

Connecting with Nature through Citizen Science

Alison Young, California Academy of Sciences

Reid Bogert, Surfrider

Lisette Arellano, Golden Gate National Parks Conservancy

Suzanne Whelan, Marin Municipal Water District

Tuesday, April 20, 2021
9:00am-10:30am



Join the conversation on social media:
#WSC2021



VIRTUAL EVENT: APRIL 6, 13, 20, 27

PRESENTED BY:





Water Conservation Showcase

VIRTUAL EVENT: APRIL 6, 13, 20, 27

PRESENTED BY:



Safety Message

- **Egress**: two paths out in case first is blocked.
- Have “**Go**” **bag** prepared with essentials.
- Set up and rehearse **convening location** with family.
- **Duck and cover** in case of an earthquake.
- **Take ergonomic breaks.**
- Continue to regularly **wash hands** and where a **face mask** and keep **socially distant** in public.



Event Sponsors

Platinum Sponsors



Gold Sponsor



Silver Sponsors



Outreach Partners

City of Santa Cruz Water Department | BAYWORK | California Water Efficiency Partnership | Garden for the Environment | Sonoma Water | San Francisco Department of the Environment Green Business Program | Sustainable Silicon Valley | Verdical Group | Wholly H2O | ReScape | San Francisco Bay Area Water for People Committee | California Department of Water Resources | Marin Municipal Water District & California Irrigation Institute | California Landscape Contractors Association | Association of Professional Landscape Designers | Alameda County Water District | Acterra | City of Palo Alto | Maddaus Water Management

Collect a code word on the Premium Exhibitor pages to be entered to win a raffle prize!

tinyurl.com/WCSexhibitor

Water Conservation Showcase

VIRTUAL EVENT: APRIL 6, 13, 20, 27

Virtual Exhibitor Packet

TO ENTER THE RAFFLE

1. Collect the 7 letters located on the Premium Exhibitor pages
2. Unscramble the 7 letters to spell a water-related word
3. Enter that word and your contact info at tinyurl.com/WCSraffle

Look for the letters!

Raffle prizes generously donated by:
High Sierra Showerheads, EBMUD, San Jose Water, Rain Bird, Lane Community College, and Richard Heath & Associates



Water Conservation Showcase 2021 Virtual Exhibitor Packet | Page 1

Premium Exhibitors



Standard Exhibitors

William J. Worthen Foundation
U.S. Green Building Council
Rain Bird
Gachina Landscape Management
BAWSCA
Lane Community College

Continuing Education Credits



LEED Professionals may self-report 10.5 continuing education hours TOTAL for 2021 WCS.

Log into your usgbc.org profile

Report course number: 0920021655



AIA Professionals will receive 1.5 continuing education hours for this session.

CEUs can be managed through PG&E training portal and are reported to AIA within 10 business days.

Course number: WS0028

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Join the conversation on social media! #WSC2021

A green circular logo with a white border and the text "City Nature Challenge" inside.

City
Nature
Challenge

Biodiversity Community Science: iNaturalist & the City Nature Challenge

A photograph of a woman with brown hair tied back, wearing a red shirt and a black backpack, holding a smartphone and taking a picture of a rocky, mossy hillside with green plants.

Alison Young
Co-Director, Community Science
California Academy of Sciences
@alisonkestrel



Goals of Academy Community Science:

Connect people to their local nature: biodiversity is everywhere!

Connect people to each other: build community around nature.

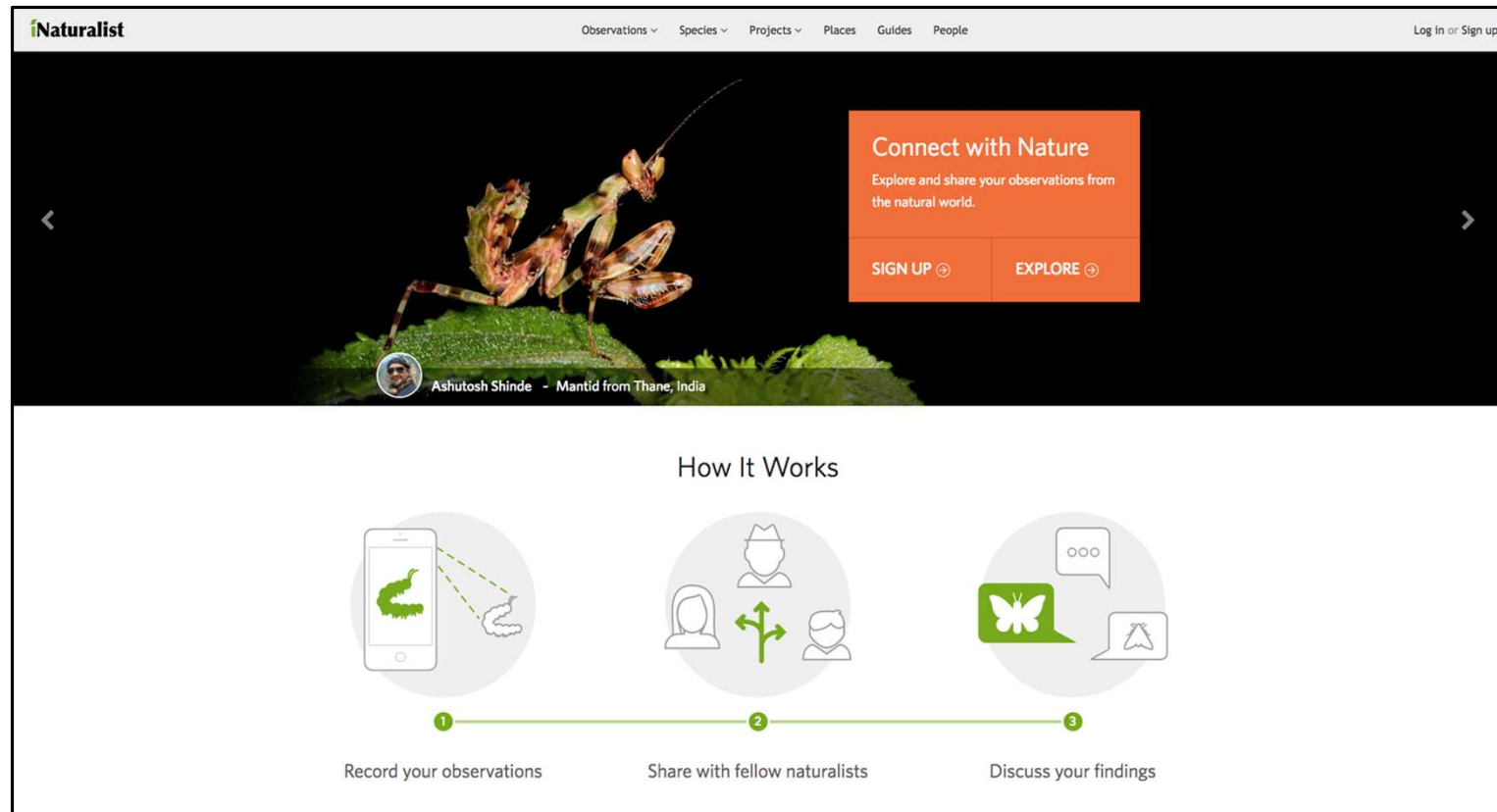
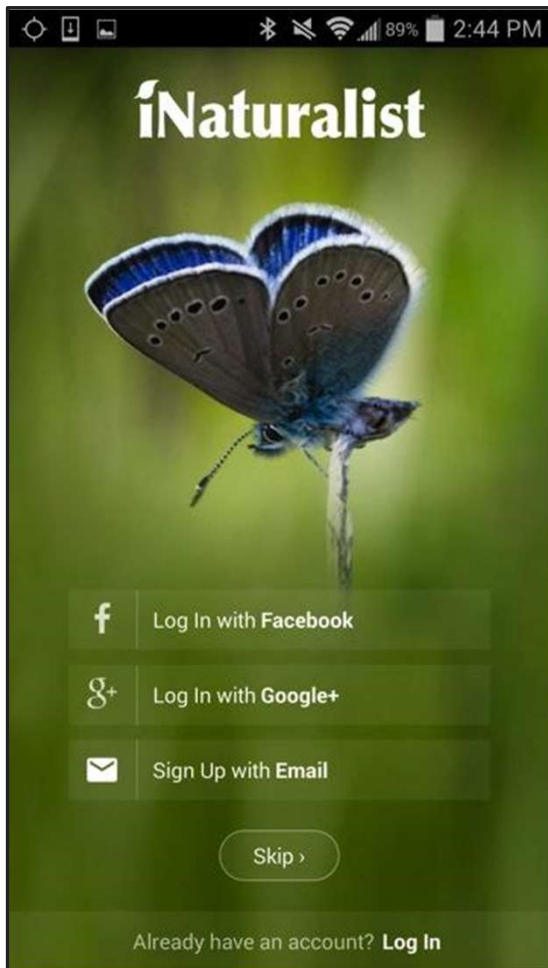
Collect biodiversity data for science, management, and conservation.

Engage people in & have them learn more about natural history science.

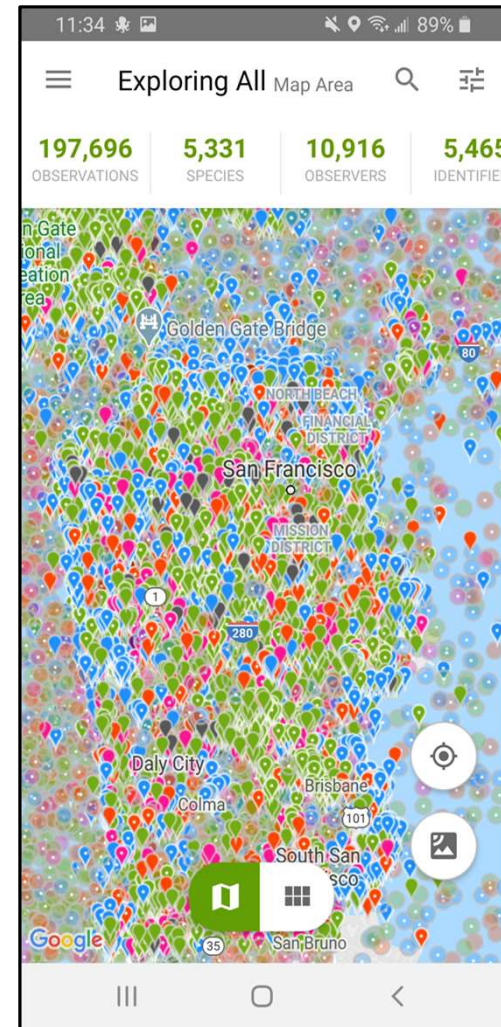
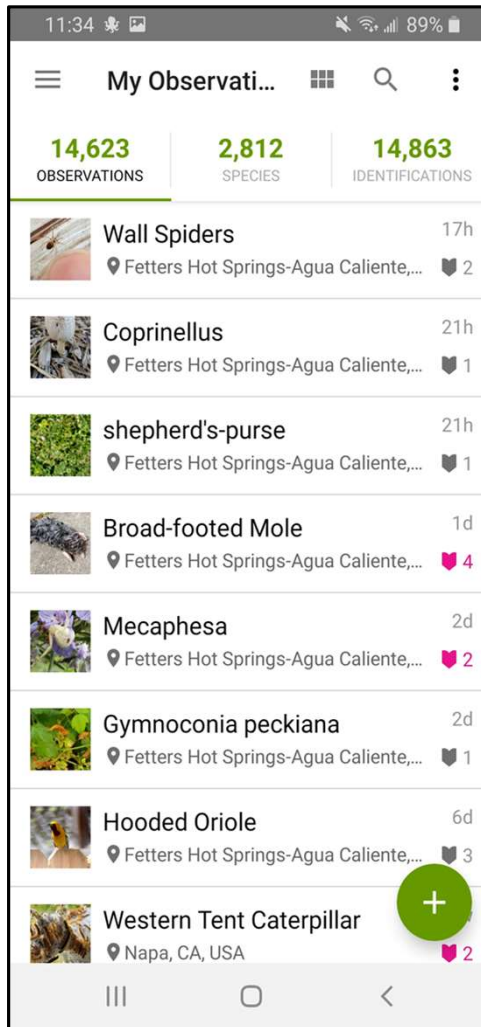
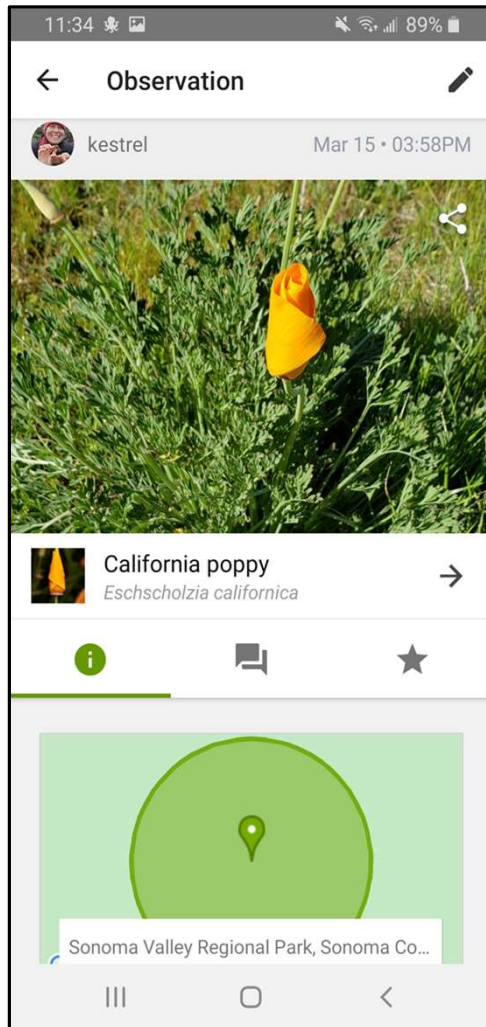
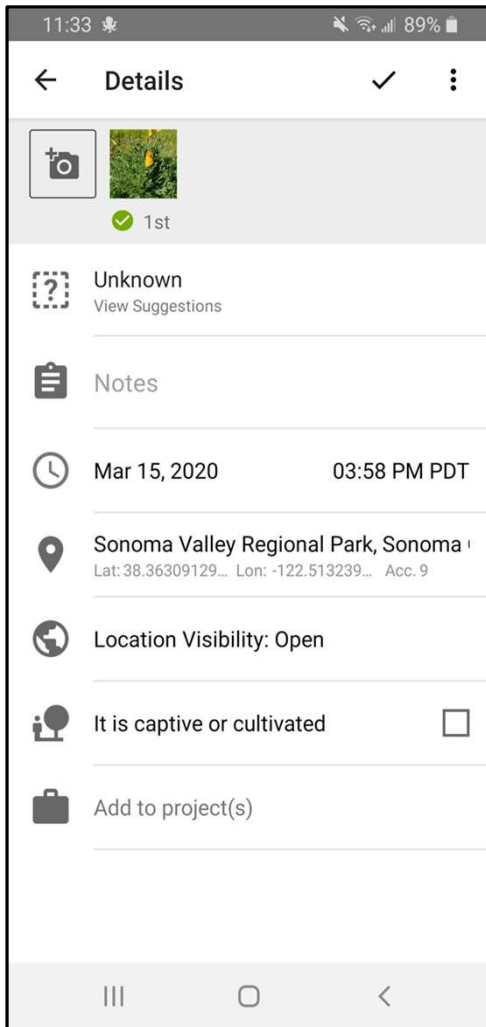




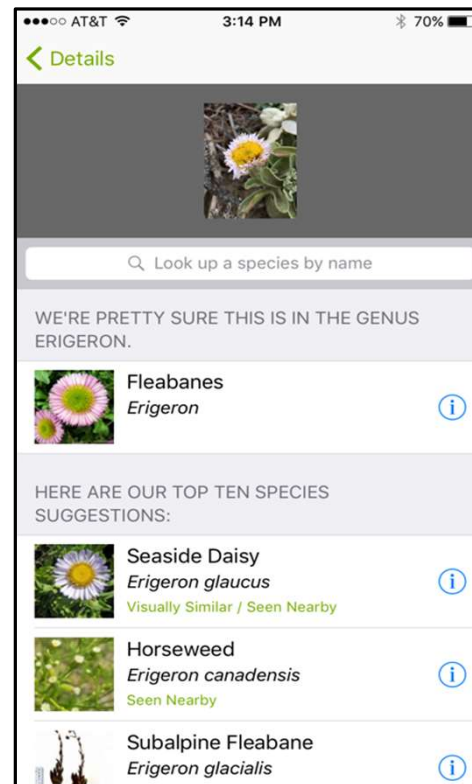
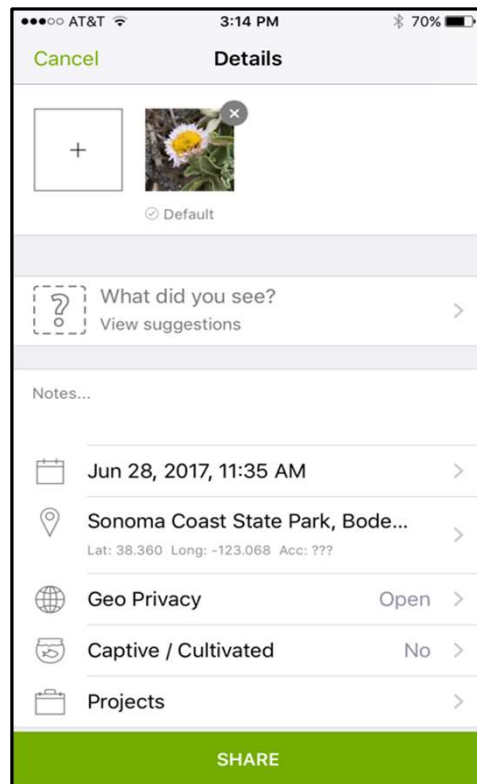
What is iNaturalist?



What is iNaturalist?



How does iNaturalist work?




1. Take a clear photo to make an observation
1. iNaturalist will give you a suggestion for ID
1. Pick from the list or type in your own ID
1. Hit “share” or ✓ to upload to iNaturalist



iNaturalist: turning photos into data




iNaturalist: turning photos into data

seaside daisy (*Erigeron glaucus*) Research Grade Edit






**rebeccafay**
5,788 observations

Observed:
Jun 28, 2017 - 11:35 AM PDT


Submitted:
Jun 28, 2017 - 5:09 PM PDT





Map Satellite


Be the first to fave this observation!


Activity


**rebeccafay** suggested an ID Improving 8mo

**seaside daisy**
Erigeron glaucus Compare

**kestrel** suggested an ID 6m

**seaside daisy**
Erigeron glaucus

**robberfly** suggested an ID 5m

**seaside daisy**
Erigeron glaucus

Community ID What's this?

seaside daisy (*Erigeron glaucus*)
Cumulative IDs: 3 of 3

0

2/3rds

3

Agree

Compare

About

Annotations

Attribute	Value	Agree	Disagree
Sex	Select		
Plant Phenology	Select		

iNaturalist: turning photos into data

seaside daisy (*Erigeron glaucus*) Research Grade Edit



rebeccafay
5,788 observations

Observed: Jun 28, 2017 · 11:35 AM PDT
Submitted: Jun 28, 2017 · 5:09 PM PDT



☆ Be the first to fave this observation!

Activity

- rebeccafay suggested an ID Improving 8mo ▼
- seaside daisy**
Erigeron glaucus Compare
- kestrel suggested an ID 6m ▼
- seaside daisy**
Erigeron glaucus
- robberfly suggested an ID 5m ▼
- seaside daisy**
Erigeron glaucus

Community ID

[What's this?](#)



Annotations

Attribute	Value	Agree	Disagree
Sex	Select		
Plant Phenology	Select		

✓ Data Quality Assessment

Quality Grade: Research



The [data quality assessment](#) is an evaluation of an observation's accuracy. Research Grade observations may be used by scientists for research. Cast your vote below:

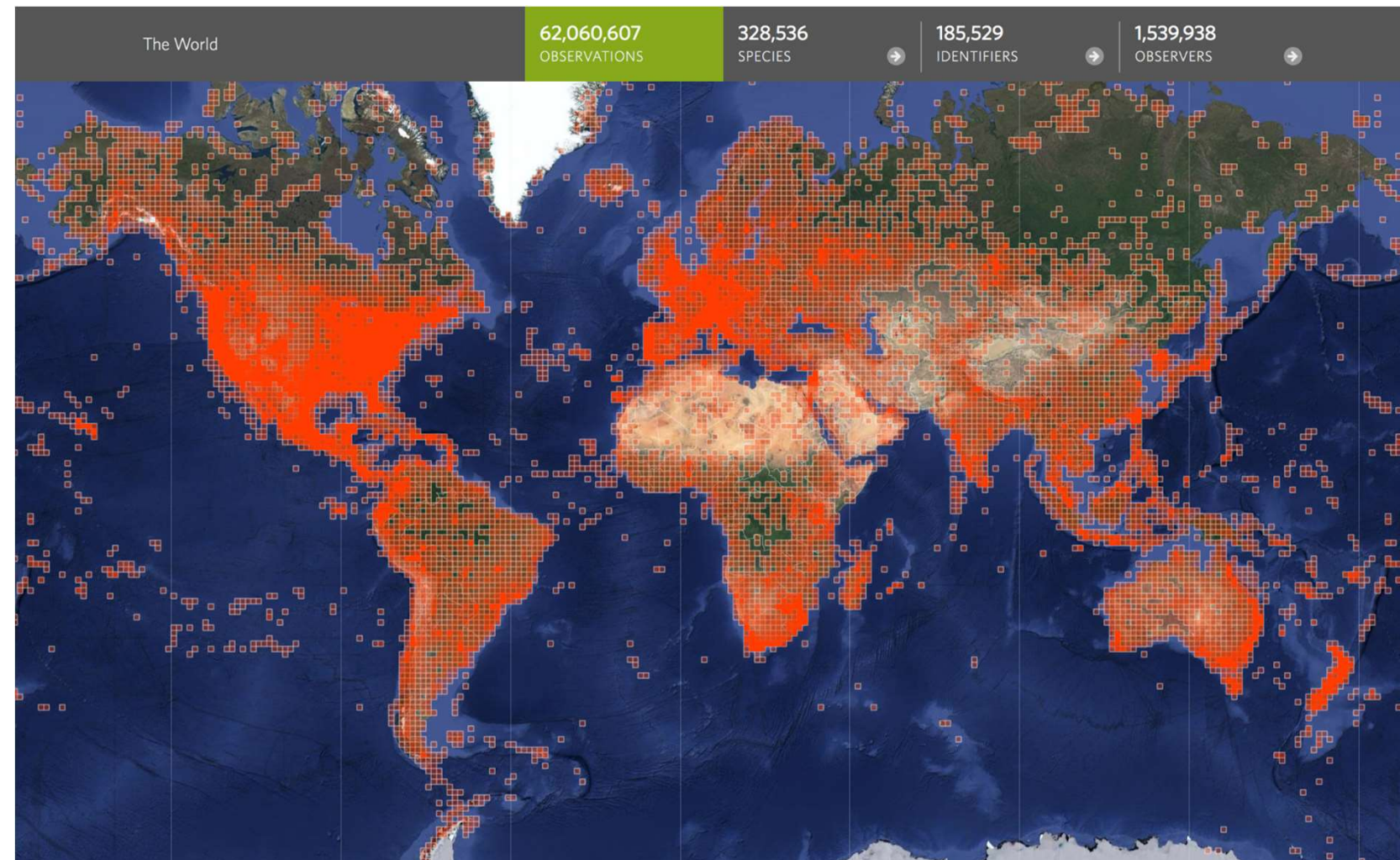
Research Grade Qualification	Yes	No
Date specified	✓	
Location specified	✓	
Has photos or sounds	✓	
Has ID supported by two or more	✓	
Date is accurate	✓	
Location is accurate	✓	
Organism is wild	✓	
Evidence of organism	✓	
Recent evidence of an organism	✓	
Community ID at species level or lower	✓	
Based on the evidence, can the Community ID still be confirmed or improved?	<input type="checkbox"/> Yes <input type="checkbox"/> No, it's as good as it can be	

This observation is Research Grade! It can now be used for research and featured on other websites.

This observation is featured on 1 site



iNaturalist: turning photos into data



Your observations are contributing to a global database of when and where species are found!



California Poppy (*Eschscholzia californica*) Research Grade Edit

kestrel
15,011 observations

Observed: Mar 29, 2019 - 1:55 PM PDT
Submitted: Mar 29, 2019 - 5:36 PM PDT

Map Satellite
Fern Lake Fire Rd, Glen Ellen, C... Show
Details

Be the first to fave this observation!

✓ Data Quality Assessment ⓘ

Quality Grade: Research

The Data Quality Assessment is an evaluation of an observation's accuracy. Research Grade observations may be used by scientists for research. Cast your vote below:

Research Grade Qualification	Yes	No
📅 Date specified	✓	
📍 Location specified	✓	
📷 Has Photos or Sounds	✓	
🛡️ Has ID supported by two or more	✓	
📅 Date is accurate	✓👍	👎
📍 Location is accurate	✓👍	👎
🌿 Organism is wild	✓👍	👎
🔍 Evidence of organism	✓👍	👎
🕒 Recent evidence of an organism	✓👍	👎
🌿 Community Taxon at species level or lower	✓	

Based on the evidence, can the Community Taxon still be confirmed or improved?

☐ Yes ☐ No, it's as good as it can be

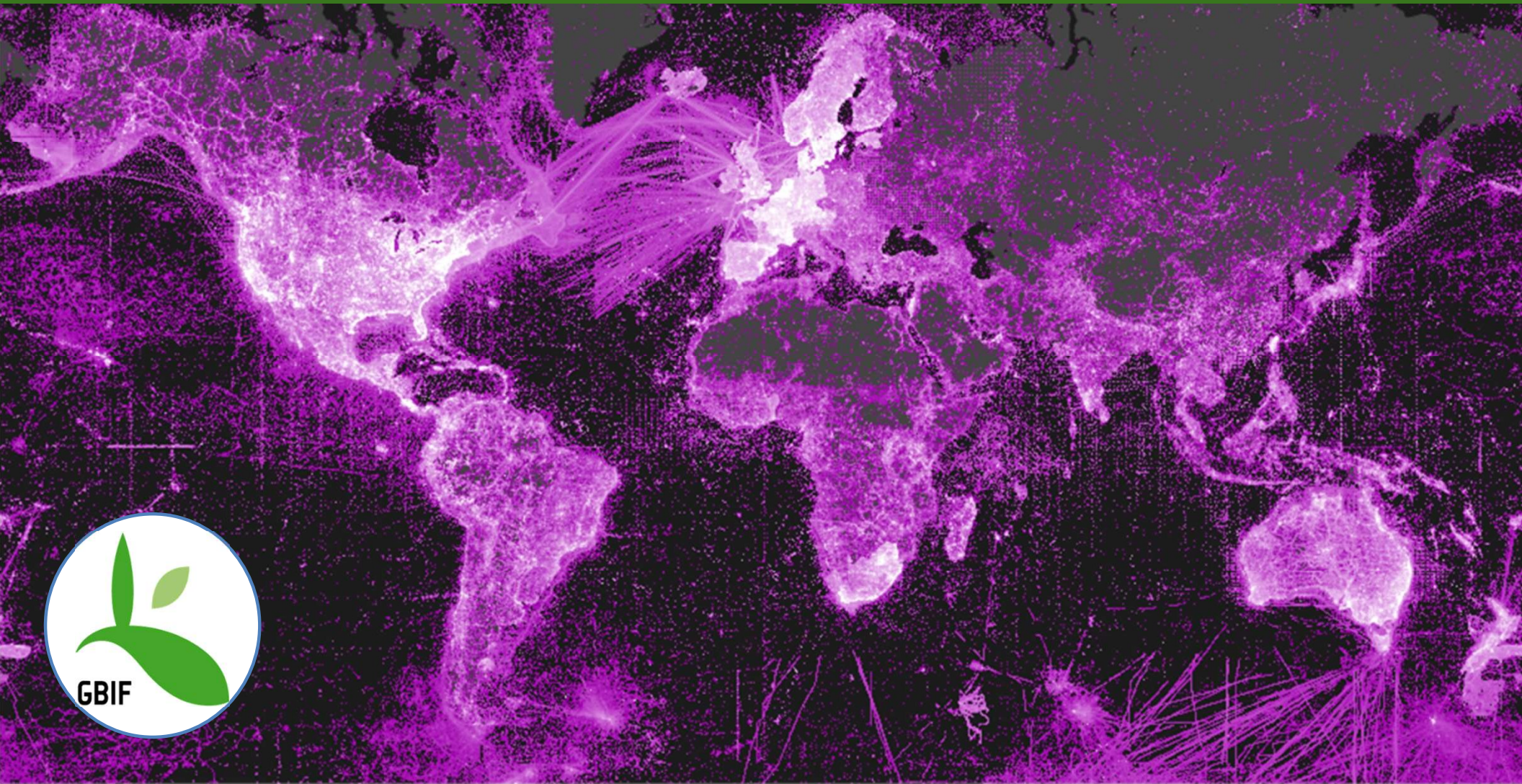
Casual Needs ID Research Grade

This observation is Research Grade! It can now be used for research and featured on other websites.

This observation is featured on 1 site

GBIF

iNaturalist data usage: big data



iNaturalist data usage: big data

Studies That Used iNaturalist Data in 2020

Click the flower charts for more information about what the numbers and colors mean. Impact data and charts courtesy of [Altmetric](#). Information about data usage courtesy of our friends at the [Global Biodiversity Information Facility](#).



Cooper, J., Pimiento, C., Ferrón, H., and Benton, M.

Body dimensions of the extinct giant shark *Otodus megalodon*: a 2D reconstruction

Scientific Reports

Data used: [doi:10.15468/dl.34gv5k](https://doi.org/10.15468/dl.34gv5k)



Dorey, J., Fagan-Jeffries, E., Stevens, M., and Schwarz, M.

Morphometric comparisons and novel observations of diurnal and low-light-foraging bees

Journal of Hymenoptera Research

Data used: [doi:10.15468/dl.92zbgq](https://doi.org/10.15468/dl.92zbgq) [doi:10.15468/dl.c5ugss](https://doi.org/10.15468/dl.c5ugss)

[doi:10.15468/dl.f55tu7](https://doi.org/10.15468/dl.f55tu7)

[doi:10.15468/dl.kg7tch](https://doi.org/10.15468/dl.kg7tch)

[doi:10.15468/dl.m8hpxs](https://doi.org/10.15468/dl.m8hpxs)

[doi:10.15468/dl.m8ud4s](https://doi.org/10.15468/dl.m8ud4s)

[doi:10.15468/dl.narxm7](https://doi.org/10.15468/dl.narxm7)

[doi:10.15468/dl.nk7d69](https://doi.org/10.15468/dl.nk7d69)

[doi:10.15468/dl.skwx9j](https://doi.org/10.15468/dl.skwx9j)

[doi:10.15468/dl.w8gw8v](https://doi.org/10.15468/dl.w8gw8v)



Siqueira, A., Morais, R., Bellwood, D., and Cowman, P.

Trophic innovations fuel reef fish diversification

Nature Communications

Data used: [doi:10.15468/dl.9vzatq](https://doi.org/10.15468/dl.9vzatq)



Lim, J., Svenning, J., Gödel, B., Faurby, S., and Kissling, W.

Frugivore-fruit size relationships between palms and mammals reveal past and future defaunation impacts

Nature Communications

Data used: [doi:10.15468/dl.8ojwyx](https://doi.org/10.15468/dl.8ojwyx)

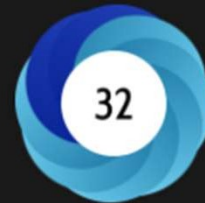


Craven, D., Sande, M., Meyer, C., Gerstner, K., Bennett, J., Gilling, D., Hines, J., Phillips, H., May, F., Bannar-Martin, K., Chase, J., and Keil, P.

A cross-scale assessment of productivity-diversity relationships

Global Ecology and Biogeography

Data used: [doi:10.15468/dl.mka2y5](https://doi.org/10.15468/dl.mka2y5)



Simpson, K., Jardine, E., Archibald, S., Forrestel, E., Lehmann, C., Thomas, G., and Osborne, C.

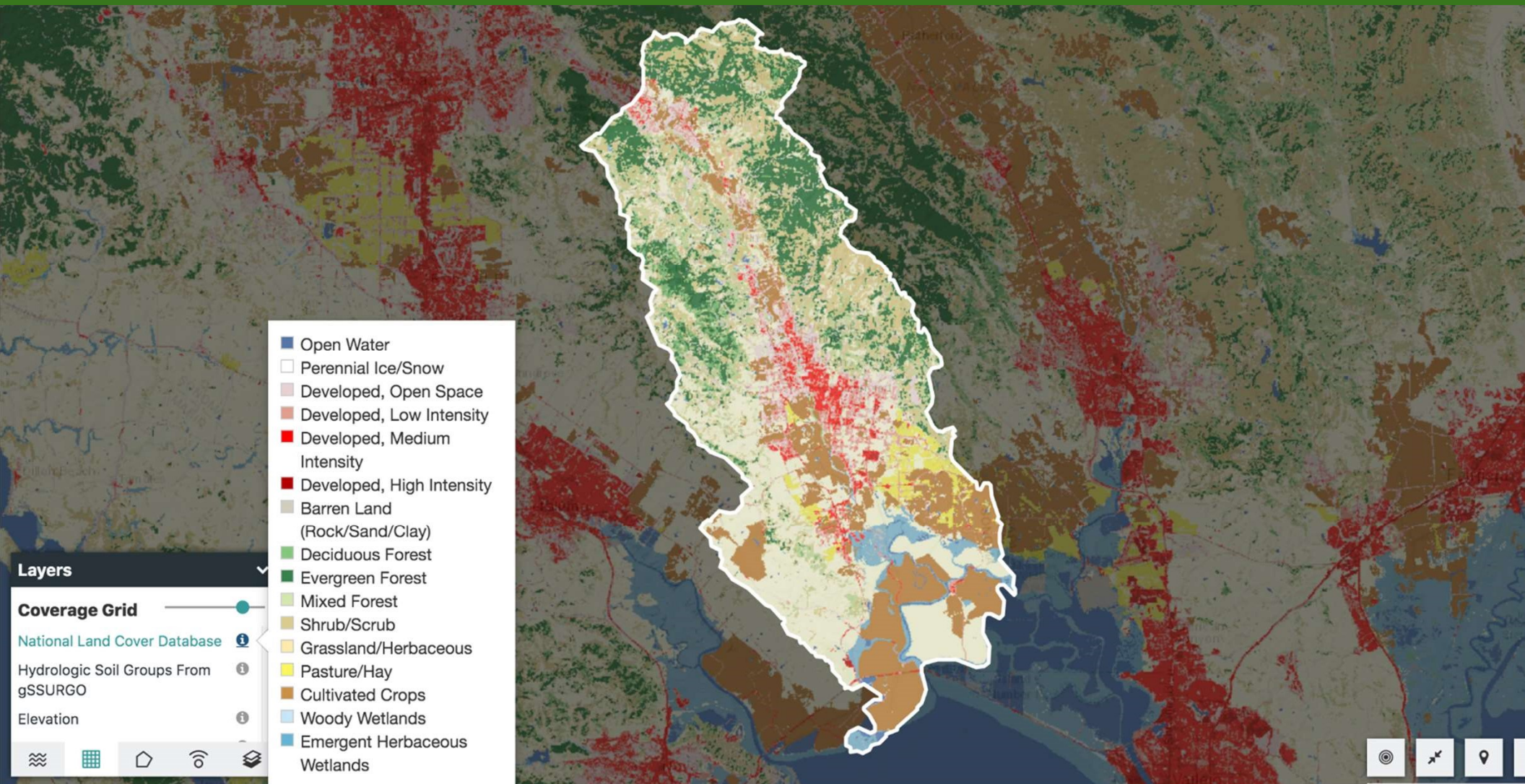
Resprouting grasses are associated with less frequent fire than seeders

New Phytologist

Data used: [doi:10.15468/dl.rckugp](https://doi.org/10.15468/dl.rckugp)

375+ papers published using iNaturalist data in 2020

iNaturalist data usage: management



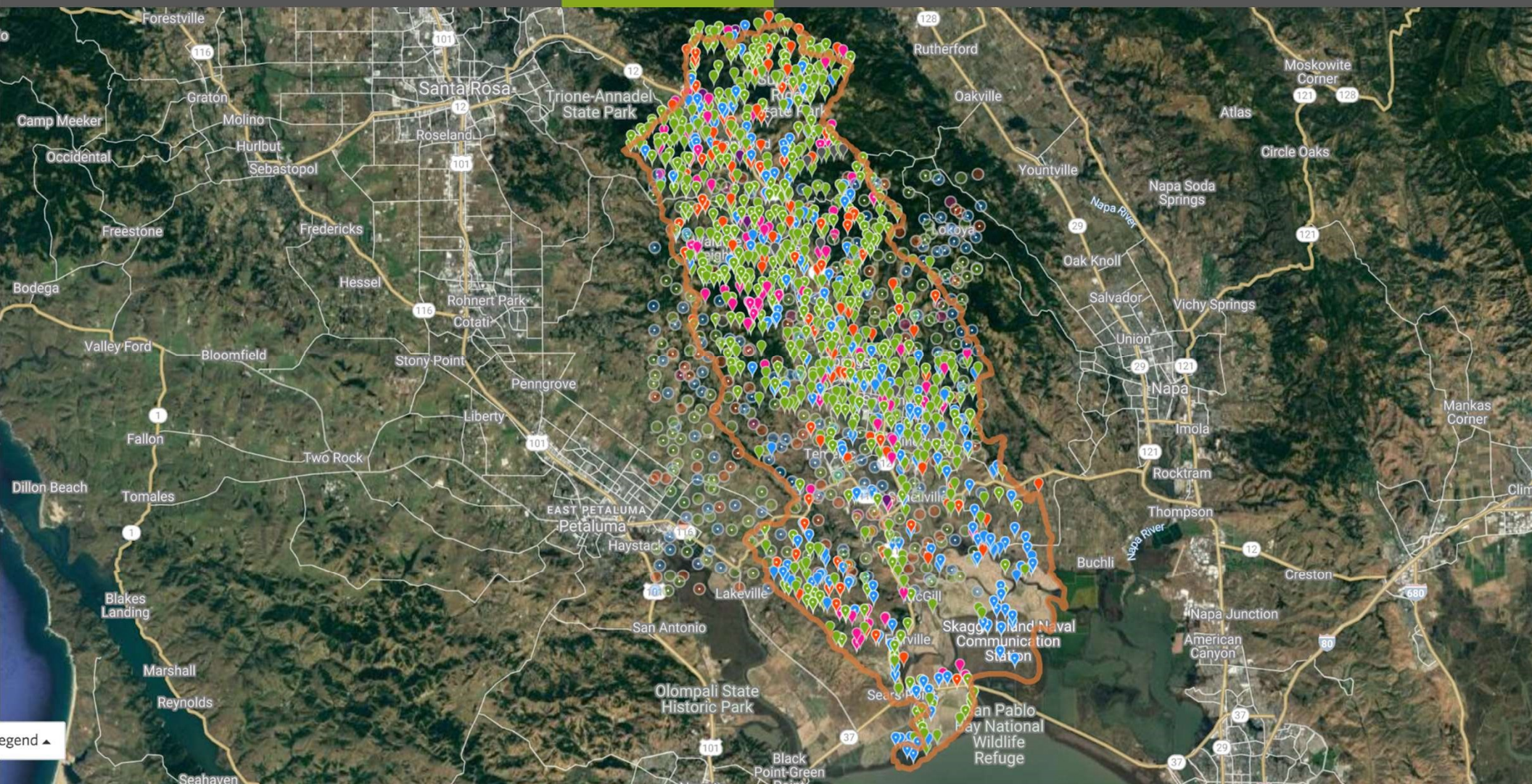
Sonoma Creek Watershed

54,828
OBSERVATIONS

2,883
SPECIES

2,854
IDENTIFIERS

1,985
OBSERVERS



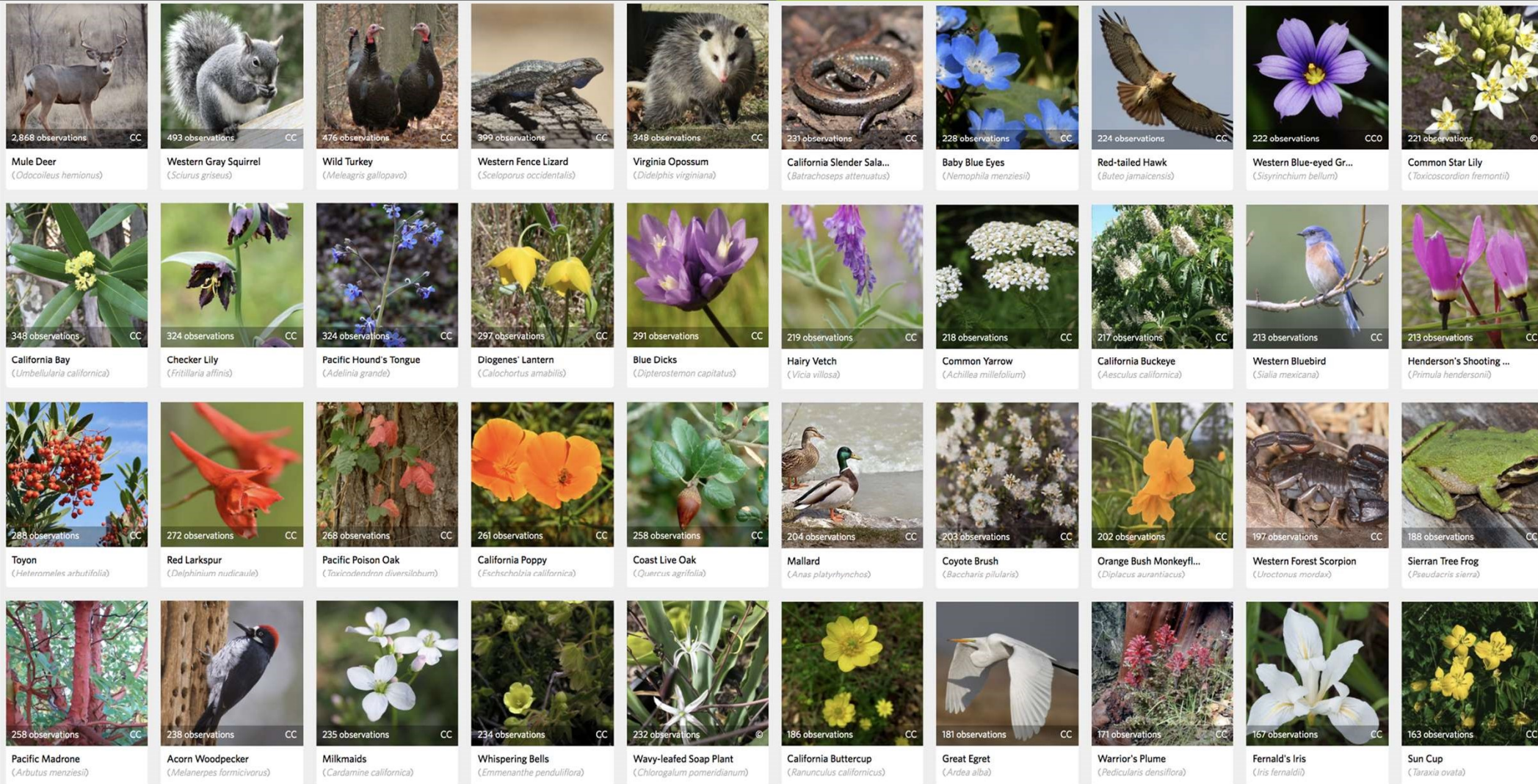
Sonoma Creek Watershed

54,828
OBSERVATIONS

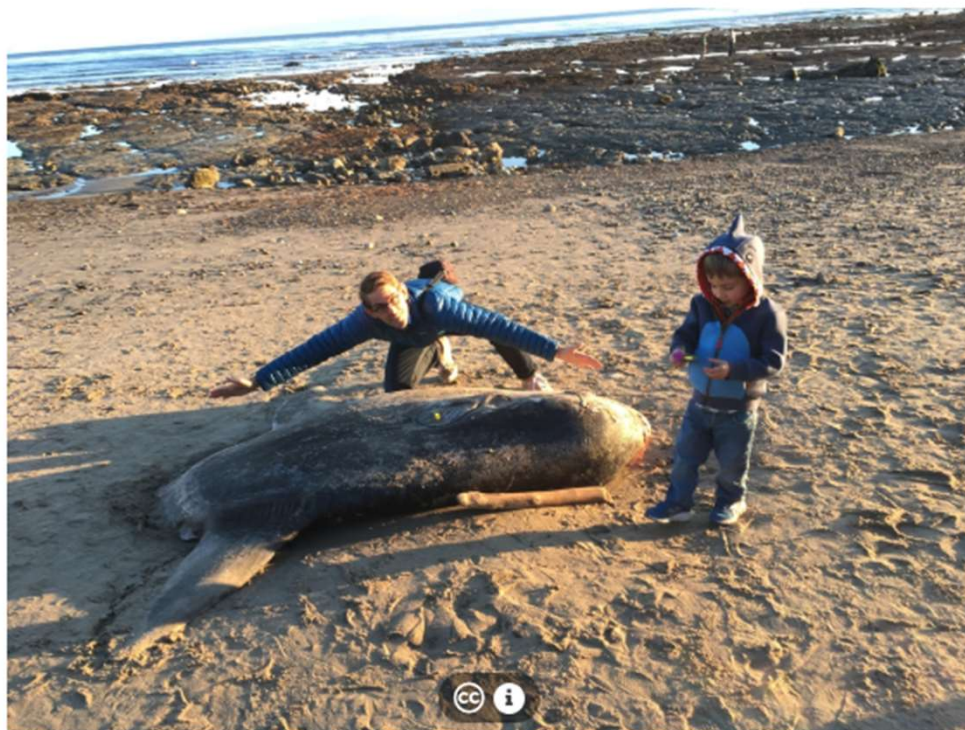
2,883
SPECIES

2,854
IDENTIFIERS

1,985
OBSERVERS



iNaturalist data usage: unexpected finds



tomleeturner

🌿 1,456 observations

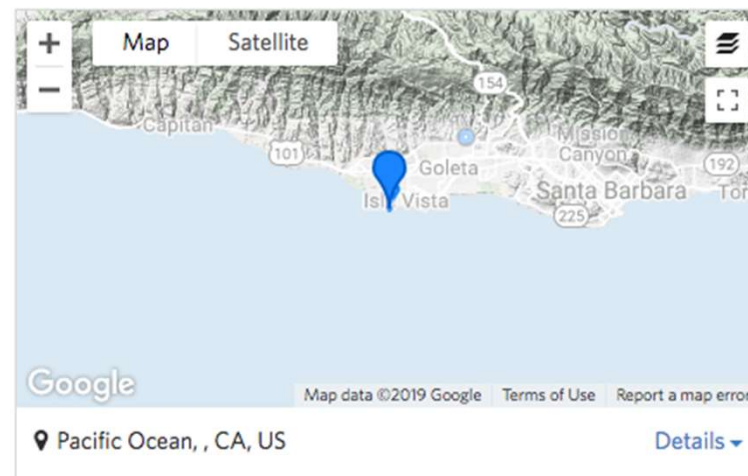


Observed:

Feb 19, 2019 · 5:17 PM PST

Submitted:

Feb 20, 2019 · 7:21 AM PST



☆ lincolndurey, tiwane, and 22 others faved this observation

iNaturalist data usage: unexpected finds

Description

I am 6 feet from finger

Activity

 tomleeturner commented
 jessieah commented
 maractwin commented
Due to t...
 tomleeturner added
 tomleeturner Same fish

rfoster commented
 @maractwin yeah this one has the widest point across the smooth clavus band, number of clavus in either observation and "backfold". It'd be quite...

mnyegaard suggested an ID*
 Hoodwinker *Mola tecta*
 I'm going out on a limb... @rfoster
 * rfoster disagrees this is C...

tomleeturner commented
 More photos here: https://www.facebook.com/KEY...story_fbid=207915038550&VH2c7nmRcEijPLhYnKDJ177gfKJvaUpI5DcZK3trBgPTPMRA87qJmNS7DKIOeGghjASDVf8cTISK77t955N-ycOWBEyYIVUO8wwQZ2uSdJIvYYbHGvYI0OSMTpGu

mnyegaard commented
 @rfoster.
 Hmmmmmm. The fish does look quite right, although it's not Mola mola, but hmmm I remember particular of the clavus - or t...

rfoster commented
 Okay, thanks @mnyegaard - I'll retre...

mnyegaard commented
 @rfoster Well, you may just be right, can't be sure. All my fingers and toes a hoot if it turns out to be the Hoodw...

rfoster commented
 Ha! Yes, so many images posted, in t... and not one shows the tail clearly!

tomleeturner commented
 One of the photos here seems to show (https://www.inaturalist.org/observa...pointed spines on the dorsal part of t... structures were the denticles I have e... evening when the tide goes back out...

mnyegaard commented
 @tomleeturner Yes, I too think I can... though, as I have been 'tricked' so m... alexandrini can have faint backfolds, to be sure. With the denticles, they v... are on the body a little behind the pe... fish this evening for a second round o... instructions of how to photograph. G...

wimvdam commented
 Here is an additional photo that r... <https://www.facebook.com/KEY...>

rfoster commented
 Thanks @wimvdam - That's such i... it's just too low-res to be able to z... or just a trick of the light...

mnyegaard commented
 @rfoster This is insane! This fish JUST where we want to check de...

tomleeturner commented
 Great news! Fish refund! Photos the ossicles I could detect with li... The denticle pictures are from ju... fin-tip = 2 m 27 cm (slight fin dan...

tomleeturner suggested an ID
 Hoodwinker Mo *Mola tecta*

tomleeturner commented
 Correction: denticle picture just r... saw it struggling in the shallows t...

rfoster commented
 You're a legend @tomleeturner! Now we wait for Marianne's verdict...

mnyegaard commented
 HOLY MOLA!!!! @tomleeturner you are a superstar and @rfoster I am sooo excited to join you out on your brave and well-picked hoodwinker limb!!!! OMG!!!! And ps, for the record, the scales are text-book Mola tecta so pls ignore my previous comments!!

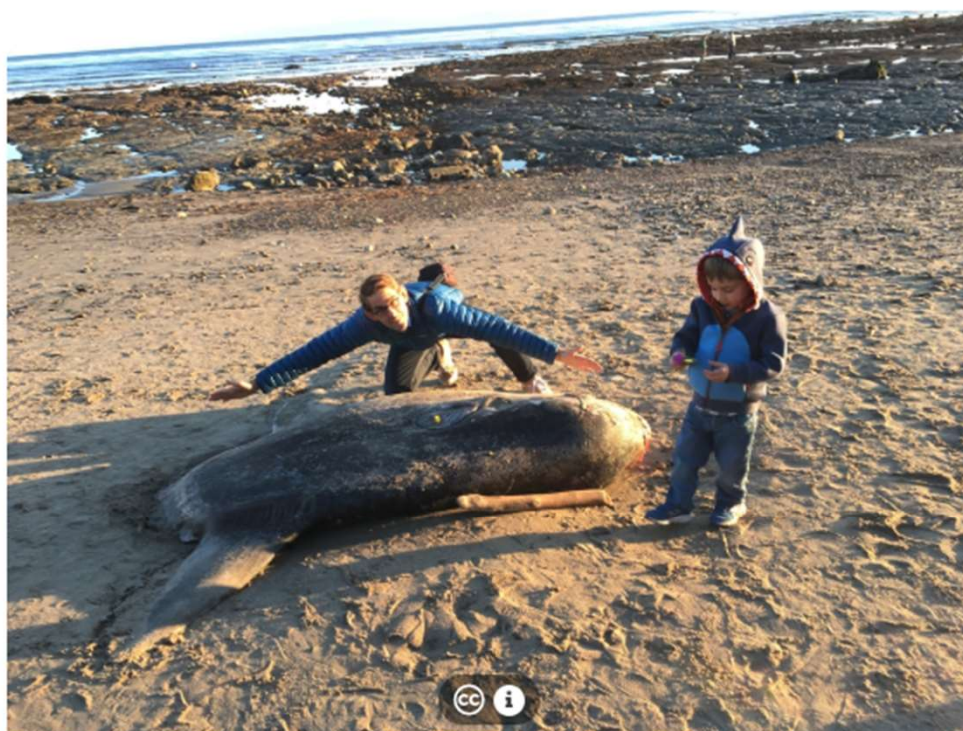
mnyegaard suggested an ID
 Hoodwinker Mola *Mola tecta*
 Since this is such an incredible find - Mola tecta well out of its expected range - here are the characteristics that clearly and without any doubt reveal the species identity. The images here are excellent and very clearly show the telltale clavus band back-fold of Mola tecta, as well as the rounded scales (denticles) set further apart than for Mola mola. The body shape is typical for the species with the widest point across the eyes, and without the long, bulging lateral "keels" on the body typical of similar sized Mola alexandrini and Mola mola; instead-the dorso-lateral keel (= "eye brow") is very short. In addition Thomas Turner examined the clavus directly and reported 3, maybe 4, ossicles on the dorsal side of the back-fold and 2 on the ventral side, but noted that there was some damage on the ventral side of the clavus margin where the next couple of ossicles would have been expected to be. This low number of ossicles for such a large fish is a key characteristic for this species.

rfoster commented
 Nice one! I just hope a museum is able to collect it - never an easy task with a several hundred pound fish on a remote beach...

iNaturalist data usage: unexpected finds

Hoodwinker Mola (*Mola tecta*) Research Grade

Follow ▾



tomleeturner

1,456 observations

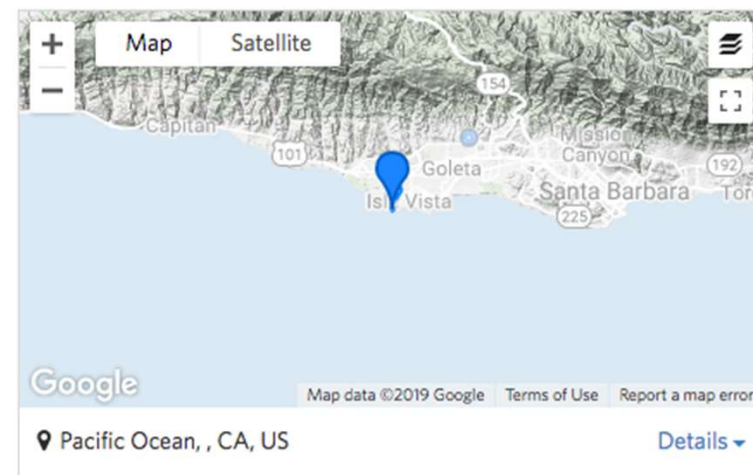


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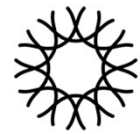




City Nature Challenge



CITY NATURE CHALLENGE IS ORGANIZED BY



CALIFORNIA
ACADEMY OF
SCIENCES

NATURAL
HISTORY
MUSEUM
LOS ANGELES COUNTY



City Nature Challenge 2016

2

2 cities took part, San Francisco
versus Los Angeles

1K

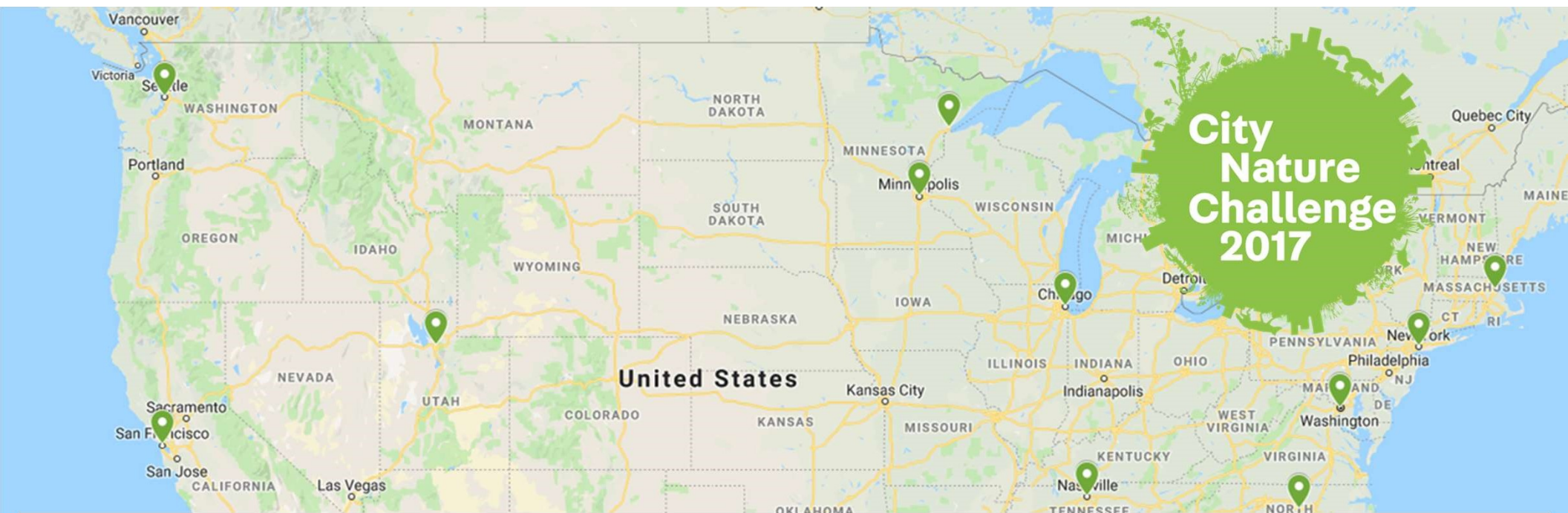
Over 1,000 people participated

19,800

* Over 19,800 observations were
made

2,544

2,544 species were found



4K

More than 4,000 people participated

125K

Over 125,000 observations were made

8,600

8,600 species were found

392

392 rare / endangered / threatened species documented!

A world map with green location pins indicating participation in the City Nature Challenge 2018. Pins are concentrated in North America (USA, Canada, Mexico), Europe (UK, France, Germany, Italy, Spain, Sweden, Norway, Finland), and parts of Asia (China, India, Japan, South Korea, Thailand, Indonesia, Philippines). Other pins are scattered across South America (Colombia, Venezuela, Brazil, Peru), Africa (Algeria, Libya, Egypt, Sudan, Nigeria, Chad, Ethiopia, Kenya, Tanzania, Angola), and the Middle East (Turkey, Iraq, Iran, Afghanistan, Pakistan, Saudi Arabia).

City Nature Challenge 2018

17K

More than 17,000 people participated

441K

Over 441,000 observations were made

18K

18,000 species were found

599

599 rare / endangered / threatened species documented!

City Nature Challenge 2019



35K

More than 35,000 people participated

963K

Over 963,000 observations were made

31K

31,000+ species were found

1100+

1,100+ rare / endangered / threatened species documented!

A world map showing the locations of participation for the City Nature Challenge 2020. Numerous green location pins are scattered across the map, with a high concentration in North America (USA and Canada) and Europe. Other pins are visible in Asia, Africa, and South America. A green circular graphic with a city skyline silhouette is positioned in the upper right corner of the map.

City Nature Challenge 2020

41K

More than 41,000 people participated

815K

Over 815,000 observations were made

32K

32,000+ species were found

1300+

1,300+ rare / endangered / threatened species documented!

Halifax, NS, Canada



Bristol & Bath, UK



Hong Kong SAR, China



Washington, D.C.,
USA



City Nature Challenge

La Paz, Bolivia



Kuala Lumpur, Malaysia



Benjamin Ong

Connect people to their
local nature in
urban/metro areas

Collect urban
biodiversity
data that are
available to
managers &
scientists

Connect
people to each
other: build
community in
person &
online around
local nature

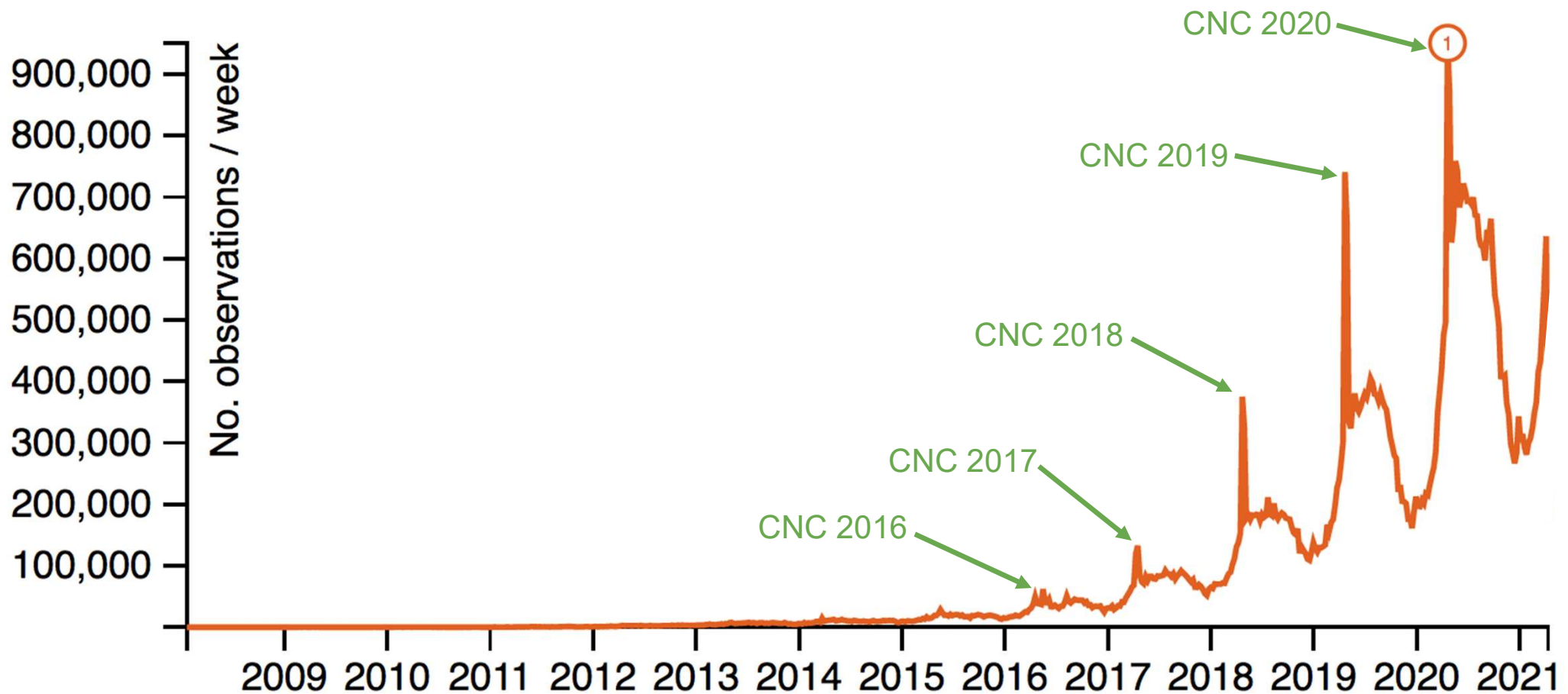
Have fun through some
friendly competition!

Grow volunteer
biodiversity
documentation
globally

The central logo is a bright green, irregular shape with a jagged, leaf-like border, containing the text "City Nature Challenge" in white. It is surrounded by five circular images: top-left shows children examining plants; top-right shows a group of people, some with cameras and phones, in a park; bottom-right shows a person taking a photo of a tree; bottom-left shows a person holding a smartphone in front of a green bush; and a large bottom-center image shows the Golden Gate Bridge and San Francisco skyline. The entire graphic is set against a white background.

City Nature Challenge

Observations uploaded per week to iNaturalist



White-spotted Slimy Salamander (*Plethodon cylindraceus*)



Luca Catanzaro

Washington, D.C., USA

First record in Arlington County since 1977; found by a high school student

Epidendrum radioferens orchid



Danny Javier Cruz López

**Guajiquiro,
Honduras**

First record of this
species in Honduras on
both iNaturalist & GBIF

Western Bobcat (*Lynx rufus*)



iNaturalist user joolzincalgary

Calgary, AB, Canada

The families in this neighborhood got a close-up lesson on the food chain & bobcat behavior when this individual caught & ate a jackrabbit in a backyard - spending 6+ hours there!

Lingulodinium polyedra

San Diego, CA, USA
Bioluminescent dinoflagellate
& night surfing



Tim Fallon

CITY NATURE CHALLENGE THROUGH THE YEARS

	2016	2017	2018	2019	2020
CITIES	2	16	68	159	244
COUNTRIES	1	1	17	28	40
OBSERVATIONS	19,800	125,000	441,000	963,000	815,000
SPECIES	2,500	8,600	18,000	31,000	32,600
OBSERVERS	1,000	4,000	17,000	32,000	41,000

2021 City Nature Challenge: April 30 - May 3

400+ Cities

citynaturechallenge.org



About

Members 4

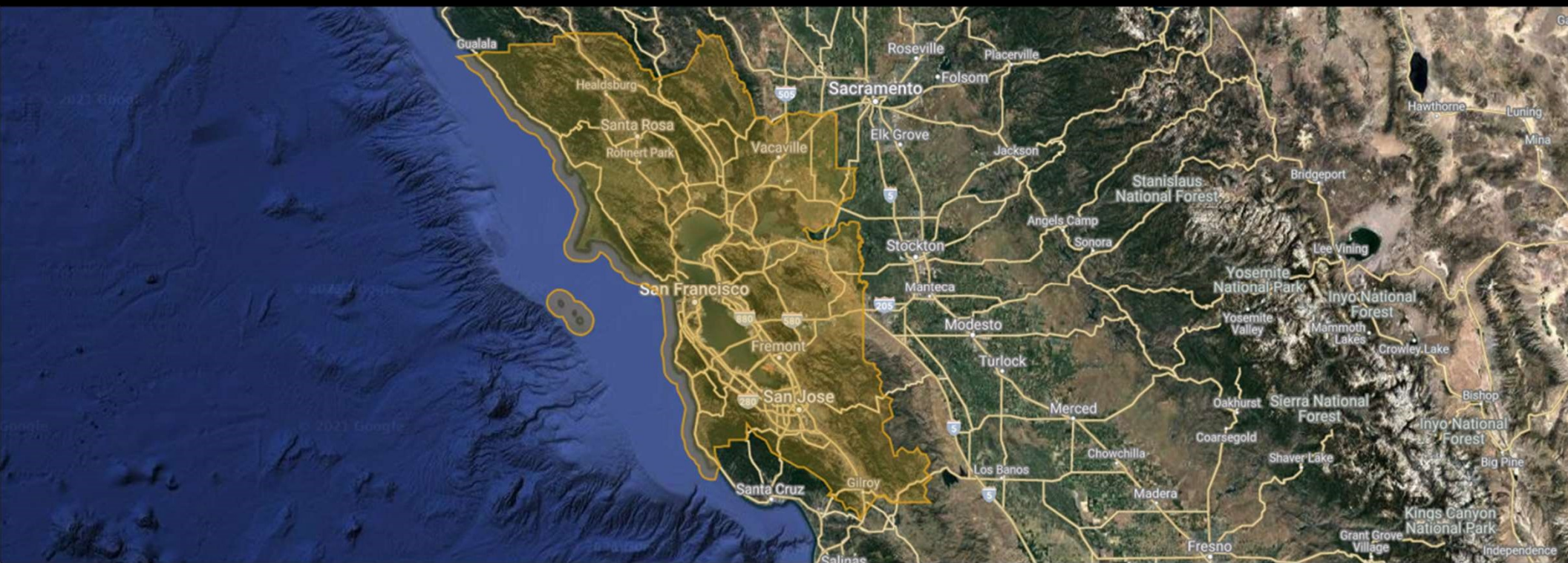
Join us for the 2021 City Nature Challenge in the San Francisco Bay Area! While we're still not quite sure what the CNC will look like, no matter what we know we want your observations of the nature near you! Help us document the incredible biodiversity of the Bay Area by making observations of WILD organisms in any of the

[Read More >](#)

[Your Membership](#)

[Edit Project](#)

[Project Journal](#)



THANK YOU!



ayoung@calacademy.org



[@alisonkestrel](https://twitter.com/alisonkestrel)



[@kestrel](https://twitter.com/kestrel)

calacademy.org/citizen-science

iNaturalist.org

citynaturechallenge.org

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Silver Sponsors



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Log into your usgbc.org profile

Report course number: 0920021655



AIA Professionals will receive 1.5 continuing education hours for this session.

CEUs can be managed through PG&E training portal and are reported to AIA within 10 business days.

Course number: WS0028

Showcase Raffle: Two Ways to Win!



Complete our post-event survey to be entered to win a \$50 gift card! Survey will be sent to all registrants at the end of the Showcase.



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