

Recognition Characteristics of Common Forms of Aquatic Insect Larvae

Single distinctive characteristics are printed in *italics*

1. Forms in which the immature stages (commonly) known as nymphs are not remarkably different from adults. The wings develop externally and are plainly visible upon the back.

Common Name and Order	Form	Tails	Gills	Other peculiarities	Habitat	Food Habits
Stoneflies (Plecoptera)	depressed	2, long	many, minute, around base of the legs		rapids	mainly <i>carnivorous</i>
Mayflies (Ephemeroptera)	elongate, variable	3, long: (rarely 2)	7 pairs <i>dorsal on abdomen</i>		all waters	mainly herbivorous
Damselflies Odonata)	slender, tapering rearward	see gills	3 leaf-like <i>caudal gill-plates</i>	immense grasping lower lip	slow and stagnant	carnivorous
Dragonflies (Odonata)	stout, variable	very short, spine-like	<i>internal gill chamber</i> at end of body	immense grasping lower lip	slow and stagnant	carnivorous
Water bugs (Hemiptera)	short, stout, very like adults	variable	wanting	<i>pointed beak</i> for puncturing and sucking	all waters	carnivorous

2. Forms in which the immature stages differ very greatly from the adults of the same species, being more or less worm-like, having wings developed internally and not visible from the outside, and having the legs shorter, rudimentary or even wanting (larvae proper)

Common Name and Order	Legs	Gills	Rear end of body	Other peculiarities	Habitat	Food Habits
Water moths (Lepidoptera)	3 pairs of minute jointed legs followed by a number of pairs of fleshy prolegs	of numerous white filaments, or entirely wanting	1 pair of fleshy prolegs with numerous claws on them	claws (crotchets) on all prolegs	all waters	herbivorous
Caddisfly larvae (Trichoptera)	3 pairs rather long	variable or wanting	same as above, with paired larger hooks on them	mostly living in portable cases	all waters	mostly herbivorous
Orflies (Neuroptera)	3 pairs shorter	7 pairs of long, lateral filaments	<i>a long tapering tail</i>		gravelly beds	carnivorous
Hellgrammites, Dobsonflies, Fishflies (Megaloptera)	3 pairs	tufted at base of lateral filaments, or wanting	paired hooked claws		all waters	carnivorous
Water Beetles (Coleoptera)	3 pairs	usually wanting	variable		slow or stagnant	carnivorous
True flies (Diptera)	<i>wanting</i>	usuall only a bunch of retractile anal gills	see table below	head small often apparently wanting	all waters	see table below

3. Further characters of some common dipterous larvae: these are distinguished from aquatic larvae of other groups by the absence of true legs.

Common Name and Family	Head	Tail	Fleshy legs, or prolegs	Other peculiarities	Habitat	Food Habits
Craneflies (Tipulidae)	retracted and invisible	a respiratory disc bordered with fleshy appendages	variable		shoals	mostly herbivorous
Net veined midges (Blepharoceridae)	tapering into body	wanting	wanting	<i>flat lobed body with row of ventral suckers</i>	rocks in falls	diatoms, etc.
Mosquitos (Culicidae)	free	with swimming fin of fringed hairs	wanting	<i>swollen thoracic segments</i>	pools at surface	herbivorous
Blackflies (Simuliidae)	free	with caudal vent <i>attachment disc</i>	one beneath the mouth	"fans" on head for food-gathering	rocks in rapids	herbivorous
True midges (Chironomidae)	free	tufts of hairs	1 <i>in front</i> 2 <i>at rear</i> end of body	live mostly in soft tubes	all waters	herbivorous
Soldier flies (Stratiomyiidae)	small, free	floating hairs	wanting	depressed form	still water at surface	herbivorous
Horseflies (Tabanidae)	acutely tapering	tapering body	wanting	tubercle covered <i>spindle shaped body</i>	beds in pools	carnivorous
Snipe flies (Leptidae)	tapering retractile	with 2 short tapering tails	stout paired beneath		rapids under stones	carnivorous
Stryphus flies (Stryphidae)	minute	extensile process as long as the body	wanting		shallow pools	
Muscid flies (Muscoidea)	rudimentary	truncated	usually wanting			

Needham and Needham, 1962