

# Waterwatch Victoria

## Macroinvertebrate Voucher Collections: Best Practice Guidelines

Prepared by Sara Johnson

### Introduction

Macro-invertebrate voucher collections are useful resources and can value-add to regional Waterwatch programs. Having 3-D, life-sized specimens can be a great complement to photos and taxonomic keys when mastering your (and future Waterwatch Coordinators' and monitors') macroinvertebrate identification skills.

To maximise your efforts and ensure your voucher collection stands the test of time, the following 'Best Practice' guidelines have been developed for Victorian Waterwatchers. Waterwatch Victoria would like to gratefully recognise Aquatic Scientists Phil Papas and Di Crowther (Department of Sustainability and Environment, Arthur Rylah Institute (DSE/ARI)), and John Hawking (Murray Darling Freshwater Research Centre) for contributing to this document.

### Planning your voucher collection

#### How many macro-invertebrate families might be in my region?

The Victorian Environmental Protection Agency (EPA) has identified key macro-invertebrate families for different bioregions throughout Victoria. This may vary from 18 to 64 families. This listing is included in the Rapid Bio-Assessment Methodology, and can be downloaded from:  
<http://epanote2.epa.vic.gov.au/EPA/Publications.NSF/PubDocsLU/604.1?OpenDocument>

#### Collecting specimens for reference collections

For large specimens, you should concentrate your sampling efforts between mid-October to early December (mid-late Spring), and between mid-March and mid-May (mid-late Autumn).

Ephemeral systems should be sampled in late Spring before they dry out over Summer.

Specimens should be placed directly into ethanol when picking samples (the final ethanol concentration should be 70%), and transferred into voucher collection vials as soon as is convenient.

## Making your Voucher collection

### Equipment

Voucher collections are made up of glass or plastic vials, filled with 70% ethanol. Vials should have tight screw caps to minimise ethanol leakage (including evaporation). Victorian DSE and EPA freshwater scientists use more expensive vials that include an 'o-ring' to reduce ethanol evaporation.

If Coordinators have difficulty accessing ethanol, consider using denatured ethanol (methylated spirits).

Unlike other macro-invertebrates, mites should be stored in GAW solution (glycerol 50%, acetic acid 10% and distilled water 40%)

It is preferable to have a number of specimens of the same taxon in case any specimens are damaged or lost while examining voucher specimens over time. Your region may consider having a 'master' voucher collection, and separate 'day-to-day' collections for use in the field and at education sessions.

### Labels

Labels inside the vial should be either printed with a laser printer (not ink jet), photocopied from printed labels or written in pencil or a Rotring pen on waterproof paper (if unsure do a test run on a label in ethanol).

Consider using two labels for each vial. The first label should include the following site and sample details: Title, Date collected, Catchment (optional), Eastings/Northings of location collected, Full name of waterbody and State, Site Code (if applicable), Sample Method (e.g. sweep sample), and Name of Collector.

Example label -

Waterwatch Voucher Collection 27 April 2005 Goulburn Catchment E373268, N5919868 (Zone 55) Castle Creek, VIC CAS500 Sweep Sample Collector – Sara Johnson
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The second label should be printed or written lengthways on another (narrow) piece of waterproof paper with the Name of the specimen (e.g. Trichoptera : Leptoceridae) and the name of the taxonomic expert that cross-checked the sample (eg. John Hawking). This label can be inserted lengthways into the vial. The advantage of including a second label with the specimen name is that if the taxonomy changes in future (ie. the name of the specimen) then only this label needs to be changed for the update rather than the whole label.

Example label -

Order Trichoptera Family Leptoceridae ID – John Hawking (MDFRC)
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There is a standard national bug number coding system (called 'Taxacode') available on the AusRiVAS website which might come in handy when labelling the top of vials -

<http://ausriv.as.canberra.edu.au/Bioassessment/Macroinvertebrates/>

### **Storage**

Store vials in a dry, safe place. Consider investing in a custom-cut styrafoam tray, carry case or cabinet to protect the glass vials during transportation and storage. Arrange the vials in trays so that macro-invertebrate orders/families are together. Ensure the collection has space to grow.

Regularly check voucher vials for leakages and top up with 70% ethanol as required.

Maintain a list of all specimens, locations etc, alongside the voucher collection at all times. Maintain this list in an electronic spreadsheet. The list should be regularly updated when any new specimens are added to the voucher collection, and to account for any changes in taxonomy, site location details etc.

### **Using your voucher collection**

If removing specimens from the voucher collection vials to compare against samples, always keep the voucher collection in a separate petri dish or container so not to mix the samples up. Ensure that your specimens are always covered with ethanol, to avoid drying out of the voucher specimens. It is good practice to use only have one voucher specimen at a time to avoid confusion.

### **Safety**

Ethanol (Ethyl Alcohol) MSDS are available online.

**Ethanol is highly flammable** and should be kept in a secure container and well away from any naked flame. Ignition sources (eg. cigarettes, open flames, spark tools, mobile phones) should not be allowed in the vicinity. Transport ethanol with care, ensure containers are secure and kept cool, and avoid travelling with possible explosives or other chemicals.

Small working quantities of ethanol should only be poured from the source supply (eg jerry can) as required.

Store in a cool, dry, well ventilated area. Avoid oxidising agents, acids, alkalis, direct sunlight, heat, and food and ignition sources.