



Shieldtail Mapping Project

Project lead: Anuj Shinde | Project supervisor: Dr. Vivek Cyriac
Institutional host: Prof. Kartik Shanker, IISc Bangalore



As part of our public engagement campaign, we showcased the rich diversity and distribution of shieldtails at the IISc (Indian Institute of Science) Open Day event on 24th Feb 2024.

At the Shieldtail counter, we demonstrated the fascinating evolutionary adaptations these small, fossorial snakes have.

Although collecting occurrence data for different shieldtail species is the primary goal of this project, we believe that public awareness and interest in shieldtails are crucial for our citizen science framework to work.



The Shieldtail counter at IISc Open Day 2024.



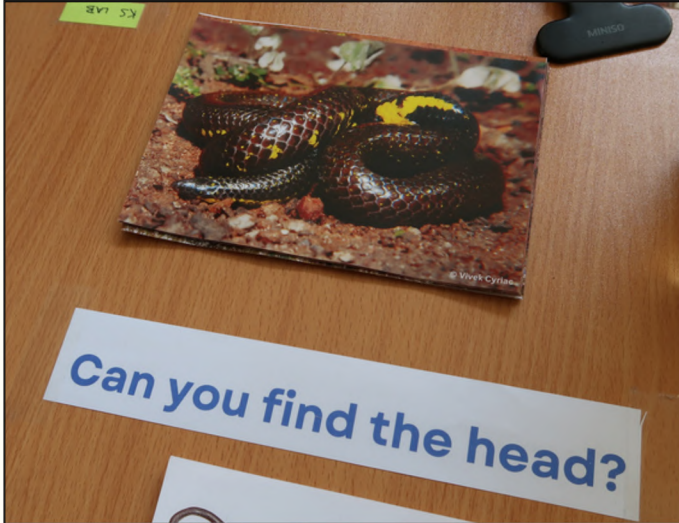
Demonstrating the physics behind iridescence or structural rainbow-like colours in shieldtail snakes.



Vivek Cyriac is showing a *Melanophidium* shieldtail specimen to the visitors.

Heads to Tails game

We designed this game and the poster to illustrate cephalic mimicry in shieldtail snakes. At the IISc Open Day exhibit, visitors were challenged to locate the snake's head in ten shieldtail photos, followed by an explanation of cephalic mimicry and its advantages in deterring predators.



Heads or Tails?

Cephalic mimicry in Shieldtail snakes

Cephalic mimicry in Shieldtail snakes involves using their tails to mimic their heads.

Some species have tails that look remarkably similar to their heads, often with markings or structures that mimic eyes, snout, and other features.

This mimicry can confuse predators, giving the snake a chance to escape. It's a clever strategy that helps them survive in their environment.

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Rainbow colours

We demonstrated iridescence in shieldtail snakes by shining bright light on a preserved *Melanophidium* shieldtail specimen. We also explained the science of diffraction grating to the visitors at the exhibit.



Rainbow colours in Shieldtails

Certain shieldtail snakes have rainbow colours (iridescence) created through structured surfaces on their scales, rather than pigments.

How?

White Light

LIGHT INTERFERENCE

Prism

White Light

Diffraction Grating

scale microstructures

X 2000

X 8000

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Diversity, Distribution, and Threats

For the Shieldtail exhibit, I crafted this poster to elucidate shieldtail biology, diversity, distributions, and to showcase the inner workings of our project.

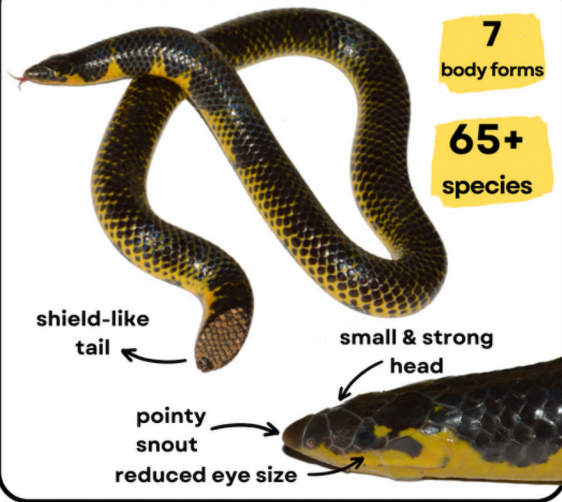


Shieldtail Mapping Project

• a citizen science initiative •

Anuj Shinde, Praveen HN, Vivek Cyriac

Shieldtail snake



Ecosystem functioning

Aerate soil promoting plant growth

Indicators of good soil health

Threats

habitat loss



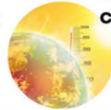
human killing



vehicles in forest



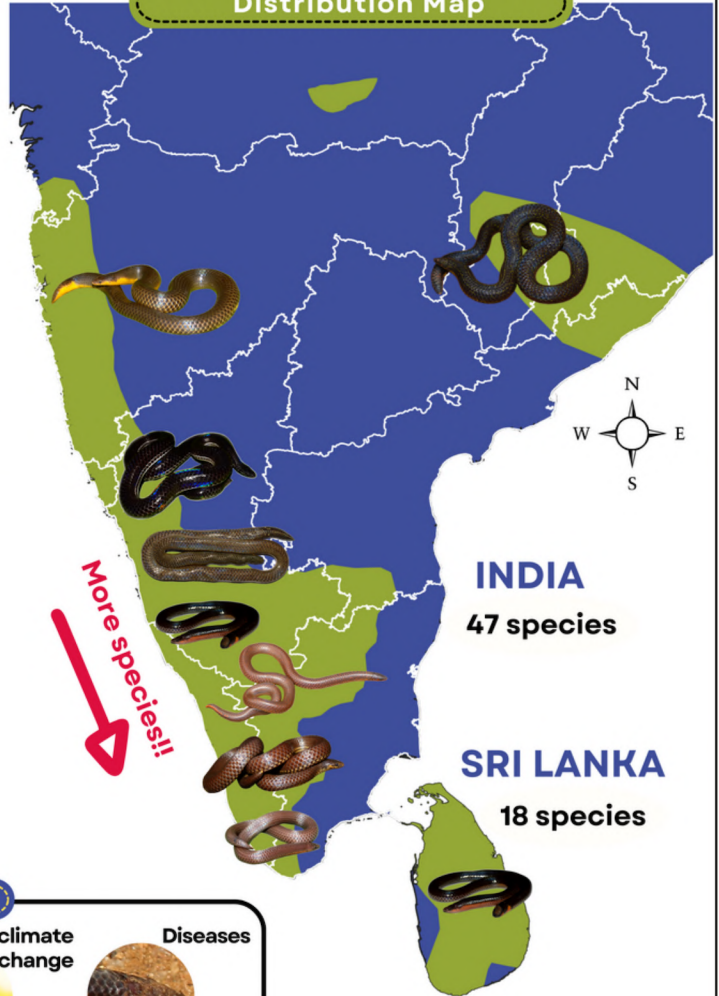
climate change



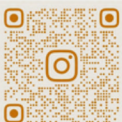
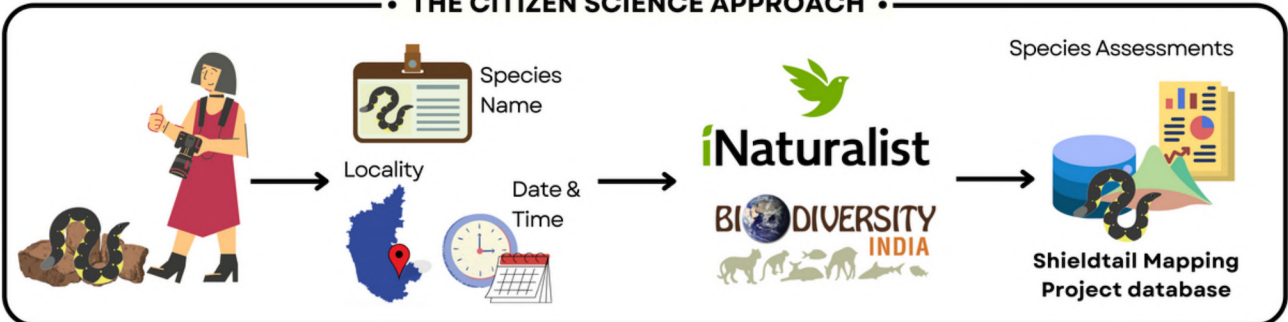
Diseases



Distribution Map



• THE CITIZEN SCIENCE APPROACH •



@shieldtails



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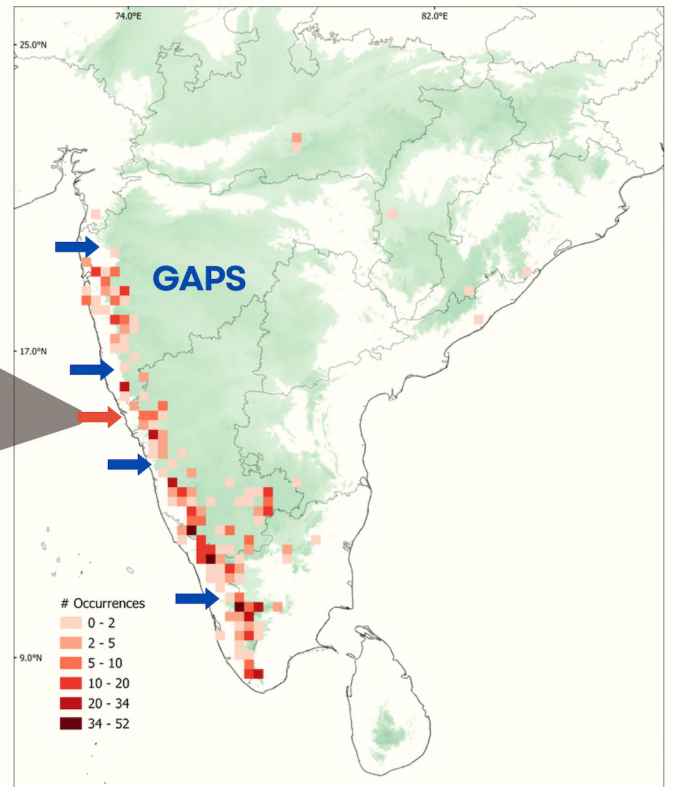
Social Media & On-Site Awareness Campaigns for the state of Goa

Since the initiation of the project, we've diligently tracked the geographical distribution of shieldtail records within our database. As our database expanded, we identified gaps indicating a scarcity of shieldtail records.

One notable region in need was Goa. Throughout February and March, we fostered partnerships with local naturalists and students, urging them to contribute shieldtail records.

Additionally, Amatyia Sharma and I embarked on a three-day excursion to Goa, engaging with wildlife enthusiasts to address the apparent absence of shieldtail records.

Subsequently, we've received several records from Goa. We remain optimistic that sightings during the upcoming wet season will not go unrecorded.



Map showing the density of shieldtail records in the SMP database. The arrows represent apparent gaps in the occurrence points. The red arrow identifies the state of Goa.

Aghanaashinii Nature Club
FLOW OF KNOWLEDGE

SHIELDTAIL MAPPING PROJECT

Webinar on "Towards Data-Driven Conservation of Shieldtails"

Date: 27th January 2024
Time: 6PM to 7PM
Mode: Online (via google meet)

Mr Anuj Shinde
M.Sc Ecology

Mr Anuj is interested in the biogeography of amphibians and reptiles. He currently manages the Shieldtail Mapping Project and is involved with the science outreach platform, HerpClub.

Scan here or click the link in bio for registration

No registration fee
Google meet link will be provided after registration

I did a virtual talk on shieldtails for the Aghanashini Nature Club, a group of nature enthusiasts from North Karnataka.

SHIELDTAILS MISSING
PEOPLE OF GOA, HAVE YOU SEEN THESE SNAKES?

We are mapping shieldtail distributions to understand their conservation needs

Uropeltis Shieldtail **Black Earth Snake**

Very few shieldtail records from Goa 🤔

Let us know if you have seen a shieldtail in Goa

UPLOAD YOUR SIGHTINGS HERE

iNaturalist or **BIO DIVERSITY INDIA**

A call-to-action poster which was circulated across herping and wildlife enthusiast circles in Goa.



As part of our awareness campaign, so far, I have visited the Parvatibai Chougule College in Margao, and Goa University in Panaji. At both these places, I interacted with zoology students and faculty about shieldtail snakes.

I also delivered a talk to snake rescuers and forest department staff in Pune. Our goal is to recruit more naturalists and students to contribute their shieldtail observations.



Talking about shieldtails and our project to an audience of Forest Department rangers and local snake rescuers.



At Goa University in Panaji.



At Chowgule College in Margao.



At Chowgule College in Margao.



I and Amatya Sharma (Shieldtail Ambassador) spoke with naturalists employed at different nature resorts about any shieldtail observations they may have.



The beginning slide of my presentation at range forest office, Nasrapur, Pune.



I interacted with a diverse set of audiences in Nasrapur. The discussions varied from the seasonal activity patterns of shieldtails to how often snake rescuers receive a call to rescue shieldtails from people's houses.