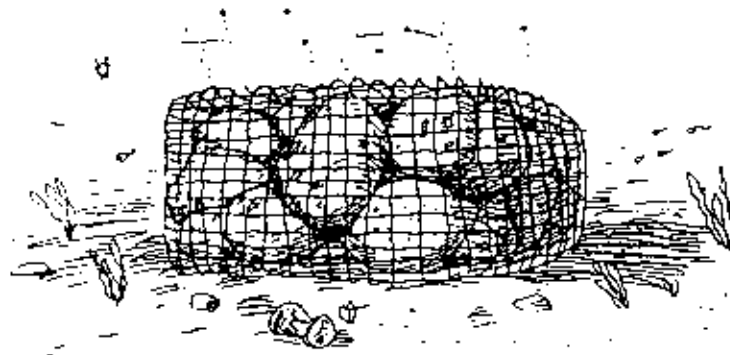


An alternative method is to set up an artificial home made of a wire basket (or a nylon mesh bag) containing rocks and debris, and attach it to the bottom of the stream. After four weeks, which should be sufficient time for bugs to colonise the artificial home, remove the basket and wash all the rocks into a small hand net. Remove the water bugs, and transfer them to a collecting container with water.

Sort the water bugs you've collected into their different types, temporarily storing them in separate compartments of the white ice cube tray. Now, using this Guide (look at the pictures), and any of the invertebrate keys you may have, try to make basic identifications of the bugs you've collected. Record what you've found, and, if you want, make drawings of them.

You don't have to identify the water bugs right down to species, just determine what kind of water bug they are.



Once you've finished making your records, return the insects you've collected to the stream.

## Calculating a Stream Pollution Index

The water bugs listed in this guide are split into four groups depending on how sensitive they are to pollution. The groups are: very sensitive, sensitive, tolerant, and very tolerant. Each water bug also has a number next to it. When you've completed your collection and identification, add the numbers together and you've got a Stream Pollution Index for the part of the stream you've sampled. The higher the total, the cleaner the water.

Pollution Index	Stream Quality Rating
20 or Less	Poor
21-35	Fair
36-50	Good
51 or more	Excellent

Here's an example of how to calculate a Pollution Index from one set of collection results. Note: if you have two or more morphologically distinct (they look different) organisms from the same group, count them separately.

Very Sensitive	Sensitive	Tolerant	Very Tolerant
Yabbies (7)	Dragon Flies (6)	Leech (3)	Mosquito (1)
May Flies (7)	Mussels (6)	Beetles (5)	Blood Worm (1)
	Shrimp (6)	Snails (3)	
Totals			
14 +	18 +	11 +	2 = 45
Pollution Index 45		Stream Quality Rating: GOOD	

Using the Index you can compare your sample site with other sites, you can compare the same site at different times of the year, or with different sites on the same stream, or with different streams.

Keep in mind that the Index is only a rough guide, and its accuracy is very dependant on how well you do your sampling. To make comparisons meaningful, it's important that you use the same sampling technique at each site. It's no good being very thorough at one site, and then not taking the same amount of care at another. You must always take the same number of samples, and the same amount of care with each sample.

## Water Bug Identification and Ratings

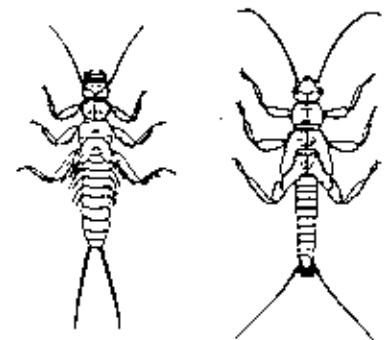
The following pictures and descriptions are of the more common water bugs that are found in most streams. Using this guide and other reference sources, attempt to identify what bugs you've collected.

Pollutions ratings are in square brackets. The higher the number, the more sensitive the animal is to pollution. In other words, water bugs with high numbers usually only occur in healthy streams.

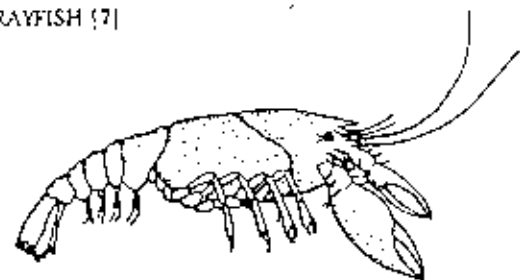
# Very Sensitive Water Bugs

### STONEFLY NYMPHS (6)

Stonefly nymphs have 2 long tails, tubes of thread like gills on their undersides, wing pads, antennae, and two claws on each foot. Found among stones or plants in clear streams.

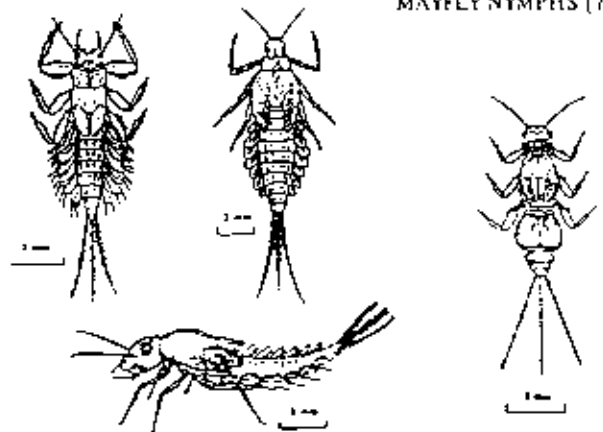


### FRESHWATER YABBIE OR CRAYFISH (7)



Strong grasping claw-like forelegs. Grow up to 40cm long. Found in burrows or near rocks on stream banks.

### MAYFLY NYMPHS (7)



Mayfly nymphs usually have 3 long filaments at the end of their abdomen, with wing pads and lateral gills along abdomen. They have short antennae, and a single claw on each foot. They're found under stones in fast flowing water or among plants in slow flowing water.