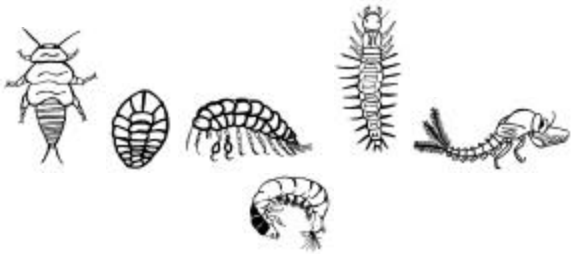
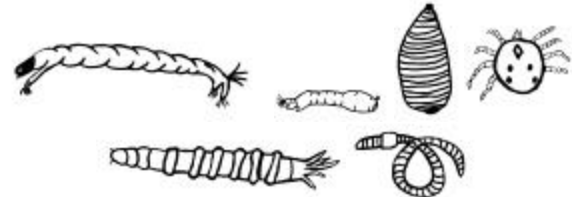




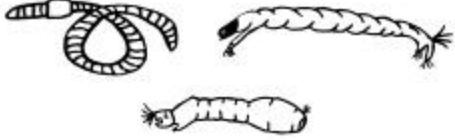




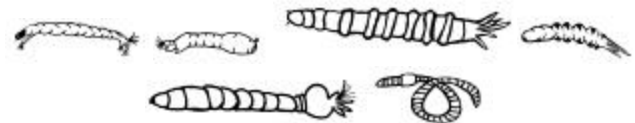


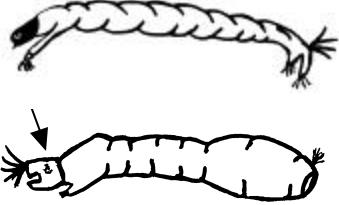









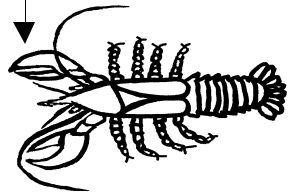

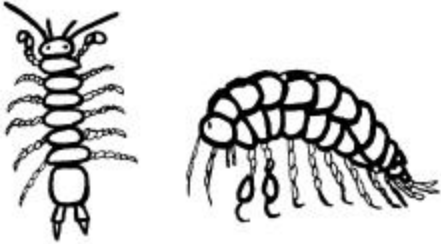





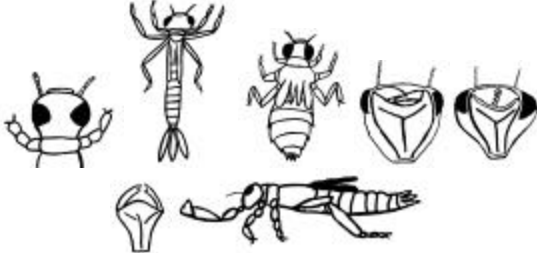











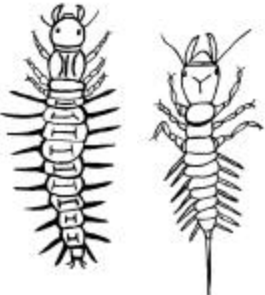


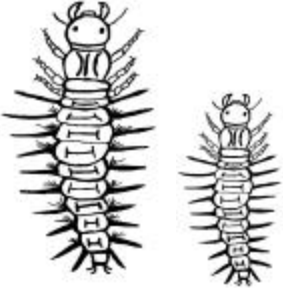
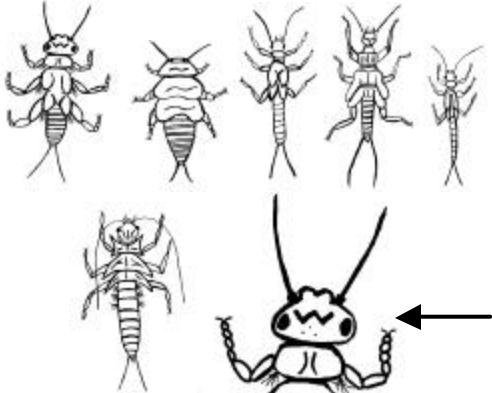
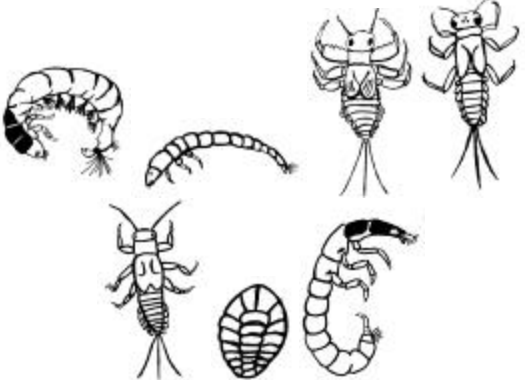

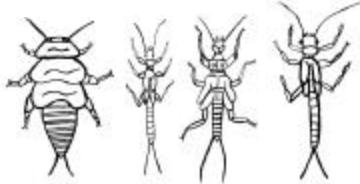

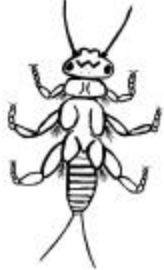



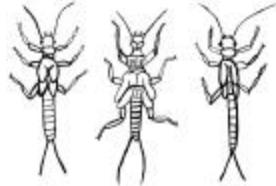

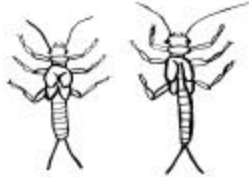



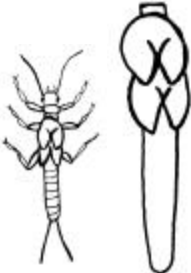
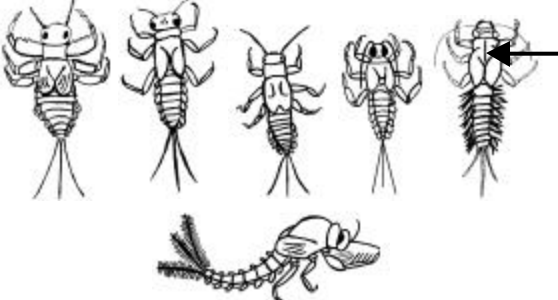
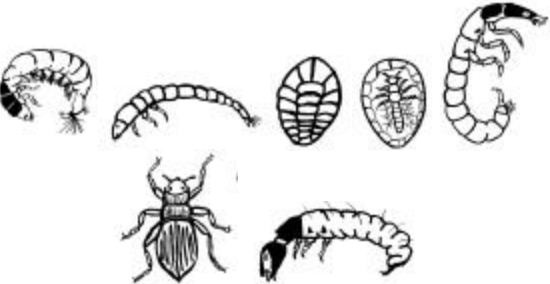
<p>1 Do you think the organism has BOTH a head AND segmented legs?</p> <p>Yes...go to # 14</p> <p>No...go to # 2</p>	<p style="text-align: center;">Examples of YES</p> 	<p style="text-align: center;">Examples of NO</p> 
<p>2 Do you think the organism is found inside of a shell?</p> <p>Yes...go to # 3</p> <p>No...go to # 4</p>		
<p>3 How many pieces is the shell?</p> <p>One...go to # 56 (Snails and Limpets)</p> <p>Two...go to # 57 (freshwater mussels and clams)</p>	 <p style="text-align: center;">Snails and Limpets</p>	 <p style="text-align: center;">Freshwater mussels and freshwater clams</p>
<p>4 Is the body of the organism divided into sections (segments)?</p> <p>Yes...go to # 6</p> <p>No...go to # 5</p>		
<p>5 Does the organism have legs?</p> <p>Yes...go to # 58 (Water mites)</p> <p>No...go to # 59 (Nematodes)</p>	 <p style="text-align: center;">Water mites</p>	 <p style="text-align: center;">Nematoda</p>
<p>6 Does the organism have a suction cup-like disc at each end of the body?</p> <p>Yes...go to # 60 (Leeches)</p> <p>No...go to # 7</p>	 <p style="text-align: center;">Leech</p>	


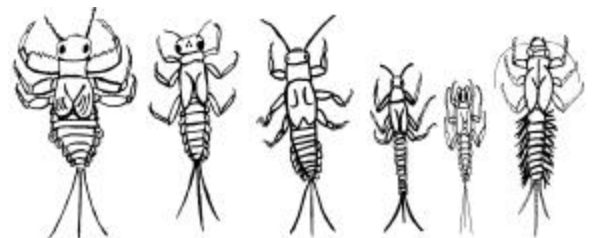
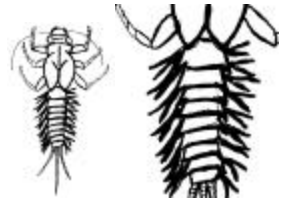
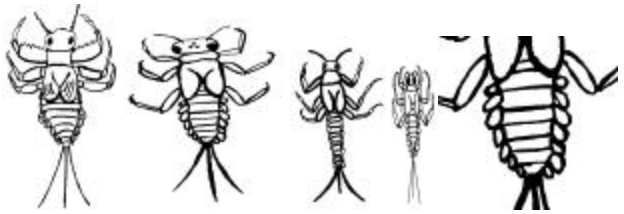
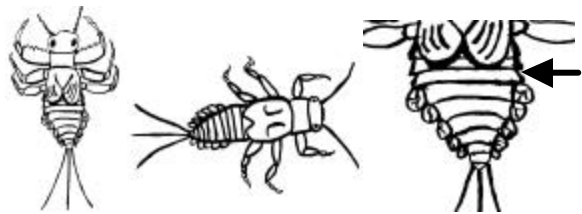
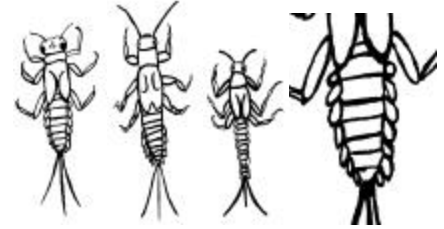

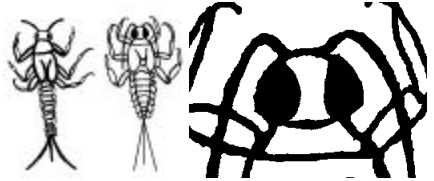

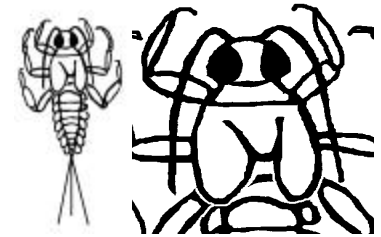
<p>7</p>	<p>How many divisions of the body can you see?</p> <p>20 or more...go to # 61 (Aquatic earthworms)</p> <p>Less than 20...go to # 8</p>	 <p>Aquatic earthworms</p>	
<p>8</p>	<p>Can you see the organism's head? (look for eyespots)</p> <p>Yes...go to # 9</p> <p>No...go to # 10</p>		
<p>9</p>	<p>Is the body thicker at one end than in the middle?</p> <p>Yes...go to # 62 (Simuliidae)</p> <p>No...go to # 63 (Chironomidae)</p>	 <p>Simuliidae (Black Fly Larva)</p>	 <p>Chironomidae (Midge Larva)</p>
<p>10</p>	<p>Does the organism have prolegs on or along the abdomen?</p> <p>Yes...go to # 11</p> <p>No...go to # 12</p>		
<p>11</p>	<p>Are the tails longer than the last set of prolegs?</p> <p>Yes...go to # 64 (Athericidae)</p> <p>No...go to # 65 (Empididae)</p>	 <p>Athericidae (Water snipe fly)</p>	 <p>Empididae (Aquatic dance fly)</p>
<p>12</p>	<p>Do you think the organism has tails?</p> <p>Yes...go to # 66 (Tipulidae)</p> <p>No...go to # 67 (Tabanidae)</p>	 <p>Tipulidae (Crane fly)</p>	 <p>Tabanidae (Horse and deer flies)</p>












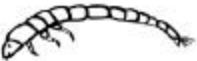
<p>1 4</p>	<p>Does the organism look like a mini lobster? (has very large pinching claws)</p> <p>Yes...go to # 68 (Crayfish)</p> <p>No...go to # 15</p>	 <p>Crayfish</p>	
<p>1 5</p>	<p>Does the organism have both of the following characteristics? 2 pairs of antenna (4 total) and More than 6 legs?</p> <p>Yes...go to # 16</p> <p>No...go to # 18</p>		
<p>1 6</p>	<p>What color is the organism?</p> <p>Grey or darker colored...go to # 69 (Isopod)</p> <p>White, Orange, or very light colored...go to # 70 (Amphipod)</p>	 <p>Isopod</p>	 <p>Amphipod (Scud or Sideswimmer)</p>
<p>1 8</p>	<p>Do you think the organism is a spider? Does it have 8 legs?</p> <p>Yes...go to # 71 (Spiders)</p> <p>No...go to # 19</p>	 <p>Spider</p>	
<p>1 9</p>	<p>Does the organism have very large eyes and a triangular lower lip that extends away from the mouth?</p> <p>Yes...go to # 20</p> <p>No...go to # 25</p>		

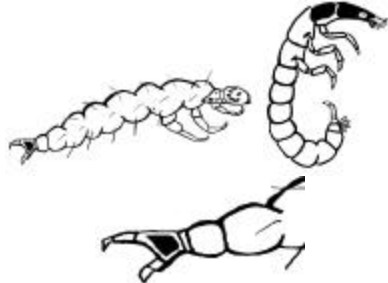
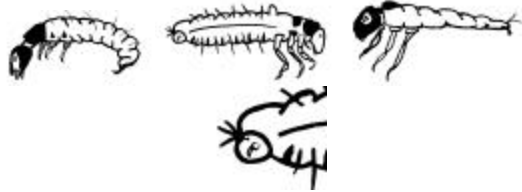

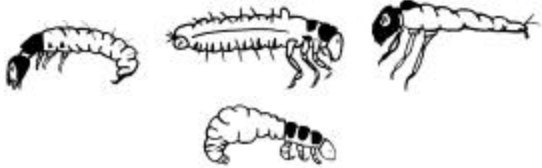
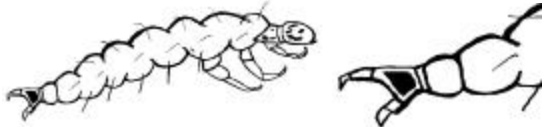
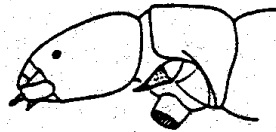
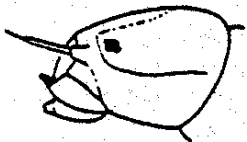
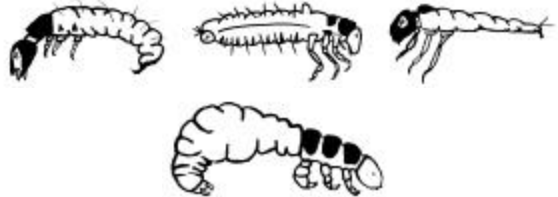


<p>20</p>	<p>What is the shape of the body?</p> <p>Long and very thin...go to # 21</p> <p>Short and squat, robust ...go to # 23</p>		
<p>21</p>	<p>Is the first section of the antenna much longer than each of others?</p> <p>Yes...go to # 72 (Calopterygidae)</p> <p>No...go to # 22</p>	 <p>Calopterygidae (Broad wing damselfly)</p>	
<p>22</p>	<p>Is the lower lip on a long thin stalk?</p> <p>Yes...go to # 73 (Lestidae)</p> <p>No...go to # 74 (Coenagrionidae)</p>	 <p>Lestidae (Spread wing damselfly)</p>	 <p>Coenagrionidae (Narrow wing damselfly)</p>
<p>23</p>	<p>Are the antennas more like the end of a q-tip or like a thin thread?</p> <p>Q-tip...go to # 75 (Gomphidae)</p> <p>Thread-like...go to # 24</p>	 <p>Gomphidae (Club-tail dragonfly)</p>	
<p>24</p>	<p>Does the lower lip have many jagged teeth?</p> <p>Yes...go to # 76 (Cordulergastridae)</p> <p>No...go to # 77 (Aeshnidae)</p>	 <p>Cordulergastridae (Biddie dragonfly)</p>	 <p>Aeshnidae (Darner dragonfly)</p>
<p>25</p>	<p>Are there 2 long spine-like structures on each section of the abdomen similar to porcupine quills?</p> <p>Yes...go to # 26</p> <p>No...go to # 27</p>		





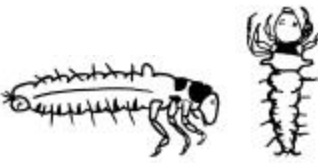


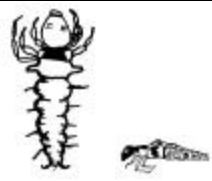
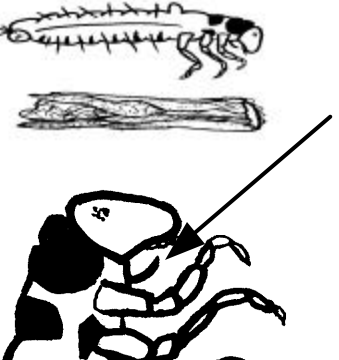
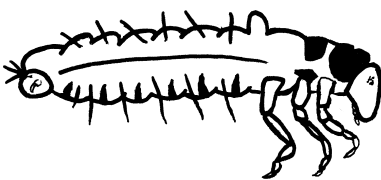
<p>26</p>	<p>Does the organism have a single long thin tail?</p> <p>Yes...go to # 78 (Sailidae)</p> <p>No...go to # 79 (Corydalidae)</p>	 <p>Sailidae (Alderfly)</p>	 <p>Corydalidae (Dobsonfly and fishfly)</p>
<p>27</p>	<p>Does the organism have 2 long thin tails and 2 hooks at the end of each leg?</p> <p>Yes...go to # 28</p> <p>No...go to # 34</p>		
<p>28</p>	<p>Does the organism have a tuft of fluffy gills at the base of each leg? (hairy armpits)</p> <p>Yes...go to # 29</p> <p>No...go to # 30</p>		
<p>29</p>	<p>What color is the organism?</p> <p>Black...go to # 80 (Pteronarcyidae)</p> <p>Brown or Dark Brown...go to # 81 (Perlidae)</p>	 <p>Pteronarcyidae (Giant stonefly)</p>	 <p>Perlidae (Common stonefly)</p>

<p>30</p>	<p>Is the body tear-drop shaped?</p> <p>Yes...go to # 82 (Peltoperlidae)</p> <p>No...go to # 31</p>	 <p>Peltoperlidae (Roach-like stonefly)</p>	
<p>31</p>	<p>Do the wing pads point away from the center of the body?</p> <p>Yes...go to # 32</p> <p>No...go to # 33</p>		
<p>32</p>	<p>Does the organism have a tuft of fluffy gills on the underside of the throat?</p> <p>Yes...go to # 83 (Nemouridae)</p> <p>No...go to # 84 (Perlodidae)</p>	 <p>Nemouridae (Broadback stonefly)</p>	 <p>Perlodidae (Perlodid stonefly)</p>
<p>33</p>	<p>Is the first pair of wing pads elongated and overlap the second pair?</p> <p>Yes...go to # 85 (Leuctridae)</p> <p>No...go to # 86 (Chloroperlidae)</p>	 <p>Leuctridae (Rolled wing stonefly)</p>	 <p>Chloroperlidae (Green stonefly)</p>
<p>34</p>	<p>Does the organism have wing pads? (these look like a human tooth)</p> <p>Yes...go to # 35</p> <p>No...go to # 40</p>		

<p>3 5</p>	<p>Are there very long thin hairs on the inside surface of the front legs?</p> <p>Yes...go to # 87 (Oligoneuriidae)</p> <p>No...go to # 36</p>	 <p>Oligoneuriidae (Brushlegged mayfly)</p>	
<p>3 6</p>	<p>What shape are the gills?</p> <p>Fringed or forked...go to # 89 (Leptophlebiidae)</p> <p>Round or oval...go to # 37</p>	 <p>Leptophlebiidae (Pronggill mayfly)</p>	
<p>3 7</p>	<p>On what section of the abdomen do the gills start?</p> <p>Third section of the abdomen...go to # 88 (EphemereIIDae)</p> <p>First or second section of the abdomen...go to # 38</p>		
<p>3 8</p>	<p>What shape is the head?</p> <p>Wide and flat...go to # 90 (Heptageniidae)</p> <p>Narrow and round...go to # 39</p>	 <p>Heptageniidae (Flathead mayfly)</p>	
<p>3 9</p>	<p>How long are the antennas?</p> <p>Short, about the same as the width of the body...go to # 91 (Siphonuridae)</p> <p>Long, greater than the width of the body...go to # 92 Baetidae</p>	 <p>Siphonuridae (Primitive minnow mayfly)</p>	 <p>Baetidae (Small minnow mayfly)</p>

<p>4 0</p>	<p>Does the organism have tufts of fluffy gills on the underside of the abdomen?</p> <p>Yes...go to # 93 (Hydropsychidae)</p> <p>No...go to # 41</p>	 <p>Hydropsychidae (Common net-spinner caddisfly)</p>	
<p>4 1</p>	<p>Does the organism have a dark body (brown or black)? Does the skin look hard like armor?</p> <p>Yes...go to # 42</p> <p>No...go to # 46</p>		
<p>4 2</p>	<p>Is the body disc shaped?</p> <p>Yes...go to # 94 (Psephenidae)</p> <p>No...go to # 43</p>	 <p>Psephenidae (Water penny beetle)</p>	
<p>4 3</p>	<p>Does the organism look like a beetle?</p> <p>Yes...go to # 44</p> <p>No...go to # 45</p>		
<p>4 4</p>	<p>Does the beetle have antenna?</p> <p>Yes...go to # 95 (Elmidae)</p> <p>No...go to # 96 (Dryopidae)</p>	 <p>Elmidae (Adult riffle beetle)</p>	 <p>Dryopidae (Long toed water beetle)</p>
<p>4 5</p>	<p>How large is the body?</p> <p>Less than 1 cm...go to # 97 (Elmidae)</p> <p>Greater than 1 cm...go to # 98 (Ptilodactlyidae)</p>	 <p>Elmidae (Larval riffle beetle)</p>	 <p>Ptilodactlyidae</p>

<p>46</p>	<p>Does the end of the abdomen split into 2 prolegs or is it more rounded?</p> <p>Split into 2 (V-shaped)...go to # 47</p> <p>More rounded...go to # 49</p>		
<p>47</p>	<p>Does the organism have a bright orange head? Or is there a white T-shaped structure between the mouthparts?</p> <p>Yes...go to # 99 (Philopotamidae)</p> <p>No...go to # 48</p>	 <p>Philopotamidae (Fingernet caddisfly)</p>	
<p>48</p>	<p>Is there a small dark area of armor plate on the last section of the abdomen? (just above the v-shaped prolegs?)</p> <p>Yes...go to # 100 (Rhyacophilidae)</p> <p>No...go to # 101 (Polycentropodidae)</p>	 <p>Rhyacophilidae (Michelin man caddisfly)</p>	 <p>Polycentropodidae</p> <p>Polycentropodidae (Funnel net caddisfly)</p>
<p>49</p>	<p>Does the organism have antenna?</p> <p>Yes...go to # 102 (Leptoceridae)</p> <p>No...go to # 50</p>	 <p>Leptoceridae (Longhorn case maker caddisfly)</p>	
<p>50</p>	<p>What shape are the claws at the end of the abdomen?</p> <p>Comb shaped many teeth...go to # 103</p> <p>Hook shaped single point...go to # 51</p>	 <p>Helicopsychidae (Snail case maker caddisfly)</p>	

<p>5 1</p>	<p>Is there a dark plate above each pair of legs?</p> <p>Yes...go to # 104 (Hydroptilidae)</p> <p>No...go to # 52</p>	 <p>Hydroptilidae (Purse case maker caddisfly)</p>	
<p>5 2</p>	<p>Is there a dark plate above the first pair of legs only?</p> <p>Yes...go to # 105 (Glossosomatidae)</p> <p>No...go to # 53</p>	 <p>Glossosomatidae (Saddle case maker caddisfly)</p>	
<p>5 3</p>	<p>Is there a small hump on either the top or side of the first section of the abdomen?</p> <p>Yes...go to # 54</p> <p>No...go to # 106 (Brachyentridae)</p>		 <p>Brachycentridae (Humpless case maker caddisfly)</p>
<p>5 4</p>	<p>Is there a small hump on the top of the first section of the abdomen?</p> <p>Yes...go to # 55</p> <p>No...go to # 107 (Lepidostomatidae)</p>		 <p>Lepidostomatidae</p>
<p>5 5</p>	<p>Does the organism have a small hook on the throat? (prosternal horn)</p> <p>Yes...go to # 108 (Limnephilidae)</p> <p>No...go to # 109 (Odontoceridae)</p>	 <p>Limnephilidae (Northern case maker caddisfly)</p>	 <p>Odontoceridae (Strong case maker caddisfly)</p>

Glossary of terms used in the identification key

Abdomen: The main part of the body of the organism. It is the third section of an insect nymph or larva. Used for digestion and respiration. It usually comprised of 10 segments.

Antenna: 2 or 4 structures found on the front of the head of the organism. Each antenna is made of a series of small segments. The shape, length, and number of segments will vary depending upon the organism.

Fluffy: feathery, soft, bushy, tuft-like structures found either at the base of the leg or the underside of abdominal segments. (See Figure 40 A).

Prolegs: A leg-like structure found either on abdominal sections segments or at the end of the abdomen. A proleg will have one or more hooks. (See Figure 10 A).

Prosternal horn: A very tiny hook-like structure found on the underside (ventral) surface of the neck (first thoracic section) on some caddisfly larvae.

Section: A distinct part or area of the body. For example, head, thorax, abdomen, legs, lines on an earthworm.

Segmented: A structure made up of more than one piece. For example, legs, antenna, abdomen, entire organisms.

Spine-like: A single identifiable long, thin, pointed, structure. Found on the abdomen of dobsonfly and alderfly larvae. A.K.A. lateral abdominal appendages. (See Figure 25 A).

Tails: One, 2, or 3 long, thin, hair-like structures found at the end of the abdomen. A.K.A. abdominal cerci. (See Figure 27 A).

Toes: The last segment of the leg. It can be either a single hook (1 toe) or split into 2 equal segments (2 toes). A.K.A. tarsal claws. (See Figure 27 A {2 toes} or Figure 37 A {1 toe}).

Triangular plate: A large flat, extendable, scoop-like structure found on the underside (ventral surface) of the head on dragonfly and damselfly nymphs. A.K.A. Labium (lower lip) or Mask (See Figure 19 A).

Wing pads: Flat oblong, oval, structures found on the back (dorsal surface) between the second and third pairs of legs. These are areas where the wings are developing. The structure will look like a human tooth. Wing pads are only found on organisms characterized by incomplete metamorphosis {mayflies (ephemeroptera), stoneflies (plecoptera), dragonflies/damselflies (odonata)}. (See Figures 34 A or 35 B).

DESCRIPTIONS

- 56** Common name: Snails and limpets
Order name: Gastropoda
Feeding group: Scraper
Pollution tolerance: High: Snails=8, Limpets=6 (sensitive to heavy metals and acidic conditions)
Type of stream found: Slow to fast moving streams below ponds or in wetlands
Location found in stream: Surfaces of rocks and on finer sediments
Couplet number in the key: 3

Trivia: There are two major groups of snails in CT. One group has an operculum (hard disc) which covers the opening to the shell, the other does not. Snails use a file-like structure called a radula to scrape food from substrates. For more information about the Snails of CT., see The Freshwater Snails of CT by Eileen Jokinen, State Geological and Natural History Survey, Bulletin #109, 1983.

Limpets are very small and build a cone-shaped shell. Like snails, they have a radula to scrape algae of the substrate. They can be found on the surface of rocks in rapidly flowing water.

- 57** Common name: Freshwater clams and mussels
Order name: Bivalvia
Feeding group: Collector/Filterer
Pollution tolerance: High = 8
Type of stream found: Slow moving streams below ponds or in wetland areas
Location found in stream: Burrowed into the finer sediments like sand and silt.
Mostly found in runs, pools, or along stream margins.
Couplet number in the key: 3

Trivia: Two families are common in CT. The Unionidae are very large (up to 3 inches long) while Sphaeriidae are the size of a fingernail. The most famous member of the freshwater bivalves is the zebra mussel. Zebra mussels are an introduced species that have had a major impact on North American aquatic ecosystems.

- 58** Common name: Water mites
Class name: Hydrachnidia
Feeding group: Parasitic on other aquatic organisms
Pollution tolerance: Moderate = 4
Type of stream found: Slow moving streams
Location found in stream: Found in the water column, on the substrate or on a host organism
Couplet number in the key: 5

Trivia: Water mites are very small and resemble a "tick". They occur in a wide variety of aquatic habitats. Some of the adult forms can be bright red or orange.

- 59** Common name: Round worms
Phylum name: Nematoda
Feeding group: Unknown
Pollution tolerance: ?
Type of stream found: All types of streams
Location found in stream: Found in or on the stream bottom
Couplet number in the key: 5

Trivia: Nematodes are small worm-like organisms. They do not have a segmented body. They are very common organisms found in all types of habitats.

- 60** Common name: Leeches
Class name: Hirudinea
Feeding group: Parasitic on other aquatic organisms
Pollution tolerance: High = 10
Type of stream found: All types of streams
Location found in stream: Found attached to the substrate or on a host organism
Couplet number in the key: 6

Trivia: Leeches are very common in CT. Sizes and color pattern depend upon the species. Leeches have a suction disc at both ends of the body. Leeches feed on the blood of a host organism by using a drill-like rasping tongue to penetrate the skin. The leech injects a chemical which prevents the blood from clotting (anticoagulant).

Some leeches are used in medical practice to remove the build up of blood and body fluids in bruised or surgically reattached appendages and tissues. When preserved leeches tend to curl up.

- 61** Common name: Aquatic earthworms
Class name: Oligochaeta
Feeding group: Collector/Gatherer
Pollution tolerance: High = 8
Type of stream found: Slow to fast moving streams (very common in very polluted streams)
Location found in stream: Found burrowing in or on fine stream substrates
Couplet number in the key: 7

Trivia: Aquatic earthworms have segmented bodies. These organisms especially Tubifex worms, can live in extremely polluted waters with very low dissolved oxygen levels. Often severely impacted streams will have very large populations of these worms.

- 62** Common name: Black flies
 Family name: Simuliidae
 Feeding group: Collector/ Filterer
 Pollution tolerance: Moderate = 6
 Type of stream found: Moderate to fast flowing streams (very common immediately downstream of a lake or pond)
 Location found in stream: Found attached to the surface of rocks that are in the fast flowing section of a riffle.
 Couplet number in the key: 9

Trivia: Black flies are very common in the streams of CT. The body is whitish-grey color, and is shaped like a bowling pin. The larvae can be up to 1/2 of an inch in length. Black flies have a ring of small hooks at the back end of the abdomen that enables them to adhere to a rock and not be swept away by the current. At a glance these hooks resemble a suction disc. Black flies use a brush-like structure to filter fine organic matter from the water column. Black fly abundance is strongly related to the time of year. In Connecticut, the greatest numbers appear in collections from mid to late April.

- 63** Common name: Midges
 Family name: Chironomidae
 Feeding group: Collector/Gatherer
 Pollution tolerance: Moderate = 6 (white forms) High =8 (red forms)
 Tolerant of heavy metals
 Type of stream found: All types from fast to slow moving streams
 Location found in stream: Found in a tube or on the stream substrate
 Couplet number in the key: 9

Trivia: Adult midges are tiny flies. The larvae are very thin, 1/2 an inch long, and are white when preserved. There are around 100 different genera of midges in CT. The two main groups in CT are the white midges and the red midges. The color in the red midges comes from a hemoglobin-like compound. This compound allows the midge to survive in very low oxygen levels. Midges have a high tolerance to heavy metals. In some streams, midges can be extremely abundant. When Chironomidae is the dominant family, comprising greater than 70% of the sample, and few other types of organisms are present, the water quality may be impacted.

- 64** Common name: Water snipe flies
 Family name: Athericidae
 Feeding group: Predator
 Pollution tolerance: Low = 2
 Type of stream found: Moderate to fast flowing streams
 Location found in stream: Found burrowing in the substrate
 Couplet number in the key: 11

Trivia: Water snipe flies have a rough appearance to the exoskeleton. The body is elongate with several tail-like structures. The body narrows to a point at the opposite end of the tail-like structures. There are prolegs along the underside of the abdomen.

65 Common name: Aquatic dance flies
Family name: Empididae
Feeding group: Predator
Pollution tolerance: Moderate =6
Type of stream found: Moderate to fast flowing streams
Location found in stream: Found burrowing in the substrate
Couplet number in the key: 11

Trivia: Aquatic dance flies have a white body and the exoskeleton does not have a rough appearance. There are several very small tail-like structures. The body does not narrow to a sharp point at the opposite end of the tail-like structures. The last few prolegs are very long.

66 Common name: Crane flies
Family name: Tipulidae
Feeding group: Shredder
Pollution tolerance: Low = 3
Type of stream found: Moderate to fast flowing streams
Location found in stream: Found burrowing in the substrate and in leaf packs
Couplet number in the key: 12

Trivia: All crane flies have what appear to be tails, however they are respiratory organs. The adult crane fly looks like a giant mosquito, however these insects can not bite. Most crane fly larva are very large up to 1.5 inches. Some of the largest look like a grey membranous tube. Some species have a bulb-like structure near the tails, while others have dark areas on the top and bottom of the abdomen.

67 Common name: Horse flies
Family name: Tabanidae
Feeding group: Predator
Pollution tolerance: Moderate = 6
Type of stream found: Moderate to fast flowing streams
Location found in stream: Found burrowing in the substrate
Couplet number in the key: 12

Trivia: Horse fly larva are white and do not have any prolegs or tail-like structures. Instead they have creeping welts which are specialized areas around the body. The creeping welts help the organism move through the substrate. The adult horse fly prefers to feed on the blood of mammals and can deliver a very painful bite.

68 Common name: Crayfish
Order name: Decapoda
Feeding group: Collector/Gatherer
Pollution tolerance: Moderate = 6
Type of stream found: Slow to Moderate flowing streams
Location found in stream: Found burrowing in the substrate and hiding under rocks
Couplet number in the key: 14

Trivia: Crayfish resemble tiny lobsters. They are scavengers on the stream bottom, feeding on a wide variety of food sources. Crayfish are the largest stream invertebrates. Often populations can be extremely numerous. They are a food source for both fish and humans.

69 Common name: Isopods or freshwater sow bugs
Order name: Isopoda
Family name: Asellidae
Feeding group: Collector/Gatherer
Pollution tolerance: High = 8
Type of stream found: Slow flowing streams
Location found in stream: Found crawling on the organic substrate and in slow moving areas
Couplet number in the key: 16

Trivia: Aquatic sow bugs are small dorsally flattened crustaceans. A close relative, the terrestrial sow bug, lives amongst decomposing leaves and logs. There is only one family of aquatic sow bugs which contains two species. Aquatic sow bugs are grey when preserved.

70 Common name: Amphipod, scud, side-swimmer
Order name: Amphipoda
Feeding group: Collector/Gatherer
Pollution tolerance: High = 8
Type of stream found: Slow moving areas of low gradient streams.
Location found in stream: Found crawling on the organic substrate and in slow moving areas.
Couplet number in the key: 16

Trivia: Scuds are also crustaceans. They appear to be bleached white or orange when preserved. Scuds can swim very rapidly on their sides when disturbed, therefore the name "side-swimmer". Most scuds are omnivorous and feed in organic debris that accumulates in stream margins. A close relative is called the beach flea, and is commonly found in seaweed that has washed ashore. They can be very abundant when conditions permit.

71 Common name: Spiders
Class name: Arachnida
Feeding group: Predators
Pollution tolerance: N/A

Type of stream found: Any type
Location found in stream: Surface tension along stream margins, suspended in vegetation over the stream.
Couplet number in the key: 18

Trivia: There are two main types of spiders found commonly along streams. The Long-jawed spider, builds a web in the vegetation alongside and over a stream. The spider's body is long and narrow, with extremely long legs. These spiders capture recently hatched aquatic insects. The second type of spider lives on the surface tension. Fishing spiders and small wolf spiders, patrol the surface tension, eating prey either stuck on the surface or emerging through. These spiders are large and very hairy.

72 Common name: Broad-winged Damselflies
Family name: Calopterygidae
Feeding group: Predator
Pollution tolerance: Moderate = 5
Type of stream found: Slow to moderate flowing low gradient streams
Location found in stream: Stream margins with abundant emergent vegetation
Couplet number in the key: 21

Trivia: The first segment of the antenna, is almost half of the entire antenna, separates this family from all other damselflies. The adult broad-wing damselfly is very common along streams, they body is iridescent green with black wings. They are some of the prettiest aquatic insects.

Damselflies in general are more slender, smaller, and delicate when compared to dragonflies. Adults can be differentiated from dragonflies because the damselflies can fold their wings straight up over their body, while dragonflies can not. Nymphs have three long tails (actually gills) off of the back of the abdomen, while dragonflies have 3 small spikes or triangular points.

73 Common name: Spread-winged Damselflies
Family name: Lestidae
Pollution tolerance: High = 9
Type of stream found: Very slow, low gradient stream, swampy, below or in a pond or a wetland area.
Location found in stream: Amongst thick emergent vegetation
Couplet number in the key: 22

Trivia: The lower lip on these nymphs are very long and slender. The gills (tails) found at the end of the abdomen are very dark and thick. Adults hold the wings slightly open when at rest. These are not commonly found in a typical riffle area.

Damselflies in general are more slender, smaller, and delicate when compared to dragonflies. Adults can be differentiated from dragonflies because damselflies can fold their

wings straight up over the body, dragonflies can not. Nymphs have three long tails (actually gills) off of the back of the abdomen, while dragonflies have 3 small spikes or triangular points.

- 74** Common name: Narrow-winged Damselflies
Family name: Coenagrionidae
Feeding group: Predator
Pollution tolerance: High = 9
Type of stream found: Slow to moderate flow low gradient streams.
Location found in stream: On rocks and vegetation in moderate flow.
Couplet number in the key: 22

Trivia: These damselflies are the most common. The gills of some members of this family are two-toned when alive. The adults have clear wings and either bright blue or green bodies.

Damselflies in general are more slender, smaller, and delicate when compared to dragonflies. Adults can be differentiated from dragonflies because damselflies can fold their wings straight up over the body, dragonflies can not. Nymphs have three long tails (actually gills) off of the back of the abdomen, while dragonflies have 3 small spikes or triangular points.

- 75** Common name: Club-tails
Family name: Gomphidae
Feeding group: Predator
Pollution tolerance: Low = 1
Type of stream found: All types of streams depending upon the species.
Location found in stream: On or in the organic substrate
Couplet number in the key: 23

Trivia: All gomphids have short antenna, of which the last section is Q-tipped shaped. There are many different species living in a wide variety of habitats. Most are adapted for burrowing into the substrate to wait for prey.

All dragonfly nymphs have 3 spikes or triangular points at the end of the abdomen. They move around primarily by crawling, however, short jets of water can be expelled through the rectum for rapid movement. Dragonfly adults can not fold their wings up over their back, and therefore are easily differentiated from the closely related damselflies. The lower lip of all Odonata are hinged, allowing to extend out to capture prey.

- 76** Common name: Biddies
Family name: Cordulergastridae
Feeding group: Predator
Pollution tolerance: Moderate = 3
Type of stream found: Fast to moderate flow of low to moderate gradient streams in wooded areas.

Location found in stream: Buried in areas of fine silt and sand accumulations (like behind large boulders, bridge abutments, and stream margins).

Couplet number in the key: 24

Trivia: These dragonflies nymphs appear to be extremely robust and hairy. They have a deeply rounded lower lip which extends out almost half the body length. The nymphs are light brown to match the fine silt and sand in a stream.

All dragonfly nymphs have 3 spikes or triangular points at the end of the abdomen. They move around primarily by crawling, however, short jets of water can be expelled through the rectum for rapid movement. Dragonfly adults can not fold their wings up over their back, and therefore are easily differentiated from the closely related damselflies. The lower lip of all Odonata are hinged, allowing to extend out to capture prey.

77 Common name: Darners
Family name: Aeshnidae
Feeding group: Predator
Pollution tolerance: Moderate = 3
Type of stream found: Slow to moderate to fast streams, moderate to low gradient.
Location found in stream: Amongst rocks and emergent vegetation.
Couplet number in the key: 24

Trivia: The darners are the largest adult dragonflies in Connecticut. The nymphs are usually very dark and almost black. The bodies are elongate with small thin legs. The darners are very common in a variety of streams. Unlike many other dragonfly nymphs, the darners stalk prey.

All dragonfly nymphs have 3 spikes or triangular points at the end of the abdomen. They move around primarily by crawling, however, short jets of water can be expelled through the rectum for rapid movement. Dragonfly adults can not fold their wings up over their back, and therefore are easily differentiated from the closely related damselflies. The lower lip of all Odonata are hinged, allowing to extend out to capture prey.

78 Common name: Alderflies
Family name: Sialidae
Feeding group: Predator
Pollution tolerance: Moderate = 4
Type of stream found: Moderate to fast flows, moderate gradient.
Location found in stream: Slow waters along the stream margins or in pools
Couplet number in the key: 26

Trivia: Alderfly larvae have a single long filament coming out of the end of the abdomen. The sides of the abdomen have many soft spine-like appendages. They also have well developed mandibles for capturing prey. The adults are black and resemble caddisfly adults in

that they fold their wings in a tent-like fashion over the back. There is only one genus in North America. These organisms are not commonly captured in riffle areas.

- 79** Common name: Dobsonfly or Fishfly (Hellgrammites)
Family name: Corydalidae
Feeding group: Predator
Pollution tolerance: Moderate = 5 (modified from 0 by CT DEP for CT)
Type of stream found: Moderate to Fast moving streams steep to low gradient
Location found in stream: Under loosely embedded stones crawling around
Couplet number in the key: 26

Trivia: The dobsonfly larva come in a variety of sizes, from 1.5 inches to an impressive 4.5 inches. Like the Alderfly, the each abdominal segment has a pair of soft spine-like appendages. However, there are two prolegs at the end of the abdomen, each with two hooks. Larvae are very common in all types of stream in Connecticut. There is only one family and several genera. The larva climbs out of the river and travels up the bank where it crawls under logs or a loose rock to pupate. After pupation, the adult lays eggs in hard white egg cases on the sides of rocks or bridge abutments. The larvae are often used for fish bait.

- 80** Common name: Giant stonefly
Family name: Pteronarcyidae
Feeding group: Shredder
Pollution tolerance: Low = 0 (**CT MOST WANTED MACRO**)
Type of stream found: Fast moving sections of high gradient upland streams
Location found in stream: In leaf packs which are trapped in between rocks in fast flowing sections of streams.
Couplet number in the key: 29

Trivia: The giant stonefly appear to be made out of a rigid exoskeleton. This family is the only stonefly which has gills present on the first few sections of the abdomen. To locate these gills, look at the bottom surface (ventral view). The body is usually black and sometimes has white tips on the ends of the antenna. This stonefly can grow up to 2 inches in length. They have no tolerance for pollution. These stoneflies are not commonly found in Connecticut streams. A positive collection is very important to documenting water quality.

All stoneflies are very intolerant of organic pollutants. They have two tails, and two tarsal claws (toes) at the end of each leg. They all are dorsally flattened. Stoneflies prefer to live in very fast moving water under rocks, and in organic debris. All stoneflies indicate high water quality.

- 81** Common name: Common stonefly
 Family name: Perlidae
 Feeding group: Predator
 Pollution tolerance: Low = 1
 Type of stream found: Moderate to fast moving streams of upland areas
 Location found in stream: Underneath loosely embedded stones in riffle areas.
 Couplet number in the key: 29

Trivia: This stonefly is very common in the streams of Connecticut. The nymph can grow to 1.5 inches in length and comes in a variety of brown color patterns. Perlid stoneflies have a tuft of gills where the leg meets the body (hairy armpits) but do not have gills on the first few sections of the abdomen. When these organisms are in an oxygen stressed environment they will try to physically move water over the gills by doing push-ups.

All stoneflies are very intolerant of organic pollutants. They have two tails, and two tarsal claws (toes) at the end of each leg. They all are dorsally flattened. Stoneflies prefer to live in very fast moving water under rocks, and in organic debris. All stoneflies indicate high water quality.

- 82** Common name: Roach-like stonefly
 Family name: Peltoperlidae
 Feeding group: Shredder
 Pollution tolerance: Low = 0 (**CT MOST WANTED MACRO**)
 Type of stream found: Fast moving, cold, clean, high gradient forested streams
 Location found in stream: In fast waters amongst leaf packs and other coarse particulate matter.
 Couplet number in the key: 30

Trivia: The roach-like stonefly is very intolerant of environmental stresses. The insect is shaped like an inverted tear drop. The body is uniformly brown and is very shiny. These organisms move very quickly and are difficult to capture with forceps. They are different from all other stoneflies in that the head is broadly joined to the thorax.

All stoneflies are very intolerant of organic pollutants. They have two tails, and two tarsal claws (toes) at the end of each leg. They all are dorsally flattened. Stoneflies prefer to live in very fast moving water under rocks, and in organic debris. All stoneflies indicate high water quality.

- 83** Common name: Nemourid stonefly
 Family name: Nemouridae
 Feeding group: Shredder
 Pollution tolerance: Low = 2
 Type of stream found: Moderate to fast moving streams of moderate gradient in forested areas
 Location found in stream: Found in and amongst leaf packs.
 Couplet number in the key: 32

Trivia: These are small stoneflies only reaching 1/2 of an inch. The gills are located around the underside of the throat, giving the organism the appearance of a hairy neck. They may be confused with Taeniopterygidae, however the latter have a single small filamentous gill at the base of each leg. Nemourids can be very common when conditions permit.

All stoneflies are very intolerant of organic pollutants. They have two tails, and two tarsal claws (toes) at the end of each leg. They all are dorsally flattened. Stoneflies prefer to live in very fast moving water under rocks, and in organic debris. All stoneflies indicate high water quality.

84	Common name:	Perlodid stonefly
	Family name:	Perlodidae
	Feeding group:	Predator
	Pollution tolerance:	Low = 2 (CT MOST WANTED MACRO)
	Type of stream found:	Moderate to fast moving clean forested upland streams
	Location found in stream:	Throughout a riffle area under loosely embedded rocks or on organic packs.
	Couplet number in the key:	32

Trivia: The hind wing pads are divergent from the body axis. The nymphs are long and slender, only about 3-6 mm wide. The body may have a light pattern on the wing pads, and head, while the abdomen may have several light lines.

All stoneflies are very intolerant of organic pollutants. They have two tails, and two tarsal claws (toes) at the end of each leg. They all are dorsally flattened. Stoneflies prefer to live in very fast moving water under rocks, and in organic debris. All stoneflies indicate high water quality.

85	Common name:	Rolled winged stonefly
	Family name:	Leuctridae
	Feeding group:	Shredder
	Pollution tolerance:	Low = 0
	Type of stream found:	Fast to moderately fast moving water in upland streams with moderate gradient
	Location found in stream:	Throughout the stream on leaf packs
	Couplet number in the key:	33

Trivia: These are small, elongated nymphs. Often they have a reddish brown tint. They are very difficult to identify. Many of the characters are seen under high power.

All stoneflies are very intolerant of organic pollutants. They have two tails, and two tarsal claws (toes) at the end of each leg. They all are dorsally flattened. Stoneflies prefer to live in very fast moving water under rocks, and in organic debris. All stoneflies indicate high water quality.

86	Common name:	Green stonefly
	Family name:	Chloroperlidae
	Feeding group:	Predator
	Pollution tolerance:	Low = 1
	Type of stream found:	Moderate to fast moving clean forested upland streams
	Location found in stream:	Throughout a riffle area under loosely embedded rocks or on organic packs.
	Couplet number in the key:	33

Trivia: The chloroperlid stoneflies are a small thin elongated stonefly. The wing pads are parallel to the body axis. The tails are shorter than the length of the abdomen. These nymphs prefer more upland streams. Adult chloroperlidae are bright yellowish-green, hence the name.

All stoneflies are very intolerant of organic pollutants. They have two tails, and two tarsal claws (toes) at the end of each leg. They all are dorsally flattened. Stoneflies prefer to live in very fast moving water under rocks, and in organic debris. All stoneflies indicate high water quality.

87	Common name:	Brush-legged mayflies
	Family name:	Oligoneuriidae
	Feeding group:	Collector/Filterer
	Pollution tolerance:	Low = 2
	Type of stream found:	Moderate to fast flowing stream of low gradient
	Location found in stream:	In moderate to fast current on the surface of rocks
	Couplet number in the key:	35

Trivia: There is only one genera, *Isonychia*, found in Connecticut. The nymphs are the strongest swimmers of any aquatic insect. The three caudal filaments (tails) are made up of a series of small hairs. These hairs act like an oar on a boat, as the mayfly undulates the tail propels it through the water. This family of mayfly passively filters fine particulate matter from the water column. Close inspection of the front legs will reveal a double row of long hairs (hence the name). These hairs trap fine matter as it passes through. No other mayfly family has this characteristic.

Most mayflies have three tails, although some appear to have two. All mayflies have only one tarsal claw (toe) at the end of each leg. They have gills on the top or sides of the abdomen which can be seen from top of the insect (dorsal surface). In general mayflies actively gather fine organic matter and have low to moderate pollution tolerances.

88	Common name:	Spiny Crawlers
	Family name:	Ephemerellidae
	Feeding group:	Collector/Gatherer
	Pollution tolerance:	Low = 1 (<i>Drunella</i> is a CT MOST WANTED MACRO)
	Type of stream found:	Moderate to fast flowing streams of any gradient
	Location found in stream:	On rocks and coarse organic substrates
	Couplet number in the key:	36

Trivia: The distinguishing characteristic for the family is that gills are absent on the first and second abdominal sections. This is a large family with a half dozen genera found in Connecticut. Their name derives from the serrated edge of the abdominal sections. They are one of the most commonly collected mayfly families in Connecticut.

Most mayflies have three tails, although some appear to have two. All mayflies have only one tarsal claw (toe) at the end of each leg. They have gills on the top or sides of the abdomen which can be seen from top of the insect (dorsal surface). In general mayflies actively gather fine organic matter and have low to moderate pollution tolerances.

Drunella is a genus under Ephemerellidae. It has a pollution tolerance of 0 and is one of the most wanted macroinvertebrates. The inside surface of the front legs of *Drunella* are jagged like a serrated knife. Additionally, this section is much thicker than the rest of the leg parts. The enlarged front leg section, have been described by students as, "like the arms of a body builder".

89	Common name:	Prong-gills
	Family name:	Leptophebiidae
	Feeding group:	Collector/gatherer
	Pollution tolerance:	Low = 2
	Type of stream found:	Moderate to fast flowing streams in forested areas
	Location found in stream:	On rocks and gravel amongst woody and organic deposits
	Couplet number in the key:	37

Trivia: These are small mayflies which have forked gills. The gills are often lost when the organism is preserved. Without the gills the mayfly has a very smooth and shiny exoskeleton, like well polished leather shoes.

Most mayflies have three tails, although some appear to have two. All mayflies have only one tarsal claw (toe) at the end of each leg. They have gills on the dorsal surface of the abdomen (top surface). In general mayflies actively gather fine organic matter and have low to moderate pollution tolerances.

90	Common name:	Flat-Headed mayflies (Shovel-nose mayfly)
	Family name:	Heptageniidae
	Feeding group:	Scraper
	Pollution tolerance:	Moderate = 4 (<i>Epeorus</i> CT MOST WANTED MACRO)
	Type of stream found:	Moderate to fast flowing streams with moderate gradient
	Location found in stream:	On the surface and underside of rocks
	Couplet number in the key:	38

Trivia: The flat headed mayflies are very common in Connecticut streams. Often they can be numerous found with the Hydropsychid caddisfly. They are well adapted to live in fast currents. The bodies are extremely flattened. The head is broad and flat, which forces the water up and over the insect, holding it to the substrate.

Most mayflies have three tails, although some appear to have two. All mayflies have only one tarsal claw (toe) at the end of each leg. They have gills on the dorsal surface of the abdomen (top surface). In general mayflies actively gather fine organic matter. This family feeds upon microscopic algae found growing on the substrate.

At first glance (*Epeorus*) appear to be a stonefly because they only have two tails. However, because there is only 1 claw at the end of each leg, they are mayflies. If you look closely you may see the third tail in between the two longer ones (just a stub).

91 Common name: Primitive minnow mayflies
Family name: Siphonuridae
Feeding group: Collector/gatherer
Pollution tolerance: High = 7
Type of stream found: Moderate to fast flowing streams
Location found in stream: On rocky and organic substrates
Couplet number in the key: 39

Trivia: This family is easy to confuse with both the brush-legged mayflies and the small minnow mayflies. However, the primitive minnow mayflies (1) do not have a double row of long hairs on the front legs, and (2) they have short antenna. The members of this family are also very good swimmers.

Most mayflies have three tails, although some appear to have two. All mayflies have only one tarsal claw (toe) at the end of each leg. They have gills on the dorsal surface of the abdomen (top surface). In general mayflies actively gather fine organic matter and have low to moderate pollution tolerances.

92 Common name: Small minnow mayflies
Family name: Baetidae
Feeding group: Scraper
Pollution tolerance: Moderate = 4
Type of stream found: Moderate to fast flowing streams
Location found in stream: On and in rocky substrates
Couplet number in the key: 39

Trivia: These can be very small nymphs (2-4 mm in length). Some genera have appear to have only two tails. These mayflies can be very common when conditions permit. However, due to their extremely small size, they are easily missed when sampling.

Most mayflies have three tails, although some appear to have two. All mayflies have only one tarsal claw (toe) at the end of each leg. They have gills on the dorsal surface of the abdomen (top surface). In general mayflies actively gather fine organic matter and have low to moderate pollution tolerances.

93	Common name:	Common net-spinners
	Family name:	Hydropsychidae
	Feeding group:	Collector/filterer
	Pollution tolerance:	Moderate = 4
	Type of stream found:	Moderate to slow flowing stream of moderate to low gradient
	Location found in stream:	In silk nets on the substrate of riffle areas
	Couplet number in the key:	40

Trivia: The hydropsychid caddisflies are the most commonly collected caddisflies. They are distinguished from all other caddisflies in that the ventral sections of the abdomen (underneath) have pairs of fluffy gills. The organisms spin a silk web between the rocks. Here it filters fine organic matter from the water column. These caddisflies will defend a small territory around each web. They are extremely common below pond outflows and sewage treatment plants. When these are the dominant family in a sample comprising greater than 70% of the organisms collected, water quality is probably impaired.

Caddisflies, as a group, are elongate organisms with soft abdomens. There are two major types, the free living forms and the case building forms. Most of the free living forms build silken webs on the substrate to filter fine organic material. One free living family is predatory. The case builders make a shelter out of either inorganic or organic materials. Caddisflies are very common in just about every stream in Connecticut.

94	Common name:	Water penny beetle
	Family name:	Psephenidae
	Feeding group:	Scraper
	Pollution tolerance:	Moderate = 4
	Type of stream found:	Fast flowing streams
	Location found in stream:	Securely fastened to the surface of cobbles in a riffle
	Couplet number in the key:	42

Trivia: Do 100 water penny beetles make a sand dollar? The water penny larvae are flattened oval shaped organisms. They are well adapted to scrape microscopic algae off of the surface of rocks in fast current. The head, legs, and gills are located underneath of expanded body sections. The adults can be found on the downstream side of large boulders near the water surface. *Be aware of counterfeit stream currency (false water penny beetle larvae). False water pennies belong to the family Eubriidae and have a tolerance of 5. False water pennies have serrated edges around the edge of the organism (like teeth or indented). If your water penny is false write the name Eubriidae in on the data sheet. Use a tolerance value of 5 to figure the HBI value.*

95	Common name:	Riffle beetle adults
	Family name:	Elmidae
	Feeding group:	Scraper
	Pollution tolerance:	Moderate = 4
	Type of stream found:	Moderate to fast flowing stream of any gradient

Location found in stream: Riffle areas, on organic substrates
Couplet number in the key: 44

Trivia: These are very small beetles (3-5 mm in length). They have long legs as compared to the body and the antenna are usually easy to see. These beetles are often missed when sampling in the field because of the small body size and the slow movements. Riffle beetles are one of the few beetle species which lives completely underwater in all life stages.

96 Common name: Long-toed water beetles
Family name: Dryopidae
Feeding group: Scraper
Pollution tolerance: Moderate = 5
Type of stream found: Moderate flowing streams of low to moderate gradients
Location found in stream: In slower margins crawling on rocks
Couplet number in the key: 44

Trivia: These beetles resemble the riffle beetles, however they are much larger (about twice the size). They are not collected very frequently. The antenna are very difficult to see because it is shortened.

97 Common name: Riffle beetle larva
Family name: Elmidae
Feeding group: Scraper
Pollution tolerance: Moderate = 4
Type of stream found: Moderate to fast flowing stream of any gradient
Location found in stream: Riffle areas, on organic substrates
Couplet number in the key: 45

Trivia: These are small (4-10 mm) brown arc-shaped larva. They are very difficult to see in the field.

98 Common name: Ptilodactylid beetle larva
Family name: Ptilodactylidae
Feeding group: Shredder
Pollution tolerance: Low = 2
Type of stream found: Moderate to fast flowing stream of any gradient
Location found in stream: Burrowing in soft substrates
Couplet number in the key: 45

Trivia: These are large (10-20 mm) brown arc-shaped larva. They are easy to see in the field. The larvae are not commonly collected. These look like giant riffle beetle larva.

- 99** Common name: Finger-net caddisflies
 Family name: Philopotamidae
 Feeding group: Collector/filterer
 Pollution tolerance: Moderate = 3
 Type of stream found: Moderate to fast flowing streams of moderate gradient
 Location found in stream: In riffle areas in webs attached to the substrate
 Couplet number in the key: 47

Trivia: The finger-net caddisflies are elongate and slender. They are one of four families of filtering caddisflies. The abdomen is white and the head is bright orange. The upper lip of the organism is transparent and T-shaped.

Caddisflies, as a group, are elongate organisms with soft abdomens. There are two major types, the free living forms and the case building forms. Most of the free living forms build silken webs on the substrate to filter fine organic material. One free living family is predatory. The case builders make a shelter out of either inorganic or organic materials. Caddisflies are very common in just about every stream in Connecticut.

- 100** Common name: Free-living caddisflies (Michelin Man)
 Family name: Rhyacophilidae
 Feeding group: Predator
 Pollution tolerance: Low = 0 (**CT MOST WANTED MACRO**)
 Type of stream found: Moderate to fast flowing streams of high to moderate gradient
 Location found in stream: On substrates with mosses
 Couplet number in the key: 48

Trivia: This is a very intolerant family. It free ranges for prey among mosses and algae. The larvae are large, bright-green, and very mobile when alive. When preserved they take on a purple color. The prolegs at the end of abdomen are long and have large hooks.

Caddisflies, as a group, are elongate organisms with soft abdomens. There are two major types, the free living forms and the case building forms. Most of the free living forms build silken webs on the substrate to filter fine organic material. One free living family is predatory. The case builders make a shelter out of either inorganic or organic materials. Caddisflies are very common in just about every stream in Connecticut.

- 101** Common name: Trumpet-net caddisflies
 Family name: Polycentropodidae
 Feeding group: Collector/filterers
 Pollution tolerance: High = 6
 Type of stream found: Moderate to slow flowing streams of low gradient
 Location found in stream: Slower currents or stream margins
 Couplet number in the key: 48

Trivia: This is the least commonly collected net spinner. The upper lip is not T-shaped, and the abdomen may have a purplish tint when preserved. The head may have dark spotted pattern.

Caddisflies, as a group, are elongate organisms with soft abdomens. There are two major types, the free living forms and the case building forms. Most of the free living forms build silken webs on the substrate to filter fine organic material. One free living family is predatory. The case builders make a shelter out of either inorganic or organic materials. Caddisflies are very common in just about every stream in Connecticut.

102 Common name: Long-horned case makers
Family name: Leptoceridae
Feeding group: Shredder
Pollution tolerance: Moderate = 4
Type of stream found: Slow moving streams of low to moderate gradient
Location found in stream: In organic debris along stream margins
Couplet number in the key: 49 or 10 in the case key

Trivia: These caddisflies are distinguished from all others in that the antenna are very long for caddisflies (1-4 sections 1-4 mm in total length). They are very common when conditions permit. Most genera are shredders.

Caddisflies, as a group, are elongate organisms with soft abdomens. There are two major types, the free living forms and the case building forms. Most of the free living forms build silken webs on the substrate to filter fine organic material. One free living family is predatory. The case builders make a shelter out of either inorganic or organic materials. Caddisflies are very common in just about every stream in Connecticut.

103 Common name: Snail case makers
Family name: Helicopsychidae
Feeding group: Scraper
Pollution tolerance: Moderate = 3
Type of stream found: Fast moving streams with fine sand deposits
Location found in stream: Crawling on gravel and coarse sand deposits
Couplet number in the key: 50 or 5 in the case key

Trivia: These caddisflies are very small. They make a snail shaped case constructed of tiny grains of sand and rock. The entire case is the size of a pea. They can be very common in clear cold gravelly streams. They are very difficult to see in the field.

Caddisflies, as a group, are elongate organisms with soft abdomens. There are two major types, the free-living forms and the case building forms. Most of the free-living forms build silken webs on the substrate to filter fine organic material. One free-living family is predatory. The case builders make a shelter out of either inorganic or organic materials. Caddisflies are very common in just about every stream in Connecticut.

- 104** Common name: Micro-caddisflies or purse case makers
 Family name: Hydroptilidae
 Feeding group: Scraper
 Pollution tolerance: Moderate = 4
 Type of stream found: Any type of stream conditions
 Location found in stream: Attached to aquatic plants, cobbles or in fine sand substrates
 Couplet number in the key: 51 or 6 in the case key

Trivia: These are extremely small caddisflies, only a few millimeters in length. They make small cases out of a variety of materials. Above each pair of legs is a hardened plate. These are extremely difficult to see in the field.

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- 105** Common name: Saddle case makers
 Family name: Glossosomatidae
 Feeding group: Scraper
 Pollution tolerance: Low = 0 (**CT MOST WANTED MACRO**)
 Type of stream found: Moderate to fast flowing waters
 Location found in stream: Securely fastened to the surface of cobbles in fast water
 Couplet number in the key: 52 or 7 in the case key

Trivia: These caddis build a case of a few small pebbles. The overall shape looks like that of a tortoise. They are very common in streams when conditions permit. The organism has an elongated head compared to other caddisflies.

Caddisflies, as a group, are elongate organisms with soft abdomens. There are two major types, the free living forms and the case building forms. Most of the free-living forms build silken webs on the substrate to filter fine organic material. One free-living family is predatory. The case builders make a shelter out of either inorganic or organic materials. Caddisflies are very common in just about every stream in Connecticut.

- 106** Common name: Humpless case makers
 Family name: Brachycentridae
 Feeding group: Shredder
 Pollution tolerance: Low = 1
 Type of stream found: Slow to fast flowing waters
 Location found in stream: Crawling in slow water areas behind rocks, stream margins, and on organic material.
 Couplet number in the key: 53 or 3 in the case key

Trivia: These caddisflies are very common. They build cases of a variety of materials from organic to inorganic. The cases are constructed of thin strips of material assembled in a circular or square form. These are medium sized caddisflies (5-15 mm).

Caddisflies, as a group, are elongate organisms with soft abdomens. There are two major types, the free-living forms and the case building forms. Most of the free-living forms build silken webs on the substrate to filter fine organic material. One free-living family is predatory. The case builders make a shelter out of either inorganic or organic materials. Caddisflies are very common in just about every stream in Connecticut.

107 Common name: Lepidostomatid case makers
Family name: Lepidostomatidae
Feeding group: Shredder
Pollution tolerance: Low = 1
Type of stream found: Small forested streams with slow to fast flowing waters
Location found in stream: In slower margins on organic debris
Couplet number in the key: 54 or 2 in the case key

Trivia: This caddisfly builds a case out of rectangular pieces of bark or wood. It resembles the family Brachycentridae, however, it has lateral humps on the first section of the abdomen.

Caddisflies, as a group, are elongate organisms with soft abdomens. There are two major types, the free-living forms and the case building forms. Most of the free-living forms build silken webs on the substrate to filter fine organic material. One free-living family is predatory. The case builders make a shelter out of either inorganic or organic materials. Caddisflies are very common in just about every stream in Connecticut.

108 Common name: Northern case maker
Family name: Limnephilidae
Feeding group: Shredder
Pollution tolerance: Moderate = 4
Type of stream found: Slow to fast flowing waters
Location found in stream: Throughout the entire stream bottom
Couplet number in the key: 55 A or 8 A in the case key

Trivia: This is the largest group of caddisflies with 40 genera found in North America. These are large elongate caddisflies, up to 20 millimeters. They are case builders, using a variety of materials including sand grains and stick and plant fragments. The largest limnephilid in Connecticut builds a case of large stick fragments.

Caddisflies are elongate organisms with soft abdomens. There are two major types, the free-living forms and the case building forms. Most of the free-living forms build silken webs on the substrate to filter fine organic material. One free-living family is predatory. The case builders make a shelter out of either inorganic or organic materials. Caddisflies are very common in just about every stream in Connecticut.

109	Common name:	Strong case makers
	Family name:	Odontoceridae
	Feeding group:	Scraper
	Pollution tolerance:	Low = 0
	Type of stream found:	Moderate to fast moving stream
	Location found in stream:	Securely fastened to cobbles
	Couplet number in the key:	55 or 9 in the case key

Trivia: These caddisflies build arc-shaped cases of small stone fragments. The larvae are often grouped together on the sides of cobbles.

Caddisflies, as a group, are elongate organisms with soft abdomens. There are two major types, the free-living forms and the case building forms. Most of the free-living forms build silken webs on the substrate to filter fine organic material. One free-living family is predatory. The case builders make a shelter out of either inorganic or organic materials. Caddisflies are very common in just about every stream in Connecticut.

#110 Key to some of the most distinctive caddisfly cases:

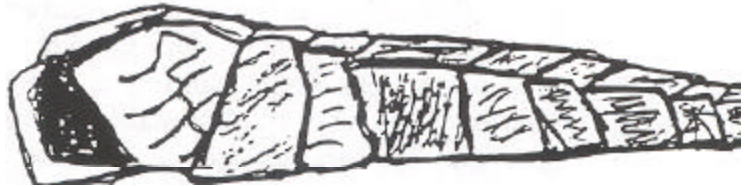
Note: this is a very limited key to only a few of the most common and distinctive caddisfly cases. The actual organism should be used for definitive identification. However, many times cases can assist in proper identification. If you have both the organism and the case, identify both. If the conclusion for both is the same family, then the identification has a high probability of being correct. If they are different, attempt to figure which has a higher probability of being correct. For example, if an organism removed from a snail shaped case is identified to be a lepidostomatidae caddisfly and the case is identified as helicopsychidae, then the larval identification probably was incorrect.

1. What type of material is the case made of:

- A. Organic material only (sticks, bark, fibers etc.) go to ...2
- B. Inorganic material only (rocks, sand, etc.)...go to ...5
- C. Mixture of both organic and inorganic...go to ...10

2. Does the case have a square opening? Is the material used to build the case shaped like square blocks?

- A. Yes... go to ...107 (Lepidostomatidae) Figure 2A: Approximate Size -----
- B. No...go to...3



3. Does the case have a round opening? Is the case made out of thin strips of material?

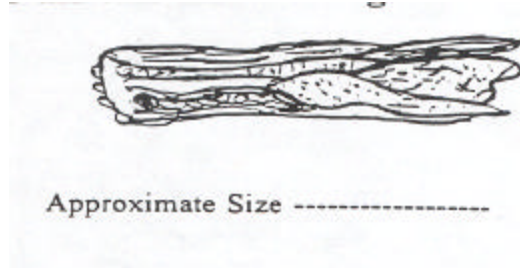
- A. Yes...go to ...106 (Brachycentridae) Figure 3A: Approximate size -----
- B. No... go to ...4



4. Is the case about 3 cm (1 inch) in length? Is the case made of large pieces of sticks and bark?

- A. Yes...go to...108 (Limnephilidae)
- B. No...the case is not distinctive enough to identify the organism with this key. Please refer to a definitive text for more information.

Figure 4A:



5. Is the case shaped like a tiny snail shell?

- A. Yes...go to...103 (Helicopsychidae)
- B. No...go to... 6

Figure 5A: Approximate size ----



6. Is the case very small and looks like an envelope? Is the case oval and made of tiny sand grains?

- A. Yes...go to...104 (Hydroptilidae)
- B. No...go to...7

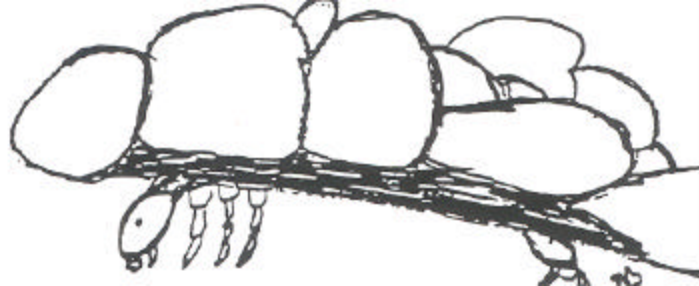
Figure 6A: Approximate size ----



7. Is the case flat on one side and rounded on the other? Is the case made out of 15-20 small pebbles all about the same size?

- A. Yes...go to...105 (Glossosomatidae)
- B. No...go to...8

Figure 7A: Approximate Size -----



8. Does the case have 2-3 large pebbles on the sides?

- A. Yes...go to...108 (Limnephilidae)
- B. No...go to...9

Figure 8A: Approximate size -----



9. Is the case made of very tightly packed transparent grains of sand?

- A. Yes...go to...109 (Odontoceridae)
- B. No...the case is not distinctive enough to identify the organism with this key. Please refer to a definitive text for more information.

Figure 9A:



Approximate Size -----

10. Does the case have coniferous needles attached to the sides? Does the case have any long thin organic material attached to the sides?

A. Yes...go to...102 (Leptoceridae)

Figure 10A:

B. No...the case is not distinctive enough to identify the organism with this key. Please refer to a definitive text for more information.

Approximate Size -----

