Practical Uses of iNaturalist, eBird, and Other Online Observations

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Why Use Citizen Science Data?

- Geographic reach
- Temporal reach
- Supplements other data
- Networking
- Proven applications
- Accessible

Why not use it?
TIME
A few (of many) examples of where to find data

- Global Biodiversity Information Facility (GBIF)
- Biodiversity Information Serving Our Nation (BISON)
- Mushroom Observer
- iMapInvasives, EDDMapS
- eBird, eButterfly, Odonata Central
- iNaturalist
- Social networks
Tips for Data Extraction and Use

- Filters, queries from sites
- APIs where available
- Post-processing

- Terms of Use
- Creative Commons licensing
- Cite your source

Adapted from graphic in Young et al., 2019. https://doi.org/10.1016/j.biocon.2019.06.016
- Free
- All taxa
- Worldwide
- Taxonomy maintained
- Active members
- Good mobile compatibility
- Taps into: EOL GBIF NatureServe
Observation Data

- Photos or Audio
- Date & Time
- Map and coordinates
- Accuracy information
- Geoprivacy:
  - By observation
  - By species status
- Optional annotations
- Creative Commons licensing
Additional filter options

Export from map or edit query
iNaturalist Projects

• Option to set rules
  o Geographic boundary
  o Species list
  o Required information
• Curators can help manage project
• Add observations that fit project criteria
• Connect with interested people
• Export data
iNaturalist Collector Projects

Project Rules and Benefits

• Limit geographically to Oregon
• Limit to Oregon iMap species list
• Automatically adds observations that match rules
Garlic Mustard (Alliaria petiolata) - Observed by smilacina - June 18, 2016 - 10:55 AM PDT

Added: Sun, 19 Jun 2016 12:15:14 -0700
App: iNaturalist Android App

Photo © smilacina, some rights reserved

Location: Clatsop County, US-OR, US (Google, OSM)
Places: Clatsop, US-OR, US, North America, NA More...
Lat 46.0261137, Lon -123.37079724
Accuracy: 8m
Geoprivacy: open

Projects

Oregon iMapInvasives Added by wbet on June 20, 2016 12:06

View 6 from June 18, 2016 »
What info gained?

- Only site in Clatsop County
- Still present after first detection in 2007
- Comments: dumped yard debris
- Likely to be reintroduced
- Manager follow-up
“Traditional” Project Rules

- Limit geographically to Oregon
- Limit to Oregon rare species list

Manually add obs
Members can allow access to obscured locations
New Sites

- Adds info about:
  - Distribution
  - Numbers
  - Status

- Connect with:
  - Local experts
  - Naturalists
  - Contractors
  - Agency field staff
  - Managers
Revisits

- Update Last Observed Date
- Count
- Habitat condition
- Threats
- Site status

Guided revisits to sites can be good opportunities for volunteers.
Using citizen science data to support conservation in environmental regulatory contexts

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Young et al., 2019. https://doi.org/10.1016/j.biocon.2019.06.016
NY Case study: eBird data for 6 at-risk birds

- Varied life histories and habitats
- Breeding evidence OR groups of wintering birds
- > 20,000 eBird observations

- New sites?
- Expand area of occupancy?
- Range extent?

Young et al., 2019. https://doi.org/10.1016/j.biocon.2019.06.016

Graphic: MargaretRDonald. EOO for *Lawrencia densiflora* using GBIF data (21 August 2018), and www.geocat.kew.org. [CC BY-SA 4.0 (https://creativecommons.org/licenses/by-sa/4.0)]
NY Case study: eBird data for 6 at-risk birds

- New sites: 5 out of 6 bird species
- Updated: 4 species
- Expansion: 3 species
- First-time calculation of range extent and area of occupancy: 2 species
- 27 new sites
- 13.5 sq km area added

Young et al., 2019. https://doi.org/10.1016/j.biocon.2019.06.016

Yellow-breasted Chat by Emily Willoughby
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eBird sightings on suitable habitat

Original site from heritage program

New or expanded sites

over 140 times the area previously mapped

Adapted from Young et al., 2019. https://doi.org/10.1016/j.biocon.2019.06.016
Citizen Science Data in a Regulatory Context

Benefits
• Update spatial accuracy
• Update temporal accuracy
• Identify mitigation areas
• Assess without additional in-house surveys
• Continual new data

Challenges
• Must sort through 1000s of records
• Technically challenging large datasets
• May be difficult to access at-risk species data
• Often lack supporting data (Breeding? Site quality?)
• Geographic bias

Adapted from Young et al., 2019. https://doi.org/10.1016/j.biocon.2019.06.016