

Standard Operating Procedure for artificial resting site collections with pot or box traps

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SOP #: POT-2021

Image: Burke et al. Malar J.



PACMOSSI
Pacific Mosquito Surveillance
Strengthening for Impact

Scope

The purpose of this SOP is to outline the materials and processes required to undertake artificial resting collections with clay pots or resting boxes.

Overview

Description: Artificial resting structures provide attractive micro-habitats where mosquitoes can rest, and attempt to overcome the difficulties associated with locating resting mosquitoes (Russell and Santiago 1934). The artificial resting structure is placed in the field, and any mosquitoes found resting inside are captured. Artificial resting structures can be clay pots, wooden boxes, fibre pots or woven baskets modified to be darker and thereby more attractive to mosquitoes.

Target species and physiological states: Captures resting adults of both sexes and many species.

Entomological surveillance indicators: Adult vector occurrence, density and resting location.

Advantage: This method uses cheap, locally acquired materials which can be easily constructed.

Disadvantage: This method may have low efficacy in complex habitats containing a range of alternative, and potentially more attractive, resting locations.

Sampling period: The artificial resting structures are often deployed overnight for 12 h periods. Collections should take during period of minimum flight activity. For *Anopheles* mosquitoes, preferably in the early morning.

Data: Total number of resting mosquitoes per sampling effort (by species and sex). When necessary, field data is merged with the results of subsequent laboratory analyses.

Materials

- Resting pots or boxes
- Mouth aspirator (1 per collector + spares)
- Collection cups
- Rubber bands
- Cotton wool
- Mesh for cups
- Scissors
- Torches
- Batteries for torches
- Pencil/pen/markers
- Data collection form/digital device
- Construction tools
- Mosquito cage (optional)

Product description

Artificial resting structures can be constructed from items such as clay pots (Odiere et al. 2007), wooden boxes, fibre pots (Komar et al. 1995) or woven baskets (Harbison et al. 2006) which have been modified slightly to be darker and thereby more attractive for mosquito entry.

Trap location selection

1. Talk with the householders about the location to place the trap. Ensure that the householders are happy with the location of the trap so they will be unlikely to move it. If no suitable trap location is identified in agreement with the household, you must not place a trap in that property.
2. When operating the trap always make sure that there is nothing within 50 cm above the trap cover.
3. Ensure the trap is placed in a location without anything dangerous (electrical concerns, trip hazard, aggressive dog nearby) to the occupants or staff servicing it.
4. Discuss permission to service the trap if the occupant is not home. If permission is granted, ensure the trap is in a location that is easily accessible when the occupant is absent.
5. Ensure that trap is in a safe location where it is unlikely that children will play with it or that animals or passers-by will damage it.
6. Do not place the trap on an ant nest or touching the wall under a light where animals such as geckos may be active and interfere with mosquito samples.

Sampling procedure

1. Modify our artificial structure so that it is field ready.

- a. If a wooden box, remove one side, paint the inside black and half-cover the open side with dark cloth.
- b. Clay pots with large openings can be treated in a similar manner to the wooden boxes.
- c. Clay pot with more narrow mouths may simply need a 2 cm hole drilled into the bottom to ensure it won't hold water (and to discourage theft).



2. Place the resting shelter in desired locations. Resting shelters can be deployed indoors or outdoors.

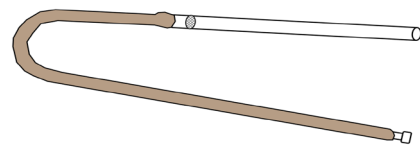
- a. As an example of sampling effort, Odiere et al. (2007) placed three clay pots in shaded sites within 5 m of houses. Degefa et al. (2019) placed four pots per location.



Image: Birungi et al. Parasit Vectors.

3. Ensure collectors have equipment required to service the artificial resting shelters.

- a. For further details about collection cups and using an oral aspirator see [SOP# MOS-2021](#).



4. Deploy the resting shelters overnight and then collect any resting mosquitoes.

- a. Resting mosquitoes are generally passive and can be collected with careful visual inspections and an oral aspirator. A battery aspirator, such as the prokopack can be used.
- b. Or the opening or the structure can be covered with the opening of a mosquito cage. Shake the structure to encourage the mosquitoes to fly into the cage.
- c. Or quickly cover the opening of the structure with a plastic lid. Spray a knock down chemical into the structure, such as a pyrethroid, and wait for 30 seconds. Then remove the lid and collect the mosquitoes with forceps ([link](#)).



5. Temporarily store the mosquitoes in labelled collection cups until processing and long-term storage. For further details see [SOP# MOS-2021](#).

Additional notes:

- Clean the artificial resting structure of any spiders, cobwebs or other material when servicing it.
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- You can also deploy sticky artificial resting structures if desired (Degefa et al. 2019).
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- Head torches are very useful as they provide a hands-free solution. People have used red lens (~680 nm) which is considered invisible to mosquitoes and therefore does not impact behavior.
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Safety/Risk assessment

Your workplace may require you to complete a risk assessment prior to conducting field work. There are a range of risks to which field workers could be exposed, and when sampling with artificial resting structures may include:

- Mosquito transmitted infections
- Chloroform
- Dog bites

For further details on safety and risk assessments see [SOP# MOS-2021](#).

References

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