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COLLEGE OF AGRICULTURE
DAVIS, CALIFORNIA
Field Note-book of Fishes,
Amphibians, Reptiles and Mammals

BY

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DEPT. OF ZOOLOGY, CORNELL UNIVERSITY

ITHACA, NEW YORK
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Explanatory Note

The object of this note-book is two-fold: to facilitate the taking of adequate notes in the field, and to teach accuracy of observation.

The six outlines of animal forms represent generalized types toward some one of which every vertebrate (except the bird) will approximate, and which with slight changes will accurately portray the species under observation.

Plate I—A generalized fish. This with slight modifications, will represent any of the fresh-water forms, and most of the marine species.

Plate II—A generalized salamander. This will serve for the adult and larval salamanders and newts, and with modification will represent the alligators and the lizards.

Plate III—A generalized frog. This will represent any frog, tree-frog or toad.

Plate IV—A generalized snake. This will represent the harmless and the venomous snakes and the limbless lizards.

Plate V—A generalized turtle. This will serve for any of the turtles, tortoises or terrapins.

Plate VI—A generalized mammal. This with slight changes will represent any of our smaller native mammals.
The color areas should be outlined with pencil in the field, while the animal is under observation, and after it has been identified, the areas should be colored with crayons or water colors. Egg and larval diagrams should be made in a similar way if the specimens are observed in the field, but otherwise notes as to color, number, size and similar data may be obtained from the instructor or from the texts.

The figures are so designed as to admit of the introduction of such laboratory characters as scalation and costal grooves, when needed.

In addition to outlining the color areas, such other items as are observed or given by the instructor should be written in the field. Notes on general distribution, migration and hibernation and other topics not considered or recorded afield, should be obtained from the texts. In determining the size use the ruler on the back cover, except in the mammal studies where well-known forms may be chosen as standards.

In planning this booklet the authors have selected only such features as have been fully tested through ten years of experience in teaching university classes in field study.
Size: 3 3/4 inches

Common name: Leopard Frog.

Scientific name: Rana pipiens Schreber.

Family, and characters of: Ranida: thorax incapable of expansion, upper jaw with teeth, moist smooth skin, digits without discs.

Confusing species: Pickerel Frog.

Recognition marks: Entire under-parts white; back green or greenish brown, irregularly spotted.

Distinctive habits:

Distribution:
  General: Eastern North America.
  Local (habitat): Marshes, ponds, water-courses and moist meadows.

Seasonal (migration, hibernation): Mar. 26–Nov. 1; hibernates beneath stones or in mud at the bottom of ponds and streams; in summer leaves water for moist situations.

Food: Adults, carnivorous, feeding chiefly on living prey; tadpoles, largely vegetarian.

Correlated structure: Adults with extrusible, viscid tongue; teeth; large mouth. Tadpoles with long intestines; rasping mouth-parts with cutaneous teeth.

Breeding:
  Sexual modifications: Males smaller, darker, with thumbs much enlarged.
  Courtship: Pectoral embrace; external fertilisation.
  Eggs: Egg-mass, plinth-like, submerged (3500–4500 eggs); hatching period, 12–24 days; egg-vegetative pole, distinctly white; inner envelope, conspicuous.

Growth:
  Larvae: Tadpole period, 60–80 days, transforming from June 30–Aug. 6.
  Young: At transformation, 18–31 mm. in length; otherwise similar to adult.

Other Characteristics: The most abundant frog in Eastern North America; the young occasionally so numerous as to form the so-called "plagues of frogs."
## THE FAUNA OF ITHACA, N. Y.

### FISHES

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<td>Horned Dace</td>
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</tr>
<tr>
<td>Golden Shiner</td>
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<td>Black-chinned Minnow</td>
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<td>May 8–June 12</td>
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<td>Cayuga Minnow</td>
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<td>Breeding Place</td>
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<td>Straw-colored Minnow</td>
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<td>Gravelly riffles</td>
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<td>Gravelly riffles</td>
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<td>May 1–July 6</td>
<td>Hollow in fine gravelly swift shoals</td>
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<td>Common Shiner</td>
<td>Quiet, clean brooks, creeks, rivers</td>
<td>May 15–June 1</td>
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<tr>
<td>Silver-sided Minnow</td>
<td>Rapids, clear lakes, rivers</td>
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<td>Shallow water, gravelly riffles or on vegetation</td>
</tr>
<tr>
<td>Blood-tailed Minnow</td>
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<td>May 24–June</td>
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<td>Black-nosed Dace</td>
<td>Clear streams and mountain brooks</td>
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<td>Hornyhead</td>
<td>Clear creeks</td>
<td>May –June</td>
<td>Pelagic eggs but laid in deep water</td>
</tr>
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<td>Cut-lip Minnow</td>
<td>Sluggish, muddy lakes, creeks, rivers</td>
<td>April–June or July</td>
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</tr>
<tr>
<td>Carp</td>
<td>Seas and lakes</td>
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<td>Rocky shoals in lakes</td>
</tr>
<tr>
<td>Alewife</td>
<td>Sea and inland lakes</td>
<td>Nov.–Dec.</td>
<td>Rocky shoals in lakes</td>
</tr>
<tr>
<td>Whitefish</td>
<td>Deep, cool lakes</td>
<td>Oct.–Jan.</td>
<td>Crevices between stones, under roots, and excavation on bottom</td>
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<tr>
<td>Ontario Herring</td>
<td>Deep, cool lakes</td>
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<td>Gravel nest in shoals</td>
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<tr>
<td>Brown Trout</td>
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<td>Honey-combed, rocky or gravelly shoals or clay bottom</td>
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<td>Rainbow Trout</td>
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<td>Nest in gravel</td>
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<td>Lake Trout</td>
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<tr>
<td>Brook Trout</td>
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<td>Swampy streams, shallow overflows, ditches</td>
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<tr>
<td>Mud Minnow</td>
<td>Muddy, sluggish rivers, ponds, lakes</td>
<td>Feb.–June 1</td>
<td>Swampy streams, shallow overflows, ditches</td>
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<tr>
<td>Pickerel</td>
<td>Marshy bayous, ponds, lakes</td>
<td>Mar.–May</td>
<td>Grassy bottoms</td>
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<td>Pike</td>
<td>Clean, sluggish water</td>
<td>June 24–Aug. 3</td>
<td>Grassy bottoms</td>
</tr>
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<td>Fresh-water Killy</td>
<td>Lakes and ponds</td>
<td>Apr. 10–May</td>
<td>Swift, gravelly streams</td>
</tr>
<tr>
<td>Brook Stickleback</td>
<td>Clear, cool, quiet brooks and ponds</td>
<td>May–June 10</td>
<td>Eggs with filaments, attached to vegetation</td>
</tr>
<tr>
<td>Trout Perch</td>
<td>Lakes, larger rivers and streams</td>
<td>May–June</td>
<td>Nest; deeper water, gravelly or sandy bottom</td>
</tr>
<tr>
<td>Brook Silverside</td>
<td>Quiet lakes, streams, and ponds</td>
<td>May–June</td>
<td>Nest; gravelly or sandy shoals</td>
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<tr>
<td>Calico Bass</td>
<td>Deep, sluggish rivers and lakes</td>
<td>Apr.–June</td>
<td>Nest; gravelly or sandy shoals</td>
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<td>Rock Bass</td>
<td>Sluggish, shady, clean waters and streams</td>
<td>May–June 10</td>
<td>Nest; sandy or gravelly shallow</td>
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<td>Bluegill</td>
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<tr>
<td>Small-mouthed Black Bass</td>
<td>Rapid, clear creeks, rivers and lakes</td>
<td>Apr.-June 30</td>
<td>Nest; gravelly and sandy shallows</td>
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<td>Large-mouthed Black Bass</td>
<td>Streams or lakes</td>
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<td>Nest, shallows among roots; also on mud, clay or gravel</td>
</tr>
<tr>
<td>Pike Perch</td>
<td>Clear, clean lakes, rivers</td>
<td>Apr. 1-June 1</td>
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<td>Sand Pike</td>
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<td>Yellow Perch</td>
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<td>White Bass</td>
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</tr>
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<td>Sheepshead</td>
<td>Large streams and lakes</td>
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<td>Miller's Thumb</td>
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Scientific name:
Family, and characters of:

Confusing species:
Recognition marks:
Distinctive habits:

Distribution:
  General:
  Local (habitat):
  Seasonal (migration):

Food:
  Correlated structure:

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  Courtship:
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<th>Spawning Period</th>
<th>Egg-Transformation</th>
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<tr>
<td>Mud Puppy</td>
<td>Mar. 13</td>
<td>May 1–June 15</td>
<td>Permanent larva</td>
</tr>
<tr>
<td>Spotted Salamander</td>
<td>Apr. 7</td>
<td>Mar. 20–May 1</td>
<td>4–6 months</td>
</tr>
<tr>
<td>Four-toed Salamander</td>
<td>Mar. 17</td>
<td>June 15–July 5</td>
<td>2.5—3 months</td>
</tr>
<tr>
<td>Red-backed Salamander</td>
<td>Apr. 1</td>
<td>Probably summer</td>
<td>Possibly 2 or more years</td>
</tr>
<tr>
<td>Slimy Salamander</td>
<td>Mar. 14</td>
<td>May, June</td>
<td>Possibly 2 years</td>
</tr>
<tr>
<td>Purple Salamander</td>
<td>Jan. 2, Mar. 12</td>
<td>May 16–June</td>
<td>8–10 months</td>
</tr>
<tr>
<td>Two-lined Salamander</td>
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<td>June 10–Aug. 1</td>
<td>4–8 months</td>
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<td>Dusky Salamander</td>
<td>Jan. 2, Mar. 20</td>
<td>Apr. 10–June 18</td>
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<td>Newt</td>
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<th>Average Spawning Date</th>
<th>Average Transformation Date</th>
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<tr>
<td>Peeper</td>
<td>Mar. 26</td>
<td>Apr. 10</td>
<td>July 6</td>
<td>90–100 days</td>
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<td>Meadow Frog</td>
<td>Mar. 28</td>
<td>Apr. 11</td>
<td>July 12</td>
<td>75–110 days</td>
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<td>Wood Frog</td>
<td>Mar. 31</td>
<td>Apr. 4</td>
<td>June 27</td>
<td>60–115 days</td>
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<tr>
<td>American Toad</td>
<td>Apr. 1</td>
<td>Apr. 23</td>
<td>June 21</td>
<td>45–65 days</td>
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<tr>
<td>Pickerel Frog</td>
<td>Apr. 3</td>
<td>Apr. 23</td>
<td>July 23</td>
<td>60–100 days</td>
</tr>
<tr>
<td>Green Frog</td>
<td>Apr. 7</td>
<td>June 7</td>
<td>June 28</td>
<td>1 year</td>
</tr>
<tr>
<td>Tree Toad</td>
<td>Apr. 28</td>
<td>June 2</td>
<td>July 25</td>
<td>45–65 days</td>
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<tr>
<td>Bull Frog</td>
<td>May 20</td>
<td>July 4</td>
<td>July 16</td>
<td>2 years</td>
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SNAKES

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<th>Species</th>
<th>Earliest Spring Appearance</th>
<th>Latest Fall Record</th>
<th>Reproductive Period</th>
<th>Nature of Reproduction</th>
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<tbody>
<tr>
<td>Ring-necked Snake</td>
<td>Apr. 10</td>
<td>Oct. 16</td>
<td>June 10–July 1</td>
<td>Oviparous, 6–10 eggs</td>
</tr>
<tr>
<td>Green Snake</td>
<td>Apr. 9</td>
<td>Oct. 20</td>
<td>July</td>
<td>Oviparous, 9–12 eggs</td>
</tr>
<tr>
<td>Pilot Snake</td>
<td>Apr. 27</td>
<td>August</td>
<td>June, July</td>
<td>Oviparous, 10–24 eggs</td>
</tr>
<tr>
<td>Black Snake</td>
<td>Apr. 16</td>
<td>Aug. 6</td>
<td>June–Aug. 6</td>
<td>Oviparous, 10–25 eggs</td>
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<tr>
<td>Milk Snake</td>
<td>Mar. 28</td>
<td>Sept. 20</td>
<td>July</td>
<td>Oviparous, 8–20 eggs</td>
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<td>Red-bellied Snake</td>
<td>Mar. 18</td>
<td>Nov. 1</td>
<td>Aug. 20–Sept.</td>
<td>Ovoviviparous, 7–12 young</td>
</tr>
<tr>
<td>Ribbon Snake</td>
<td>Mar. 18</td>
<td>Oct. 30</td>
<td>Aug. 1–Sept. 15</td>
<td>Ovoviviparous, 6–12 young</td>
</tr>
<tr>
<td>Garter Snake</td>
<td>Mar. 30</td>
<td>Nov. 2</td>
<td>Aug. 1–Sept. 15</td>
<td>Ovoviviparous, 10–40 young</td>
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<th>Earliest Spring Appearance</th>
<th>Latest Fall Record</th>
<th>Reproductive Period</th>
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<tr>
<td>Soft-shelled Turtle</td>
<td>Apr. 23</td>
<td>July 26</td>
<td>June 15–July 15</td>
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<tr>
<td>Snapping Turtle</td>
<td>Jan. 25, Mar. 20</td>
<td>Oct. 31</td>
<td>June, July</td>
</tr>
<tr>
<td>Musk Turtle</td>
<td>Apr. 1</td>
<td>Sept. 24</td>
<td>June 10–July 10</td>
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<td>Muhlenberg's Turtle</td>
<td>Apr. 9</td>
<td>Sept. 28</td>
<td>July 20–Aug. 5</td>
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<tr>
<td>Wood Turtle</td>
<td>Jan. 26, Apr. 20</td>
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<tr>
<td>Spotted Turtle</td>
<td>Apr. 3</td>
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<th>Breeding Time</th>
<th>Breeding Place</th>
<th>Activity</th>
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<td>Opossum</td>
<td>Woodland</td>
<td>Mar. –</td>
<td>Hollow tree</td>
<td>Nocturnal, hibernates</td>
</tr>
<tr>
<td>Red Squirrel</td>
<td>Arboreal, everywhere</td>
<td>Apr. – May</td>
<td>Hole in tree</td>
<td>Diurnal</td>
</tr>
<tr>
<td>Gray Squirrel</td>
<td>Arboreal, hardwood groves</td>
<td>Mar. – Apr. (Sept. – Oct.)</td>
<td>Hole in tree, nest in crotch</td>
<td>Diurnal, hibernates during coldest weather</td>
</tr>
<tr>
<td>Chipmunk</td>
<td>Terrestrial, dry woods, fence rows</td>
<td>Apr. – May</td>
<td>Burrow in ground or stump</td>
<td>Mostly diurnal, hibernates, Oct. 1 – Mar. 1</td>
</tr>
<tr>
<td>Woodchuck</td>
<td>Terrestrial, fields and wood borders</td>
<td>Apr. 15 – May 1</td>
<td>Burrow in ground</td>
<td>Nocturnal</td>
</tr>
<tr>
<td>Flying Squirrel</td>
<td>Arboreal, everywhere</td>
<td>Jan. – Dec.</td>
<td>Hole in dead stub</td>
<td>Largely nocturnal</td>
</tr>
<tr>
<td>House Mouse</td>
<td>Habitations and vicinity</td>
<td>Jan. – Dec.</td>
<td>About buildings</td>
<td>Largely nocturnal</td>
</tr>
<tr>
<td>Norway Rat</td>
<td>Buildings, wharves, sewers, etc.</td>
<td>Apr. – Sept.</td>
<td>Burrow or crevice</td>
<td>Nocturnal</td>
</tr>
<tr>
<td>Deer Mouse</td>
<td>Largely terrestrial, woods and vicinity</td>
<td></td>
<td>Burrow in stump or beneath log in Boreal woods</td>
<td>Largely nocturnal</td>
</tr>
<tr>
<td>Canadian White-footed Mouse</td>
<td>Similar to the preceding</td>
<td>May</td>
<td>Burrow or marsh nest</td>
<td>Largely nocturnal</td>
</tr>
<tr>
<td>Muskrat</td>
<td>Aquatic, marshes and streams</td>
<td>Apr. – Aug.</td>
<td>Burrow</td>
<td>Nocturnal and diurnal</td>
</tr>
<tr>
<td>Pine Mouse</td>
<td>Subterranean, woods and fields</td>
<td>May – Aug.</td>
<td>Nest on ground</td>
<td>Nocturnal and diurnal</td>
</tr>
<tr>
<td>Field Mouse</td>
<td>Woods and fields</td>
<td>May – June</td>
<td>Nest below or above ground</td>
<td>Largely nocturnal</td>
</tr>
<tr>
<td>Red-backed Mouse</td>
<td>Canadian woods</td>
<td>May 15 – Aug.</td>
<td>Beneath clod or board</td>
<td>Largely nocturnal</td>
</tr>
<tr>
<td>Jumping Mouse</td>
<td>Moist meadows</td>
<td>May – June</td>
<td>Nest beneath bush or stump</td>
<td>Nocturnal and diurnal</td>
</tr>
<tr>
<td>Varying Hare</td>
<td>Boreal woods</td>
<td>March – Apr.</td>
<td>Nest on ground in woods and fields</td>
<td>Largely nocturnal</td>
</tr>
<tr>
<td>Cotton-tail</td>
<td>Woods and fields</td>
<td>Apr. – May</td>
<td>Cavern or hollow tree</td>
<td>Nocturnal</td>
</tr>
<tr>
<td>Canada Lynx</td>
<td>Boreal woods</td>
<td>Apr. – May</td>
<td>Caverns or burrows</td>
<td>Largely nocturnal</td>
</tr>
<tr>
<td>Red Fox</td>
<td>Woods and fields</td>
<td>Apr. – May</td>
<td>Burrow in bank of stream</td>
<td>Largely nocturnal</td>
</tr>
<tr>
<td>Otter</td>
<td>Borders of streams</td>
<td>Apr. – May</td>
<td>Burrow or hollow log</td>
<td>Largely nocturnal</td>
</tr>
<tr>
<td>Mink</td>
<td>Marshes and stream borders</td>
<td>Apr. – May</td>
<td>Burrow in ground or stump</td>
<td>Largely nocturnal</td>
</tr>
<tr>
<td>Small Brown Weasel</td>
<td>Marshes, stream borders, woodland, fence rows, etc.</td>
<td></td>
<td>Burrow</td>
<td>Largely nocturnal, hibernates during coldest weather</td>
</tr>
<tr>
<td>New York Weasel</td>
<td>Terrestrial, anywhere</td>
<td>Apr. – May</td>
<td>Hollow tree</td>
<td>Nocturnal, hibernates</td>
</tr>
<tr>
<td>Skunk</td>
<td>Woodland</td>
<td>Apr. – May</td>
<td>Burrow</td>
<td>Dec.–Feb.</td>
</tr>
<tr>
<td>Raccoon</td>
<td>Subterranean, moist woods and meadows</td>
<td>May –</td>
<td>Burrow</td>
<td>Nocturnal and diurnal</td>
</tr>
<tr>
<td>Star-nosed Mole</td>
<td>Subterranean, alluvial soil</td>
<td>May –</td>
<td>Burrow</td>
<td>Nocturnal and diurnal</td>
</tr>
<tr>
<td>Naked-tailed Mole</td>
<td>Subterranean moist ground</td>
<td>May –</td>
<td>Burrow</td>
<td>Nocturnal and diurnal</td>
</tr>
<tr>
<td>Hairy-tailed Mole</td>
<td>Terrestrial and subterranean, anywhere</td>
<td>May – (Oct.)</td>
<td>Burrow</td>
<td>Nocturnal and diurnal</td>
</tr>
<tr>
<td>Short-tailed Shrew</td>
<td>Terrestrial, woods and fields</td>
<td>Jan. – Dec.</td>
<td>Hollow log or under board</td>
<td>Nocturnal</td>
</tr>
<tr>
<td>Long-tailed Shrew</td>
<td>Arboreal</td>
<td>May</td>
<td>Among leaves of trees</td>
<td>Largely nocturnal</td>
</tr>
<tr>
<td>Hoary Bat</td>
<td>Arboreal</td>
<td>June – July</td>
<td>Hollows or crevices in trees</td>
<td>Nocturnal, migratory, found during October</td>
</tr>
<tr>
<td>Red Bat</td>
<td>Arboreal</td>
<td>June – July</td>
<td></td>
<td>May 15 – Oct. 15</td>
</tr>
<tr>
<td>Silvery-haired Bat</td>
<td>Arboreal</td>
<td>June – July</td>
<td></td>
<td>Nocturnal, migratory, May 1 – Sept. 20</td>
</tr>
<tr>
<td>Pipistrelle</td>
<td>Arboreal</td>
<td>July</td>
<td></td>
<td>Nocturnal, migratory, May 1 – Nov. 1</td>
</tr>
<tr>
<td>Big Brown Bat</td>
<td>Caves and buildings</td>
<td>July</td>
<td>Probably gregarious, attics and caves</td>
<td>Nocturnal, migrates and hibernates</td>
</tr>
<tr>
<td>Say’s Bat</td>
<td>Trees and buildings</td>
<td>July</td>
<td></td>
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<td>Little Brown Bat</td>
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