Environmental Service Learning
Why We Do These Projects:

Community Science
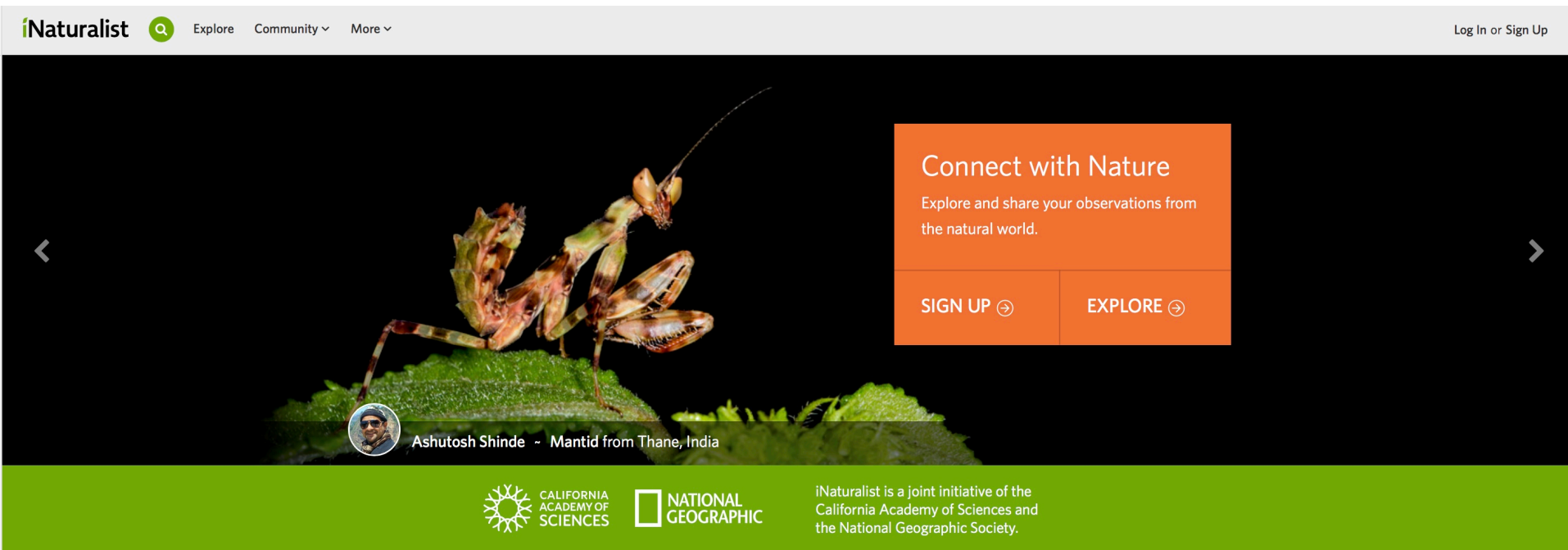

Center for Earth and Environmental Science

IUPUI SCHOOL OF SCIENCE

Why become involved in Community Science?

Ashutosh Shinde ~ Mantid from Thane, India

iNaturalist is a joint initiative of the California Academy of Sciences and the National Geographic Society.

Platforms such as iNaturalist and eBird allow anyone with a smart phone to contribute observations to scientific enterprises.

"Every observation can contribute to biodiversity science, from the rarest butterfly to the commonest backyard weed. We share your findings with scientific data repositories like the *Global Biodiversity Information Facility* to help scientists find and use your data. All you have to do is observe."

Contribute as You Enjoy Nature

iNaturalist · Explore · Community · More · Log In or Sign Up

Connect with Nature
Explore and share your observations from the natural world.

SIGN UP → · EXPLORE →
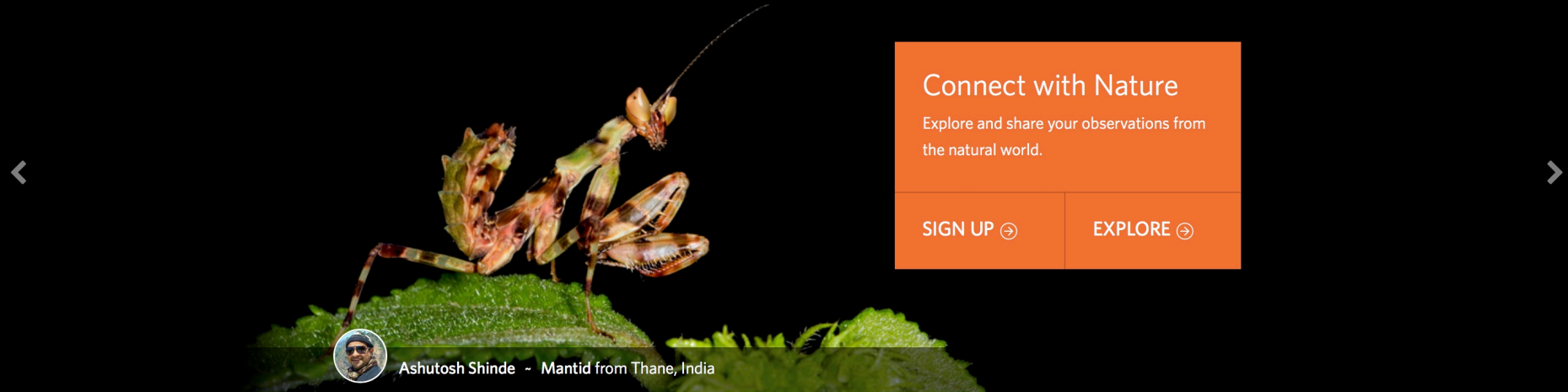
Ashutosh Shinde ~ **Mantid** from Thane, India

CALIFORNIA ACADEMY OF SCIENCES · NATIONAL GEOGRAPHIC

iNaturalist is a joint initiative of the California Academy of Sciences and the National Geographic Society.

To be an observer:

Take photos.

Upload photos.

Discuss photos.

How It Works

1. Record your observations
2. Share with fellow naturalists
3. Discuss your findings

Community Science is a means of harnessing the power of numbers . . . .

By recruiting the public to assist with data collection, researchers are able to gather data over vastly larger areas and for longer periods of time.

More eyes on the ground.

The lack of scientific literacy is a problem in the United States.

More eyes in more places.

Non-scientists generally do not understand the scientific method (i.e. how the process of science works and how scientists add to our knowledge base) . . . .

Reduces the cost of conducting large scale studies.

what types of questions science can address . . . .

Public volunteers rather than paid researchers.

there are even issues with how the language of science differs from everyday language usage . . . .

theory, for example . . . .

Fosters better relationships between scientists and the public.

Involvement in science projects increases public support of research/science.

Increases public understanding of science and the scientific process.

Avenue for developing relationships within communities.

People come together to participate in the activity.

With more data – and larger scale data sets – scientists can draw more robust conclusions.

PPSR: Public Participation in Scientific Research

Participate any time, any place.

Community science activities can be very defined or very broad.

Participate in a specific project at a specific time and/or place.

GBBC occurs mid-February every year.

The Great Backyard Bird Count

Art by Charley Harper

Upload checklists to eBird whenever you like.

Or participate at a time/place convenient to you.

Finding a Project

There are many online resources to help people find a project that suits their particular interests.

Projects in all fields of science are available.

scistarter
Science we can do together.

Platforms like SciStarter can help you find them.

GREAT BACKYARD BIRD COUNT

middle of February: President's Day weekend (Fri-Mon)

GBBC is one of the longest running Community Science projects in the world: established in 1998.

First online Community Science project to display data in real time.

Experience with Community Science projects is extremely beneficial for students looking at a career involving education – it is something you can incorporate in your own classroom.

GBBC

250,000+ checklists from just the USA.

GBBC 2021 numbers:

check lists submitted:

e-Bird: 379,726

Merlin bird app: 479,842

photos uploaded to Macauley Library: 151,393

species observed: 6436

Use of the Merlin smart phone birding app was new in 2021.

Participant locations:

estimated global participants: 300,000+

North America

South America

Europe

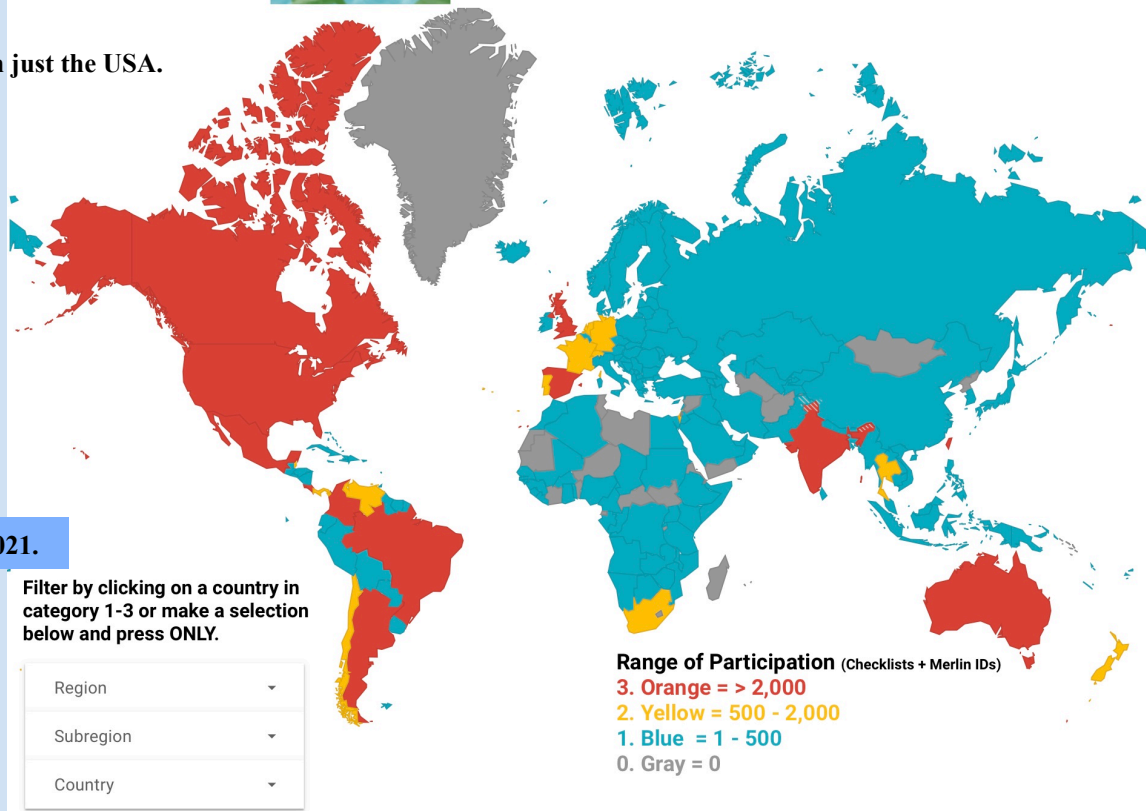Australia

Asia

Africa

Antarctica

Oceanic Islands

Participants from 190 countries in 2021

Awareness about the GBBC is growing – the event has become increasingly popular.

The Great Backyard Bird Count

2021 Global Participation

Filter by clicking on a country in category 1-3 or make a selection below and press ONLY.

Region

Subregion

Country

Range of Participation (Checklists + Merlin IDs)
3. Orange = > 2,000
2. Yellow = 500 - 2,000
1. Blue = 1 - 500
0. Gray = 0

Data from past years . . . . . .

Number of checklists:

2021 – 379,726

2020 – 249,444

2019 – 204,921

2018 – 176,905

2017 – 173,826

Notice that even with so many more checklists submitted in 2021 . . .

Number of species observed:

2021 – 6436

2020 – 6942

2019 – 6699

2018 – 6310

2017 – 5940

Fewer species were seen in 2021 compared to 2020 . . .

After a steady increase in species numbers (correlating with steady increase in checklists since 2017), the 2021 species number plummeted by 500.

Why count birds?

Birds are excellent subjects for Community Science work.

Birds are charismatic mega-fauna.

- colorful & attractive
- people find them interesting (catering to bird watching & bird enthusiasts is BIG business)

People are "predisposed" to care about birds (already have feelings of attachment/concern).

- keep birds as pets
- feed wild birds

Birds readily come to feeders.

People can go to "wild" places to count birds . . . .

- brings the science to the citizens

People can count birds in their own backyard . . . .

Bird biodiversity isn't overwhelming.

- approximately 10,000 species

Compared to . . . . oh, let's say . . . . . Beetles . . . . a group with 350,000+ species . . . .

Some estimates put the number of bird species at closer to 20,000, but it depends on how you define a species . . . .

- many identification aids (e.g. *Sibley Guide to Birds*, Merlin Bird ID app)

Why count birds?

There are many possible causes of such fluctuations.

Birds populations are very dynamic – they are constantly in flux.

Some bird species have different summer and winter ranges.

Is timing of migration changing?

Some bird species stay in the same area year-round.

GBBC provides a snapshot in time (mid-February) of what bird species are where and in what numbers.

Long-term data set: 20+ year period.

Massive world-wide data set: look for large scale patterns.

Answer questions about how populations are changing over time and how changing environmental conditions affect birds.

Are ranges shifting over time?

Do shifts correlate with particular climatic factors (temperature, rainfall, etc.)?

Are certain species more sensitive to fluctuations, and therefore might function as the proverbial "canary in the coal mine" – early warning indicators of climatic changes?

Are other factors influencing bird populations?

food supply

disease

habitat loss

catastrophic events (e.g. fires, flooding, etc.)

introduced species (predators)