Introduction to

Poultry For Youth

Ages 5 to 8

Francine Bradley
Pamela Emery
Jan James
Marianne Bird
Sherry Paukert

University of California
Agriculture and Natural Resources
Publication 4-H-2061

Introduction to

Poultry For Youth

Ages 5 to 8

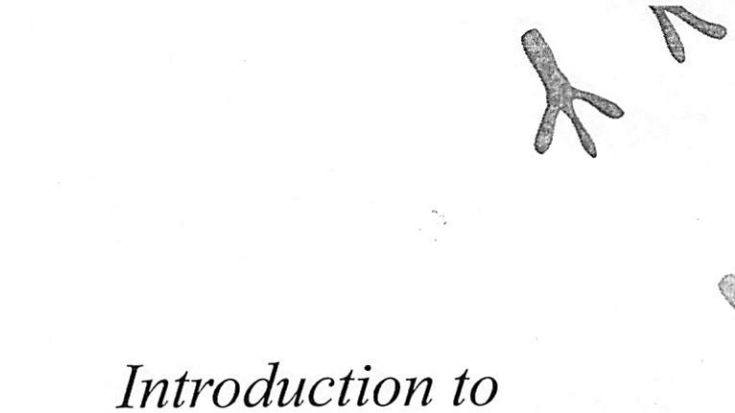
Francine Bradley, *UC Cooperative Extension Specialist,* Department of Animal Science, University of California, Davis

Pamela Emery, *Curriculum Specialist,* UC Cooperative Extension Yolo County

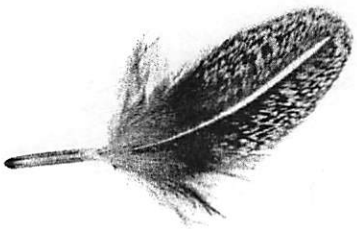
Jan James, UC Cooperative Extension Sacramento County

Marianne Bird, *4-H Youth Development Advisor,* UC Cooperative Extension Sacramento County

Sherry Paukert, *Countywide Poultry Leader,* UC Cooperative Extension Napa Count



University of California
Agriculture and Natural Resources
Publication 4-H-2061



This curriculum has been funded in part by a generous grant from the Wells Fargo Foundation.

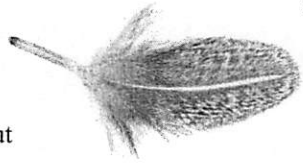
For information about ordering this publication, contact:

University of California
Agriculture and Natural Resources
Communication Services
6701 San Pablo Avenue, 2nd Floor
Oakland, California 94608-1239
Telephone 1-800-994-8849
(510) 642-2431
FAX (510) 643-5470
E-mail: danrcs@ucdavis.edu

Visit the ANR Communication Services Web site at *http://anrcatalog.ucdavis.edu*

Publication 4-H-2061
ISBN-13: 978-1-60107-448-5

UC PEER REVIEWED This publication has been anonymously peer reviewed for technical accuracy by University of California scientists and other qualified professionals. This review process was managed by the ANR Associate Editor for Human and Community–Youth Development.



Printed in the United States of America on recycled paper.

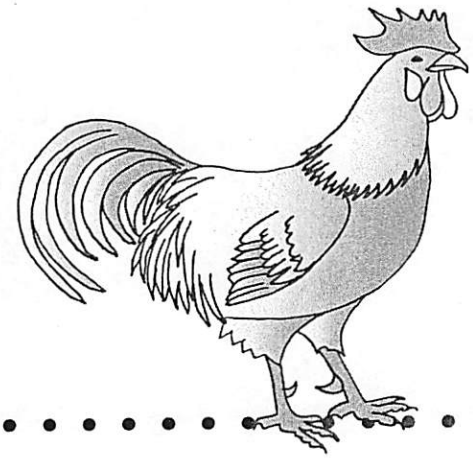
500-pr-8/07-SB/RW

Contents

Introduction to

Poultry For Youth

Ages 5 to 8



Welcome to *Introduction to Poultry for Youth Ages 5 to 8*. This is the first in a four-unit series of instructional materials designed to teach youth about poultry. The subsequent units provide lessons for youth ages 9 to 11, 12 to 14, and 15 to 18.

For 4-H programs, the goals of this series are twofold. The first is to introduce 4-H members to poultry. The sessions in this unit educate youth about birds and provide opportunities for them to learn about poultry without having to own birds themselves. Concepts include learning how to identify wild and domestic birds, exploring eggs, and understanding numerous human-poultry connections. The second goal is to provide 4-H leaders with supplementary materials they can use with youth who do have their own birds. The sessions provide opportunities for experimentation and exploration that can be intermingled with the more practical lessons needed to successfully raise a bird. If your participants are interested in raising a bird, the bibliography section "Raising a Bird" on page 52 may assist in getting you started.

For the classroom or after-school educator, this series provides numerous learning opportunities through experiential learning and practical application. Studies have shown that when youth can apply what they are learning to the world around them, the concepts they are exposed to are retained more permanently. Each session

provides opportunities for the children to connect an activity or experiment to a part of their everyday lives. Reading, writing, mathematics, and science are a part of each session, so curriculum content standards are reinforced.

Each session is designed to encourage participants to think about what they already know about a topic, test their thinking through various investigations, and apply what they have learned to a new situation. This sequential process encourages youth to think scientifically through observing, hypothesizing, comparing, organizing, and communicating. Background information and assessment activities are provided for each session. Although facts and terms are not the focus of this unit, the proper use of terminology is encouraged. The glossary on page 51 provides definitions of terms used throughout the sessions; these terms are printed in bold type the first time they appear.

Before beginning the unit, read through all of the material. Review the background information for each session; it should contain enough information to answer basic questions. Keep in mind, however, that leaders are not expected to know everything and should be willing to discover new things with their youth and allow opportunities for the children to explore and discover. The best teachers are those who teach people how to question and find answers, not those that know everything and tell it to their students.

Allowing time for exploration and discovery is a crucial component of education, especially for young children. Strategies for developing and promoting this type of learning environment are described on page 4; other successful techniques can be incorporated as well. Use techniques that are successful for you and the youth with whom you work.

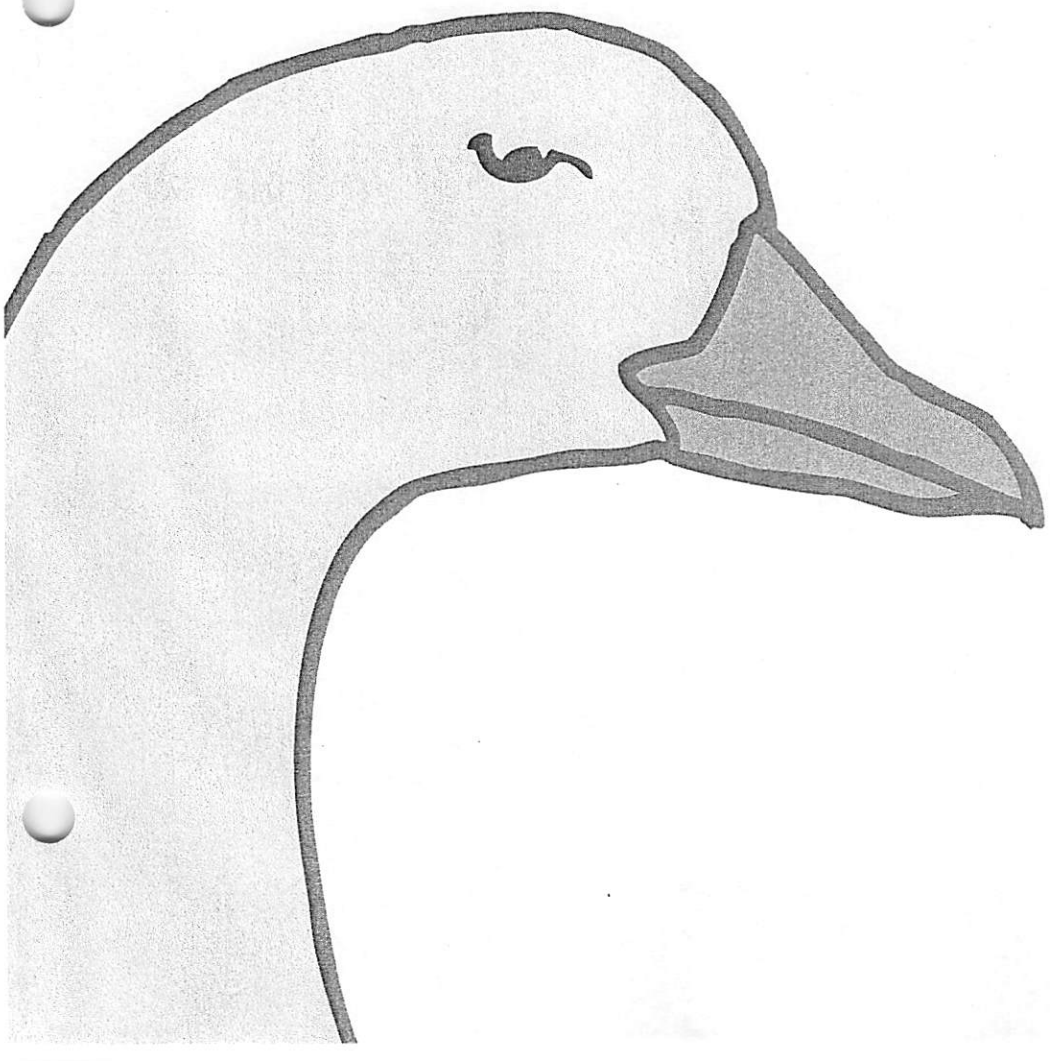
Encourage older youth and parents to become involved in the sessions. Most lessons benefit from having 1 adult for every 3 to 6 participants. The sessions are most enjoyable when youth and adults share learning experiences together.

The 4-H Youth Development Program understands that children learn in a variety of ways and at varying speeds, depending on their experiences as well as their developmental capabilities. If the sessions in this unit are on topics the children have already covered and more depth is required, you may find a session in Introduction to Poultry for Youth Ages 9 to 11 that may better meet their needs. These units can be obtained through the University of California Agriculture and Natural Resources catalog Web site, anrcatalog .ucdavis.edu.

Whether used in a poultry project or as a science supplement in a classroom, it is hoped that these sessions will teach everyone a bit more about poultry—what poultry are, how humans and poultry are connected, and how that relationship has changed over the years. With this knowledge, each participant can become an educated consumer of poultry products.

Teaching Techniques and Tools

There are many ways to teach and many ways to learn. One of the best ways to learn is by doing. For example, suppose you watch a video on how to learn to swim. You can watch the video numerous times, but until you actually practice the sport, you won't master the techniques of swimming.



The 4-H Youth Development Program uses experiential learning to promote better understanding and retention. "Learning by doing" is the key.

This section presents strategies that can maximize the educational experience of the participants. Try some of these ideas as you teach, and combine them with other educational strategies you have found to be successful.

EXPLORE AND DISCOVER

Provide opportunities for youth to explore and discover. Allow time for youth to fiddle and experiment with supplies in a safe setting. Create an atmosphere of exploration and discovery. Take participants to the zoo or a local county fair to see a chicken or turkey, as well as other birds. Provide experiences for youth so they can connect newly learned knowledge to something they already know. This approach is known as constructivist learning.

QUESTIONS

Asking questions, as opposed to giving answers, is an effective teaching and learning method.

- Ask the children questions that encourage exploration and further thinking.
- Ask questions that do not have one clear answer (open-ended questions).
- Ask questions that require investigation.
- Provide time for the children to think before calling on them to answer questions.

The following types of questions encourage thinking:

- "What if . . .?"
- "What would happen next?"
- "What do you think?"
- "How would you do it?"

ALLOW TIME TO MAKE CONNECTIONS

It has been proven that we retain information better if we can apply it directly to our experiences and lives. The sessions in this unit incorporate many opportunities for making connections. Here are some additional ways you can encourage children to make connections:

- Provide time for the children to think about what they already know.
- Provide opportunities for children to hypothesize about what will happen next based on their previous experiences.
- Perform the "Application" activities at the end of each session. These activities ask the children to apply what they have learned to a new situation.

FACILITATE LEARNING BY USING OTHER PEOPLE

Many memorable educational experiences include lessons taught by older people—a sibling, grandparent, neighbor, or friend. Incorporate older youth and adults in your teaching.

- Ask older youth to assist younger children with procedures and directions.
- Invite a 4-H or FFA youth with poultry experience to lead one of the small-group stations.
- Ask parents to come with their children to specific meetings so they can learn about poultry together.
- Invite a parent who has a particular area of expertise to be a guest educator for a meeting.
- Assign a teen to work with a child who needs special attention.
- Assign a parent to be the person who gathers supplies prior to the meeting and/or distributes them during the meeting.

INCORPORATE MOVEMENT

Children are growing and active people. Their bodies require movement and their minds need mental breaks. Throughout each session incorporate organized movement.

- Use hand and body motions while singing a song.
- Have children gather their own supplies in an orderly fashion.
- Serve a snack between the "Investigation" and "Application" activities of the session.
- Have a standard break activity that requires movement such as "Simon Says" or "Duck, Duck, Goose!"

Session 1

Homegrown or on the Wild Side?

DOMESTIC OR WILD?

TIME 50 TO 60 MINUTES

SCIENCE LEARNING

- observing
- oral and pictorial communication
- comparing
- organizing through classifying and grouping

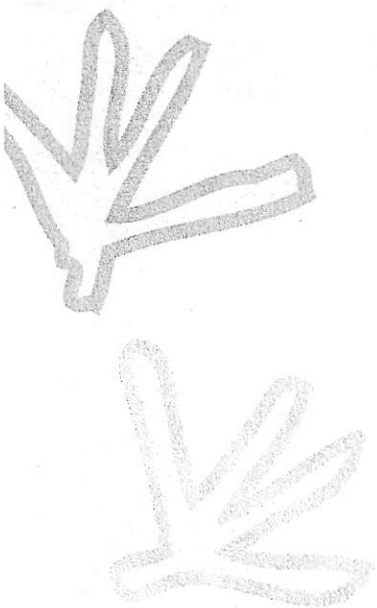
VOCABULARY

- captive
- different
- domestic
- feral
- poultry
- similar
- tame
- wild

OBJECTIVES

The children will

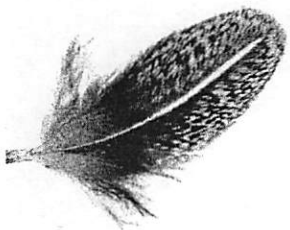
- explore and understand the basic needs of all living organisms.
- examine the similarities and differences between wild, captive, and domestic animals, specifically birds.
- classify animals as wild, captive, or domestic.



MATERIALS

- black marker
- butcher paper or poster board
- cellophane tape
- color photos or drawings of the following, one set per small group (color photos of these items are preferred; however, black and white drawings on pages 38-45 are provided as an option):
  - wild turkey
  - domestic turkey
  - wild duck
  - domestic duck

- glue sticks (several)
- index cards (1 per child)
- photos or drawings of domestic and wild animals from magazines, newspapers, coloring books, postcards, or other sources
- scissors (1 per child)
- "Wild, Captive, or Domestic?" activity sheet (page 9)



PREPARATION

- Prior to the activity date, ask children to bring in a few photos or drawings of their favorite animals. These will become part of a display and will not be returned.
- Obtain a collection of magazines, coloring books, and newspapers that have photos of animals in them.
- Locate large photos of a wild turkey, a domestic turkey, a wild duck, and a domestic duck, or photocopy and realistically color the illustrations on pages 38–45. **Laminating is suggested.**
- Copy and cut out the photos of the three animals on page 9.
- Write the designated words on index cards for the application activity on page 8.

BACKGROUND INFORMATION

Domestic or Wild?

People typically think of animals as wild, captive, or domestic. Wild animals live freely and are able to take care of their own needs, such as finding food, shelter, and mates. They also know how to avoid predators. Most types of animals, such as mammals, fish, birds, reptiles, amphibians, insects, and microorganisms, are considered wild. Sometimes people take wild animals captive (place them in zoos, wild animal parks, or game farms), and often successfully breed and raise them; but the animals still have the same instincts, colors, and shapes as their wild relatives. For this reason, captive animals and their offspring are usually able to return to living in the wild.

Domestic animals have been kept in captivity and are bred for special purposes. Examples of domestic animals include dogs, cats, cattle, and horses. Long-term domesticated animals such as sheep, pigs, chickens, and rabbits have been kept in captivity and selectively bred by humans over many generations (some for thousands of years). These animals depend on humans for protection from predators, shelter, food, and medical care. In turn, domesticated animals provide a source of food, fiber, or power for the humans who take care of them. Domesticated animals cannot live successfully in the wild, but the ancestors of all domestic animals were wild. Ancestral species of some domesticated animals can still be found in the wild today. For example, the red jungle fowl of Southeast Asia is the ancestor of the modern chicken; and the wild turkeys of North and Central America are the ancestors of the modern turkey varieties, including the large white-meat turkeys.

Similarities and Differences among Wild, Domestic, and Captive Fowl

Wild birds are typically much lighter in weight and leaner in appearance than their domesticated relatives. Their lighter weight allows them to move faster and, in most cases, to fly. Many wild birds, particularly the females, are colored to blend into their environment. This makes it more difficult for predators to find them, which is especially beneficial when the females are incubating eggs. Males are much more colorful, especially during the breeding season, when they are trying to attract a mate. Understandably, bright-colored males do not sit on eggs. In some bird species, the differences in feather colors and body shape are so extreme between males and females that early naturalists thought the males and females were from **different** species.

Domesticated bird species (particularly species of chicken, turkey, duck, and goose) tend to be larger and heavier than their wild relatives. Part of this is due to better diet and living

conditions. Also, humans, over thousands of years, selectively bred the bigger and meatier animals. Domesticated animals sometimes display different colors than their ancestors. For example, white feathering is common among domesticated chickens and turkeys because when these white birds are plucked, the fine, hairlike pinfeathers are nearly invisible. Consumers prefer not to see the small pinfeathers on their dinner plates, so producers raise white chickens and turkeys. In the wild, a white turkey or chicken would rarely survive long enough to reproduce, since it would be much easier for predators to see. In addition to the loss of their camouflage feathers, mature modern meat-type chickens and turkeys have become far too heavy to fly.

Some wild birds, such as pheasants and quail, can be successfully raised in captivity. Captive birds are typically hatched and raised in the wild and are not as **tame** as domesticated birds. Captive birds are **similar** to and essentially look the same as their wild counterparts and have not lost their ability to fly.

The term **poultry** refers to all domesticated fowl raised for their meat or eggs, including chickens, turkeys, ducks, and geese.

INTRODUCTORY ACTIVITY

Invite a child to be an "actor." Without allowing the rest of the participants to see, show the child one illustration from page 9. Ask the child to pretend that she or he is the animal shown in the photo and act out what that animal would do. The actor may not talk. Encourage sounds, action, and enthusiasm. Have the rest of the children guess what animal the child is portraying. Repeat the procedure with the other two animals. After all three role-plays are complete, ask the following questions and allow time for students to respond thoughtfully.

- Which person was the wild animal? Why?
- Which person was the captive animal? Why?
- Which person was the domestic animal? Why?

INVESTIGATION

- In small groups of three to four, have the participants gather a collection of animal photos. These photos should include ones the children brought as well as ones cut out from magazines, newspapers, and other sources. Ask each group to sort their photos into the categories wild, captive, and domestic. All group members should agree to the classification of each animal.
- Tape a piece of butcher paper on the wall and divide it into three sections with a black felt-tip pen. Write one category name (wild, captive, or domestic) at the top of each section. One by one have each child choose a photo; tell the class what the animal is, and what category the animal belongs to, and why; and then glue it onto the paper. An animal may fit into more than one category. If this is the case, allow the child to choose where to place it.
- Display this poster and refer to it throughout the rest of the sessions.

APPLICATION ACTIVITY

- Divide the participants into two groups. Have one group look at the photos of the wild and domestic turkeys. Have the other group look at the wild and domestic ducks.
- Discuss the similarities and differences between the two animals and why these differences may exist. Share facts from the background information for this lesson with the children. Be sure to ask: Where does each live? What do they eat? How are they protected from predators? Which is the domestic animal? Which is the wild animal?
- Have the groups switch photos and compare and contrast the other two birds.

ASSESSMENT

- Write the names of the following animals on index cards, one animal per card: pig, jellyfish, cow, wolf, boa constrictor, chicken, horse, duck, bee, bat, goat, dog, panther, humpback whale, lizard, jackrabbit, and lion. Each child should have one card.
- Have the children divide themselves into two groups, wild and domestic, based on the cards they have. Could any of the animals named on the cards be captive?

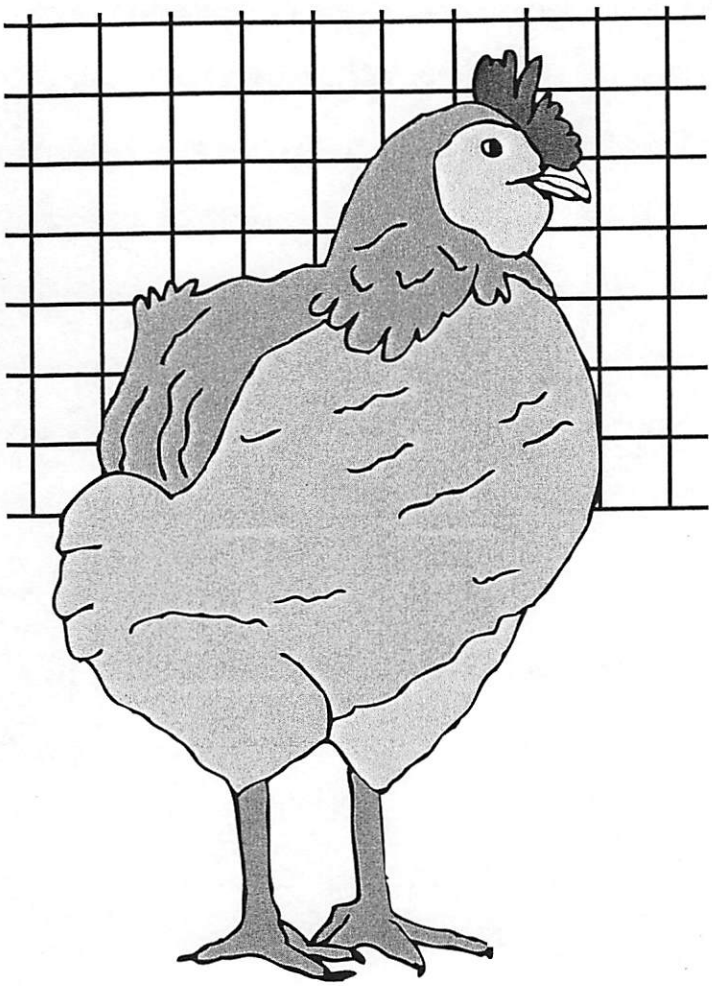
EXTENSION

- Read a story about an animal. Discuss whether the animal is wild, domestic, or captive.

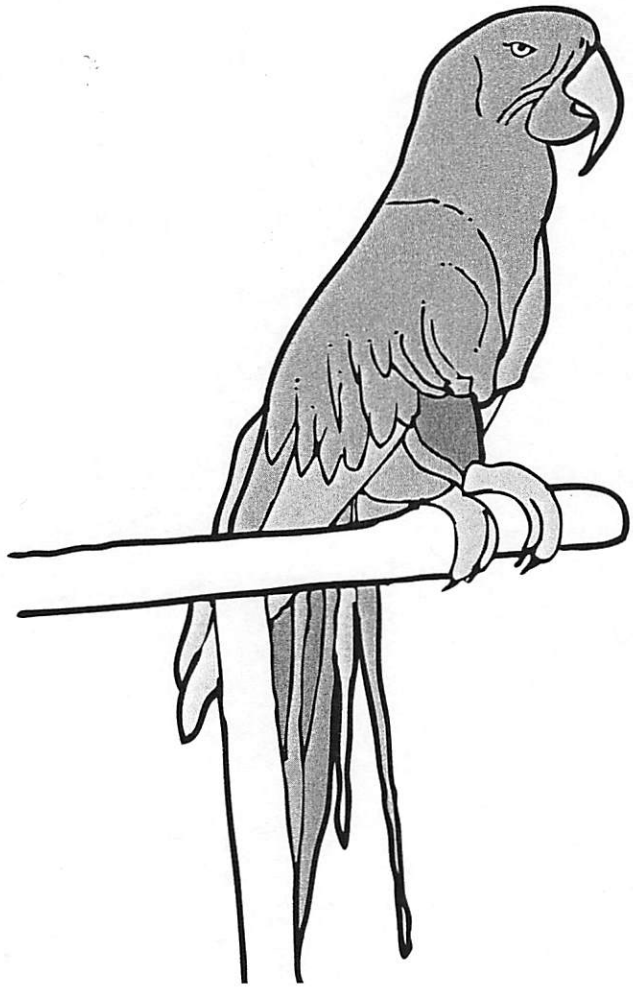
NOTE BOXES

- An animal may be domestic if it is
  - found living with people and depends on people for care
  - bred by people for food, fur, leather, or work
- An animal may be captive if it
  - is not tame but is cared for by people
  - has the instincts of its wild ancestors
  - has the body shape and color of its wild counterparts
- Some domesticated animals, such as the horse, can become **feral.** This means that although its ancestors may have been domesticated, it can live and reproduce successfully on its own.
- Once an animal has been domesticated, neither it nor its offspring can become wild, but it can become feral.

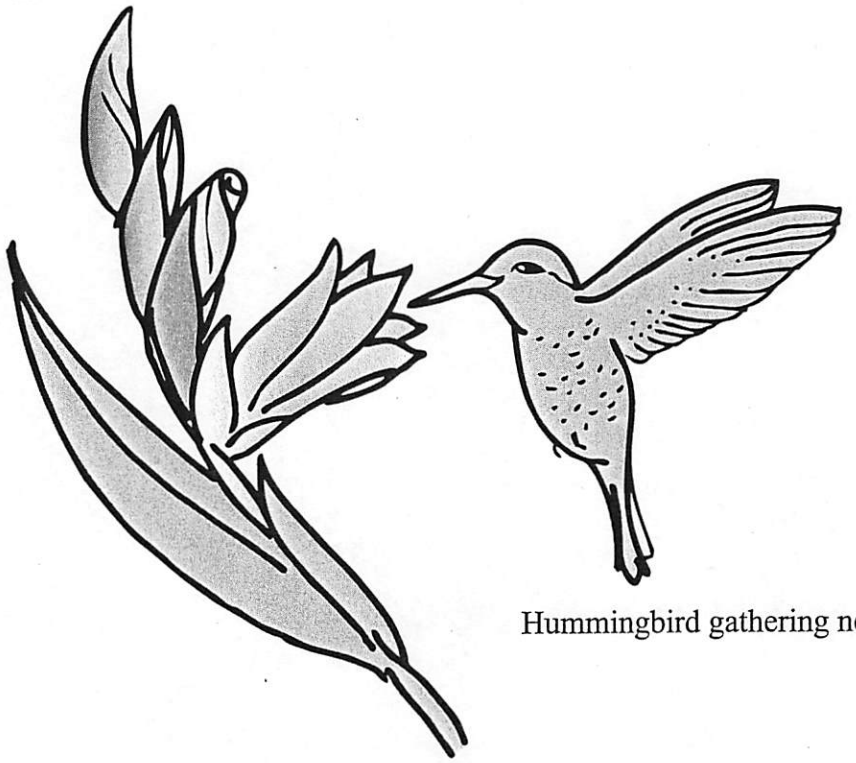
WILD, CAPTIVE, OR DOMESTIC?



Leghorn chicken in a cage.



Parrot on a tree limb in a zoo aviary.



Hummingbird gathering nectar from a flower.

Session 2

Homegrown or on the Wild Side?

WHERE DOES IT LIVE ?

TIME: 30 MINUTES

SCIENCE LEARNING

- observing
- oral and pictorial communication
- comparing

VOCABULARY

- environment
- fowl
- granivore
- habitat
- omnivore

OBJECTIVES

The children will

- understand the basic needs of living organisms, including themselves
- create models of wild and domestic bird habitats
- compare the habitats of wild and domestic animals

MATERIALS

- crayons or markers (for each child)
- drawing of Canada goose (page 48)
- drawings or photos of domestic poultry in their environment
- drawings or photos of wild animals in their native habitat
- string, bowls, paper towel tubes, paper, seeds, straw or dried weeds, feathers, and other items that can be used to make an imaginary habitat
- white paper (1 to 2 sheets per child)

PREPARATION

- Gather the supplies needed for the children to make a habitat for a leghorn chicken or a mallard duck.
- Obtain drawings or photos of wild animals in their native habitat, or use the drawings on pages 38–49.

BACKGROUND INFORMATION

What Makes a Habitat?

Humans and all other animals, including pets and farm animals, have the same basic needs. One of the most basic needs is home. A home is not just a place of shelter; it is a place where all basic needs are met. The scientific term for a wild animal's home is its habitat. For a domestic animal, its home is referred to as its environment.

All animals have four basic needs: water, food, shelter, and space. The habitat or environment in which the animal lives must provide these four elements. Animals in the wild depend on their surroundings to meet these needs. Animals' existence is threatened when these needs are not met, for example, during a drought, after a fire, or when their habitat is encroached upon by human development. Domestic animals such as chickens and turkeys depend on their caregivers to ensure that they stay healthy by providing them with water, food, shelter, and space.

Care of Poultry

All types of poultry need some form of shelter that protects them from the sun, rain, and wind. Ideally, the shelters should also provide protection from predators. Most poultry are raised in a confined area such as a barn for meat chickens and turkeys, or wire cages for laying hens.

Domestic birds need proper nutrition, which includes balanced feed and clean water. Most domestic birds are fed premixed food that contains a variety of ingredients such as grains (corn, soybeans, wheat, milo, and oats) and added vitamins and minerals. For the most part, poultry are omnivores, which means that they eat both plants and animals, but they can also be granivores, which means they eat only seeds. The birds' owners are responsible for determining the best diet for their birds.

INTRODUCTORY ACTIVITY

Ask the children to draw a picture of where they live and items they require to survive. For example, children need a place to sleep and food to eat. After the drawings are complete, lead the children in a personal exploration of their thoughts by asking questions such as the following.

- What are some things in your drawing that you need for survival?
- If you were really going to live there, would you need to add anything to your drawing?
- A home is a shelter. What other things do people need to survive?
- What are some things that all living things need in order to live?

Allow children to share their drawings and display them, if time and space allow.

INVESTIGATION

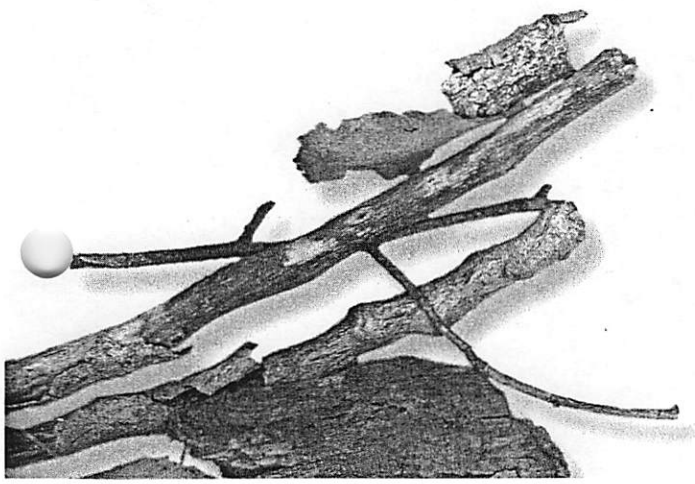
- Divide the children into two groups. Designate one group as the "Laying Hen" group and the other as the "Mallard Duck" group. Ask the children to create a life-sized model habitat for their animal using the supplies available (string, bowls, plates, grass, seeds, etc.). Be sure to set ground rules for participation and cooperation. Allow 8 to 10 minutes for the children to create the habitat. They must be creative, using the supplies available, and show how the animal will have everything it needs to survive.
- Once the habitats are complete, have one person from each group act as the bird to show how the bird lives in the habitat model.
- After both groups have described their habitats, ask the children the following questions and allow time for answers.
    - How are the two habitats alike?
    - How are the two habitats different?
    - If you were to able to change the habitat you made or add other items, what would you change or add? Why?

APPLICATION ACTIVITY

- Have the children suppose that they are going to raise a bird. What kinds of things would they need to consider prior to getting the bird? What kinds of things would they need while raising the bird? Why would they need to provide these things?
- Have an older youth who owns a bird describe the healthy environment that is provided for it. If possible, have the guest bring in a bird and some supplies that are used to care for it.

ASSESSMENT

- Show the children a drawing of a Canada goose (page 48). Ask them what this wild waterfowl needs to survive. The children should be able to explain its four basic needs: water, food, shelter, and space. If appropriate, discuss where the children have seen Canada geese.
- Have the children list three reasons people need homes and three reasons why birds need homes. Compare the reasons.



EXTENSIONS

On a large piece of paper, write lines in the following sequence to form a cinquain template. A cinquain is a five-line poem written in a specific way. Ask each child to give you a word that describes something an animal needs to live. Place the word on an appropriate line of the poem. As a group, read the poem aloud.

One word_____
(*noun, the title of the poem*)

Two words_____
(*adjectives that describe the title*)

Three words_____
(*adjectives that describe actions of the title*)

Four words_____
(*a statement of feeling*)

One word_____
(*noun, a synonym of the title*)

Example:
Kittens
furry, young
frisky, playful, nocturnal
enjoyable pet and companion
felines

NOTE BOXES

- *Optional:* While the children are drawing, play appropriate songs from Banana Slug String Band science education CDs. Titles include Goin' Wild, Everything Needs a Home, and Ecology. **See page 54 for ordering information.**
- For a twist to one of the drawing activities, have the children use gel pens to draw their pictures on black construction paper.

Session 3

Poultry

INTRODUCTION TO COMMON DOMESTIC BIRDS

TIME: 45 TO 50 MINUTES

SCIENCE LEARNING

- observing
- organizing by sequencing and graphing
- assembling
- hypothesizing

VOCABULARY

- beak
- bill
- caruncle
- chicken
- cock
- comb
- duck
- hen
- roost
- rooster
- snood
- turkey
- wattle
- webbed feet

OBJECTIVES

The children will

- identify the types of poultry humans use for meat
- assemble models of poultry
- compare the anatomy of chickens, ducks, and turkeys
- explore the adaptations of birds
- predict the functions of the anatomical features of some birds

MATERIALS

- 60-pound white paper (approximately 2 sheets per child)
- bathing cap
- broad-tipped marker
- butcher or chart paper (one sheet)
- cellophane tape (optional)
- goggles
- inflatable inner tube
- "Let's Make A Bird!" masters (pages 19–24)
- photos of domestic ducks, chickens, and turkeys large enough for the whole group to see (if photos are not available, use the drawings provided on pages 38–49)
- raincoat
- scissors (1 per child)
- swimming fins (1 set)
- yellow and red crayons (1 each per child)

PREPARATION

- Photocopy the "Let's Make a Bird!" masters (pages 19–24) onto the 60-pound paper. Make enough copies so each child will get one type of bird. Make a few extras of each page to allow for participant error.
- Locate photos or drawings of domestic ducks, chickens, and turkeys or photocopy and color the drawings provided on pages 38–49.

BACKGROUND INFORMATION

Poultry is a major source of food for people. In the United States, chicken and turkey are the most common types of poultry eaten. Duck and goose are also consumed, especially in certain ethnic communities.

Ducks

Ducks are large-bodied birds that swim in the water. They get their food with their shovel-shaped **bills** by picking up mud along the edge of the water and straining it through their bills using lots of water. They have **webbed feet,** which means they have skin between their toes to help them swim. Their feathers are closely packed together and have natural waterproof qualities. Short tails and simple heads distinguish ducks from other types of birds and allow them to swim and dive easily.

Chickens

Chickens find their food in or on the ground or growing close to the ground. They have short, powerful **beaks** to help them eat small insects, fruit, seeds, and green plants. They often scratch in the dirt to find food. Chickens like to sleep on **roosts,** such as tree limbs, above the ground. Chickens have red appendages called **combs** on top of their heads. Chickens are the only birds with combs. Red skin called a **wattle** hangs down below each chicken's beak. A female chicken is called a **hen;** a male chicken is called a **cock.** Cocks usually have longer tails, bigger combs, and larger wattles than hens. Cocks are known for their distinct crowing noises.

Turkeys

Turkeys are much larger than chickens and have several distinct features. They have big legs and feet to hold up their weight. The head of a turkey is different from a chicken's head. It has a long piece of red skin that hangs down on one side of its beak. This is called a **snood.** A turkey also has many bumps on its head that are called **caruncles.** Turkeys are able to change the color of their snoods and caruncles from red to blue—it is thought the color change indicates a change in mood. Female turkeys are called hens; male turkeys are called toms. Toms have big, fan-shaped tails, which they display when they want to impress a hen.

Like chickens, turkeys find their food in or on the ground or growing close to the ground. They have short, powerful beaks, which help them eat insects, small animals, seeds, fruits, and green plants. Turkeys prefer to roost aboveground at night.

INTRODUCTORY ACTIVITY

- Invite three children to the front of the room. Ask one child to act like a duck, one to act like a chicken, and one to act like a turkey.
- Ask the rest of the group what they observed.
- Show the children the drawings of the duck, chicken, and turkey. Ask them to identify the animals and then name the parts they see. If appropriate, have them discuss the functions of the parts they see. Take note of misconceptions and be sure to cover them in the investigation activity.

INVESTIGATION

- After describing each bird, have the participants choose one bird to assemble.
- Give each child one set of bird parts, one pair of scissors, one red crayon, and one yellow crayon.
- Instruct the children to color their bird parts as realistically as they can, cut them out, and assemble the bird. After the birds are complete, assist children in identifying their birds and the bird's characteristic anatomy. Taping is optional; bird parts may be assembled on a flat surface without taping them together.
- As a group, create a chart that describes the animal parts and their functions. Ask the children to list the parts and explain their functions. You may assist by asking questions such as: What is this? (Point to your head, your feet, your abdomen, etc.). What do you think it is for? A sample chart is shown below.

Animal Part	What We Think It's For!
Head	
Legs	
Feet	
Wings	
Comb	
Wattle	
Caruncle	
Snood	
Breast	
Back	
Tail	

APPLICATION ACTIVITY

- Gather the fins, raincoat, inflated inner tube, and goggles. Set them in front of the room. Have the children sit in a circle.
- Discuss the idea that animals have certain adaptations that help them survive in their surroundings.
- Invite one child to the front of the room. Explain that this person is a duck.
- Ask the children to name one adaptation the duck has that helps it survive. As the children state their answers, listen to them. If you have an appropriate prop to place on the child, do so. Continue to listen to ideas and dress the child with the appropriate items that show an adaptation. Examples include:
    - fins: webbed feet
    - raincoat: waterproof feathers
    - inner tube: feathers and body structure that help the bird float
    - bathing cap: small, smooth head feathers for ease in diving and swimming
    - goggles: a second eyelid (nictitating membrane) that allows birds to see underwater
- Ask the children about the adaptations chickens have that allow them to be successful in their environment. Answers may include long claws to scratch and dig, a pointed beak to peck open its shell during hatching, and the instinct to swallow pebbles to help in food digestion.
- Ask the children what they think would happen if ducks did not have webbed feet? If a cock was not colorful? If poultry feathers were not waterproof?
- Provide time for all to respond.

ASSESSMENT

Have children view photos or drawings of the animals they assembled. Ask each child to point to one part of the animal and explain what it does. Continue until each child has had a turn.

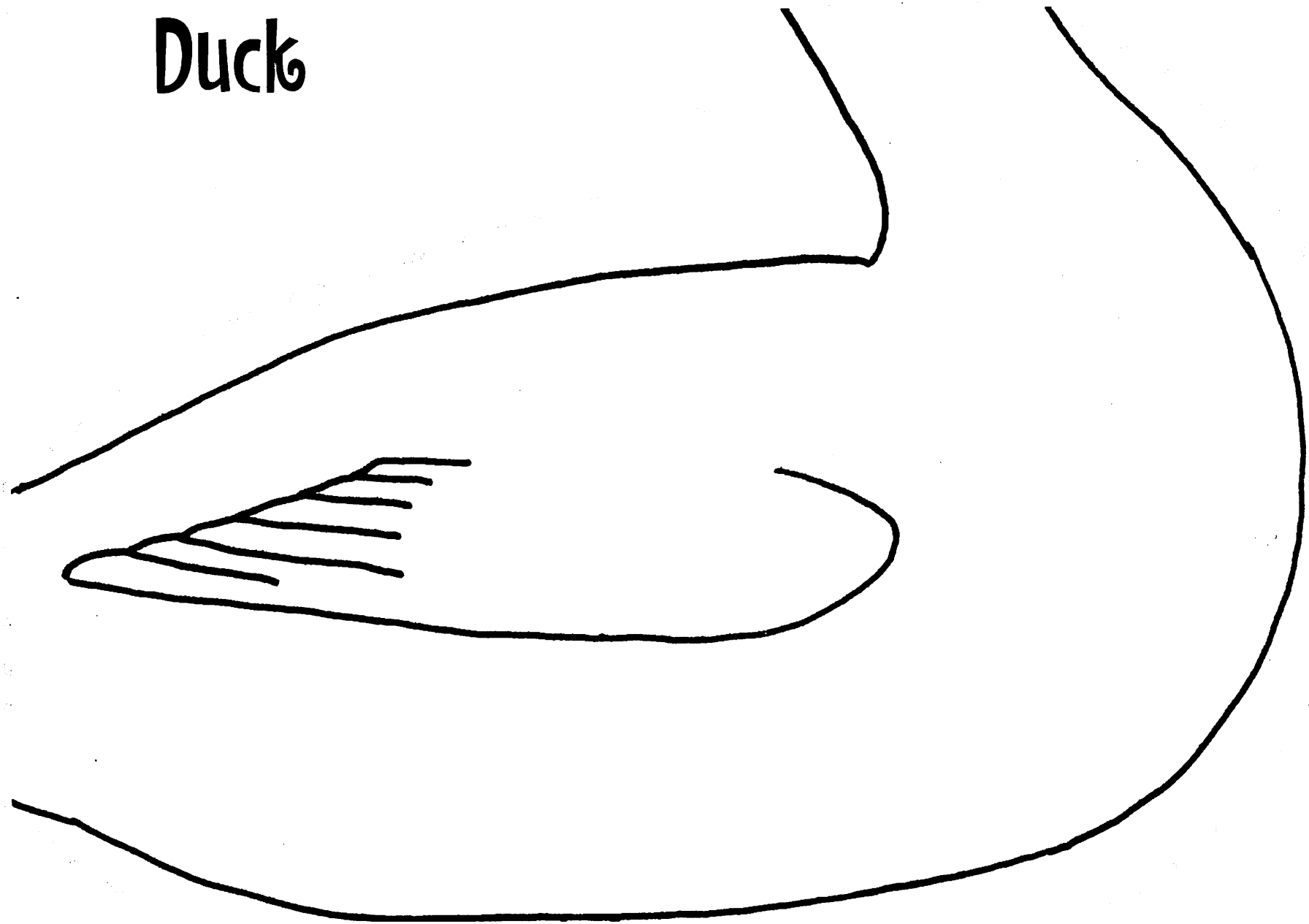
EXTENSIONS

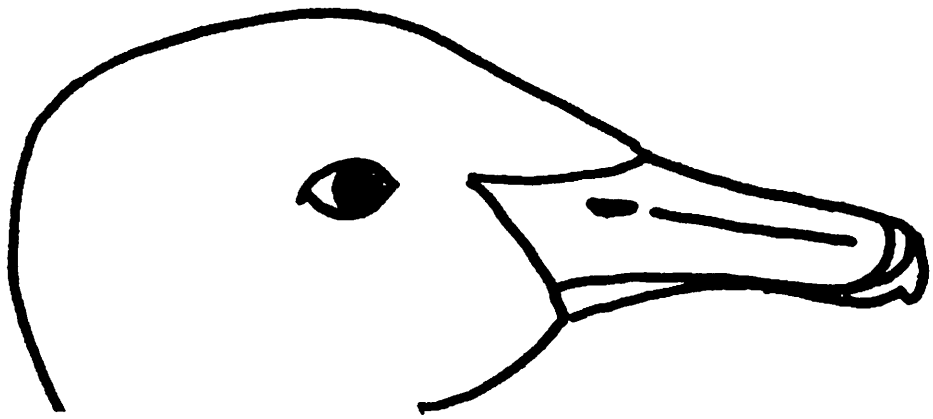
- Paste the completed animals on a piece of butcher paper and use it to write a thank-you note to an appreciated person or company.
- Have the children mix and match parts to create a bird of their own. Where would this bird live? What adaptations does it have?
- Have participants draw the head of a chicken or turkey and label its parts.
- Bring in a live cock and hen. Compare the wattles, combs, and other facial features.
- Show the participants a live chicken, duck, and turkey. Compare and contrast the animals.

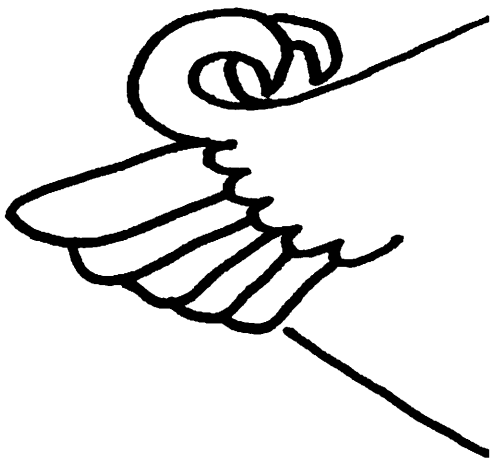
NOTE BOXES

- After completing the activity, allow the children to tape their finished animal together and place it on a display.
- Save extra cutout poultry pieces for the extension activity in which children mix and match parts.

Duck

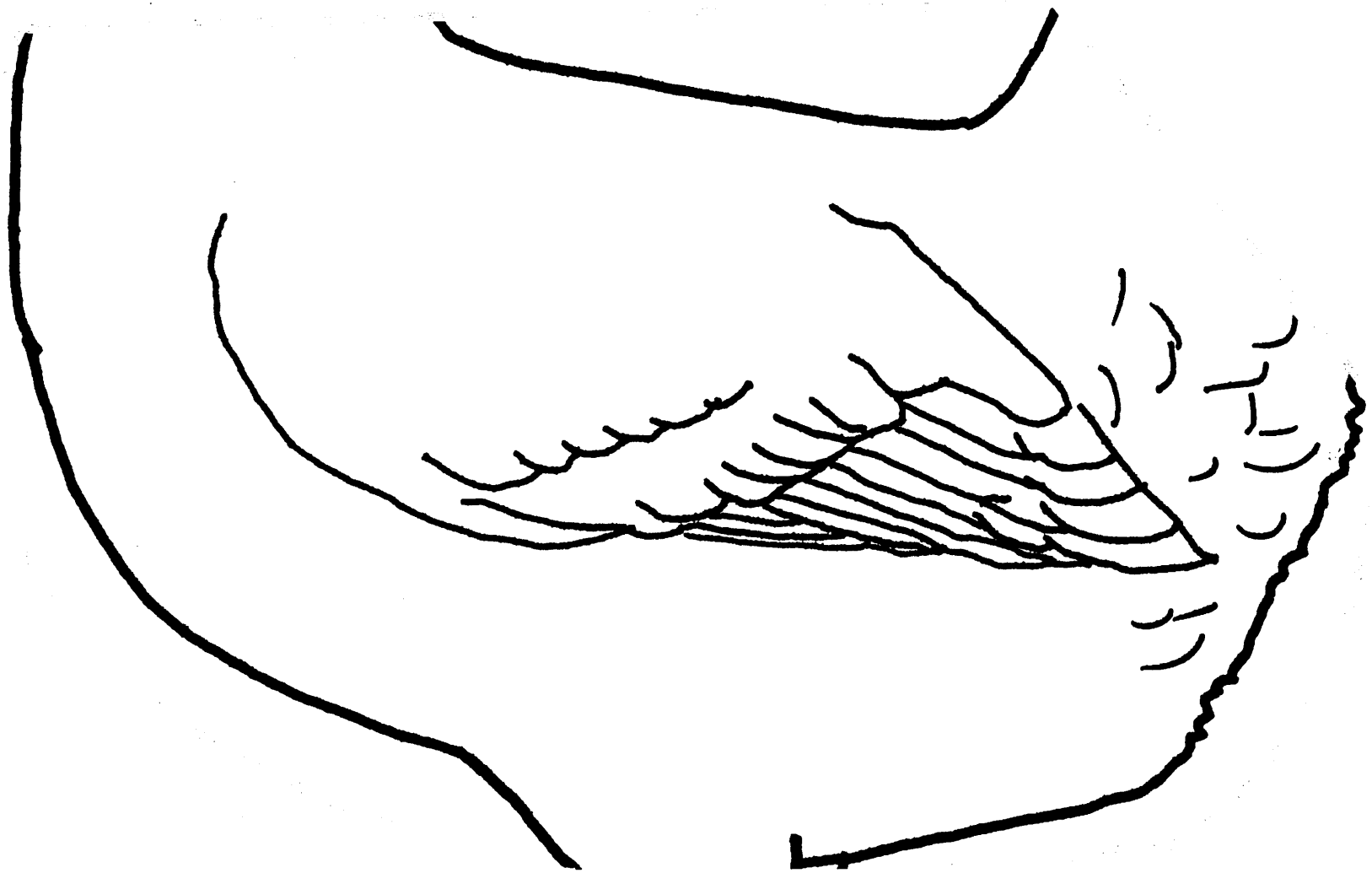


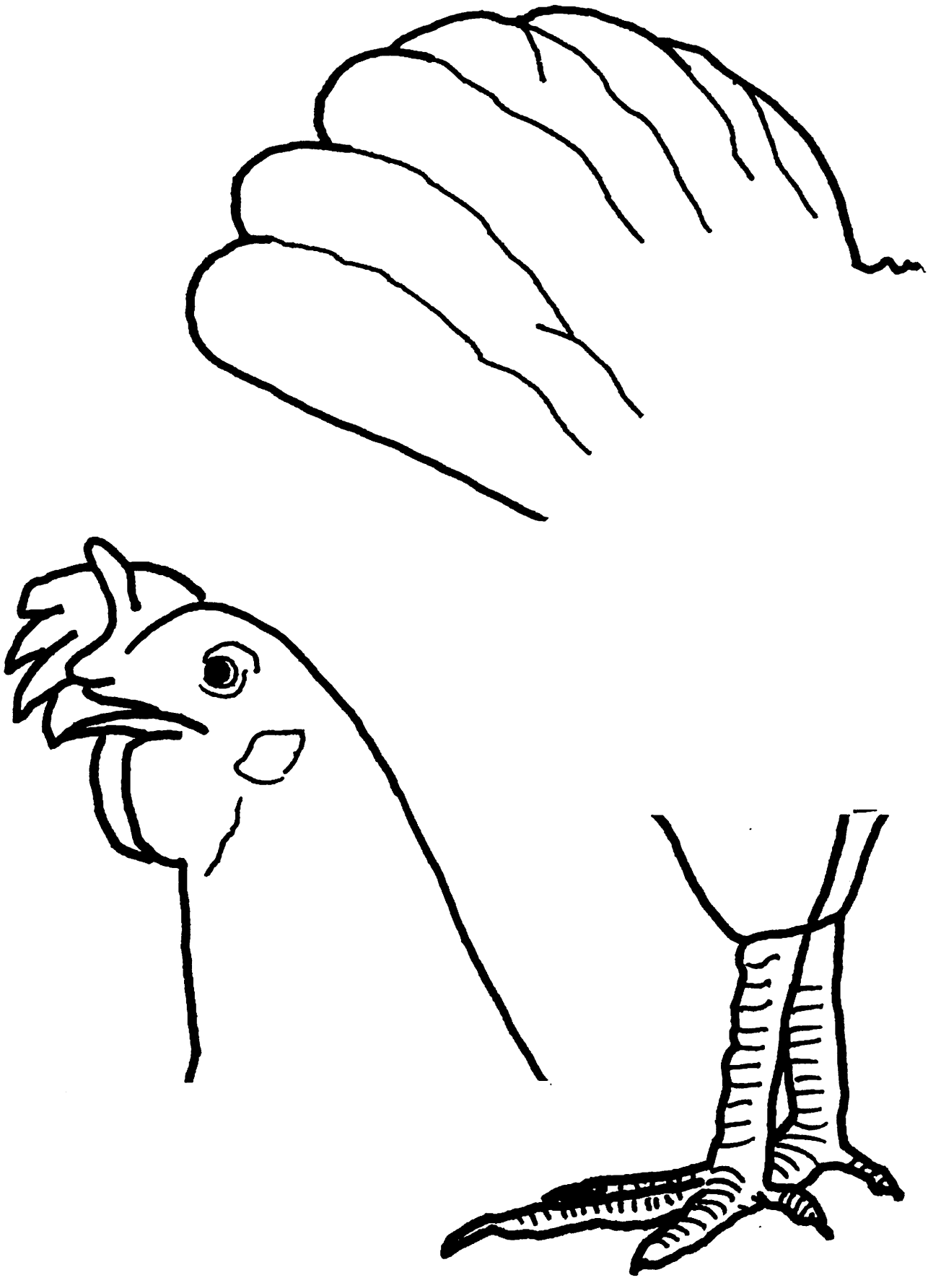




LET'S MAKE A BIRD!

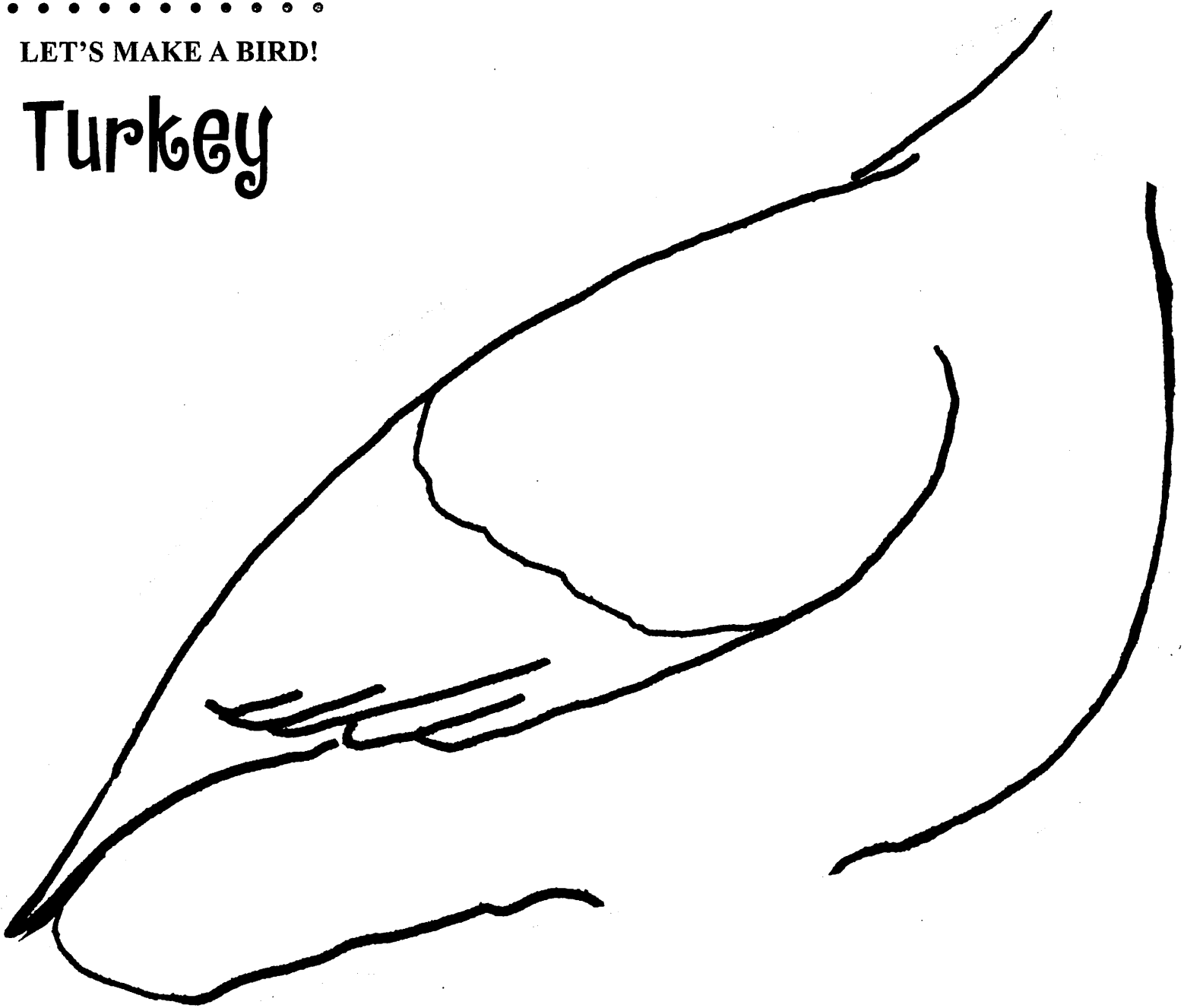
Chicken

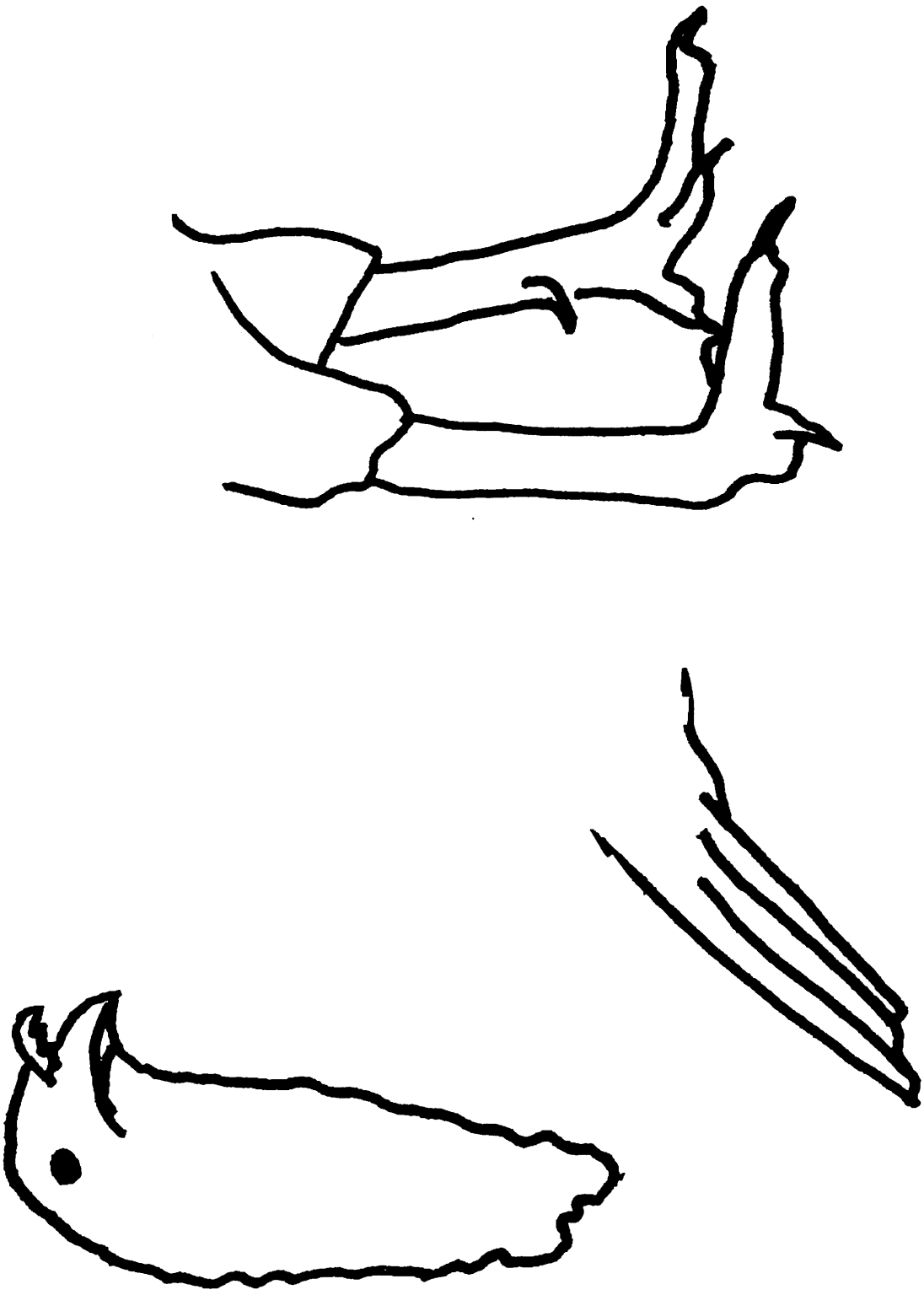




LET'S MAKE A BIRD!

Turkey





Session 4

When Did Your Family Go to the Birds?

HUMAN–POULTRY CONNECTIONS

TIME: 50 TO 60 MINUTES

SCIENCE LEARNING

- observing
- oral communication
- comparing
- organizing

VOCABULARY

Due to the nature of this exercise, a specialized vocabulary can be derived from the literature read aloud and the experiences shared.

OBJECTIVES

The children will

- develop an appreciation for the historical uses of poultry
- understand by listening to stories the role that poultry plays in many holiday celebrations, recreational activities, and religious observances
- identify human-poultry connections in their families by sharing information and listening to others

MATERIALS

- display of down pillows, Ukrainian eggs, feather headdresses, etc. (optional)
- fishing fly
- large feather
- drawings of poultry (pages 38–49)
- selected children's literature that shows a variety of ways poultry is used (see the "Literature for Children" section of the bibliography, pages 52–53).

PREPARATION

- If appropriate, ask that one parent, guardian, or other relative of each child participate in this activity. Explain that family poultry stories will be shared at this meeting.
- Obtain copies of the books you will read to the children. Plan to read two or three of the books. Use other books that have photos or drawings that show various uses of poultry (see suggestions in the bibliography, page 52).

BACKGROUND INFORMATION

A Bit of History

Historically, poultry have been used for many reasons and in a variety of ways. Depending on the culture, poultry have been used for recreation, food, clothing, religious symbols, decorations, and medicines. Many traditions are carried on today.

Through the 1930s, most of the areas in the United States were rural. The majority of Americans lived on farms or ranches, and most farm wives kept poultry for eggs, meat, and down. As rural areas became more urbanized, fewer people were involved in food production. Today, less than 2 percent of the nation's population produces the food we eat.

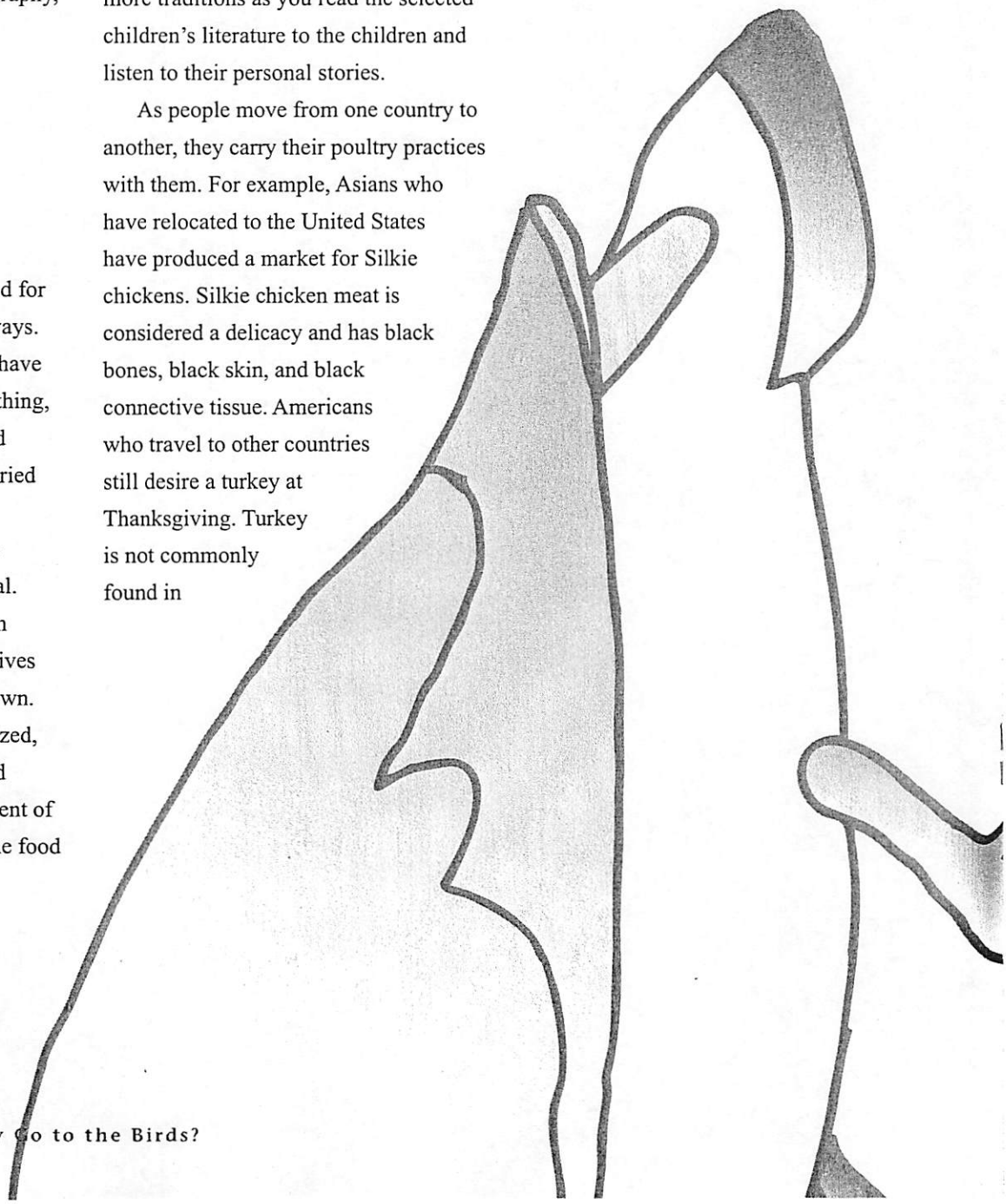
Celebrations

Poultry is a part of many celebrations. In the United States, turkey is eaten for Thanksgiving; in Asia, duck is consumed on New Year's Day, and feathers are used to decorate Chinese New Year dragons. In Europe, it is common to serve a goose at Christmas supper. Feather headdresses are worn in many Native American celebrations, and feathers are used in religious ceremonies. You will find out about more traditions as you read the selected children's literature to the children and listen to their personal stories.

As people move from one country to another, they carry their poultry practices with them. For example, Asians who have relocated to the United States have produced a market for Silkie chickens. Silkie chicken meat is considered a delicacy and has black bones, black skin, and black connective tissue. Americans who travel to other countries still desire a turkey at Thanksgiving. Turkey is not commonly found in worldwide markets in November; however, the market for this bird is increasing internationally since Americans travel during the holidays.

Religious Poultry Connections

A number of religions use birds or eggs as symbols. For many Christians, the egg is a symbol of new life, spring, and the Resurrection. Gold chicken statues can be seen on European church-tops as a symbol of the risen Christ. Roasted



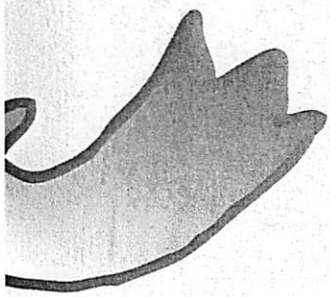
eggs are traditionally served at Jewish Passover. Animist religions incorporate chickens in religious ceremonies and feasts.

Recreational Activities

Many recreational activities are associated with birds. Fowl such as turkeys, ducks, geese, and pheasants are hunted in season in many parts of the United States. Poultry feathers are used in fly-fishing. Cock fighting is a legal sport in many nations and in some states in our country.

INTRODUCTORY ACTIVITY

- Show the children the photo of the man tying fishing flies made of chicken feathers (page 29). Show the children an actual fishing fly. Ask the children: What do you think the man is doing? Why is he doing it? Why are feathers put on the hook?
- Next, show the photo of the father and son displaying what they bagged after a day of turkey hunting (page 30). Ask the children: What did they do? Why did they do it? What are they going to do with the birds?



INVESTIGATION

- Explain to the children that throughout history, people have used poultry in numerous ways. Discuss the idea that the purpose of this activity is to learn about some of the ways people have used poultry in the past and how people today are still connected to poultry.
- Read one or two stories that show some connection to poultry. Possible titles include Lion Dancer: Ernie Wan's Chinese New Year by Kate Waters and Madeline Slovenz-Low, Abuela's Weave by Omar Castaneda, and Rechdenka's Eggs by Patricia Polacco. After reading the stories, discuss the human-poultry connections evident in the stories.
- Ask participants to share an experience they or one of their family members has had with poultry. The experience may be about the participant, a grandparent, great-grandparent, uncle, aunt, cousin, or other family member. Have all of the children and adults sit in a circle. Seat adults between the children. Hold the large feather in your hand. Explain that the feather indicates that it is your turn to share, and that when you are finished sharing, you will pass the feather to the next person in the circle and it will be his or her turn to share. If a person does not have an experience to share when it is his or her turn, they may pass the feather to the next person in the circle.
- After listening to the experiences, you may wish to ask some questions that encourage participants to talk about human-poultry connections that were not mentioned. The background information in this lesson provides connections that may not come up in the discussion. You may wish to show the photo of the man holding the Japanese long-tailed fowl (page 31). This particular breed of chicken is considered a national monument in Japan, similar to the bald eagle in the United States.

APPLICATION ACTIVITY

- Tell the children that they are going to play a game called "Thumbs Up! Thumbs Down!" Say: "I will say a phrase. If you think the statement is correct, put your thumb up. If you think the statement is false, put your thumb down."
- Proceed by reading the following statements, all of which are true. If all the participants do not agree, ask a child who used a "thumbs up" sign why they think the statement is true, and then ask a child who chose a "thumbs down" sign why they think the statement is false. Be sure to have established a setting where children feel comfortable to talk.
- Here are some statements to use. You may also choose to create a few statements of your own.

- People use poultry for food.
- People use poultry to make pillows and comforters.
- People use poultry for decorations.
- People use poultry for sports and hobbies.
- People use poultry for ceremonies.
- People use poultry in religious ceremonies or symbols.
- People use poultry for clothing.

- If you have items made from poultry or used with poultry, share them with the children.

ASSESSMENT

Before the children leave for the day, have them line up in single file. One by one, ask them to share with you one new thing they learned about how poultry is used. After they do this, tell them one thing you liked that they did that day.

EXTENSIONS

- Ask the children to draw a human-poultry connection they would like to have or continue to have in their family.
- Invite a few community members whose careers are linked to poultry to speak to the group. Have them share information about their occupations and show some tools they use on the job. Guests may include commercial egg producers, a butcher from a local grocery store, a veterinarian who works with poultry owners, or a research scientist.
- Ask children why some people have small poultry operations even though large commercial poultry operations exist. Some possible reasons may be:
  - They raise waterfowl or game birds for special markets.
  - They raise birds for specialty feathers needed for decoration or fly-tying.
  - They enjoy teaching youth about poultry.
  - They prefer to eat farm-fresh food produced on their land.

NOTE BOXES

- Remind children that the word "poultry" does not mean just chickens and turkeys, but also includes ducks and geese.
- When you state your personal poultry connection, you may want to include some interesting connections such as an aunt who does chicken-hatching demonstrations at the zoo or a great-grandmother who made down quilts. This will encourage the children to think of uses besides food.
- Be sure that current careers related to poultry are included in part of the discussion.
- Create a list of human-poultry connections on butcher paper in the shape of a chicken. Title it "How We Use Poultry."

Making a fishing fly with chicken feathers.

How would you do it?

Father and son after a day of turkey hunting.

Man showing a Japanese Long-tailed Fowl, the national bird of Japan.

Session 5

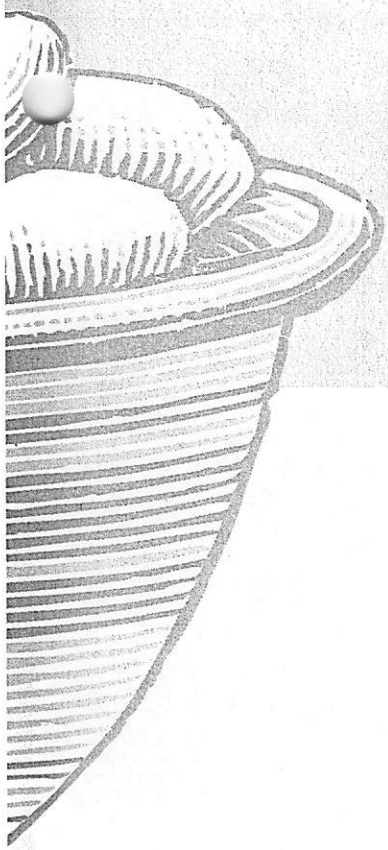
Eggs Inside and Out

LET'S TAKE A LOOK!

TIME: 45 TO 50 MINUTES

SCIENCE LEARNING

- observing
- oral communication



VOCABULARY

- air cell
- albumen
- chalaza, pl. chalazae (pronounced "ke-lay-zee")
- egg white
- exterior
- interior
- oval
- ovum
- shell
- shell membranes
- yolk

OBJECTIVES

- The children will
- explore the characteristics of an egg
- gain a curiosity for learning more about eggs
- learn the basic components and functions of an egg

MATERIALS

- chicken eggs (1 per 3 children)
- plastic dessert plates (1 per 3 children)
- butter knife (1 per group leader)
- 1-gallon resealable plastic bag (1)
- soap and hot water
- pump dispenser of hand sanitizer
- paper towels
- hand lenses (1 per 3 children)
- "Parts of an Egg" illustration (page 37)

PREPARATION

Some of the eggs should be kept unrefrigerated for a week or more. Number the eggs ahead of time and keep a record of which eggs were not refrigerated. Make one copy of illustration "Parts of an Egg" (page 37) for each child. On newsprint or on the blackboard, start a "Parts Chart" like the one below. The information in the "What It Actually Does" column gives you the correct answers. At the end of the session you will fill in the information as the children think about what function the parts serve. Return each child's drawing from Session 6 so they can compare what they say when they made the drawing to what they see after they learn more about the parts of the egg.

PARTS CHART

Part	What I think it does	What it actually does
Shell		Protects the embryo. It also provides calcium for the growing chick (some of the shell's calcium is dissolved for this use). The large end of the shell is very porous. It allows carbon dioxide to leave the egg and oxygen to enter. This is why the air cell gets larger in an older egg.
Shell membrane		Keeps in moisture. There are two shell membranes. The air cell forms between them at the large end of the egg.
Albumen or egg white		Provides liquid for the embryo. It contains one-half of the egg's protein and other nutrients. It's like a protein drink.
Chalazae		Parts of the albumen that hold the yolk in place, like it's in a hammock. The more prominent they are, the fresher the egg.
Yolk		The embryo attaches itself to the yolk, and this is where it grows. The yolk provides food, vitamins, fat, and protein for the embryo. The chick's stomach is formed around the yolk, and when it hatches, there is still a little bit of yolk left. It will feed the chick for about 3 days. This is a benefit in nature where all the chicks may not hatch at exactly the same time. The hen does not have to leave the nest immediately to find food for the first newly-hatched chicks. They can just snuggle up under her and wait for the other chicks to hatch.

INTRODUCTORY ACTIVITY

- Have the children sit in a circle and show them a chicken egg. Ask the following questions, one at a time. Go around the circle and let each child state an answer to each question. When ideas run out, ask the next question and continue soliciting answers in a circular motion. Remind the children to be good listeners and to not repeat what has already been said.
  - What can you tell me about this egg?
  - What do we know for sure about this egg?
  - How can we find out more about this egg?
- One of the children will undoubtedly say that the egg could be cracked open so they can see the inside. If not, encourage that response from the group.

INVESTIGATION

- With the children, create a list of rules for working with eggs. Record them on butcher paper for all to see. Be specific. Be sure the rules include the following concepts:
  - Never eat a raw egg.
  - Do not put your hands in your mouth during an activity with eggs.
  - Wash hands thoroughly after handling eggs.
  - After working with eggs, clean all areas, including bowls, utensils, and counters exposed to eggs, with soap and hot water and dry thoroughly.
  - Do not handle an egg without permission.
- Divide children into groups of three, with one adult or teen leader in each group.
- Distribute one whole raw chicken egg on a dessert plate to each group. Each station should also contain a hand lens, paper towels, and pump dispenser of hand sanitizer.
- Invite each child to look closely at the exterior of the egg. They may also observe the eggshell with a hand lens. In each small group, have each child state one thing they observed. This might be the shape of the egg (oval), or its texture, temperature, or smell.
- Before cracking the egg open, ask the children what they expect to see. Allow the children time to hypothesize.
- Crack the egg open and put it on the dessert plate. Place the shell on a paper towel. Allow the children to make observations of the exterior and interior of the egg. They may notice the following parts:
  - air cell
  - shell
  - shell membrane
  - yolk (ovum)
  - egg white (albumen), four kinds
  - chalazae
- Allow the children to hypothesize and explain what they think each part is for. If appropriate, discuss with the children what the functions of the parts are. Remember, however, at this age level exploration is the most important process.
- When the examinations are complete, place the eggs in the resealable plastic bag and discard. Clean up using soap and hot water, and have the children wash their hands with hand sanitizer.

APPLICATION

- Say: "Suppose you are in a grocery store and are going to buy a dozen eggs. Close your eyes and imagine what you would see and do." Allow time for the children to visualize the scene. If you would like, have one child role-play what was visualized.

- Ask a series of questions about what the children visualized. Have them give the "thumbs up" sign if they actually imagined what you state. Have them give a "thumbs down" sign if they did not imagine doing what you state. Here are some questions you can ask:
  - Did you go to the refrigerated section of the store?
  - Did you pick out the kind of eggs you wanted?
  - Did you price the eggs to see which were the best buy?
  - Did you check to see if any eggs were broken?
  - Did you pay for them?
  - Did you carry them carefully?
- Now ask the children what the farmer, shipper, grocer, and they themselves would have to do to make sure the eggs were safe to eat.

ASSESSMENT

Have each child draw a cracked-open egg. Ask each child to explain what they can tell you about the egg.

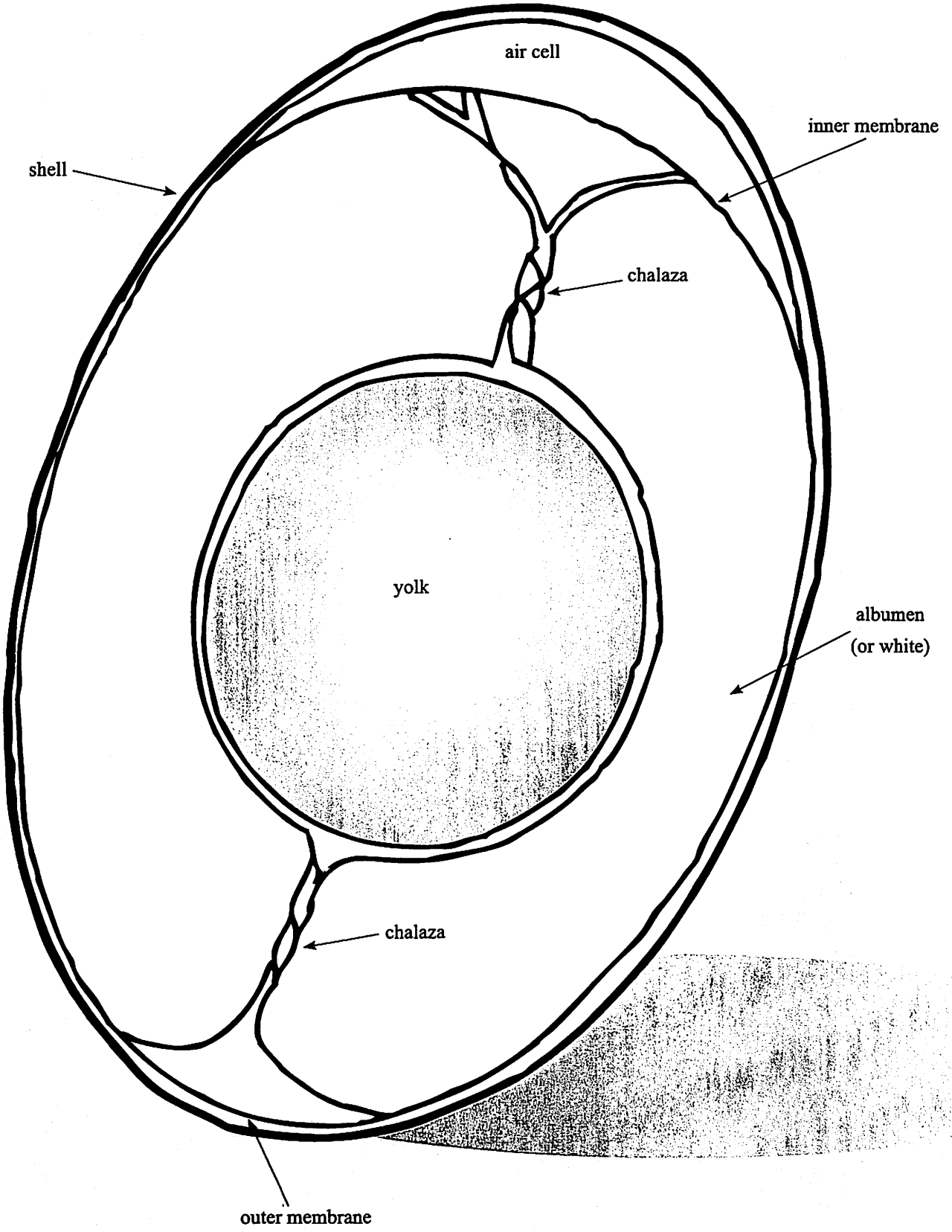
EXTENSIONS

- Take a trip to the grocery store and have the store manager explain to the students how eggs are handled in the store.
- Let children examine an egg carton and discuss in small groups what they notice about the carton and why they think the carton is made the way it is.

NOTE BOXES

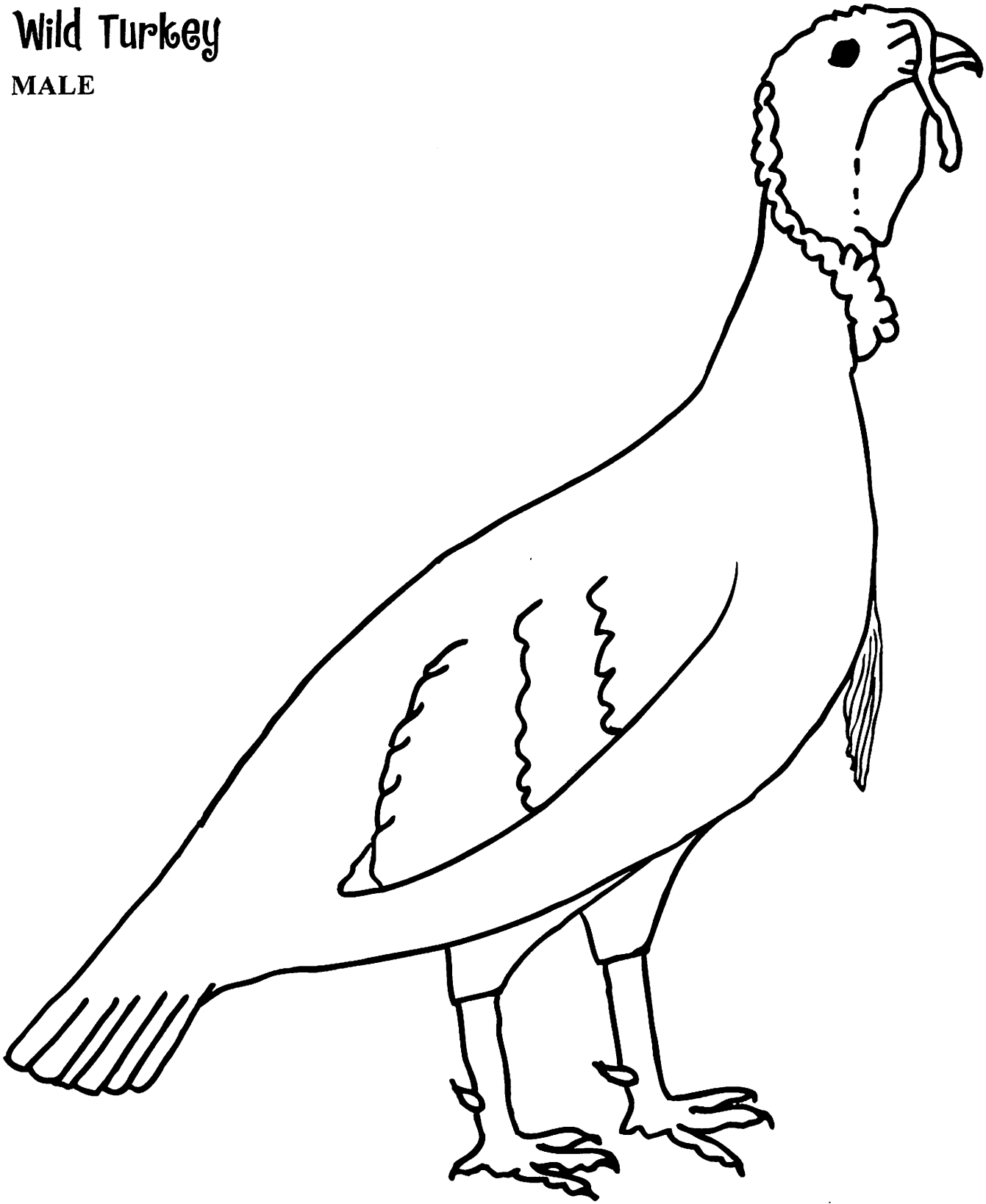
- Wash hands before and after handling eggs.
- The two chalazae anchor the yolk to the center of the egg white.
- There are two chalazae per egg.
- Poultry eggs have two shell membranes, an inner and an outer.
- The albumen has four layers: inner thin, middle thick, outer thin, and chalaziferous (made up of two chalazae).
- Eggs at commercial grocery stores cannot be fertilized.

Parts of an Egg



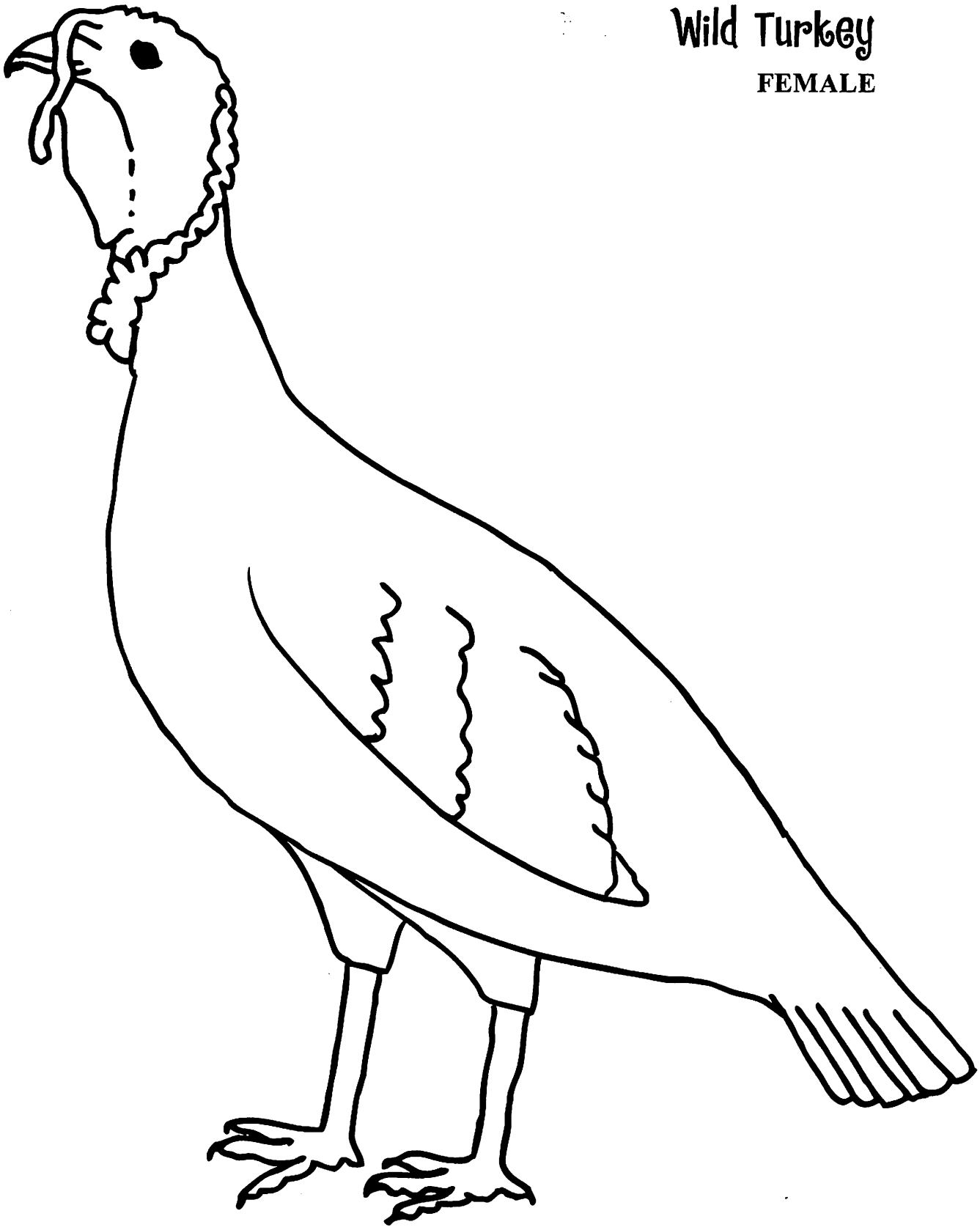
Wild Turkey

MALE



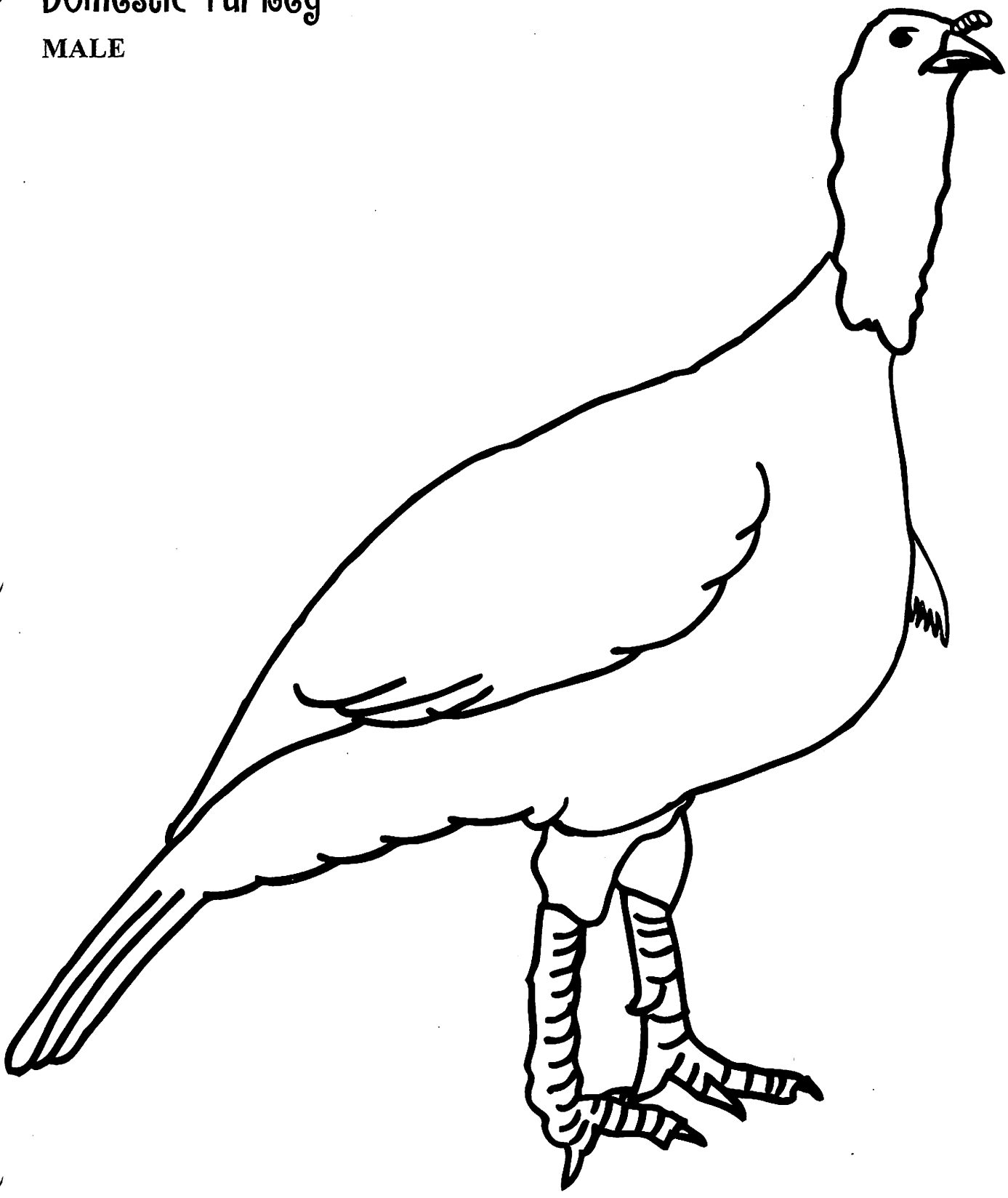
Wild Turkey

FEMALE



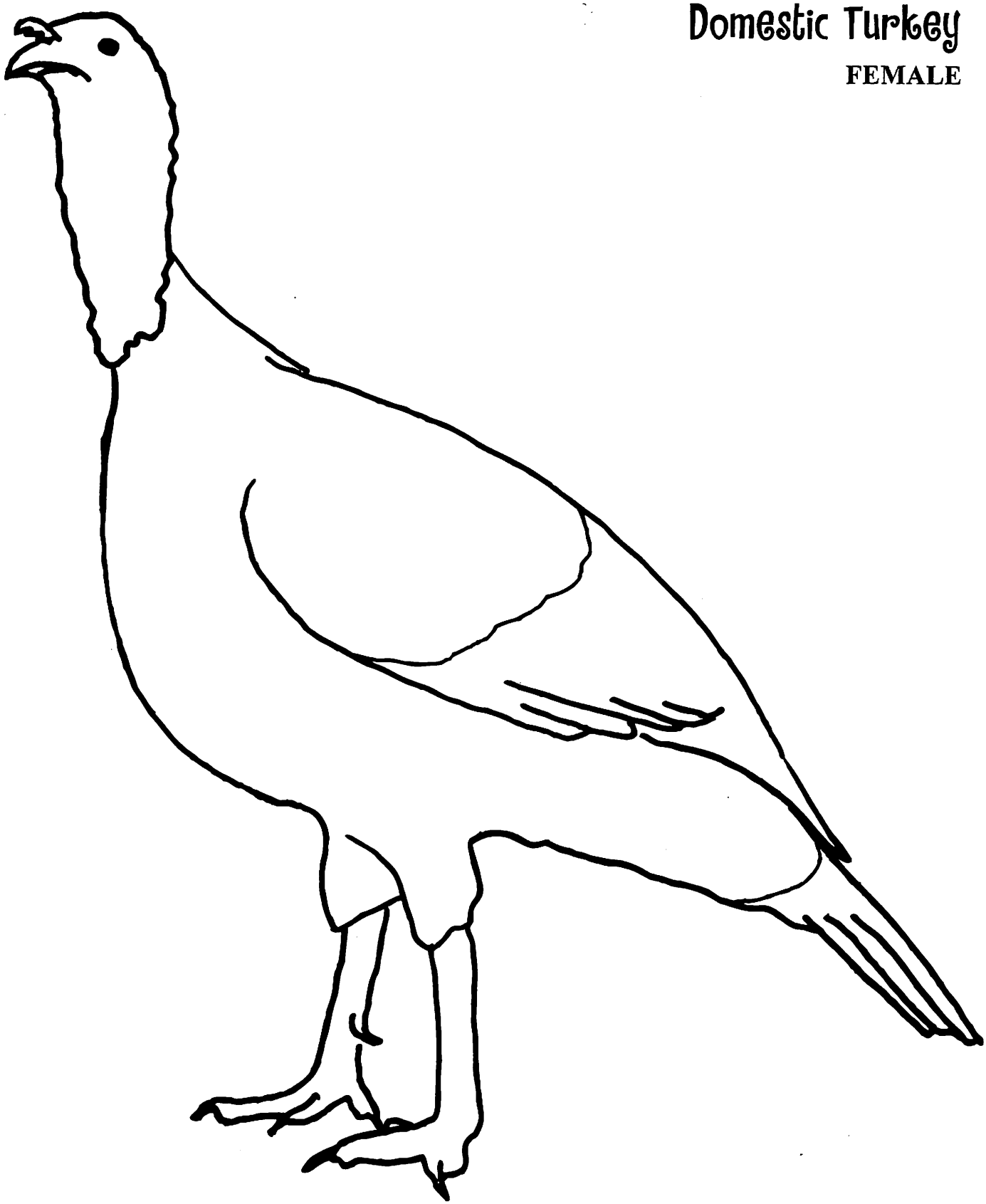
Domestic Turkey

MALE



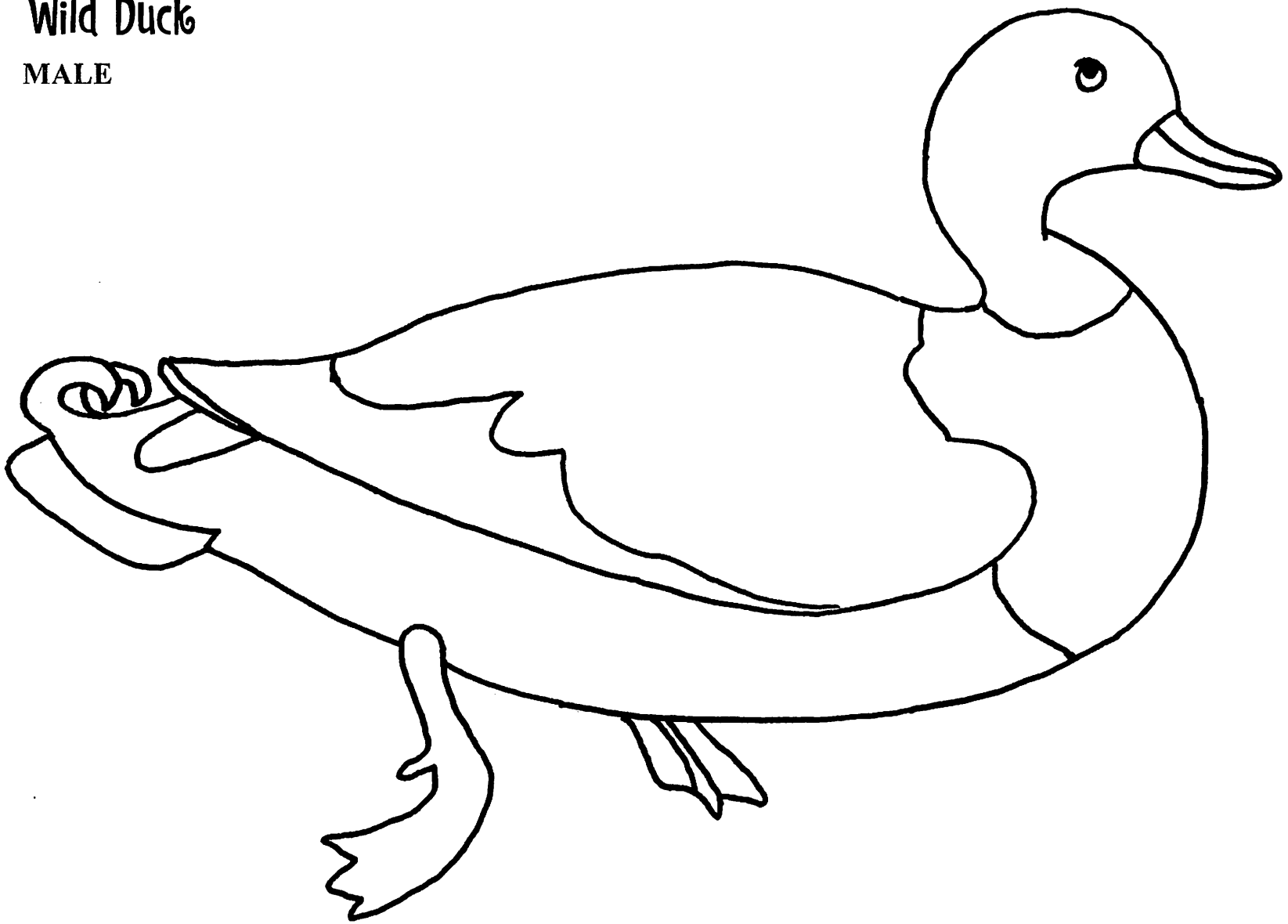
Domestic Turkey

FEMALE



Wild Duck

MALE

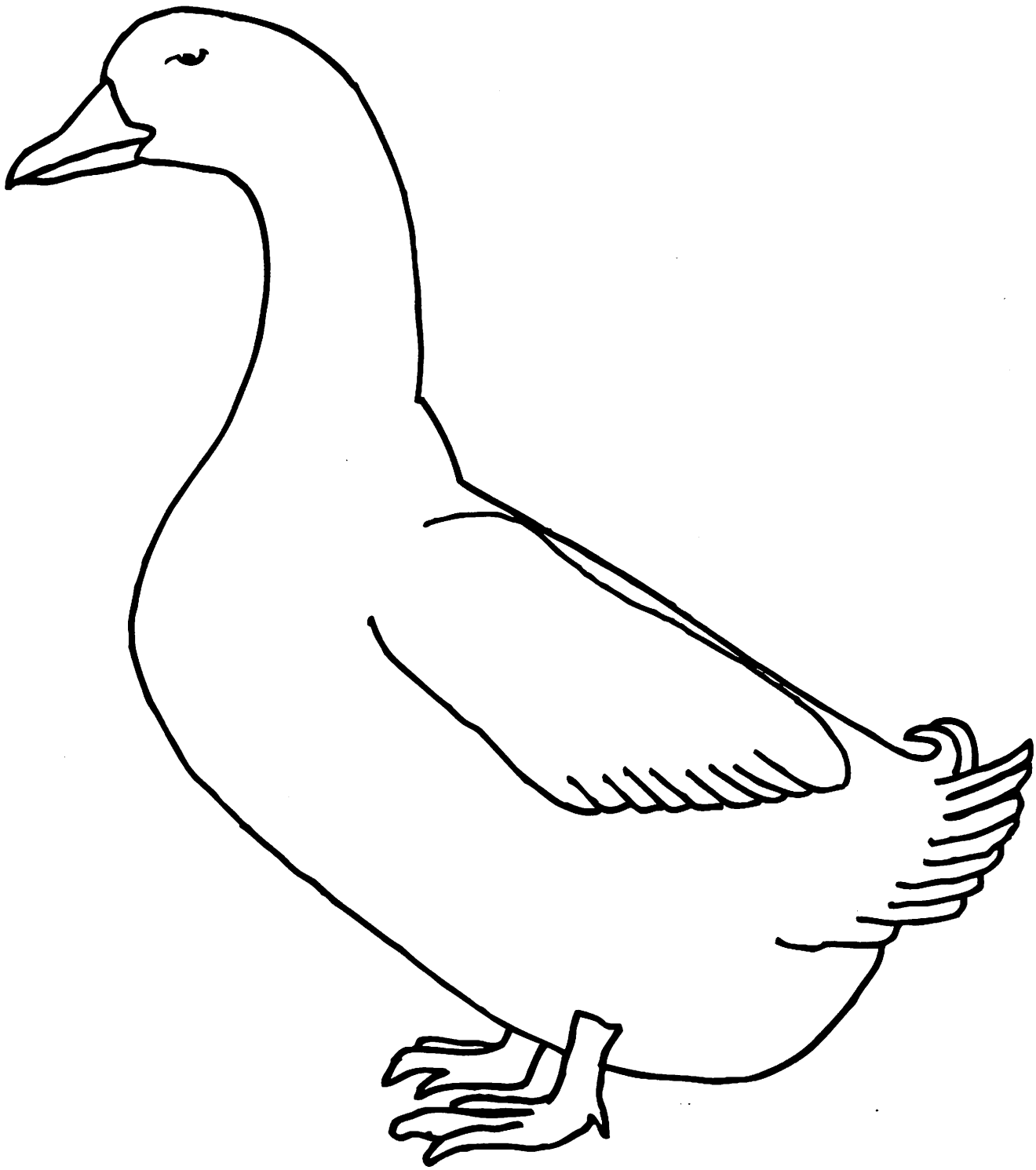


Wild Duck

FEMALE

Domestic Duck

MALE

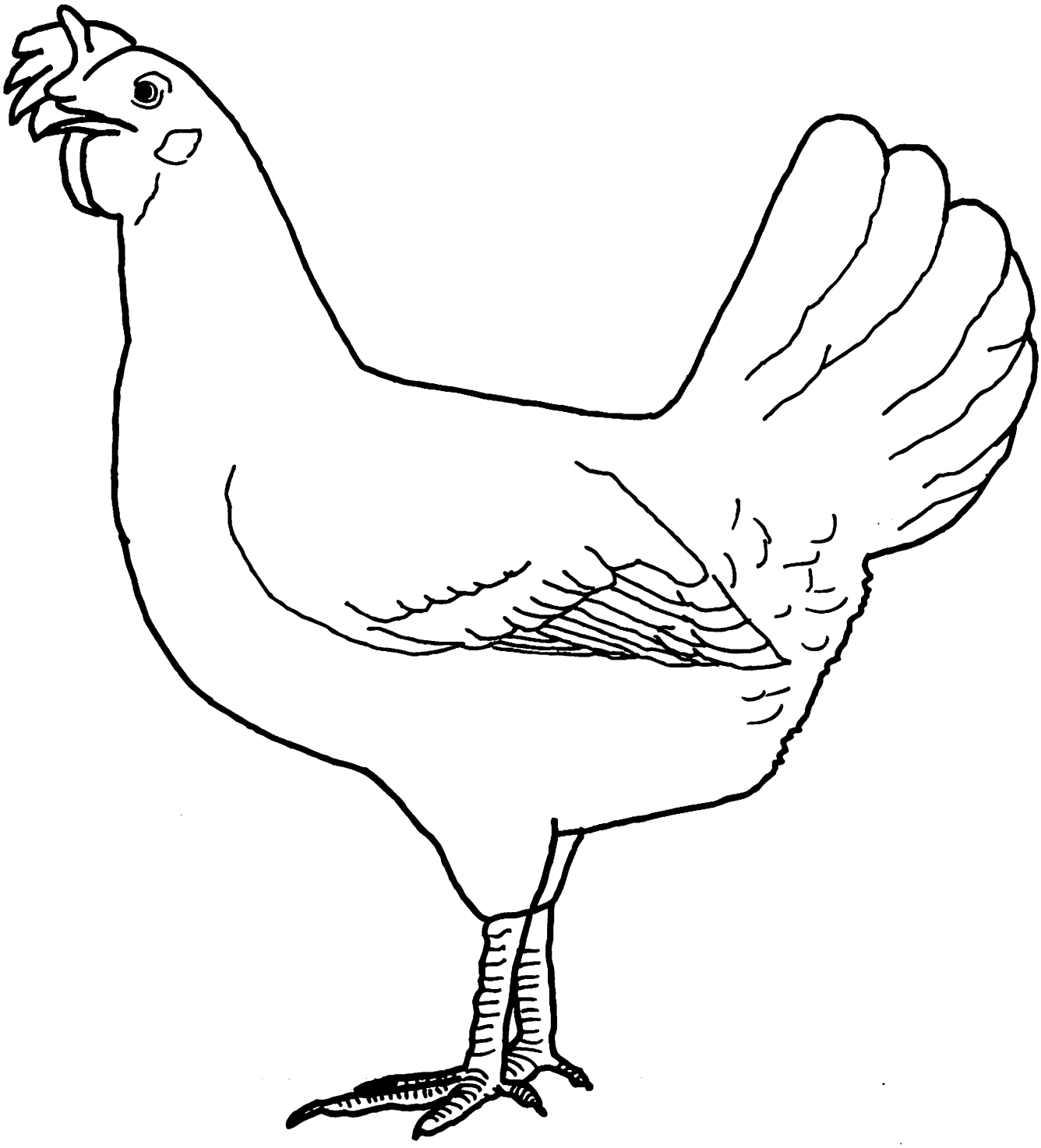


Domestic Duck

FEMALE

Leghorn Chicken

FEMALE

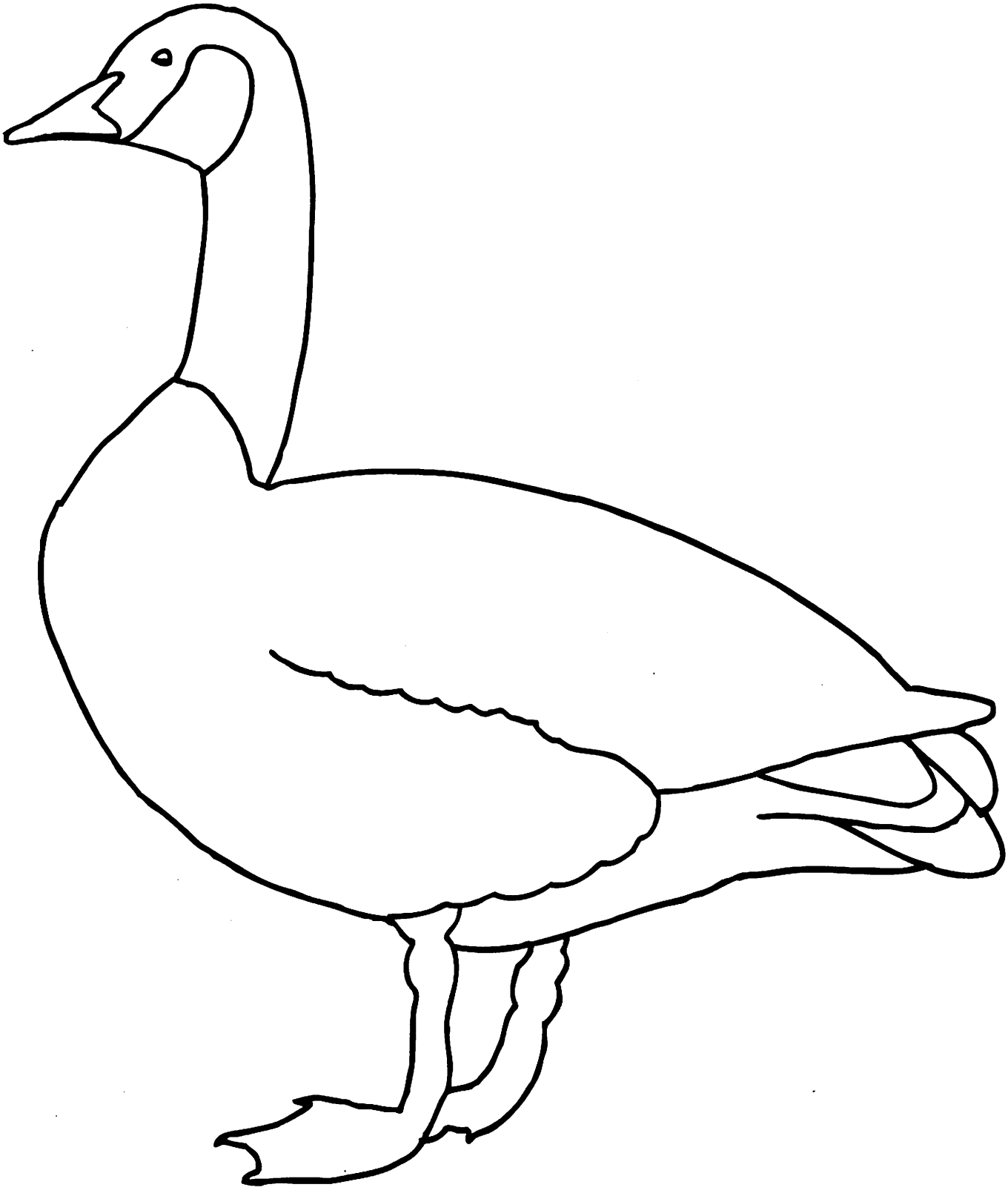


Domestic Chicken

IN ITS ENVIRONMENT

Canada Goose

FEMALE



Wild Bird

IN NATIVE HABITAT

GLOSSARY

air cell. The empty space between the two membranes at the large end of an egg.

albumen. The food source for growing bird embryos; it accounts for most of an egg's liquid weight and more than half of the egg's total protein. Also known as egg white.

beak. The upper and lower mandibles of a bird; a bird's mouthpiece.

bill. The upper and lower mandibles of a duck or other waterfowl.

captive. A wild animal that people have placed in a specific location such as a zoo, wild animal park, or game farm. Captives typically look like wild animal relatives and can often be successfully returned to the wild.

caruncle. A fleshy bump or spot on the head, face, or neck of a turkey; can also be found on certain types of ducks.

chalaza (pl. chalazae). Twisted strands of egg white that anchor the yolk in the center of the thick egg white; two per egg white.

chicken. A domestic fowl whose ancestry goes back to the jungle fowl of southeast Asia.

cock. A male chicken; also called a **rooster**.

comb. A fleshy appendage on the heads of fowl.

different. Not the same.

domestic. In animals, those kept in captivity for many generations. Domestic animals depend on humans for food, water, shelter, and health; they are generally bred for a specific use such as food, clothing, or to perform work.

domestic duck. A type of waterfowl bred for meat or eggs.

egg white. The food source for growing bird embryos; it accounts for most of an egg's liquid weight and more than half of the egg's total protein. Also known as albumen.

environment. The surroundings of an organism; all external conditions that influence its development or being.

exterior. Outside.

feral. Not domesticated or cultivated.

fowl. Larger birds that are used for food by people.

game bird. A wild bird that may be hunted for food in a manner consistent with wildlife regulations.

granivore. An animal that eats only seeds.

habitat. The place where an animal or plant lives and grows under natural conditions.

hen. A female fowl over 1 year old.

interior. Inside.

omnivore. An animal that eats both plants and animals.

oval. A broadly elliptical shape; the preferred shape of an egg.

ovum. The yellow portion of an egg that contains fat, protein, and other vitamins and minerals. If the egg is fertilized, the ovum is the attachment site of the embryo. Also known as the **yolk.**

poultry. Any or all domesticated fowl that are primarily raised for their eggs, meat, or feathers; includes chickens, turkeys, ducks, and geese.

roost. To rest above the ground on a limb or other surface.

rooster. Common term for a male chicken; also called a cock.

shell. In birds, the outer surface of an egg.

shell membranes. Inner and outer membranes inside the egg shell that provide physical protection for egg contents.

similar. Alike in some way.

snood. In poultry, a long piece of skin, generally red, that hangs down on one side of the beak of a turkey.

tame. To be calm enough for humans to handle.

turkey. A large native American bird now largely domesticated for its meat.

wattle. One or two leaflike structures suspended from the upper part of a neck of a chicken; made of the same kind of tissue as the comb.

webbed feet. Feet with skin between the toes, as in ducks.

wild. Animals that live freely.

yolk. The yellow portion of an egg that contains fat, protein, and other vitamins and minerals. If the egg is fertilized, the yolk is the attachment site of the embryo. Also known as the **ovum.**

Bibliography and Resources

RAISING A BIRD

This unit does not require that the participants own or raise poultry. However, many youth may be interested in raising a bird. The following Web sites and books may be useful for those interested in raising a small flock or bird.

Cooping In: A Poultry Exhibitor's Guide to Successful Showing and Competition. This booklet provides useful information for children who wish to exhibit birds. Chapter titles include "Exhibition Poultry," "Fitting Poultry for Show," "The Packing List," "Cooping In," "Advice from Judges," and "Show Etiquette." This booklet is available for purchase for $5 from Pat Rubin, c/o Talisman Press, P.O. Box 5485, Auburn, CA, 95604. Other information sheets are also available.

Helping Poultry Breeders Raise Birds in an Urban Area. This report written by Bart Pals provides suggestions and strategies on how to raise poultry successfully in an urban setting. The report can be viewed at the American Poultry Association Web site, *http://www.amerpoultryassn.com/.*

Starting and Maintaining Home Poultry Units. The University of California Poultry Web site (*http://animalscience.ucdavis.edu/Avian/interest.htm*) has this information sheet and others on many topics related to small-flock poultry. Titles include *Selecting Chickens, Raising Chickens, Feeding Chickens, Housing Chickens,* and *Portable Poultry Houses.*

Your Chickens: A Kid's Guide to Raising and Showing. In this detailed book, Gail Damerow describes breeds and discusses required bird care, health information, egg storage, and how to care for broilers.

University of California Agriculture and Natural Resources Catalog Web site. The ANR Communication Services catalog Web site (*http://anrcatalog.ucdavis.edu/InOrder/Shop/Shop.asp*) provides a variety of resources related to 4-H poultry and game. Titles include the *4-H Avian Science Leader's Manual, Growing Blue Ribbon Pullets,* and *Embryology: Hatching Classroom Fun.* These items, as well as a free catalog, can be ordered from the Web site or by calling ANR Communication Services toll-free at 1-800-994-8849.

University of California Cooperative Extension 4-H Program. Each county has a University of California Cooperative Extension 4-H Youth Development Program. Refer to the county government section of your local telephone book for the listing in your area, or visit the California 4-H Web site at *http://www.ca4h.org/.* If there is not a poultry leader in your region, contact poultry leaders in other counties for information.

LITERATURE FOR CHILDREN

Brett, Jan. *Daisy Comes Home.* Putnam, 2002. Mei Mei cares for six hens at her Chinese home. One night Daisy the runt hen drifts down the river and has some interesting adventures. This story could lead into a discussion of pecking orders.

Castaneda, Omar. *Abuela's Weave.* Lee and Low Books, 1993. The story and drawings describe contemporary life in Guatemala, with depictions of a woman and her granddaughter feeding chickens and turkeys.

Fowler, Allan. *The Chicken or the Egg!* Children's Press, 1993. This book of photos shows the development of a chicken from an egg.

Hutchins, Pat. *Rosie's Walk.* Econo-Clad Books, 1999. A fox is after Rosie, a chicken, but Rosie doesn't know it. Unwittingly, she leads the fox from one disaster to another.

Johnson, Sylvia A. *Inside an Egg.* Lerner Publications, 1982. Photos and elementary-level text show how a chick develops from an egg.

Llwellyn, Claire. *Eggs: What's for Lunch?* Children's Press, 1999. Learn how to prepare and eat eggs in a variety of ways. Simple-to-follow ideas geared for children.

Pinkwater, Jill. *The Hoboken Chicken Emergency.* Simon and Schuster, 1999. A Polish family who has immigrated to the United States prefers chicken and duck to turkey. However, the father, passionate about his new country, insists that it would be un-American to eat anything other than turkey on Thanksgiving.

Polacco, Patricia. *Rechdenka's Eggs.* Paper Star, 1996. Preparing her eggs for the Easter Festival, Old Babuska takes in Rechenka, an injured goose, who shows her that miracles can really happen. The story is enhanced by drawings of Ukrainian painted eggs.

Selsam, Millicent Ellis. *Egg to Chick.* HarperTrophy, 1987. This book shows how an egg develops from the time it is fertilized until the baby chick hatches 21 days later.

Sing, Rachel. *Chinese New Year's Dragon.* Aladdin Paperbacks, 1992. A young girl's recollection of a special Chinese New Year's celebration is told in a narrative form that describes many of the traditions of her family, including eating roast duck for Chinese New Year.

Tildes, Phyllis Limbracher. *The Magic Babuska: An Original Russian Tale.* Charlesburg Publishing, 1998. Nadia longs to create beautifully decorated Easter eggs, called pysanky, but the intricate details are too difficult for her weak eyes. Nadia learns to rely on her own inner gifts to fulfill her dreams.

Waters, Kate, and Madeline Slovenz-Low. *Lion Dancer: Ernie Wan's Chinese New Year.* Scholastic, 1990. This story depicts the most important day in Ernie Wan's life. This Chinese New Year, he will perform his first Lion Dance on the streets of New York City! Contains color photos of whole roast ducks hanging in a restaurant window in New York, neon signs advertising Peking duck, and the Chinese lunar calendar and horoscope, which discuss the Year of the Chicken.

LITERATURE FOR EDUCATORS

Damerow, Gail. *Your Chickens: A Kid's Guide to Raising and Showing.* Storey Books, 1993. This detailed book shows breeds, required care, and health information, as well as how to store eggs, and how to care for broilers.

Green-Armytage, Stephen. *Extraordinary Chickens.* Abrams, 2000. This book contains beautiful photos of various chicken breeds. Photos are large enough for a classroom full of children to see easily.

Hanke, O. A., and J. H. Skinner. *American Poultry History 1823–1973.* American Printing and Publishing Company, 1974. The photos and text clearly depict the evolution of poultry usage through this particular time period.

Lowry, Thea S. Empty Shells: *The Story of Petaluma, America's Chicken City.* Manifold Press, 2000. This book explains the history of one of America's most famous "chicken capitals" and shows how growth has impacted the industry. Contains illustrations of historical poultry.

Mercia, Leonard S., and Kimberly Foster. *Raising Poultry the Modern Way.* Storey Books, 1990. This resource provides information on raising small flocks, including selecting birds, housing and feeding requirements, and more.

Staples, Tamara. *The Fairest Fowl: Portraits of Champion Chickens.* Chronicle Books, 2002. Celebrate champion chickens through colorful photos. Includes details of the judging process, strategies for poultry farmers, and profiles of prize breeds.

Vorwald Dohner, Janet. *The Encyclopedia of Historical and Endangered Livestock and Poultry Breeds.* Yale University Press, 2001. Provides an in-depth history of a variety of animal breeds, many of which are endangered.

RESOURCES

Banana Slug String Band

The Banana Slug String Band provides music that helps children, teachers, and parents discover the magic and mysteries of the earth. Its unique blend of rock, rap, folk, and world beat offers something for every music lover. Cassettes and CDs are available. *Appropriate titles include Goin' Wild, Everything Needs a Home,* and *Ecology.* For a free catalog, contact

Banana Slug String Band
P. O. Box 2262
Santa Cruz, CA 95063
(888) 327-5847
Fax: (888) 327-5847
Web site: *http://www bananaslugstringband.com/*

The ChickZone

This Web site has a variety of resources available for free as well as for purchase. Learning guides and movie clips of embryos show children the development of a chicken embryo. Information and references on using incubators in the classroom are also provided.

Avian Sciences Net, Purdue University
Web site: *http://ag.ansc.purdue.edu/poultry/*

National 4-H Avian Bowl Manual

It is from this manual that each year's Avian Bowl study material is chosen. The manual is a general reference with selections on layers, backyard poultry, game birds, waterfowl, turkey, eggs, food safety, and more. It includes an extensive "EGGcyclopledia" with easy-to-understand descriptions. $12.00.

Bulletin Room
Clemson University
96 Poole Agriculture Building
Clemson, South Carolina 29634-0129
Fax: (864) 656-0742
Phone: (864) 656-3261

National Poultry Judging Manual, 4H460

Describes 4-H poultry judging contests, including those on egg production, egg quality, and ready-to-cook poultry. Includes color photos of external and internal chicken anatomy. $4.50.

CIT Distribution
Warehouse #2
University of Nebraska-Lincoln
Lincoln, NE 68583-0700
Phone: (402) 472-9712
Fax: (402) 472-0542
E-mail: gnickels1@unl.edu

Turkey Time

This educational activity kit comes in a folder that also serves as a turkey display. Includes information on food safety and turkey nutrition. Free.

California Poultry Federation
4640 Spyres Way, Suite 4
Modesto, CA 95356
(209) 576-6355
Fax: (209) 576-6119
Web site: *http://www.cpif.org/*

WEB SITES

American Egg Board: *http://www.aeb.org/*

American Poultry Association: *http://www.amerpoultryassn.com/*

Avian Sciences Net, Purdue University: *http://ag.ansc.purdue.edu/poultry/*

California Poultry Federation: *http://cpif.org/*

California Waterfowl Association: *http://www.calwaterfowl.org/*

Ducks Unlimited: *http://www.ducks.org/*

Egg Nutrition Center: *http://enc-online.org/*

National 4-H Embryology Web site: *http://4hembryology.psu.edu/*

Pacific Egg and Poultry Association: *http://pacificegg.org/*

United Egg Producers: *http://www.unitedegg.org/*

University of California 4-H: *http://www.ca4h.org/*

University of California Agriculture and Natural Resources Catalog: *http://anrcatalog.ucdavis.edu/InOrder/Shop/Shop.asp*

University of California Poultry Web site: *http://animalscience.ucdavis.edu/Avian/interest.htm*

University of California Veterinary Medicine Extension—Poultry Programs: *http://www.vetmed.ucdavis.edu/vetext/po-progs.html*