



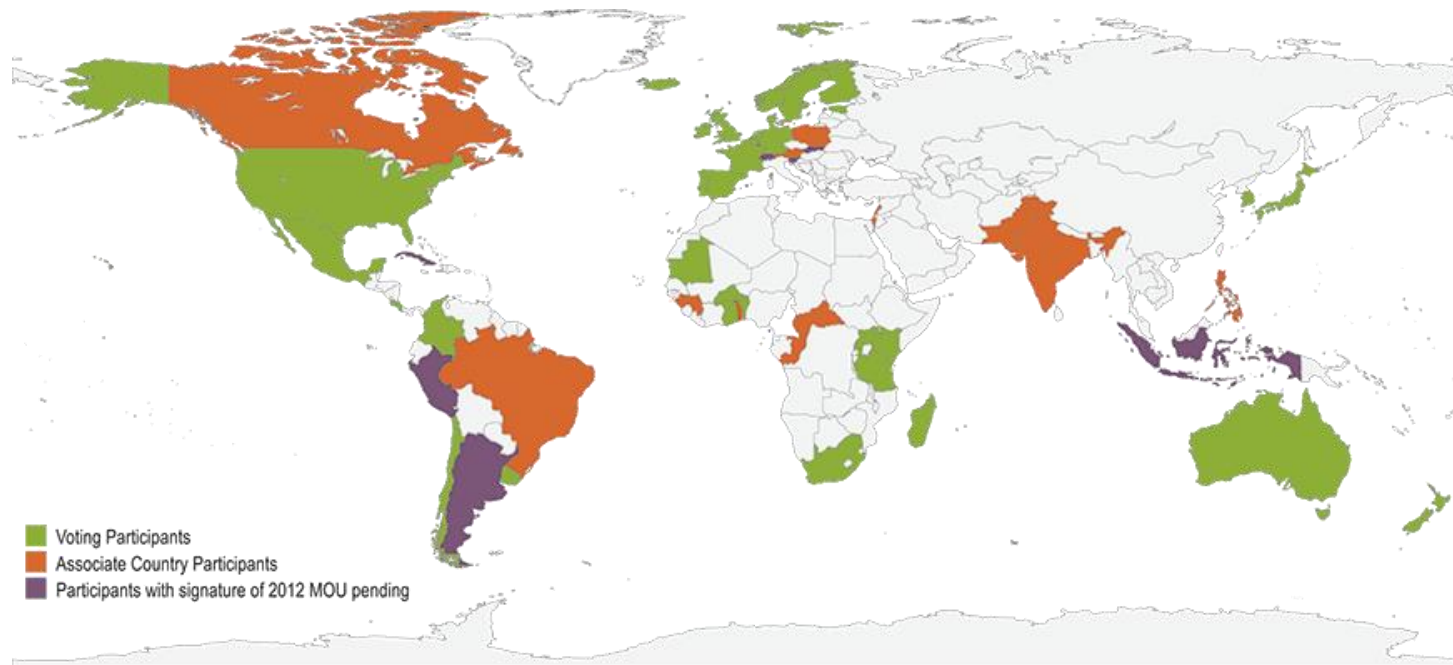
# Citizen Science and GBIF

***Siro Masinde***  
*Jan Legind, Kyle Copas & Tim Hirsch*

# WHAT IS GBIF?

GBIF = Global Biodiversity Information Facility

[www.gbif.org](http://www.gbif.org)



52 participating countries & 40 organizations

# WHAT DOES GBIF DO?

- Promotes and facilitates **free** and **open access** to biodiversity data via the internet  
e.g., occurrences, checklists (names) & metadata in GBIF.org
- Promotes **common standards** and free **tools** for biodiversity **data management** and **exchange**
- Provides guidance on setting up **national biodiversity information facilities** and **portals** as well as supporting and maintaining **networks**

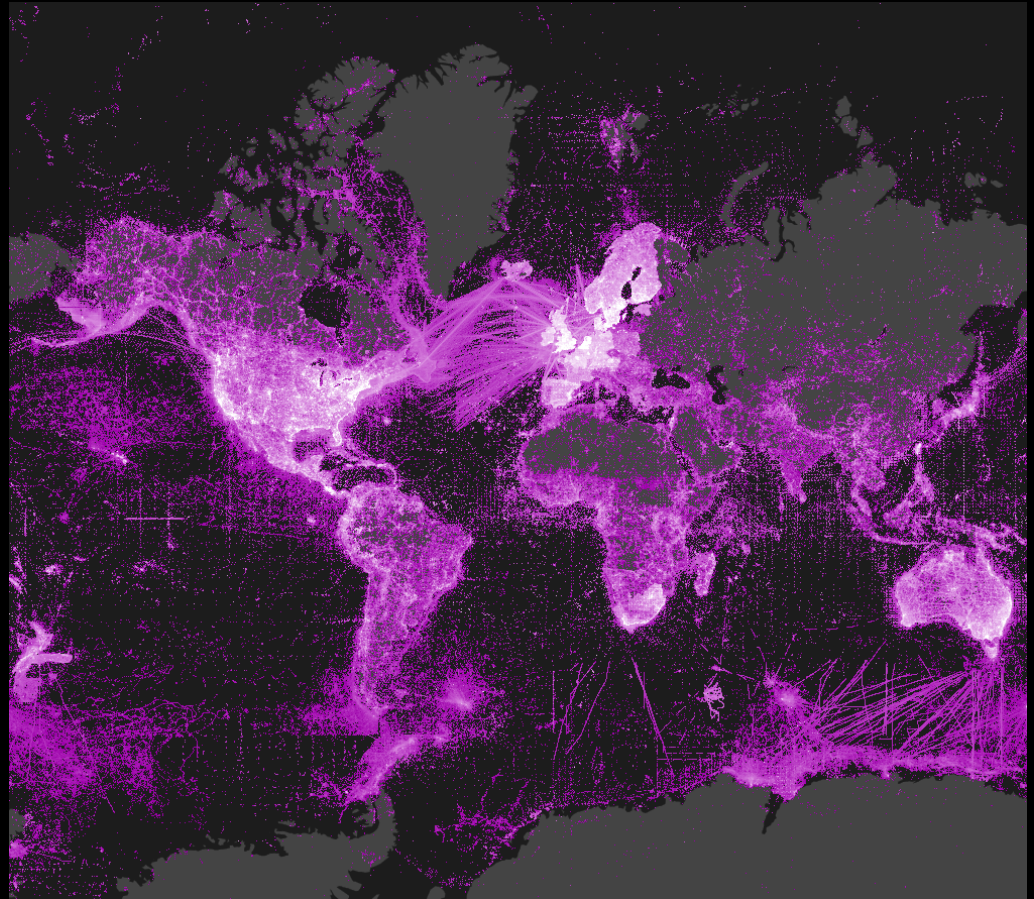
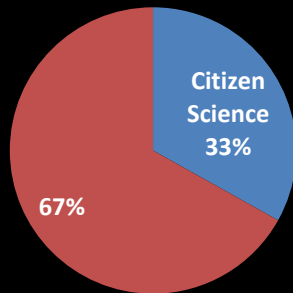
# GBIF BY THE NUMBERS

**517,325,592**  
species occurrence records

**1,454,694**  
species

**13,845**  
datasets

**644**  
data-publishing institutions





# GBIF CITIZEN SCIENCE DATA TOP 10 ORDERS

Charismatic taxa, morphologically easily recognizable & identifiable



**113,644,218**

Animalia > Chordata >  
**Passeriformes**  
[e\\_monk](#)



**22,747,340**

Animalia > Chordata >  
**Anseriformes**  
[Barbara](#)



**21,905,683**

Animalia >  
Chordata >  
**Charadriiformes**  
[Allan Hopkins](#)



**9,895,032**

Animalia >  
Chordata >  
**Piciformes**  
[Yip Kee Yap](#)



**9,481,006**

Animalia > Chordata >  
**Accipitriformes**  
[Charles \(Chuck\) Peterson](#)



**7,463,088**

Animalia > Chordata >  
**Columbiformes**  
[Alex Loach](#)



**7,002,740**

Animalia > Chordata >  
**Pelecaniformes**  
[Cyron Ray Macey](#)



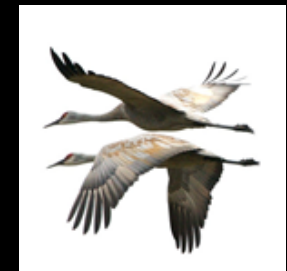
**4,860,543**

Animalia > Arthropoda >  
**Lepidoptera**  
[Parshotam Lal Tandon](#)



**3,915,918**

Plantae > Magnoliophyta > **Poales**  
[Dendroica cerulea](#)



**3,243,893**

Animalia > Chordata > **Gruiformes**  
[Patrick](#)

# SOURCES OF GBIF-MEDIATED CITIZEN SCIENCE DATA

## NATIONAL NODE BIOBLITZES

### **National Biodiversity Data Centre (Ireland)**

- Hosts annual bioblitz competition across four locations in the Republic and Northern Ireland
- Attracts national media coverage and provides datasets in GBIF

### **DanBIF (Denmark)**

- 2013 event linked to World Biodiversity Day
- Generated occurrence data for Ostre Anlæg park in Copenhagen (dataset available through GBIF.org)

### **InBIO (Costa Rica)**

- 2014 bioblitz in their research park which we covered in GBits

### **SANBI (South Africa)**

- 2012 bioblitz in Stellenbosch linked to the iSpot initiative



# SOURCES OF GBIF-MEDIATED CITIZEN SCIENCE DATA

## CITIZEN SCIENCE NETWORKS

### eBird

- >150 million high-quality observations worldwide
- Collected by professional ornithologists, recreational birders and citizen scientists

### iNaturalist

- Publish subset of verified 'research-grade' observations

### anymals+plants

- German-based initiative includes mobile app to encourage uploading of public sightings
- Displays existing GBIF-mediated records in locations where people are looking

### Diveboard

- Amateur dive network initiative that enables divers to record sightings in 'electronic log books'
- Partners linked to GBIF Belgium and GBIF France converted observations into extensive GBIF dataset

### Scandinavian networks

- Recorders in Sweden, Norway and Finland conduct rapid (and strict) peer review





# SOURCES OF GBIF-MEDIATED CITIZEN SCIENCE DATA

## CROWD-SOURCED DIGITIZATION

### **Australian Volunteer Portal (Atlas of Living Australia)**

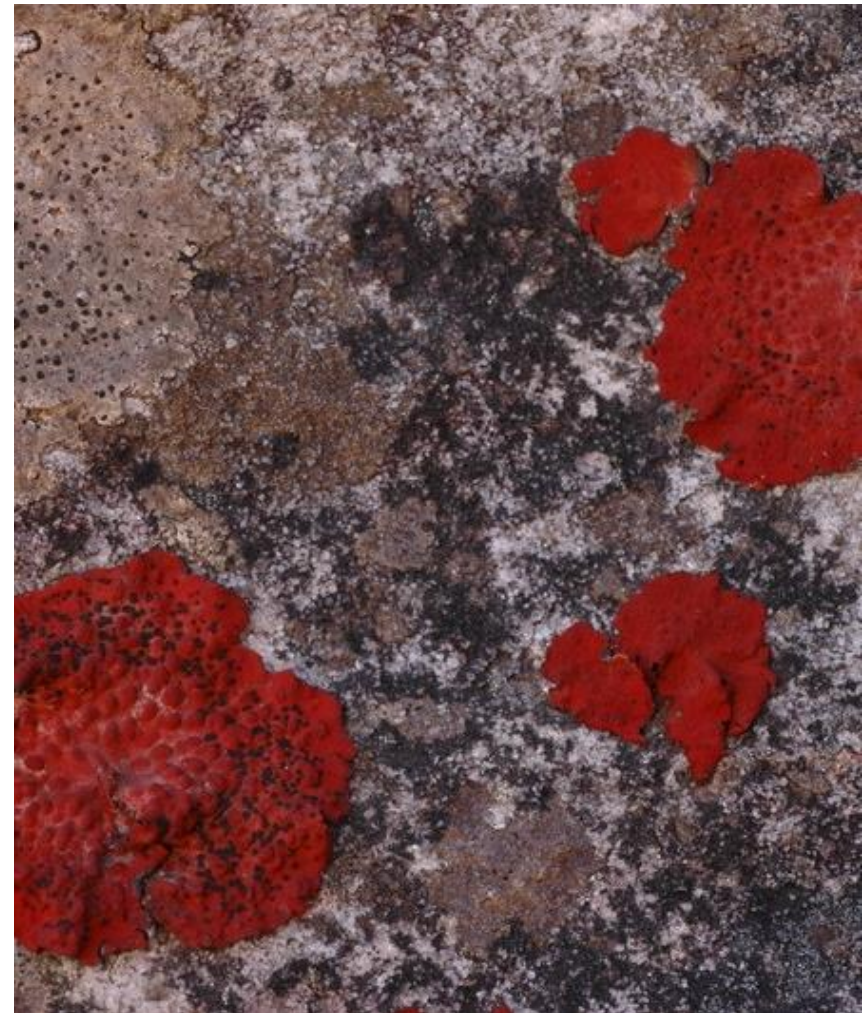
- Invites users to engage in 'expeditions'
- Volunteers transcribe labels from images themed around particular collections

### **Les Herbonautes (France)**

- Francophone network encourages public transcription of herbarium sheets
- Digitization of National Herbarium's 8 million specimens from all continents dating to 1635 and age of exploration

### **Lichens of Africa (GBIF Norway)**

- GBIF Norway crowdsourcing effort launched to mark 200th anniversary of Natural History Museum botanical garden in Oslo
- Volunteers assist in transcribing thousands of records for African lichen specimens





# CITIZEN SCIENCE DATA

## TOP NATIONAL PUBLISHERS

Country	# Observations
USA	161,894,332
Sweden	38,604,747
UK	22,304,967
Finland	13,519,114
Australia	7,448,478
Germany	4,951,803
Denmark	4,609,679
Ireland	1,582,524
Norway	370,911
Estonia	169,086
Belgium	370,911
Canada	121,916

## EXCLUDING eBIRD

Country	# Observations
<b>Sweden</b>	<b>38,604,747</b>
UK	22,304,967
Finland	13,519,114
<b>USA</b>	<b>8,362,169</b>
Australia	7,448,478
Germany	4,951,803
Denmark	4,609,679
Ireland	1,582,524
Norway	370,911
Estonia	169,086
Belgium	370,911
Canada	121,916

# CITIZEN SCIENCE DATA BASIS OF RECORD

- Greater proportion of observations
- Contributions to specimen data are underreported and underappreciated

Basis of record	Citizen science	Institutional
Human observation	204,330,760	67,405,200
Observation	45,803,179	55,760,093
Unknown	3,782,583	36,026,607
Preserved specimen	<b>1,984,634</b>	97,090,284
Literature	51,204	404,875
No information	81	3
Fossil specimen	47	3,850,597
Living specimen	0	822,136
Machine observation	0	689,739
Material sample	0	2,293
Ratio of specimens	<b>0.8%</b>	<b>39%</b>

# GBIF FUTURE PROJECTS FOR QUALITY CONTROL AND DATA EVALUATION

- **Endorsement of datasets**
  - Community assessment and evaluation of data sets before publication
- **Quality and fitness-for-use**
  - Suitability of data for a given user need
- **Reference datasets**
  - Cleaned datasets