



DYNAMITE DUCKS DEPARTING

Overview: In this activity the children will learn more about the habits and characteristics of various birds. They will participate in a migration activity, and have a hands-on look at bird parts and feathers.

California Education Standards Correlations p. 309

Grades: K-3

Key Concepts:

San Francisco Bay is an important stopover in the migration of thousands of ducks using the Pacific Flyway. The plants and animals living all around San Francisco Bay are a main food source for migratory ducks.

Objectives:

Students will be able to:

- understand why and where ducks migrate
- understand the purpose of feathers and wings

Materials:

Part 1

Story:

- *Mallards on the Move*

Part 2

- Discovery box: (containing various bird parts)
- duck decoys

Part 3

Duckercises:

- 12 arm band (the costumes)
- duck specimen (green-winged teal)

Part 4

(set up by staff)

Migration:

- 3 migration stations
- 12 rug squares to be used as nests at nesting station.

TIME FRAME FOR LEADING THIS ACTIVITY

Recommended Time: 30 minutes

Introduction (5 minutes)

- read story - "Mallards on the Move"

Discovery Box (10 minutes)

- touch and feel bird feathers and bones

Duckercises Preparation (6 minutes)

- hand out children's duck costumes
- warm up for migrating by doing various "duckercises"

Migration (9 minutes)

- assemble children at first migration station
- have children migrate to various migration stations
- follow-up questions

HOW THIS ACTIVITY RELATES TO THE REFUGE'S RESOURCES

What are the Refuge's resources?

- significant wildlife habitat
- endangered species
- migratory birds

What makes it necessary to manage the resources?

- Loss of wetland habitat due to development, such as landfills for buildings and roads, has adversely affected wildlife.

What can students do to help?

Refuge staff work to acquire and preserve wetland habitat, but we need your help.

- Reduce, reuse, and recycle, decreasing the need for landfills.
- Write to your state and federal legislators, urging them to conserve wetlands.
- Teach others what you have learned about habitats and endangered species.



SUPPORTING INFORMATION FOR THIS ACTIVITY

Migration

- Migration means that birds leave one area and fly to another. They may migrate because a place becomes too cold for them or there's no longer enough food. When the seasons change and there's more food, the birds fly back to where they were born.
- Every year, throughout North America ducks, geese, and a number of other types of birds make very long migratory flights along routes called "flyways".
- In the summer months, birds breed and raise young in the north where there is an abundance of food and space.
- Birds travel south to warmer climates in the winter, but return every summer to the north for the breeding season.
- Times and distances of migrations are not the same for all birds.
- Ducks do not begin their migration until fall, around August or September. Migratory birds may travel during the day, night, or continuously. Some birds migrate thousands of miles, while others travel less than one hundred miles. Some have a leisurely migration, while others fly swiftly to their destination.
- Most migratory birds have very powerful flight muscles, highly developed respiratory systems, hollow bones, internal air sacs, and specialized body shapes, all of which allow birds to fly high, fast, and for long periods of time.
- The routes that migratory birds take on their journeys are called "flyways". The Pacific Flyway is a major migratory bird "highway" and the San Francisco area is one of the most important stops on the west coast.
- The San Francisco Bay is an important part of this Pacific Flyway.
- The wetlands around San Francisco Bay provide important resting areas and food for migratory birds. Many birds stop in at the wetlands to eat little creatures in both the mud and waters around the Bay in order to build up fat supplies so they may complete their journeys.
- One reason the Don Edwards San Francisco Bay National Wildlife

Refuge exists is to protect migratory birds. The refuge preserves wetland habitats for resting, feeding, nesting, and wintering, and is therefore especially vital to the survival of migratory birds.

- Some birds are flying from their breeding grounds in arctic Canada and Alaska and on to their wintering grounds in Baja California or South America; others nest here, but migrate to milder climates in the south for the winter; some birds spend their winter in marshes and fly north to breed; other birds do not migrate at all. They remain in the area as permanent residents.

Ducks are known as waterfowl. Male ducks usually have very colorful feathers, while the females blend in with their surroundings. This makes it harder for the predators to find and harm them, their young, or their eggs.

- **Dabbling Ducks**, such as the shoveler and the mallard, feed off the surface while swimming. They do not dive for food, although you may see them plunge head first into the water leaving their tails sticking straight up. An interesting sight! The dabbling ducks can take off the water straight up because their wings are larger than those of a diving duck, and they are more forward on their body. This design is best for a quick take-off.
- **Mallards** are the most common wild duck in North America. They are the ancestor to most types of domesticated ducks. The mallard eats a large variety of food, including seeds, roots of marsh plants, insects, snails, tadpoles, earthworms, and small fish. The male is easily identified by his green head, white ring around his necks, and a blue patch on his wing. The female is mottled brown with a purple patch on her wing.
- **Shovelers** use their broad, shovel-like beak to feed off the water's surface (like a shovel!) They eat small plants and animals by sucking up water and sifting the food through their beaks. The male is the colorful duck, and the female is brown.

HOW TO LEAD THIS ACTIVITY BY FOLLOWING THE "DO, READ, ASK" TEACHING FORMAT

Part 1

Do

Have the students sit on the carpet squares in front of the bench. The leader sits on the bench facing the students.

Read

"Today we are going to learn about bird migration by becoming Mallard ducks."

Mallards on the Move Story (5 minutes)

Do

Read *Mallards on the Move*, showing the pictures as you read what is on the back of each picture.

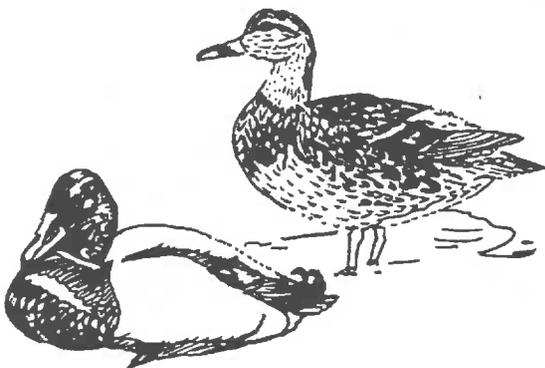
Mallards On The Move

"Allow me to introduce Marilyn and Michael, my mallard friends."



Do

Show models of the female and male mallards. Point out various features on models as you describe them in the story.



Read from book

"Marilyn is a female mallard duck. Her bill is orange with some black on the top beak. The feathers on her head and body are brown and blackish brown. When Marilyn is flying, people can see that she has a patch of blue feathers between two white band on her wings. Michael is a male mallard duck. His bill is yellow with a black tip. His head and neck are shiny green. He has a white collar and a brown chest. His wing feathers are greyish-brown with some white on

his body feathers. Both Marilyn and Michael have orange feet. When Michael is flying, people can see that he has a patch of blue feathers between two white bands, similar to Marilyn."

"During the year people live in their houses in _____ (your city or town). They might go to the beach during the summer, but mostly they stay at home. For ducks like Marilyn and Michael, life is very different. Using the Pacific Flyway, they will leave Don Edwards San Francisco Bay National Wildlife Refuge in the spring and fly north to the prairies and parklands of Canada. Marilyn and Michael enjoy living in Canada because there is plenty of food and space for them and their friends."

"In Canada, Michael and Marilyn will mate. Marilyn will lay 8-10 olive green eggs; she will keep them warm by sitting on them. In approximately 27 days the mallard ducklings will hatch! Before the ducklings hatch, however, Michael needs to molt (replace old feathers with new ones). For nine months Michael has been wearing colorful plumage to help him attract Marilyn. Now that he has mated, he is ready to exchange his worn feathers for new ones. In order to do so, he leaves Marilyn and the eggs and goes to his favorite lake. First his body feathers fall out and are replaced and then his wing feathers drop off. Until his new wing feathers grown back (in 3-4 weeks) he is unable to fly, so he hides among thick weeds in the water. Marilyn molts too, but she waits until the ducklings can survive on their own. After the ducklings hatch, they will grow and learn to fly throughout the summer. When the weather gets colder in the fall, Marilyn and her ducklings will fly south, and back to San Francisco Bay. Marilyn quacks as she flies through the air."

Do

Have all the girls quack like Marilyn:
"quack-wack-wack" (loud)

Read

"Michael also quacks as he flies south for the winter, but he migrates on his own."

Do

Have all the boys quack like Michael:
"kwek, kwek" (low-pitched)

Read

"While migrating, Marilyn and her family use the location of the ocean, rivers, mountains, and the stars to guide them throughout their journey to San Francisco Bay. During their trip south, Marilyn and the ducklings rest and feed at wetlands found along the Pacific Flyway."

"Finally they arrive in California, where it is nice and warm. Marilyn can see her usual resting spot from high in the sky. It is a wetland area with lots of floating surface plants and waterbugs to feed on. The ducklings fly, gliding toward the shallow water."

"Marilyn and the ducklings will stay in California until it is warm enough to fly back to Canada. Once they return to Canada they will mate, have more ducklings, and make the same long journey the following year. Soon we are also going to become dabbling ducks and take Marilyn and Michael's annual journey."

Part 2

Discovery Box (10 minutes)

Read

"Before we can become Michael and Marilyn, however, we need to figure out what makes a bird a bird."

Ask

? **What kind of parts does a bird have?**

(Answers will vary, but should include feathers, wings, bones, beaks, feet, etc.)

Do

Put the Discovery Box on the bench.



Read

"This is the Discovery Bird Box. It has special bird parts in here for all of you to look at. Before I open it, do you promise to be very careful when touching the parts?"

Do

Open the Discovery Box so the top lid lies down flat and move the wings back onto the inside of that top lid. Hold up some feathers.

Ask

? **What do you think these are?** (You should get the answer, "feathers.")

Do

Pass out a feather to each student.

Ask

? **How do the feathers feel?**

(Answers will vary but should include soft.)



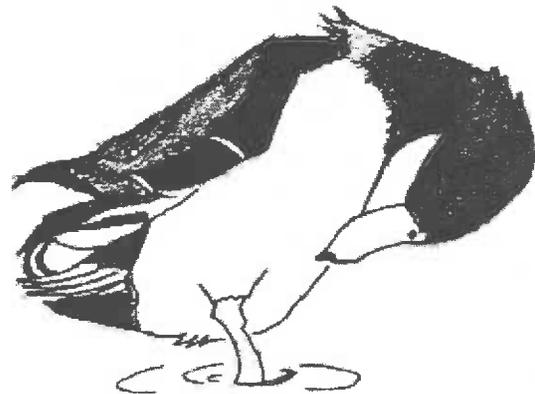
Read

"Hold your feather tightly by the shaft and near the ground so that it does not blow away. Birds use their beaks to mend their feathers that have pulled apart. This is called 'preening'."

Do

Show picture of mallard preening.

Preening Feathers



Read

"When they do this, they are spreading oil from a gland near their tail onto their feathers to make them waterproof."

Do

Have an adult (probably the chaperone) put a drop of water on each student's feather with the eyedropper and water from the bottle.



Ask

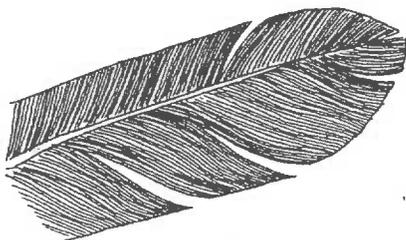
? **What happens to the water when you put a drop on the feather?** (The water runs off or forms beads without wetting.)

Do

Collect the feathers from each student. Keep one for yourself to demonstrate mending.

Read

"Birds also preen to mend torn feathers. Look closely at the feather as I separate the edges, and then as I run my fingers down the feather to put them back together." (Demonstrate this)

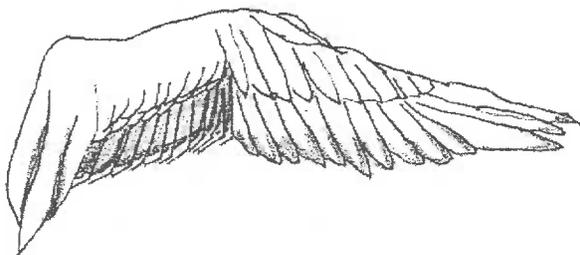


Ask

? **Why does the feather edge hold together again?** (The tips of the feather have tiny hooks that hold on to its neighboring feather strand - it is like a zipper.)

Do

Pick up the wings.



Ask

? **Why do you think birds need wings?** (So they can fly.)

Do

Hold up the two wings and show students which is the left wing and which one is the right wing. Pass the wings to the students, one down each side of the table.

Ask

? **Why is the wing so light?** (Because it is made of feathers.)

Do

Hold up a body feather and a wing feather.

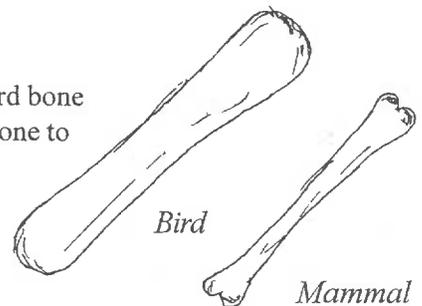


Read

"The body feather has a shaft down the middle of the feather to cover the bird body better. The wing feather has the shaft over to one side to help the bird fly better."

Do

Pass around the bird bone and the mammal bone to compare the two.



Ask

? **Why are the bird bones so light?** (A bird's bones are hollow so that their entire bodies are very light for flying.)

Do

Pass around the bag of down feathers. Do not let the students open the bag; have them feel the down through the bag.



Read

“These are called down feathers and are found underneath the big feathers we saw earlier.”

Ask

? **How do these feathers feel?** (Soft, squishy.)

Read

“These are the kind of feathers that you might find in pillows and down vests and parkas. If they can keep us warm, you can imagine that they keep the birds *very* warm. Down feathers are like the bird’s jacket. They keep Michael and Marilyn warm on their journey south.”

Do

Collect the bag of down feathers and close up everything in the Discovery Box.

Part 3

Duckercises to Get Ready for Migration

(6 minutes)

Read

“Now, to help us fly better on our migration, we will wear these feather armbands and do our duckercises.”

“All of you can get up from the ground and stand over here near the ‘nesting station.’”

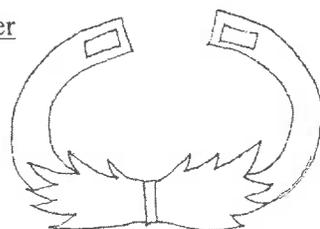


Do

Gather the students near the “nesting station”. A container marked “For Duckercises and Arm Bands,” next to the “nesting” sign. (It contains arm bands, stuffed duck, pictures of ducks with their bottoms-up, food chart dabbling ducks eat, duck taking off from the water, and a migration map of San Francisco Bay to Canada).

Do

Hand out the velcro feather arm bands and help the students put them on. Each student gets one arm band.



Read

“Now that we know a little bit more about birds, it is time to get ready to migrate. We will warm up by practicing our duckercises.”

Do

Have the students put both of their arms straight out from their sides making sure they are not touching the fingers of anyone else. Make sure all of the children have enough space between them in order to do the duckercises without hitting each other.

Ask

? **Does anyone know if dabbling ducks swim on the surface of the water or dive for their food?** (Swim on the surface of the water.)

Do

Show “Bottoms-Up!” picture of duck with head under water.



Read

“This is a picture of a dabbling duck feeding. It plunges it’s head first in the water leaving the tail sticking straight up to reach its food.”

Ask

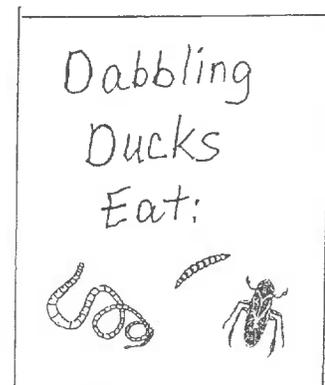
? **Does anyone know what ducks like to eat?** (Seeds, roots of marsh plants, insects, worms, small fish.)

Do

Show the picture of food, dabbling ducks eat.

Read

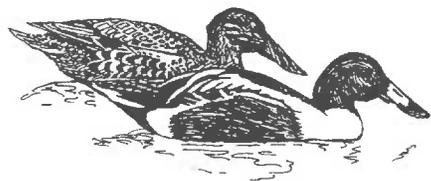
“Dabbling ducks eat by sucking up water and sifting the food through the brush-like edge on the side of their beaks.”



Do

Show the duck (northern shoveler) and point out the beak.

female



male

Read

“One thing you are going to have to do in this activity as a duck is *eat*. But, remember, you are ducks and ducks don’t have hands to pick things up with. Ducks have to bend down in order to pick things up with their beaks.”

Do

Demonstrate how a duck will eat by putting your hands behind your back and squatting your knees but keeping your legs and back straight.

Read

“Okay, ducks, let’s see all of you practice eating like a duck.”

Do

Have the students do a few “waist bends” imitating a duck eating.

Read

“Dabbling ducks take off straight up from the water because their wings are larger than those of a diving duck, and their legs are under the center of their body. This design is best for a quick take-off.”



Do

Show picture of duck taking off from the water.

Read

“Another thing you are going to have to learn to do as a duck is to get yourself ready to f

Do

Demonstrate how the ducks will get ready to fly.

- shake out their legs one at a time
- shake out their arms
- shake out their tail feathers by moving their rear end back and forth.

Read

“Okay, ducks, now let’s see all of you get ready to fly by shaking out your legs one at a time so you will be able to take off from the ground. Now shake out your wing (arm) feathers so you can fly. Now let’s shake our tail feathers.”

Do

Have the students follow you through these exercises.

Read

“Okay, now the best part of all. We need to practice flying. So to do that, we need to put our arms out and flap our arms up and down while standing in place.”

Do

Demonstrate how a duck will fly by sticking both of your arms straight out from your sides and flapping them up and down. Have the students imitate your actions as well.

Read

“Finally, we all know that ducks like to ‘quack’. So when we are flying we need to be sure to ‘quack’.”

Do

Have the students “quack.” Girls ‘quack-wack-wack’. Boys do low-pitched ‘kwek,kwek,kwek.

Part 4

Migration (9 minutes)

Read

“Okay, ducks, you are going to start out in a place far away from the San Francisco Bay, called Canada, and it’s way up north, near the Arctic. And right now in this activity it is going to be our home.”

Do

Have the students sit on the carpet squares. These are their nests.

Ask

? Does anyone know what kind of home ducks and birds live in? (a nest)

Read

"You are mallard ducks sitting in your nests in Canada. Your chicks have hatched and are growing up. You have been here during the summer and fall, now Canada is getting very COLD and you need to go someplace warm."



Ask

? What are some warm places you can think of?

(Places down south, including California.)

Do

Point out the "Wintering Migration Station" way over to the right. This is the farthest one away.

Read

"That is the Don Edwards San Francisco Bay National Wildlife Refuge. It is warmer in the winter than Canada. But it is a long way away from Canada and to get there the ducks have to fly for a long time. So when they are migrating, the ducks get hungry. They stop at places along their route to rest and feed."

Do

Point out the "Eating Migration Station."

Read

"All of you are going to fly to these places like Michael and Marilyn."

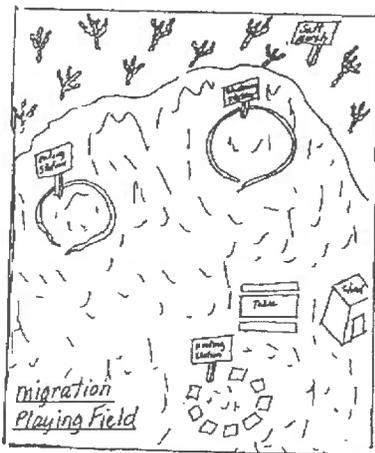
Do

Have the students stand up.

Read

"Let's get ready to fly by putting your arms straight out from your sides.

You can find your way by looking for the north star. Everyone look to the sky and pretend you see the north star. Cold weather is coming. It is time to migrate south. Stay here, I will fly ahead and then tell you when to fly to me."



Do

Get in front of the group about 1/3 of the way to the "Eating Migration Station".

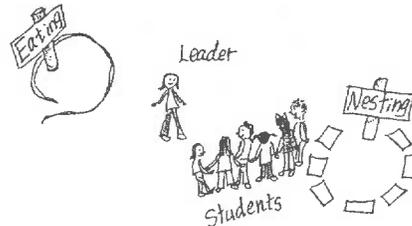
Read

"Now fly to me, and remember to flap your wings and quack."

(When they get to you...)

Read

"On the way, strong winds blow you back. Everyone pretend the winds are blowing you back."



Do

Students fly backwards from the wind gusts.

Read

"Stay here, I will fly ahead and then tell you when to fly to me".

Do

Get in front of the group about 1/2 of the way to the "Eating Migration Station".

Read

"Now fly to me, and remember to flap your wings and quack."

(When they get to you....)

Read

"Strong winds helps you fly faster on your course. Everyone flap your wings as fast as you can going toward the 'Eating Migration Station'."



Do

Students and leader fly very fast the rest of the way to the "Eating Migration Station". They stop there.

Read

"You are tired and hungry. Rest and eat on the grasslands of the river valley."

Do

Have students pretend to eat by doing waist bends.

Read

"We're going to leave the river valley and continue our journey to the "Wintering Migration Station."



"Stay here. I will fly ahead, then tell you when to follow."

Do

Get in front of the group about 1/3 of the way to the "Wintering Migration Station."

Read

"Now, fly to me, and remember to flap your wings and quack."

(When they get to you...)

Read

"On the way, heavy rains make you seek shelter until the storm passes. Rest here with your head under your wing."

Do

Have the students crouch down with their head down and have them put one arm over their head imitating the duck's head under its wing.

Read

"Everyone fly over the mountains towards the salt marshes you see by the Bay. You fly faster because you are excited about finding your winter home at the San Francisco Bay salt marshes".

Do

Children continue flying towards the "Wintering Migration Station." They move their arms up and down very fast and end up at the "Wintering Migration Station."

Read

"Everyone made it! Now you rest and eat and stay here for many months. The weather is warm and you like it here in the salt marshes. See the sign in the marsh. Look at all the salt marshes you have to rest and eat in during the winter."

Do

Children pretend to eat and rest (crouching down) for about a minute.

Read

"Now it is spring and you know the weather is getting warmer in Canada and you want to fly back to nest and have more ducklings. You can stop to eat on the way at the "Eating Migration Station" if you feel you can't make it all the way to your "Nesting Migration Station."



Do

Students fly back to the beginning "Nesting Migration Station."

Read

"Sit on your nests (carpet squares)."



Do

Collect the arm bands and put them into the container.

Ask

- ? What is the name of the trip that we just took as ducks? (A migration.)
- ? Where did we start our migration? (Canada.)
- ? Why did we start there? (Our nests are there.)
- ? Why did we migrate from Canada to California? (It is warmer in California in the fall and winter.)
- ? How long did we stay at the Don Edwards San Francisco Bay National Wildlife Refuge? Why? (Until it was spring; then left as it was getting warmer and there was plenty of food in Canada.)



? Why did we return to Canada in the spring?

(Our nests are there for us to mate and have our baby ducklings. This is called "breeding season".)

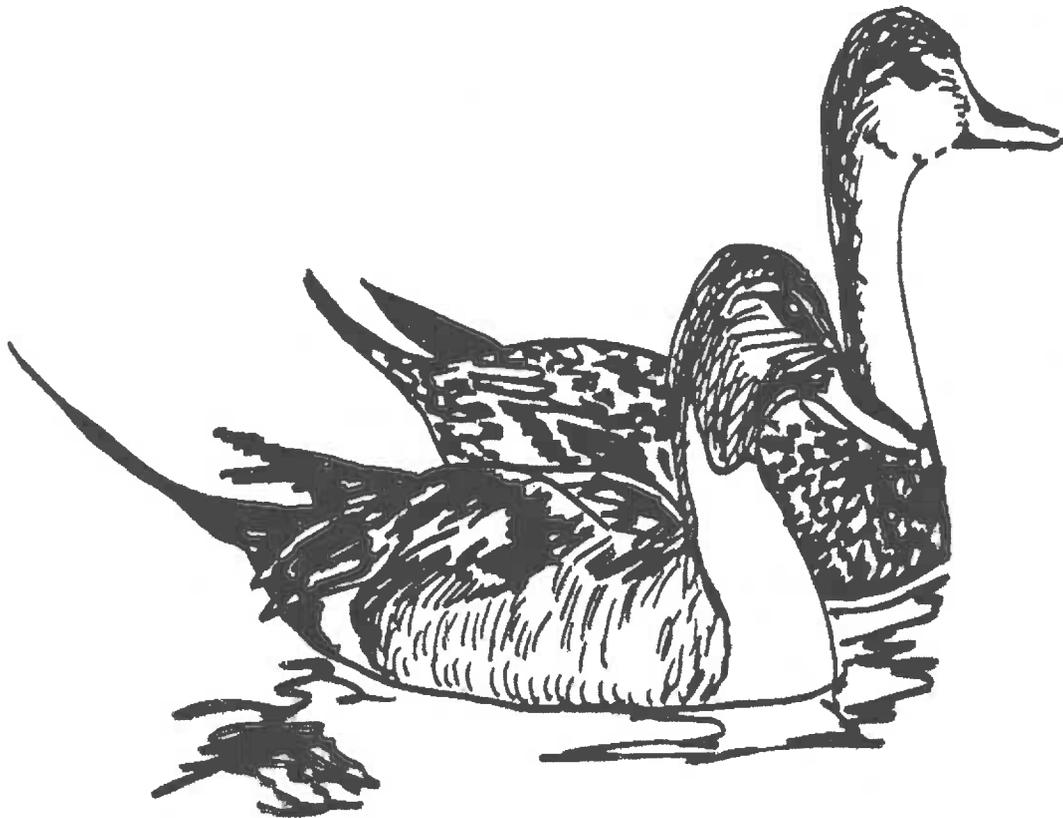
? What would happen to the ducks if the areas we migrated to disappeared? (They could starve unless they found new places to live.)

Read

"It is very important that there are places like Don Edwards San Francisco Bay National Wildlife Refuge, to protect the birds that we have seen today, and to provide a place for them to eat and rest when it gets too cold up north."

Ask

? What can we do to help protect the areas that we migrated to? (Learn more about these areas and tell others; write letters or draw pictures to send to your senators and representatives; reduce, reuse, recycle; never litter; never dump down storm drains, etc.)



Northern Pintail