



## Salinity Tolerances of Freshwater Macroinvertebrates

Freshwater macroinvertebrates can be found in all types of water bodies across Australia, even swimming pools! They are quite small but most can be seen with the naked eye. They are extremely diverse and range in appearance and size. For instance, they can have no legs to numerous legs, be round or oblong, with or without visible eyes, antennae and mouthparts. Some animals breathe through tubes which they push up through the water surface into the air, others have gills located on various segments of their body and some even take small bubbles of air under water like little scuba tanks!

Freshwater macroinvertebrates vary greatly in sensitivity to a number of factors in their environment, such as water temperature, change in pH, pollution and salinity.

Salinity Limits for some other plants & animals:

Distilled Water	0
Rainwater	10
Humans	830 (desirable max)
Citrus	2300
Vines	2600
Tomatoes	2800
Lucerne	3400
Oats	5500
Poultry	5800
Milking Cows	11000
Beef	18000
Dry Sheep	25000
<i>yabbies die at</i>	<i>41,700</i>
<i>Pacific Ocean</i>	<i>58,300</i>
<i>Dead Sea</i>	<i>555,000</i>

Salinity Tolerance Levels of Various Australian Freshwater Macroinvertebrates				
Class	Order	Family	Common Name	Tolerance (µS cm)
Insecta	Ephemeroptera	Various	Mayfly nymph	750#
Insecta	Tricoptera	Hydropsychidae	Caddisfly Larvae	2,400*
Insecta	Plecoptera	All	Stonefly nymph	4,200
Insecta	Coleoptera	Elmidae	Riffle Beetle (adult)	4,800
Insecta	Hemiptera	Corixidae	Waterboatmen	18,000
Crustacea	Decapoda	Atyidae	Freshwater Shrimp	26,800
Gastropoda	Neotaenioglossa	Hydrobiidae	Freshwater Snail	31,000
Crustacea	Amphipoda	Hyalidae	Side-swimmers/Scud	39,000

# From this study, 45% of genera were found at salinities of <500mg/l

\* Number averaged from tolerance range

There are some important factors to consider when observing salinity levels suitable for macroinvertebrates. First, the salinity levels for the eggs and younger stages of many macroinvertebrates can be significantly less than those stated above. Another factor is the change in habitat that occurs with change in salinity. Although the organism can survive the salinity level present, its preferred habitat may change or disappear, resulting in an absence of many species. As some species become absent, the food web is drastically altered and the system will not be functioning normally. In general, some adult macroinvertebrates can tolerate high levels of salinity, but the integrity of the freshwater system can severely diminish as salinity increases.



**Australian Government**

**Department of Agriculture, Fisheries and Forestry**  
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