Balcones Canyon Lands National Wildlife Refuge
24518 FM 1431, Marble Falls TX 78654
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STUDYING and COLLECTING INSECTS

VOLUNTEER DIRECTIONS

Need to Know

1. Your station, STUDYING INSECTS (Station #3), **Goal is to**: understand the different methods of studying and collecting insects: a transect, tagging, and collecting. Using these activities and examples:

1. Transects
2. Tagging monarchs
3. Collecting

TEKS: will have students understanding that the study of insects is a collection of cycles, structures, and processes that interact. Students will collect information through observation and measurement, using a variety of tools and methods to conduct science inquiry. Show how to catch and tag Monarchs and document information for Monarch Watch. Children participate in conducting insect transect.

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).** Any logical tie-in is good: insects as food, habitat the birds forage to find the food, insect threats to the birds, etc. 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 an Insect?
2. Insect Families and Life Cycles
3. **Studying and Collecting Insects**
4. Insect Senses
5. Aquatic Insects
6. Insect Habitat
7. Social & Beneficial Insects

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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

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.

GCWs migrate to pine/oak habitat of southern Mexico & Central America in July-midAugust & 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 (doorknob 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. Incubation is 14-17 days and this work is shared by male & female (as well as fed by both). Fledge in 10-12 days.

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

ORGANISMS AND ENVIRONMENTS

Within the living environment organisms, have characteristics, life cycles and interactions with all components of the natural environment. The natural environment plays a key role in the organism's survival. When changes in the environment occur organisms thrive, become ill or perish.

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Example of Interaction with Environment

Golden-cheeked warbles 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 warbles 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 guidebook).

Setting up the activity

a. Set up a transect about 50 feet in length and put a variety of plastic bugs along it (Be sure to remember where you put them so you can collect them at the end of the activity.)

b. Divide the children into groups of three or four and give each group a sheet to count the insects they find

c. When children return do a check to see how many of each they found.

Materials List for this Station

Laminated Activity Signs (2)
Table (1)
Station Guide Book
Flipbook
Activity Bin

Taking Flight!

Goal: Understand the different methods of studying and collecting insects: a transect, tagging, and collecting.

1. Transects
2. Tagging monarchs
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Activities (this information is in the flipbook)

1. Walking a transect - explain the technique and why scientists do transects. A transect is a line that a researcher walks through a habitat to find out what animals live there.

The same transect is walked at different times of the day and different seasons of the year to find out how the populations of species and the mix of species in a habitat changes.

2. Tagging a monarch

Monarchs migrate twice a year. In the spring one generation begins migrating from Mexico to as far north as Canada. In the fall another generation begins the migration back to Mexico.

The generation of butterflies that heads north is not the same generation that comes back south. There are several generations of monarchs in between the two migrations.

Scientists are unsure how the generations communicate the information about where and when to migrate. To track the migration, monarchs are caught and tagged with small paper tags which are stuck to their wings. Each label has a unique number. When the monarch is recovered the number is reported back to the scientists tracking the migration. They keep a large database of each location when and where each butterfly was tagged and when and where it was found again. By combining these locations the scientists can draw lines indicating the migration path of the monarchs.

In October, the rangers at Balcones Canyonlands NWR tag monarchs as part of this study.

3. Collecting

In order to show what types of insects are found in an area scientists often collect and mount insects. The insects are caught, killed, and then pinned to show to others. This is important for many reasons.

PURPOSES OF COLLECTING: (1) create reference collections for study and appreciation; (2) document regional diversity, frequency, variability of species as well as representation in environments undergoing or threatened with alteration by man or natural forces; (3) serve as voucher specimens for published records and checklists; (4) compliment a planned research endeavor; (5) aid in dissemination of educational information; and (6) augment our understanding of taxonomic and ecological relationships. Explain how insects are captured using nets, pitfall traps, and siphon.

OPTION:

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You can easily show students how to make their own butterfly net from an old pillowcase, 2 hangers, tape or wire, and an old broom handle or stick. The hangers are straightened out, connected together, and bent into a circle; then treaded through a hole in the pillowcase opening where the material folds back on itself so that the wire is inside the lip, and then the emerging ends of the wire are taped or wired to the handle or stick. Make one at home and bring it to show the students!

Transect Activity Materials

1. Posters about monarch and their migration
2. Markers for the starting and ending points of transect
3. Plastic insects, spiders, scorpions
4. Census sheets laminated for reuse
5. Clipboards with erasable markers tied to them with a string
6. Paper towels to erase sheets for reuse

Transect Activity

1. Set up a transect about 50 feet in length and put a variety of plastic bugs along it (Be sure to remember where you put them so you can collect them at the end of the activity.)
2. Divide the children into groups of three or four and give each group a sheet to count the insects they find.
3. When children return do a check to see how many of each they found.

Quiz Your Guests

1. Do the same monarch butterflies that migrate north return south in the winter? (NO)
2. Describe your favorite way to capture an insect. (net, deadfall, siphon)

Take Away Name one method of collecting insects. (*aspirator, sheet trap, pitfall trap, sweeping)*