



Balcones Canyon Lands National Wildlife Refuge
24518 FM 1431, Marble Falls TX 78654
(512) 339-9432 X 70, jennifer_brown@fws.gov
Cell: (830) 220-9254

MIGRATION

VOLUNTEER DIRECTIONS

- Need to Know** 1. Your station, MIGRATION, will teach students that birds must adapt to their environment by annually moving to and from their breeding grounds. When a bird migrates and where the bird migrates are examples of instinctual behavior. The students will learn about some of the changes the bird must make to undergo the migration, and the dangers of the migration itself.
2. You **must include something about the Golden-cheeked warbler and Black-capped vireo into this program (a section in this guide book has more on both birds)**. After all, these birds are the reason there is a refuge near Austin. Furthermore, all of the resource management and public use management plans on the refuge must consider how these birds will be affected by man induced impacts.
3. The section in these directions called “Organism and Environments” is a specific science TEK requirement. **Get to know the Organism and Environments TEKS and be ready to share this with the students.**
4. **A map** of the stations is in this guide book to help you direct your group to the next station. They go clock-wise in number order. Please be ready to direct your group to the next sequential station.

Sequence of Stations in Bridges to Birding

1. What is a Bird?
2. Using a Field Guide
3. How to Use Binoculars
4. Songs and Calls
5. Building a Home (different shapes of nests)
6. Habitat
7. **Migration**
8. Bird Banding

GOLDEN-CHEEKED WARBLER (GCW)

HABITAT: Old Forests with big trees; shady, dense forests in steep-sided canyons & slopes as well as drier, flat hill tops. Requires Ashe Juniper (“cedar”) bark to construct nest. Spanish Oak, Live Oak, cedar foliage provides insects, caterpillars, spiders, beetles for food.

TERRITORY: 5-20 acres to forage;

NEST TERRITORY: 3-6 acres/ nesting pair



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Female constructs Cup nest in old cedar and Hardwood (oak, elm) trees at least 15' high. All nests require cedar bark. Bark is woven with spider webs. Nest is tucked in forked vertical limb & camouflaged.

Warblers usually nest only once/season unless accident or predation. Male stays nearby singing & defending during incubation.

3-4 eggs are hatched in 12 days & fledge 8-9 days later. Parents care for them for 1 month.

They migrate to pine/oak habitat of southern Mexico & Central America in July- mid-August & return in mid-March.

BLACK-CAPPED VIREO (BCV)

HABITAT: Dense, shrubby, broad-leafed (shin oak, hackberry, sumac, agarita, persimmon, Texas Mountain Laurel) young forest. Patchy habitat with 30-60% cover interspersed with open grassland. Shrubby vegetation reaching from ground level to 6- 7' high.

TERRITORY: 1-16 acres NEST TERRITORY: 2-4 acres

Male & female select nest site between 3-'6' off ground (door knob height) in dense cover. Pendulous Cup Nest is made by female from grasses and spider webs and is suspended from its rim in the fork of a branch. Nest is completed in 2-3 days.

They may nest more than once /year building a new nest each time.

Incubate 14-17 days and this work is shared by male & female (as well as fed by both). Fledge in 10-12 days.

They arrive in mid-March to mid-April and stay until mid Sept. They spend their winter in western Mexico.

COMPARING LIFE CYCLES OF DIFFERENT ANIMALS

BLACK AND WHITE WARBLER (BWW): lives in similar habitat of the Golden-cheeked Warbler (GCW), but lives in other types of forests too. Unlike the GCW that builds its nest up in a tree, the BWW builds its nest on the ground, although it is placed in woodland as well. The nest is made from leaves and grasses concealed under fallen leaves or branches at the base of a shrub. The GCW always builds its nest from long strips of bark from only old Cedar. The GCW is highly dependent upon this certain kind of tree. That is why its range is so restricted because the range of Ashe Juniper is restricted to central Texas. If the cedar were to become extinct, then the GCW would become extinct as well. Would the BWW become extinct in this situation? No, because it also can live in other types of woods and in different parts of the USA.



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The GCW cannot live in pure stands of Ashe Juniper. Since they are totally insect eaters, they depend on a diversity of trees, shrubs, and grasses to provide the numerous kinds of caterpillars and insects they require for themselves and their offspring.

BWW creeps up and down tree trunks (similar to Nuthatches, Brown Creepers) frequently hanging upside down to probe crevices in bark grabbing spiders & caterpillars. It will thrash its prey against the tree to stun or kill it before eating it.

BBW may resemble some female woodpeckers. Woodpeckers do not walk upside down trees. Thus, even though a woodpecker and a BWW may eat insects off the same tree, the BWW is getting insects that woodpeckers miss since they are not walking upside down.

Like GCW, BWW are one of the first warblers to return in the spring because they forage on the bark of trees. They have no need to wait until the leaves emerge and eat bugs that are on the leaves. GCW arrive at BCNWR around early March.

Even though BWW are more accepting of different habitats than the GCW, their numbers are still drastically decreasing because they are frequent hosts to Brown-headed Cowbirds, are sensitive to Habitat Fragmentation, and habitat loss- just like the GCW.

WOODPECKERS: They have strong claws and short legs for clinging to tree trunks, while stiff tail feathers serve as props when climbing. Instead of the normal toe arrangement of 3 toes pointing forward and one toe pointing backwards, they have 2 toes pointing forward and to backward to facilitate vertical climbing. They have strong chisel-like beaks to dig for boring insects and hew out nests from solid wood. They can stick out their tongue several inches past the tip of its beak. Backward pointing barbs allow most Woodpeckers to spear insects. Flickers have long tongues, with a few barbs, that is coated with a sticky secretion for licking up ants. Sapsuckers tongues are bristled like a brush for lapping up sap oozing from holes drilled through the bark of living trees. Do Woodpeckers live in the desert where there are few trees? Yes. They are adapting to those habitats by utilizing large cacti, old agave bloomstalks, and utility poles to construct nests!

ORGANISM AND ENVIRONMENTS

There are complex and important relationships that organisms have with their environment. There are systems and cycles within environments.

Organisms live and survive in their ecosystem by interacting with the living and nonliving components.

Organisms undergo similar processes and have structures and behaviors that help them survive within their environments.

Example of an Interaction with the Environment



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Golden-cheeked warblers require cedar bark to build their nests for successful nesting here in Texas in the spring. The removal of cedar trees for development and grazing has resulted in the Golden-cheeked warblers having less natural environment in which to build nests and the species chances of survival have been reduced. The refuge provides an area where the cedar trees are protected which in turn protects the Golden-cheeked warbler.

Getting Ready

Use the laminated activity station sign to identify your table (in the guide book).

Set up the stations and your presentation.

Materials List

Laminated Activity Signs (2) Table

(1)

Station Guide Book

Flip board

Taking Flight!

MIGRATION

Migration is a yearly cycle involving departure from and return to breeding area.

***This behavior is Instinctual- controlled by hormones and activated by changing day length.**

There are processes that prepare the bird for the long flights like storing extra fat for fuel, changes in the density and size of the bird's flight muscles, and behavioral changes when hormones stimulate restlessness that mentally prepare the bird for the long journey.

-Since birds have high food intake requirements (high Metabolism), they generally only average 25 miles/day in distance. Although they may fly 30-50 mph, they usually need to stop to feed.

75% of the 650 North American birds do some form of migration. Members of nearly every Family Classification winter south of USA. Some birds even fly between the Continents. Most birds that breed in North America fly to Central or South America. The southern part of South America gets a winter season when North America gets into its summer season. So birds are taking advantage of seasonally available foods by migrating wherever there is food. Furthermore, since birds have high metabolism, they can take advantage of the longer summertime day to forage.

WHY MIGRATE?



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The summer habitat cannot support the birds any longer in the winter until the weather changes back to the growing season. (The 4 seasons are a Cycle). Winter conditions are too harsh- lack of food (insects). Availability of insects drops towards zero along with the temperature.

Birds use generally established routes or “flyways” and travel more or less on schedule, but are affected by the weather. These Routes follow Coasts (Atlantic), rivers, (Mississippi River), Mountain Ranges. But birds may fly over plain landscape & Gulf of Mexico.

Migration demands lots of energy. They may feed intensively at one location for several days or weeks just prior to long flights. Birds build up fat reserves up to 50% of their total body weight. Ruby-throated Hummingbirds add 2 grams of fat to its 3 gram body to be able to fly non-stop across the Gulf of Mexico! During migration birds may stop for a few days to sit out bad weather and refuel. Long distant migrators have wings that are longer and more pointed to increase efficiency. Flocks of birds may fly in linear or V-formation to reduce wind resistance for easier flying.

The most important factor determining migrating efficiency is the strength & direction of the wind. Strong head winds & cross winds require extra energy while strong tail winds increase efficiency dramatically.

Some birds migrate during the daylight hours. They depend on rising warm air for lift and then glide to next column of rising warm air (e.g., Hawks). This process only happens in daylight. Some daytime migrators can feed as they migrate (Swifts & Swallows). They catch aerial Insects to eat. Many of the daytime migrators actually fly around sunrise or sunset when it is cooler (Blue Jays, Brown-headed Cowbirds). Typically, any birds that fly during the middle of the day do so during early spring or late autumn when daytime temperatures are cooler (Bluebirds, Flickers). Geese can switch and are more likely to migrate at night in the warmer months and by day in the cooler months.

Lots of birds migrate at Night. Flying makes birds warm, so flying at night helps them to remain cooler. Also there is generally less air turbulence; therefore the birds can maintain a steadier course while exerting less energy. The majority of night migrants are small land birds such as warblers, vireos, and thrushes avoiding being visible by hawks and gulls that could easily catch them. Most of these night migrators fly in late spring & early autumn when temperatures are warmer.

DANGERS DURING MIGRATION:

1. Communication Towers: Many birds that migrate at night are drawn to the glow of the warning lights for planes atop the towers and crash into the tower, wires, or even each other. Warblers, Vireos & Thrushes seem especially prone. 5 million birds from about 190 species are killed annually from these accidents.



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Approximately 5,000 towers are installed every year to handle the surge in demand for communication services. The taller the tower, the more deadly it is. Digital TV towers require some 1,000 new towers, each at least 1,000 feet tall. In 1999 at least 50,000 towers measured at least 200'.

2. Window Panes kill roughly 100 million birds/year from at least 225 species of 917 species that live in USA & Canada. Roughly ½ die that strike a window, either instantly or later from their injuries or cats & other scavengers.

MIGRATION ACTIVITY

1. This station may be self-operating, though it will help to have someone available to make sure dice and other materials are returned. It may be presented as a more formal activity, however, with an introduction and a wrap-up.
2. Place the numbered cards provided on the following pages in order in a circuit around a field or open wooded area (hang cards from trees or along a fence).
--Attach yarn to each card, if you need to hang them.
3. Place the dice and cups for rolling dice at stations 8, 9, 13, and 15. Place flagging at station 6.
4. Spread pictures of birds on the station table, which serves as the beginning of the circuit. Participants select the bird they want to be.
5. Place the *Migration – It's a Risky Journey* instructions (in the station box) in a visible location where your game will begin. Players roll the dice to begin their journey.

Tips & Options

--Some children will want to play the game again, and if there is time, you may want to let them do so. Or, offer a more formal introduction or wrap-up to the game by discussing some of the hazards of migration.

--Tailor the game to meet the needs of your area. Teller Wildlife Refuge uses this game in the spring, so it represents a flight north. If needed, modify the game for an autumn migration south.

--Participants may play the game individually or in small groups.

Materials

- 24 Game Cards
- 5 dice
- Cups to hold dice
- 1 roll of flagging
- Bird pictures
- Instruction card
- "Results" sheets



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--Yarn or string

Quiz Your Guests

1. Approximately 75% of all birds migrate. Is that a) 1 out of 4 birds? b) 4 out of 5 birds? c) 3 out of 4 birds? (answer is "c")
2. The most important factor in migration efficiency is what? (answer "Wind speed and direction")

Take Away

Thinking about what you have learned about the dangers birds face during migration, what can you do to help? (make your yard bird-friendly by providing food during spring and winter, place bird feeders nearer windows to prevent collisions, brake for birds in your neighborhood, keep cats indoors, etc.)