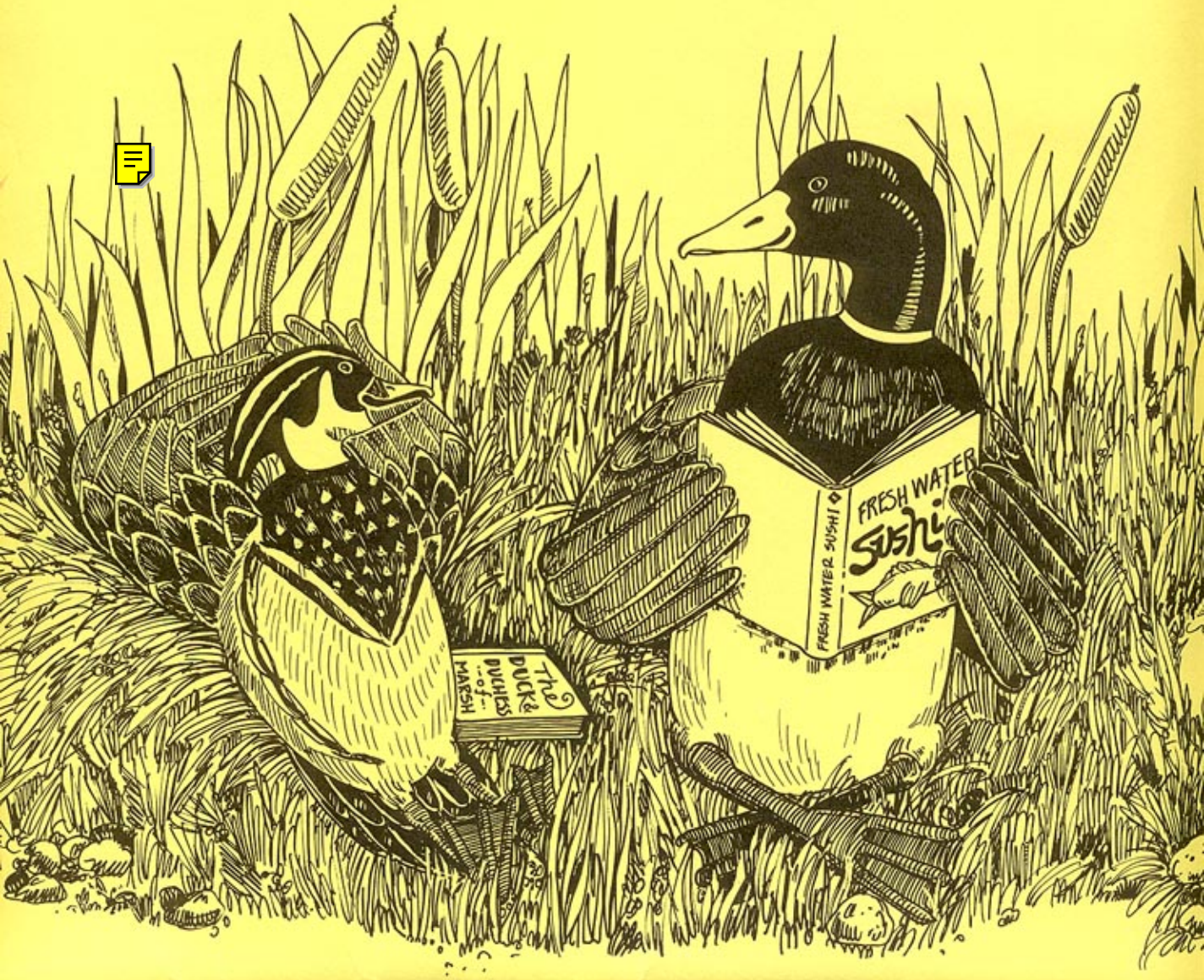
California
Central Valley Habitat
Joint Venture

Habitat Fun Pack

Junior - Senior High



Junior - Senior High

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- Statistically Speaking

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ART
- Flock of Snow Geese - Mobile
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REFERENCE
- Pacific Flyway Sheet

★ *Do you need a short-term, self-contained environmental education project?*
★ *Does one of your students need to make up a grade or complete a project to go "over the top" for an A?*

As part of the Central Valley focus of the North American Waterfowl Management Plan, these activities will supplement your environmental education program.

It is hoped that these materials will create an awareness of waterfowl as a disappearing resource, and a sense of value for the birds and their habitat that remains.

NAME _____

CENTRAL VALLEY BIRDS

WOOD DUCK
STILT
SNOW GOOSE
COMMON FLICKER
SANDHILL CRANE
WARBLER
NORTHERN PINTAIL
GREAT BLUE HERON
HARRIER HAWK
KINGFISHER
AMERICAN BITTERN
AMERICAN WIGEON
WESTERN MEADOWLARK

CURLEW
MALLARD
AVOCET
GREAT EGRET
RING-NECKED PHEASANT
PIED-BILLED GREBE
KILLDEER
CANADA GOOSE
WHITE-FRONTED GOOSE
CALIFORNIA QUAIL
RUDDY DUCK
RED-WINGED BLACKBIRD
NORTHERN SHOVELER

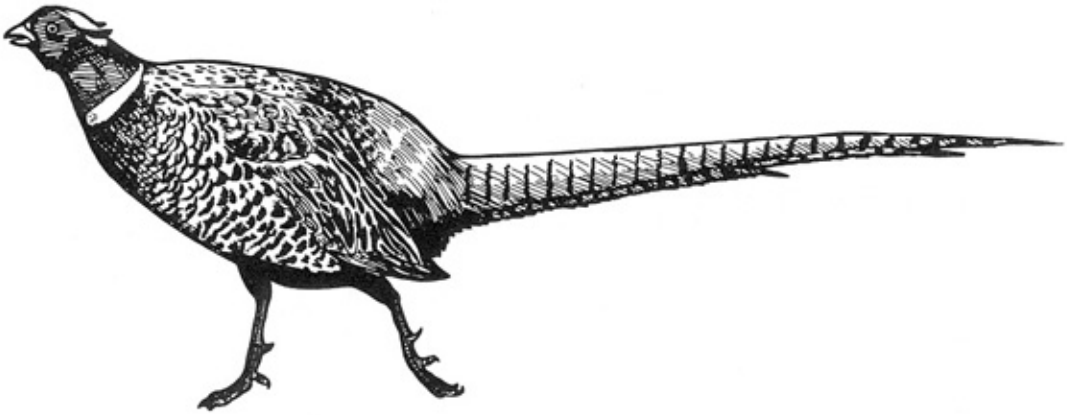
V	T	A	A	C	T	L	M	R	E	L	E	V	O	H	S	N	R	E	H	T	R	O	N
R	W	O	B	A	A	M	N	O	R	E	H	E	U	L	B	T	A	E	R	G	U	V	S
X	U	O	P	O	S	L	O	P	E	B	E	R	G	D	E	L	L	I	B	D	E	I	P
K	Y	Z	A	A	R	R	I	N	G	N	E	C	K	E	D	P	H	E	A	S	A	N	T
Q	I	O	J	C	K	L	J	F	A	M	E	R	I	C	A	N	W	I	G	E	O	N	S
R	V	N	Q	C	D	N	C	B	O	F	L	S	C	C	U	D	D	L	O	W	L	M	A
D	U	P	G	A	E	K	D	L	N	R	M	E	K	D	J	W	I	H	F	G	K	N	N
P	W	D	H	F	O	R	E	D	W	I	N	G	E	D	B	L	A	C	K	B	I	R	D
E	F	G	D	A	I	E	A	B	B	Z	A	I	C	T	S	B	A	R	R	A	L	O	H
O	X	O	O	Y	I	S	F	H	L	G	Y	B	A	B	U	Y	A	L	B	Q	M	P	I
K	B	A	M	H	D	G	H	L	C	B	A	L	L	Q	V	L	E	B	O	L	B	N	L
N	Y	M	F	G	O	U	H	E	U	A	A	X	A	W	U	G	H	O	D	L	E	O	L
M	B	O	B	O	B	I	C	K	R	O	N	O	O	X	F	A	E	O	C	P	O	R	C
P	E	N	J	A	O	L	J	K	L	A	Q	A	A	F	O	X	I	A	B	A	Q	P	R
M	Z	B	A	N	O	R	T	H	E	R	N	P	I	N	T	A	I	L	Z	M	O	R	A
E	B	K	C	U	D	D	O	O	W	A	P	O	L	I	A	C	D	M	O	A	O	S	N
S	R	E	K	C	I	L	F	N	O	M	M	O	C	W	P	S	T	I	L	T	O	O	E
O	W	H	I	T	E	F	R	O	N	T	E	D	G	O	O	S	E	R	S	S	U	U	O
O	H	A	R	R	I	E	R	H	A	W	K	N	G	O	A	I	F	E	T	X	V	A	V
G	H	G	A	V	O	C	E	T	F	M	K	L	M	S	N	J	M	A	L	L	A	R	D
W	H	K	R	A	L	W	O	D	A	E	M	N	R	E	T	S	E	W	O	V	O	W	B
O	A	M	E	R	I	C	A	N	B	I	T	T	E	R	N	Y	V	X	A	W	A	B	X
N	C	O	B	E	A	D	O	Z	C	G	R	E	A	T	E	G	R	E	T	W	A	Y	A
S	K	I	L	L	D	E	E	R	D	A	E	B	E	S	O	O	G	A	D	A	N	A	C

NAME

BREAK A LEG!

Can you find the hidden Central Valley birds? Good Luck!* *GEESE is hidden in #1

1. GEE, SEAN, YOU'RE JUST NOT RIGHT FOR THE ROLE.
2. NOW, DON'T GIVE ME ANY LIP. HE, AS ANTELOPE AL, WILL BE PERFECT FOR THE PART.
3. AH, AWKWARD LINES ARE HARD TO MEMORIZE.
4. ACCORDING TO THE SCRIPT, THE CROWD, IN PANIC, RAN EVERYWHERE.
5. THE SPOTLIGHT PICKED UP THE INJURED FATHER ON THE STAIRS.
6. "OGRE, BEGONE!" THE ACTRESS CRIED OUT.
7. DON'T START THE FINAL REHEARSALS 'TIL THE DIRECTOR GETS HERE.
8. THE STAR SENT REGRETS THAT HE COULDN'T ATTEND THE OPENING.
9. THE LIGHTS FLICKERED, THE CROWD BECAME QUIET, AND THE PLAY BEGAN.
10. NOW, THE PLAYERS WANT A BIG PARTY TO CELEBRATE THE GREAT REVIEWS!



(Cut this part off if you want to give them a real challenge.)

WORD BANK:

CROW	GEESE	PHEASANT
HAWK	CRANE	HERON
GREBE	STILT	EGRET
FLICKER	SWAN	

Name _____

DEFEND YOURSELF!

Read the following land-use situation. You have 8 minutes to prepare your own decision on the matter and be ready to defend it.

Imagine that you are a citizen who owns a controversial piece of land where a number of wildlife species have their nests. Land developers are trying to buy the land for an amusement park with parking lots and hotels. Wildlife authorities are encouraging you to donate the land as a private wildlife reserve. Consider both sides of the issue carefully.

You can make up your own facts and figures to suit your argument.

1. What factors do you have to take into consideration. (What will you be paid for the land? Will you receive a tax write-off if you donate the land? How much?)

2. How are you using this land now? (farming, ranching, not in use, etc.)

3. Do you think this is a good use of your land? Why or why not?

4. What is your decision and why?

WHAT WILL HAPPEN TONIGHT? - A Town Meeting

OBJECTIVES:
Students will gain knowledge of conflicting interests when public policy is being formed. This will be done as the students participate in a public process to decide how land is to be used.

MATERIALS:
Identification cards for each presenter, and a permit for the City Council to hold

TIME:
About 20 to 40 minutes for the presentation

READ TO YOUR CLASS:
Mom and Dad are worried. Whenever there is a town meeting, it causes such a fuss that no one gets anything done for at least three days before and after it happens.

The last open area near the town might be sold - the old marsh. Fifteen acres of it would be sold to Dan the Developer for a shopping center, like the one on the other side of town. It will have department stores.

Everyone around _____ (your town) remembers growing up with the marsh nearby. It was always good for a great adventure or two, even if Mom didn't appreciate the bugs and frogs you brought home in a jar. You were even successful in raising the tadpole eggs to frogs if you remembered to replace the pond water often enough. You fed the ducks that gathered there in the winter months. Even though you fed them slowly, the seed seemed to disappear long before you were ready to go home. The marsh was a great place.

It sure will be hard to see the old marsh go, but Dad said it would be good for business to have some new stores. Plus, you wouldn't have to ride your bike all the way into town. It would be a lot easier.

I wonder what will happen at the town meeting tonight? People want to know if Dan will get a permit to use the land the way he wants to. This might be the last year for tadpoles.

THE PLAYERS:
Barbara the Biologist - from the Department of Fish and Wildlife
Dan the Developer - missed his flight and is late to the meeting
Mr. Bird - represents the Bird Watchers' Society
Mr. History - from the Historical Society
Pam the Planner - from the town planning office
Ms. Politician - running for mayor
Sam the Sportsman - represents those who hunt and fish in the marsh
Brenda the Businesswoman - represents the local business community

City Council - will decide the best use for the land, and give the permit to Dan if the members (3) agree with the plan
Citizens - both happy and upset; all are interested and full of questions
Timekeeper - to keep everyone short-winded - 2 minutes each for the presenters

PRESENTATION:
Each presenter will have 2 minutes to deliver a short speech. Emphasis is on the power of a few well-delivered sentences.

QUESTIONS FROM THE AUDIENCE:
As long as order prevails

DECISION TIME !
After the presentations and any comments from the audience, the City Council adjourns to take a short break and make its decision. The decision is announced.

DE-BRIEFING:
"Now we have to step back from our role-playing. We are the _____ class from _____ (school). I want you to think about certain things:

1. What additional information would have helped you plan your speech?
2. Where would you go to get this information?
3. Who were the leaders during the City Council Meeting?
4. Were you assigned to speak for a group you don't agree with? (Point out that other people have different needs and ideas, and this might be a way to identify them.)

Simulation games like this one do three things:

1. Clearly explain a problem - The problem we discussed was _____ _____.
2. Show us that things can influence a decision. What things?
3. Show us that there are people interested in the decision. Groups interested in our decision would be: _____."

Barbara the Biologist

Remember Barbara, you stand for the fish and wildlife of the area. You represent the creatures who cannot speak for themselves.

Could the marsh area be left alone as habitat for the birds?

The ducks use the marsh ponds in the winter and spring when it is too cold to stay up north in Alaska, Canada, Washington and Oregon.

Curlews, killdeer, stilts and avocets love to hunt for food in the mud, and the geese love the grassy areas.

Remind people that the marsh is home for many other kinds of fish and wildlife too.

Long live the wildlife!

Dan the Developer

Remember Dan, you stand for all the investors from San Francisco.

They will put a lot of money into this project. They expect you to convince the people of the town, especially the City Council, that the shopping center will bring jobs for the town and better and easier shopping for the people.

The town has really grown. It needs a shopping center on the north side of the town.

You and your investors will all make a good profit if the shopping center is built.

Go for it!

Mr. Bird

Remember Mr. Bird, your wonderful birds are in danger. As this year's president of the Bird Watchers' Society, it is up to you to save them!

If Dan the Developer puts in that shopping center, not one bird will return to the area. All that habitat will be lost forever.

Not only are there very few areas left for the birds, there are very few places left for people to watch birds and enjoy nature and the outdoors.

Hang in there for your birdwatcher friends and your feathered friends!

Mr. History

Remember Mr. History, that you stand for all the old places that are left in this town, and, there aren't many left.

The first family to settle in the area built their barn on the edge of that marsh, and it is still standing today.

That barn is over 100 years old and should be preserved in some way, not torn down.

And of all the bad luck, it is on the piece of land that may be sold to Dan the Developer. There is no way he is going to let the barn stand.

You've got to convince the City Council members to grant the permit ONLY if the barn can be saved.

Mr. History, fight for the past!

Pam the Planner

Remember Pam, you are to look at all of the town's needs, because your job is to help find the best solution for all of the town's citizens.

The town really needs the new jobs the shopping center will bring.

However, you also have to think about all of the new roads a shopping center will require. How will the town pay for them?

The town needs to clean up the river which flows by the marsh and on into town. The marsh could be a natural water filter to remove silt and absorb pollutants. Does the marsh provide other benefits people are forgetting?

Is there a way to build the shopping center so that all of the marsh won't be lost?

Pam, the City Council members want to know what you think, so think hard.

Ms. Politician

Remember Ms. Politician, that you want to represent the town as mayor next year, so you had better start lining up the votes now!

How can you stand for both the shopping center, which will put more people to work, and the people like Mr. Bird, who has all of his bird-watcher friends ready to vote for your opponent.

So, just think of a plan that will make Dan and the nature lovers happy.

Now is the time to show this town what a leader you can be!

Sam the Sportsman

Remember Sam, you represent all of the people of the town who like to fish and hunt in the marsh.

Men and women interested in outdoor sports such as hunting and fishing want to protect natural areas where fish and wildlife live.

There are fewer and fewer places to go and enjoy these activities with your children or friends.

You want to save those places that are left.

Brenda the Businesswoman

You represent local businessmen and women and you want the town to grow and prosper.

The shopping center would bring jobs and money into the town, and you think that would be good for everyone.

You support Dan the Developer and want the shopping center built.

City Council Member

Remember City Council member, that you were elected by the people of the town to represent them - all of them.

You must listen carefully to all the speakers and people from the audience before you decide whether to grant the permit to Dan.

You might grant the permit only if some changes are made in the plans. What would those changes be? If you give him the permit so the sale can go through, you had better be ready with good reasons why.

The town is waiting for your answer.

Timekeeper

Remember Timekeeper, the folks at the town meeting are going to be excited.

It is your job to see that each of the eight speakers does not go over the time limit of *2 minutes* each.

Questions from the audience should be short - about 20 seconds each.

The City Council members are counting on you to help keep order tonight.

Good luck!!

Permit

A Land Use Simulation

Set the stage for this investigation by reviewing quickly what will take place. For example: "During this activity we will participate in a simulation game concerning land use in a fictitious community and analyze what we have done".

Objectives

Using a simulation game, the students will be able to identify and defend a particular land usage, using certain environmental factors as justification for that usage.

The students will become familiar with a form of political process and work within that process using compromise and problem solving skills to achieve their goals.

The students will receive the necessary information prior to decisionmaking.

Students should be able to describe how such decisionmaking could affect their lives, community, and the management of the environment.

Length of Lesson

You may want to provide time for research and possible interviews prior to conducting this exercise. Allow at least 45 minutes for the simulation.

Materials

Chalkboard
Chalk
Marking pens
Large pieces of paper
Task cards

I. Naming, Recording, and Classifying Possible Uses of Land

A. Distribute TASK A. Read the problem to the group and then have them read the given information on TASK A and list possible uses of the land to meet the city's needs.

NOTE: When most people have started to write down uses on TASK A, go ahead with question 1.

B. The problem is to identify some possible uses for the 1-square mile (640 acres) of county farmland which is 4 miles northeast of the city. It is now available for the city's use.

Questions and Discussion:

Accepting
Supporting
Encouraging
Time to think
Clarifying

1. Ask "What are some possible uses for the undeveloped land?" As people respond, write all comments just as they are said. Don't paraphrase them, if they are too wordy, ask: "How shall I write that on the chart?" List all suggestions, specific or general. Number the items as you go to simplify identification later. When you feel that you have enough material, go on to question 2.

2. Ask: "Which of these possible uses are similar?" Designate similar uses by letters or symbols, or colors. When most are designated, or the group seems to run out of thoughts, STOP. Change items among categories if the participants change their minds. Don't get bogged down in the details of grouping. For example, if some people think one use should be in another category, then put that use in both categories and go on to the next step.

3. Ask: "What label could we give to all the items in the same category?" For example, Recreation, Industrial, Utilities, Housing, Commercial. These are group interests you will represent.

II. Developing and Giving Presentations

A. Have the group count off into the number of land use categories. Groups should not be more than eight persons. Assign one of the categories to each group for them to represent.

B. Pass out TASK B and inform the participants they have 10 minutes to list and analyze the advantages and disadvantages of possible uses for the vacant land in the assigned category. They may consider those listed on the board plus any other possible uses they can think of in their category. It is important to stress that this task is to just analyze the uses of the land.

10 minutes pass

C. Tell the groups that their next task is to develop a land use plan for the area in their assigned land use category (about 10-15 minutes).

Groups begin planning

D. An Unexpected Turn of Events: Five minutes into their planning, make the following two announcements:

> 1. "We have just received word that due to the current workload from reading environmental impact statements, the members of the Board of County Commissioners have all resigned. Each group has 1 minute to elect one member to represent them on the Board."

2. Have another teacher, aid, or parent helper, take the new Board to another room and pass out TASK C. Review TASK C with them.
   a. Have them concentrate on evaluation criteria first.
   b. Have chairperson read and stick to the announcements at the bottom of TASK C in order to keep the process moving.

3. Make this announcement after the Board leaves the room. You may have to give extra time for everyone to finish.

"You have about 10 minutes to finish your plan and develop a 2-minute presentation to be made to the County Board of Commissioners. Your 2-minute presentation must include a visual display, such as a land use map, as a part of your presentation and more than one person in each group must participate in making the presentation." (Pass out felt pens and large paper.)

E. When all groups are ready, have the County Board enter the room and sit at the front. Appoint a timekeeper to cut off all presentations at 2 minutes (give a 1-minute warning). Have chairperson make announcements listed on TASK C.

F. When presentations are finished, the board returns for 5 minutes to select the best proposal.

G. While the Board is meeting, each small group develops a list of criteria they think should be used in choosing the plans submitted. (Pass out TASK C to use in developing the criteria.)

H. County Board reenters the room and reads their criteria aloud.

I. County Board announces their decision and gives their reasons. Board adjourns.

NOTE: Person in charge must move rapidly to the next question to avoid shouting matches between losing groups. Have Board members return to the groups who selected them. The main purpose is to evaluate the process, not to get bogged down in the content of the issue.

Questions and Discussions

Accepting
Supporting
Encouraging
Time to Think

Debriefing:

"Now we have to remember to step back from our role-playing. We are the _____ class from _____School. I want you to think about certain things as we debrief:

A. What additional data would you like to have had for planning your group's proposal?

If needed, list on board; e.g., topography, vegetation, economy of area, railroad, shopping center, adjacent land, climate, soil survey, historical information, flood plain, wildlife, interest of board, money available, educational needs, regulations by State, existing zoning, political climate, population information (age needs, race, jobs).

B. Where would you go to collect information on these topics?

C. Point out to the group that this is one of the most important parts of the activity because it emphasizes that we need a variety of information and data before we can intelligently make a land management or environmental decision to best meet the needs of people and their environment.

If there is time, and it is pertinent to the situation, you may want to ask the following questions:
D. Did new leaders emerge during this session? What factors enabled this to happen?

E. Did your group work as a team? What did your group do to insure participation by all members of the group?

F. Were you assigned to a group or interest you did not want to represent? How did you feel? Point out that many times we overlook the fact that other people have different needs and ideas, and this might be a way to identify them.

Simulation games like this one do three things:

1. Clearly define a problem. The problem we discussed:

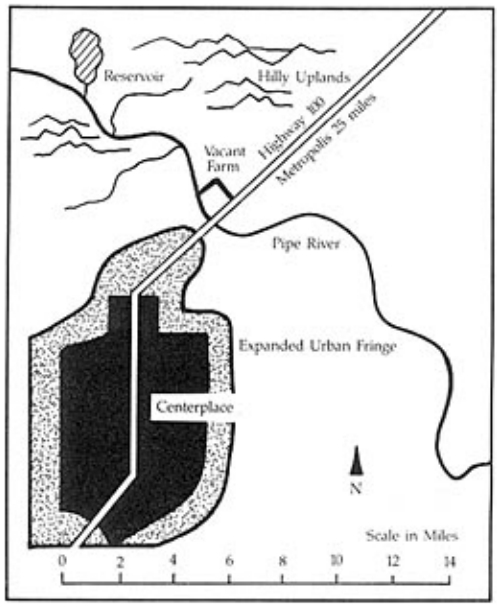
2. Factors influence a decision. Factors influencing use:

3. There are people interested in the decision. Groups interested in our decision:

TASK A (Work by yourself)

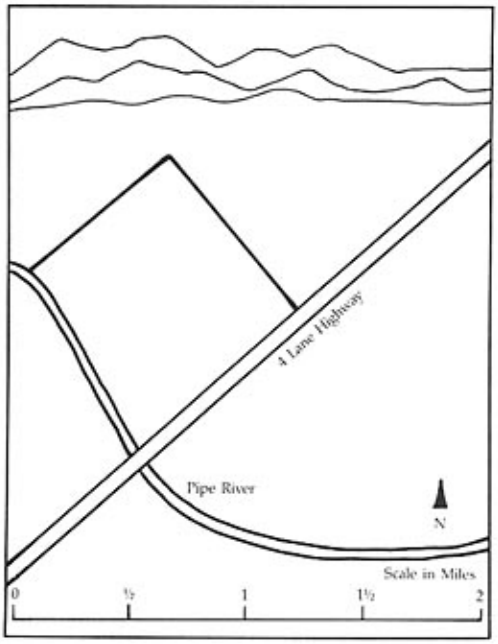
Read the background information for Centerplace City, and then list some possible uses of the vacant farmland.

"One square mile of unused county farmland, four miles northeast of the city, is now available for the city's use." (640 acres)



Background Information: Centerplace City

* The population is 250,000 and rapidly increasing.
* The city's boundaries are being extended, but the suburban fringe is expanding even more rapidly.
* The rapid population growth is accompanied by demands for more housing, more jobs, additional city service, and recreation areas.
* The power for industrial uses, adequate public transportation, and a skilled labor force is available.
* The city is located near forests, which are to the north.
* The land to the east is devoted mainly to farming.
* The Pipe River is unpolluted and is the source of irrigation water as well as the municipal water supply.
* The river is too small for freight transportation, but logs could be floated on it.
* The gravel bed of the river is appropriate raw material for concrete manufacture.
* The present sewage treatment plant and garbage disposal area are at maximum capacity.
* The citizens of Centerplace are concerned about the maintenance of a scenic regional environment.
* The County Board of Control is the authority for land zoning, and many citizens' groups are developing to influence zoning decisions.



List possible uses of the land below:

TASK B

Group Assigned Category of Land Use

Your task is only to analyze and list possible consequences of different land uses within your assigned land use category, not to decide which is the best use.

Use	Advantages to Land/People	Disadvantages to Land/People

TASK C

1. Using the information given below:
   a. Develop criteria to evaluate the proposals. Consider jobs, recreation, wildlife, etc. Take about 10 minutes.
   b. You will give criteria for assigning a letter grade A-F for each presentation.

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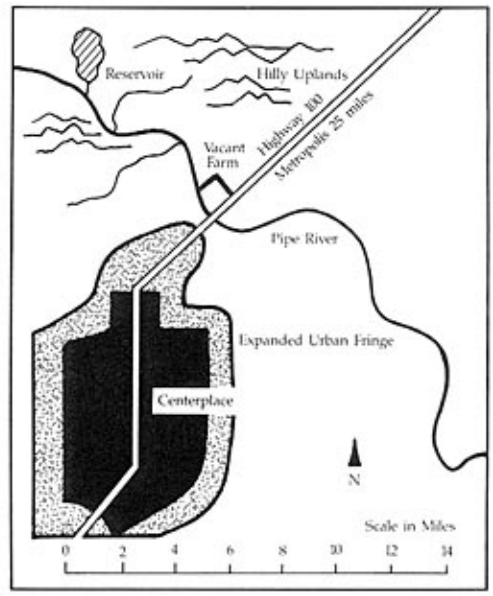


2. Elect a chairperson to preside during the group presentations and to run the County Board meeting in an orderly manner. Your chairperson makes these announcements to everyone:
   a. Because of time constraints, there will be no rebuttal after presentations.
   b. The Board may ask 2-3 clarifying questions after all presentations.
   c. You will have 2 minutes to give your presentation. You will be given a warning when you have 1 minute left.

TASK C, page 2

List Your Criteria Here:

1.

2.

3.

4.

5.

Land Use Group

Grades You Assign

MINI-REPORT--THE DUCK STAMP

OBJECTIVES: Students will become aware of loss of waterfowl habitat through a student presentation, and become actively involved in a simulated competition on behalf of habitat preservation.

MATERIALS:

"The Duck Stamp Story" - brochure
Grade Sheets - For the teacher and the student presenter
Student Assignment
Overhead Transparency
Entry Forms
Duck Sheets - Ducks from the Central Valley of California
Scratch Paper - (Have available for initial sketches) and pencils

STUDENT NAME_____

GRADE SHEET - teacher copy

Preparation: It appears that the brochure has been read and some of the material committed to memory.

Delivery: Adequate volume and clear enunciation -

Posture -

Variety in tone -

Any gestures -

Opening and closing remarks -

Overall Grade:

Additional Comments:

STUDENT NAME_____

GRADE SHEET - student copy

Preparation: It appears that the brochure has been read and some of the material committed to memory.

Delivery: Adequate volume and clear enunciation

Posture -

Variety in tone -

Any gestures -

Opening and closing remarks -

Overall Grade:

Additional Comments:

STUDENT ASSIGNMENT

-Read the brochure "The Duck Stamp Story."
-Read the rest of this assignment, and meet with the teacher to determine the judge and prizes for the competition before preparing your presentation.
-Prepare an 8-minute oral presentation for the class. It will be a sales pitch and a challenge to your audience. Your comments may cover these topics, and you may include others as well:

1. History of the Duck Stamp

-Decline in waterfowl and a need to save bird habitat.
-Migratory Bird Conservation Act of 1929.
-Darling's idea of a required stamp for hunters.
-Migratory Bird Hunting Stamp Act of 1934.
-Artists' competition since 1949 - prints of the winning drawing are sold to eager collectors.
-313 million dollars from the stamp sales have purchased and saved 3.7 million acres of wetland for waterfowl.

2. Problems Still Exist - Include these facts:

Decline of waterfowl habitat in the Central Valley of California:
-95% of wetlands have been lost; nowhere in the country do so many birds depend upon so little land.
-Of the 280,000 acres of wetlands left here, 90,000 are unprotected.
- **Show the overhead transparency.**

Point out that much of the private unprotected wetlands have been lost. Funds could purchase and save more of these wetlands for bird habitat.

3. Here's the Pitch: (fictitious)

"Here's how we can help: local participation in the state duck stamp competition has fallen off this year. (Along with the duck population.) As part of a local effort, our school has been chosen to be the first in a new competition involving students.

Our teacher_____, has given me the authority to grant _____(class privilege or prize) to the top 5 finalists in the class, and the first-place prize will be_____. Judging will be done by_____.

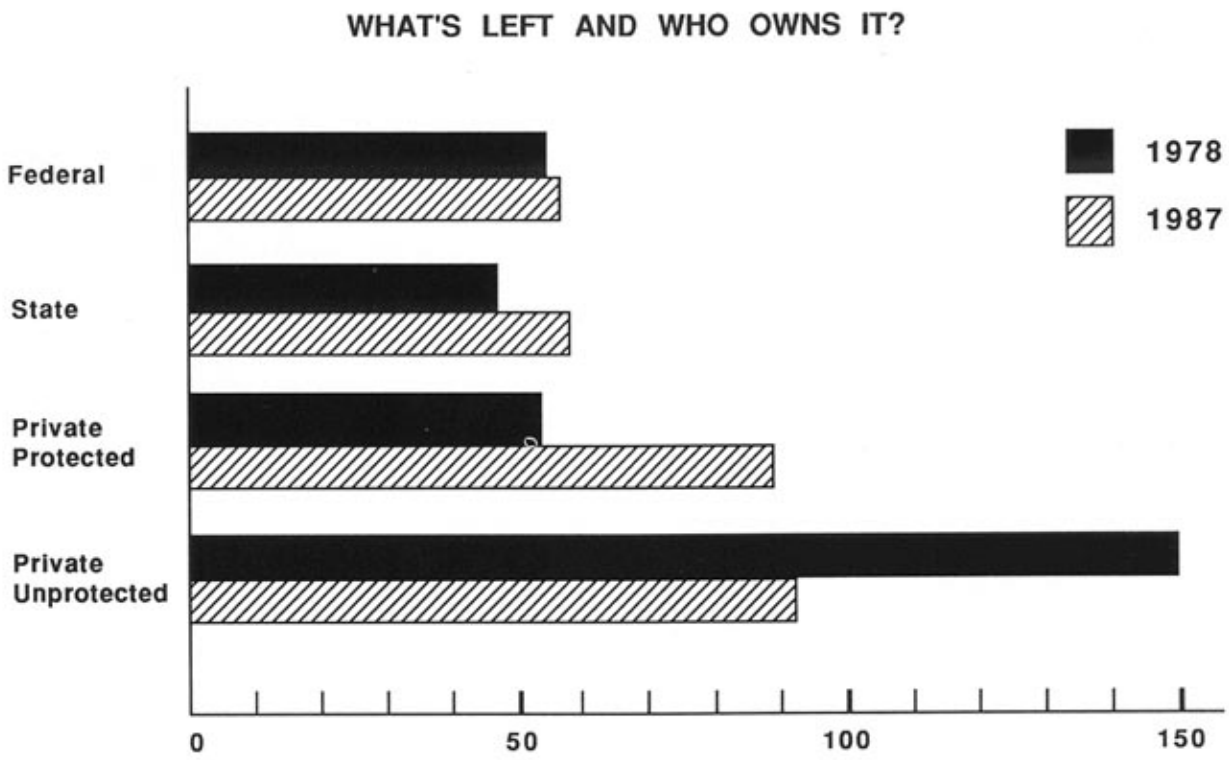
(Hold up duck entry forms.) "In the corner of your entry form is a copy of an actual duck stamp."

(Hold up Duck Sheets with ducks of the Central Valley.)
"This sheet shows you the ducks that winter in the California Central Valley and use the Pacific Flyway. The sheet and the outlines on the bottom of your entry form will get you started. You have 12-15 minutes to sketch a rough draft on the scratch paper I will give you. The final copy of your duck stamp is due_____."

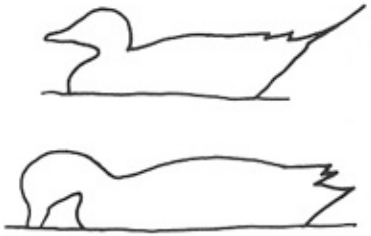
The teacher gives the following guidelines for grading:

1. Participation
2. Design Layout
3. Degree of Achievement

Allow time for questions before passing out scratch paper, Duck Sheet, and entry forms.



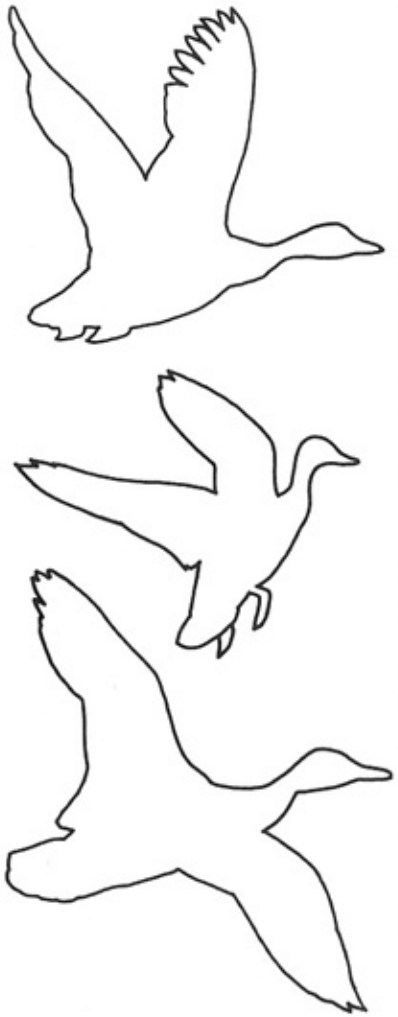
Comparative Status of Wetlands in the Central Valley of California, 1978 and 1987



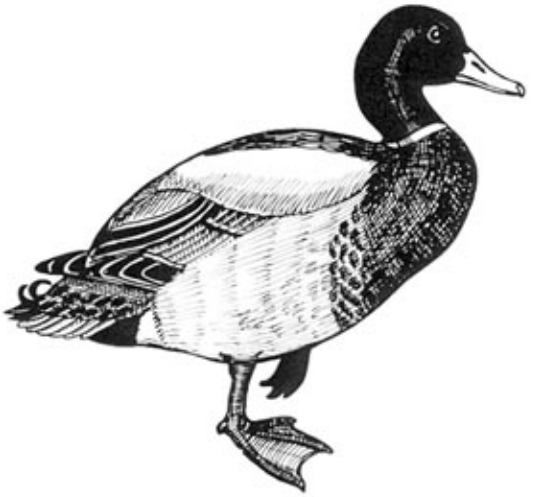
Name_____

DUCK STAMP DESIGNING

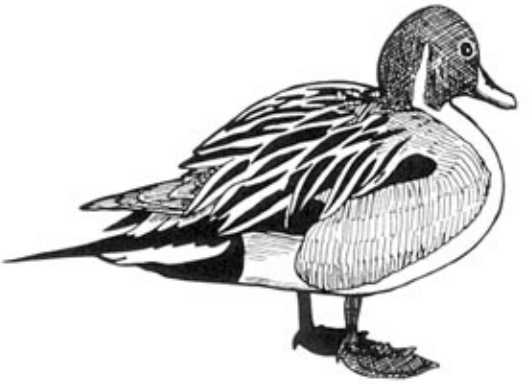
Hunters buy a ticket to hunt. Other people who are also interested in birds buy it too. The ticket is called a Duck Stamp, and the money from selling the stamp buys land for the birds. Draw your own Duck Stamp here:



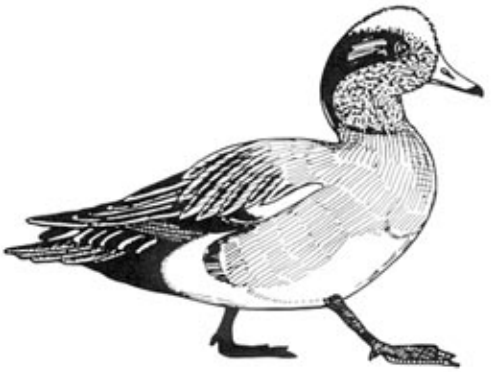
Ducks of the Central Valley



Mallard

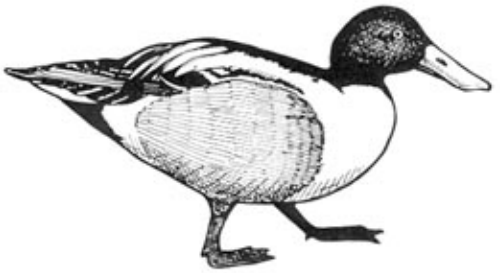


Northern Pintail



American Wigeon

Wood Duck



Northern Shoveler

Ruddy Duck

The Duck Stamp Story

The Federal Duck Stamp Program is one of the most successful conservation programs ever initiated. Since 1934 millions of Duck Stamp dollars have contributed to preserving about 4 million acres of wetland habitat in the National Wildlife Refuge System.

When the explorers from Europe first set foot upon the continent of North America, the skies and marshes were filled with millions of ducks and geese and the woods and plains abounded with an astonishing variety of wildlife. The native Indians, in their many centuries of dwelling in this plenteous land, took from it only what they could use and saw the flocks and herds flourish and multiply.

It took the explorers and the thousands of settlers who followed them only a little over 400 years to deplete these great flocks and herds, reducing some by millions and completely extinguishing others. Migratory waterfowl, especially, were decimated as market hunters and overly eager sports enthusiasts laid waste to the vast flocks. Millions of acres of marshland were drained to feed and house this country's ever-growing population, greatly reducing waterfowl breeding and nesting habitat.

In addition, the elements joined forces to reduce wetland areas as the central portion of the continent was devastated by a prolonged drought of historic proportions. The Dust Bowl years left that area withered and unproductive, and even the lush timbered swamps of the South and the marshes of the Gulf Coast suffered. Migration rest areas and wintering grounds became endangered.

Black duck at home in a fresh water marsh. Wapack NWR New Hampshire © Mark Wilson/WILDSHOT

As early as 1913, Congress recognized the importance of waterfowl management and protection with the enactment of the Weeks-McLean Law. In 1918, the Migratory Bird Treaty Act was passed and protection from commercial exploitation was afforded to both migratory waterfowl and other species of birds.

By the late 1920's, the waterfowl situation became critical and the descendants of the early explorers and settlers realized that urgent action was required to remedy the problem. A very significant step was taken when the U.S. Congress enacted the Migratory Bird Conservation Act of 1929. The law expanded the existing National Wildlife Refuge System established in 1903 and provided authorization for the acquisition of wetlands for waterfowl habitat. The law was, however, only a stopgap measure, as it made no provision for the procurement of funds with which to purchase the land.

J.N. "Ding" Darling, nationally-known political cartoonist, led a drive by conservationists to remedy the funding problem. Darling, who was keenly interested in hunting and wildlife, watched in dismay as the waterfowl habitat in his own state was severely reduced. Darling put his own artistic talents to use and frequently published biting cartoons depicting the destruction of this nation's waterfowl and their habitat.

Undoubtedly, though, Darling's most significant contribution was the concept of a Federal revenue stamp to generate the necessary funds for the acquisition of waterfowl habitat. His idea became reality on March 16, 1934, when Congress passed the Migratory Bird Hunting Stamp Act which required every waterfowl hunter over age 16 to annually purchase and carry a Federal Duck Stamp. Proceeds from the sale of Duck Stamps were earmarked to buy and lease waterfowl habitat.

First Federal Duck Stamp, 1934–35, Designed by J.N. "Ding" Darling

It seemed only fitting to President Franklin D. Roosevelt that Darling be commissioned to design the first Federal Duck Stamp. Roosevelt had previously appointed Darling as Chief of the Bureau of Biological Survey, predecessor of the present U.S. Fish and Wildlife Service. Darling produced a small pencil sketch of a pair of mallards coming in over a marsh pond. In August 1934, the Duck Stamps went on sale and a total of 635,000 were sold at one dollar each.

The price of Duck Stamps has increased over the years with the decreasing availability of wetlands. Waterfowl habitat which once sold for as little as $1 an acre now costs thousands of times that price. A collector who had purchased, at the issue price, each of the 59 stamps by 1992 would have spent a total of $242. This investment would presently be worth over $4,000. That percentage increase has turned many stamp purchasers into avid collectors. All stamps not sold are destroyed three years after issue, thus preserving the value of the stamps purchased by collectors.

Most of the annual stamps depict waterfowl in their natural environment. Until 1949, a nationally-recognized wildlife artist was commissioned annually to produce a Duck Stamp design. Since that year, however, an annual Duck Stamp design is chosen by a panel of waterfowl and art experts. This is the only annual art competition sponsored by the Federal Government, and the number of annual entries varies between 600 and 1,000.

Any artist can enter the contest by submitting a 10 × 7 inch waterfowl design and paying an entry fee. The winner receives a pane of stamps bearing his or her design and maintains the right to sell prints of the winning artwork which are eagerly sought by collectors.

Raccoon in marsh. Montezuma NWR New York
© John & Karen Hollingsworth

The Federal Duck Stamp Program is one of the most successful conservation programs ever initiated. Over 98¢ of every Duck Stamp dollar goes directly into a fund used solely to acquire wetlands for North American waterfowl. These lands become a part of the National Wildlife Refuge System and also benefit many other species of plants and animals.

The focus of the program has changed over the decades. The goal in recent years has been to preserve key wintering and breeding habitats in each of the four major north-south migratory waterfowl flyways, particularly those most threatened by development. Efforts are also underway to save areas needed by species whose numbers are low or declining, such as black ducks, cackling Canada geese, canvasbacks, mallards, Pacific brants, Pacific white-fronted geese, pintails, redheads and wood ducks.

The Duck Stamp Program also aids wildlife other than waterfowl. One-third of the nation's endangered or threatened species find food and shelter in wetlands conserved under the program. Coastal wetlands also provide spawning and nursery habitat for our nation's fishery resources.

White-tailed deer drinking. Quivira NWR Kansas
© John & Karen Hollingsworth

Leonard's skipper butterfly feeding on loosestrife. Great Swamp NWR New Jersey
© John & Karen Hollingsworth

In addition to providing valuable fish and wildlife habitat, wetlands help to maintain ground water supplies and water quality, protect shorelines from erosion, store floodwaters, trap sediments that can pollute waterways, and modify climatic changes.

Possession of the most recent Federal Duck Stamp (must be signed in ink across it's face) provides free admission into all National Wildlife Refuges where entrance fees are charged. It is also one way to support the goals of The North American Waterfowl Management Plan, an historic 1986 Agreement between the United States and Canada which sets forth a course of action for both countries to take to ensure the continued survival of abundant populations of ducks, geese and swans.

The success of the Federal Duck Stamp Program and the North American Plan requires the continued strong commitment, creativity and hard work by the Federal governments of these two nations, state and local governments, private organizations, businesses and individual citizens.

The purchase of a Federal Duck Stamp provides an opportunity for every citizen to make a small investment in an enormous endeavor—the preservation of our natural heritage.

U.S. Department of the Interior
U.S. Fish and Wildlife Service

Order Your Duck Stamps Today

Please send me the following Federal Migratory Bird Hunting and Conservation Stamps (Duck Stamp):

Qty.		*Total*
____	1990–91 Black-bellied Whistling Ducks @ $12.50 each = *	____
____	1991–92 King Eiders @ $15.00 each =	____
____	1992–93 Spectacled Eiders @ $15.00 each =	____
____	1993–94 (Do not order before July '93) @ $15.00 each =	____
	Shipping and Handling charges per order	$1.00

**All 1990–91 stamps not sold by 6/30/93 will be destroyed.*

____ *Quantity Total* *Total Amount $* ____

Enclosed is my check or money order for $_____ made payable to the **U.S. Fish and Wildlife Service.**

Name _____
Address _____
City, State, Zip _____

Mail to: **Federal Duck Stamp Office**
1849 C Street, N.W., Suite 2058
Washington, D.C. 20240

Duck Stamp Collection

The Duck Stamp Collection includes a data sheet on each duck stamp issued since the first one in 1934. Each sheet includes a photograph of the stamp and original art, short biography of the artist, names of the designers and engravers, inscription, first date of sale, and number of stamps sold. Subscription service provides the entire collection to date plus one update per year for an indeterminate period of time.

Subscriptions to the Duck Stamp Collection are $12 ($15 foreign) each and $2.50 for the binders (1992 prices). These are made available through the Government Printing Office. Call Order and Information Desk at (202) 783-3238 to verify prices.

____ Subscription (s) for the Duck Stamp Collection = ____
(Stock #924-001-00000-3)

____ Binder (s) to hold my Collection = ____
(Stock #024-010-00684-6)

Enclosed is my check or money order for $_____ made payable to the **Superintendent of Documents.**

Name _____
Address _____
City, State, Zip _____

Mail to: **Superintendent of Documents**
Government Printing Office
Washington, D.C. 20402-9325

MINI REPORT--MIGRATION

OBJECTIVES:
The class will become aware of ancient beliefs and current understandings regarding bird migration. This will be done through a student presentation, and the presenter will then give an oral quiz to the class based on the presentation.

MATERIALS:
2 articles on bird migration and an overhead transparency of the Pacific Flyway

BACKGROUND INFORMATION:
See attached articles.

STUDENT NAME_____

GRADE SHEET

Preparation: It appears that the articles have been read and some of the material committed to memory.

Delivery: Adequate volume and clear enunciation -

Posture -

Variety in tone -

Any gestures -

Opening and closing remarks -

Overall Grade:

Additional Comments:

STUDENT ASSIGNMENT

Read the two articles on bird migration. Look up and define two new terms that are used in the articles. Explain one of them during your presentation.

Please list the two terms you found and their definitions.

_____

_____

Which one will you explain to the class? _____

Prepare an oral presentation on migration in which you will use the overhead projector and the transparency of the Pacific Flyway.

1. Begin with ancient myths, and be sure to define migration. These will be your opening remarks.

2. Then discuss what we know now about migration:

Why does it happen? Give all the theories presented in the articles.

How? Discuss ways of migrating. Show migration for spring and fall on the transparency by using arrows or symbolic birds.

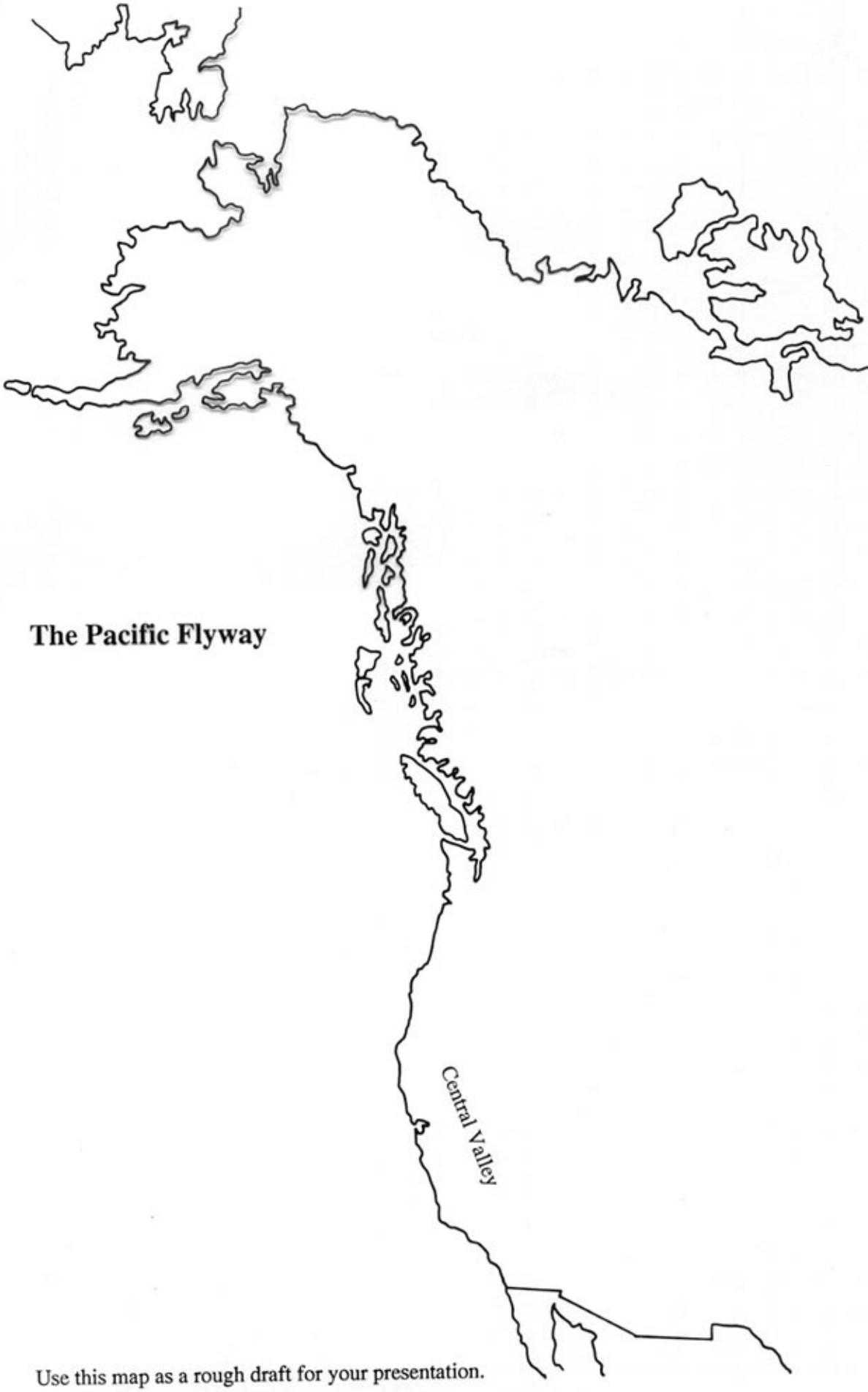
When? Discuss time of year and time of day.

Where? Tell what areas the birds favor and what they avoid as they fly along the Pacific Flyway.

3. Length of Presentation: 5-10 minutes

4. When you are finished, ask the class 3 or 4 quiz-type questions based on the information you have shared.

5. Close with appropriate remarks regarding the topic.



Use this map as a rough draft for your presentation.

MIGRATION

History and Scope

The migrations of birds were probably among the first natural phenomena to attract the attention and arouse the imagination of man. Recorded observations on the subject date back nearly 3,000 years, to the times of Hesiod, Homer, Herodotus, Aristotle, and others.

Of observers whose writings are extant, Aristotle, naturalist and philosopher of ancient Greece, was one of the first to discuss the subject of bird migration. He noted cranes traveled from the steppes of Schythia to the marshes at the headwaters of the Nile, and pelicans, geese, swans, rails, doves, and many other birds likewise passed to warmer regions to spend the winter. Aristotle also must be credited with the origin of some superstitious beliefs that persisted for several centuries. One of these, the hibernation theory, survived for more than 2,000 years, and it was not until early in the nineteenth century that its acceptance as an explanation for the winter disappearance of birds was almost completely abandoned. Some early naturalists wrote fantastic accounts of the flocks of swallows allegedly seen congregating in marshes until their accumulated weight bent into the water the reeds on which they clung and thus submerged the birds. Probably the most remarkable theory advanced to account for migration is contained in a pamphlet, "An Essay toward the Probable Solution of the Swallow, when they Know and Observe the Appointed Time of their Coming", mentioned by Clarke (1912: v. 1, 9-11) published in 1703. It is written "By a Person of Learning and Piety," whose "probable solution" stated migratory birds flew to the moon and there spent the winter. Astronauts have so far failed to verify this.

The scope of the migration phenomenon is worldwide, not simply limited to the United States, the Northern Hemisphere, or the world's land masses.

Advantages of Migration

Why should a bird subject itself to the rigors of a long migratory journey twice a year? Migration makes it possible for some species to inhabit two different areas during the seasons when each presents favorable conditions. If it was not advantageous to make the trip twice a year, natural selection would have eliminated the tendency, but bird migration has become the rule over much of the world rather than the exception. By withdrawing in the spring to regions uninhabitable earlier in the year, migrant species are generally assured of adequate space and ample food upon their arrival in the winter-free North, and those nonmigratory kinds, which stay behind to nest, are also assured of ample space for these activities.

Orientation and Navigation

Evidence supports that the sun and stars are visual "landmarks" used by at least some birds as well as bees and probably many other creatures in finding their way home as well as to their winter and summer quarters.

Many cues are available to birds for migratory guidance and one or several of these may be used by any migrant. Different species and groups of birds use different cues, depending on their migration traits. Visual cues probably play a predominant role in migration. Radar studies have indicated that some birds can maintain their orientation even under completely overcast nights, although they usually become disoriented under such conditions. Long-distance migrants and pelagic species have a much higher developed sense of orientation than those species that migrate only short distances or not at all.

Perils of Migration

The migration season is full of danger for birds. Untold thousands of smaller migrants are destroyed each year by storms and attacks by predatory animals. These mortality factors, and others, help keep bird populations in check.

VOCABULARY LIST

ZONING - Any section of land restricted by law for a particular use

ENVIRONMENTAL IMPACT - Any significant effect of development upon the environment

MUNICIPAL - Relating to the internal affairs of a major political unit such as a city

DEVELOPMENT - Land that has been changed by people through agriculture, dredging, or the construction of roads and buildings

CONSERVATION - A careful usage and protection of our natural resources to insure their availability in the future

WILDLIFE REFUGE MANAGEMENT - Includes planning, repairing, and improving the animal habitats and educating people regarding the needs of wildlife - a challenge to provide for the most wildlife on the least amount of land

AESTHETIC VALUE - Placing a priority on the beauty of nature

ETHICS - A set of moral principles or values used in making choices

HABITAT - A balance of food, water, cover, and space that satisfies animals' needs for life

FLYWAY - A certain path that birds travel when migrating between nesting and wintering grounds

ESTUARY - A place where fresh water and salt water come together, making many food sources available to the wildlife there...e.g., bays and river mouths

UPLANDS - Slightly elevated dry land

ADAPTATION - Making physical or behavioral adjustments to changing environmental conditions

BIRD BANDING - Means of marking birds with metal bands to obtain data regarding their flight patterns, migration, habits, and life cycles - a way of tracking individual birds

MIGRATION - Movement of birds between their nesting and wintering grounds

ECOLOGY - The science of the interrelations between living organisms and their environment

ECOSYSTEMS - A system involving all interactions of living and non-living components of a given area

CURRENT BOOK SELECTIONS
7-12

Building An Aviary, Carl Naether and Matthew M. Vriends, 1989
Birdwatch: A Young Person's Introduction to Birding,
Mary MacPherson, 1989
The Birder's Handbook, Paul Ehrlich, David Dobkin, and
Darryl Wheye, 1988
Bird Happy: Attracting and Feeding Birds, Wallace L. Howey, 1987
Discovering Birds of Prey, Mike Thomas and Eric Soothill, 1986
Families of Birds, Oliver L. Austin, 1985

Also see older books:

Field Guide to the Birds of North America, National Geographic Society, 1983
Blackbird Singing, Eve Bunting, 1980
A Field Guide to the Birds, Roger Tory Peterson, 1980
Mysteries of Bird Migration, Allan C. Fisher, Jr. National Geographic,
1979, pages 154-193
Ducks, Geese and Swans of North America, Frank Bellrose, 1976
A Heart to the Hawks, Don Moser, 1975
The Peregrine Falcons, Alice Schuck, 1975
Habitat Guide to Birding, Thomas P. McElroy, 1974
In Search of a Sandhill Crane, Richard Cuffari, 1973
Bird Navigation, G.V.T. Matthews, 1968
Birds of North America, C. S. Robbins, Bertel Broun, and H. S. Zim, 1966
The Golden Eagle, Robert Murphy, 1965
Waterfowl Tomorrow, U. S. Department of the Interior, 1964

WATERFOWL PRODUCTION

Bird population at a wildlife refuge:

	Pairs of Birds	Waterfowl Production
Mallard	1,100	3,080
Cinnamon Teal	356	1,000
Shoveler	140	392
Gadwall	104	292
Pintail	76	212
Ruddy	18	48
Wigeon	14	40
Red Head	10	28
Ring Neck	6	16
Canada Goose	5	12

Calculate the production of each pair of birds:

Mallard:	3,080 / 1,100 = 2.80
Cinnamon Teal	2.81
Shoveler	2.80
Gadwall	2.81
Pintail	2.79
Ruddy	2.67
Wigeon	2.86
Red Head	2.80
Ring Neck	2.67
Canada Goose	2.40

Use this information for the activity on the next page.

STATISTICALLY SPEAKING...

Arrange the numbers of waterfowl produced in order from largest to least number:

2.86
2.81
2.81
2.80
2.80
2.80
2.79
2.67
2.67
2.40

In statistics, there are three ways to measure a mid-point.

MEDIAN: The Median is the measurement that divides the set into two equal parts. What is the Median of the above set? (2.80)

MODE: The Mode is the measurement that appears most frequently in a group of measurements. What is the Mode in the set? (2.80)

MEAN: The Mean is the arithmetic average that you get by adding all of the measurements in a group and then dividing by the total number of measurements in that group. What is the Mean in the set? (2.741)

Which number do you think is the most <u>accurate</u> in representing the number of birds produced from each pair? Why? State some reasons for your answer.

Name:

The Perfect Animal

Can you create an animal that has adapted to total urbanization? Combine the characteristics of five different animals who have survived the many problems that people have created. These traits should be the most cleverly developed for living in an urban environment. Remember, you cannot invent something that does not already exist in the animal world.

Draw a picture of the animal and name it. List the function of each body part and be prepared to defend your choices:

For example:

1. Legs of a frog to swim in over flooded sewers.
2. Wings of an eagle to soar above the air pollution.
3. Nose of a pig to root through garbage.

WATER USAGE

WATER WORDS

OBJECTIVE:
Students will be able to describe a variety of ways and reasons why water is important to people and wildlife.

HOW TO GET THERE:
Students brainstorm, make collages, and carry out family discussions on water usage and conservation.

MATERIALS:
Large pieces of paper, magazines, scissors, and glue

GO FOR IT!

1. Students discuss all purposes for water.
2. Working in teams, students cut out magazine pictures of water, looking especially for pictures that show how all living things need water.
3. Still in teams, students construct a large collage of overlapping water pictures on one large piece of paper. Display on bulletin board.
4. Final Discussion: Challenge students to think of all the ways they have used water during the day. Stress the importance of water.

ASSIGNMENT:
Duplicate the chart below on tagboard. Send it home to be posted for a few days and discussed by the family. Have students bring back a ***list*** from home of the ways they could conserve water if there was a shortage.

CAN YOU BELIEVE IT?

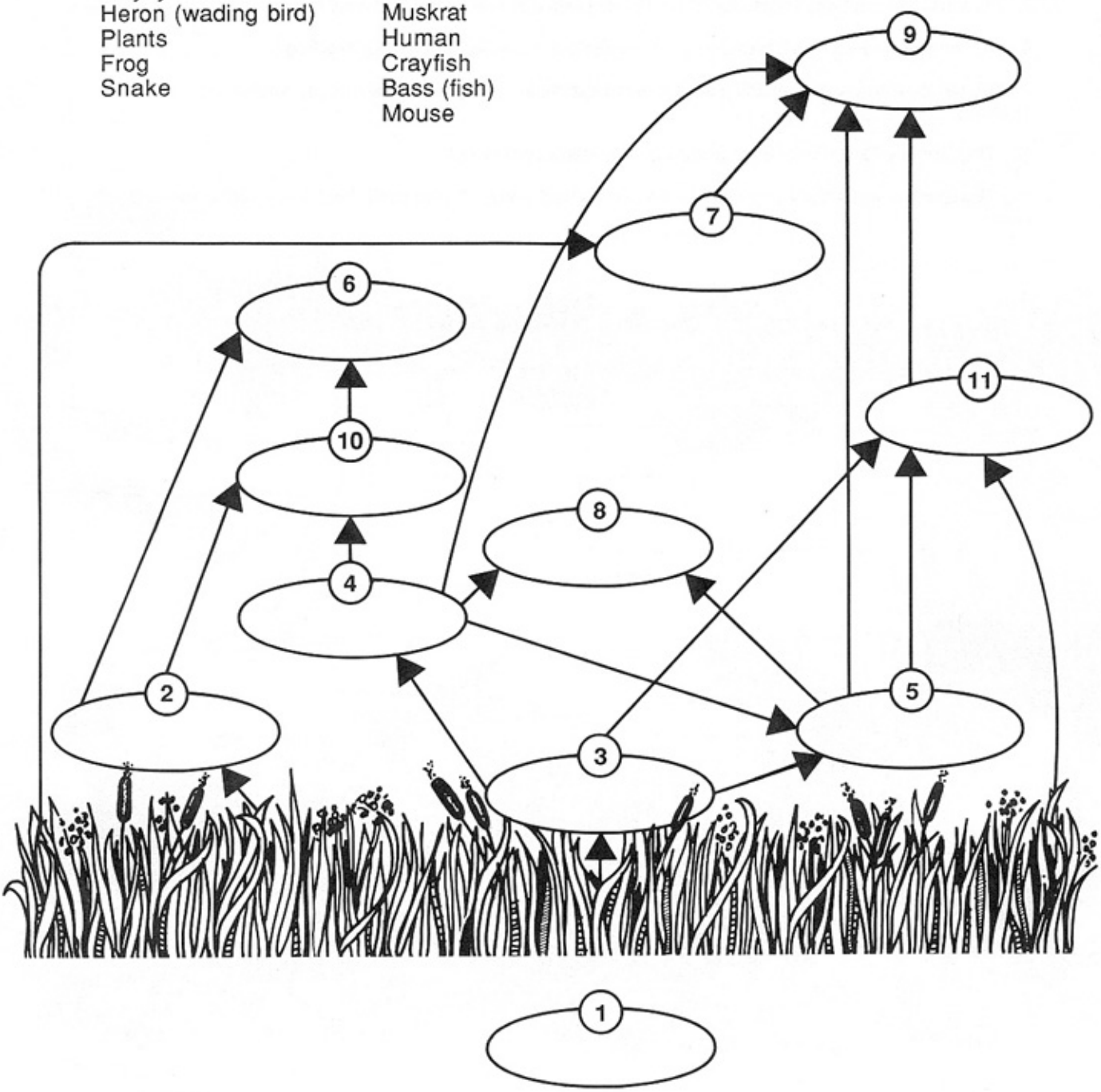
Taking a bath	30 gallons
Taking a shower	25-30 gallons
Filling a sink	1-2 gallons
Flushing a toilet	4-6 gallons
Washing clothes	30-50 gallons per load
Washing dishes	6 gallons per load
Washing a car	60 gallons
Watering a lawn	100-200 gallons per hour

Freshwater Marsh Food Web Puzzle

Every creature has to eat. Some food comes from plants and some from animals. Most creatures eat many different things. Plants and animals, including humans, are all linked in a "food web".

Here is a simplified food web from a freshwater marsh area where pioneers might have settled 200 years ago. Read the clues and see if you can work out the web. Use the words below to fill in the correct numbered places. (Note: The arrows point away from the "food" toward the creature that eats it.)

Mayfly
Heron (wading bird)
Plants
Frog
Snake
Owl
Muskrat
Human
Crayfish
Bass (fish)
Mouse



Clues

1. These living things use energy from the sun to make food. They provide the most food in the entire world.

2. This small marsh rodent eats plants and sometimes insects.

3. The larva of this flying insect feeds on plants.

4. This creature eats insects; it stays close to water but is sometimes found on land.

5. This animal lives all its life in the water and feeds on insects and frogs.

6. This bird hunts at night for snakes and mice.

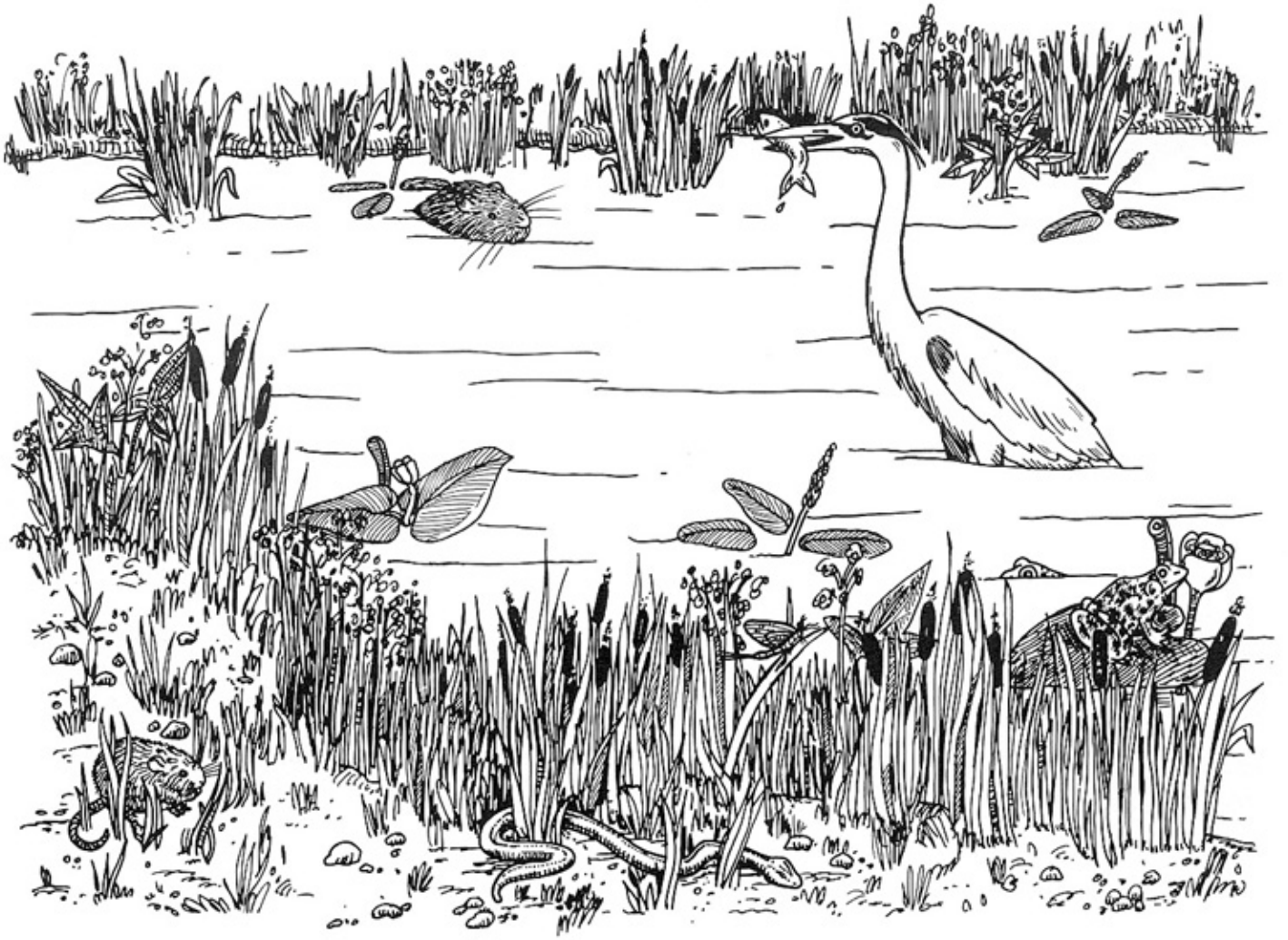
7. This small mammal was hunted for its fur; its meat was also eaten. It eats mostly plants.

8. This long-legged bird wades among plants in shallow water, looking for fish and frogs.

9. This creature can find many things to eat in the marsh, including plants, fish, frogs, crayfish and muskrats.

10. This long reptile hunts for frogs and mice. It swallows prey whole.

11. This creature looks like a small lobster and swims backwards. It eats small dead fish, insect larvae and plants.



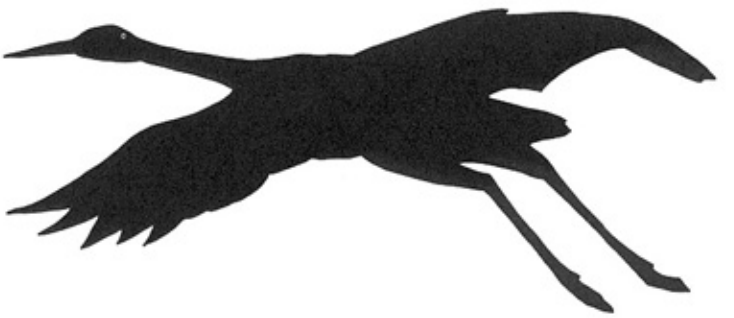
Answers: 1. plants, 2. mouse, 3. mayfly, 4. frog, 5. bass, 6. owl, 7. muskrat, 8. heron, 9. human, 10. snake, 11. crayfish.

Name

Migration Identification

When studying migratory birds, it is important to be able to identify them in flight. Here are the outlines of seven migratory birds from the Central Valley. Can you identify *any* of them? *Some* of them?

Answers below.



1. Northern Harrier Hawk
2. Northern Pintail
3. Northern Shoveler
4. Mallard
5. Canada Goose
6. Kingfisher
7. Sandhill Crane

Goose Mapping Project

Purpose
Through this activity, students will learn the migration route of a common migratory bird, the Canada goose. This will be done by compiling and mapping data from actual band reports.

Learning Outcomes
After completing this activity, students will be able to:

A. Map the migration route of the Canada goose based on band reports.
B. Define the terms wintering and breeding grounds.
C. List two uses of band reports.
D. List the four major flyways in North America.

Organization

Who:	Groups of four
Where:	Inside
When:	Any time of year
Time:	One to two hours

Materials for Class
* Data Sheet - Band Results
* Paper bag or hat

Materials for Each Student
* Data Sheets - maps, flyways
* Colored pencils or crayons
* Quiz

Directions

1. The data sheet contains 50 banding results. Make five copies of these band reports. Cut data sheets into 250 strips and put these into a hat or paper bag. *Note:* These band reports are simplified versions of real data that have been turned in to the U.S. Fish and Wildlife Service.

2. Lead students in a discussion of bird banding. Banding is done to provide information regarding migratory birds' routes. Through recovery of birds' bands, data on direction and duration of migration is obtained. Introduce students to the idea of flyways, which are generalized migratory corridors. Although species' actual migrations do not strictly conform with these flyways, they are a useful way to indicate along which flyways birds migrate. (For instance, the Canada goose migrates along all four flyways.) (Refer them to their flyway maps.)

3. Hand out copies of the data sheet, mapping page and flyway sheet.

4. Tell students they are wildlife biologists compiling banding returns. Data are being sent to them regarding the locations of banded Canada geese. Their job is to map Canada goose migration - spring and fall - based on the reports. Tell students they will each receive data from seven or eight bands. While bands are recovered year round, the information students receive will be mainly from summer and fall migration periods. (Have the students suggest why more bands might be recovered at these times of the year.) Students can tell the difference by the dates: spring migrations generally occur between February and April, and fall migrations between September and December. Reports from January, May, June, July and August indicate nonmigrating times of the year. During the summer months geese are at their breeding grounds; during January they are wintering in more southern areas. Tell students they will plot reports on the maps they have been given. They should use different colors for migration dates and for dates indicating presence on wintering and breeding grounds.

5. Pass the hat with the strips of paper (banding results). Each student should have seven.

   Have them mark the date of one banding result on the correct map location.

   If someone has two identical results, both should be marked on the map.

6. Have students form groups of four to compare data. Students should map the banding report of the other group members. Based on the additional information, have students plot spring and fall migration routes based on the U.S. flyways and indicate generalized wintering and breeding grounds. Their data will indicate that the Canada geese used in this activity breed mostly in Canada. They migrate along either the Mississippi Flyway or the Atlantic Flyway. Therefore, the routes mapped can cover most of the states north of South Carolina and east of Wyoming.

Extended Activities:

7. If possible, make an enlargement of the data sheet map and plot all the band reports. Ask students where band report #1 was from and if the bird was recovered during the spring or fall migration. Plot each migration period in a different color. Continue collecting information from the class and plotting it until all reports have been shown.

8. Have students pick one of the flyways and research its geography. Generate a class list of possible problem areas and favorable habitats (refuges, rivers) which Canada geese might encounter on that route.

   Through research and observation made throughout the school year, students can note the varying numbers, types, and varieties of birds in the area and determine which species migrate and which do not. They can then study one migratory species they have identified in the neighborhood and use a map and bird guides to examine where the species migrates. Research should include the route and timing of migration, obstacles encountered and traditional habitats used during migration.

   If possible, have a local conservation officer or Fish and Wildlife Service employee bring in samples of actual bird bands and mounted birds with bands to discuss banding in greater detail. Have the speaker tell students what they should do if they see a band on a bird (either live or dead). Some wildlife refuges allow students to observe banding operations and, on occasion, will allow upper-level students to participate.

Quiz Answers:

1. The Canada geese depicted in this activity breed mostly in Canada and migrate along either the Mississippi or Atlantic Flyway.

2. a - Atlantic Flyway
   b - Central Flyway
   c - Pacific Flyway
   d - Mississippi Flyway

3. True. While bands are found by many different individuals in different ways, the majority are sent in by hunters.

4. Wintering grounds - Argentina, South America
   Breeding grounds - Alberta and Saskatchewan, Canada

5. Band reports give information regarding bird migration routes, wintering and breeding grounds, life expectancy, causes of death, etc.

Name

Goose Mapping: QUIZ

1. Where do the Canada geese that you studied in this activity breed and what flyways do they use?

2. The map below shows the four major flyways of the United States. Based on the banding results below, which flyway would the migrating birds be using?

   a. Birds banded in northern Quebec and recovered in Maine, Delaware, North Carolina, Rhode Island, and Maryland.

   b. Birds banded in the Northwest Territories and recovered in Wyoming, New Mexico, Texas, and Montana.

   c. Birds banded in Alaska and recovered in Oregon, Nevada, California, and Idaho.

   d. Birds banded in Alaska and recovered in North Dakota, Great Lakes, Tennessee, Louisiana, and Missouri.

3. Wildlife biologists rely on information from bands returned by hunters to learn about migratory birds. True or False?

4. The Swainson's hawk breeds around the beginning of May. Based on the following banding results, where do you think this species winters? Where does it breed?

   Bird One - Banded in Alberta, July 1977. Found dead in Kansas, August 20, 1978.
   Bird Two - Banded in Saskatchewan, July 1974. Found dead in Argentina, March 4, 1976.

5. List two examples of information obtained from band reports:

   a.

   b.

GOOSE MIGRATION
Mapping Project

Migratory Birds Banding Reports - Data Sheet

1. Goose caught by hand in Maine, 8/16/81.	15. Goose banded in Oklahoma shot by hunter in Saskatchewan, 10/26/81.
2. Neck-collared goose observed by person in New Jersey, 11/28/81.	16. Injured goose caught in Iowa, 11/28/81.
3. Goose found dead by hunter in Maine, 10/16/81.	17. Goose banded 1/2/63 in Maryland and shot by hunter approximately 18 years later in Maryland 11/8/81.
4. Band number of goose read from a distance by observer in Quebec, 7/9/81.	18. Goose banded in Manitoba shot three months later in Missouri, 11/8/81.
5. Hunter reports band from Pennsylvania, 11/12/81.	19. Goose banded in Manitoba 7/19/68, and recaptured near place of banding 7/30/81.
6. Goose caught after being forced down and weakened by bad weather in Pennsylvania, 12/30/77.	20. Goose caught in Illinois after being hit by a vehicle, 7/29/81.
7. Goose shot by hunter in Missouri, 11/11/78.	21. Goose banded in the Northwest Territories, Canada shot in Ohio three months later, 10/21/81.
8. Goose band sent from Ontario with no information about recovery or cause of death, 8/4/81.	22. Goose found dead in Massachusetts, 10/27/81.
9. Hunter reports goose that was taken by his party in Iowa hunt, 10/13/81.	23. Goose killed in Wisconsin by hunter, 10/29/81.
10. Goose banded in Iowa was identified by neck collar and reported from Wisconsin resident, 9/19/81.	24. Goose banded in Ohio found injured in Michigan, 8/4/81.
11. Skeleton of banded goose found and reported from Ohio, 9/8/81.	25. Goose first banded 10/11/67, accidentally killed when recaptured in banding operation in Minnesota, 10/26/81.
12. Goose recaptured almost a year later in the same place where banded in Wisconsin, 10/8/81.	26. Goose banded in Texas shot almost 13 years later in Manitoba, 10/2/81.
13. Goose banded in Colorado killed by a hunter in Wyoming, 10/31/81.	27. Goose banded in Utah identified by neck collar in California, 2/5/81.
14. Goose inadvertently caught by fur trapper in Manitoba, 10/10/81.	28. Goose found dead on highway in Ontario, 9/1/81.

Migratory Birds Banding Reports - Data Sheet

29. Goose collected for scientific specimen in Ohio, 4/27/81.

30. Goose found dead in South Dakota, 11/17/81.

31. Goose banded in Arkansas shot almost 17 years later in South Dakota, 10/20/78.

32. Goose found entangled in fishing gear in Michigan, 1/5/79.

33. Goose recaptured at the place of banding one year and one day later in Ontario, 6/22/81.

34. Goose captured after it joined a flock of domestic birds in Quebec, 6/23/81.

35. Goose shot by hunter in Ontario 40 days after it was banded, 8/3/81.

36. Band reported from North Dakota with no information about bird or circumstances of encounter, 6/15/81.

37. Goose found dead in Minnesota, 10/30/81.

38. Goose caught as result of an unknown animal in Minnesota, 11/23/81.

39. Goose banded in Kansas 2/14/80, shot in Saskatchewan, 11/9/81.

40. Goose found injured in North Carolina, 6/28/80.

41. Goose found dead in New Jersey almost seven years after banding, 5/27/80.

42. Two geese banded on same day found dead almost a year later near a highway in Virginia, 1/5/72.

43. Goose banded in Kentucky 7/1/76, recaptured in Tennessee by another bander, 1/28/80.

44. Goose caught by a dog in Minnesota, 5/28/79.

45. Goose in Missouri found dead after striking a high tension wire, 3/8/79.

46. Ohio resident with binoculars reported a goose with a band number, 3/20/75.

47. Goose banded in Tennessee later recaptured by a bander in the Northwest Territories of Canada, 1/7/76.

48. Goose in British Columbia killed by a moving aircraft, 3/27/80.

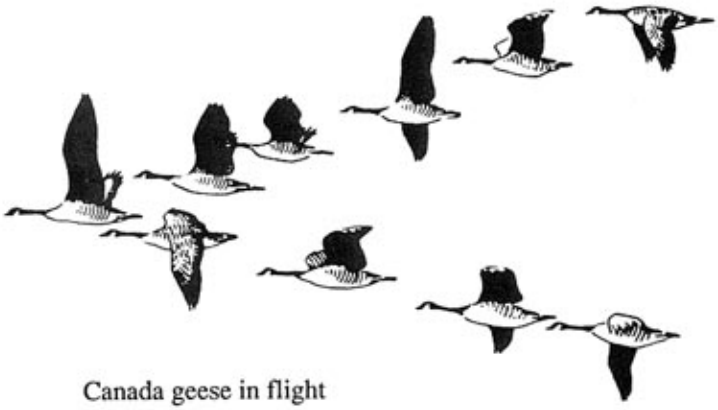
49. Goose found dead due to parasite infestation in Minnesota, 7/22/80.

50. Goose found dead due to lead poisoning in South Dakota, 12/17/80.

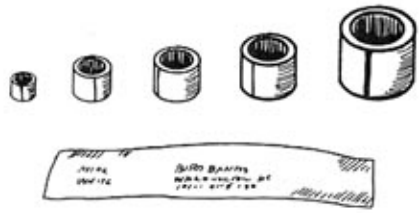
Information

Canada geese migrate in a V-formation at about 50 mph. Their movement is steady and unhurried and closely follows the movement of the seasons.

Canada geese are often banded by scientists to obtain information about their migrations. Canada geese make their spring migrations (south to north) from about February to April. Fall migrations (north to south) occur from about September to December.

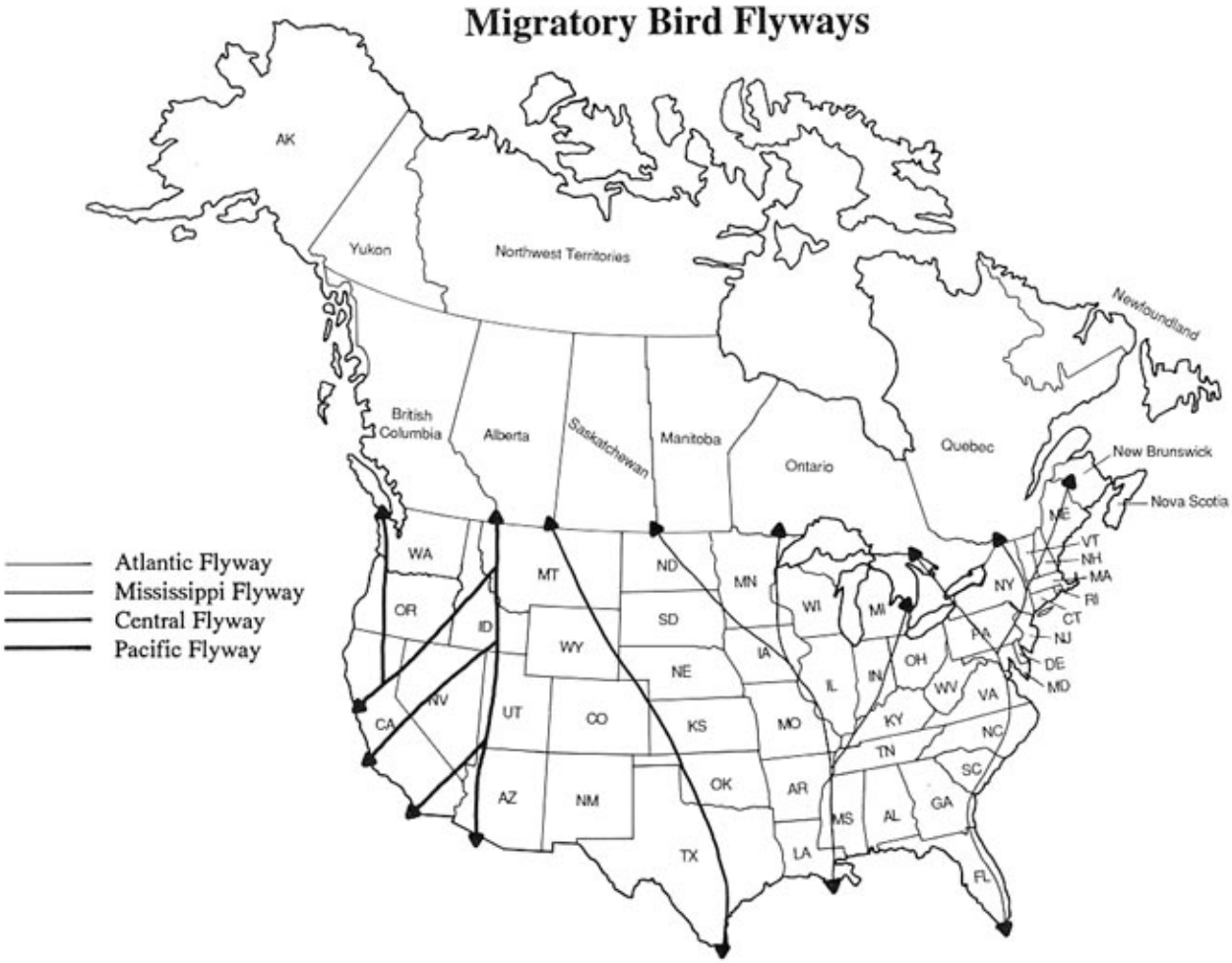


Canada geese in flight



Bird bands

Migratory Bird Flyways



Goose Mapping: **Information**

WANTED
COLLAR NUMBER
of any
CACKLING CANADA GOOSE
wearing a yellow neck collar with black lettering

Also called the "cackler", this smallest race of Canada geese was named for its repeated, high-pitched call. Only slightly larger than a mallard, they may weigh up to four pounds. Cackling geese are grayish-brown above, with a dark brown breast which may appear to have a purplish cast. If present, the white neck ring is usually narrow or incomplete. The bill is short, almost stubby.

The population size of cackling Canada geese has declined from 400,000 in the late 1960s to about 30,000 today. Concern about this decline prompted the U.S. Fish and Wildlife Service, the California Department of Fish and Game, and the University of California, Davis, to initiate a study to determine the size of the cackling goose population, as well as its winter distribution in California.

To accomplish this, cackling geese were captured, banded with aluminum leg bands, and marked with yellow plastic neck collars with black lettering. This was done on their breeding grounds in the Yukon Delta NWR, Alaska, as well as their wintering grounds at Tule Lake NWR and Sacramento NWR, California, during 1983 and 1984. The neck collars make it possible to identify individual birds from a distance with a spotting scope, without having to recapture them.

How Can You Help?

If you see a bird with a collar, please note the particular combination of letters and numbers, as well as the date, location, etc. of the sighting. (With the head of the bird up, read the vertical character first, then the horizontal characters, is A16, is OL5). Then notify refuge staff at this office, so appropriate records can be maintained. Be aware that some white-fronted geese (also known as "specs") have been marked with yellow collars bearing black lettering, so be sure to distinguish between the two when making your report. Your assistance in this effort will enable wildlife managers and biologists to better understand and protect this species, and hopefully reverse the downward trend in their population numbers.

Thank you!

U.S. Fish and Wildlife Service
Klamath Basin National Wildlife Refuges
Route 1, Box 74
Tulelake, CA 96134
Phone (916) 667-2231

Place the letters to the left where you would find the birds in the refuge.

DESIGN - A - REFUGE / Habitat Match

A	**EARED GREBE**	Nests in large groups on freshwater lakes. It weaves a floating nest.
B	**WESTERN GREBE**	Breeds on broad open freshwater lakes edged with reeds. It also builds a woven nest.
C	**AMERICAN COOT**	Nests in freshwater marshes, wetlands, or near lakes and ponds.
D E	**GREATER WHITE-FRONTED GOOSE** **SNOW GOOSE**	These birds feed in grassy fields and grainfields. They are seen milling around, or "staging", in the early spring, before migrating north to breed.
F	**CANADA GOOSE**	This bird breeds in open or forested areas near water. It needs protection from predators, and favors raised islands in the marsh to nest. Such islands can be built for them, or nesting platforms can be installed in the shallow marsh.
G	**MALLARD**	This is the most abundant duck in North America. It prefers uplands for nesting, dikes that are close to water, or will nest in marsh growth over water.
H	**NORTHERN PINTAIL**	Found in marshes and open areas with ponds, lakes. Feeds in grainfields, and selects open areas to nest, where vegetation is low or sparse. Sometimes the nest is located on the bare earth, but is usually found between 40-100 yards from water.
I	**NORTHERN SHOVELER**	This bird is found in ponds, marshes, or in a farmland-type habitat like hay fields, pastures, or grainfields. Short grass cover is needed for nesting on hayfields. Does not need to nest next to the water.
J	**AMERICAN WIGEON**	Forages in fields, marshes, and shallow waters. Selects an upland nest site near but not next to water. Locates nest in clumps of brush.
K	**RUDDY DUCK**	Found on large lakes in areas of bulrushes or cattails. Nests in dense vegetation of freshwater marshes, lakes, or ponds, where it constructs a built-up or floating nest.

Add some public-use options:

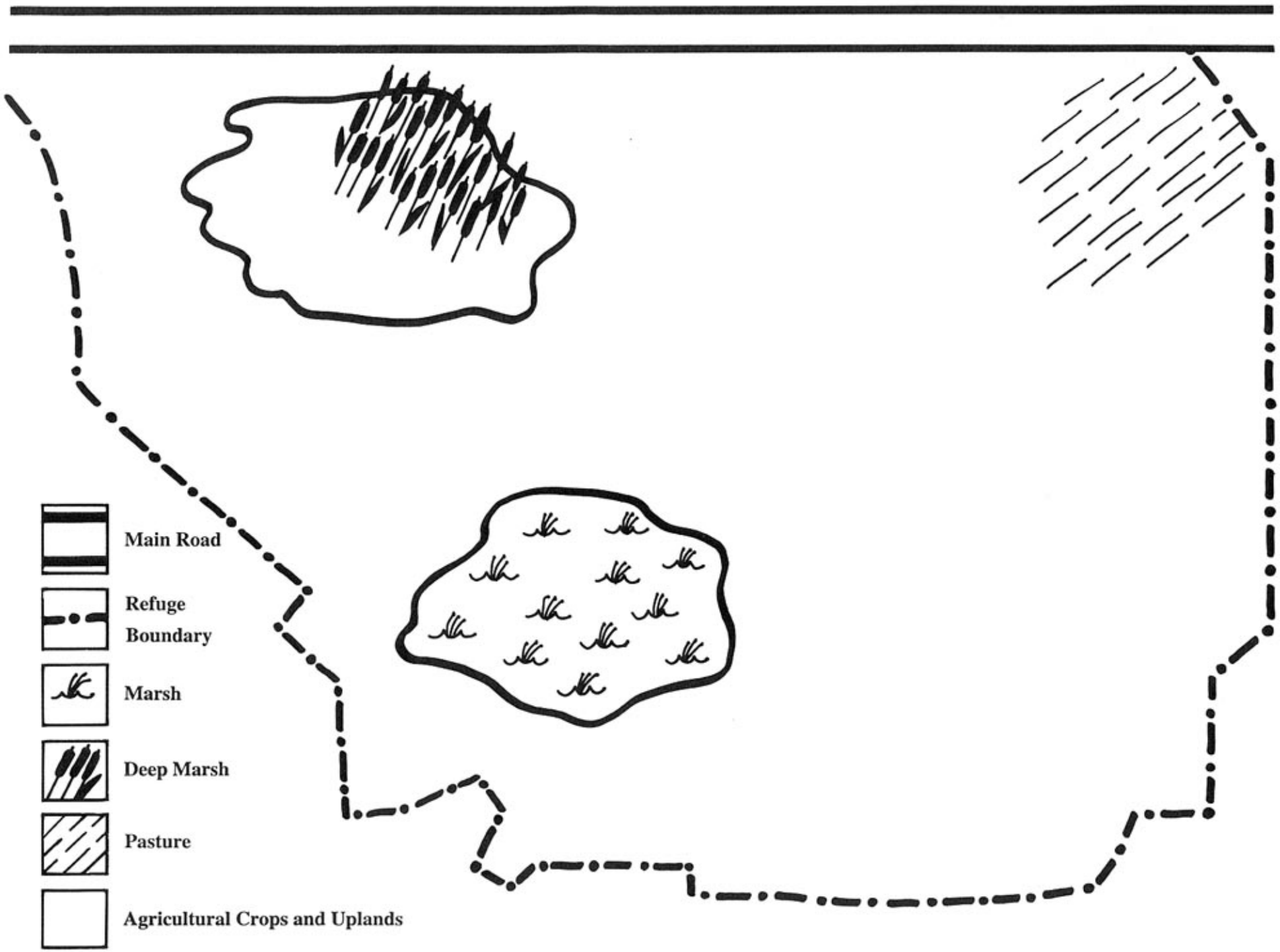
A main road is needed to pass through the refuge so an auto-tour can be established. This road should not be located near the nesting geese.

Paths can be placed near the nesting birds, and a boardwalk extended out into the actual habitat of the birds.

Signs are needed to give clear directions.

A kiosk is a small, open exhibit, usually roofed, that contains exhibit panels that tell about the ecosystems and various wildlife in the area. You will want to locate one kiosk in the refuge.

A refuge office should be located on the property so visitors can have access to refuge staff, activities, and facilities.

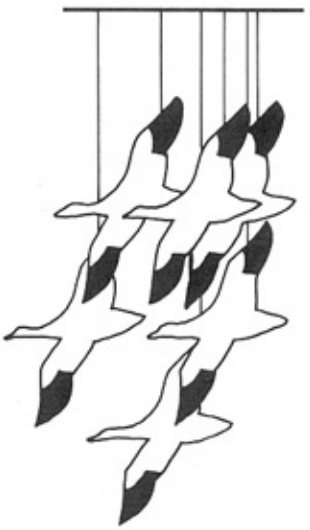

Main Road
Refuge Boundary
Marsh
Deep Marsh
Pasture
Agricultural Crops and Uplands

FLOCK OF SNOW GEESE

Run on tag board

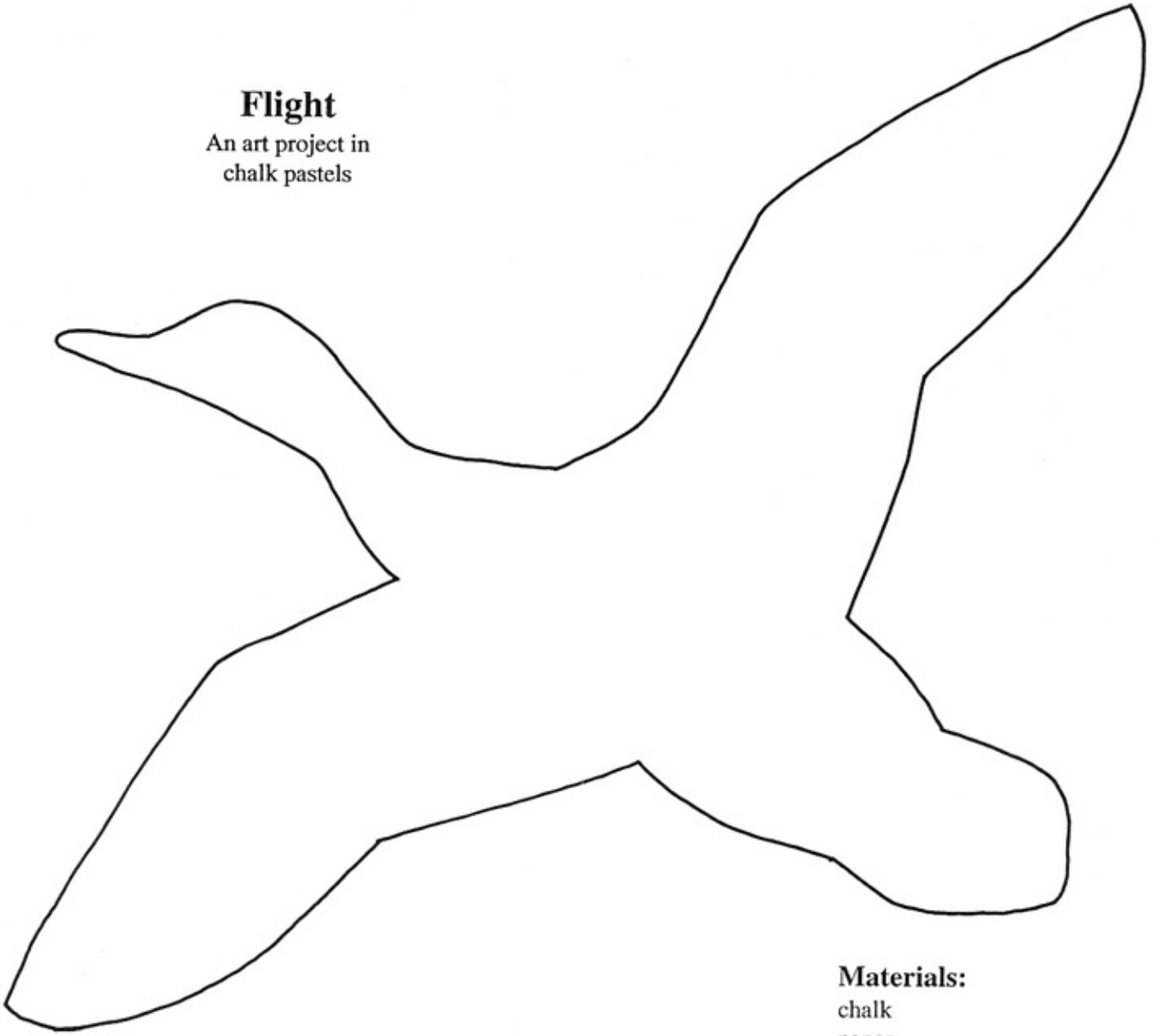
Using this stencil, have each student make a bird, and add it to the "flock".

One wire hanger will take at least a flock of six.



Flight

An art project in
chalk pastels

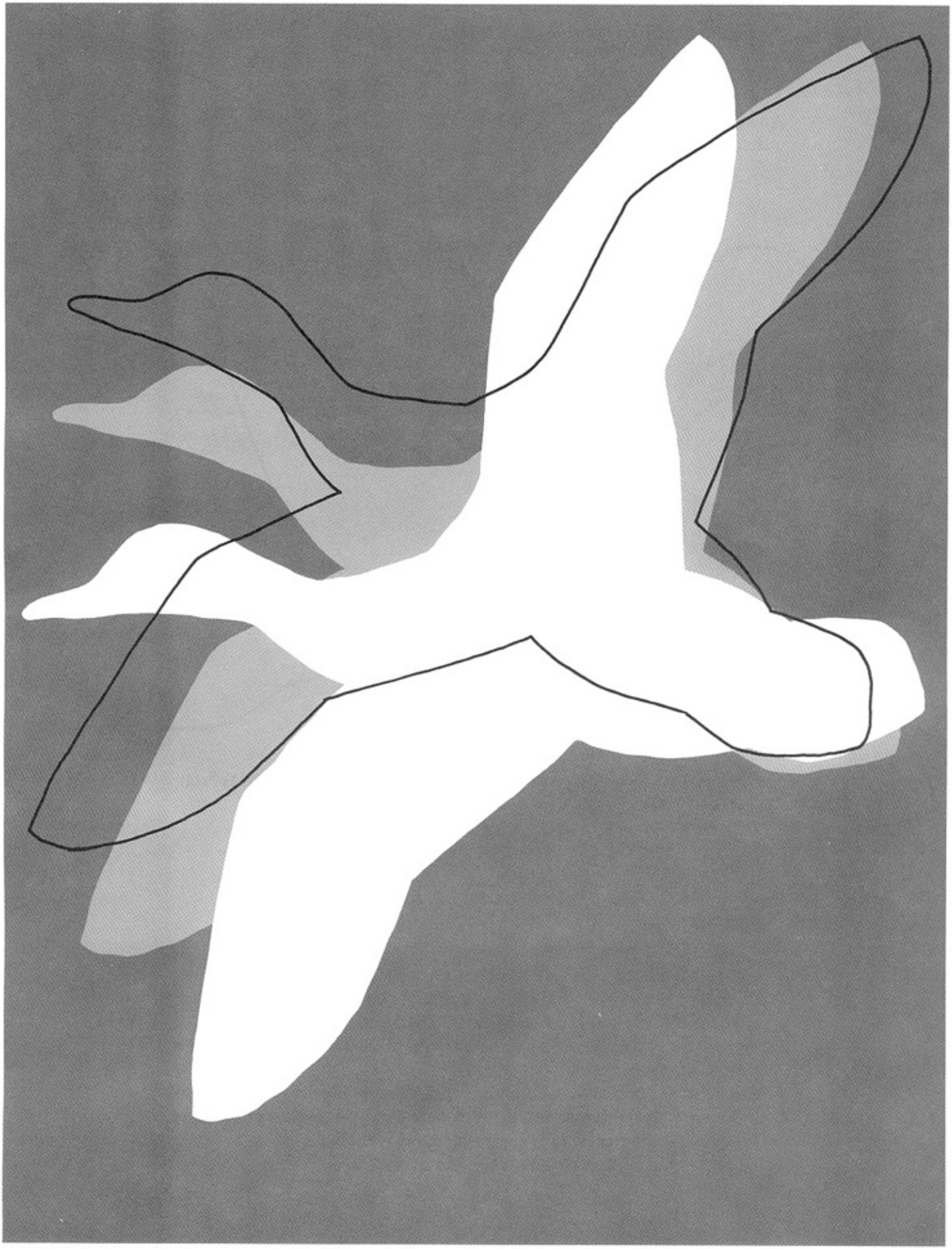


Materials:

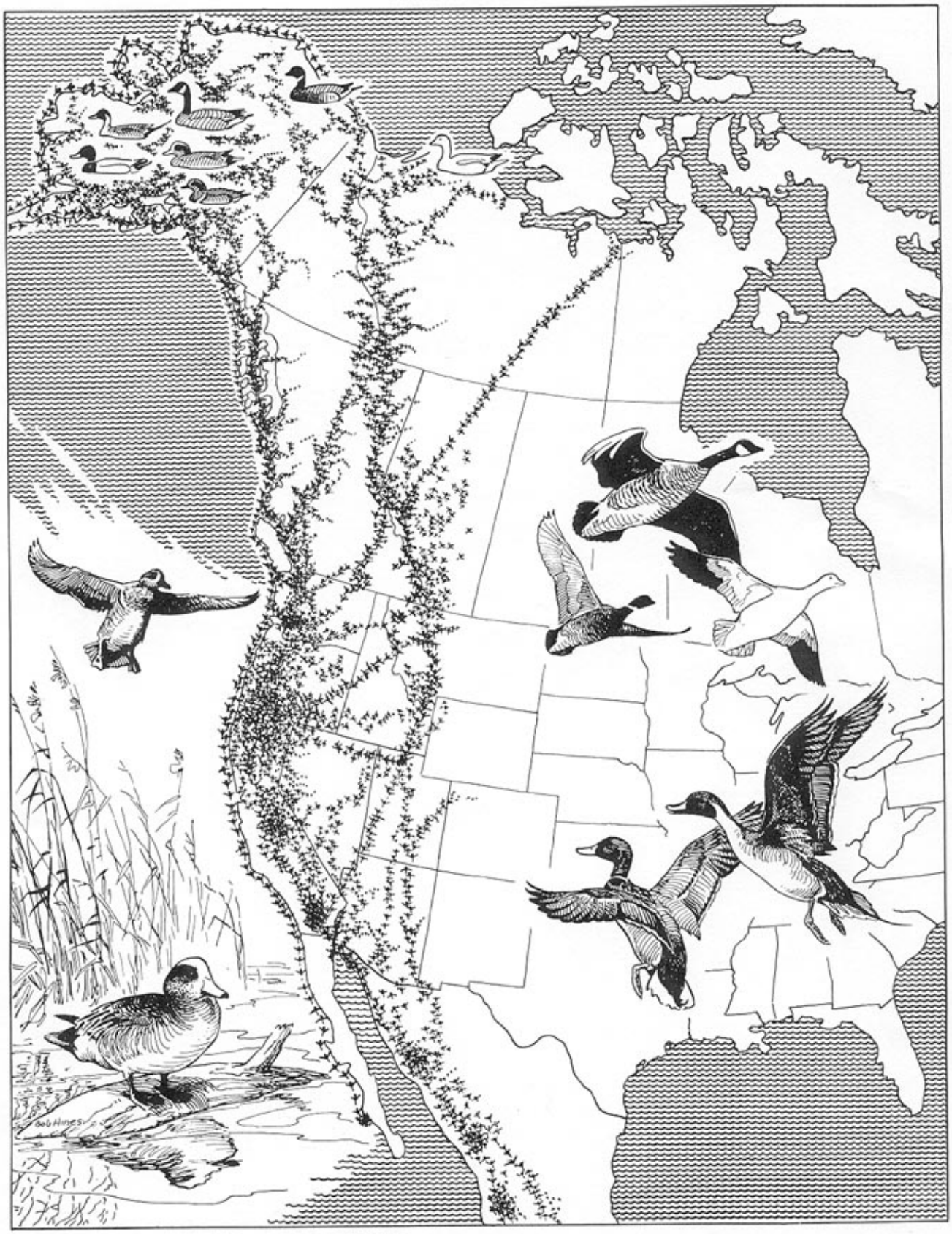
chalk
paper
scissors
Kleenex

Run on tagboard

1. Cut out the stencil and chalk it heavily on one side.
2. Place it on clean paper, and holding it firmly with one hand, use the other hand to wipe the chalk from the center of the bird to the edges of the paper.
3. Prepare the bird again, with a different color of chalk. Watch out for smudges on your hands or the paper.
4. Place the bird on another part of the paper, overlapping the first outline that you made, and brush this color off the bird, onto the paper and out to the edges.
5. Repeat until desired effect is achieved. Spray with fixative.
6. Finally, you may want to outline the bird in black ink.



PACIFIC FLYWAY



UNITED STATES DEPARTMENT OF THE INTERIOR • FISH AND WILDLIFE SERVICE