

Collection of insect specimens at cultural heritage sites

Recommendations for the capture, handling and transport of insects for identification purposes

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Captions will be soon available in english.

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Why collect insect specimens?

Once an infestation has been detected within a collection, it is often very important to identify the insect species present in order to implement the appropriate eradication procedures and related prevention methods.

For these reasons, collection curators seek to have these insects identified by specialised laboratories, such as those of natural history museums, the INRA, universities or certain more specialised facilities particularly experienced in the identification of insects found in heritage collections, like the CICRP.

In order to ensure a reliable identification, insect specimens collected must be in perfect condition (the legs and antennae, although very fragile appendages, are often essential to achieving an accurate identification down to the species level) and the aim of this document is therefore to specify the precautions to be taken during the capture, handling and transport of these specimens.

Which insects should be collected?

It is important to remember that only **insects having reached adult stage (imago)** may be identified down to the species level. For the most part, larvae and pupae may not be identified down to this level.

Insect specimens may be collected:

- either **dead and dessicated**, then placed in an appropriate container (see Recommendations for transporting insects below),
- or **immersed while alive directly in alcohol in a leakproof container**

Live specimens must never be transported in a closed container. Experience has shown that they do not survive the journey and decompose, thus making them impossible to identify.

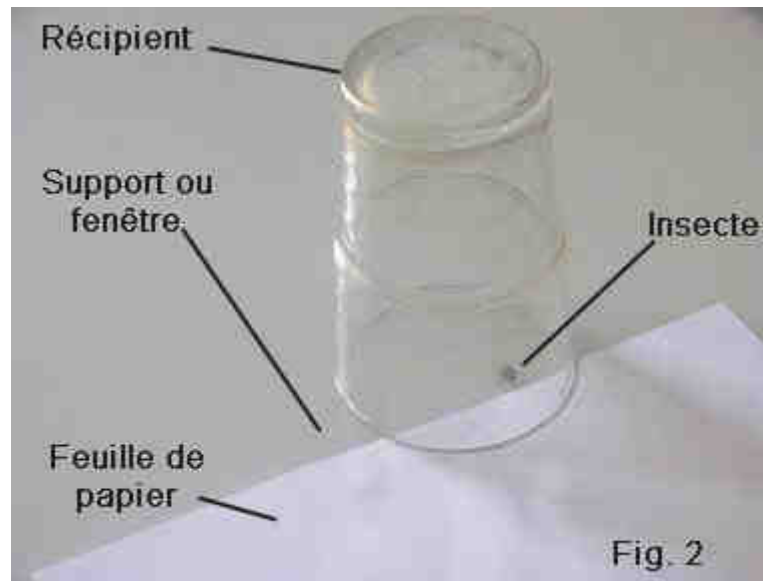
How should live insects be collected?

The safest method for collecting live insects is to use a mouth aspirator equipped with a recipient (here a tube) that can be fitted with a stopper (see Figure 1, mouth aspirator and tube).



When this type of equipment (which may be purchased in specialised stores, although it is also not too difficult to put together oneself) is not available, live insects may be sampled in the following manner:

- Place a glass or open jar over the insect, then slide a piece of paper underneath so as to imprison the specimen between the receptacle and the piece of paper (see Figure 2).
- Transfer the insect to a box with a lid.
- Immediately carry the specimens collected to the identification centre closest to the collection site (within 24 hours).
- **After 24 hours, live insects that have been collected must be immersed in alcohol.**



How should insects be preserved in alcohol?

In order to best preserve insects **that have been collected alive**, one should observe the following procedures:

- Collect the live insects and **immerse them in alcohol**. Ethanol (either 70% or 96%) should be used (rubbing alcohol, rum, camphorated 70% alcohol or other forms are not suitable replacements).
- Use receptacles **with leakproof closures**.
- Glass receptacles are best, with screw lids and gaskets (see Figure 3) so as to avoid leakage, which is a recurring problem with plastic flasks that lack gaskets.
- Pack the insects in with cotton wool, without allowing any air bubbles to enter the receptacle before sealing the lid, since some insects, especially those of the *Lepisma* genus, have tail bristles that may easily break off due to changes in the environment.
- Record all pertinent information on a label (collection site and date, material on which the insect was found, name of the collector, etc.) using indelible ink (such as India ink) or pencil.
- Place the label inside the receptacle, above the cotton wool.

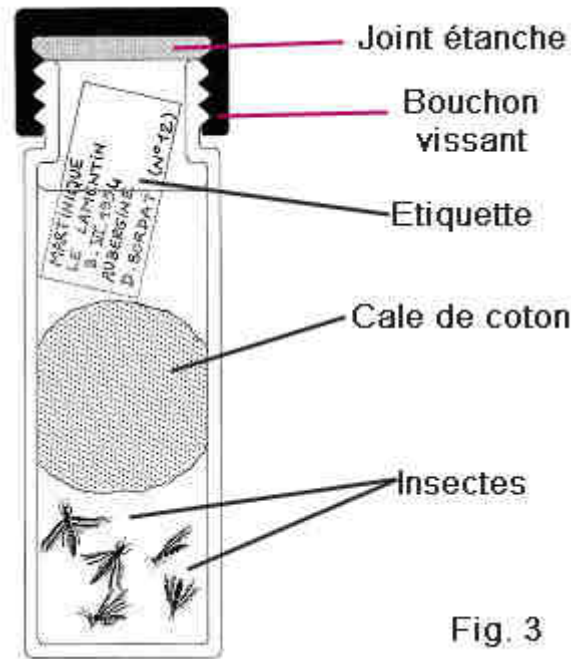


Fig. 3

Appropriate collection receptacles may be sent by the CICRP upon request.

How should dead insects be collected?

Collected insects may be placed:

- on a cotton pad that can be easily made by anyone
- on a miniature cotton pad placed inside a plastic box

Preparation of insects on miniature cotton pads in plastic boxes

Dead adult insects are very fragile and very often their appendages (primarily antennae and legs) break off when handled during collection. These appendages are very often essential to achieve an identification down to the species level.

In order to ensure that dead insects are not damaged during collection, fine-tip flexible forceps are generally used. These bend easily in contact with the insect, rather than the other way around, thus avoiding the fragmentation of the specimen (see Figure 4).



Fig. 4

In the absence of this type of equipment, it is possible to use a brush (or a thin piece of straw), sliding the dead insect on to a piece of paper (see Figure 5) and then transferring it to the cotton pad in the collecting box.

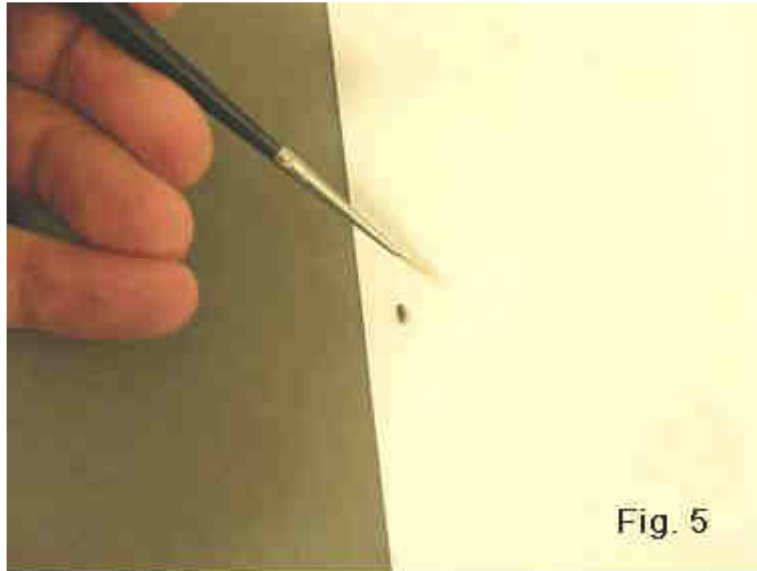


Fig. 5

The idea is to place the insects between the cotton pad and the lid of the box in such a way that they cannot be easily displaced but at the same time not crushing the specimens by wedging them in too tightly (see Figure 6).

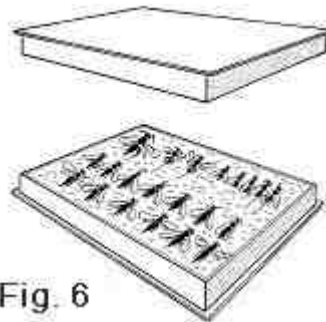
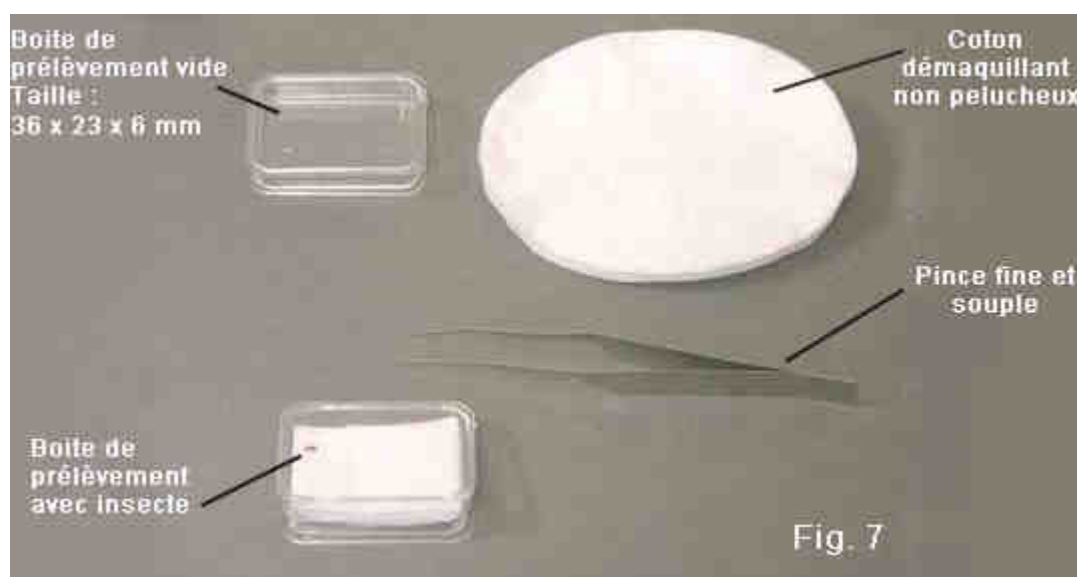


Fig. 6

One must never place insect specimens between two cotton pads, since they will fall into pieces when the two cotton pads are separated to extract the specimens. Similarly, one must never leave specimens, whether partially or completely desiccated, in a hermetically sealed container, since they will quickly putrefy.

However, small-sized insects (up to 5 mm) can be preserved on a miniature cotton pad placed in a plastic box. The most conveniently sized box measures 36 mm x 23 mm x 6 mm and can be sent on request (see Figure 7).



Preparation of insects on miniature cotton pads (in the absence of plastic boxes)

A cotton pad is very easy to make oneself (see Figure 8) using the following components:

- A sheet of paper cut to fit the bottom and sides of the box, which will enclose the pad
- A small piece of cardboard cut to fit the box
- A layer of lint-free cotton
- A piece of paper to serve as a cover sheet and label, placed over the cotton, on top of the insects, on which the collection data will be recorded

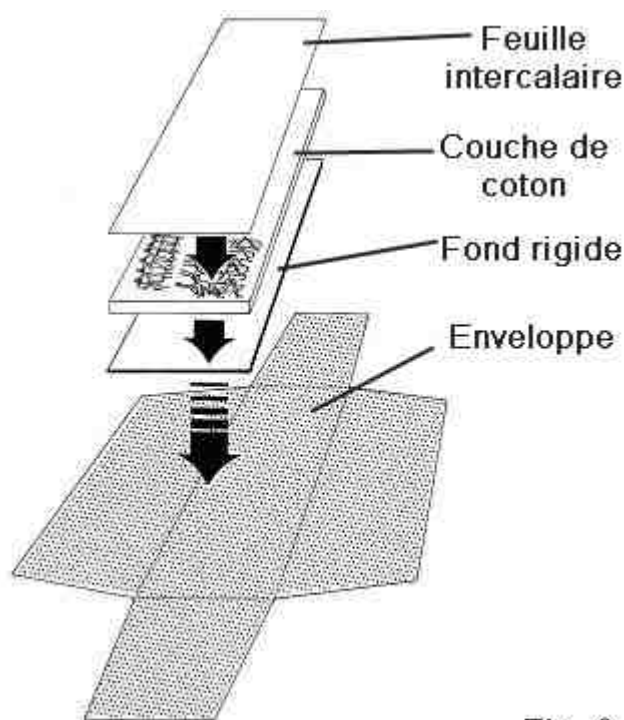


Fig. 8

Recommendations for transporting insect specimens

Insects preserved on cotton pads or in containers with alcohol must be packaged for transport in a carton larger than the collection box. The latter should be surrounded with straw, cotton or polystyrene “popcorn”. The receptacles containing insects preserved in alcohol must be carefully cushioned with cotton to keep them from moving or touching each other. Any failure to observe these guidelines exposes the specimens to a high risk of damage during transport.

Required equipment

For purchases of entomology equipment, please refer to the following document: Martinez, M. and Dommanget, J.-L., Adresses utiles à l'entomologiste (Guyancourt: Office pour les Insectes et leur Environnement – OPIE, 2000).

Acknowledgements

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