Aquatic Invertbrate Key (turn over page for intvertbrates with legs)

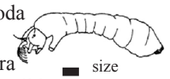
Without legs

Without a shell

With a Distinct head

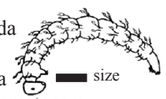
Body widens at bottom end, may be attached to substrate, dark head (blackfly larva)

Phylum Arthropoda
Class Insecta
Order diptera
Family simulidae
filtering collector



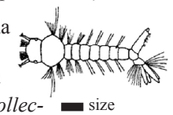
Both ends of body about the same width; tiny pair of prolegs under head and at tip of abdomen. (midge larva)

Phylum Arthropoda
Class Insecta
Order diptera
Family Nematocera
gathering collector



Body widens at head end, hairs along body (mosquito larva)

Phylum Arthropoda
Class Insecta
Order diptera
filtering collec-



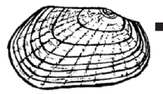
With a shell (Mollusca)

Shell hinged (clams)

Small, <15mm long (Pea clams)

Phylum Mollusca
Class Bivalvia
Order unionids
filtering collector

Larger, with thick, heavy shells, clams and Mussels

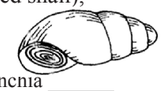


Phylum Mollusca
Class Bivalvia
Order sphaeriidae
filtering collec-

Shell without hinge

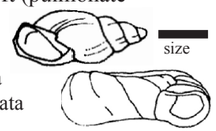
Snail like

Plate-like cover over opening; when spire is pointed up opening faces usually is on right, (gilled snail),



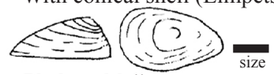
Phylum Mollusca
Class Gastropoda
Order prosobrancnia
scraper

No plate-like cover over opening; when spire is pointed up opening usually is on left (pulmonate snails)



Phylum Mollusca
Class Gastropoda
Order Pulmonata
scraper

With conical shell (Limpets)



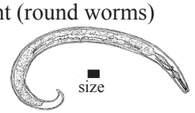
Phylum Mollusca
Class Gastropoda
Order pulmonata
scraper

Without distinct head

Round in cross section

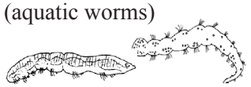
Worm Like

Smooth round worm, unsegemneted, thrashing movement (round worms)



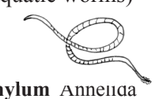
Phylum Nematoda
shredder

Long and thin segmented stretch body movement (aquatic worms)



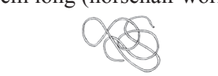
Phylum Annelida
Class Oligochaetes
shredder

Segmented stretching round body movement (aquatic worms)



Phylum Annelida
Class Oligochaetes
shredder

long thin smooth up to 30 cm long (horsehair worms)

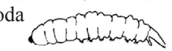


Phylum Nematoda
Class Turbellaria
shredder

Caterpiller like

finger-like extensions on one end, well developed extensions, last segment not swollen (cranefly larva)

Phylum Arthropoda
Class Insecta
Order diptera
FamilyNematocera
shredder



two feathered "horns" at back end, (watersnipe larva)

Phylum Arthropoda
Class Insecta
Order diptera
Family Athercidae
predator

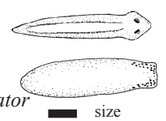
Flat in cross section

With oral and caudal suckers Hirudinea (leeches)

Phylum Annelida
Class Hirudinea
Order Rhynchobdellida
parasite or predator

Without suckers Turbellaria (flatworms)

Phylum Platyhelminthes
Class Turbellaria
Order Planarians
parasite or predator



Organisms found in good quality water, Sensitive to pollution.

Taxa (groups)	**Counts**
Order Plecoptera (Stonefly)	
Order Trichoptera (Caddisfly)	
Order Coleoptera (Water Penny)	
Order Coleoptera (Riffle Beetle)	
Order Ephemeroptera (Mayfly)	
Class Gastropoda, family Prosobranchs (Gilled Snail)	

# of Taxa (groups) _____
Water Quality Index number x 3 _____

Organisms found in moderate quality water, Somewhat tolerant to pollution.

Taxa (groups)	**Counts**
Order Decapoda, (Crayflsh)	
Order lsopoda (Sowbug:)	
Order Amphipoda (Scud:)	
Order Megaloptera, Family Oialidae (Alderfly larva):	
Order Megaloptera, Family Corydalidae (Fishfly larva)	
Order Odonata, Suborder Zygoptera (Damselfly: larva)	
Order Diptera, Family Athercidae (Watersnipe Larva)	
Order Diptera, Suborder Nematocera (Crane Fly)	
Order Coleoptera (Beetle Larva)	
Order Odonata Suborder Anisoptera (DragonFly larva)	

# of Taxa (groups) _____
Water Quality Index number x 2 _____

Organisms found in poor quality water, Tolerant to pollution.

Taxa (groups)	**Counts**
Class Oligochaeta (Aquatic Worm)	
Order Diptera, Suborder Nematocera (Midge Larva)	
Order Diptera, Family Simulidae.(Blackfly Larva)	
Order Hirudinea (Leech)	
Class Gastropod, Order Pulmonata (Pouch Snail and Pond Snails)	
Class Turbellaria (Planarian)	
Order Hydracarina (Water Mite:)	
Order Hemiptera (True Bug Adult)	
Phylum Nematoda	

# of Taxa (groups) _____
Water Quality Index number x 1 _____

Total Water Quality Index (sum of three categories) ___

Excellent	**(>22)**
Good	**(17-22)**
Fair	**(11-16)**
Poor	**(<11)**

Correlating invertbrate data with sources of pollution

Study characteristics	Stream
high diversity, high counts of pollution sensitive invertbrates	no problems, good water quality
low diversity, high counts, many scrapers and collectors	organic enrichment/pollution or lots of algal growth resulting from nutrient enrichment
high diversity and low counts, or, no insects but stream appears clean	toxic pollution (eg chlorine, acids, heavy metals, pesticides) or, another sever problem of unknown origin
low diversity and low counts of all types of invertbrates	physical problems (eg downstream of dam, sedimentation from errosion) , or, sometimes streams are unproductive for natural reasons (glacier feed streams, spring fed streams)

Aquatic Invertbrate Key (turn over page for intvertbrates without legs)

With Legs

With 6 legs

No wings or small and do not cover abdomen

Round flat body

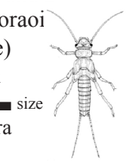
spiderlike larval (water-mites)
Phylum Arthropoda
Class Arachnida
Order Hydrachnidia
predator

body oval and flat; head and legs concealed beneath (water penny)
Phylum Arthropoda
Class Insecta
Order Coleoptera
scraper

Elongated Body

With long, segmented "tails.

With 2 tarsal -claws and 2 "tails" often with thoraoi gills.(stonefly larvae)
Phylum Arthropoda
Class Insecta
Order Plecoptera
predator



With 1 tarsal claw, 3 (occasionally 2) "tails", and with lateral abdominal gills. (mayfly larvae)
Phylum Arthropoda
Class Insecta
Order Ephemeroptera
predator

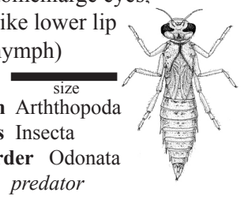
Without long segmented tails

No fan like tails

two or three fan like tails 3 oar-shaped tails; no gills along abdomen (damselfly nymph)
Phylum Arthropoda
Class Insecta
Order Odonata
predator

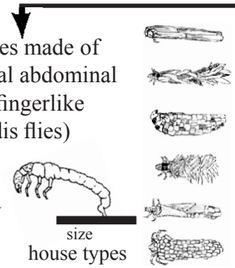
long thin abdomen

fat abdomenlarge eyes, mask-like lower lip onfly nymph)



Phylum Arthropoda
Class Insecta
Order Odonata
predator

fixed or portable houses made of sand or plants, terminal abdominal prolegs, usually with fingerlike abdominal gills, (caddis flies)
Phylum Arthropoda
Class Insecta
Order Trichoptera
predator

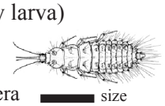


no body houses

no lateral filaments along abdomen body is hardened and stiff, abdomen with hooks and filaments (riffle beetle larva)
Phylum Arthropoda
Class Insecta
Order Coleoptera
gathering collector

lateral filaments along abdomen

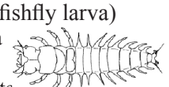
fluffy or branched gill tufts under abdomen (dobson fly larva)
Phylum Arthropoda
Class Insecta
Order Megaloptera
predator



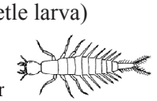
no branched gills under abdomen

abdomen does not end in single, unforked, long hair-like tail

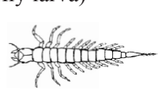
abdomen ends in a pair of prolegs, each with 2 hooks (fishfly larva)
Phylum Arthropoda
Class Insecta
Order Megaloptera
predator



abdomen does not ends in a pair of prolegs, (aquatic beetle larva)
Phylum Arthropoda
Class Insecta
Order Coleopter
predator

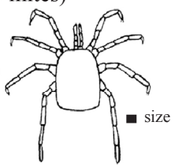


abdomen ends in single, unforked, long hair-like tail (alderfly larva)
Phylum Arthropoda
Class Insecta
Order Megaloptera
predator



With more than 6 legs

With 8 legs adult (water-mites)
Phylum Arthropoda
Class Arachnida
Order Hydrachnidia
predator

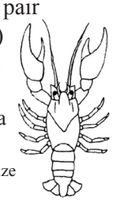


More than 8 legs

long flat body with more than 12 legs, crawls slowly (aquatic sowbug)

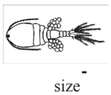
Phylum Arthropoda
Class Crustacea
Order Isopoda
predator

Large, armed with a pair of pincers (crayfish)
Phylum Arthropoda
Class Crustacea
Order Decapoda
predator



Round short bodies, bivalves (water flea)
Phylum Arthropoda
Class Crustacea
Order Caldocerans
predator

Cylinder bodies, long antena, egg clusters (cyclops)
Phylum Arthropoda
Class Crustacea
Order Copepods
predator



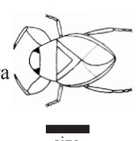
Small, laterally flattened,curved body (scuds)
Phylum Arththo
Class Crustacea
Order amphipoda
predator

With wings and leathery forewings covering abdo-

short legs, swims or dives quickly, with biting mouth parts (adult beetle)
Phylum Arthropoda
Class Insecta
Order Coleoptera
predator

Not short legs

beetle-like, crawls slowly on bottom (riffle beetle adult)
Phylum Arthropoda
Class Insecta
Order Coleoptera
scraper



longer legs, swims quickly with sucking mouthparts forming a jointed beak (true bug adult)
Phylum Arthropoda
Class Insecta
Order Hemiptera
swim on back - *predator*
swims on front, - *shredder*