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**Title of resource**

GN_05: Sticky trapping

**Authored by**

When using this protocol, the following should be referenced:

Cameron MM et al. (1994).Comparative activity of phlebotomine sandflies in different crops in the Peruvian Andes. Bull ent Res, 84: 461-7.
Cameron MM et al. (1995). An association between phlebotomine sandflies and aphids in the Peruvian Andes. Med Vet Entomol, 9: 127-32.
Cameron MM et al. (1995). Sugar meal sources for the phlebotomine sandfly Lutzomyia longipalpis in Ceará State, Brazil. Med Vet Entomol, 9: 263-72.

**DOI**

10.13140/RG.2.2.14879.41129

**Description**

Sticky trap collections:

- selecting sentinel housing
- preparing and placement of sticky traps
- processing sticky trap collections

Protocol from the Gnatwork Bangladesh workshop, September 3-6th 2018.

**Intended use**

Scientific research use and training purposes.

**Restrictions on use**

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**Resource history**

N/A

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## A. Selecting Sentinel Houses for Sticky Trap collections

One of the commonest methods for collecting sandflies during ecological or epidemiological studies is the use of sticky traps – sheets of paper coated in castor oil which intercept flying sandflies. These studies require many traps and it is very important that they are labelled correctly so that the site and placement of collections can be identified.

It is very important that the sticky traps are placed in the same houses whenever a village is sampled so that fair comparisons can be made over time. Note that sticky trap sampling is quite labour-intensive so less houses will be sampled by this method than for test tube and aspiration methods. Realistically, each field collector should be able to place 8 traps in each of 4 houses (2 mixed dwelling and 2 houses without cattle), so 12 mixed dwelling and 12 houses without cattle need to be selected from each village.

1. Maps of each village under surveillance should be generated, indicating the positions of houses (brick or thatched), mixed dwellings, cattle sheds and other buildings of interest (schools, poultry houses etc).

2. Using the maps constructed, count how many houses/mixed dwellings there are of each type and record whether they are constructed from brick, straw etc.

3. Allocate a code and number to each house/mixed dwelling e.g. if there are 146 houses, they can be labelled HS001 through to HS146, and if there are 122 mixed dwelling, they can be labelled MD001 through to MD122.

4. Using a random number generator to select 12 houses/mixed dwellings of each type. For example, use the random generator provided at: https://www.random.org/

5. Use the same procedure to generate new numbers for the next village to be sampled.

## B. Preparing & Placement of Sticky Traps

### Equipment required:

- Plain A4 photocopying paper (need 192 sheets per village per night for sticky traps + 192 sheets for separating the sticky traps the following morning.
- Pencils
- Paintbrushes (around 10 cm diameter)
- Castor oil (need approx. 1.5 litre of clear castor oil for 400 sticky traps).
- 12 Storage boxes for transporting sticky traps (one per field assistant + spares) – need to have lids and need to be larger than A4 dimensions and deep enough to hold 64 sheets of paper.
- String/clips for positioning traps

### Method:

1. Label a clean A4 sheet of paper using a pencil with the following information
   a) Village Code
   b) House Code
   c) Trap Placement: e.g. D (for wall of house with door), L (for wall of house left to door) etc, also if it is placed outside (OUT) or inside (IN)
   d) Date (Write date when traps are set up [evening])

2. Using a large paintbrush (e.g. 10 cm wide), brush castor oil on both sides of the paper. Make sure that both sides are coated evenly all over the surface of the paper.

3. Repeat so that each house to be sampled has 8 sticky traps (4 inside, and 4 outside). Place all of the traps for one house on top of each other and store in a polythene box with a lid (the box has to be bigger than the A4 sheets of paper so that they can be stored flat).

4. Each field collector should have a separate box to hold all of the sticky traps that he needs for the 4 houses that he will visit (2 mixed dwellings, and 2 houses). Therefore, he will need 32 traps in total (8 per house x 4 houses). The box needs to be deep enough to store the traps (and the blank sheets of paper he will place to separate sticky traps when he collects them the following morning).

5. Position traps either outside of the house or inside of the house according to the code written on the trap, Select an opening (e.g. window, or eave) if possible.

6. Hold the sticky trap firmly in place using either string/clips as appropriate.

7. You need to fix 8 traps per house (4 outside, and 4 inside: 1 on each wall: door, left, right, back).

8. On the following morning, collect all traps. Make sure that there is a blank sheet at the bottom of the box, and place a blank sheet of paper between each trap.

9. Cover the box with the lid as soon as you have placed the traps inside the box (to prevent any flies in flight from landing on the traps).

## C. Processing Sticky Trap Collections

### Equipment required:

- Soap detergent solution
- Entomological paintbrushes (small)
- Petri dishes for processing (can be re-used)
- Small polythene tubes (eppendorfs/Nunc tubes) – allow for 96 tubes/village/night
- Parafilm (to seal tubes)
- Permanent marker pens
- Holders for keeping tubes upright (e.g. polystyrene boxes)
- 70% ethanol

### Method:

1. Make a 20% soap detergent solution (e.g. 50 ml detergent + 200 ml water – mix well).

2. Using a small paintbrush, pick off all the insects from both sides of one sticky trap and place into a labelled Petri dish (or similar container) containing 20% soap detergent solution (to remove oil). Note that the label should contain the village code, house code, where the trap was placed, and date of collection.

3. Cover the container (when you are not examining it under a microscope) to stop any insects flying in the laboratory from landing inside).

4. Note that traps contain insects other than sandflies. Your first step is to separate biting insects, which may be of medical importance, from non-biting insects. Examine the specimens under the dissecting microscope and separate biting insects (those with piercing/chewing mouthparts) from non-biting insects (discard non-biting insects).

5. Separate the biting insects into vector groups: mosquitoes, midges, and sandflies.

6. Record the number, sex and status (unfed, blood-fed, gravid) of the specimens of interest.

7. Transfer the specimens of interest to a Petri dish containing water and wash for 5 minutes – repeat twice.

8. For storage, place all of the specimens of interest from one sticky trap collection in a tube containing 70% ethanol. Make sure that the tube is labelled (with a permanent marker pen) and has the same code as the petri dish (contains the village code, house code, where the trap was placed, and date of collection). If available, place parafilm around the top of the tube to prevent evaporation of the alcohol or spillage.