

Publication equality in conservation and plant genetics: The impact of neocolonialism in modern science

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- Scientific progress is hampered by the restricted flow of knowledge, potentially due to publication bias against economically developing nations
- The unequal geographic distribution of research productivity has been documented in a number of scientific fields, including medicine, environmental science, and physics
- Geographic bias is compounded in conservation, where countries with high biodiversity tend to have fewer research resources
- Is there a publication bias against research from biodiverse but resource-poor nations?
- We propose to undertake a big-data approach to analyze the published literature in plant genetics over the past 50 years.

Our study seeks to:

1. Investigate whether there is a publication bias against countries with low economic resources and high biodiversity
2. Identify potential demographic factors that may help to explain such discrepancies
3. Describe broader aspects of international collaborations
4. Assess the common genetic techniques used in relation to a country's economic status
5. Characterize how these different facets of scientific research change over time

Using Python script to extract a JSON file from the API and export relevant metadata to a Bibtext-formatted file

API keywords:
plant*, genetic*

Scopus Dataset

Species
Species Country of Origin
Genetic Technique used
Year
Author Affiliation
Funding

GBIF: Global Biodiversity Information Facility

Iteration through 175 million plant observations to compile a dictionary of unique species appended with countries of occurrence

Dictionary of genetic techniques compiled to include common genetic methods in the literature

Extraction Dictionaries
Species Country of Origin (GBIF)
Genetic Techniques

Approximately 250,000 publications

Scopus

Publication Title
Abstract
Year
Author(s)
Author(s) Affiliation
Funding Source
Keywords



Graphical representation of authorship relationship among countries.

Extracted Data

Demographic data pulled from UN & literature:
GDP
% GDP spending on R&D
Population size
Biodiversity
Peace/stability coefficient
IUCN red-listed species

Temporal analyses of all measures:
Model patterns of change in research productivity globally over time

Association between number of publications and biodiversity measures:
Quantify the research productivity as a function of biodiversity

Graphical representation of results using GIS

Characterize patterns of international collaboration

Analysis

Association between species country-of-origin and author country-of-origin:
Visualize the disconnect between authorship and species range

Association between number of publications and demographic data:
Quantify the research productivity as a function of economic development

