

Pocket Forest Lesson Plan - Mini Greenhouse Assembly

Content Area	ENVIRONMENTAL SCIENCE	Grade Level	6-8
Topic	Mini Greenhouse Assembly	Duration	50 minute block
Objective: Students will be able to...		Assessment: Students will demonstrate mastery of the objective by...	
Assemble a mini greenhouse to be used to grow plants that will be later planted in the pocket forest		Being able to follow instructions to plant seeds and assemble their greenhouse	
Standards addressed: *The following standards could be part of a larger lesson that includes the creation of the milk jug greenhouses:*			
<p>7.MS-LS1-4. Construct an explanation based on evidence for how characteristic animal behaviors and specialized plant structures increase the probability of successful reproduction of animals and plants.</p> <ul style="list-style-type: none">- Examples of plant structures that affect the probability of plant reproduction could include bright flowers attracting butterflies that transfer pollen, flower nectar, and odors that attract insects that transfer pollen, and hard shells on nuts that squirrels bury. <p>7.MS-LS2-3. Develop a model to describe that matter and energy are transferred among living and nonliving parts of an ecosystem and that both matter and energy are conserved through these processes.</p> <p>8.MS-ESS3-5. Examine and interpret data to describe the role that human activities have played in causing the rise in global temperatures over the past century.</p> <ul style="list-style-type: none">• Examples of human activities include fossil fuel combustion, deforestation, and agricultural activity.• Examples of evidence can include tables, graphs, and maps of global and regional temperatures; atmospheric levels of gases such as carbon dioxide and methane; and the rates of human activities.			
Materials	<ul style="list-style-type: none">- Transparent milk/water gallon jugs (amount can be one per student or students can assemble in pairs)- Soil- Access to water- Scissors- Duct tape- Sand- Plant/flower seeds- Sharpies		
Instruction	<ol style="list-style-type: none">1. Set up the stations ahead of time:<ol style="list-style-type: none">a. Jug cutting station (cut the milk jug an inch from the handle all the way around, horizontally, to about an inch away from the other side of the handle so the milk jug opens but is still attached)b. Soil filling station (students use cups to fill their milk jugs)c. Seed planting station (students choose which seeds they want to plant and sprinkle them on top of the soil).d. Sand station (students sprinkle sand on top to set the seeds to the soil)e. Labeling and taping station (students will tape their milk jugs shut, keeping the cap off, and label the jug with the seeds that are planted inside, the student’s name, and the date).2. Begin the lesson by introducing students to the reason for the mini greenhouse assembly (they already have knowledge of the pocket forest).3. Explain what they will do at each station		

	<ol style="list-style-type: none"> 4. Describe the seeds they have available to them 5. Pass out the materials and have students begin 6. If there is time left over after all students have assembled their greenhouse, project pictures of what some of the plants that they planted in their greenhouse will look like when fully bloomed.
Home Study	Tell students about any upcoming volunteer opportunities at the pocket forest as well as give them ideas for what they can do at home to encourage the planting and growth of native plants.

Pocket Forest Lesson Plan- Pocket Forest Monitoring

Content Area	ENVIRONMENTAL SCIENCE	Grade Level	6-8
Topic	Pocket Forest Monitoring	Duration	Two-three 50 minute blocks
Objective: <i>Students will be able to...</i>		Assessment: <i>Students will demonstrate mastery of the objective by...</i>	
Identify multiple factors that can influence and affect the development of the pocket forest. These include: <ul style="list-style-type: none">- Weather conditions- Evidence of wildlife- Soil pH- Soil moisture- Light intensity		Completing a pocket forest monitoring sheet	
Standards addressed: <i>Massachusetts science standards that are addressed in this lesson</i>			
<p>7.MS-LS1-4. Construct an explanation based on evidence for how characteristic animal behaviors and specialized plant structures increase the probability of successful reproduction of animals and plants. Examples of animal behaviors that affect the probability of animal reproduction could include nest building to protect young from cold, herding of animals to protect young from predators, vocalizations and colorful plumage to attract mates for breeding.</p> <ul style="list-style-type: none">• Examples of animal behaviors that affect the probability of plant reproduction could include (a) transferring pollen or seeds and (b) creating conditions for seed germination and growth.• Examples of plant structures that affect the probability of plant reproduction could include bright flowers attracting butterflies that transfer pollen, flower nectar, and odors that attract insects that transfer pollen, and hard shells on nuts that squirrels bury.			
<p>7.MS-LS2-3. Develop a model to describe that matter and energy are transferred among living and nonliving parts of an ecosystem and that both matter and energy are conserved through these processes.</p> <ul style="list-style-type: none">- Cycling of matter should include the role of photosynthesis, cellular respiration, and decomposition, as well as transfer among producers, consumers (primary, secondary, and tertiary), and decomposers.- Models may include food webs and food chains.			
Materials	<ul style="list-style-type: none">- Soil pH, soil moisture, light intensity monitor- Pocket forest monitoring hand out- Clipboards		
Instruction	<ol style="list-style-type: none">1. Walk students through the monitoring hand out...what is included in each section? What should they be on the lookout for?2. Provide students with the “Animal Signs” handout so they can use it as they are making their observations.<ol style="list-style-type: none">a. Walk them through the guide and show them examples of what they might see while observing the pocket forest (evidence of animal homes, animal tracks, animal scat, etc.)3. Demonstrate how to use the Soil pH, soil moisture, light intensity monitor4. Bring students outside to the pocket forest and have them work on completing their monitoring sheet (you may need to bring them outside on another day to complete their monitoring)		

Pocket Forest Monitoring

Names:

Date:

Description of the weather:

Are drought conditions present? How do you know?

Is there any evidence of wildlife? What did you see? Explain.

Was there evidence of animals eating plants? Use the reference sheet to describe the type of leaf destruction and what type of animal may have done this.

Describe the area you are monitoring: what does it look like? What types of plants are there?

Soil Ph

Soil Moisture

Light intensity

Any evidence of animal tracks or scat? Use the reference sheet to help you.

Pocket Forest Monitoring

Names:

Date:

Description of the weather:

Are drought conditions present? How do you know?

Is there any evidence of wildlife? What did you see? Explain.

Was there evidence of animals eating plants? Use the reference sheet to describe the type of leaf destruction and what type of animal may have done this.

Describe the area you are monitoring: what does it look like? What types of plants are there?

Soil Ph

Soil Moisture

Light intensity

Any evidence of animal tracks or scat? Use the reference sheet to help you.

Pocket Forest Lesson Plan- Plant Slide Creation

Content Area	ENVIRONMENTAL SCIENCE	Grade Level	6-8
Topic	Pocket Forest Plant Slide Creation	Duration	Three-four 50 minute blocks
Objective: <i>Students will be able to...</i>		Assessment: <i>Students will demonstrate mastery of the objective by...</i>	
Choose a plant from a list provided, do research, and create one google slide describing the plant.		Students will create an informational slide about one plant. They will then use the slides to identify plants within the pocket forest.	
Standards addressed: <i>Massachusetts science standards that are addressed in this lesson:</i>			
7.MS-LS2-3. Develop a model to describe that matter and energy are transferred among living and nonliving parts of an ecosystem and that both matter and energy are conserved through these processes. - Cycling of matter should include the role of photosynthesis, cellular respiration, and decomposition, as well as transfer among producers, consumers (primary, secondary, and tertiary), and decomposers. - Models may include food webs and food chains.			
Materials	<ul style="list-style-type: none">- Chromebook- Access to the “leaf shape” identification chart		
Instruction	<ol style="list-style-type: none">1. Provide students with a list of all of the plants in the pocket forest.2. Have each student or pair of students choose one plant from the list.3. Provide students with access to the plant identification slides.4. Give them an example of how to complete each section of the slide.5. Provide them with time to research and complete the slides.6. Once all students have finished, each group will present their slide. <p>*All plants in the pocket forest should be numbered. The teacher will have the master copy of the list.*</p> <ol style="list-style-type: none">7. After all groups have presented, students will bring printed copies of the slides outside to the pocket forest. They will have to use the slides to identify three different plants using the slides.8. The teacher will have the master list and students will have to check in with the teacher when they think they have identified a plant.		

Plant Common Name:

Scientific name:

Researched by:

Cultural uses:

Interesting facts:

Plant description:

Habitat:

Wildlife preference:

Leaf shape:

Tree/plant shape:

Flower description (color, bloom time):

Plant height:

Picture:

1. ANIMAL SIGNS

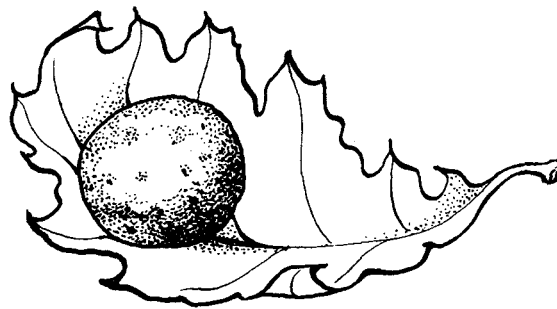
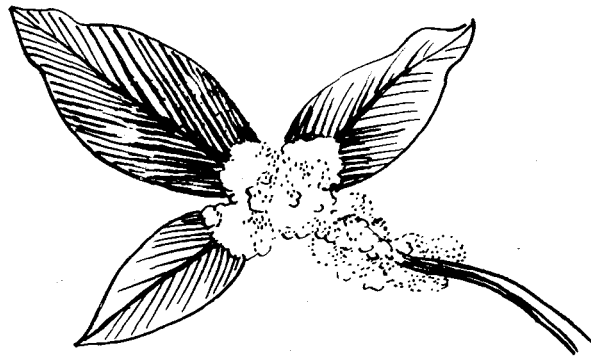
ABOUT THIS SECTION

KNOWING WHERE TO LOOK

When searching for animals and their signs, students tend to look only on the ground. The "Where to Look" page helps them expand their focus. It provides tips on what animals and signs they might find in many locations.

KNOWING WHAT TO LOOK FOR

The "Signs of Animals Eating Plants" and other animal signs pages help students develop search images for evidence of animal activity. Although the signs illustrated on these pages are only a sampling of those likely to be found at your study site, they provide a starting point to help your students notice things they often overlook. This new perspective will help them piece together clues about interactions among animals and their food sources.



FINDING THE "WHAT" AND FIGURING OUT THE "WHO"

Once students have found an animal sign, they'll need to figure out who made it. The signs illustrated in the animal signs pages are labeled with the names of the animals that make them. If students find a sign that's not included here, they can compare it to the illustrations to try to narrow down the type of animal (e.g., an insect, a bird) that could have made the sign.

Some animal signs, such as a nibbled leaf or a seed-filled scat, are direct evidence of what an animal is eating. Other animals signs, such as a nest or a track, simply reveal an animal's presence. Once students trace either of these kinds of signs to the animal who made them, they're ready to consult the "Animals and Their Foods" chapter to complete their detective work!

WHERE TO LOOK

IN THE AIR

- ☐ up high for flying or soaring birds
- ☐ around plants for flying insects

IN SHRUBS, CACTI, AND TREES

- ☐ on branches, arms, and twigs for galls, eggs, nests, browse marks, insects, spiders, mammals, tree frogs, snakes, and bird droppings
- ☐ on trunks for woodpecker holes, scratch marks, cocoons, webs, and ant trails
- ☐ in holes, pleats, and crevices in bark for nests, scorpions, pseudoscorpions, beetles, daddy-longlegs, and other small organisms
- ☐ on flowers and fruits for insects and signs of eating
- ☐ on leaves, stems, and vines for tree frogs, insects, insect eggs, snails, galls, and signs of eating

AMONG LOW PLANTS

- ☐ in moss clumps for tiny animals
- ☐ in grass for trails, clipped leaves, and matted bedding
- ☐ in thickets for signs of rabbits, such as droppings, and clipped twigs or grass leaves
- ☐ on stems and leaves for insects, spiders, galls, insect eggs, bird droppings, and signs of eating
- ☐ on flowers for bees, flies, butterflies, moths, and spiders



ELSEWHERE

- ☐ on and around tree stumps, fence posts, and rocks (perches) for scat, nutshells, and other leftovers
- ☐ on fence posts and walls for birds, spiders, lizards, small mammals, snails, and insects
- ☐ in sunny areas for animals basking
- ☐ on building ledges and windowsills for birds, nests, and bat roosts
- ☐ in drainpipe ends, and holes in bricks and cinder blocks for spiders and insects
- ☐ on pavement and in sidewalk cracks for insects and other animals
- ☐ in wet areas for animals drinking

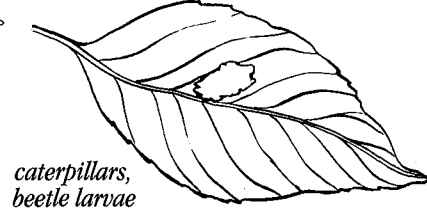
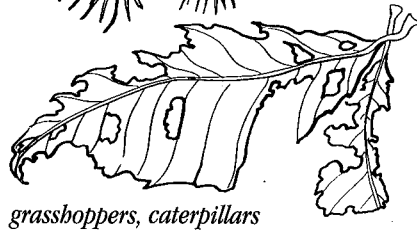
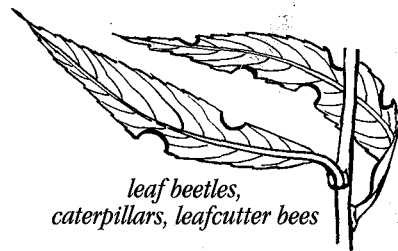
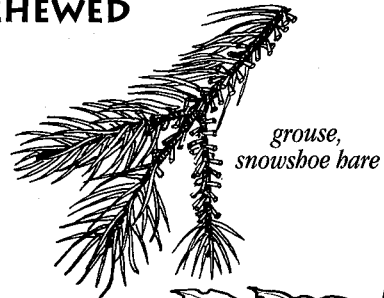
ON THE GROUND

- ☐ between plants for scat, worm castings, bird droppings and pellets
- ☐ under rocks, boards, logs, bricks, and trash for salamanders, toads, skinks, sow bugs, centipedes, millipedes, ants, snakes, scorpions, and beetles
- ☐ in leaf litter and surface soil for seed caches, earthworms, sow bugs, millipedes, beetles, and other small animals
- ☐ in sandy or muddy areas for tracks
- ☐ under plants for bird nests, mammal tunnels, mouse holes, rabbit dens, tracks, snakes, lizards, salamanders, and other animals
- ☐ in rotting logs, stumps, and under bark for termites, beetles, insect larvae, ants, skinks, and lizard eggs

SIGNS OF ANIMALS EATING PLANTS

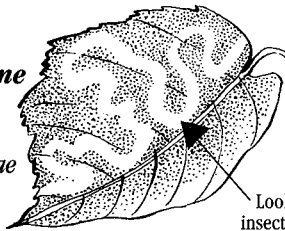
LEAVES

CHEWED



MINED

serpentine mine
fly and moth larvae



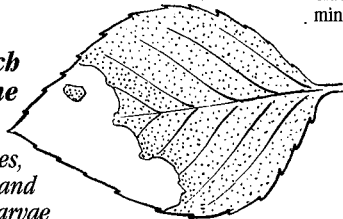
Look for insect larvae inside the mines.

blotch mine
fly and moth larvae

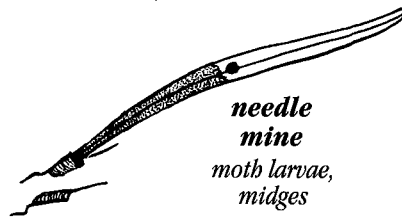


patch mine

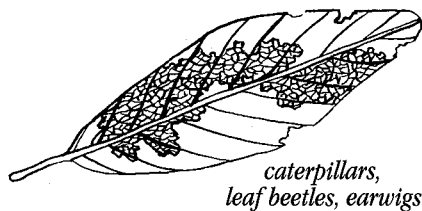
beetles, moth and beetle larvae



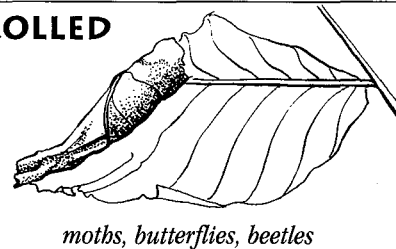
needle mine
moth larvae, midges



SKELETONIZED

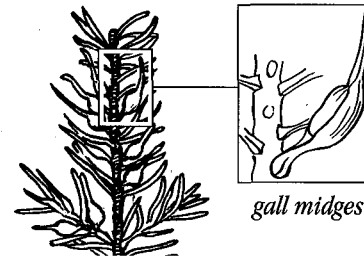
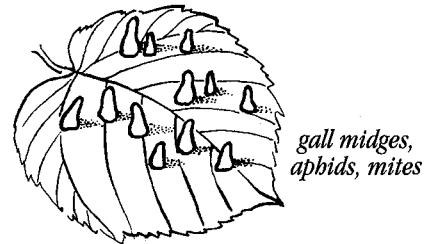
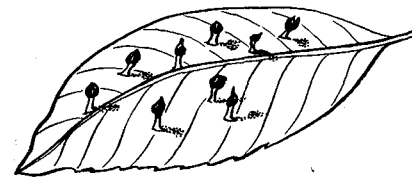


ROLLED

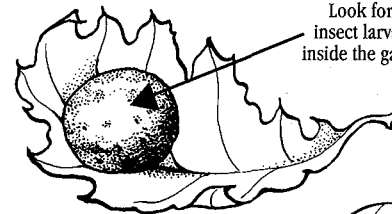


GALLED

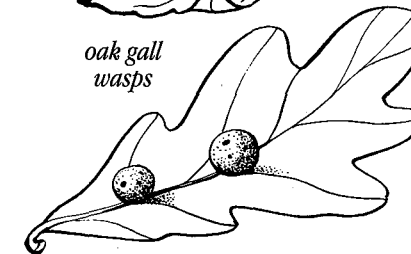
mites



Look for insect larvae inside the galls.



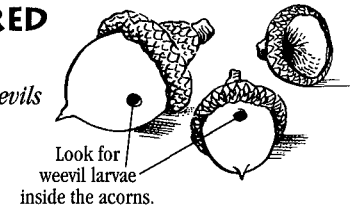
oak gall wasps



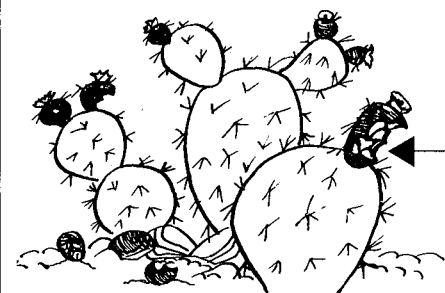
SEEDS, NUTS, AND FRUITS

BORED

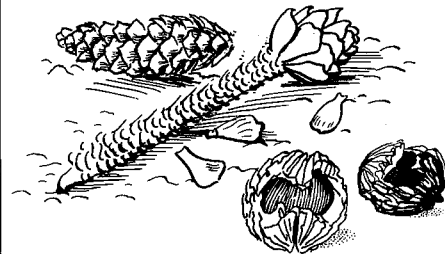
weevils



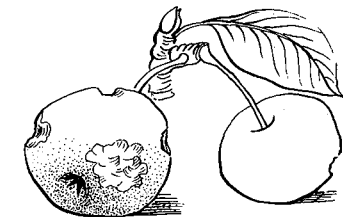
CHEWED



kangaroo rats, orioles, coyotes



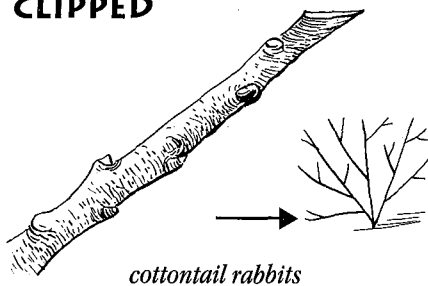
red and gray squirrels, chipmunks, jumping mice, white-footed mice, deer mice



white-footed mice, deer mice, fox, deer, opossum, woodchucks

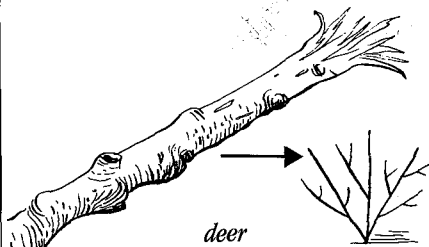
STEMS AND TWIGS

CLIPPED



cottontail rabbits

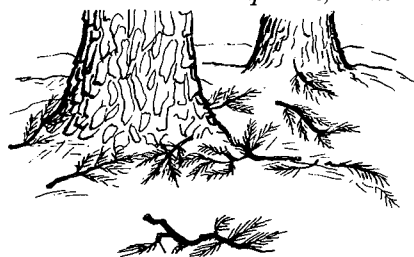
CHEWED



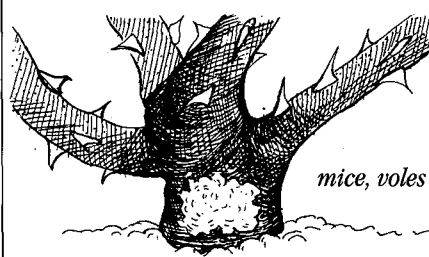
deer

PRUNED

*porcupines,
red squirrels, beetles*



GNAWED

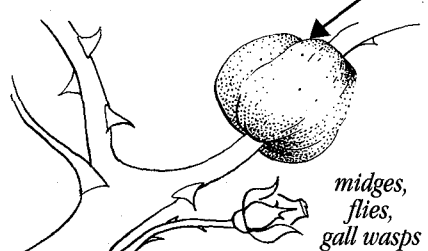


mice, voles

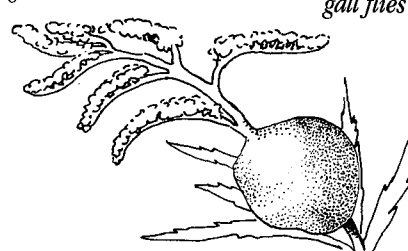
GALLED

Look for insect larvae
inside the gall.

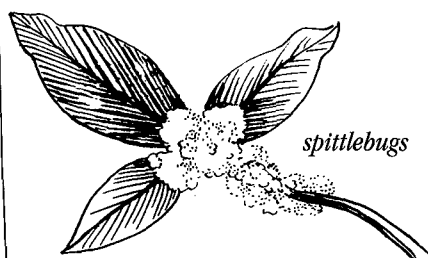
*goldenrod
gall flies*



*midges,
flies,
gall wasps*

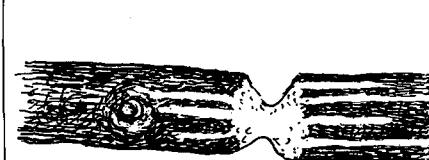


FROTHED



spittlebugs

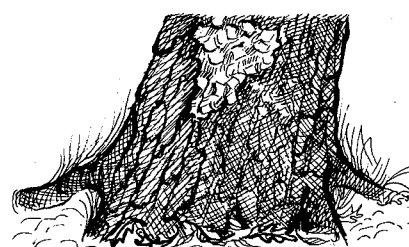
GIRDLED



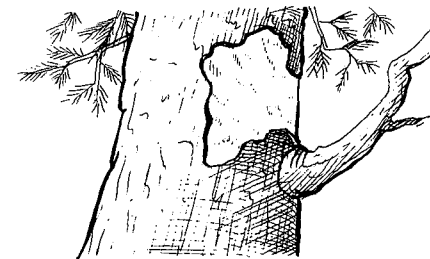
twig pruner beetles

TRUNKS, LIMBS, AND LOGS

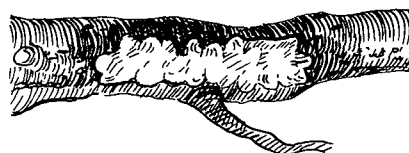
BARK STRIPPED



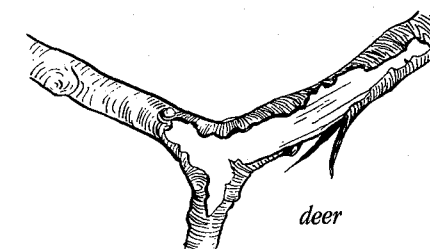
woodchucks, squirrels



porcupines

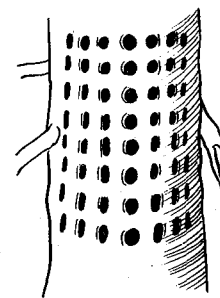


rabbits, hares

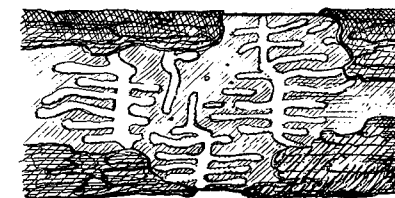


deer

BORED

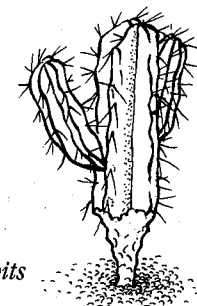


sapsuckers

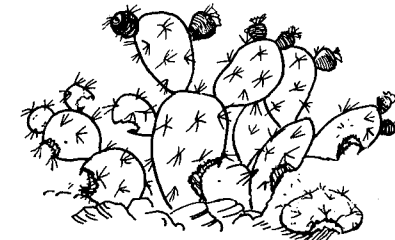


bark beetles

CHEWED



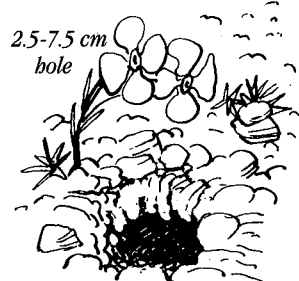
cottontail rabbits



*cottontails, jackrabbits, ground squirrels,
tortoises, woodrats, pocket mice*

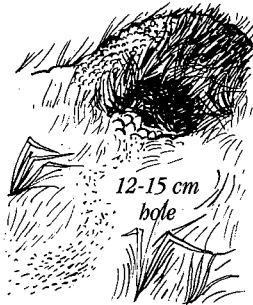
HOMES, TRAILS, AND SCRATCHINGS

BURROWS AND NESTS



2.5-7.5 cm
hole

shrews, voles, moles, mice,
chipmunks, red squirrels,
prairie dogs, ground squirrels,
lizards, pocket gophers



12-15 cm
hole

woodchucks, skunks,
raccoons, rabbits, foxes,
opossum



deer mice, voles



mice, gray squirrels



woodrats



deer mice

TRAILS AND TUNNELS



voles



shrews



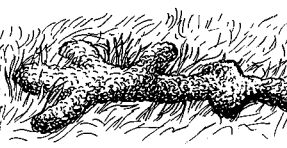
shrews



rabbits

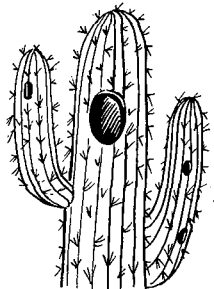


moles



gophers

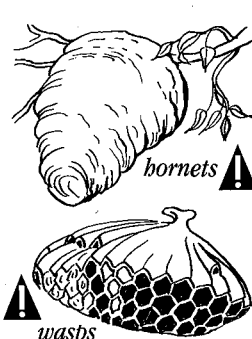
OTHER ANIMAL HOMES



woodpeckers, owls, flickers,
rats, mice, lizards



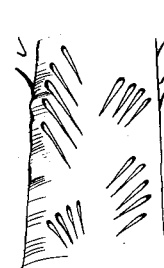
raccoons, opossum, squirrels,
white-footed mice



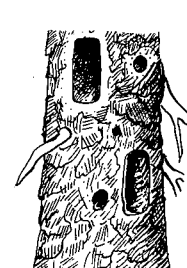
hornets

wasps

DIGGING, SCRATCHING, AND PECKING



squirrels, opossum,
porcupines, raccoons



woodpeckers



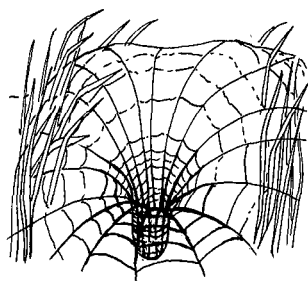
skunks, squirrels,
chipmunks



skunks

WEBS, EGGS, AND COCOONS

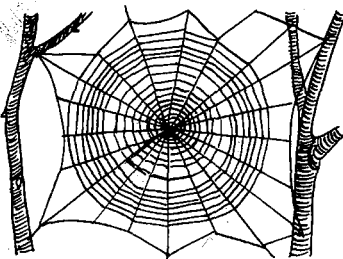
WEBS



funnel web spiders



hammock spiders



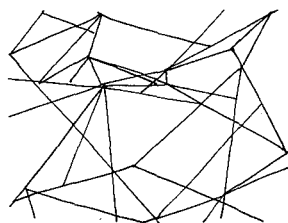
orb spiders



webworms
(wide v-winged moths)

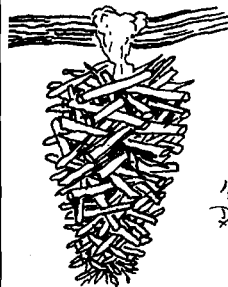


tent caterpillars
(wide v-winged moths)

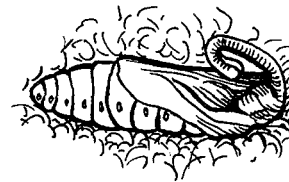


comb clawed spiders

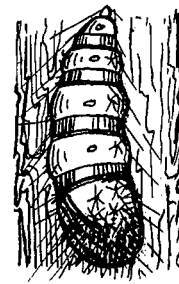
COCOONS AND CHRYSALIDES



bagworm moths
(narrow v-winged moths)



hawk moths
(wide v-winged moths)



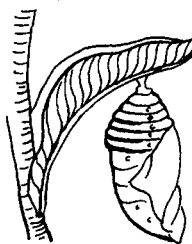
gypsy moths
(wide v-winged moths)



polyphemus moths
(large silkworm moths)

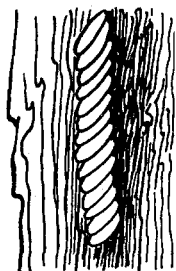


cecropia moths
(large silkworm moths)

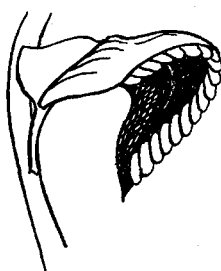


monarch
butterfly larvae
(other large butterflies)

EGGS



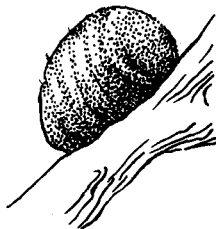
cicadas



katydids

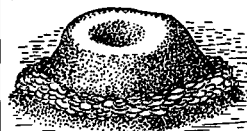


gypsy moths

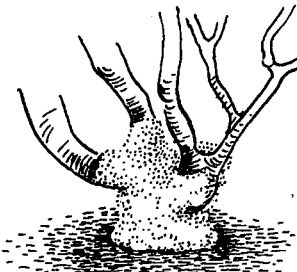


mantids

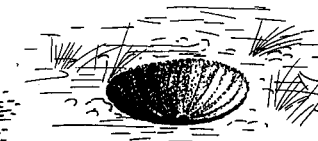
MOUNDS AND PITS



ants



termites



ant lions

TRACKS AND SCAT

MAMMALS

TRACKS

mice and shrews



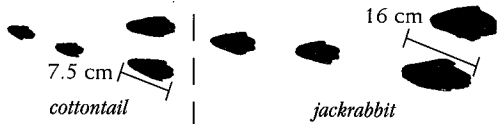
rats



squirrels



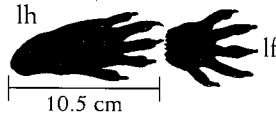
rabbits



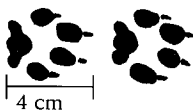
opossum



raccoons



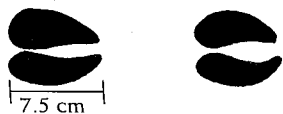
foxes



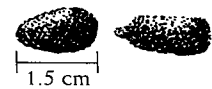
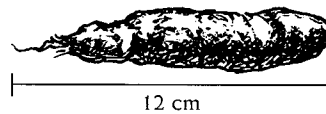
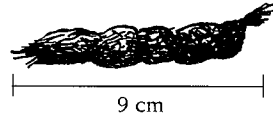
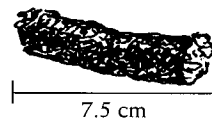
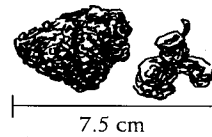
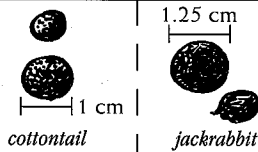
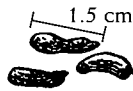
coyotes



deer



SCAT ⚠



BIRDS

TRACKS

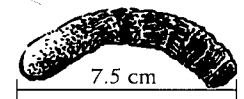
grouse



wild turkeys

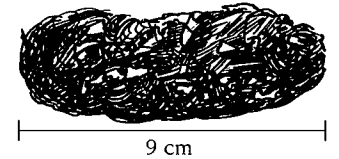
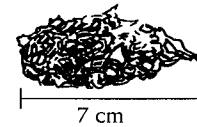
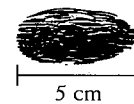


SCAT ⚠



PELLETS

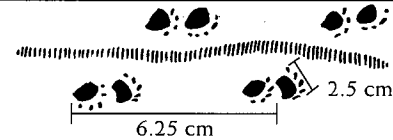
regurgitated pellets of nondigested hair, bones, and fur



REPTILES

TRACKS

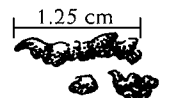
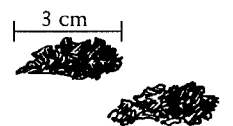
turtles



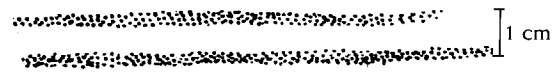
snakes



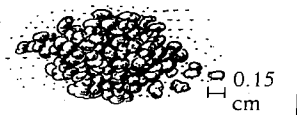
SCAT ⚠



ANIMALS WITHOUT BACKBONES



centipede tracks



earthworm castings

BIRDS *continued*



DOVES

	HABITAT	WHERE FOUND	Plants					Animals	Other
			Grasses	Herbs	Shrubs/Vines	Trees	Cacti		
Doves (illustrated above)		in places with trees and shrubs; searching on ground for seeds; nesting on cactus arms, or low in shrubs	seeds	seeds, [berries— <i>Inca doves only</i>]	berries, [nectar— <i>Inca doves only</i>]		nectar— <i>Inca doves only</i>		
Rock Doves (pigeons)		near food trash; nesting on rock ledges, window ledges, and overhangs	grain in bird feed	seeds, berries				insects, earthworms	



OTHER BIRDS

	HABITAT	WHERE FOUND	Grasses	Herbs	Shrubs/Vines	Trees	Cacti	Animals	Other
Roadrunners		on the ground near shrubs; nesting in cactus arms						grasshoppers, large crawling insects, scorpions, spiders, small snakes, lizards, young ground-nesting birds, bird eggs, mice, rodents	
Woodpeckers (illustrated above)		on living or dead tree trunks and branches; in areas with low shrubs; in, on, or near cacti; on the ground near anthills— <i>flickers only</i>			berries	acorns, nuts, seeds, berries, [sap— <i>sap-suckers only</i>]	fruits	ants, adult and larval beetles, termites, crickets	



PERCHING BIRDS

	HABITAT	WHERE FOUND	Grasses	Herbs	Shrubs/Vines	Trees	Cacti	Animals	Other
Blackbirds, Orioles, and Meadowlarks		in thick brushy areas, open areas with sparse shrubs, wet areas, and parking lots; moving through tall trees; feeding on the ground; near buildings and trash— <i>grackles only</i>	seeds		berries— <i>orioles only</i>	berries— <i>orioles only</i> ; cones— <i>meadowlark only</i>		bees, grasshoppers, crickets, caterpillars, sow bugs, snails, earthworms, bird eggs, [ants, grubs, weevils, cankerworms— <i>red-winged blackbirds only</i>]	
Chickadees, Titmice, and Verdin		in edges and interiors of wooded areas; on low branches; nesting in rotting tree stumps; nesting in cacti— <i>verdin only</i>			berries, seeds	seeds, cones, nuts		moth and butterfly adults, larvae, and eggs, katydids, weevils, flies, wasps, scale insects, leafhoppers, treehoppers, aphids	
Grosbeaks, Sparrows, Finches, and Cardinals (sparrow illustrated above)		near edges of deciduous woods; in brushy undergrowth of wooded areas; in weedy, brushy, or grassy fields; perched on tips of herb stalks or tree branches; among small saplings; near buildings and orchards; in desert shrubs and thickets	seeds	seeds	fruits, berries	seeds, cones, fruits, berries		beetles, ants, bees, wasps, grasshoppers, caterpillars, flies, [aphids— <i>finches only</i>]	

KEY: Caution Vacant Lots Lawns Fields Wooded Areas Deserts Grasslands (a) adult (l) larva / nymph

BIRDS *continued*

PERCHING BIRDS *continued*

BIRDS

continued

FOOD SOURCES

Plants

Grasses

Herbs

Shrubs/Vines

Trees

Cacti








Animals

Other

PERCHING BIRDS

continued

	HABITAT	WHERE FOUND	Grasses	Herbs	Shrubs/Vines	Trees	Cacti	Animals	Other
<div> <div>Jays, Crows, Ravens, and Magpies</div> <div>Jays</div> <div>Crows and Ravens</div> <div>Magpies</div> <div>Larks</div> <div>Mockingbirds and Thrashers</div> <div>Nuthatches</div> <div>Robins and Bluebirds</div> <div>Starlings</div> <div>Swallows</div> <div>Wrens</div> </div>	<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>	<div> <div>in dense thickets; pine and oak woods; perched high in trees; on the ground</div> <div>near roadsides and orchards; in open wooded areas; feeding in grass; near trash; nesting in trees or cacti</div> <div>in open country and pine woods; near heavy brush and brush piles; nesting in trees; on telephone wires</div> <div>in open areas with brushy borders; nesting in grass or open patches of bare soil between desert shrubs</div> <div>in brushy areas; on dry hillsides; nesting in desert shrubs; flying between bushes; on ground picking through leaf litter</div> <div>on tree trunks and branches; nesting in tree cavities</div> <div>near abandoned orchards and roadsides; in open woods, clearings, and lawns; on fence posts; nesting in tree cavities—<i>bluebird only</i></div> <div>near orchards; on building ledges; nesting in cactus cavities</div> <div>in cacti; near buildings and cliffs; flying overhead</div> <div>on or near ground with leaf litter; in partly brush-covered areas; in rocky, brushy ravines; nesting in tree cavities; nesting in cactus arms—<i>cactus wren only</i></div> </div>			berries	acorns, cones		caterpillars, grasshoppers, wasps, beetles, bird eggs, young birds	
				seeds, berries	acorns, berries, fruits		cutworms, beetles, grasshoppers, caterpillars, cicadas, scorpions, spiders, lizards, amphibians, bird eggs, young birds, small mammals	dead animals, garbage	
			berries	berries, fruits		weevils, ground beetles, wasps, bees, grasshoppers, rodents	dead animals		
		seeds			adult and larval beetles, caterpillars, grasshoppers				
		berries	berries, fruits	berries, fruits	beetles, ants, bees, wasps, grasshoppers, crickets, lizards, salamanders, [frogs— <i>thrashers only</i>]				
			acorns, cones		beetles, weevils, ants, wasps, moth and butterfly adults, larvae, and eggs, caterpillars, scale insects, spiders				
		berries	berries, fruits		ground beetles, weevils, caterpillars, ants, snails, millipedes, sow bugs, [earthworms— <i>robins only</i>]				
		berries	berries, fruits		ground beetles, grasshoppers, caterpillars, cicadas, millipedes				
					flies, bees, wasps, moths, ground and other beetles, weevils, ants, grasshoppers, spiders				
			seeds, berries	acorns, cones, seeds	fruits	beetles, grasshoppers, crickets, caterpillars, ants, wasps, flies, millipedes			

KEY:  Caution  Vacant Lots  Lawns  Fields  Wooded Areas  Deserts  Grasslands (a) adult (l) larva / nymph

MAMMALS



GNAWING MAMMALS

MAMMALS

GNAWING MAMMALS

HABITAT

WHERE FOUND

Grasses

Herbs

Shrubs/Vines

Trees

Cacti

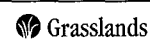
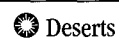
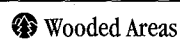
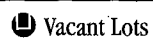
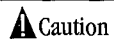
Plants

Animals

Other

Jumping Mice		in shrubs; under grasses; near wooded, rocky areas	seeds	seeds, fruits	berries			caterpillars, beetles	mushrooms
Mice and Rats Deer Mice		in open or dense areas; in abandoned bird nests in trees; in hollow logs; under tree stumps; in rock piles; under low bushes		seeds		seeds, nuts, cones, acorns, seedlings		crickets, grasshoppers, beetles	
Rats		in burrows along foundations of buildings; in rubbish piles and ravines; (occasionally) in fields near buildings							garbage, household grains
Voles		in matted grass; in burrows; underneath shrubs	leaves, seeds	leaves, seeds		bark, leaves, seeds, acorns		insects	mushrooms
White-footed Mice		in thick, brushy, wooded and rocky areas; in trees; in hollow logs; under tree stumps; in rock piles				seeds, acorns, nuts, cones, fruits, roots, seedlings		grasshoppers, beetles, moths, crane flies, caterpillars, pupae, cocoons, snails, centipedes, millipedes	
Woodrats		in cone-shaped nests near cacti; in stick nests on the forest floor; in crevices in cliffs and rocky areas			seeds	acorns, cones, nuts, berries	pads	ants, beetles, termites	
Pocket Gophers		in underground burrows in loose, slightly moist soil	roots	tubers		roots of seedlings			
Pocket Mice, Kangaroo Mice, and Kangaroo Rats		in sandy areas with sparse vegetation; in hardpacked soil; in wooded or grassy foothills; in tiny burrows with entrances under shrubs and cacti	seeds, [leaves— <i>kangaroo rats only</i>]	seeds, [leaves— <i>kangaroo rats only</i>]	seeds, [leaves— <i>kangaroo rats only</i>]			insects— <i>pocket mice only</i>	
Squirrels Chipmunks		in brushy and wooded areas; on stone walls; near trash cans		berries, bulbs	berries	cones, acorns, nuts, seedlings		beetles, slugs, cankerworms, earthworms	mushrooms
Squirrels (illustrated above)		on branches of trees; on the ground; sitting on boulders			berries	acorns, seeds, nuts, cones, buds, inner bark, galls		beetles, caterpillars, bird eggs, young birds	mushrooms
Ground Squirrels		on sandy flats near plants; on partly wooded slopes; in open grassland; on fence posts	leaves, seeds	leaves, berries, seeds, bulbs	seeds, leaves	fruits, seedlings	fruits, flowers	insects, eggs, birds	mushrooms
Woodchucks		near plants; in open woods and fields; in ravines; along roadsides	leaves, roots	stems, flowers, leaves, roots	twigs	fruits			

KEY:

















(a) adult

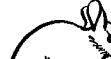








(l) larva / nymph





MAMMALS *continued*








FOOD SOURCES

	HABITAT	WHERE FOUND	Plants					Animals	Other
			 Grasses	 Herbs	 Shrubs/Vines	 Trees	 Cacti		
GNAWING									
Porcupines	 	on or in trees; in rocky dens; near desert shrubs		leaves, stems, fruits		roots, leaves, seeds, acorns, twigs, inner bark, buds, berries, fruits, cones			

	HABITAT	WHERE FOUND	Grasses	Herbs	Shrubs/Vines	Trees	Cacti	Animals	Other
									
INSECT-EATING									
Moles	  	underground in loose soil		bulbs				insect larvae, spiders, worms, centipedes, millipedes	
Shrews (illustrated above)	  	in other animals' nests; in large masses of plants; at the base of desert plants; under logs; near rocky places; on dry hillsides; in brushy areas		seeds, fruits		fruits, seeds, cones, nuts, roots		springtails, gypsy moths, moth and beetle larvae, grasshoppers, crickets, spiders, snails, slugs, centipedes, sow bugs, worms, mice, voles, salamanders, birds, small snakes, young rabbits	

	HABITAT	WHERE FOUND	Grasses	Herbs	Shrubs/Vines	Trees	Cacti	Animals	Other
									
RABBITS, HARES									
Rabbits and Hares Cottontails (illustrated above)	  	in forests and dense thickets; sitting in small, scratched-out areas among clumps of grass; in desert trees	leaves	stems, leaves	twigs, bark, buds	twigs, sapling buds, bark	pads		
Jackrabbits	 	sitting in small, scratched-out places in shrubby areas; under desert shrubs	leaves	leaves, stems	leaves, twigs		pads		
Snowshoe Hares	  	in small, scratched-out areas in thickets; near logs under trees; in hollow logs	leaves	leaves	leaves, buds, twigs, fruits	leaves, sapling twigs, bark			

	HABITAT	WHERE FOUND	Grasses	Herbs	Shrubs/Vines	Trees	Cacti	Animals	Other
									
HOOFED									
Deer (illustrated above)	  	near brushy edges of woods; in fields	leaves	leaves	leaves, twigs, buds	leaves, twigs, buds, bark, fallen fruits			mushrooms

KEY:  Caution  Vacant Lots  Lawns  Fields  Wooded Areas  Deserts  Grasslands (a) adult (l) larva / nymph

MAMMALS *continued*



	HABITAT	WHERE FOUND	Plants					Animals	Other
			Grasses	Herbs	Shrubs/Vines	Trees	Cacti		
FLESH-EATING MAMMALS	Doglike Mammals								
	Coyotes	in dens; along brushy edges of woods			berries	fallen fruits	fruits	snakes, frogs, grouse, mice, squirrels, rabbits, livestock	dead animals
	Foxes	in brushy fields and dense, rocky woods; in dens; in trees			berries, fruits	fallen fruits		insects, scorpions, snakes, lizards, frogs, toads, ground birds and their eggs, mice, voles, shrews, skunks, rabbits, squirrels, porcupines, deer	
	Raccoons (illustrated above) ⚠	in trees; near trash; near streams, rivers, and lakes			berries, fruits	fruits		insects, slugs, snails, turtles, toads, frogs, salamanders, crayfish, eggs, muskrats, moles, mice, shrews, young rabbits	garbage
	Skunks Spotted Skunks ⚠	in brushy or rocky areas; eating in trees; in hollow logs; in woodpiles		berries	berries, fruits	berries		beetles and their larvae, spiders, centipedes, millipedes, small snakes, lizards, birds, salamanders, eggs, crayfish, mice, rats, young rabbits	dead animals
	Striped Skunks ⚠	in dens; on rock and brush piles; in hollow logs on sunny slopes; near trash; in grassy areas		berries	berries, fruits		fruits	crickets, grasshoppers, beetle larvae, moth larvae, spiders, centipedes, millipedes, turtles, eggs, snakes, frogs, toads, voles, mice, rats, chipmunks, moles	garbage



	HABITAT	WHERE FOUND	Grasses	Herbs	Shrubs/Vines	Trees	Cacti	Animals	Other
OTHER MAMMALS	Opossum (illustrated above)	in wooded areas; near city trash and brush piles		berries	fruits	acorns, fruits		insects, lizards, bird eggs, mice	garbage
	Armadillos	in shrubby, open woods; in underground burrows					fruits	beetles, spiders, centipedes, millipedes, snakes, lizards, toads, salamanders, birds and their eggs	dead animals
	Bats	in rocky outcrops; on building ledges; in hollow trees; hanging from tree branches		nectar, pollen	nectar, pollen	nectar, pollen	nectar, pollen	moths, crickets, ants, other insects	

KEY: ⚠ Caution □ Vacant Lots ● Lawns ⊕ Fields 🌳 Wooded Areas ☀ Deserts 🌿 Grasslands (a) adult (l) larva / nymph

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Information presented within the *Who Eats What* guide was drawn from the following sources:

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Common Leaf Characteristics

Leaf Category



Needle-like



Scaly



Broadleaf

Leaf Margins



Entire



Toothed



Lobed

Leaf Structure



Simple

Leaf Arrangement on Stem



Opposite



Alternate



Whorled

Leaf Venation



Palmate



Pinnate



Parallel



Compound

Leaf Shapes



Elliptical



Oval



Oblong



Ovate



Linear



Lanceolate
(lance-shaped)



Deltoid
(triangular)



Cordate
(heart-shaped)