

# Biodiversidad, ciencia, informática y postmodernidad

Francisco Pando  
GBIF - España





# Sumario


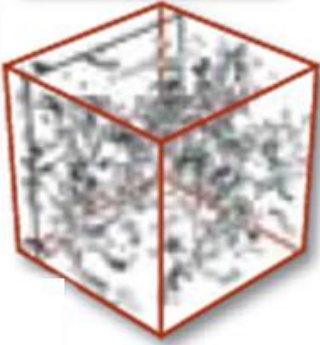
- El éxito de la ciencia
- La ciencia como elemento clave de la modernidad
- Ascenso y caída de la modernidad
- Ideas postmodernas
- Ciencia postmoderna
- Biodiversidad y post-postmodernidad
- Diseñando la siguiente generación de biólogos y taxónomos
- Una invitación

# El éxito de la ciencia

- Explicar, entender, predecir

**Science Paradigms**

- Thousand years ago:  
science was **empirical**  
*describing natural phenomena*
- Last few hundred years:  
**theoretical** branch  
*using models, generalizations*
- Last few decades:  
a **computational** branch  
*simulating complex phenomena*

$$\left(\frac{\dot{a}}{a}\right)^2 = \frac{4\pi G\rho}{3} - K\frac{c^2}{a^2}$$

- La base del desarrollo tecnológico

# Ciencia como elemento clave del modernismo

Modernism as a socially progressive trend of thought that affirms the power of human beings to create, improve and reshape their environment with the aid of practical experimentation, scientific knowledge, or technology



[Diego Rivera. \*El Hombre controlador del Universo\* \[1934\]. \*Palacio de Bellas Artes\*.](#)



# Modernidad: ascenso



- El “nuevo hombre”
  - Futurismo (velocidad, tecnología, violencia, juventud)
  - La nueva objetividad: "The *Neue Sachlichkeit* is Americanism, cult of the objective, the hard fact, the predilection for functional work, professional conscientiousness, and usefulness
- ... el fascismo como producto de la modernidad

'Unique Forms of Continuity in Space', 1913 bronze by Umberto Boccioni

[http://en.wikipedia.org/wiki/Unique\\_Forms\\_of\\_Continuity\\_in\\_Space#mediaviewer/File:%27Unique\\_Forms\\_of\\_Continuity\\_in\\_Space%27,\\_1913\\_bronze\\_by\\_Umberto\\_Boccioni.jpg](http://en.wikipedia.org/wiki/Unique_Forms_of_Continuity_in_Space#mediaviewer/File:%27Unique_Forms_of_Continuity_in_Space%27,_1913_bronze_by_Umberto_Boccioni.jpg)

# Y caída

No nos equivoquemos, este pensamiento era el dominante, p.ej., leyes y prácticas eúgenéticas:

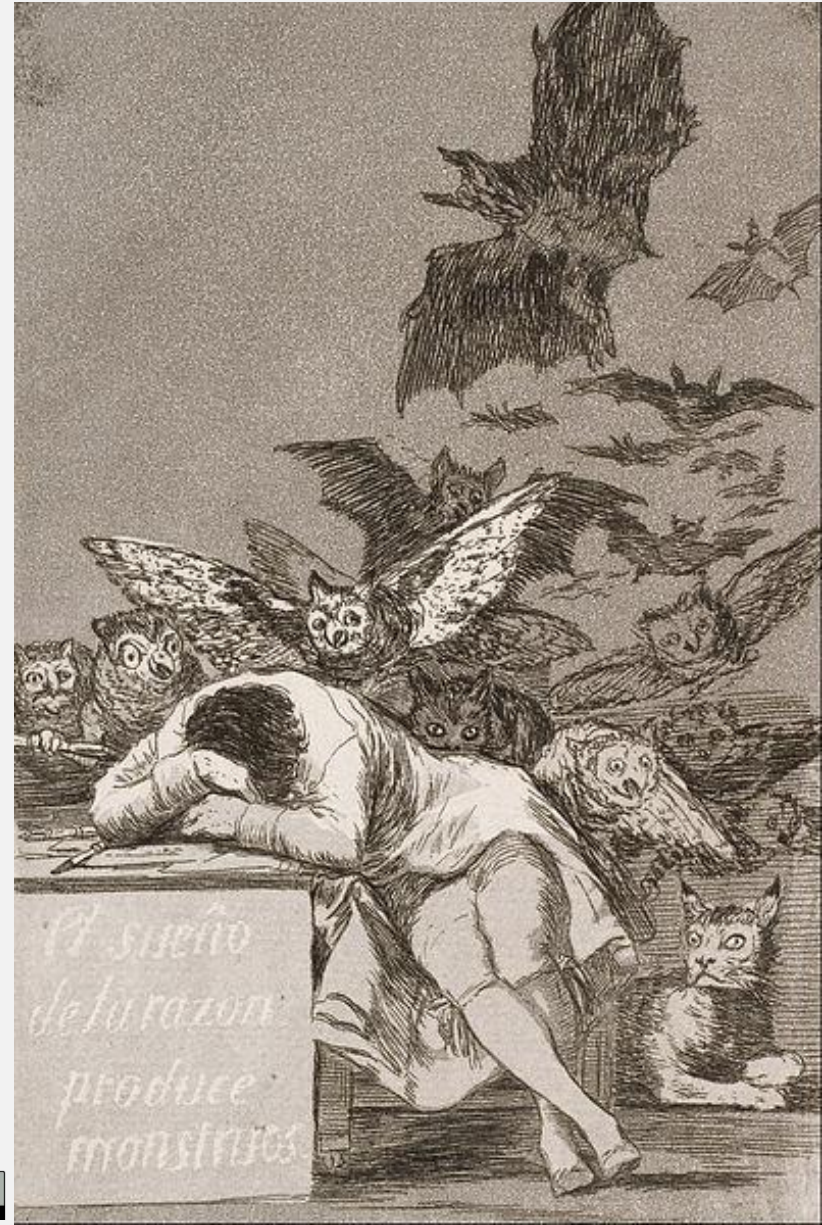
- Canada (Alberta Sterilization Act 1928)
- en otros 30 países (EEUU, Noruega, Dinamarca, Suiza, Alemania...

Y la Segunda Guerra Mundial escenificó de una manera atroz el verdadero valor y consecuencias de este pensamiento

"Now I am become Death, the destroyer of worlds."

Robert Oppenheimer / Bhagavad Gita

[http://es.wikipedia.org/wiki/El\\_sue%C3%B1o\\_de\\_la\\_raz%C3%B3n\\_produce\\_monstruos](http://es.wikipedia.org/wiki/El_sue%C3%B1o_de_la_raz%C3%B3n_produce_monstruos)



# Postmodernidad

**POST-MODERNISM**

You may have two degrees, but I read an article once on Wikipedia.

**BELIEF**

It *can't* be true if I don't like it.

EMERGENT-SEE  
POLYCHROMATORS

ES LO QUE HAY! PABLO

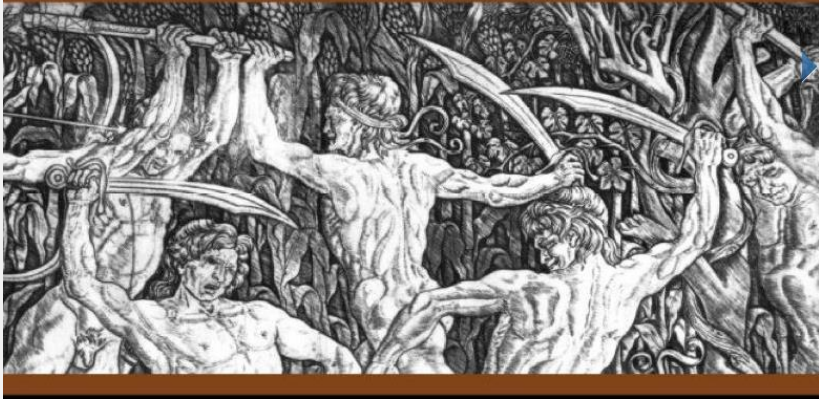


- como escepticismo,
- como incapacidad para entenderlo todo
- como alienación



# La ciencia postmoderna. Excepticismo

## SCIENCE *as a* PROCESS



Hull, D. L. 1988. Science as a Process. An Evolutionary Account of the Social and Conceptual Development of Science. The University of Chicago Press, Chicago and London, 586 pp.

*"What is the relative importance in science of **reason, and evidence** on the one hand, and **power, prestige, and influence** on the other"*

Los científicos ya no son esos seres puros en busca del conocimiento puro. Y es claro que somos tan humanos como el que más.

# La ciencia postmoderna. incapacidad para entenderlo todo

La ciencia como producto ha dejado de ser el trabajo de uno o unos pocos

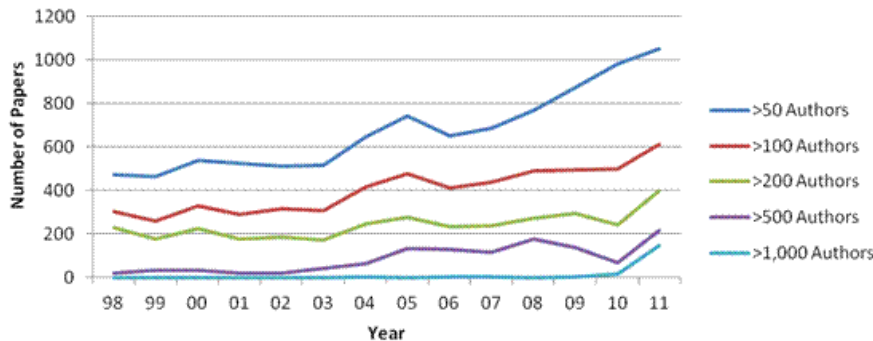
Colaboración; reparto de tareas, interdependencia, dilución del concepto de “autor”.  
Hiperespecialización (fragmentación)  
“Hiperautoría”:

la inflación en autores no se explica solo por el aumento de las interrelaciones...

mezcladas con prácticas discutibles:

- honorific authors
- guest authors
- gift authorship
- surprise authorship
- ghost authorship

Multiauthor papers, 1998 to 2011



[http://archive.sciencewatch.com/newsletter/2012/201207/multiauthor\\_papers/](http://archive.sciencewatch.com/newsletter/2012/201207/multiauthor_papers/)

## Hyperauthorship: A Postmodern Perversion or Evidence of a Structural Shift in Scholarly Communication Practices?

Blaise Cronin  
School of Library and Information Science, Indiana University, Bloomington, IN 47405-1901. E-mail: [bcronin@indiana.edu](mailto:bcronin@indiana.edu)

Classical assumptions about the nature and ethical entailments of authorship (the standard model) are being challenged by developments in scientific collaboration and multiple authorship. In the biomedical research

uel, 1997). Curiously, the perceived seriousness of the problem does not find echo in other scientific fields. This article (a) begins with a brief, historical overview of scholarly

<http://onlinelibrary.wiley.com/doi/10.1002/asi.1097/pdf>

# La ciencia postmoderna. incapacidad para entenderlo todo



“Los valores son sustituidos por su representación, el conocimiento por indicadores”

- índice de citación
- factor de impacto
- índice H

---

## **H-index: however ranked, citations need context**

SIR — The h-index (the number  $n$  of a researcher's papers that have received at least  $n$  citations) may paint a more objective picture of productivity than some metrics, as your News story 'Achievement index climbs the ranks' (*Nature* 448, 737; 2007) points out.

<http://www.nature.com/nature/journal/v449/n7161/pdf/449403b.pdf>

# La ciencia postmoderna. como alienación

- Antes, la ciencia "buena" era la que explicaba y predecía. Ahora la ciencia "buena" es la que sirve para hacer más ciencia como esa, para publicar.
- Utiliza valores de la "nueva objetividad" (de los años 20) con subrogados de la realidad

# Postmodernidad y medioambiente

## Thomas Midgley como epítome de científico postmoderno

Thomas Midgley, Jr.



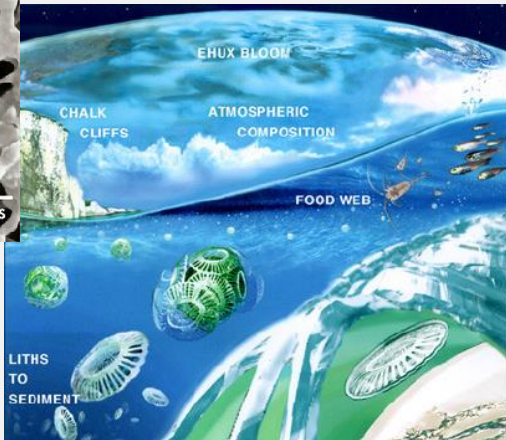
Midgley, c. 1930s–1940s

Descubrió y patentó el uso de aditivos de plomo como en las gasolinas agentes antidetonantes para gasolinas.

Desarrolló y sintetizó compuestos fluorocarbonados como (CFCs) como refrigerante

# Postmodernidad y medioambiente

- El reconocimiento de su complejidad y las interdependencias (incluidas las que nos involucran)
- Su finitud y nuestra capacidad para alterarlo



(Cocolitoforos)

# Biodiversidad y medioambiente en el primer plano

- En el centro de la sociedad



- En el centro de la ciencia
  - biología molecular
  - tecnologías de la información



Postmodernidad+informática= digimodernidad





# Iniciativas globales

**Table I. A summary of some of the main repositories for data products used in evolutionary research**

Exemplar repositories	Type of data	Tools beyond search/browse	Information products
BOLD <sup>a</sup>	Sequences from marker barcodes	Y: identification engine	Y: summaries of barcoding status
BHL <sup>b</sup>	Pages digitized from biodiversity literature	N	Y: semantically enhanced literature
CAMERA <sup>c</sup>	Metagenomic and genomic data sets	Y: workbenches for analysis	N
Catalogue of Life <sup>d</sup>	Valid names and synonyms	N	N
Dryad <sup>e</sup>	Any data from biosciences	N	Y: any summary information
EOL <sup>f</sup>	Multimedia, text blobs, references and links	Y: aggregation and curation	Y: summary information
Genbank (NCBI) <sup>g</sup>	Gene sequences	Y: e.g. BLAST	N
GBIF <sup>h</sup>	Species occurrences	Y: tools to map occurrences	N
Map of Life <sup>i</sup>	Species range maps, checklists, observations	Y: species richness and lists	Y: models of species distributions
MorphBank <sup>j</sup>	Images from biocollection specimens	Y: annotate images	Y: annotations of images
TreeBASE <sup>k</sup>	Basic voucher information	N	Y: phylogenetic trees and character data

<sup>a</sup><http://www.boldsystems.org/views/login.php>

<sup>e</sup><http://datadryad.org/>

<sup>l</sup><http://mappinglife.org>

<sup>b</sup><http://www.biodiversitylibrary.org/>

<sup>f</sup><http://www.eol.org>

<sup>i</sup><http://morphbank.org>

<sup>c</sup><http://camera.calit2.net/>

<sup>g</sup><http://www.ncbi.nlm.nih.gov/genbank/>

<sup>k</sup><http://www.treebase.org/treebase>

<sup>d</sup><http://www.catalogueoflife.org/>

<sup>h</sup><http://data.gbif.org>

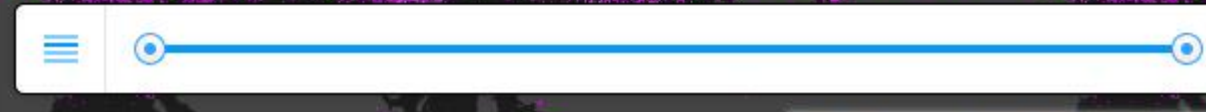
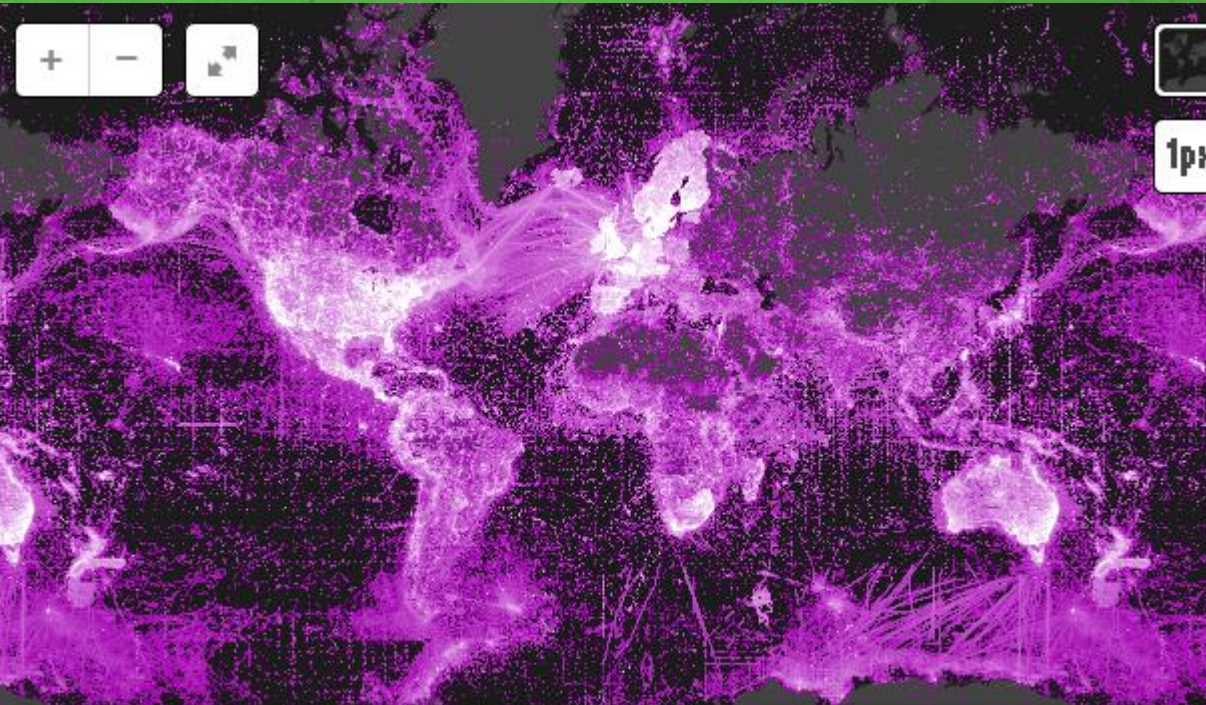
Cynthia S. Parr, Robert Guralnick, , Nico Cellinese and Roderic D.M. (2012). knowledge about the diversity of life. Trends in Ecology and Evolution. 27 (2):94-103

[http://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347\(11\)00324-7](http://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347(11)00324-7)

La mayor red de datos de biodiversidad del mundo

**Global Biodiversity Information Facility**  
Free and open access to biodiversity data

<b>441,819,230</b> OCCURRENCES	<b>1,454,695</b> SPECIES	<b>15,094</b> DATASETS
-----------------------------------	-----------------------------	---------------------------



### Taxonomic characteristics

The following provides a summary of number of records per kingdom. Further filters, such as a location or temporal filter, can be applied when [exploring the data](#).

<b>286,515,884</b> (66.8861%) Animalia records	<b>121,523,887</b> (28.2833%) Plantae records	<b>8,038,407</b> (1.8765%) Fungi records	<b>4,332,760</b> (1.0115%) Protozoa records
<b>2,107,154</b> (0.4919%) Chromista records	<b>1,007,975</b> (0.2353%) Bacteria records	<b>840,131</b> (0.1961%) Other records	<b>14,228</b> (0.0033%) Archaea records
<b>7,796</b> (0.0018%) Viruses records			

### Record type characteristics

Records may originate from a variety of means, such as a scientist collecting a specimen or an individual recording the presence of an organism. This is classified by the [Darwin Core basIORecord](#) standard.

<b>303,738,491</b> (70.907%) Observation records	<b>89,465,185</b> (20.385%) Specimen records	<b>31,381,460</b> (7.305%) Unknown evidence records	<b>2,615,217</b> (0.611%) Fossil records
<b>762,123</b> (0.178%) Using Specimen records	<b>401,613</b> (0.094%) Literal Occurrence records		

### Temporal characteristics



## 2014 Annual Checklist DVD Out Now

Read More



Welcome to the Catalogue of Life website. The gateway to our online database of the world's known species of animals, plants, fungi and micro-organisms.

There are two distinct versions of the Catalogue of Life: the Dynamic Checklist and the Annual Checklist. Choose the version most suited to your needs.

### Dynamic Checklist

Updated periodically throughout the year  
*Next update: July 2014*

Access

### Annual Checklist

A referenceable snapshot once per year  
*Next publication date: April 2015*

Access

# Strumigenys emmae

[learn more about names for this taxon](#)

add to a collection

add an article

add a link

- Overview
- Detail**
- Data
- 81 Media
- 3 Maps
- Names
- Community
- Resources
- Literature
- Updates



## OVERVIEW

### Comprehensive Description

#### Taxonomic History

[learn more about this article](#)

[Epitritus emmae](#) Emery, 1890c PDF: 70, pl. 8, fig. 6 (w.) ANTILLES. [AntCat](#) [AntWiki](#)

Taxonomic history

[Wheeler, 1908a](#) PDF: 149 (q.).

Combination in [Quadristruma](#): Brown, 1949b: 48; in [Strumigenys](#): [Bolton, 1999](#) PDF: 1674.

Senior synonym of [Strumigenys clypeatus](#), [Strumigenys malesiana](#), [Strumigenys wheeleri](#): Brown, 1949b: 48.

See also: [Bolton, 1983](#) PDF: 400; [Bolton, 2000](#): 950.

#### Table of Contents

##### OVERVIEW

- Comprehensive Description
- Distribution

##### PHYSICAL DESCRIPTION

- Diagnostic Description
- Look Alikes

##### MOLECULAR BIOLOGY AND GENETICS

- Molecular Biology

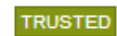
##### WIKIPEDIA

##### RESOURCES

- Partner links
- Nucleotide sequences



• Source: [AntWeb](#)



article rating from 0 people ★★★★★

*Inspiring discovery through free access to biodiversity knowledge.*

The Biodiversity Heritage Library works collaboratively to make biodiversity literature openly available to the world as part of a global biodiversity community.

BHL also serves as the foundational literature component of the Encyclopedia of Life (EOL).



**SUPPORT**

## Help Support BHL

BHL's existence depends on the financial support of its patrons. Help us keep this free resource alive!

[Donate Now](#)

Search across books and journals, scientific names, authors and subjects

Search  

[ADVANCED SEARCH](#)

Browse Our Collection By:

-  [Titles](#)
-  [Authors](#)
-  [Date](#)
-  [Collection](#)

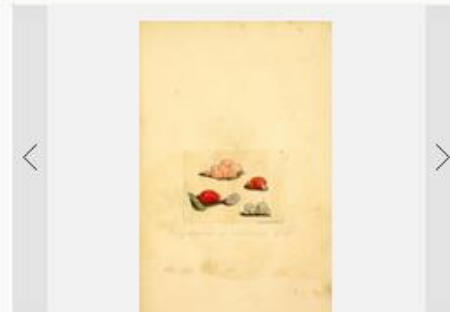
### New on the BHL Blog

#### Once There Were Billions: Heath Hen

To help tell the story of four extinct bird species, BHL and the Smithsonian Libraries co-curated an...

BHL at the 2014 American Libraries Association Annual meeting, Las Vegas, NV

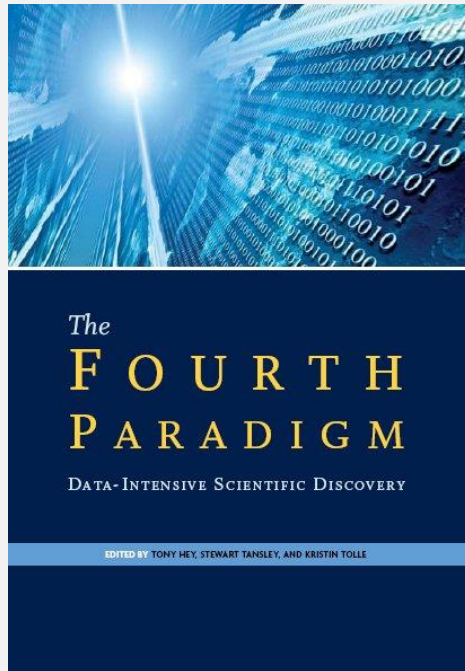
### Today's Picks Flickr Stream



### Featured Collection Celebrating Alfred Russel Wallace



# ¿Porqué ese énfasis en los datos?



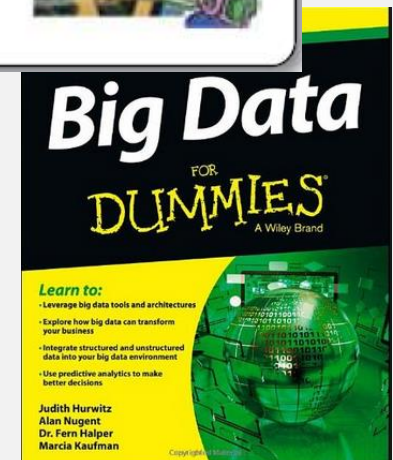
<http://research.microsoft.com/en-us/collaboration/fourthparadigm/>

- Porque los hay
- Porque se pueden hacer cosas



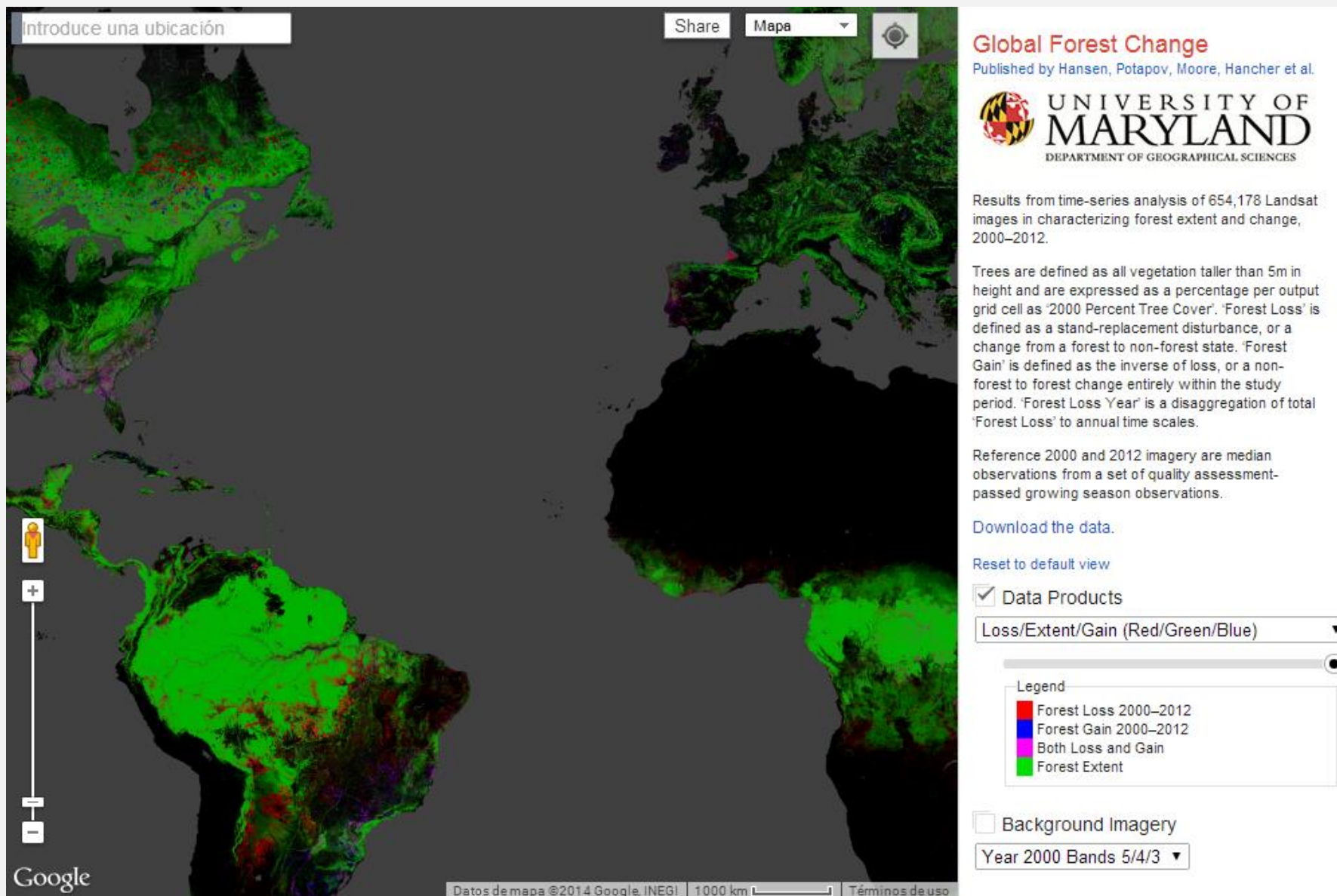
## Science Paradigms

- Thousand years ago:  
science was **empirical**  
*describing natural phenomena*
- Last few hundred years:  
**theoretical** branch  
*using models, generalizations*
- Last few decades:  
a **computational** branch  
*simulating complex phenomena*
- Today: **data exploration** (eScience)  
*unify theory, experiment, and simulation*
  - Data captured by instruments or generated by simulator
  - Processed by software
  - Information/knowledge stored in computer
  - Scientist analyzes database/files using data management and statistics

$$\left(\frac{\dot{a}}{a}\right)^2 = \frac{4\pi G\rho}{3} - K\frac{c^2}{a^2}$$


# “Big data”

<http://earthenginepartners.appspot.com/science-2013-global-forest>



# Data & Science

## Data-Intensive Scientific Discovery

- Data intensive. Basic science is data intensive in its own right, but data sources that support basic science are often insufficient to support applications. Localized impacts with global extent, such as intrusion of invasive species, are often difficult for centralized projects with small numbers of researchers to ascertain. **New applications-appropriate sources must be identified**, and new ways of observing (including the use of communities as data gatherers) must be developed.

Hey,T., Tansley,S., & Tolle,K. (Eds.) 2009. The fourth Paradigm. Data-Intensive Scientific Discovery. Microsoft Research. Redmon.  
E.E.U.U.

<http://research.microsoft.com/en-us/collaboration/fourthparadigm/>

<http://serc.carleton.edu/earthandmind/posts/4thpardigm.html>



# La publicación de datos se está haciendo un requerimiento del proceso científico

<http://www.nsf.gov/nsb/publications/2011/nsb1124.pdf>



## **Digital Research Data Sharing and Management**

---

December 2011

Task Force on Data Policies  
Committee on Strategy and Budget  
National Science Board

This report recognizes the evolving role of data in science and society and strong and sustainable data sharing and management policies as a critical national need.

# Que se lee ahí

- Sharing can also be encouraged through the establishment of professional incentives such as promoting **the publication of data in a format that allows for citation and verification.**
- Data scientists and curators should be supported by funding agencies and by their home institutions by **providing pathways for advancement to tenure and other reward mechanisms.**
- ...researchers must be confident **when they share data that they will be properly attributed** and the provenance of the data is assured.
- new data **licensing mechanisms** can preserve intellectual property rights and provide researchers with incentives to make their data public.

# La exacerbación del sistema

- La publicación de artículos científicos crece exponencialmente

*stm*

## The stm report

An overview of scientific and scholarly journal publishing

- [http://www.stm-assoc.org/2012\\_12\\_11\\_STM\\_Report\\_2012.pdf](http://www.stm-assoc.org/2012_12_11_STM_Report_2012.pdf)
- 28,100 active scholarly peer-reviewed journals in mid 2012, collectively publishing about 1.8–1.9 million articles a year.
- 20% USA; 10% China
- impacto: 30% USA, 4% China

- Acceso a los servicios secundarios, obras de referencia o materiales educativos en lugar de artículos originales en revistas de investigación.



### Do metrics matter?

Many researchers believe that quantitative metrics determine who gets hired and who gets promoted at their institutions. With an exclusive poll and interviews, *Nature* probes to what extent metrics are really used that way.

**51%** of respondents said that they have changed their behaviour because of the way they are evaluated.

"It discourages me from doing **important research work** that may be of **null association**."

"I am **more likely** to accept an article for review if I want to verify that it is citing a paper of mine that is near the cusp of **being counted for my h-factor**."

**71%** of respondents said that they are concerned their colleagues can 'game' or 'cheat' the systems for evaluation in their institutions.

"These metrics can be **skewed** by people if they know that their performance will be **evaluated on metrics alone**."

"A **great deal of politics** are involved and a focus on **numbers over quality** with regard to publications."



## Read before you cite!

M.V. Simkin, V.P. Roychowdhury (UCLA)

*(Submitted on 3 Dec 2002)*

We report a method of estimating what percentage of people who cited a paper had actually read it. The method is based on a stochastic modeling of the citation process that explains empirical studies of misprint distributions in citations (which we show follows a Zipf law). Our estimate is only about 20% of citers read the original.

Subjects: **Disordered Systems and Neural Networks (cond-mat.dis-nn)**; Statistical Mechanics (cond-mat.stat-mech); Physics and Society (physics.soc-ph)

Journal reference: Complex Syst. 14 (2003) 269-274

Cite as: **arXiv:cond-mat/0212043 [cond-mat.dis-nn]**  
(or **arXiv:cond-mat/0212043v1 [cond-mat.dis-nn]** for this version)

### Submission history

From: Mikhail Simkin [[view email](#)]

**[v1]** Tue, 3 Dec 2002 08:40:50 GMT (42kb)

# La crisis del sistema

## *Journal of* Universal Rejection



---

[About the Journal](#) | [Editorial Board](#) | [Instructions for Authors](#) | [Subscriptions](#) | [Archives](#) | [Conference](#) | [Blog](#) | [Store](#)

---

### **SPECIAL ANNOUNCEMENT:**

The Journal of Universal Rejection is pleased to announce the [Conference of Universal Rejection](#).

### **About the Journal**

The founding principle of the Journal of Universal Rejection (JofUR) is rejection. Universal rejection. That is to say, all submissions, regardless of quality, will be rejected. Despite that apparent drawback, here are a number of reasons you may choose to submit to the JofUR:

- You can send your manuscript here without suffering waves of anxiety regarding the eventual fate of your submission. You know with 100% certainty that it will not be accepted for publication.
- There are no page-fees.
- You may claim to have submitted to the most prestigious journal (judged by acceptance rate).
- The JofUR is one-of-a-kind. Merely submitting work to it may be considered a badge of honor.
- You retain complete rights to your work, and are free to resubmit to other journals *even before our review process is complete*.
- Decisions are often (though not always) rendered within hours of submission.

**Editorial Board**

# La crisis del sistema

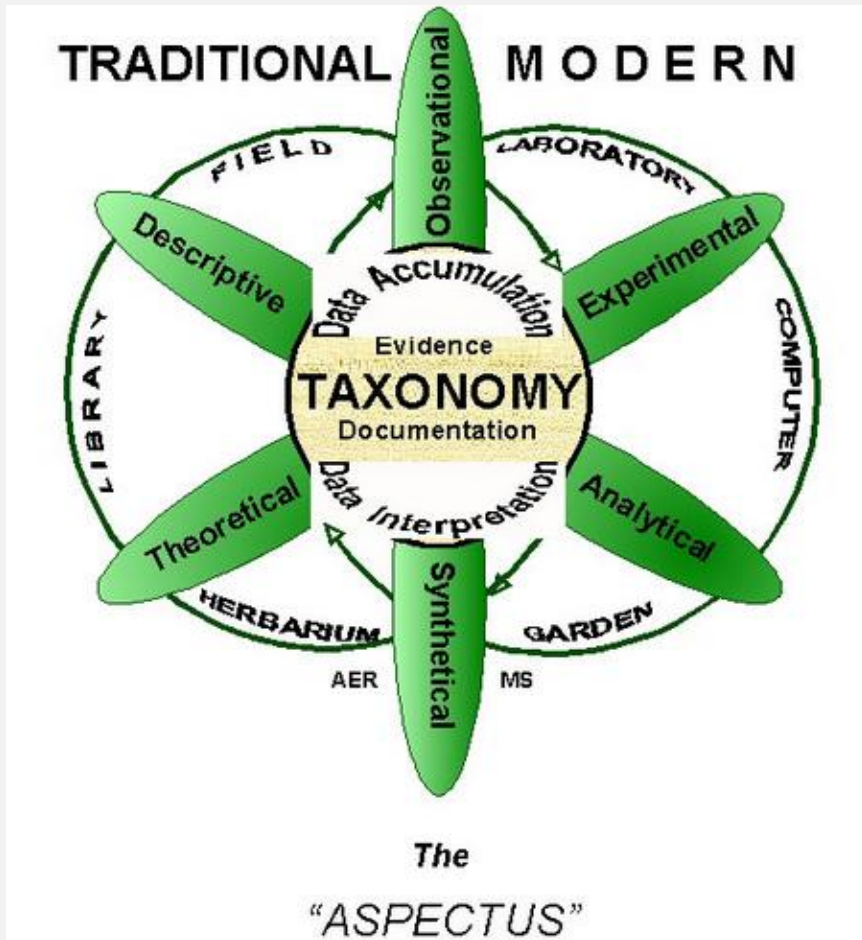


HOW  
SCIENCE  
GOES  
WRONG

99  
Einsteinium

- “There is no cost to getting things wrong,” says Brian Nosek, a psychologist at the University of Virginia who has taken an interest in his discipline’s persistent errors. “The cost is not getting them published.”
- Biotechfirm, Amgen, found they could reproduce just six of 53 ‘landmark’ studies in cancer research. Earlier, a group at Bayer, a drug company, managed to repeat just a quarter of 67 similarly important papers. A leading computer scientist frets that three quarters of papers in his subfield are bunk.
- Researchers ought to be judged on the basis of the quality, not the quantity, of their work. Funding agencies should encourage replications and lower the barriers to reporting serious efforts which failed to reproduce a published result. Information about such failures ought to be attached to the original publications

# La crisis de la taxonomía



## ***Vascular Plant***

***Systematics*** (Radford, A. E., W. C. Dickison, J. R. Massey, C. R. Bell. 1976. Harper and Row, New York)

Taxonomy as **low impact science**. Taxonomy, a branch of biology that has been driven to ground in universities because it doesn't yield immediate impact. It's a slow-burning science **that underpins what everyone else does**. We still don't know the names of vast numbers of species on Earth, and we never will if taxonomy dies

Colin Osborne, Univ. Sheffield

# Diseñando la siguiente generación de biólogos y taxónomos

- Nuevas capacidades
- “Trascendencias”
- Recuperar los fundamentos



# Diseñando la siguiente generación

## Nuevas capacidades

- Gestión de datos

### **Advanced Technologies and Data Management Practices in Environmental Science: Lessons from Academia**

REBECCA R. HERNANDEZ, MATTHEW S. MAYERNIK, MICHELLE L. MURPHY-MARISCAL, AND MICHAEL F. ALLEN

BioScience, 62(12):1067-1076. 2012.

<http://www.bioone.org/doi/full/10.1525/bio.2012.62.12.8>

Spatial analysis, Geographic information, Systems, Remote sensing, Modeling, Time series analysis, Meta-analysis, Data mining, Computer programming, Data structures or algorithms, Networking, Information technology, Database management, Metadata, Computational biology

# Diseñando la siguiente generación

## Nuevas capacidades

The screenshot shows the R Project website with the following content:

- Navigation:** Home, About R, What is R?, Contributors, Screenshots, What's new?, Download, Packages, CRAN, R Project Foundation, Members & Donors, Mailing Lists, Bug Tracking, Developer Page, Conferences, Search, Documentation, Manuals, FAQs, The R Journal, Wiki, Books, Certification, Other.
- PCA 5 vars:** A biplot showing variables: Fertility, Examination Education, Catholic, and Agriculture. A bar chart below shows the distribution of variables.
- Clustering 4 groups:** A dendrogram showing hierarchical clustering of data points into four groups.
- Factor 1 [41%]:** A histogram showing the distribution of data points along the first principal component.
- Factor 3 [19%]:** A histogram showing the distribution of data points along the third principal component.
- Getting Started:**
  - R is a free software environment for statistical computing and graphics. It compiles and runs on a wide variety of UNIX platforms, Windows and MacOS. To [download R](#), please choose your preferred [CRAN mirror](#).
  - If you have questions about R like how to download and install the software, or what the license terms are, please read our [answers to frequently asked questions](#) before you send an email.
- News:**
  - R version 3.1.1 (Sock it to Me)** has been released on 2014-07-10.

Lenguaje de programación  
Entorno de trabajo

Para estadística, gráficos, mapas

Maneja estructuras de datos complejas

Extensible  
Con multitud de paquetes desarrollados por científicos de todo el mundo

# Diseñando la siguiente generación

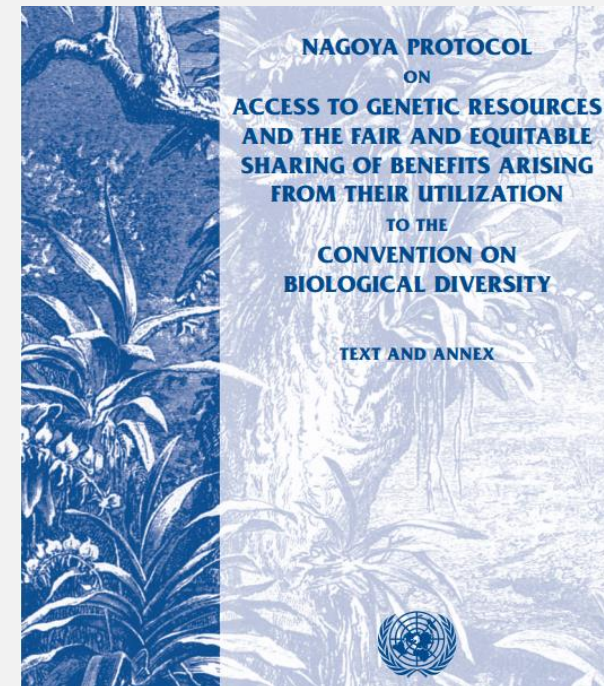
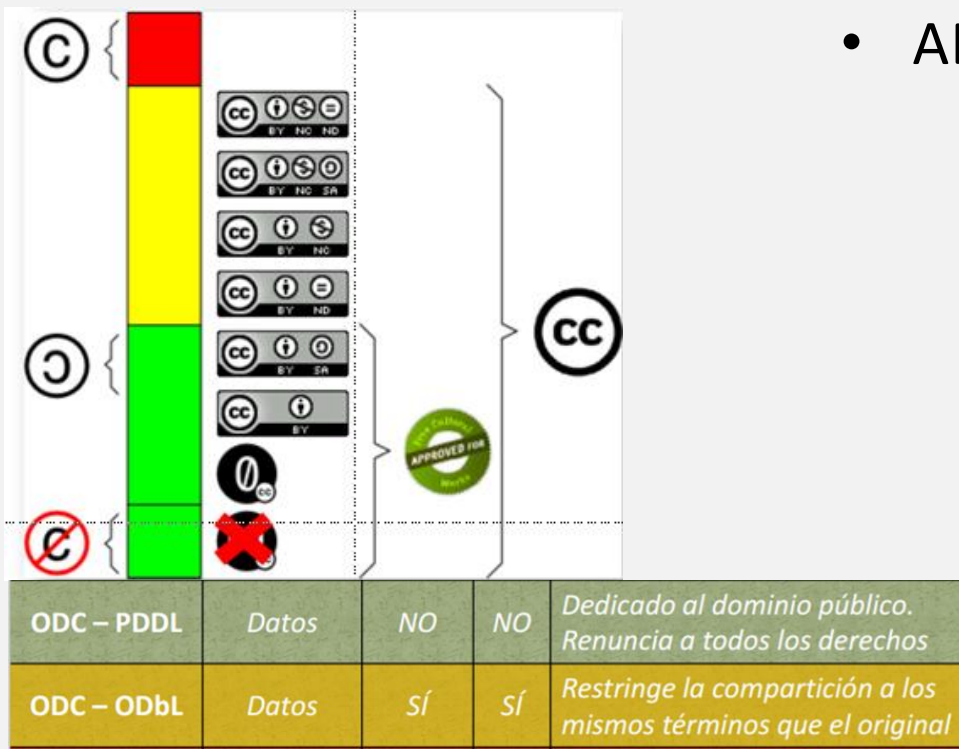
## Nuevas capacidades

### Licencias

- Creative commons
- Open data commons

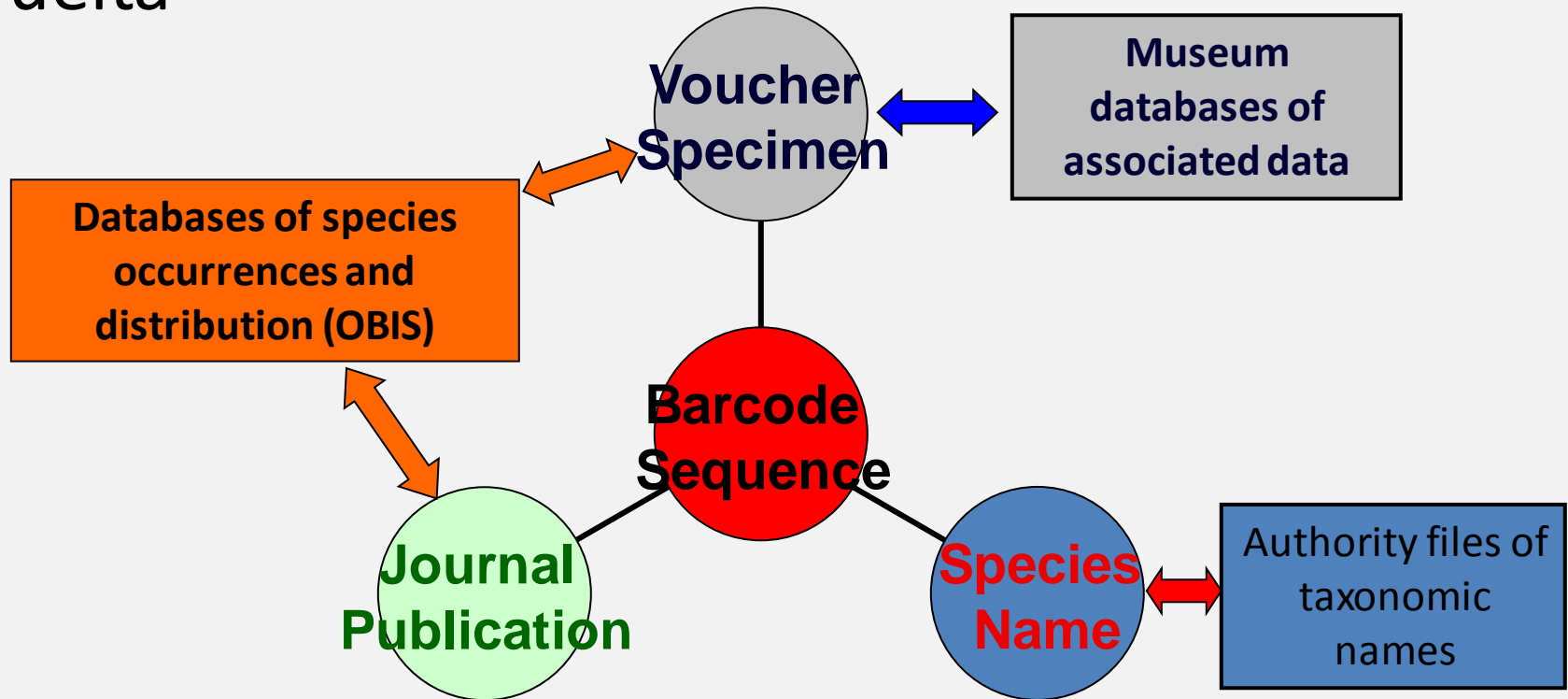
### Leyes

- Acceso a la información pública
- Protección del medioambiente
- ABS



# Diseñando la siguiente generación

Trascender: De lo tradicional a lo molecular y vuelta



# Diseñando la siguiente generación

## Trascender: De la ciencia a lo social

In essence, we are getting into trouble because we are not being very effective in terms of how we inform society's decisions and society's policies. We are too self-referential. What citizen science can do is begin to try to bridge that gap. I see that as a fundamental role for what we are doing. I am not in any way diminishing the importance of education and outreach and training the next generation and long data sets, but with our focus on certainty and peer-reviewed publications, ecological scientists have painted themselves into a corner, and citizen science provides the kind of mechanism and the kind of information that we need in order to begin to actually inform society's choices more effectively.

Hague Vaughan. Citizen science as a catalyst in bridging the gap between science and decision-makers. Citizen Science Toolkit Conference. June 20 - 23, 2007. Cornell Univ. Ithaca.

# Diseñando la siguiente generación

Trascender: del individuo, al equipo, a la red

*“Diseminar,  
encontrar,  
compartir”*

The image displays two overlapping web interfaces. The background interface is Mendeley, featuring a red logo and navigation tabs for Dashboard, My Library, Papers, Groups, and People. A search bar and a 'Welcome back Francisco Pando' message are visible. The foreground interface is ResearchGate, showing a navigation bar with 'ResearchGate', 'Q&A', 'Publications', and 'Jobs'. A notification box states: 'Easily find content that benefits your research. We've updated our main navigation header so that you can more easily find questions, answers, and publications relating to your research. Your projects are now listed under the contributions tab of your profile.' Below this is a 'Live Feed' section with a post by Christoph Ottenheim: 'How can I get rid of symbiotic bacterial contamination of basidiomycetes mycelia especially ganoderma?'. The right sidebar shows 'YOUR NETWORK ACTIVITY' with endorsements for Javier Fernández-López and Carlos Lado Rodríguez, and 'JOBS YOU MAY BE INTERESTED IN' with listings from the City of Baltimore and Novo Nordisk.

# Diseñando la siguiente generación

- Recuperar los fundamentos ¿Qué es buena ciencia?
  - > Reconocer la cadena de valor añadido en la producción científica
  - > Publicar los datos
  - > Nuevas métricas que apoyen la transparencia y la trazabilidad
  - > Herramientas y métodos para responder cuestiones
  - > No todo es “Big data”
  - > Adaptar el juego a las reglas del juego

# Herramientas y métodos para cuestiones

Townsend et al. 2010. The big questions for biodiversity informatics. Systematics and Biodiversity 8(2): 159–168

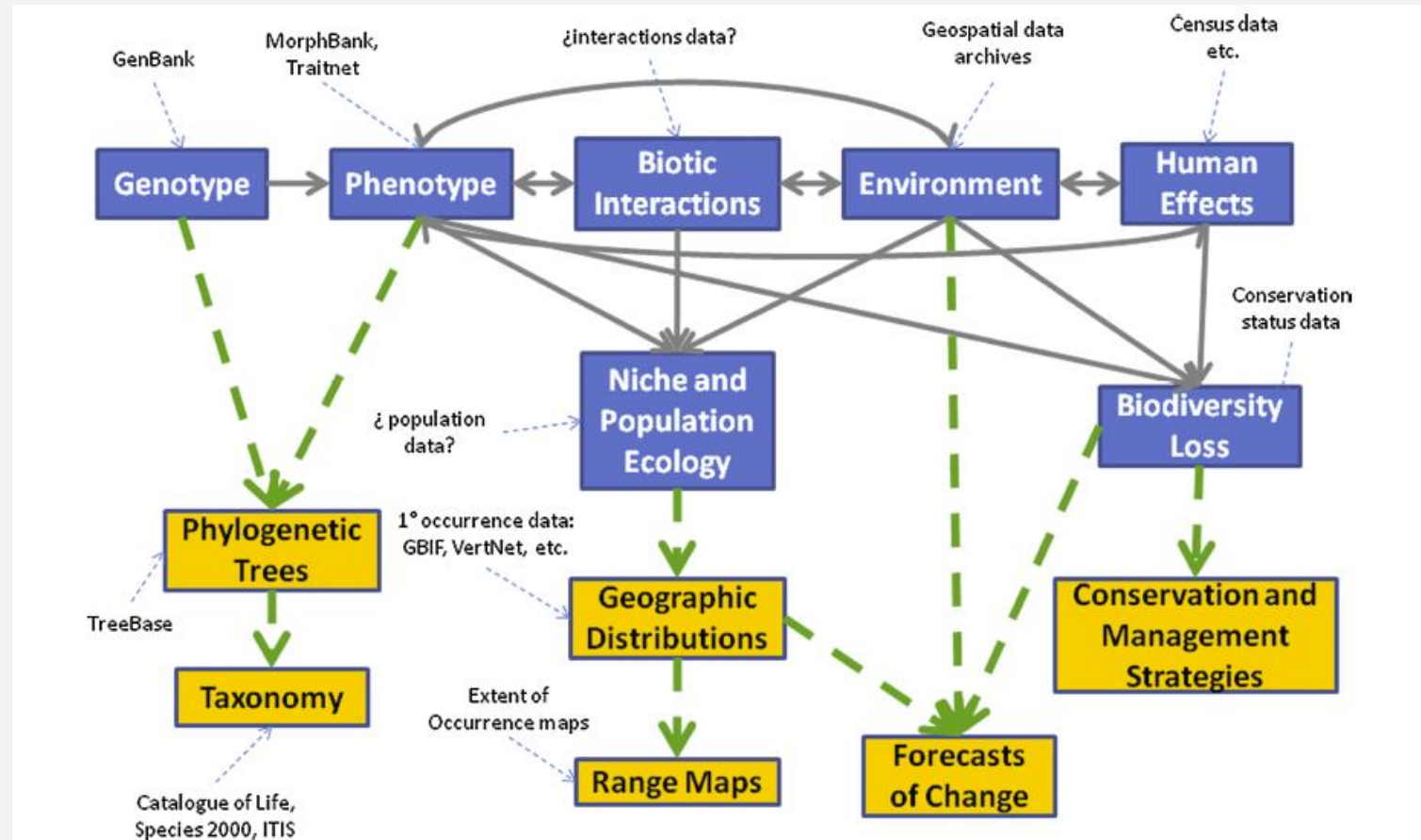


Fig. 2. Summary in broadest terms of the world of biodiversity informatics. Shaded boxes are the basic underlying biological processes, ranging from genotype and phenotype up through ecology and biodiversity loss. Clear boxes are the biodiversity information products that are often explored in the field. Labels outside boxes show example information resources or initiatives for most of the elements of the diagram.



# Herramientas y métodos para cuestiones



Global Biodiversity  
Informatics Outlook

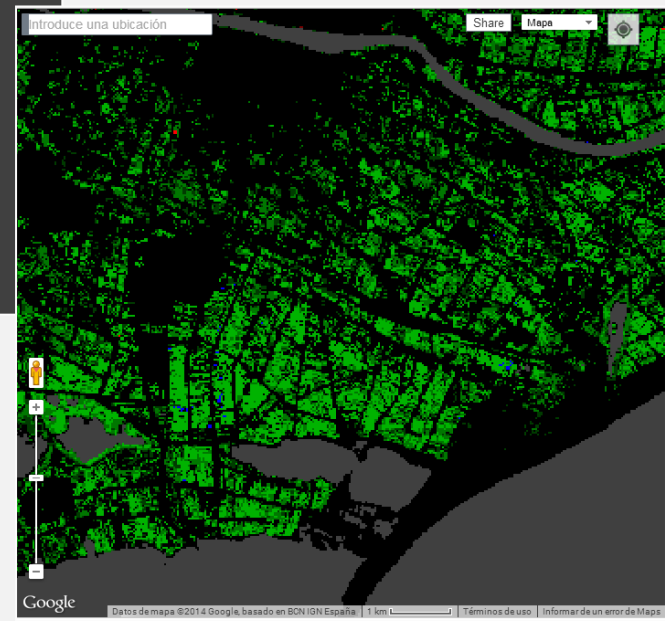
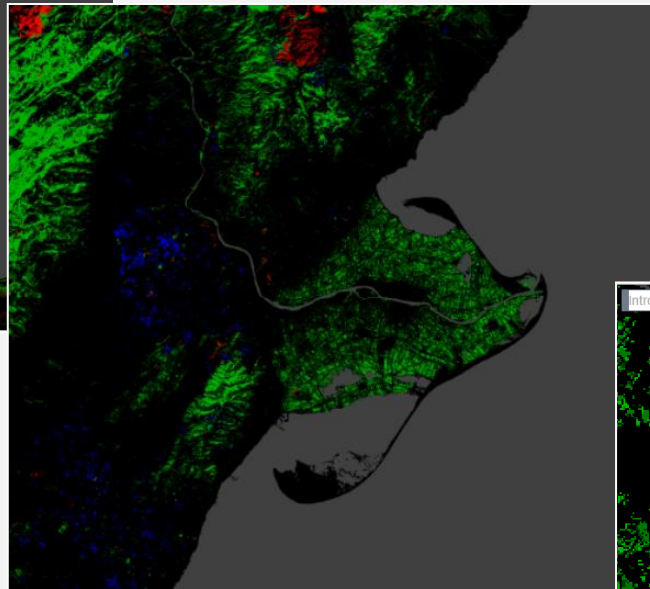
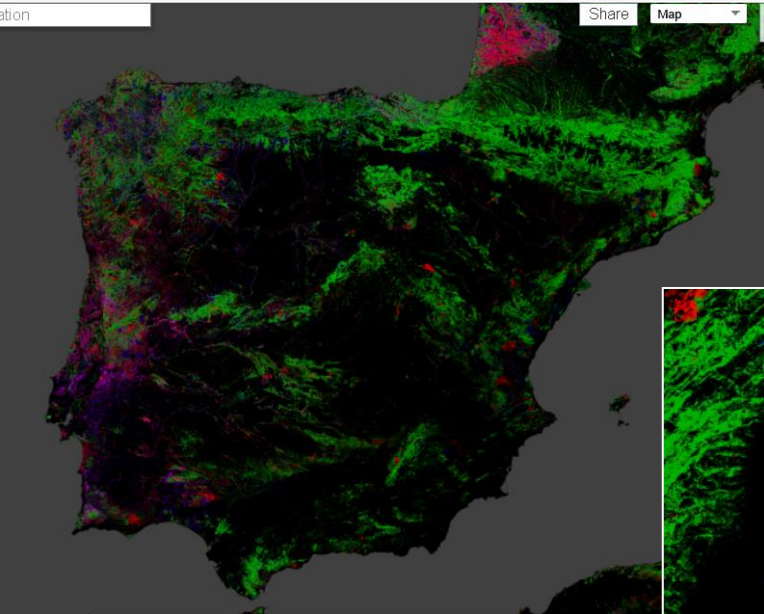
The Global Biodiversity Informatics Outlook (GBIO) offers a **framework** for reaching a much deeper **understanding** of the world's biodiversity, and through that understanding the **means** to conserve it better and to use it more sustainably.



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



# “Big data, thick data”



## Global Forest Change

Published by Hansen, Potapov, Moore, Hancher et al.



UNIVERSITY OF  
MARYLAND  
DEPARTMENT OF GEOGRAPHICAL SCIENCES

Results from time-series analysis of 654,178 Landsat images in characterizing forest extent and change, 2000–2012.

# “Big data, thick data”

“Instead of focusing on a “big data revolution,” perhaps it is time we were focused on an “all data revolution,” where we recognize that the critical change in the world has been innovative analytics, **using data from all traditional and new sources**, and providing a deeper, clearer understanding of our world.”

BIG DATA

## The Parable of Google Flu: Traps in Big Data Analysis

Large errors in flu prediction were largely avoidable, which offers lessons for the use of big data.

David Lazer,<sup>1,2\*</sup> Ryan Kennedy,<sup>1,3,4</sup> Gary King,<sup>3</sup> Alessandro Vespignani<sup>5,6,3</sup>

www.sciencemag.org SCIENCE VOL 343 14 MARCH 2014  
Published by AAAS

Science

AAAS

Science 14 March 2014:  
Vol. 343 no. 6176 pp. 1203-  
1205  
DOI: 10.1126/science.1248506

# Adaptar el juego a las reglas del juego

## Fungal planet

<http://www.fungalplanet.org/>

214 How to cite individual sheets?



Mycobank: MB808885.

***Stagonospora trichophorica*** Crous & Quaedvlieg, sp. nov.  
*Etymology.* Named after the host genus from which it was collected, *Trichophorum*.



215 How to cite individual sheets?



Mycobank: MB808886.

***Phaeosphaeria poae*** Crous & Quaedvlieg, sp. nov.  
*Etymology.* Named after the host genus from which it was collected, *Poa*...



216 How to cite individual sheets?



Mycobank: MB808887

***Keissleriella poagens*** Crous & Quaedvlieg, sp. nov.  
*Etymology.* Named after the host genus from which it was collected, *Poa*.



217 How to cite individual sheets?



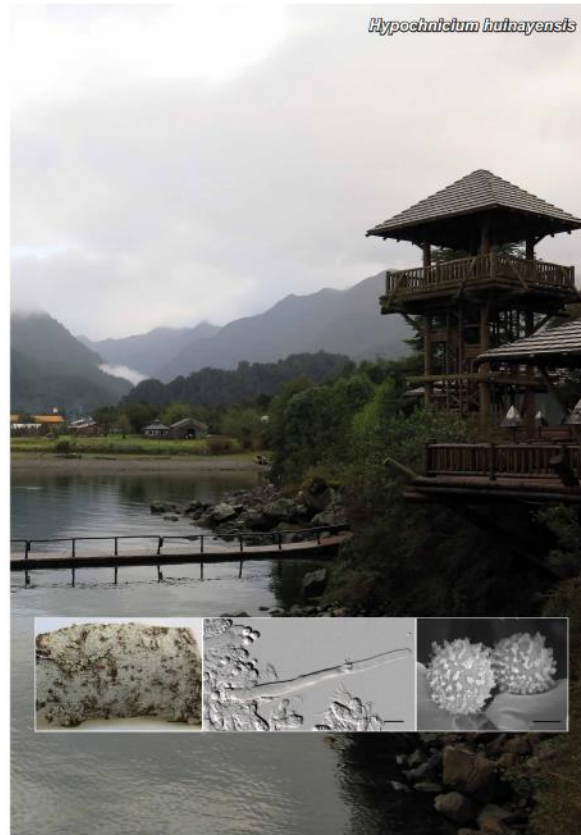
Mycobank: MB808888.

***Bipolaris drechsteri*** Manamgoda & Minnis, sp. nov.  
*Etymology.* Named after the host genus from which it was collected, *Trichophorum*.



280

Personia - Volume 31, 2013



*Hypochnicium huinayensis*

Fungal Planet description sheets

Fungal Planet 207 – 26 November 2013

***Hypochnicium huinayensis*** Telleria, M. Dueñas & M.P. Martín, sp. nov.

*Etymology.* Named in honour of the San Ignacio del Huinay Foundation, promoter of scientific research and sustainable development in Chilean forest region.

**Basidioma** resupinate, effused, loosely adnate, thin, furfuraceous; hymenophore porose-reticulate, sometimes more or less tuberculate, greyish white to cream; margin not specially differentiated. **Hyphal system** monomitic; hyphae hyaline, thin-walled, ramified, with clamps, 4–5 µm wide; subicular texture open and subhyphal hyphae densely interwoven. **Cystidia** numerous, enclosed or projecting, thin-walled, somewhat thick-walled in the basal part, non encrusted, subcylindrical to fusiform, sometimes basally tapering to a stalk-like hyphal part, long, 110–240 × 9–12 µm. **Basidia** subclaviform to suburniform, 25–30 × 7–9 µm. **Spores** almost globose, 6.5–8(–9) × 6.5–8 µm, thick-walled, uniguttulate, ornamented in Melzer and cotton blue, smooth in 3% KOH, cyanophilous.

**Habitat** — Decayed wood in Valdivian temperate rainforest from Chilean Northern Patagonian region.

**Typus.** **CHILE**, Los Lagos (X Region), Palena, Comuna Huaitulhué, Comau (spot, Huinay, path to Cerro del Tambor, S42°22'44.5" W72°24'25.8", on unidentified wood, 100 m, 26 Apr. 2012, M. Dueñas, M.P. Martín & M.T. Telleria, 15596Tel. (holotype MA-Fungi 86742, ITS sequence GenBank HG000303, MycoBank MB805569).

**Additional specimens examined.** **CHILE**, Los Lagos (X Region), Palena, Comuna Huaitulhué, Comau (spot, Huinay, path to Cerro del Tambor, S42°22'44.5" W72°24'25.8", on *Geophila ovalifolia* (Cononiaceae), 24 m, 25 Apr. 2012, M. Dueñas, M.P. Martín & M.T. Telleria, 13990MD (MA-Fungi 86743), ITS sequence GenBank HG326616.

**Notes** — Phylogenetic analyses (parsimony and Bayesian), based on two specimens of *H. huinayensis*, and previously published data (Paulus et al. 2007, Telleria et al. 2010), clearly grouped *Hypochnicium* sequences in two main clades according to the spore morphology (clade I: smooth spores; clade II: ornamented spores); the six main subclades described in Telleria et al. (2010) were resolved. Specimens of *H. huinayensis* cluster together as a group of their own in the subclade II-F, as sister group of the three sequences of *H. albostramineum*, two from Sweden and one from Spain (intraspecific K2P *H. albostramineum* < 0.00370; interspecific K2P *H. huinayensis*/*H. albostramineum* > 0.0683).

The four species, *Hypochnicium bombycinum*, *H. aff. erikssonii*, *H. kundellii* and *H. polonense*, reported from the Argentinian Patagonia (Greslebin & Rajchenberg 2003) have smooth spores (clade I), while *H. patagonicum* and *H. huinayensis*, described from Chilean Patagonia (Gorjón & Hallenberg 2013), have ornamented spores (clade II). The ITS sequences of 19598Tel. (holotype) and 13980MD of *H. huinayensis* were identical (Kimura-2-parameter pairwise distances, K2P, obtained using PALUP v. 4.0b10 was 0.0) and different to the ITS sequence (HG000304) of *H. patagonicum* (isotype, GB0129149) (interspecific K2P *H. chilense*/*H. patagonicum* > 0.14289).

**Colour illustrations.** San Ignacio del Huinay scientific field station, Chilean Patagonia, when the fungus was collected on decayed wood in Valdivian temperate rainforest (M.T. Telleria); basidioma (MA-Fungi 86743), scale bar = 50 mm; hymenium with cystidium, basidium and spores (MA-Fungi 86742), scale bar = 15 µm; spores by SEM (MA-Fungi 86742), scale bar = 2.5 µm.

M. Teresa Telleria, Margarita Dueñas & María P. Martín, Real Jardín Botánico RJB-CSIC, Plaza de Murillo 2, 28014 Madrid, Spain; e-mail: telleriat@rjb.csic.es, mduenas@rjb.csic.es, mpmartin@rjb.csic.es

© 2013, Authors. Published by Cambridge University Press, under Creative Commons Attribution License

Crous PW, Wingfield MJ, Guarro J, Cheewangkoon R, van der Bank M, Swart WJ, Stchigel AM, Cano-Lira JF, Roux J, Madrid H, Damm U, Wood AR, Shuttleworth LA, Hodges CS, Munster M, de Jesús Yáñez-Morales M, Zúñiga-Estrada L, Cruywagen EM, de Hoog GS, Silvera C, Najafzadeh J, Davison EM, Davison PJN, Barrett MD, Barrett RL, Manamgoda DS, Minnis AM, Kleczewski NM, Flory SL, Castlebury LA, Clay K, Hyde KD, Maïsse-Sitoe SND, Chen S, Lechat C, Hairaud M, Lesage-Meessen L, Pawłowska J, Wilk M, Sliwinska-Wyrzyczowska A, Metrak M, Wrzosek M, Pavlic-Zupanc D, Maleme HM, Slippers B, Mac Cormack WP, Archuby DI, Grünwald NJ, **Telleria MT**, **Dueñas M**, **Martín MP**, Marincowitz S, de Beer ZW, Perez CA, Gené J, Marin-Felix Y, Groenewald JZ. 2013 Fungal Planet description sheets: 154–213. *Personia* 31: 188–296

# Invitación

## A tener nuestro criterio

There are things we know that we know. There are known unknowns. That is to say there are things that we now know we don't know. But there are also unknown unknowns. **There are things we do not know we don't know.**

– Donald Rumsfeld

La gente educada es la gente libre y responsable, la gente que actúa con sus propias reflexiones -

– Federico Mayor Zaragoza

**A luchar por la buena ciencia:** la que explica, predice, y sirve a la sociedad, a hacer una ciencia que la sociedad entienda y defienda

Francisco Pando  
Unidad de Coordinación de GBIF  
Real Jardín Botánico -CSIC  
Claudio Moyano 1  
28014 Madrid, España

pando@gbif.es

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

twitter.com/GbifEs

Telf: + 34 91 420 3017

