LifeWatch
e-Science European Infrastructure
for Biodiversity and Ecosystem Research

LifeWatch ITALIA

ATTIVITA' IN CORSO & PRIORITA' STRATEGICHE

CENTRO TEMATICO COLLEZIONI

Luca Bartolozzi, Fabio Cianferoni, Stefano De Felici, Valerio Sbordoni,

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16 Dicembre 2015 ROMA

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Activities

- The CTC selects high-quality data to be made available to the scientific community, therefore it works upgrading, standardizing and refining data to be hosted in the LifeWatch Italy infrastructure.

- Namely, CTC seeks to promote and support all initiatives directed to the digitization of biodiversity data from natural history collections and Citizen Science projects, with the aim of ensuring their availability online.

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Collaborations

CTC collaborates in the development of the National Biodiversity Network (NNB) which aggregates currently 54 datasets from various sources for a total of approximately 1,200,000 records of occurrence.

Network Nazionale Biodiversità

Data portal Naturaitalia (http://www.naturaitalia.it/), the official site of Biodiversity in Italy owned by the Ministry of Environment.

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Collaborations

«CollMap» Project: MOU LifeWatch-ANMS

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BIOLOGICAL REVIEWS
Cambridge Philosophical Society
247
Biol. Rev. (2010), **85**, pp. 247–266.
doi:10.1111/j.1469-185X.2009.00098.x

Biological collections and ecological/environmental research: a review, some observations and a look to the future

Graham H. Pyke[1] and Paul R. Ehrlich[2]
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[2] *Department of Biological Sciences, Stanford University, Stanford, CA 94305, USA*

(*Received* 17 *February* 2009; *accepted* 19 *August* 2009)

ABSTRACT

Housed worldwide, mostly in museums and herbaria, is a vast collection of biological specimens developed over centuries. These biological collections, and associated taxonomic and systematic research, have received considerable long-term public support. The work remaining in systematics has been expanding as the estimated total number of species of organisms on Earth has risen over recent decades, as have estimated numbers of undescribed species. Despite this ...

JSE Journal of Systematics and Evolution
doi: 10.1111/jse.12181

Review

Collections-based systematics: Opportunities and outlook for 2050

Jun Wen[1*], Stefanie M. Ickert-Bond[2], Marc S. Appelhans[1,3], Laurence J. Dorr[1], and Vicki A. Funk[1]
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[3]Department of Systematics, Biodiversity and Evolution of Plants, Albrecht-von-Haller Institute of Plant Sciences, Uni... Göttingen, Untere Karspüle 2, 37073 Göttingen, Germany
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Received 11 May 2015; Accepted 25 August 2015; Article first published online ...

INSIGHTS

LETTERS

Edited by Jennifer Sills

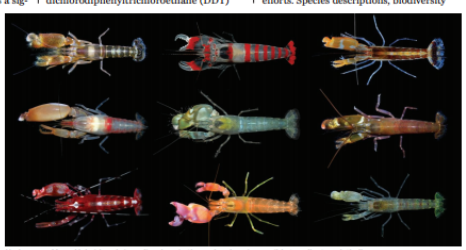
Specimen collection: An essential tool

COLLECTING BIOLOGICAL specimens for scientific studies came under scrutiny when B. A. Minteer *et al.* ["Avoiding (re)extinction," Perspectives, 18 April, p. 260] suggested that this practice plays a significant role in species extinctions. Based on a small number of examples (rare birds, frogs, and a few plants), the authors concluded that collection of voucher specimens is potentially harmful to many species, and that alternatives—photographs, audio recordings and nonlethal tissue sampling for DNA analysis—are sufficient to document biological diversity.

The isolated examples that Minteer *et al.* cited to demonstrate the negative impact of scientific collecting have been carefully analyzed, and none of these extinction events can be attributed to that cause (1–3). For example, only about 102 Great Auk specimens (*Pinguinus impennis*) exist today in scientific collections, many of ...

biodiversity is hidden deep in its habitat (see image)]. Moreover, identification is often not the most important reason to collect voucher specimens. Studies of morphological diversity and its evolution are impossible without whole specimens. Preserved specimens also provide verifiable data points for monitoring species health, distribution, and phenotypes through time. Both historical and new collections played a key role in understanding the spread of the chytrid fungus infection, one of the greatest current threats to amphibians (5). The decision to ban dichlorodiphenyltrichloroethane (DDT) ...

distract from the primary causes of modern extinction: habitat degradation and loss, unsustainable harvesting, and invasive species (10). It is important to distinguish protecting the lives of individuals from conserving populations and species. Individuals are lost every day to predation, natural death, and anthropogenic factors, hence it is the populations we try to save. Halting collection of voucher specimens by scientists would be detrimental not only to our understanding of Earth's diverse biota and its biological processes, but also for conservation and management efforts. Species descriptions, biodiversity ...



Undercover. Many Alpheidae shrimps live deep in the reef and are impossible to collect nonlethally.

THE NEW YORK TIMES INTERNATIONAL WEEKLY
SCIENCE & TECHNOLOGY
MONDAY, NOVEMBER 2, 2015
la Repubblica VII

Museum Specimens Find New Life Online

By ERIK OLSEN

A wasp was loaded into a rotating drum to make 3-D images. Below, the Onthophagus elegans.

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CBD

FORUM PAPER

DIVERSITY & EVOLUTION

Lack of well-maintained natural history collections and taxonomists in megadiverse developing countries hampers global biodiversity exploration

Omid Paknia · Hossein Rajaei Sh. · André Koch

Received: 7 September 2014 / Accepted: 21 January 2015
Gesellschaft für Biologische Systematik 2015

Opinion

...versial discussions ... positions for taxonomists and the expansion of existing or the establishment of new natural history collections in MDCs. ...Considering the lack of sufficient financial re... ...suggest that joint political priority ...should be given to

Cell PRESS

Biodiversity data should be published cited, and peer reviewed

Mark J. Costello[1], William K. Michener[2], Mark Gahegan[3], Zhi-Qiang Zhang[4], and Philip E. Bourne[5]

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[3] Centre for eResearch, University of Auckland, Auckland, 1142, New Zealand
[4] Landcare Research, 231 Morrin Road, Auckland, 1072, New Zealand
[5] Skaggs School of Pharmacy and Pharmaceutical Sciences, University of California, San Diego, La Jolla, CA, 92093-0657, USA

Concerns over data quality impede the use of public biodiversity databases and subsequent benefits to society. Data publication could follow the well-established publication process: with automated quality checks, peer review, and editorial decisions. This would improve data accuracy, reduce the need for users to 'clean' the data, and might increase data use. Authors and editors would get due credit for a peer-reviewed (data) publication through use and citation metrics. Adopting standards related to data citation, accessibility, metadata, and quality control would facilitate integration of data across data sets. Here,

we are most concerned with the primary biodiversity data rather than the secondary (e.g., modelled or simulated) data derived from them, and interpretations and descriptions around data. Thus, data can be numerical, categorical (e.g., species or place names), images, or sounds.

The rate at which new data are published through the Global Biodiversity Information Facility (GBIF) (Box 1), as a proportion of available data, is declining each year [6]. GBIF was established to make biodiversity data publicly available and, thus, to satisfy a key aim of the Convention on Biological Diversity. Nonetheless, more data are continually being

UNEP

Convention on Biological Diversity

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17 August 2012

ENGLISH ONLY

CONFERENCE OF THE PARTIES TO THE
CONVENTION ON BIOLOGICAL DIVERSITY
Eleventh meeting
Hyderabad, India, 8-19 October 2012

A REVIEW OF BARRIERS TO THE SHARING OF BIODIVERSITY DATA AND INFORMATION, WITH RECOMMENDATIONS FOR ELIMINATING THEM

Note by the Executive Secretary

1. The Executive Secretary is pleased to circulate herewith the document entitled "A review of barriers to the sharing of biodiversity data and information, with recommendations for eliminating them". This document, whose preparation was led by UNEP-WCMC in its capacity of the secretariat of the Friends of the Conservation Commons, is a contribution to the following decisions highlighting the importance of sharing biodiversity data and information for the implementation...

(a) In paragraph 2 of decision X/7 ... and associated indicators ...

Professional Biologist

Data-intensive Science: A New Paradigm for Biodiversity Studies

STEVE KELLING, WESLEY M. HOCHACHKA, DANIEL FINK, MIREK RIEDEWALD, RICH CARUANA, GRANT BALLARD, GILES HOOKER

The increasing availability of massive volumes of scientific data requires new synthetic analysis techniques to explore and identify interesting patterns that are otherwise not apparent. For biodiversity studies, a "data-driven" approach is necessary because of the complexity of ecological systems, particularly when viewed at large spatial and temporal scales. Data-intensive science organizes large volumes of data from multiple sources and fields and then analyzes them using techniques tailored to the discovery of complex patterns in high-dimensional data through visualizations, simulations, and various types of model building. Through interpreting and analyzing these models, truly novel and surprising patterns that are "born from the data" can be discovered. These patterns provide valuable insight for concrete hypotheses about the underlying ecological processes that created the observed data. Data-intensive science allows scientists to analyze bigger and more complex systems efficiently, and complements more traditional scientific processes of hypothesis generation and experimental testing to refine our understanding of the natural world.

Keywords: data-intensive science, informatics, biodiversity, machine learning, statistics

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Collaborations

- **Fauna Europaea** (official db of the Pan-European Species directories Infrastructure – **PESI**)
- **Catalogue of Life**
- **Bio-Blitz initiatives**

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DEST courses

Last event: 18-22 May 2015 – Firenze

International Course on "entomological research in protected areas" in collaboration with the Distributed European School of Taxonomy (DEST)

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Indroductory courses to the Insect systematics

Last event: 14-18 September 2015 – Firenze

Collaborazione tra:

- **LifeWatch Italia**
- **ANMS (Associazione Nazionale Musei Scientifici)**
- **Museo di Storia Naturale dell'Università degli Studi di Firenze**
- **GET (Gruppo Entomologico Toscano)**

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Il Centro Tematico Collezioni di **LifeWatch Italia** organizza il Workshop:

Strumenti informatici per la condivisione dei dati di occorrenza nel Network Nazionale della Biodiversità

Roma, Università di Tor Vergata
25 novembre 2015

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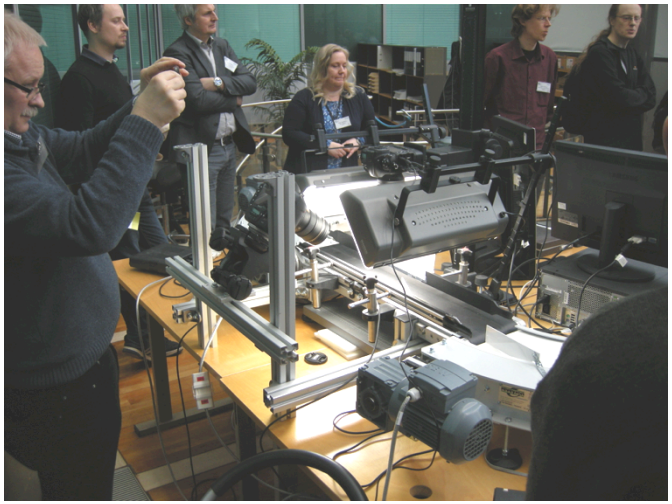
Strategic priorities

1. Expanding collaborative project LifeWatch ITA –ANMS

- CollMap Local: a special focus on geographically sound collections
- Search of partnership to develop an EUCollMap Project



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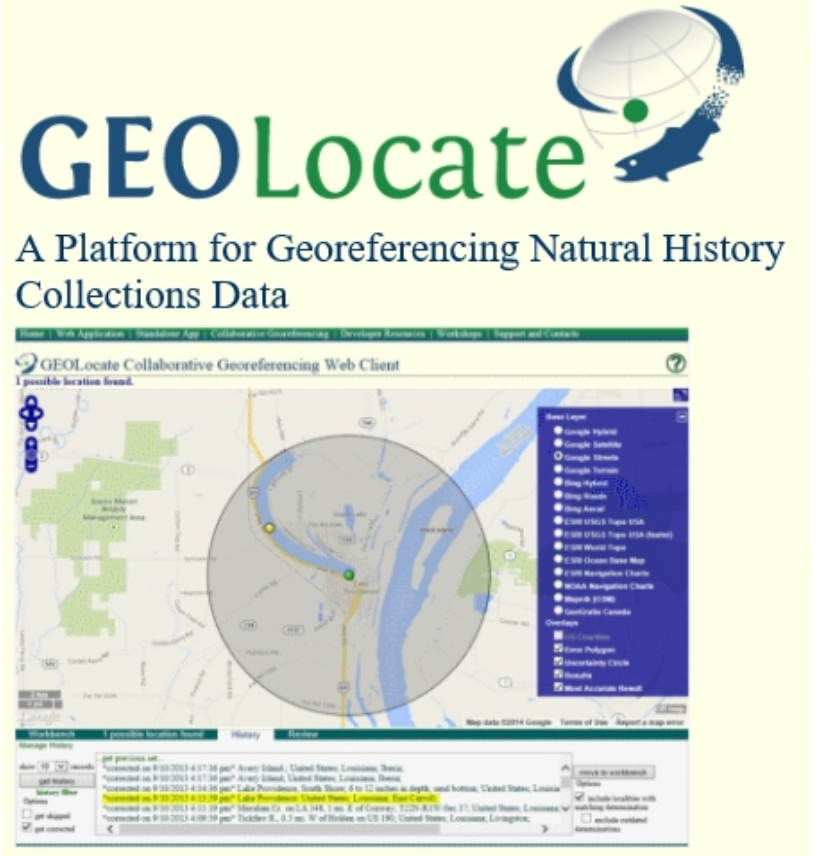
Strategic priorities

2. Encourage biodiversity data digitization of data collection by:

- dissemination and assistance in the use of specific software
- development of tools dedicated to the geo-referencing of the data



Strategic priorities

3. Citizen Science

- Develop a metadata catalog of Citizen Science projects available online as a means to their information content and audit strengths and weaknesses of the projects.
- Establish a coordination point of BioBlitz initiatives to serve as a newsboard, exchange of materials, and a data-collection spot.
- Provide a unified access to the existing wide array of natural science forums to highlight and finalize the individual activities of stakeholders.

Grazie per l'attenzione

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