The Avian Index of Tropical Forest Health

An open data tool to promote sustainable forest use to combat climate change

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Tropical Forest: An Emissions Source or Sink

Deforestation

- One of the largest sources of GHG Emissions (15 %). [1]
- Largest source in several countries. [1]

Sustainable Forest Use

- A *solution* to Climate Change
- Cost-effective, immediate
- Absorb up to 30% of Net Emissions [2]
- Associated benefits: Biodiversity, Ecosystem Services, & Livelihoods
- Target of SDG 15 [3]

⚠ Challenge: Lack of ecological information or indicators

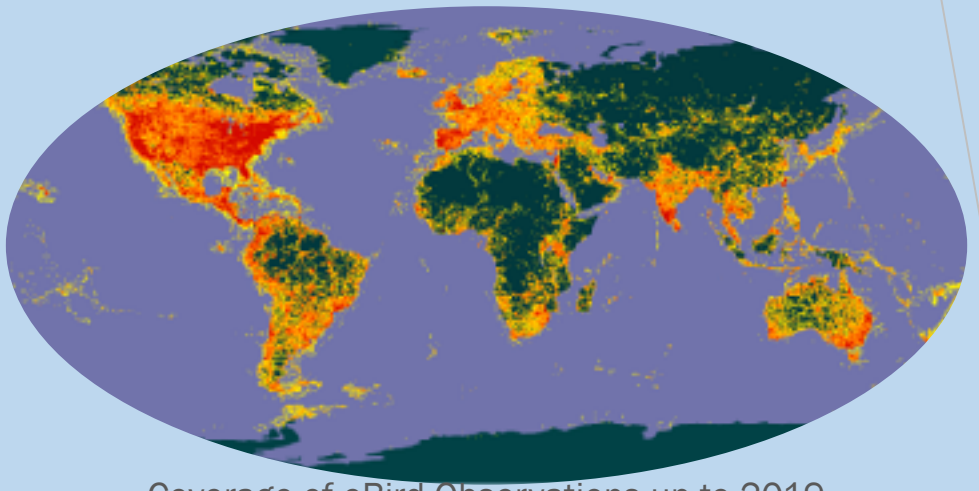
[1] IPCC. *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.*
[2] IPCC. *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.*
[3] United Nations. 2019. *Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development.* 1-21 (UN Resolution A/RES/71/313,).

Open Data on Birds

Birdwatching Records (Citizen Science)

eBird

- Nearly 1 Billion observations
- ≈ 700,000 users
- 99 % of species
- 253 subregions
- Growth rate ≈20 % per annum



Coverage of eBird Observations up to 2019

Potential to extract useful ecological information

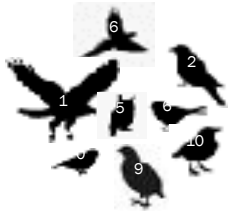
Team eBird.2021. eBird. Available at: http://www.ebird.org. (Accessed: 09 April 2021)
Team eBird. 2020. 2020 Year in Review: eBird, Macaulay Library, BirdCast, Merlin, and Birds of the World. https://ebird.org/news/2020-year-in-review.

An Avian Index of Tropical Forest Health

Using birds present to indicate ecological health

- Method:
  - Sensitivity scores of species present -> Indicator Variables
  - Standard Method
  - Validation with fieldwork
  - Cloud Computing for Online Map of forest health
- Functions:
  - Assess forest health,
  - Identify Sources of Impact
  - Monitor Trends
  - Set Goals
- Criteria:
  - Rapid, Inexpensive, Easy-to-use

Avian Index



Indicator Variables	
Total Score	Average Score
≥ 30	≥ 4.5
30 – 21	4.5 – 3
20 – 11	2.9 – 1
10 – 1	0.9 – 0
≤ 0	< 0

Forest Conditions

% Similarity
100 – 91
90 – 76
75 – 51
50 – 26
25 – 0

EcoStatus
Natural
Good
Fair
Poor
Critical

- Crucial Information to take Climate Action:
  - Informed Action (Sustainable Forest Use)
  - Track Progress (SDG 15)
- Evaluate Impacts (on tropical forests)
- Understand Risks (e.g. tipping points)

Roadmap to Reality

- PhD at University of Oxford (UK), Bonn or Göttingen (Germany), 2021 - 2024
- Study Location: South & Central America
- Work with local partners, eBird etc.
- Share through publication and Online Map
- Incentivise use, achieve policy relevance
- Requirements:
  - Funding:
    - Fieldwork (US$ 15,000)
    - Cloud computing (US$ 13,000)
  - Technical Support
- Invite YOU to join in to *TAKE CLIMATE ACTION USING OPEN DATA*.


Thank you!