



CATERPILLAR REARING PROJECT

PROTOCOL

MOTH MONITORING SCHOOL PROGRAMME | JUNE-AUGUST 2022 |

HOW TO REAR CATERPILLARS

The hostplant database for moths in India is still patchy. Through this initiative, we aim to create an exhaustive database for moth hostplants. Students can learn more about plant-insect interaction, and this programme can facilitate further research in this area, in which there exists a large lacuna in our country.

Things Required

Notebook, pen, scale, two 1 kg plastic jar with holes made to the lid. One jar (J1) to be used for caterpillar rearing another one (J2) for pupation. One jar is meant for each caterpillar. Tissue paper for lining the J1, big Ziplock bags to store hostplants, small paint brush and datasheet. You can prepare J2 by adding $\frac{3}{4}$ dry soil in the jar, top it with dry leaves and keep some dry twigs erect on the top of the soil.

Step by step guide

- Collect the caterpillar along with some leaves of its host plant.
- Place them in a 1-kg plastic jar and make small holes in the lid to allow breathing
- Line the bottom of the jar with a sheet of tissue paper to absorb moisture from the droppings.
- Provide your caterpillar fresh leaves of the host plant and clean the jar every day.
- Collect leafy branches rather than individual leaves from the hostplant
- Place the jar on a window sill, and to prevent ant attacks, keep it in a dish of water or apply petroleum jelly at the bottom of the jar.
- Make regular notes about the growth of the caterpillar: its size, colour and markings. During every instar, the caterpillar may become sluggish and stop feeding for day a two. It will start feeding voraciously immediately after its moult.
- Record the change in colour, markings and size after every moult. As it reaches maturity the caterpillar will stop feeding, generally change their body colours and show signs of restlessness for two to three days often wandering far from the food plant.
- Take a fresh jar, and provide options for pupating sites by filling it three-fourths with a mud layer covered with leaf litter and topped with some leafy branches.

- Transfer the caterpillar into this jar. The caterpillar will choose a pupation site. Moths usually emerge in the early morning or late evening.
- The pupation stage may last from 10–15 days to a month, depending on the species. A newly emerged moth needs space to hang upside down and expand its wings; otherwise, it will be crippled and may not be able to fly.
- Release the moth during dark hours.

Data Collection

- (i) **Selection of Study Area:** Choose an area that has few trees, gardens, sunny patches, some ground cover. It could be around your home/school/office. Once you select the study area, keep collecting data from this area only.
- (ii) **Selecting the day:** Choose one day in the week when you go looking for caterpillars, keep looking every week till you find a caterpillar.
- (iii) **Selecting the time:** Choose one morning hour on the chosen day. Ensure to observe between 8.00 a.m. to 11.00 a.m. for better results.
- (iv) **Collection of Caterpillars:** Look for freshly half eaten leaves among the bushes and trees. Also look for tell-tale signs such as dark brown feces (droppings) fallen under a plant which appear like black pepper. Use brush to dislodge the caterpillar into your jar. If the caterpillar's grip is tight then just break that particular branch and keep it in your jar. You may or may not know the name in any case taking several pictures of each stage will help us to identify the species for you.
- (v) **Collection of Hostplants:** If the plant is easily accessible to you, there is no need of collecting the leaves. If not, you can collect few branches and keep them in ziplock bag and store them in vegetable tray of the refrigerator. If not keep the base of branches in water jar. This will keep the leaves fresh for longer time. You may or may not know the name in any case taking a picture of the entire branch with flowers or fruits is preferred. We will identify that for you.
- (vi) **Caterpillar Observation:** You should observe your caterpillar during morning and evening hours. You should note down following things about your caterpillar:
 - **What is the body colour?** Note if the body colour changes at some stage. Take photos each time.
 - **What is the size?** This you could do by placing a scale next to the caterpillar. You can measure your caterpillar two times, one when you collect it and second when the caterpillar is ready for pupation. Take photos each time
 - **Which pupation medium it chooses?** Photographing the pupa might not be possible, however when the moth emerges, you can take picture of the empty case.
 - **How does the adult look like?** If you manage to complete the life cycle, you will be rewarded with an adult moth. You can take pictures from all angles which will help in identification.

Data Entry

You can take print outs of the datasheet and fill in necessary data on regular basis. There should entry every time you find a new caterpillar or your caterpillar changed colour/size or your caterpillar pupated and the adult emerge. This means for one caterpillar there will be minimum 3-4 entries. On weekly basis transfer your data from your datasheet into the excel file provided by us. You can also add this data on the portal (details provided separately) You can upload pictures too.

Project Presentation

At the end of the project, each class from each school will be asked to do an online presentation about their project work. The template for the presentation will be provided by us. Students will get an opportunity to interact with experts during this session. The winning school will be chosen based on the number of successful life histories completed. The best presentation will get uploaded on partner organization websites including National Moth Week.

Data Usage

Once your data is received at our end, we will scrutinize for the correctness and then sort data which documented complete life histories. We will upload the respective data along with pictures on global citizen science portals such as iNaturalist. Your data will be then used by scientists around the world. You will be acknowledged for your contribution. We will also write a blog on role of students as citizen scientists where all information presented during the presentation will be collated.

Valedictory Function

For each region we will hold online valedictory function wherein the students will do their presentation. The winning school will receive a Field Guide to Indian Moths as a prize which will be couriered to the respective addresses in each region. All students and teachers will be given certificates which will be couriered to them.
