

Mapping Biodiversity: A Participatory Science Approach

AuroOrchard as a Case Study



Coppersmith barbet (*Megalaima
haemacephala*)



Session Contents

- i. Introduction to participatory science and its importance
- ii. Introduction to iNaturalist and how to use it
- iii. Creating an iNaturalist profile and getting started
- iv. Understanding location complexity and best practices for using iNaturalist at AuroOrchard
- v. Overview of the DPSIR framework and its application to AuroOrchard
- vi. Guided walk around AuroOrchard to document biodiversity using iNaturalist



01/06/2025 pmt 01:28 pm
Observation by Andres Acosta
Certainty: Certain

About me

- Experience in participatory science: worked on projects using OBSenMER, Balèn Terla (Apps to monitor Cetaceans), Kodal Programme.
- Research using the DPSIR framework at a National scale: páramo ecosystem, Colombia.
- BSc Ecology & MSc Biodiversity, Wildlife & Ecosystem Health, The University of Edinburgh (UoE) – ongoing.
- Editorial Board Member of the Open Journal of Biodiversity & Ecosystems (Edinburgh Diamond Library, UoE).





Copyright: Ravi Viswanathan

What is Participator y science?

- *‘Participatory sciences include **community science, citizen science, community-based monitoring, volunteer research**, and more — research and monitoring efforts that depend on knowledge, insights, or observations from members of the public’*
- *‘ It’s a way for anyone to contribute to scientific research and discovery (...), whilst bringing together scientists, citizens, and communities to work towards a common goal’*

[Association for Advancing Participatory Sciences](#)

Citizen science stories

- 'Search for Lost Birds' initiative was launched to highlight 126 bird species that haven't been observed in the past decade.



- New Britain Goshawk, was unknowingly photographed and posted by @tomvierus in Papua New Guinea.



The moth thought lost since 1959

- The Frosted Phoenix, New Zealand. Only ten had ever been found — **the last in 1959** — and scientists worried it was extinct.
- Then, in 2024, it was photographed at a hotel and shared on iNaturalist, where experts identified it within days.
- It was the first living individual ever documented.



Titanomis sisyrota

Back after 140 years

- South African moth known from **just 2 museum specimens** collected over **140 years ago** and was considered lost to science.
- Then, between 2020 and 2023, community scientists documented **13 sightings** of living moths on iNaturalist!



Drepanogynis insciata

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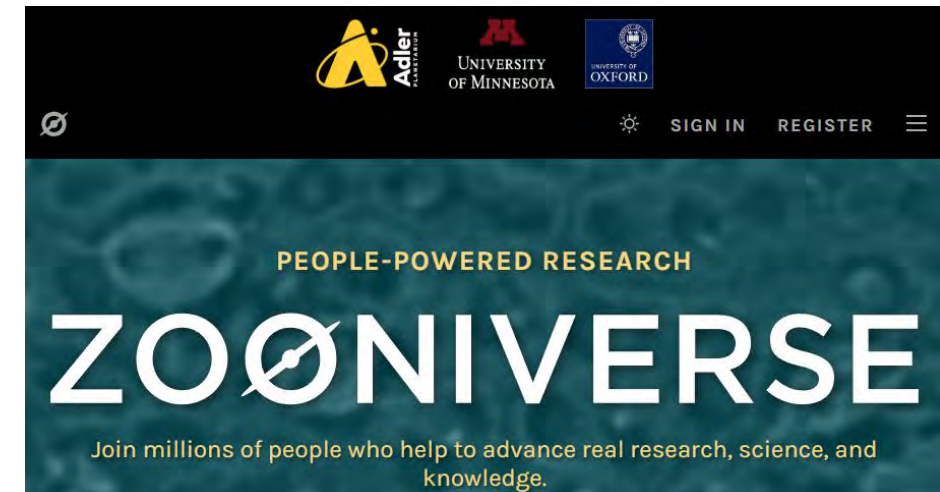
Scaly-breasted Munia *Lonchura punctulata* © Sambeet Puhon Macaulay Library

eBird India

eBird India is a collaborative project managed by
Bird Count India

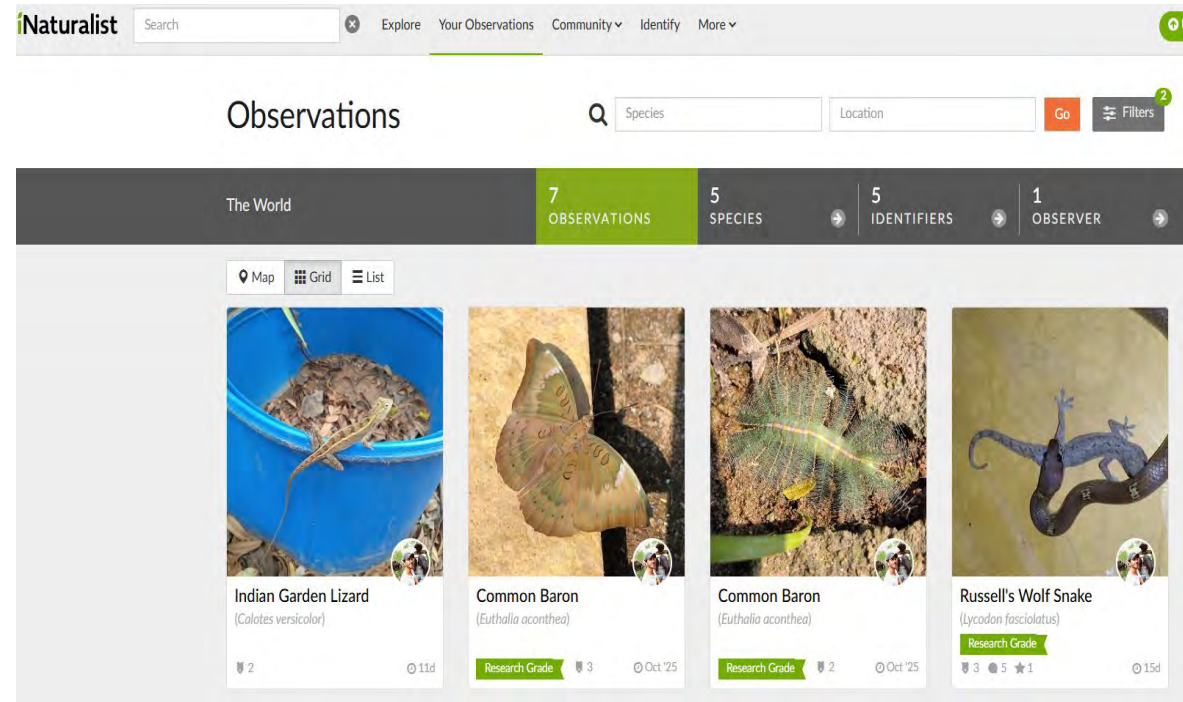


iNaturalist



Introduction to iNaturalist

- Initiative of California Academy of Sciences & National Geographic
- Nonprofit social network of naturalists, citizen scientists, and biologists built for mapping and sharing observations of biodiversity.
- You contribute to biodiversity research & connect with other nature enthusiasts
- ***Every record you make today enters GBIF — the same global database professional ecologists use. Your afternoon walk becomes real data!***



GBIF | Global Biodiversity Information Facility

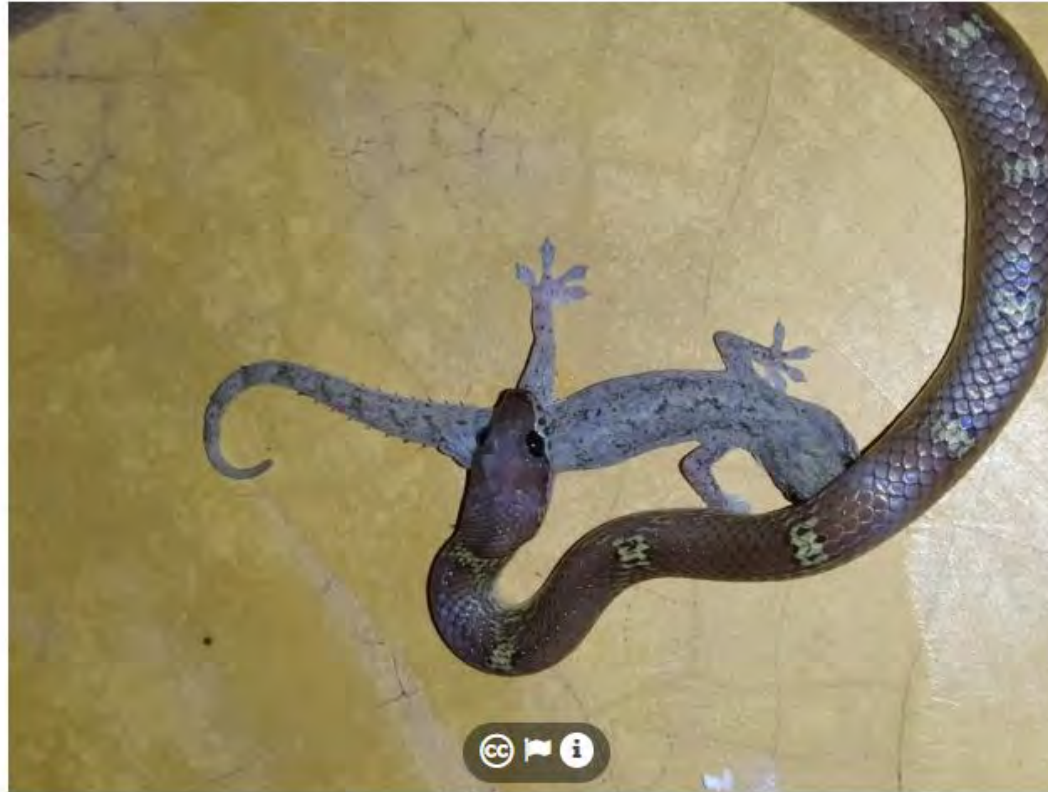
Free and open access to
biodiversity data

How iNaturalist Works?

- 1) Create a profile and start observing
- 2) Take photos of plants and animals
- 3) Share your observations with the community
- 4) **Add date, time, location**
- 5) Get help with identification from experts & in-built AI.
- 6) Aim for 'Research grade'

Russell's Wolf Snake (*Lycodon fasciolatus*)

Research Grade

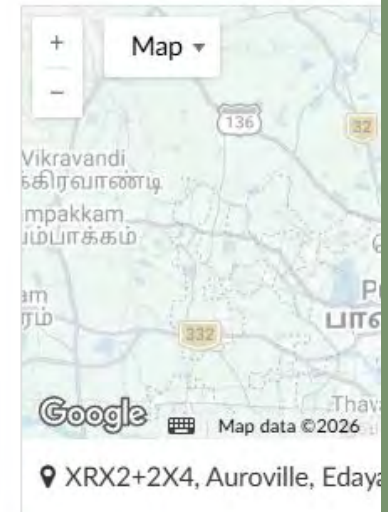


andresecology

7 observation

Observed:

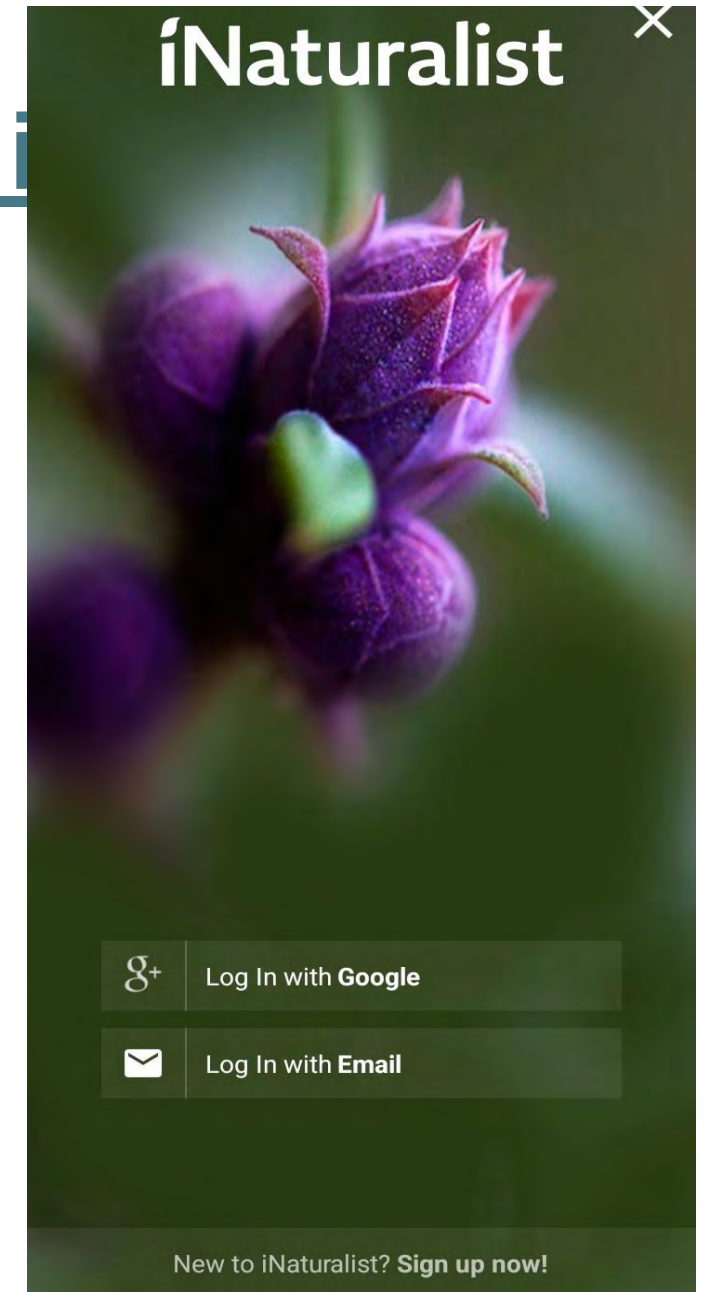
1 Jul 2026 · 21:30 IST



★ You faved this!

Let's Get Started with iNaturalist

1. Please download & open the iNaturalist app or website and **create a profile**
2. Send a request to join the project by scanning the QR code
3. It's user-friendly, but I'll guide you through the process if needed.



AuroOrchar d iNaturalist Project



About

Leave 2

This project is a collaborative and participatory project to document the agrobiodiversity of the farm by Aurovilians and farm team members. Over time, we aspire to build knowledge and appreciation for the diversity of soil life, plants, insects and birds, involved in producing food for the community.

[Read More](#) [Your Membership](#)

[Project Journal](#)

Overview

5 OBSERVATIONS

4 SPECIES

5 IDENTIFIERS

1 OBSERVER

Stats

Recent Observations

[View All](#)



Indian Garden Lizard
Calotes versicolor

2 8 days ago



RG

Russell's Wolf Snake
Lycodon fasciolatus

3 5 11 days ago



Bengal Monitor
Varanus bengalensis

2 2 months ago



RG

Oleander Hawkmoth
Daphnis nerii

2 5 months ago



Most Observations

andreseecology

5

[View All](#) [View Yours](#)



Most Species

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4

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Most Observed Species

Indian Garden Lizard

1

 Bengal Monitor 1

 Oleander Hawkmoth 1

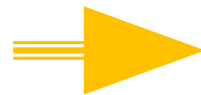
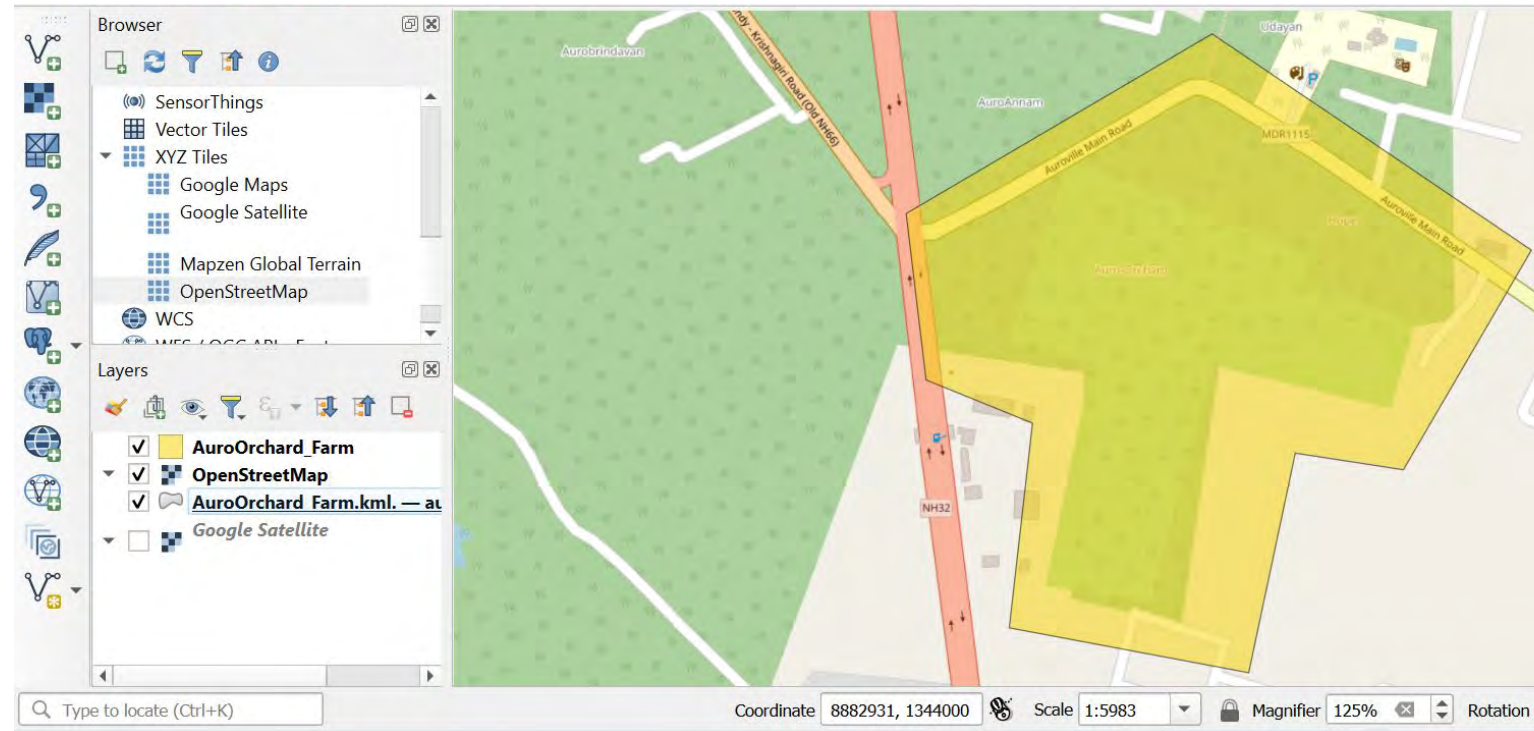
Location Matters



- iNaturalist didn't have AuroOrchard registered as a named place (only Auroville & AVBG)
- ...But we succeeded in uploading the farm, creating a **QGIS file** 😊



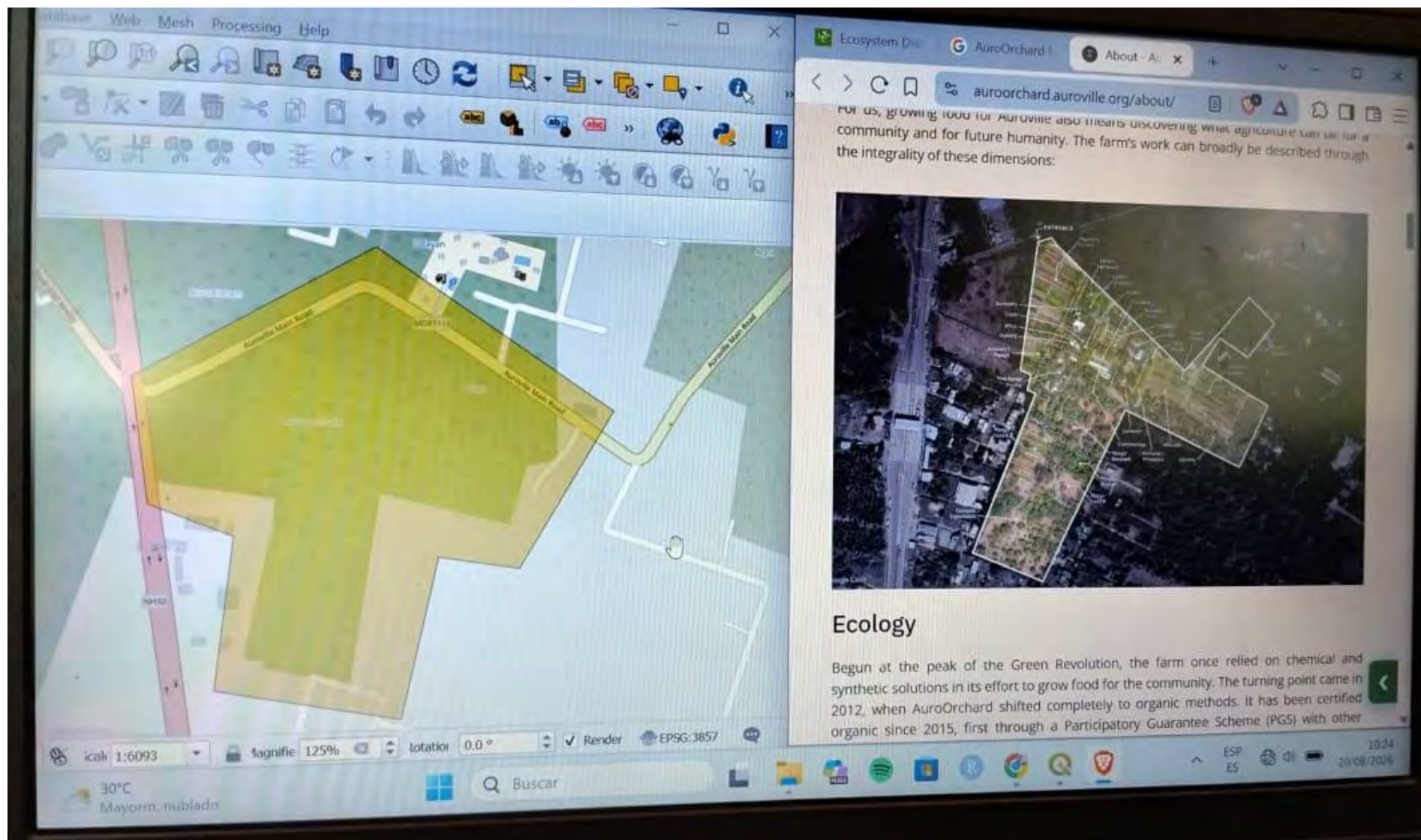
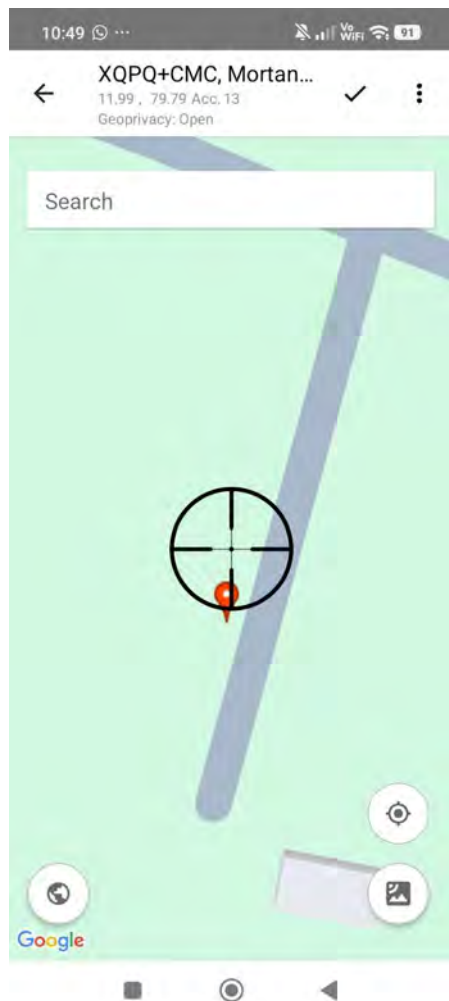
- Please ensure that **you allow location/GPS whilst using iNaturalist**
- Since some phones' GPS is inaccurate, verify your first uploads are registered within the project!



If entering location manually (not ideal) – please follow these instructions carefully

NEW iNaturalist place:

AuroOrchard, IN *Point of interest*





A few tricks...

- Focus: small insects that your phone can't focus on; place your hand behind the lens
- Mushrooms: use a small mirror to identify gills, pores, or teeth underneath a mushroom cap without picking or damaging the fungus
- Consider buying a MACRO lens for ~300 rs.



Curious to
learn more
about
iNaturalist?

A person's hands are visible, holding a smartphone up to take a photo of a green plant in a forest. The background is a blurred forest scene with green foliage.

Introduction to **iNaturalist**:
Turn your curiosity
into discovery



Photo: NASA



The Broader Project: **AuroOrchard as a DPSIR Case Study for Climate Adaptation in Bioregional Agriculture**

- **Goal:**

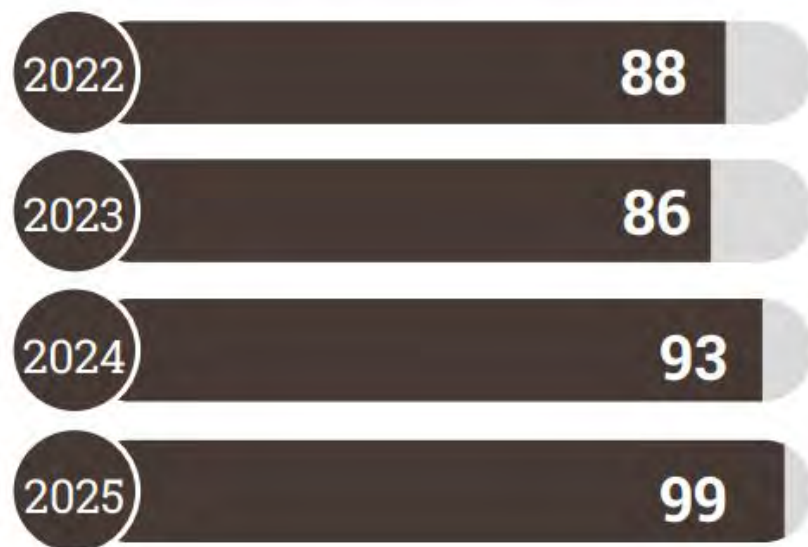
Use the Drivers-Pressures-State-Impact-Responses (DPSIR) framework to understand climate change impacts on AuroOrchard and develop strategies for climate resilience. Participatory science is a key component of this project.

Auroorchard Climate Case Study — DPSIR Overview



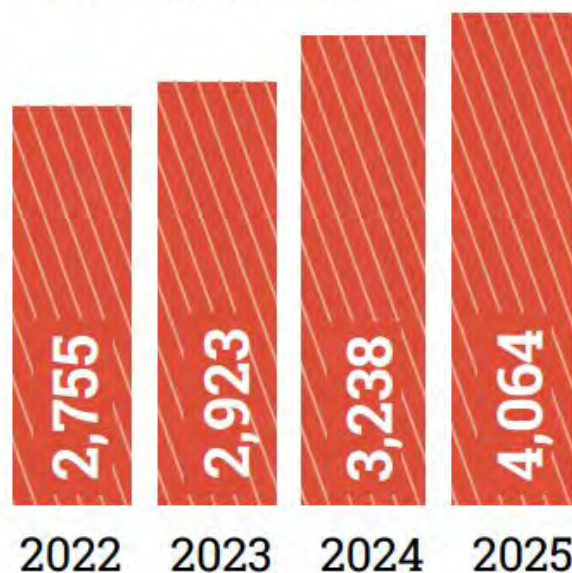
Rationale...

% share of days with extreme weather events

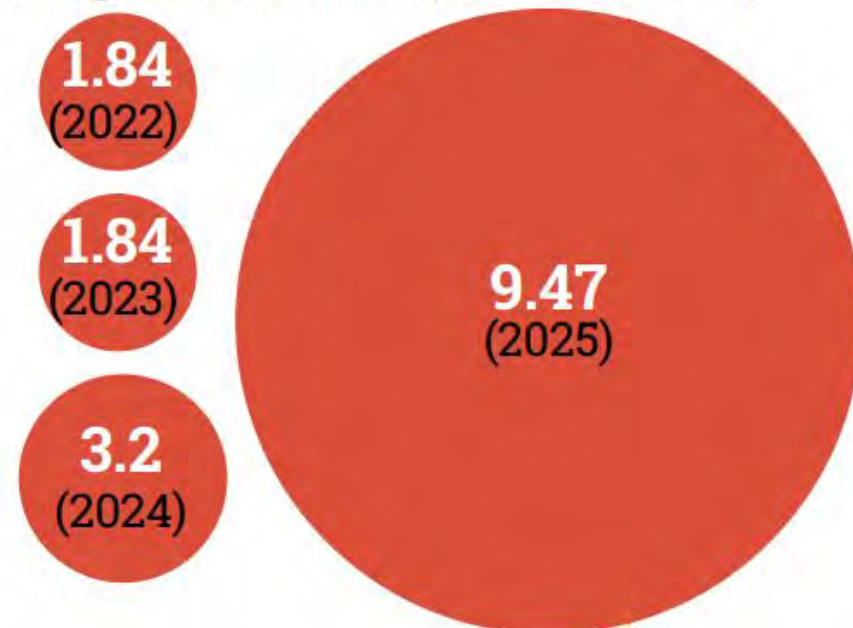


Loss and damage

Human deaths



Crop area affected (million hectares)



Data source: Disaster Management Division, India Meteorological Department (IMD) and media reports; compiled by Pandey and Sengupta (CSE/Down to Earth Data Centre, 2025).

South Peninsula region

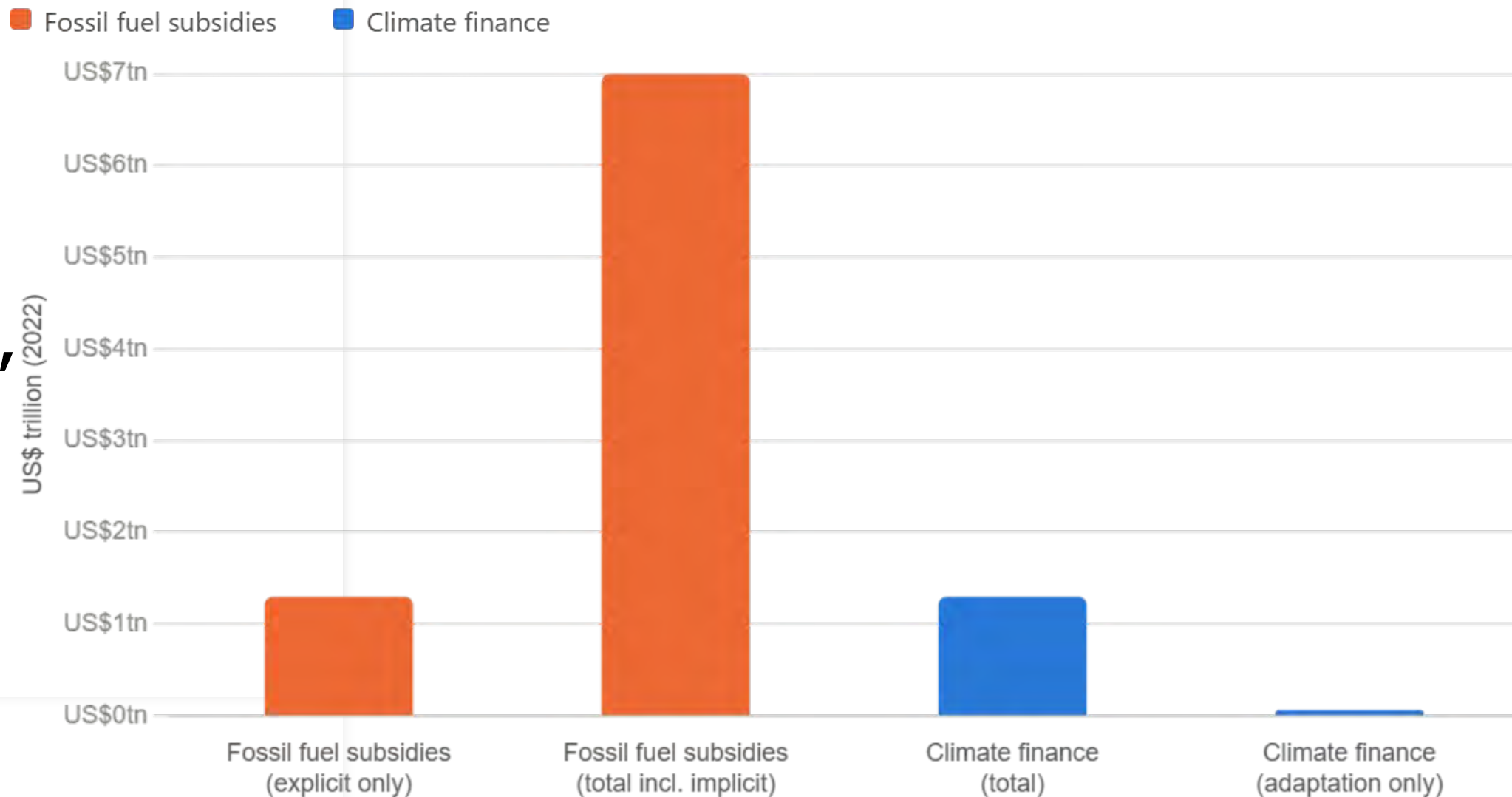
It recorded extreme weather events on **205** of the **273** days, which claimed **745** lives, damaged **67,321** ha of crop area

					
A&N Islands	9	1	0	0	3
Andhra Pradesh	74	484	0	0	289
Karnataka	120	117	62,586	944	3,849
Kerala	147	114	0	0	5,352
Lakshadweep	6	0	0	0	0
Puducherry	24	0	0	0	16
Tamil Nadu	49	6	162	0	93
Telangana	51	23	4,573	0	0



Data source: Disaster Management Division, India Meteorological Department (IMD) and media reports; compiled by Pandey and Sengupta (CSE/Down to Earth Data Centre, 2025).

Funding the problem, not the solution



Note: Fossil fuel subsidies and climate finance are not strictly comparable — the \$7tn figure includes uncoded externalities (environmental and health costs), not cash transfers alone. The comparison nonetheless illustrates the scale disparity in public financial flows. Sources: Black et al. (2023), IMF Working Paper WP/23/169; Climate Policy Initiative (2023), *Global Landscape of Climate Finance 2023*.

Let's Go on a Walk!

Thank you for joining us on this introduction to citizen science.

We hope you'll continue to contribute to our project and join the global Participatory science movement.



Before that... Ethics of iNaturalist Use

Responsible Observation:

- Avoid disturbing or handling wildlife
- Keep a safe distance to prevent stress or harm

Photography and Permission:

- Respect the privacy of others and avoid taking photos of sensitive or protected areas

Data Accuracy and Integrity:

- Make sure to identify and label observations accurately
- Avoid making assumptions or guessing identifications





Thank you !

Indian Flower Mantis (*Creobroter pictipennis*) Photo Credits: Leela Acosta & Mathilde