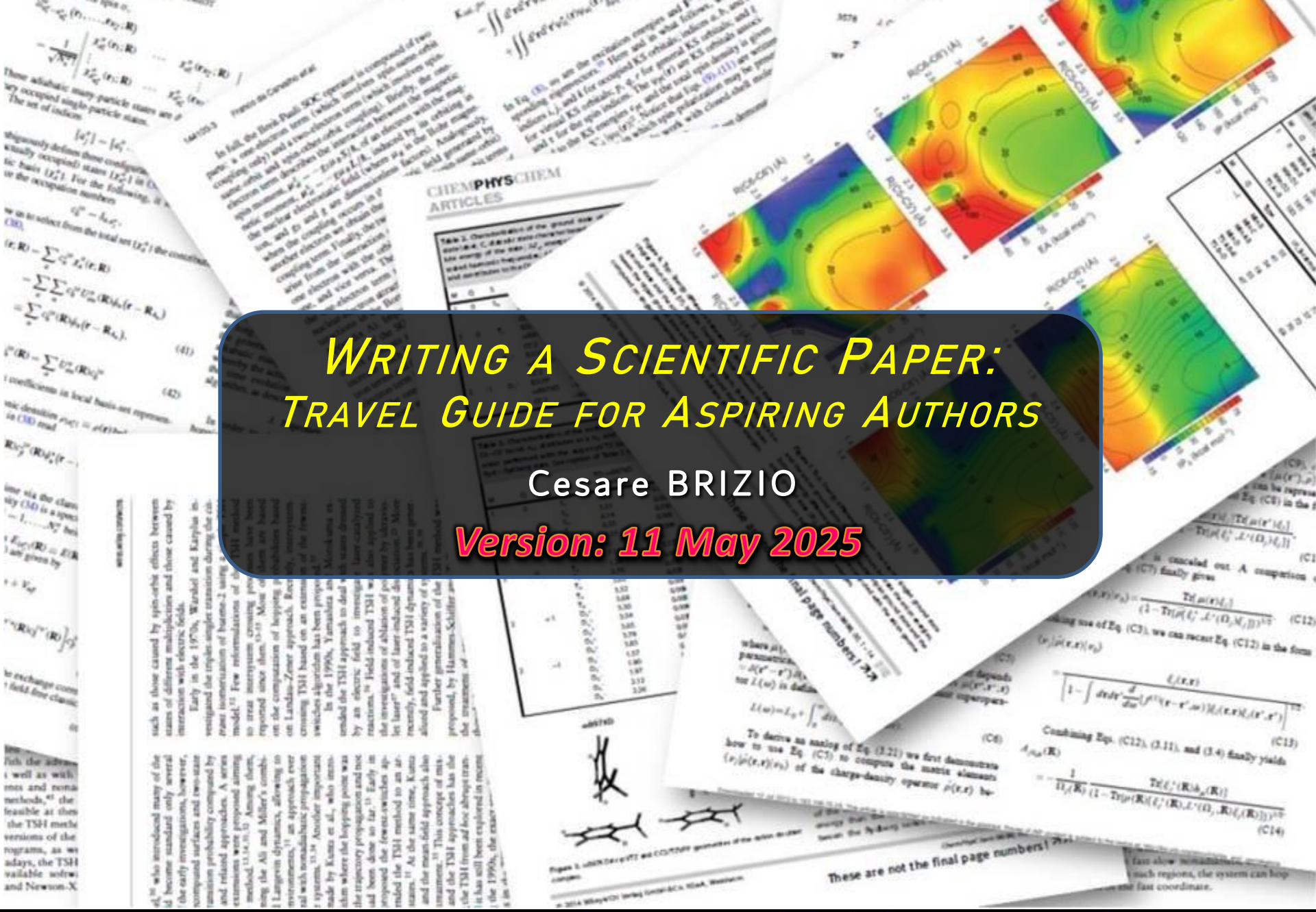
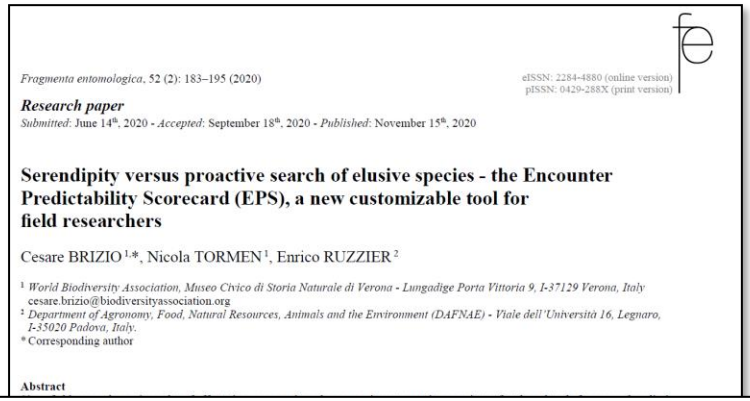

Writing a Scientific Paper:
Travel Guide for Aspiring Authors
Cesare BRIZIO
Version: 11 May 2025



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Research paper

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Serendipity versus proactive search of elusive species - the Encounter Predictability Scorecard (EPS), a new customizable tool for field researchers

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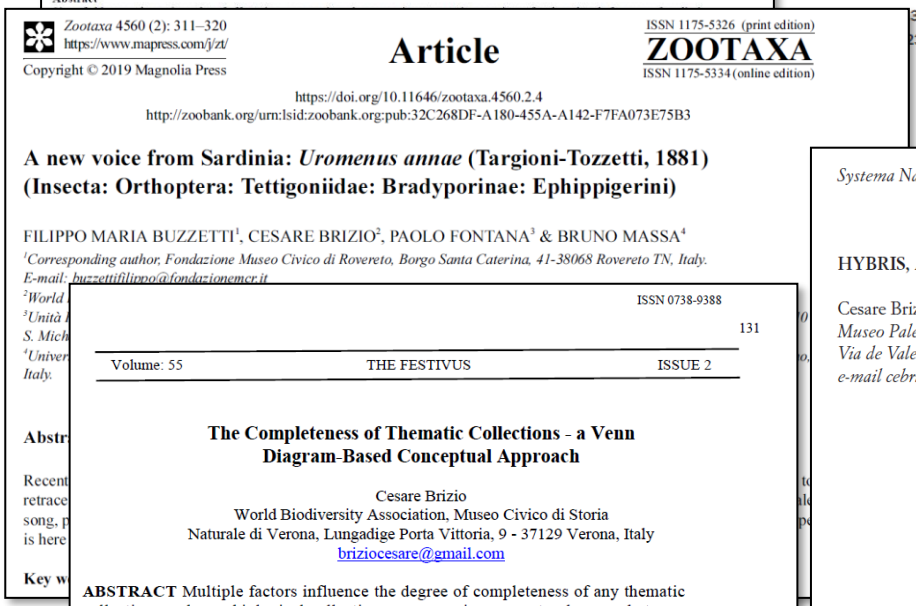
Abstract



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Article

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A new voice from Sardinia: *Uromenus annae* (Targioni-Tozzetti, 1881) (Insecta: Orthoptera: Tettigoniidae: Bradyporinae: Ephippigerini)

FILIPPO MARIA BUZZETTI[1], CESARE BRIZIO[2], PAOLO FONTANA[3] & BRUNO MASSA[4]

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E-mail: buzzettifilippo@fondazionemcr.it
[2]*World*
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Abstr

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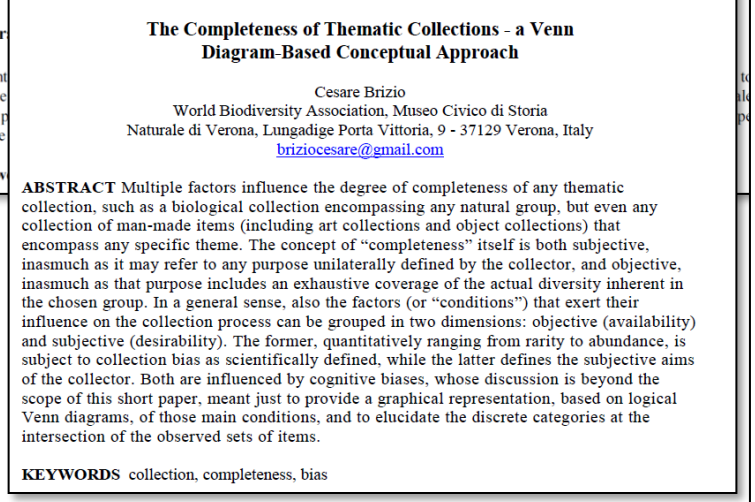

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131

Volume: 55 THE FESTIVUS ISSUE 2

The Completeness of Thematic Collections - a Venn Diagram-Based Conceptual Approach

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ABSTRACT Multiple factors influence the degree of completeness of any thematic collection, such as a biological collection encompassing any natural group, but even any collection of man-made items (including art collections and object collections) that encompass any specific theme. The concept of "completeness" itself is both subjective, inasmuch as it may refer to any purpose unilaterally defined by the collector, and objective, inasmuch as that purpose includes an exhaustive coverage of the actual diversity inherent in the chosen group. In a general sense, also the factors (or "conditions") that exert their influence on the collection process can be grouped in two dimensions: objective (availability) and subjective (desirability). The former, quantitatively ranging from rarity to abundance, is subject to collection bias as scientifically defined, while the latter defines the subjective aims of the collector. Both are influenced by cognitive biases, whose discussion is beyond the scope of this short paper, meant just to provide a graphical representation, based on logical Venn diagrams, of those main conditions, and to elucidate the discrete categories at the intersection of the observed sets of items.

KEYWORDS collection, completeness, bias

Colour Enhanced Time/Pressure Envelope (CETPE), a novel on-screen rendering of digital sound

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Accettato: 2/11/2023

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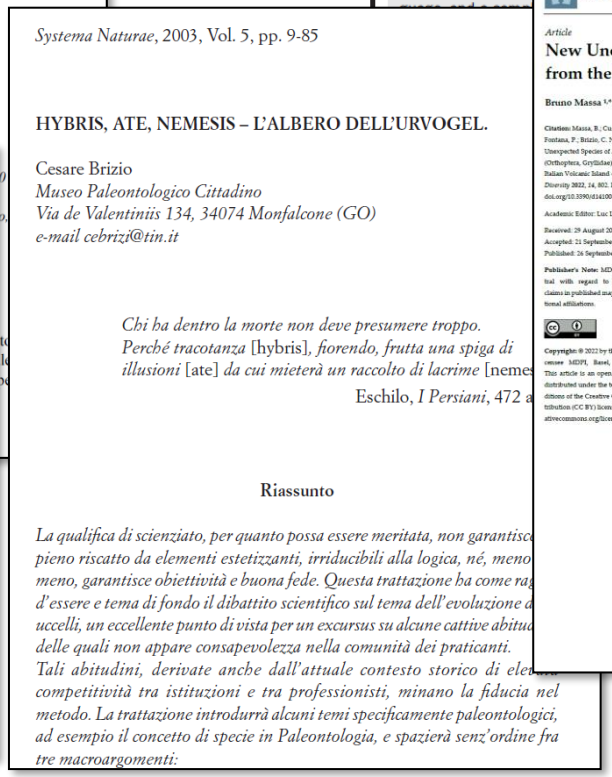
2385-2615

The most widespread forms of digital sound rendering in audio-management software applications include Time/Pressure Envelopes (TPE's aka "oscillograms"), Frequency/Pressure Analyses (FPA's), and Time/Frequency Spectrographic Images (TFSI, often referred to as "spectrograms"). Only the latter, thanks to the colour mapping of pressure values, are capable to deliver simultaneously visual information about the three numerical domains (time, horizontal axis; frequency, vertical axis; pressure, colour) digitally defining the acoustic phenomenon.

Here the Colour Enhanced Time/Pressure Envelope (CETPE) is proposed, a 24-bit RGB colour mapped form of the commonplace TPE available on-screen in any digital audio software: this novel Fast Fourier Transform (FFT)-based rendering, controlled by user-defined parameters, is capable to deliver partial but potentially relevant information about the presence and the intensity of interesting frequency bands in an audio file.

A proof-of-concep



Systema Naturae, 2003, Vol. 5, pp. 9-85

HYBRIS, ATE, NEMESIS – L'ALBERO DELL'URVOGEL.

Cesare Brizio
Museo Paleontologico Cittadino
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e-mail cebrizi@tin.it

Chi ha dentro la morte non deve presumere troppo.
Perché tracotanza [hybris]*, fiorendo, frutta una spiga di illusioni* [ate] *da cui mieterà un raccolto di lacrime* [neme

Eschilo, *I Persiani*, 472 a

Riassunto

La qualifica di scienziato, per quanto possa essere meritata, non garantisc
pieno riscatto da elementi estetizzanti, irriducibili alla logica, né, meno
meno, garantisce obiettività e buona fede. Questa trattazione ha come ra
d'essere e tema di fondo il dibattito scientifico sul tema dell'evoluzione d
uccelli, un eccellente punto di vista per un excursus su alcune cattive abitu
delle quali non appare consapevolezza nella comunità dei praticanti.
Tali abitudini, derivate anche dall'attuale contesto storico di ele
competitività tra istituzioni e tra professionisti, minano la fiducia nel metodo. La trattazione introdurrà alcuni temi specificamente paleontologici, ad esempio il concetto di specie in Paleontologia, e spazierà senz'ordine fra tre macroargomenti:

diversity

MDPI

Article

New Unexpected Species of *Acheta* (Orthoptera, Gryllidae) from the Italian Volcanic Island of Pantelleria

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Citation: Massa, B.; Cusimano, C.; Fontana, P.; Brizio, C. New Unexpected Species of *Acheta* (Orthoptera, Gryllidae) from the Italian Volcanic Island of Pantelleria. *Diversity* 2022, 14, 802. https://doi.org/10.3390/d14100802

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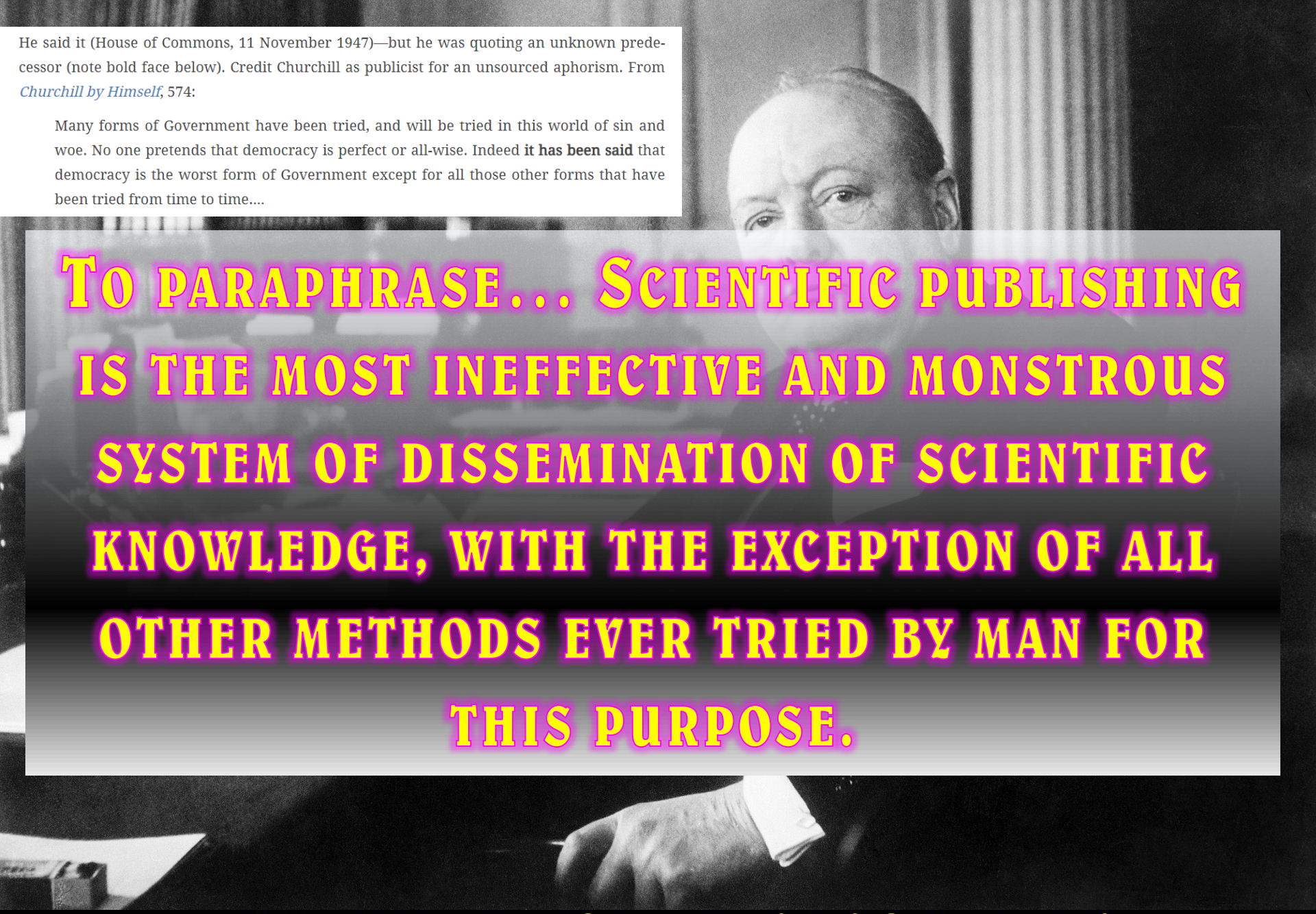
Abstract: In late April 2022, while listening to audio files from an unsupervised bioacoustic assessment of the shearwater populations (Aves, Procellariformes) on the coast of Pantelleria island (Sicily, Italy), a cricket song of unknown attribution was heard. The first bioacoustic analyses, including FFT-based spectrograms and sound pressure envelopes, confirmed that it could not be attributed to the known sound of any Italian nor Mediterranean species of cricket. In the ensuing weeks, field research at the original station and further localities on the southern coast of Pantelleria provided photographs, living specimens, and further audio records. As soon as the photos were shared among the authors, it became clear the species belonged to the genus *Acheta*. Further bioacoustic analyses and morphological comparison with type specimens of Mediterranean and North-African congenerics in relevant collections and the scientific literature were conducted: they confirmed that the findings could only be attributed to a still undescribed species that escaped detection due to its impervious and unfrequented habitat. *Acheta pantescus* n. sp. is apparently restricted to the effusive coastal cliffs of the island of Pantelleria, a habitat whose scant extension and vulnerability require environmental protection actions such as the inclusion in a special Red List by the IUCN Italian Committee.

Keywords: new species; biogeography; Mediterranean; red list; bioacoustics

1. Introduction

On the night of 27 April 2022, during a survey aimed at the assessment of the presence of the pelagic birds Scopoli's shearwater *Calonectris diomedea* (Scopoli, 1769) and Yelkouan shearwater *Puffinus yelkouan* Acerbi, 1827 (Aves, Procellariformes) on the island of Pantelleria (Sicily, Italy), BM and CC placed a Wildlife Acoustics sound recorder, set in unsupervised mode from sunset to dawn, near the cliffs of Punta Limarsi on the south-eastern coast of the island. After retrieving the recorder, they examined the content of the SD card. They noticed an Orthopteran song with Gryllinae affinities that, to the unaided ear, seemed not to match any species reported from Pantelleria or other Italian areas.

The recording was shared the same day with the other authors. Between 27 April and mid-May, with only acoustic evidence available, pursuant to the principle of parsimony, the authors engaged in a series of attempts to attribute the recorded song to a known species of cricket. With many decades of field experience in Orthopteran research, to ascertain the lack of comparable audio samples of Italian cricket songs, BM and PF could both rely on their first-hand knowledge and the systematical comparative hearing of the



He said it (House of Commons, 11 November 1947)—but he was quoting an unknown predecessor (note bold face below). Credit Churchill as publicist for an unsourced aphorism. From *Churchill by Himself*, 574:

> Many forms of Government have been tried, and will be tried in this world of sin and woe. No one pretends that democracy is perfect or all-wise. Indeed **it has been said** that democracy is the worst form of Government except for all those other forms that have been tried from time to time....

TO PARAPHRASE... SCIENTIFIC PUBLISHING IS THE MOST INEFFECTIVE AND MONSTROUS SYSTEM OF DISSEMINATION OF SCIENTIFIC KNOWLEDGE, WITH THE EXCEPTION OF ALL OTHER METHODS EVER TRIED BY MAN FOR THIS PURPOSE.

Scientific results must be verifiable (falsifiable) and consequently REPEATABLE


https://renegross.art/projects/rJOXn6?album_id=7581068

RIPETIBILITY

- If a discovery is true, it is repeatable
- To enable me to repeat it, the one who made it must provide a:
  - CLEAR
  - HONEST
  - COMPLETE

  a description of how he did it.
- Furthermore, to be understandable, this description must satisfy a series of requirements in terms of FORM.

The Four Handmaidens of Repeatability:

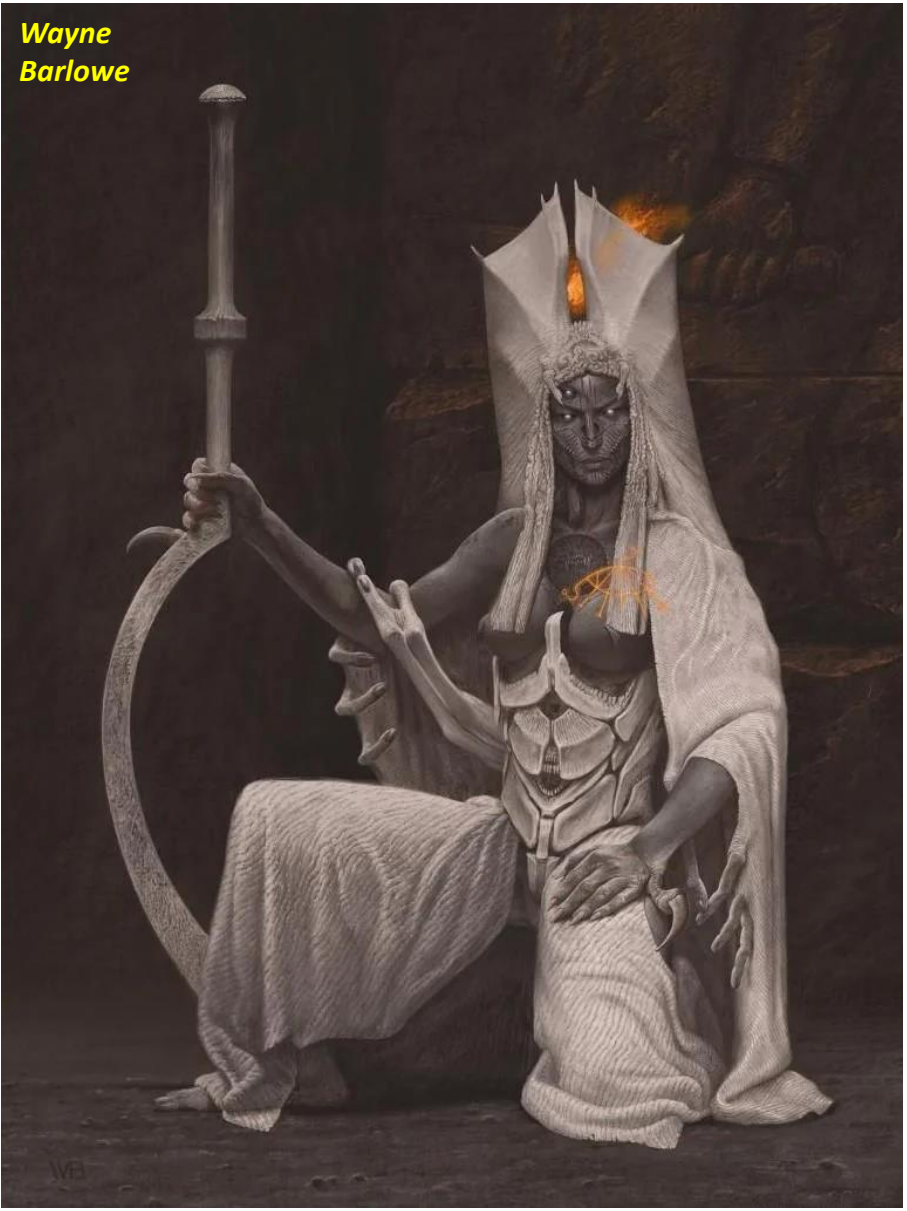
- CLARITY
- HONESTY
- COMPLETENESS
- FORM

CLARITY

- Lack of ambiguity
- Clear figures and legible captions
- Logical articulation of thought
- Definitions, quotations and references as necessary
- Opportunities for further study
- Supplementary data

HONESTY (EXACTNESS)

- Truth: nothing but it
- Accurate figures (not just clear)
- Correct information
- Citations from, and references to, the work of others that you may have used
- Statement of conflicts of interest
- Supporting data

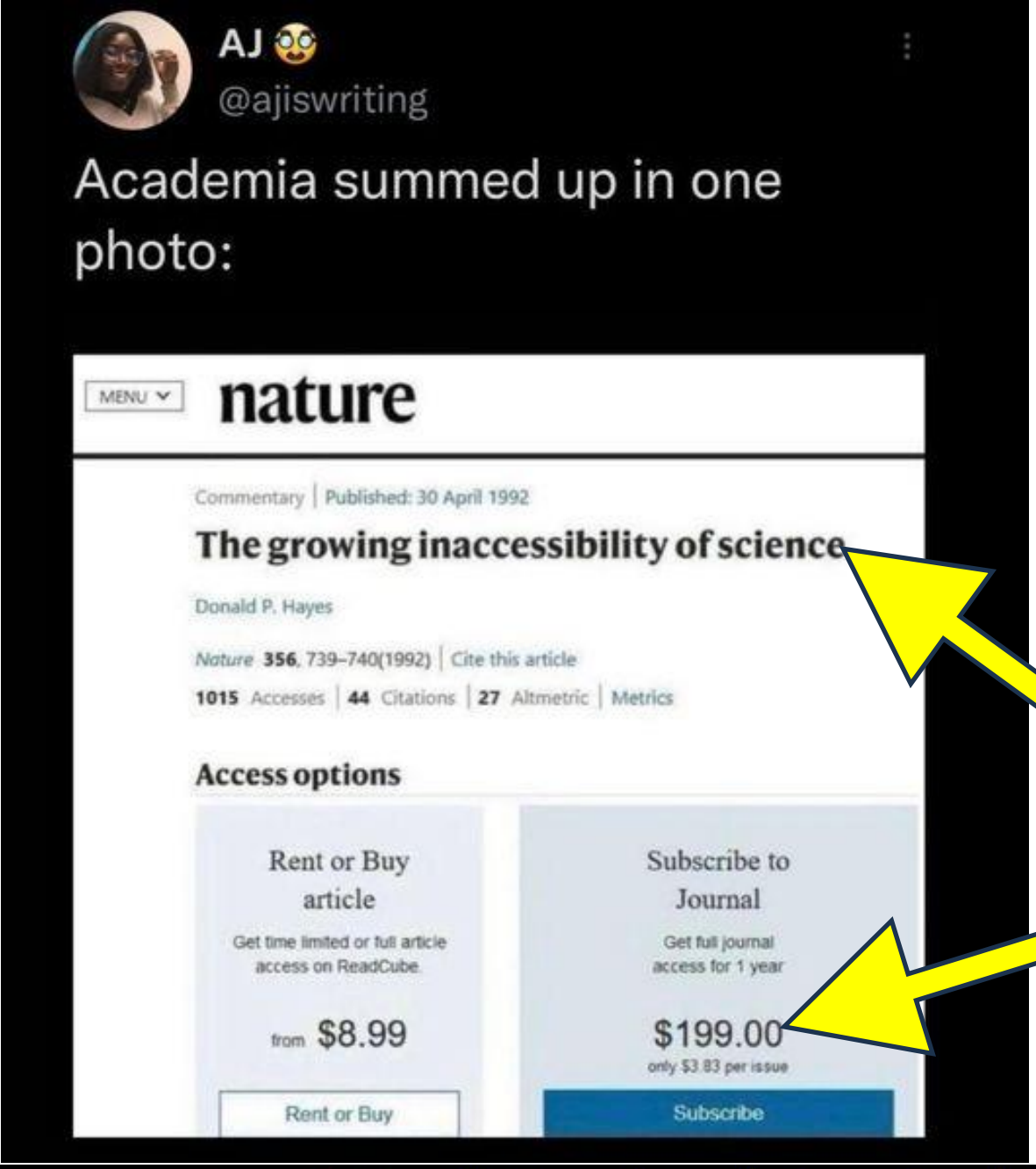


COMPLETENESS

- Truth: all
- Materials and methods covered with sufficient clarity to allow anyone to repeat the experience you describe
- References to other authors, including those who have different ideas from yours
- Supplementary data

FORM

- Control over Language, Grammar, Vocabulary, visual aspects to guarantee the comprehensibility of text and images
- On the road to the right form, you will be guided by templates and editorial policies
- Typically, the manuscript is born "amorphous" in order to be formatted according to the needs of each magazine



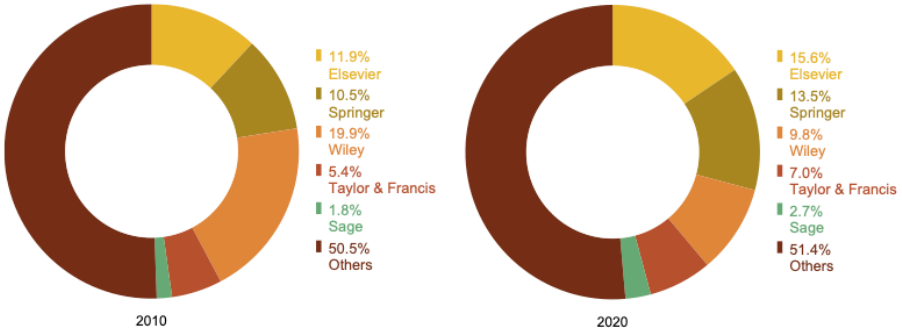
The Business of Scientific Publishing (the article on the side is from 1992…)

«Pay to learn about how costly it has become to read scientific papers!»

Market Share of the Main Publishers

https://en.wikipedia.org/wiki/Academic_publishing

Figure 13. Shares of the top five publishers, based on number of journal titles, 2010 and 2020

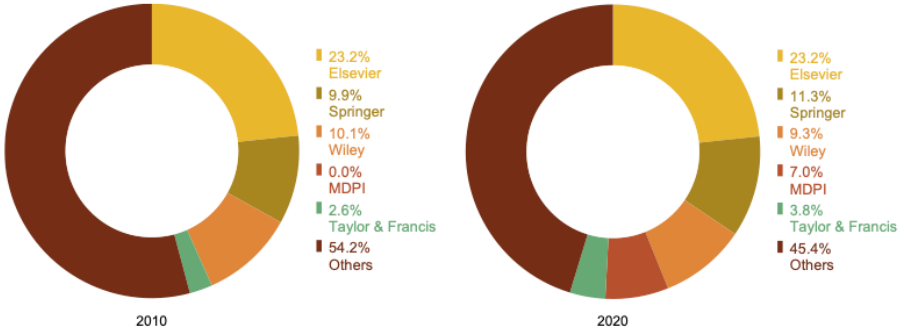


Note: Publisher share is calculated in terms of the number of unique journal titles. Mergers and acquisitions in the market are not taken account of; only the bibliographical information provided for articles is considered. The top five publishers based on 2020 share.

Source: WIPO, based on Web of Science database, April 2022.

Number of Journals

Figure 14. Shares of the top five publishers, based on article counts, 2010 and 2020



Note: Multidisciplinary Digital Publishing Institute (MDPI). Mergers and acquisitions in the market are not taken account of; only the bibliographical information provided for articles is considered. The top five publishers based on 2020 share.

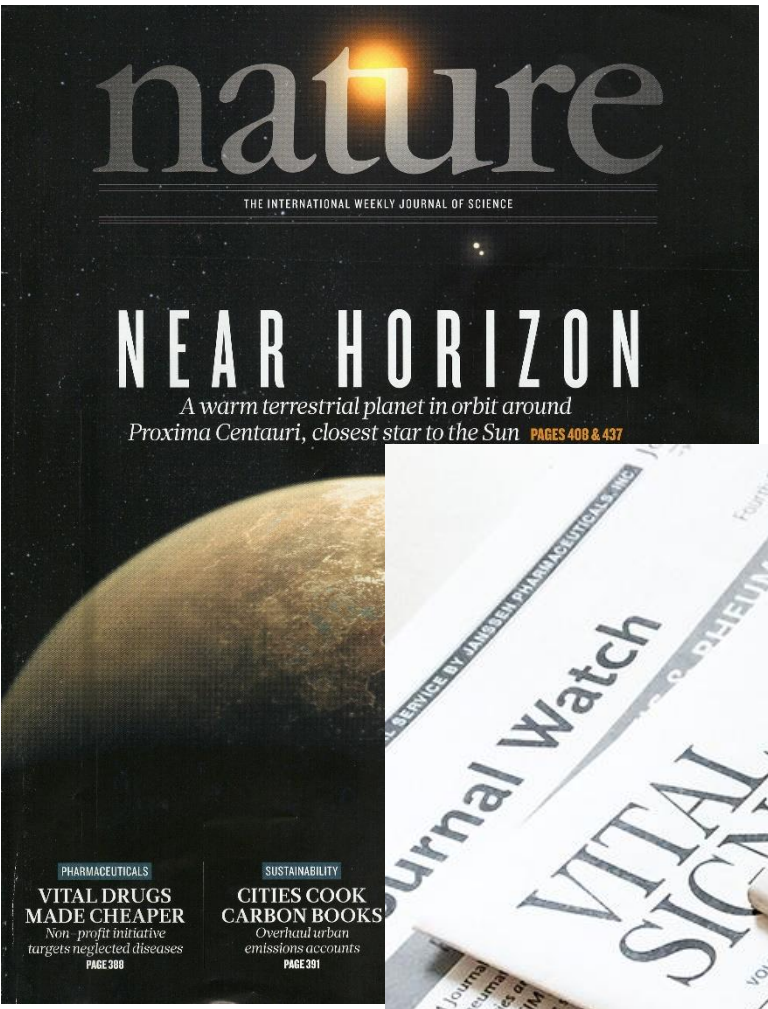
Source: WIPO, based on Web of Science database, April 2022.

Number of Articles

Cost elements for the publisher

Paper publication

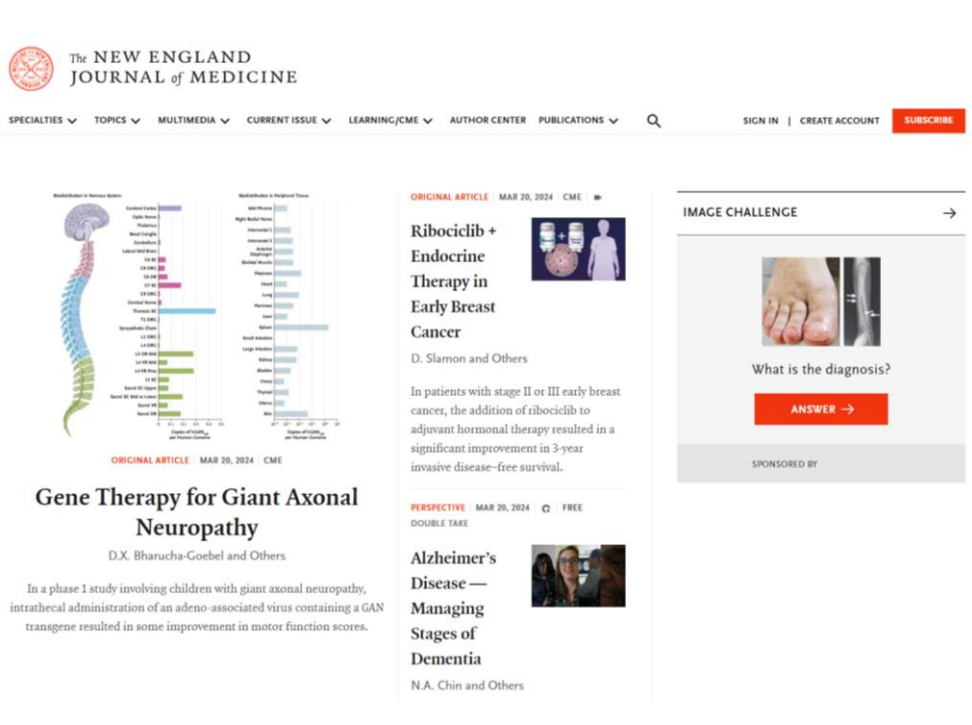
- Illustrations (BW or color)
- Number of pages
- Excerpts for the author
- However, the paper magazine is sold, typically by subscription

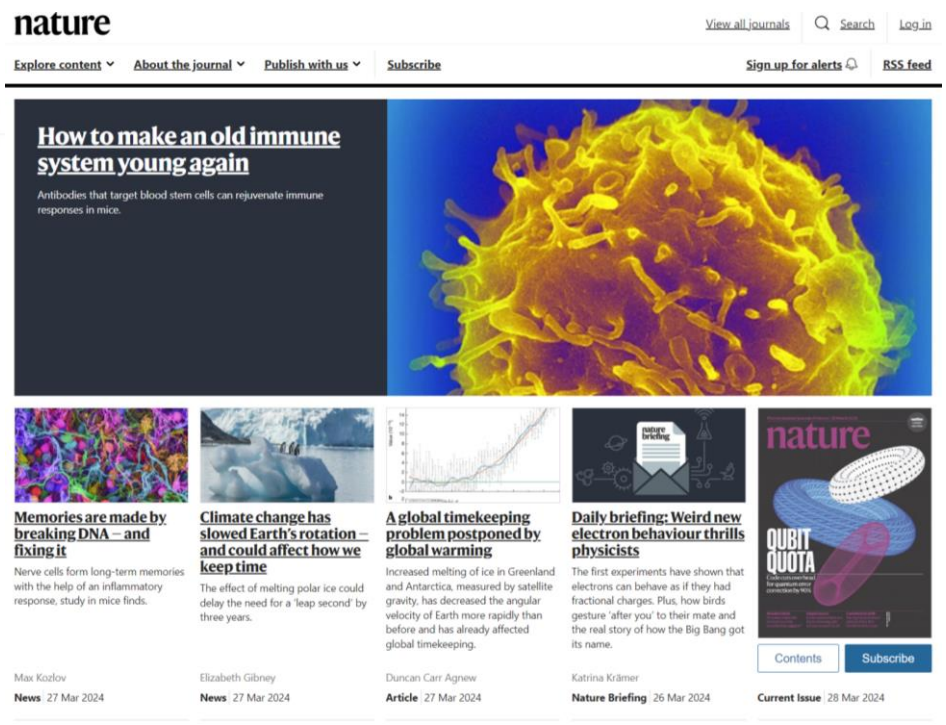


Cost elements for the publisher

Online publication

- Website
- Online repository





Cost elements for the publisher

nature.com/nature/journal-staff

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    - Dedicated
    - Occasional
- Peer review
- Secretariat
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  - **Those who want to read** pay
- **Open** Access – costs management
  - **Those who want to publish** pay
  - **«Merits», vouchers, discounts…**
- More or less permissive policies on preprints (more on that below…)
- **The paper version of the magazine is paid (subscription or "news kiosk")**

ACCESS TO PUBLICATION

- **Unconditional Open Access** – costs management
  - **NOBODY** pays

Typical of:

- **Journals of scientific societies**
- **Journals of scientific institutions (Museums, etc.)**

Actually, the costs are supported by other sources (membership fees) or in any case the editorial activity is carried out by personnel paid through other means.

Scholarly Peer Review

Types

https://en.wikipedia.org/wiki/Scholarly_peer_review

- **Blind** Peer Review
- **Double Blind** Peer review (anonimization of the manuscripts)
- **Attributed** Peer review
- **Open** Peer Review (open identities, open reports, open participation)

Problems

- "Homophily"
- Conflicts of interest
- "Lack of accountability" of the anonymous reviewers

Scholarly Peer Review

INFECTION AND IMMUNITY, Apr. 2009, p. 1273–1274 Vol. 77, No. 4
0019-9567/09/$08.00+0 doi:10.1128/IAI.00018-09

EDITORIAL

Is Peer Review Censorship?∇

"A censor is an expert in cutting remarks."
—Laurence J. Peter (22)

Given the unpleasantness of having one's work rejected (10), as well as a desire for more-rapid communication of scientific findings, some scientists have expressed nostalgia for the good old days when nearly any submitted manuscript was accepted for publication, and some have even compared peer review to censorship (23, 27). After all, neither Newton nor Darwin had to submit to the indignity of peer review prior to publication! In this commentary we explore the latitude provided to authors in scientific manuscripts and attempt to distinguish the processes of peer review and censorship. In dissecting these issues, we hope to provide authors of *Infection and Immunity* with tools for approaching the comments and criticisms that inevitably follow peer review. Furthermore, we hope that delineating the differences between peer review and censorship will encourage flexibility in authors, reviewers, and editors when dealing with controversial and speculative viewpoints.

To approach this question, we might first consider the historical relationship of science to other disciplines. At the outset of the scientific revolution, the major struggle of science was with religion. The or[illegible] Although Galileo is a scientific luminary, in his time he encount[illegible] jection[illegible] dogmatic. Significant questions were raised with regard to the helio[illegible] the a[illegible] flecte[illegible] angle to a star should[illegible] goes around the sun. This was a legitimate scientific criticism that would not be resolved until the 19th century, when technological advances allowed Friedrich Bessel to make the first demonstration of stellar parallax. Galileo was in fact not the first astronomer to run afoul of church censors, as Vatican Decree XXI had already declared that "This whole chapter can be deleted because it admittedly deals with the truth of the earth's motion," in reference to Copernicus' *De Revolutionibus* (9). Although associating the Inquisition and contemporary scientific peer review may seem extreme, a case can be made that the Inquisition represented a review by Galileo's learned peers. Despite the scientific criticisms of the heliocentric theory and pleas to soften his claims, Galileo was initially defiant and recanted only when shown the instruments of torture. In our experience, *Infection and Immunity* authors are generally happy to make revisions to get their papers accepted, and encouragement from torture devices is hardly ever needed anymore. Hence, things do appear to have changed for the better in the area of scientific publishing.

Censorship is defined by the dictionary as "examination in order to suppress or delete anything considered objectionable" (1). The word originates from the Roman censors, magistrates charged with both taking the census (for tax purposes) and maintaining public morality, or regimen morum. Peer review has been more specifically defined as "the evaluation of scientific research findings for competence, significance and originality by qualified experts" (4, 5). Peer review of manuscripts as it presently exists is taken for granted, but its history is much more recent than that of censorship. Although the peer review of scientific manuscripts dates back to the Royal Society of Edinburgh in 1731, peer review was irregularly performed by most journals until the latter half of the 20th century. While some journals, like the *British Medical Journal*, routinely sent all manuscripts to outside experts for an opinion prior to publication, *Science* and *JAMA* did not employ outside reviewers until 1940, relying only on editors' assessments for publication decisions, and the *Lancet* did not implement external peer review until 1976 (4, 6, 30). The critical technological advance of the photocopier in 1959 greatly facilitated the dissemination of manuscripts to multiple reviewers, and the recent development of the internet has further enhanced the process.

Peer review became essential because new incentives for publication dramatically increased the number of research papers. (PubMed lists more than 700,000 articles published during the past year alone.) Peer review allows journals to select the best papers for publication and helps busy scientists to prioritize [illegible] providing some quality control. However, the stakes for having one's manuscript published [illegible] journals [illegible]on, and funding have become heavily reliant on publication record. [illegible]ence is that [illegible] the greatest [illegible] prestige. Whether based [illegible]ertise, etc., the venue chosen for publication can have a significant impact in the visibility of a study and the fortunes of the authors. Hence, the most desirable venues for scientific publication are those in which articles are rigorously peer reviewed and editors routinely reject manuscripts on the basis of priority, an imprecise term that is meant to convey importance, preference, suitability, and interest to the readership. The prestige of a journal has become a surrogate measure for the quality of the work itself.

The current system persists despite abundant evidence of imperfections in the peer review process (19, 25). Most scientists would agree that peer review improves manuscripts and prevents some errors in publication (13). However, although there is widespread consensus among scientists that peer review is a good thing, there are remarkably little data that the system works as intended (2, 20, 28). In fact, studies of peer review have identified numerous problems, including confirmatory bias, bias against negative results, favoritism for established investigators in a given field, address bias, gender bias, and ideological orientation (reviewed in references 2, 13, 17, and 31). Smith wrote that peer review is "slow, expensive, ineffective, something of a lottery, prone to bias and abuse, and hopeless at spotting errors and fraud" (28). Chance has been shown to play an important role in determining the outcome of peer review (8), and agreement between reviewers is disconcertingly low (25). Bauer has noted that as a field matures, "knowledge monopolies" and "research cartels," which fiercely protect their domains, suppress minority opinions, and curtail publication and funding of unorthodox viewpoints, are established (3). In response, experienced authors learn

∇ Published ahead of print on 17 February 2009.

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Editorial Process

Phases

- **Verification of editorial policies and requirements**
  - **Contact:** none, unless clarification is requested. This information can be found on the journal websites.
  - **Outcome:** the author decides whether to submit a manuscript
- **Download or preparation of the template**
  - **Contact:** none, unless clarification is requested. The document template, or instructions for preparing it, are available on the journal website. You can refer to standard formats such as APA templates (see next slide).
  - **Outcome:** the author is now in a position to draft the manuscript

Editorial Process

Standard template

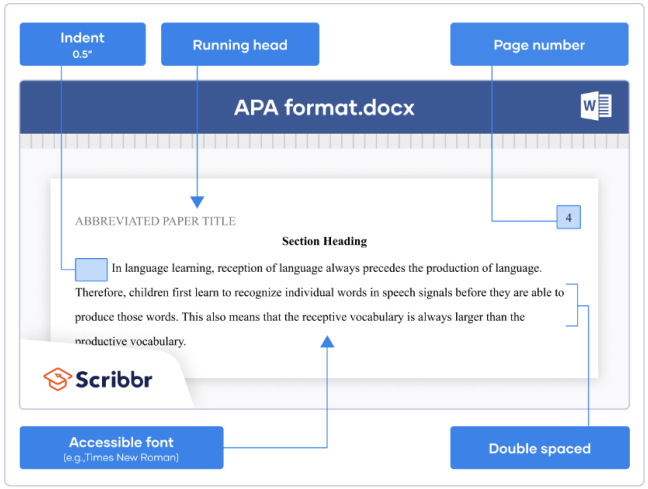
Example: APA Template 7th Edition

IF YOU GET USED TO USING A STANDARD FORMAT, SUCH AS APA FORMAT, TO WRITE EACH OF YOUR MANUSCRIPTS, THE SUBMISSION PROCESS WILL CERTAINLY BE EASIER, EVEN IF IT WAS NECESSARY TO ADOPT A DIFFERENT FORMAT!

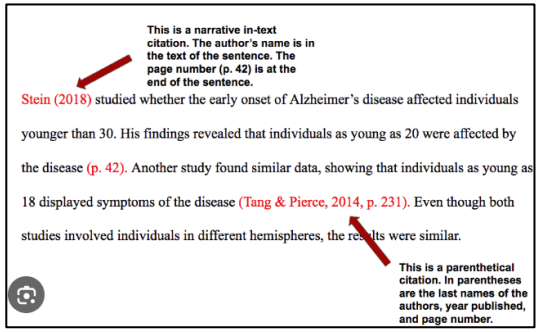
APA FORMATTING

Throughout your paper, you need to apply the following APA format guidelines:

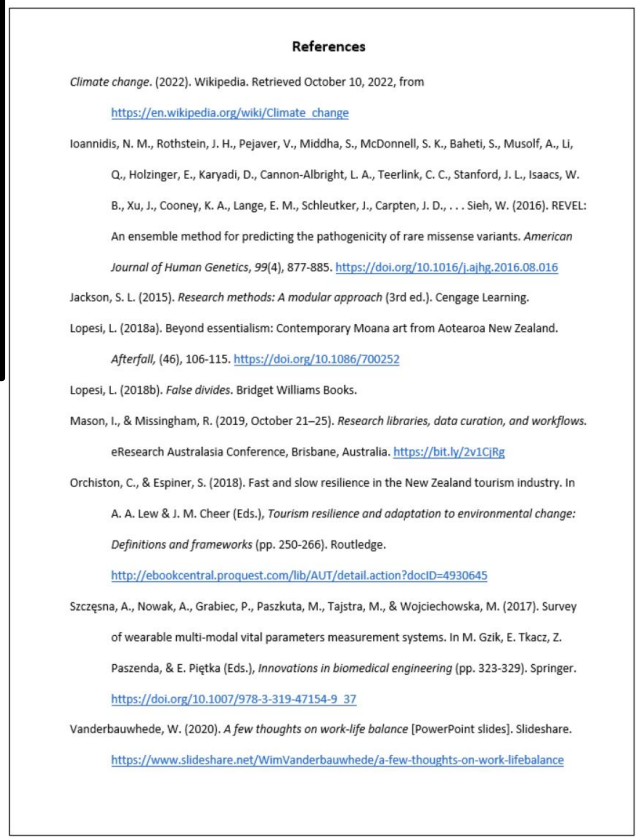
- Set page margins to 1 inch on all sides.
- Double-space all text, including headings.
- Indent the first line of every paragraph 0.5 inches.
- Use an accessible font (e.g., Times New Roman 12pt., Arial 11pt., or Georgia 11pt.).
- Include a page number on every page.



APA IN-TEXT CITATION



APA CITATION



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Editorial Process

Phases

- **Drafting the manuscript**
  - **Contact:** none, unless clarification is requested. The formats required for submission have already been ascertained.
  - **Mode:** the author prepares the necessary material (manuscript, figures, data, etc.) according to the required formats.

- **Submission**
  - **Contact:** editorial staff of the journal
  - **Mode:** Guided paths for uploading the manuscript and figures to the journal or publisher's website (if multiple journals are managed by a single publisher). **ANONIMIZATION indispensable in case of double blind peer review,** otherwise you risk having your manuscript rejected.
  - **Outcome:** confirmation of receipt of the manuscript, possible assignment of an editor, possible requests for additions

Phases

- **Desk Evaluation**
  - **Contact:** editorial staff of the journal
  - **Outcome:** Acceptance or rejection of the manuscript in case it does not fit the scope of the journal
- **External review**
  - **Contact:** the external referees, with mediation by the editorial staff of the journal
  - **Outcome:** manuscript improvement cycles, with subsequent acceptance or rejection of the manuscript

Editorial Process

Phases

- **Revisions**
  - **Contact:** editorial staff of the journal
  - **Outcome:** progressive adaptation to editorial needs (format, images, etc.)
- **Copyediting**
  - **Contact:** editorial staff of the journal
  - **Outcome:** layout and finalization of the magazine issue that will contain the article
- **Publication**

CITATION DATABASES

https://en.wikipedia.org/wiki/Scopus

(subscription)

Scopus

32 languages

Article Talk | Read Edit source View history

From Wikipedia, the free encyclopedia

For other uses, see Scopus (disambiguation).

Scopus is Elsevier's abstract and citation database launched in 2004.[1] Scopus covers 36,377 titles (22,794 active titles and 13,583 inactive titles) from 11,678 publishers, of which 34,346 are peer-reviewed journals in top-level subject fields: life sciences, social sciences, physical sciences and health sciences. It covers three types of sources: book series, journals, and trade journals. Scopus also allows patent searches in a dedicated patent database Lexis-Nexis, albeit with a limited functionality.[2]

All journals covered in the Scopus database are reviewed for sufficiently high quality each year according to four types of numerical quality measure for each title; those are *h*-Index, CiteScore, SJR (SCImago Journal Rank) and SNIP (source normalized impact per paper). For this reason, the journals listed in Scopus are considered to be meeting the requirement for peer review quality established by several research grant agencies for their grant recipients and by degree accreditation boards in numerous countries.[3]

Overview [edit source]

Comparing ease of use and coverage of Scopus and the Web of Science (WOS), a 2006 study concluded that "Scopus is easy to navigate, even for the novice user. ... The ability to search both forward and backward from a particular citation would be very helpful to the researcher. The multidisciplinary aspect allows the researcher to easily search outside of his discipline" and "One advantage of WOS over Scopus is the depth of coverage, with the full WOS database going back to 1945 and Scopus going back to 1966. However, Scopus and WOS complement each other as neither resource is all-inclusive."[4] A small number of studies found ca. 80-90% overlap in coverage between WoS and Scopus for the period between 1990 and 2020.

In terms of the structured query language search capabilities Scopus is somewhat more advanced than Web of Science: for example, WoS can perform only NEAR/n queries, Scopus can also do PRE/n queries.[5]

Also, when the same article is covered in Scopus and in the Web of Science (WoS), its Scopus entry has a 3-5 larger number of keywords than its WoS coverage, and the Scopus keywords are more focused on the specific article content, whereas WoS has more keywords related to the broad category of the article's subject. A larger number of narrow-targeted keywords allows Scopus users to find a larger number of relevant publications, while filtering out false positives. On the other hand, WoS exports (e.g. in the ris format) the doi numbers of cited articles, while Scopus exports the titles of cited articles. Also, Scopus allows exporting 20,000 references (e.g. as a ris file) at once, while WoS export is limited to 5,000 references at once. On the other hand, WoS exports the doi's of cited references, while Scopus exports the titles of cited references.

Scopus

Producer	Elsevier (Netherlands)
History	10 November 2004; 19 years ago
Languages	40 languages
Access	
Providers	Elsevier
Cost	Subscription
Coverage	
Disciplines	Life sciences; social sciences; physical sciences; health sciences
Record depth	41,462 indexed titles (2021)
Format coverage	csv, BibText, ASCII, RIS
Temporal coverage	1788–present
Geospatial coverage	Worldwide
No. of records	82.4 million
Update frequency	daily
Links	
Website	www.scopus.com
Title list(s)	www.scopus.com/sources

https://en.wikipedia.org/wiki/Web_of_Science

(paid access)

Web of Science

28 languages

Article Talk | Read Edit source View history

From Wikipedia, the free encyclopedia

The **Web of Science** (**WoS**; previously known as **Web of Knowledge**) is a paid-access platform that provides (typically via the internet) access to multiple databases that provide reference and citation data from academic journals, conference proceedings, and other documents in various academic disciplines. Until 1997, it was originally produced by the Institute for Scientific Information.[2] It is currently owned by Clarivate.[3]

History [edit source]

A citation index is built on the fact that citations in science serve as linkages between similar research items, and lead to matching or related scientific literature, such as journal articles, conference proceedings, abstracts, etc. In addition, literature that shows the greatest impact in a particular field, or more than one discipline, can be located through a citation index. For example, a paper's influence can be determined by linking to all the papers that have cited it. In this way, current trends, patterns, and emerging fields of research can be assessed. Eugene Garfield, the "father of citation indexing of academic literature",[4] who launched the Science Citation Index, which in turn led to the Web of Science,[5] wrote:

> Citations are the formal, explicit linkages between papers that have particular points in common. A citation index is built around these linkages. It lists publications that have been cited and identifies the sources of the citations. Anyone conducting a literature search can find from one to dozens of additional papers on a subject just by knowing one that has been cited. And every paper that is found provides a list of new citations with which to continue the search. The simplicity of citation indexing is one of its main strengths.[6]

Search answer [edit source]

Web of Science is described[*citation needed*] as a unifying research tool[*citation needed*] that enables the user to acquire, analyze, and disseminate database information in a timely manner. This is accomplished because of the creation of a common vocabulary, called ontology, for varied search terms and varied data. Moreover, search terms generate related information across categories.

Acceptable content for Web of Science is determined by an evaluation and selection process based on the following criteria: impact, influence, timeliness, peer review, and geographic representation.[7]

Web of Science

Producer	Clarivate
History	1997; 27 years ago
Coverage	
Disciplines	Science, social science, arts, humanities (supports 256 disciplines)
Record depth	Citation indexing, author, topic title, subject keywords, abstract, periodical title, author's address, publication year
Format coverage	Articles, reviews, editorials, chronologies, abstracts, proceedings (journals and book-based), technical papers
Temporal coverage	1900–present
No. of records	79 million (core collection)[1] 171 million (platform)[1]
Links	
Website	clarivate.com/webofsciencegroup/solutions/web-of-science mjl.clarivate.com/home

WEB OF SCIENCE

Logo in 2014

«While marketed as a global point of reference, Scopus and WoS have been characterised as "structurally biased against research produced in non-Western countries, non-English language research, and research from the arts, humanities, and social sciences".»

Indexing

SCIENCE CITATION INDEX EXPANDED

https://en.wikipedia.org/wiki/Science_Citation_Index_Expanded

Science Citation Index Expanded

20 languages

Article Talk | Read Edit source View history

From Wikipedia, the free encyclopedia

The **Science Citation Index Expanded** – previously titled **Science Citation Index** – is a citation index originally produced by the Institute for Scientific Information (ISI) and created by Eugene Garfield.

It was officially launched in 1964 and is now owned by Clarivate (previously the Intellectual Property and Science business of Thomson Reuters).[1][2][3][4][5]

The indexing database covers more than 9,200 notable and significant journals, across 178 disciplines, from 1900 to the present. These are alternatively described as the world's leading journals of science and technology, because of a rigorous selection process.[6][7][8]

Science Citation Index Expanded

Producer	Clarivate (Canada and Hong Kong)
History	1964–present
Coverage	
Disciplines	Science, medicine, and technology
Print edition	
ISSN	0036-827X
Links	
Website	mjl.clarivate.com/cgi-bin/jrnlst/jloptions.cgi?PC=K

Accessibility [edit source]

The index is available online within Web of Science,[9][10] as part of its Core Collection (there are also CD and printed editions, covering a smaller number of journals).[11] The database allows researchers to search through over 53 million records from thousands of academic journals that were published by publishers from around the world.

Specialty citation indexes [edit source]

Clarivate previously marketed several subsets of this database, termed "Specialty Citation Indexes",[12] such as the **Neuroscience Citation Index**[13] and the **Chemistry Citation Index**,[14] however these databases are no longer actively maintained.

The Chemistry Citation Index was first introduced by Eugene Garfield, a chemist by training. His original "search examples were based on [his] experience as a chemist".[15] In 1992, an electronic and print form of the index was derived from a core of 330 chemistry journals, within which all areas were covered. Additional information was provided from articles selected from 4,000 other journals. All chemistry subdisciplines were covered: organic, inorganic, analytical, physical chemistry, polymer, computational, organometallic, materials chemistry, and electrochemistry.[15] By 2002, the core journal coverage increased to 500 and related article coverage increased to 8,000 other journals.[16] One 1980 study reported the overall citation indexing benefits for chemistry, examining the use of citations as a tool for the study of the sociology of chemistry and illustrating the use of citation data to "observe" chemistry subfields over time.[17]

Indexing

Different indexing databases may use different criteria - it's puzzling to observe that, under the provisions of the editorial policies by the members of the Web of Science network, some publications got inexplicably indexed, when they fail to observe the declared criteria (see for example the SCOPUS journal selection criteria here: https://www.elsevier.com/solutions/scopus/how-scopus-works/content/content-policy-and-selection).

It seems obvious that some journals were added in a different time, when more relaxed criteria were in place, or simply that they were included among the indexed journals bypassing the official procedure).

Scientometrics

IMPACT FACTOR

https://www.editage.com/insights/the-impact-factor-and-other-measures-of-journal-prestige

The impact factor and other measures of journal prestige

Popular · This article is in Understanding the Impact Factor

Editage Insights
Nov 02, 2013

Reading time
8 mins

It is a well-known fact that academics worldwide face pressure to publish in prestigious English language journals. And the journal impact factor (IF) is the most widely recognized indicator of journal prestige and influence. Accordingly, many people choose which journals to publish in based largely on the IF.[1]

Use and misuse of IF

Use 1. **As an objective measure of journal prestige**: There are a vast number of journals to choose from, and the journals' IF provides an objective measure of the overall quality of work published in that journal. As a general rule, the higher the IF value of a journal, the more prestigious it is considered to be.

Use 2. **To select journals for libraries**: There are tens of thousands of journal publications in existence. The IF provides library administrators with a tool to decide which journals to retain in their collections and which new ones to acquire for their libraries.

Misuse

3. **Academic evaluation**: The IF is often used in the process of academic evaluations of researchers for tenure, grants, funding, etc. However, this use is incorrect because the IF is only meant to indicate the quality of an entire journal, not the quality of individual articles published in the journal.[3]

Scientometrics

JOURNAL RANKING

https://en.wikipedia.org/wiki/Journal_ranking

Consequently, several journal-level metrics have been proposed, most citation-based:

- **Impact factor** and **CiteScore** – reflecting the average number of citations to articles published in science and social science journals.
- **SCImago Journal Rank** – a measure of scientific influence of scholarly journals that accounts for both the number of citations received by a journal and the importance or prestige of the journals where such citations come from.
- ***h*-index** – usually used as a measure of scientific productivity and the scientific impact of an individual scientist, but can also be used to rank journals.
- **h5-index** – this metric, calculated and released by Google Scholar, is based on the h-index of all articles published in a given journal in the last five years.[3]
- **Expert survey** – a score reflecting the overall quality or contribution of a journal is based on the results of the survey of active field researchers, practitioners and students (i.e., actual journal contributors or readers), who rank each journal based on specific criteria.[4]
- **Top quartile citation count (TQCC)** – reflecting the number of citations accrued by the paper that resides at the top quartile (the 75th percentile) of a journal's articles when sorted by citation counts; for example, when a journal published 100 papers, the 25th most-cited paper's citation count is the TQCC.[5]
- **Publication power approach (PPA)** – the ranking position of each journal is based on the actual publishing behavior of leading tenured academics over an extended time period. As such, the journal's ranking position reflects the frequency at which these scholars published their articles in this journal.[6][7]
- **Altmetrics** – rate journals based on scholarly references added to academic social media sites.[8]
- **diamScore** – a measure of scientific influence of academic journals based on recursive citation weighting and the pairwise comparisons between journals.[9]
- **Source normalized impact per paper (SNIP)** – a factor released in 2012 by Elsevier based on Scopus to estimate impact.[10] The measure is calculated as SNIP=RIP/(R/M), where RIP=raw impact per paper, R = citation potential and M = median database citation potential.[11]
- **PageRank** – in 1976 a recursive impact factor that gives citations from journals with high impact greater weight than citations from low-impact journals was proposed.[12] Such a recursive impact factor resembles Google's PageRank algorithm, though the original paper uses a "trade balance" approach in which journals score highest when they are often cited but rarely cite other journals; several scholars have proposed related approaches.[13][14][15][16]
- **Eigenfactor** is another PageRank-type measure of journal influence,[17] with rankings freely available online.[18]

Scientometrics

«Altmetrics»

https://en.wikipedia.org/wiki/Altmetrics

Altmetrics

12 languages

Article Talk | Read Edit source View history

From Wikipedia, the free encyclopedia

This article is about alternative scholarly impact metrics. It is not to be confused with article-level metrics.

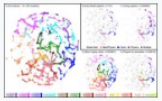
In scholarly and scientific publishing, **altmetrics** are non-traditional bibliometrics[2] proposed as an alternative[3] or complement[4] to more traditional citation impact metrics, such as impact factor and *h*-index.[5] The term altmetrics was proposed in 2010,[1] as a generalization of article level metrics,[6] and has its roots in the #altmetrics hashtag. Although altmetrics are often thought of as metrics about articles, they can be applied to people, journals, books, data sets, presentations, videos, source code repositories, web pages, etc.

Altmetrics use public APIs across platforms to gather data with open scripts and algorithms. Altmetrics did not originally cover citation counts,[7] but calculate scholar impact based on diverse online research output, such as social media, online news media, online reference managers and so on.[8][9] It demonstrates both the impact and the detailed composition of the impact.[1] Altmetrics could be applied to research filter,[1] promotion and tenure dossiers, grant applications[10][11] and for ranking newly-published articles in academic search engines.[12]

Overtime, the diversity of sources mentioning, citing, or archiving articles has gone down. This happened because services ceased to exist, like Connotea, or because changes in API availability. For example, PlumX removed Twitter metrics in August 2023.[13]

Part of a series on

Citation metrics



Altmetrics · Article-level · Author-level (Eigenfactor · G-index · H-index) · Bibliographic coupling · Citation (Analysis · Dynamics · Index · Graph) · Co-citation (Proximity Analysis) · Coercive citation · Citation cartel · I4OC · Journal-level (CiteScore · Impact factor · SCImago) · Kardashian Index

V · T · E

altmetrics

The original logotype from the Altmetrics Manifesto.[1]

Adoption [edit source]

The development of web 2.0 has changed the research publication seeking and sharing within or outside the academy, but also provides new innovative constructs to measure the broad scientific impact of scholar work. Although the traditional metrics are useful, they might be insufficient to measure immediate and uncited impacts, especially outside the peer-review realm.[1]

Projects such as ImpactStory,[14][15] and various companies, including Altmetric,[14][16] Plum Analytics[14][17][18][19] and Overton[20] are calculating altmetrics. Several publishers have started providing such information to readers, including BioMed Central, Public Library of Science (PLOS),[21][22] Frontiers,[23] Nature Publishing Group,[24] and Elsevier.[25][26] The NIHR Journals Library also includes altmetric data alongside its publications.[27]

The crisis of scientific publishing

Right of Access to Scientific Information: The Suicide of Aaron Swartz(«The Internet's Own Boy» https://www.youtube.com/watch?v=9vz06QO3UkQ)

Stop Online Piracy Act (**SOPA**)
https://en.wikipedia.org/wiki/Stop_Online_Piracy_Act

The crisis of scientific publishing

- Controversies on “peer review” in the light of Brembs, 2018

frontiers in Human Neuroscience

REVIEW
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Prestigious Science Journals Struggle to Reach Even Average Reliability

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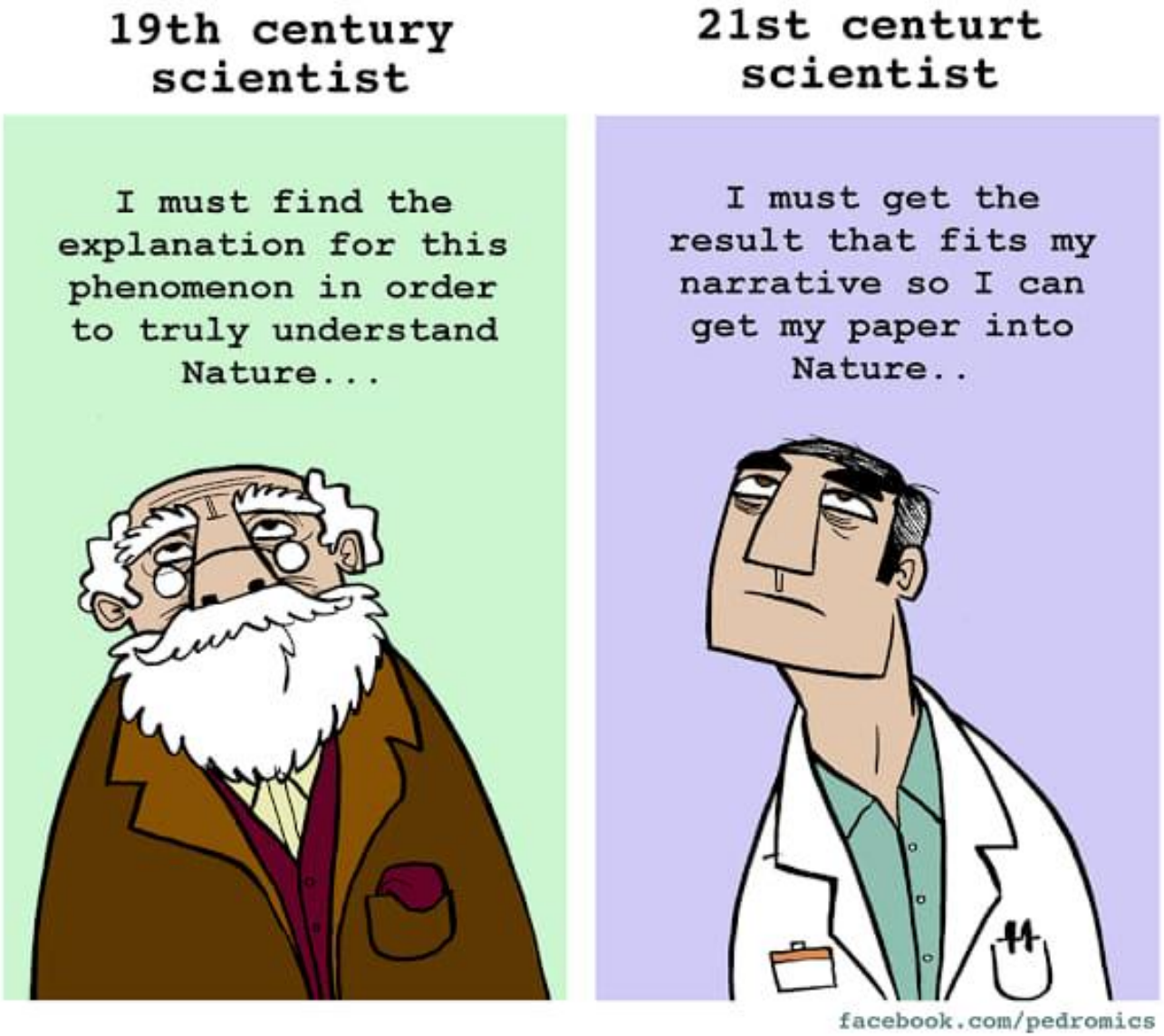
In which journal a scientist publishes is considered one of the most crucial factors determining their career. The underlying common assumption is that only the best scientists manage to publish in a highly selective tier of the most prestigious journals. However, data from several lines of evidence suggest that the methodological quality of scientific experiments does not increase with increasing rank of the journal. On the contrary, an accumulating body of evidence suggests the inverse: methodological quality and, consequently, reliability of published research works in several fields may be *decreasing* with increasing journal rank. The data supporting these conclusions circumvent confounding factors such as increased readership and scrutiny for these journals, focusing instead on quantifiable indicators of methodological soundness in the published literature, relying on, in part, semi-automated data extraction from often thousands of publications at a time. With the accumulating evidence over the last decade grew the realization that the very existence of scholarly journals, due to their inherent hierarchy, constitutes one of the major threats to publicly funded science: hiring, promoting and funding scientists who publish unreliable science eventually erodes public trust in science.

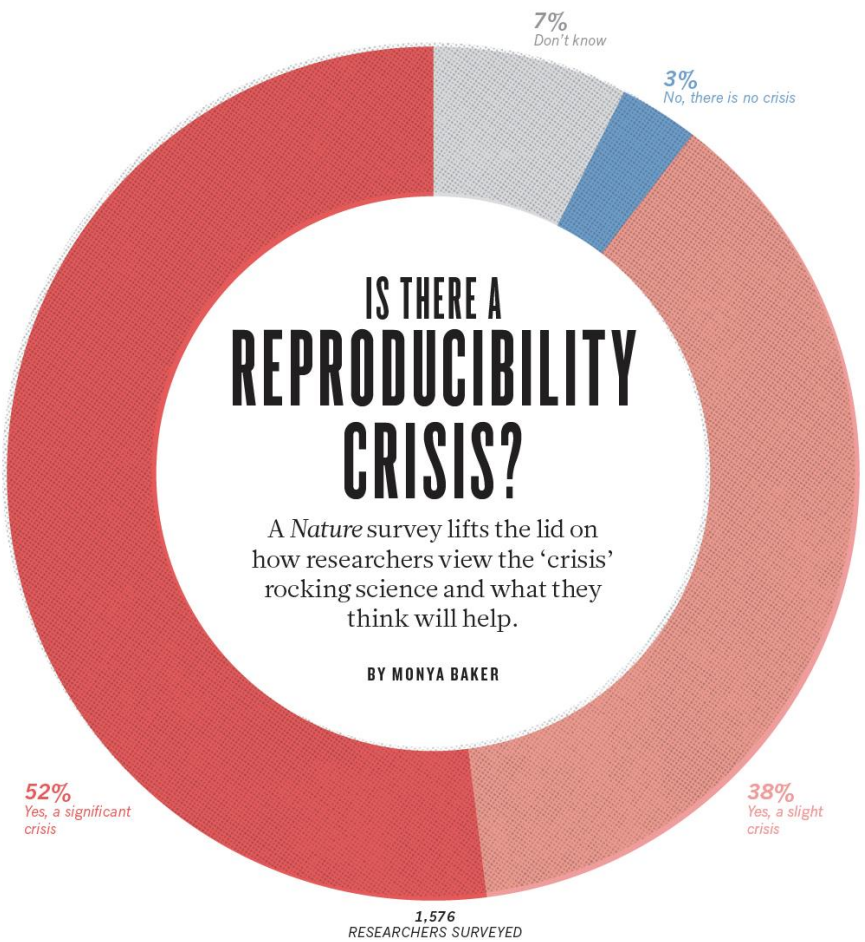
Keywords: journals, journal ranking, reliability, reproducibility of results, science policy

The crisis of scientific publishing



The crisis of scientific publishing

Monya Baker (25 May 2016). "1500 scientists lift the lid on reproducibility". Nature. 533: 452–454. ISSN 1476-4687.



More than 70% of researchers have tried and failed to reproduce another scientist's experiments, and more than half have failed to reproduce their own experiments. Those are some of the telling figures that emerged from *Nature*'s survey of 1,576 researchers who took a brief online questionnaire on reproducibility in research.

Failing to reproduce results is a rite of passage, says Marcus Munafo, a biological psychologist at the University of Bristol, UK, who has a long-standing interest in scientific reproducibility. When he was a student, he says, "I tried to replicate what looked simple from the literature, and wasn't able to. Then I had a crisis of confidence, and then I learned that my experience wasn't uncommon."

The crisis of scientific publishing

Translation of the Italian cartoon:

«*Scientific knowledge is also here, inside the Internet! But we can't see it because naked women prevent us from doing so.*»

The crisis of scientific publishing

QSS

an open access journal

Check for updates

Citation: Boothby, C., Murray, D., Waggy, A. P., Tsou, A., & Sugimoto, C. R. (2021). Credibility of scientific information on social media: Variation by platform, genre and presence of formal credibility cues. *Quantitative Science Studies*, *2*(3), 845–863. https://doi.org/10.1162/qss_a_00151

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The MIT Press

RESEARCH ARTICLE

Credibility of scientific information on social media: Variation by platform, genre and presence of formal credibility cues

Clara Boothby[1], Dakota Murray[1], Anna Polovick Waggy[1], Andrew Tsou[1], and Cassidy R. Sugimoto[1,2]

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[2]School of Public Policy, Georgia Institute of Technology, Atlanta, Georgia, United States of America

Keywords: credibility, platform, scholarly communication, science communication, social media, Twitter

ABSTRACT

Responding to calls to take a more active role in communicating their research findings, scientists are increasingly using open online platforms, such as Twitter, to engage in science communication or to publicize their work. Given the ease with which misinformation spreads on these platforms, it is important for scientists to present their findings in a manner that appears credible. To examine the extent to which the online presentation of science information relates to its perceived credibility, we designed and conducted two surveys on Amazon's Mechanical Turk. In the first survey, participants rated the credibility of science information on Twitter compared with the same information in other media, and in the second, participants rated the credibility of tweets with modified characteristics: presence of an image, text sentiment, and the number of likes/retweets. We find that similar information about scientific findings is perceived as less credible when presented on Twitter compared to other platforms, and that perceived credibility increases when presented with recognizable features of a scientific article. On a platform as widely distrusted as Twitter, use of these features may allow researchers who regularly use Twitter for research-related networking and communication to present their findings in the most credible formats.

1. INTRODUCTION

Scientific institutions and scientists themselves are increasingly making use of online communication platforms to disseminate scientific findings (Duggan, Ellison et al., 2015). Covering science in informal outlets, such as Twitter, alongside traditional science news and peer-reviewed journal articles has the potential to reach a cross-section of science enthusiasts (Büchi, 2016; Ranger & Bultitude, 2014). However, presented with this crowded online arena, readers will employ various heuristics, conscious and unconscious, to assess the credibility of information (Flanagin & Metzger, 2007). Here, we define *credibility* as a perceived feature of trustworthiness that readers apply to information they encounter (Schmierbach & Oeldorf-Hirsch, 2012). If writers and publishers of online science information want information they present to be seen as credible, they will need to be cognizant of the methods users employ to

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Journal of the American Society for Information Science and Technology

Volume 58, Issue 13
November 2007
Pages 2078-2091

Research Article

Making sense of credibility on the Web: Models for evaluating online information and recommendations for future research

Miriam J. Metzger

First published: 21 September 2007 | https://doi.org/10.1002/asi.20672 | Citations: 598

Read the full text ›

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Abstract

This article summarizes much of what is known from the communication and information literacy fields about the skills that Internet users need to assess the credibility of online information. The article reviews current recommendations for credibility assessment, empirical research on how users determine the credibility of Internet information, and describes several cognitive models of online information evaluation. Based on the literature review and critique of existing models of credibility assessment, recommendations for future online credibility education and practice are provided to assist users in locating reliable information online. The article concludes by offering ideas for research and theory development on this topic in an effort to advance knowledge in the area of credibility assessment of Internet-based information.

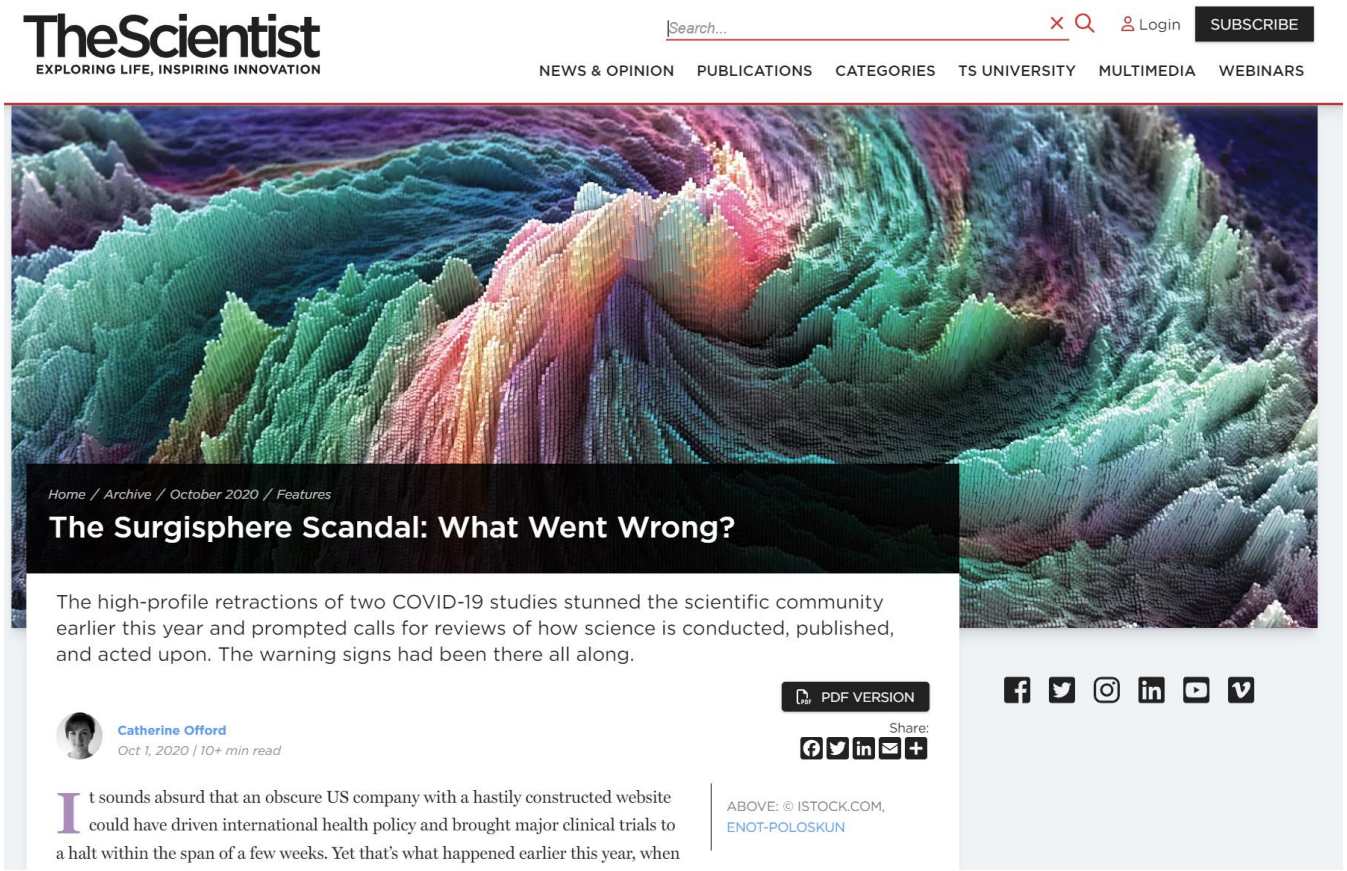
References Related Information

Recommended

Web credibility assessment: Conceptualization, operationalization, variability, and models
Wonchan Choi, Besiki Stvilia
Journal of the Association for Information Science and Technology

Older adults' credibility assessment of online health information: An exploratory study using an extended typology of web credibility
Wonchan Choi
Journal of the Association for Information Science and Technology

The crisis of scientific publishing



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An Age-Old Problem: "Psychospecies" and Zoologists' Aspiration to Immortality

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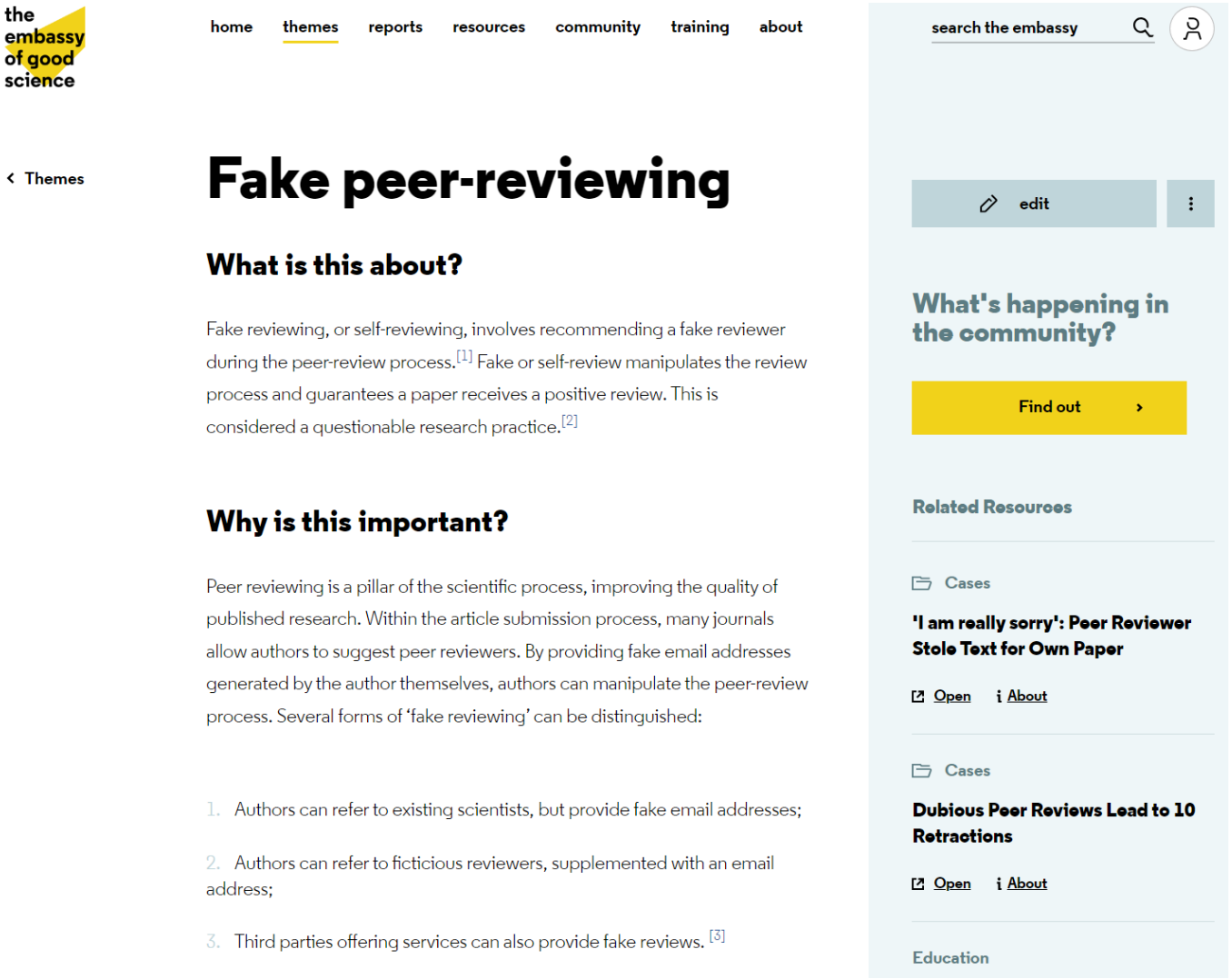
Bad Practices

1) The Self-Reviser (Fake Peer-Reviewing)



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Fake peer-reviewing

edit

What is this about?

Fake reviewing, or self-reviewing, involves recommending a fake reviewer during the peer-review process.[1] Fake or self-review manipulates the review process and guarantees a paper receives a positive review. This is considered a questionable research practice.[2]

Why is this important?

Peer reviewing is a pillar of the scientific process, improving the quality of published research. Within the article submission process, many journals allow authors to suggest peer reviewers. By providing fake email addresses generated by the author themselves, authors can manipulate the peer-review process. Several forms of 'fake reviewing' can be distinguished:

1. Authors can refer to existing scientists, but provide fake email addresses;
2. Authors can refer to ficticious reviewers, supplemented with an email address;
3. Third parties offering services can also provide fake reviews. [3]

What's happening in the community?

Find out ›

Related Resources

Cases

'I am really sorry': Peer Reviewer Stole Text for Own Paper

Open About

Cases

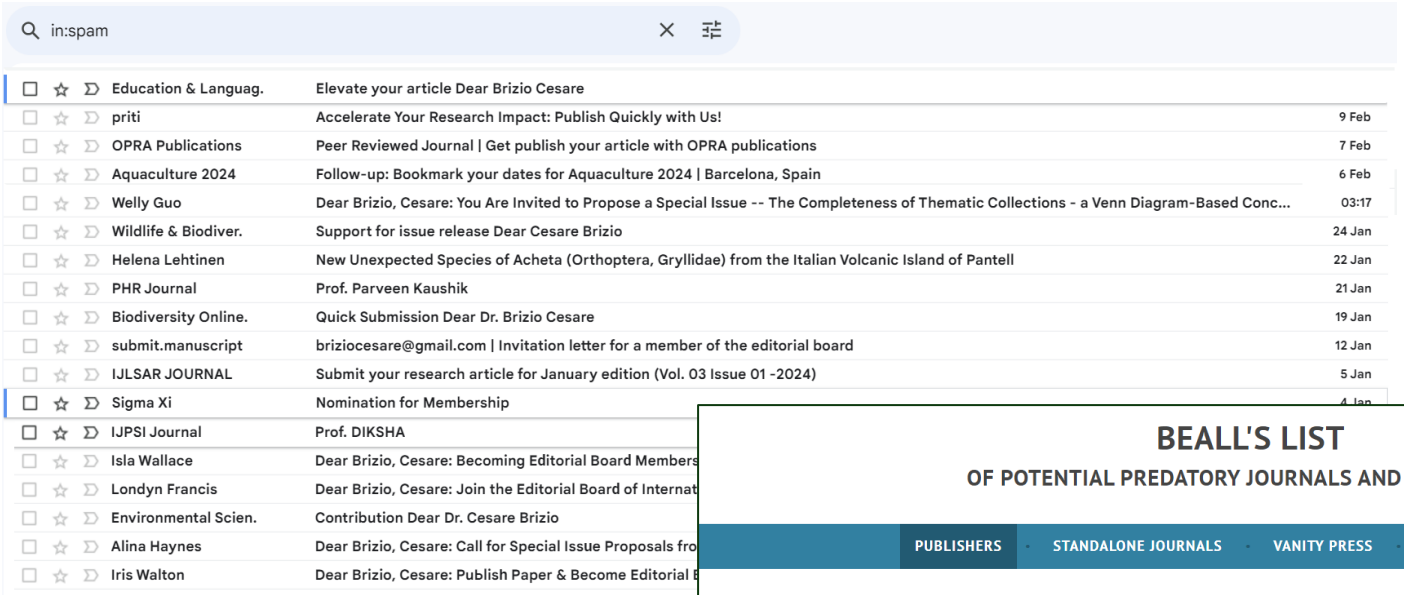
Dubious Peer Reviews Lead to 10 Retractions

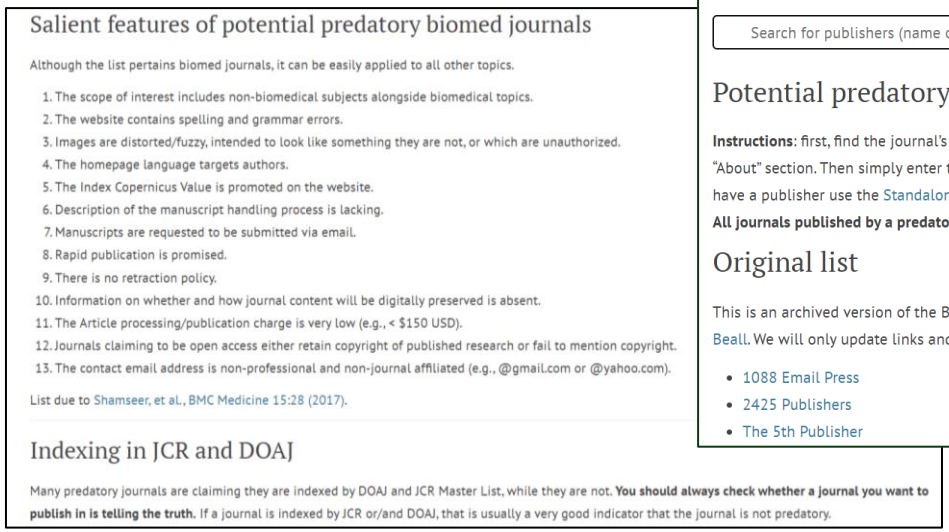
Open About

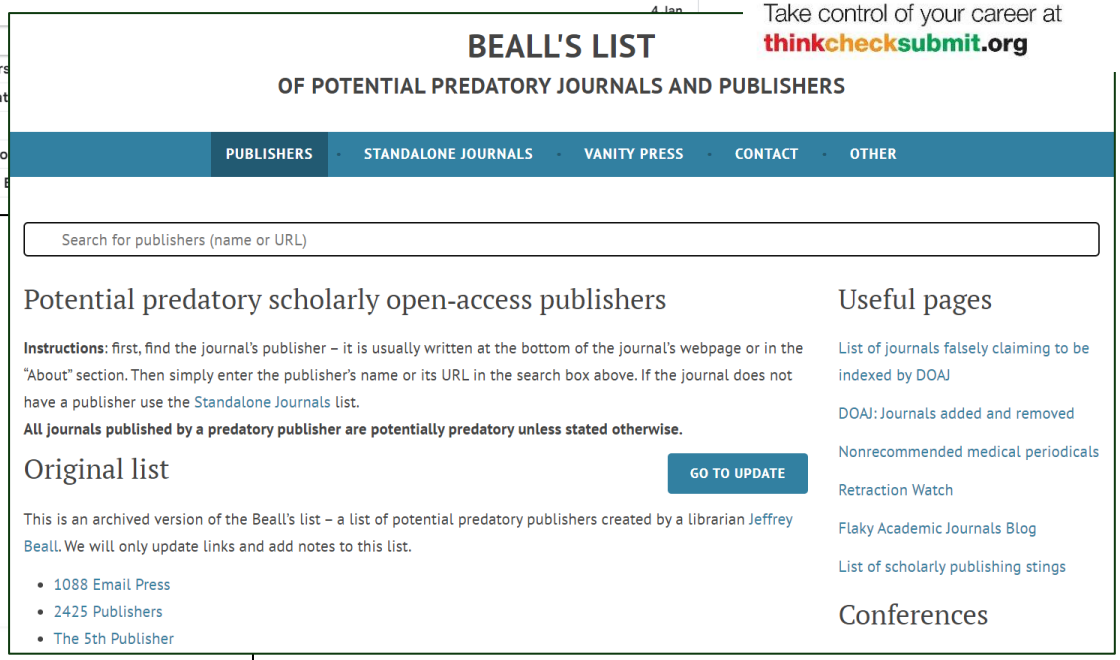
Education

Bad Practices

2) Predatory Journals / Conferences







https://en.wikipedia.org/wiki/Predatory_publishing

Bad Practices

3) Self-citation- When it's excessive…

PECKHAMIA 311.1, 29 December 2023, 1—34
LSID urn:lsid:zoobank.org:pub:438015EA-8FB9-4110-92DC-0646752AD074 (registered 28 DEC 2023)
ISSN 2161—8526 (print)
ISSN 1944—8120 (online)

Maratus yanchep, a new peacock spider from Western Australia (Araneae: Salticidae: Euophryini: Australphryni)

Jürgen C. Otto [1] and David E. Hill [2]

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Schubert 2020. Joseph Schubert. 27 MAR 2020. Seven new species of Australian peacock spiders (Araneae: Salticidae: Euophryini: *Maratus* Karsch, 1878). Zootaxa 4758 (1): 1-44.

NOT EXCESSIVE IN THIS CASE!

Dr. Otto discovered and described most of the *Maratus* species… And just a very few researchers followed later!

Bad Practices

4) Wicked pacts, “cartels”

PLOS ONE

RESEARCH ARTICLE

Authorship and citation manipulation in academic research

Eric A. Fong[1☯], Allen W. Wilhite[2☯*]

1 Department of Management, University of Alabama in Huntsville, Huntsville, Alabama, United States of America, 2 Department of Economics, University of Alabama in Huntsville, Huntsville, Alabama, United States of America

☯ These authors contributed equally to this work.
* wilhitea@uah.edu

OPEN ACCESS

Citation: Fong EA, Wilhite AW (2017) Authorship and citation manipulation in academic research. PLoS ONE 12(12): e0187394. https://doi.org/10.1371/journal.pone.0187394

Editor: Lutz Bornmann, Max Planck Society, GERMANY

Received: February 28, 2017

Accepted: September 20, 2017

Published: December 6, 2017

Abstract

Some scholars add authors to their research papers or grant proposals even when those individuals contribute nothing to the research effort. Some journal editors coerce authors to add citations that are not pertinent to their work and some authors pad their reference lists with superfluous citations. How prevalent are these types of manipulation, why do scholars stoop to such practices, and who among us is most susceptible to such ethical lapses? This study builds a framework around how intense competition for limited journal space and research funding can encourage manipulation and then uses that framework to develop hypotheses about who manipulates and why they do so. We test those hypotheses using data from over 12,000 responses to a series of surveys sent to more than 110,000 scholars from eighteen different disciplines spread across science, engineering, social science, business, and health care. We find widespread misattribution in publications and in research proposals with significant variation by academic rank, discipline, sex, publication history, co-authors, etc. Even though the majority of scholars disapprove of such tactics, many feel pressured to make such additions while others suggest that it is just the way the game is played. The findings suggest that certain changes in the review process might help to stem this ethical decline, but progress could be slow.

frontiers | Science news Research news Frontiers updates Open science

Citations cartels: an emerging problem in scientific publishing

Groups of authors citing each other is becoming an issue in scientific publishing. With a new approach, researchers discuss how to identify the problem

– by Claudio Bogazzi, PhD

In academia, the number of citations that an article receives is considered one of the most important measures of scientific impact and quality. The academic competitivity for grants and research positions places high value in such impact measures, in addition to the number of publications by any given researcher, resulting in the emerging phenomenon of citations cartels.

Bad Practices (???!!!)

Scientific Societies "by invitation" and open to anyone

SIGMA XI
The Scientific Research Honor Society

Dear Cesare Brizio,

In recognition of your scholarly achievements and contributions to the advancement of knowledge in your field, it is our pleasure to nominate you
for Membership in **Sigma Xi, The Scientific Research Honor Society.**

Accept

As the
world's largest interdisciplinary scientific honor society, Sigma Xi recognizes
researchers for the values we hold in high esteem, including more than 200 Nobel Laureates.
All joining together under a single Mission:

*"To enhance the health of the research enterprise, foster integrity in science and engineering, and promote the public's understanding of
science for the purpose of improving the human condition."*

Membership in Sigma Xi distinguishes
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to support your career.

Sigma Xi members enjoy
access to programs and initiatives
that recognize innovators, support interdisciplinary research, foster responsible
conduct of research, train researchers in science communication, cultivate the
next generation of researchers, and promote the public understanding of science.

For more information about
the Society's leadership, members, programs, awards, and publications, we invite
you to explore the 2022 Annual Report.

If you have any questions
about Sigma Xi, please feel free to contact us. We
look forward to welcoming you as a companion in zealous research!

First Nominator:

Jamie L. Vernon, PhD
Executive Director and CEO
Sigma Xi member since 2013
LinkedIn

Second Nominator:

Fenella Saunders
Editor in Chief, *American Scientist*
Director of Science Communications and Publications
Sigma Xi member since 2004
LinkedIn

Sigma Xi
The Scientific Research Honor Society
[illegible]

Article

The Role of Scientific Associations in Promoting Research Integrity and Deterring Research Misconduct

June 2003 · Science and Engineering Ethics 9(2):269-272
DOI: 10.1007/s11948-003-0013-1

Melissa S. Anderson · Joseph B. Shultz

Overview | Stats | Comments | Citations (6) | References (7) | ...

Abstract

The nature of scientific societies' relationships with their members limits their ability to promote research integrity. They must therefore leverage their strengths as professional organizations to integrate ethical considerations into their ongoing support of their academic disciplines. This paper suggests five strategies for doing so.

Membership is not a guarantee of competence...

> Sci Eng Ethics. 2003 Apr;9(2):141-58. doi: 10.1007/s11948-003-0002-4.

Scientific societies and research integrity: what are they doing and how well are they doing it?

Margot Iverson [1], Mark S Frankel, Sanyin Siang

Affiliations + expand
PMID: 12774647 DOI: 10.1007/s11948-003-0002-4

Abstract

Scientific societies can play an important role in promoting ethical research practices among their members, and over the past two decades several studies have addressed how societies perform this role. This survey continues this research by examining current efforts by scientific societies to promote research integrity among their members. The data indicate that although many of the societies are working to promote research integrity through ethics codes and activities, they lack rigorous assessment methods to determine the effectiveness of their efforts.

PubMed Disclaimer

Which journal to publish in?

The "house" magazine

These are journals whose publisher is the same institution in which the author is a staff, or association, member, or event participant:

- **Museum Annals**
- **Scientific Society Journals**
- **Conference Proceedings**

Normally, these are low-impact journals.

The entry thresholds are low and peer review is guaranteed by other members of the same organization or institution.

Depending on the field, manuscripts may be accepted on a wide range of topics (for example, in the Annals of a Natural History Museum), or on the theme of the organization / institution / conference.

They are a good ground for beginners.

Which journal to publish in?

Questions to ask yourself: the better is the enemy of the good…

Obviously, the most prestigious journals are inundated with manuscript proposals, and can afford to make a very strict selection.

Setting the goal of publishing in a specific journal, especially if it is prestigious, can delay publication by years.

- **If you write for pleasure, this is not a problem!**
- **If you write because (wickedly!) publishing is essential to maintain or improve your professional position, and if the most high-profile journals are not available to publish in a reasonable time, it certainly makes sense to turn to another possible journal.**

Obviously, for ethics and logic, each manuscript is submitted one at a time!!!

Which journal to publish in?

Questions to ask yourself: Presentability of the group of authors – order of authors

The probability that a journal will take your manuscript into consideration is modest if you are a beginner, but it is high for already established authors, even more so if they are internationally established, even more so if they have already published in that very journal.

Whatever the context, especially for a beginner, being associated as a co-author with an established author (who can reserve the right to choose the journal) is certainly better than risking publication as the sole author.

Only if your contribution to the manuscript is really preponderant, you can expect the most prestigious collaborator to renounce the role of first author: personally I have enjoyed many praiseworthy exceptions, but it is common practice for the "veteran" to ask for, and obtain, the role of first author regardless of the importance of the contribution provided.

In the list of authors, the most prestigious places are the first and the last.

Which journal to publish in?

Questions to ask yourself: objective impact of the research to be published

The choice of journal is also (or, for expert authors, above all) determined by the objective importance or novelty of what is reported in the manuscript.

Objectively relevant or innovative research can also make its way into important journals, regardless of the author's previous experience and reputation.

Since, typically, the relevance of publications increases with experience, it is absolutely legitimate for the first publications to occur in local or national journals (Museum Annals).

If you are uncertain about the relevance of your manuscripts, seek advice from a referent who knows you in an academic or external context, and share the draft of the manuscript with him, confidentially, considering the possibility of proposing to co-author it.

Which journal to publish in?

Questions to ask yourself: specialist magazine or generalist magazine?

The choice of journal obviously also depends on the topic covered, with generalist journals ready to act as a parachute.

Even for relatively limited sectors, there are several scientific journals: which of them to choose also depends on what is illustrated in the previous slides.

Competition could be high in both contexts, generalist and specialist: even if the communities of specialists are small, the number of specialist journals is smaller sector by sector.

Generalist journals, on the other hand, have a necessarily larger catchment area, and therefore authors, and may not be able to guarantee better availability or faster response times.

Many important journals, such as Nature, manage two separate journals in parallel:

«XXXXX Journal»: generalist, articles that may be of interest to any reader

«XXXXX Communications»: specialist articles of interest to a minority of readers

Which journal to publish in?

Timeliness: a "short communication" to mark the territory

Some journals accept particularly short manuscripts, in compliance with formats that can take on different names, such as "short communication" or "rapid communication", usually used to present discoveries that will be the subject of future articles.

There are also "letters", which however are not scientific articles, but letters regarding previously published articles.

"Short communications" have two advantages:

- their drafting is obviously quicker than that of a real article;
- Obviously, the editorial processes are also quicker.

Competition could be high in both generalist and specialist contexts: even if the communities of specialists are small, the number of specialist journals is smaller sector by sector.

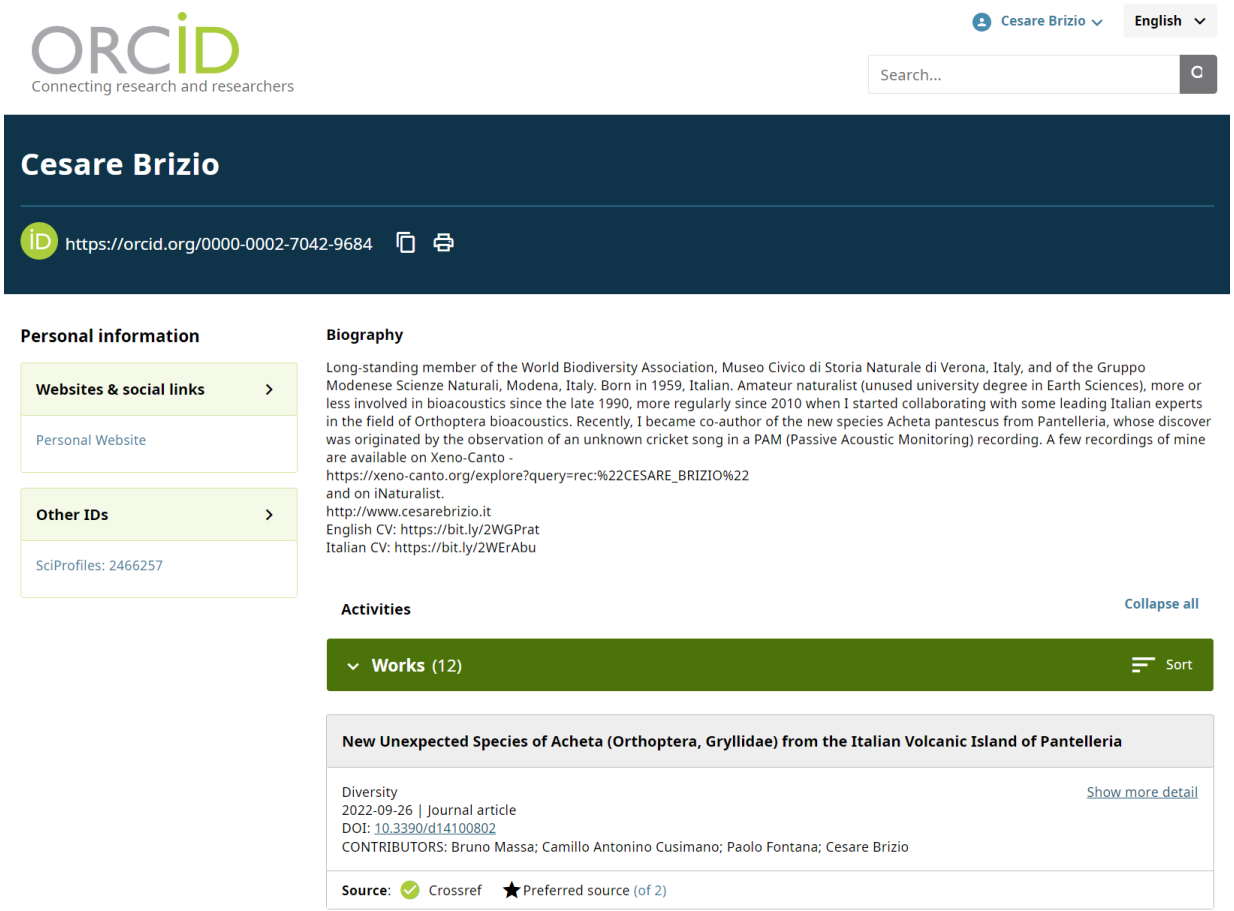
Generalist journals, on the other hand, have a necessarily larger catchment area, and therefore authors, and may not be able to guarantee better availability or faster response times.

Persistent Digital Identifiers

ORCID - https://orcid.org/

It is a free service (the cost is supported by the member organizations) that provides your personal, digital and persistent identifier (Open Researcher and Contributor ID).

By using it in your manuscripts, it will be included in the final publications and will allow anyone to access information about you and your publications.

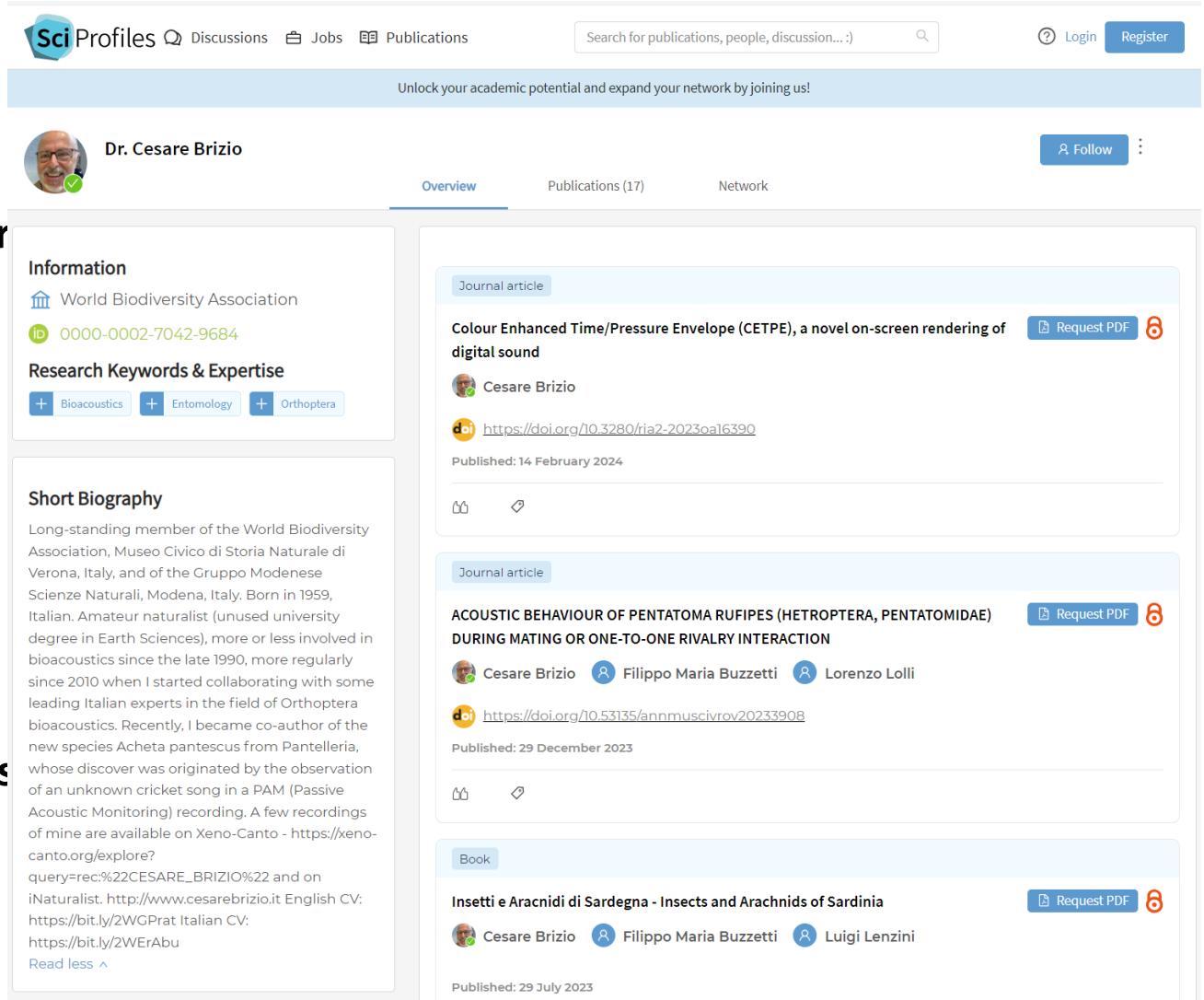


Persistent Digital Identifiers

SciProfiles - https://sciprofiles.com/

It is a free service associated with your ORCID (the related cost is supported by the member organizations) that provides your personal profile.

Once you have created and associated your personal profile to your ORCID, you can upload all your previous publications to your SciProfiles profile.



WHAT (WHY) TO PUBLISH

- **DESCRIBING UNPUBLISHED ENTITIES** (for example a new animal species) ➔ **EMPHASIS ON MORPHOLOGICAL DETAILS**
- **DESCRIBING UNPUBLISHED PHENOMENA** (for example a new chemical reaction) ➔ **EMPHASIS ON STATISTICS AND MATHEMATICS**
- **FORMULATING NEW THEORIES ➔ EMPHASIS ON STATISTICS AND MATHEMATICS + ACCURATE OVERVIEW OF PREVIOUS THEORIES**
- **PROPOSING NEW METHODS ➔ METHODOLOGICAL EMPHASIS (protocols, workflows…)**
- **«REVIEW ARTICLE» ➔ Careful examination of the literature**

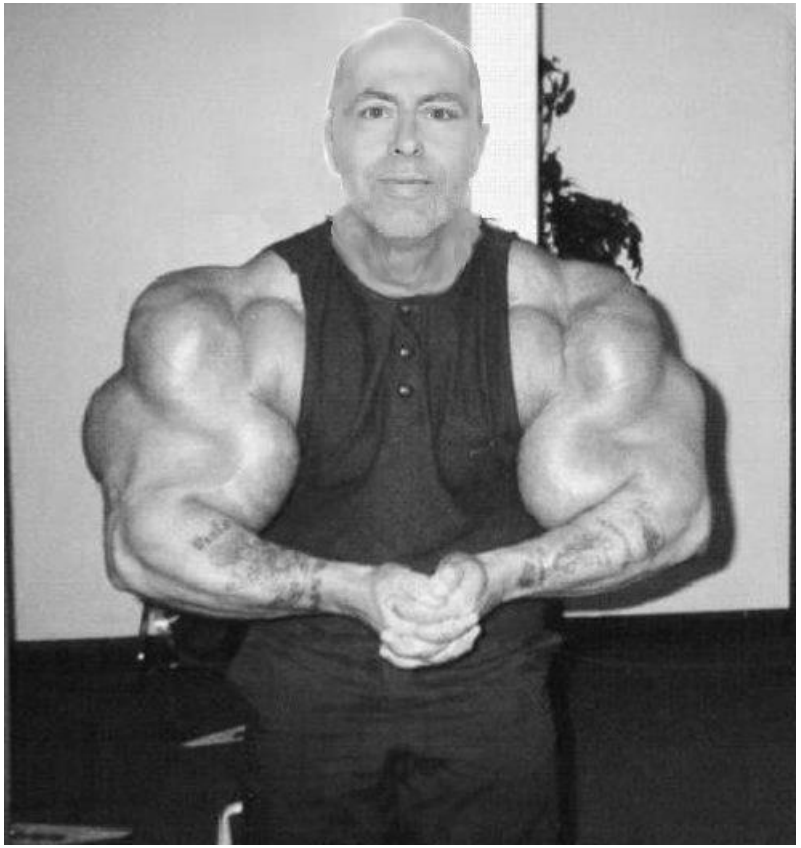
MINIMUM SKILLS FOR PUBLISHING

- LANGUAGE MASTERY
- TERMINOLOGY MASTERY
- KNOWLEDGE OF THE SCIENTIFIC LITERATURE OF THE SECTOR
- IT SKILLS
- SKILLS IN DISCIPLINE-SPECIFIC METHODS
- MASTERY OF STATISTICAL-MATHEMATICAL METHODS

IT SKILLS

- **CHILLING MISUNDERSTANDING : the computer that "proves I'm right"...**
- **Imprudent/casual use of genomics, proteomics and metabolomics**
- **SHIT IN, SHIT OUT**

Indicated by the arrow, here is an incontrovertible demonstration of my physical strength, obtained using computer methods.



THE FETISH-ELABORATIONS ("FASHIONABLE PLOTS")

- **THEY ARE NOT OBLIGATORY!!! "Fetish-elaborations" are things that are inserted into the article because, "usually", there are in articles "of this kind"...**
- **FASHIONABLE METHODS, FASHION OF METHODS**
- **DO NOT START AN ILLUSTRATION IF YOU ARE NOT SURE OF WHAT YOU ARE DOING!**

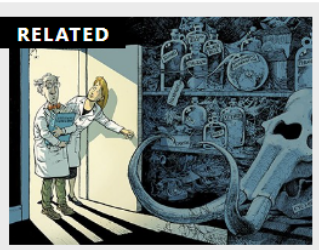
THE FETISH-ELABORATIONS ("FASHIONABLE PLOTS")

COMMENT | 20 March 2019

Scientists rise up against statistical significance

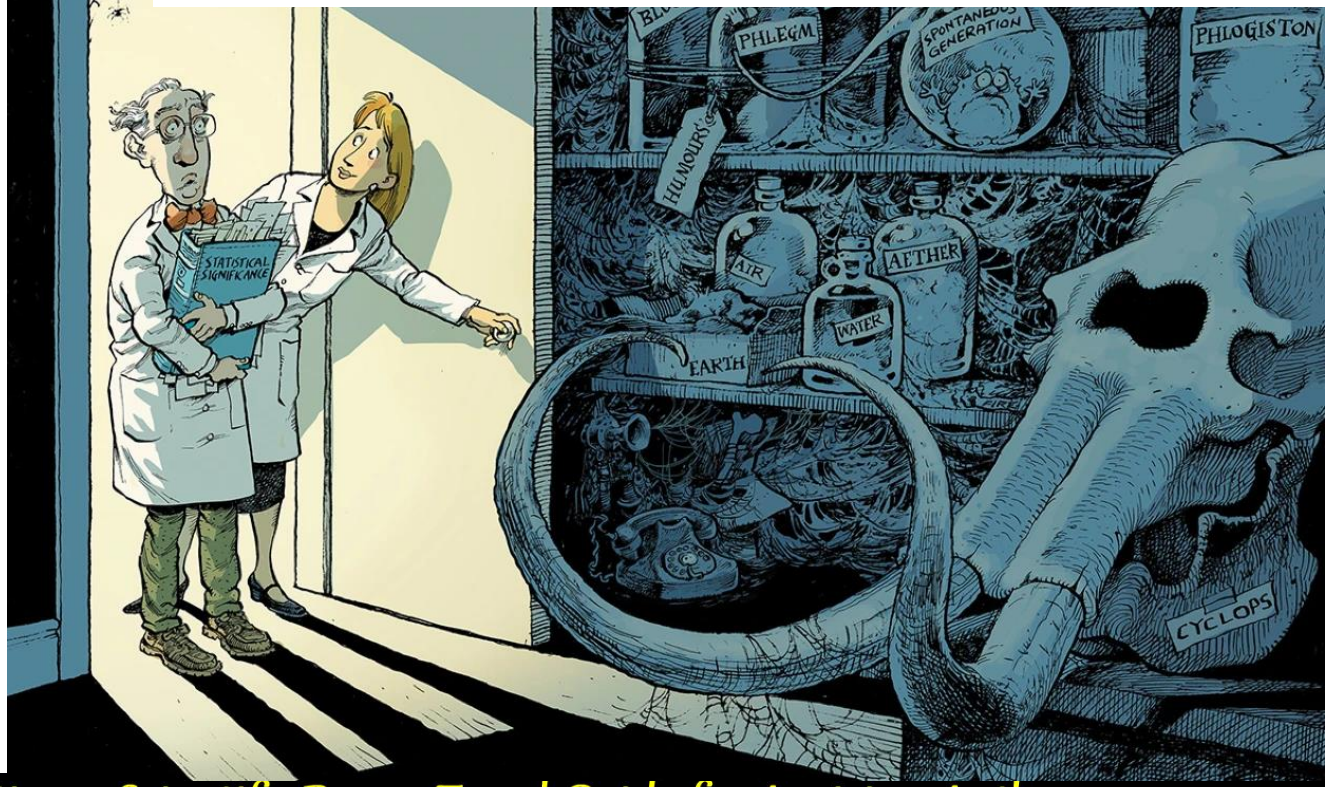
Valentin Amrhein, Sander Greenland, Blake McShane and more than 800 signatories call for an end to hyped claims and the dismissal of possibly crucial effects.

By Valentin Amrhein, Sander Greenland & Blake McShane

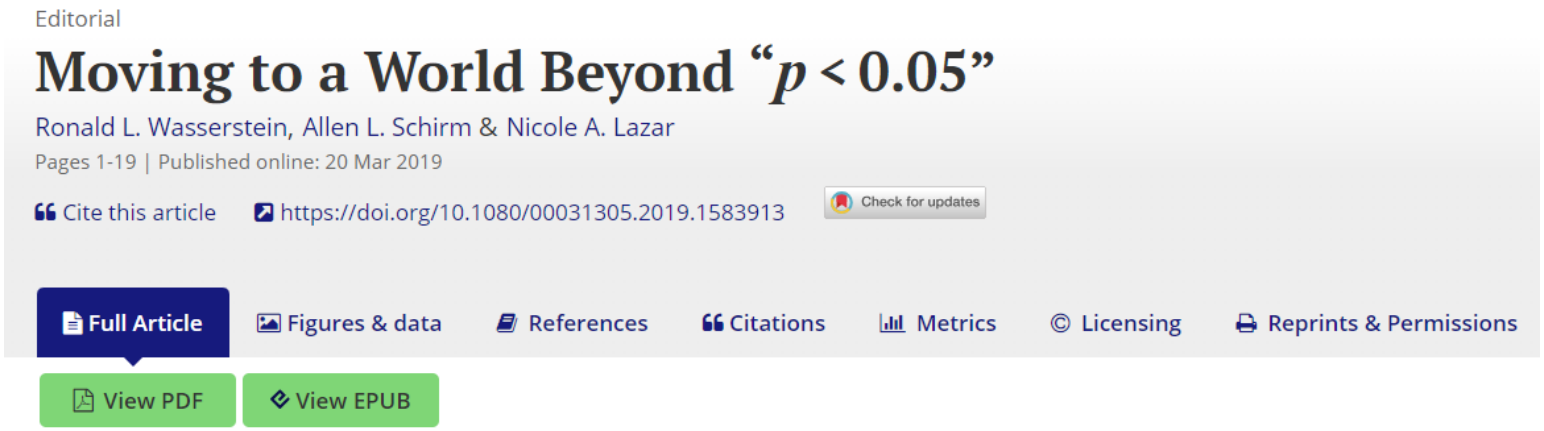


Scientists rise up against statistical significance

Change is in the air. In a Comment in this week's issue, three statisticians call for scientists to abandon statistical significance. The authors do not call for *P* values themselves to be ditched as a statistical tool – rather, they want an end to their use as an arbitrary threshold of significance. More than 800 researchers have added their names as signatories. A series of related articles is being published by the American Statistical Association this week (R. L. Wasserstein *et al. Am. Stat.* https://doi.org/10.1080/00031305.2019.1583913; 2019). "The tool has become the tyrant," laments one article.



THE FETISH-ELABORATIONS ("FASHIONABLE PLOTS")



Editorial

Moving to a World Beyond "$p < 0.05$"

Ronald L. Wasserstein, Allen L. Schirm & Nicole A. Lazar

Pages 1-19 | Published online: 20 Mar 2019

Cite this article https://doi.org/10.1080/00031305.2019.1583913 Check for updates

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EDITORIAL: *The editorial was written by the three editors acting as individuals and reflects their scientific views not an endorsed position of the American Statistical Association.*

Some of you exploring this special issue of *The American Statistician* might be wondering if it's a scolding from pedantic statisticians lecturing you about what *not* to do with *p*-values, without offering any real ideas of what *to do* about the very hard problem of separating signal from noise in data and making decisions under uncertainty. Fear not. In this issue, thanks to 43 innovative and thought-provoking papers from forward-looking statisticians, help is on the way.

THE FETISH-ELABORATIONS ("FASHIONABLE PLOTS")

DNA BARCODING – THE ORIGINAL SIN…

Hebert, P. D. N., Cywinska, A., Ball, S. L., de Waard, J. R. 2003. ***Biological identifications through DNA barcodes***. *Proc Biol Sci*, **270** (1512), 313–321.

COI - A 654 base-pair segment of mitochondrial DNA encoding the N-terminal half of cytochrome C oxidase subunit 1 has been proposed as a barcode to identify animal species

Since then, the method, potentially solving questions that would otherwise be difficult to resolve on a purely morphological basis, and due to the "taxonomic impediment" (shortage of specialists), has been both used and abused.

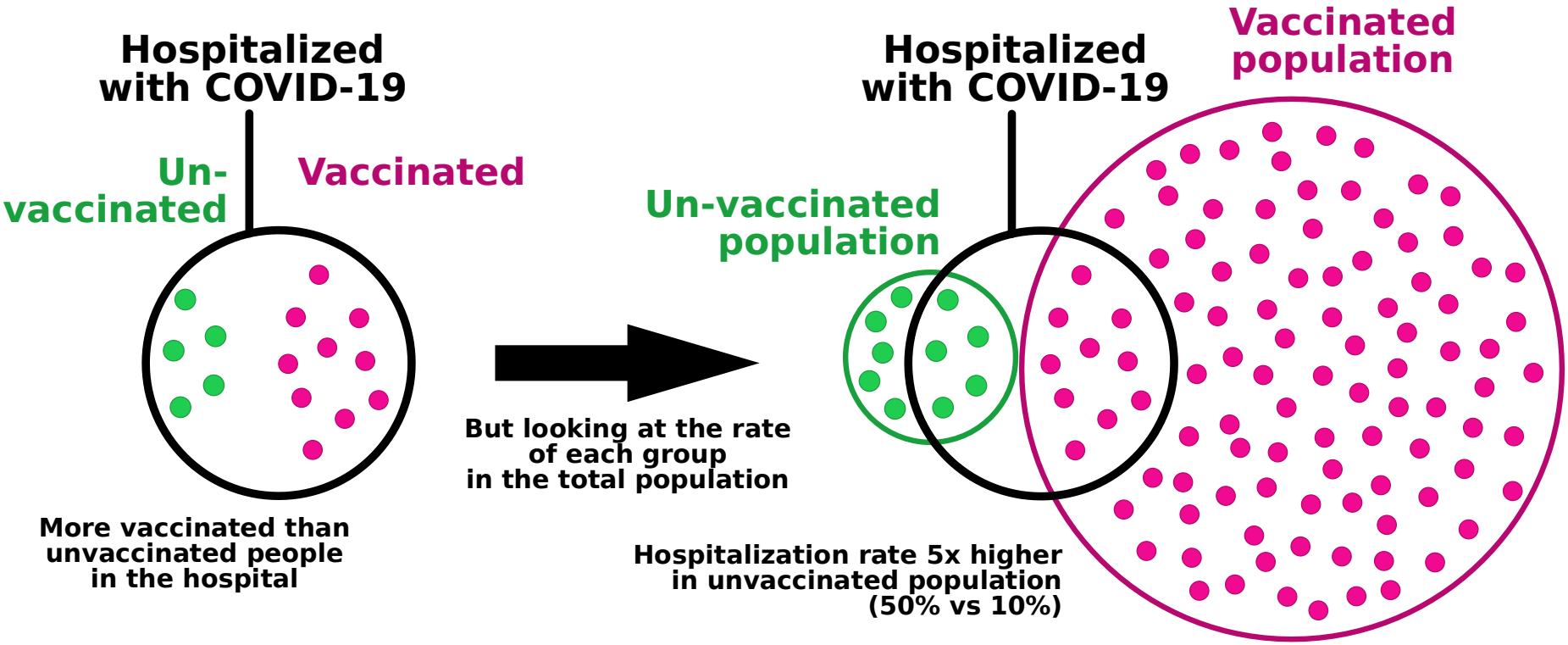
PRECEDENTS(1990's and early 2000's): *indiscriminate and uninformed use of discrete character matrices for the generation of cladograms.*

THE FETISH-ELABORATIONS ("FASHIONABLE PLOTS")

DNA BARCODING – A SLIPPERY GROUND…

Source	Observations
Caruso et al. (2024) *An integrative framework for dark taxa biodiversity assessment at scale: A case study using Megaselia (Diptera, Phoridae)* - Insect Conserv Divers. 1–20. DOI: https://doi.org/10.1111/icad.12762	*The use of integrative methodologies is the best approach to face up to the task of describing hyperdiverse and dark taxa, as morphology alone can be imprecise and slow, and molecular methods alone are often insufficient and lead to errors.*
Cheng Z et al. (2023) *The devil is in the details: Problems in DNA barcoding practices indicated by systematic evaluation of insect barcodes.* Front. Ecol. Evol. 11:1149839. doi: https://doi.org/10.3389/fevo.2023.1149839	*The results showed that errors in the barcode data are not rare, and most of them are due to human errors, such as specimen misidentification, sample confusion, and contamination. A significant portion of these errors can be attributed to inappropriate and imprecise practices in the DNA barcoding workflow.*
Collins & Cruickshank (2012) *The seven deadly sins of DNA barcoding - Molecular Ecology Resources* doi: https://doi.org/10.1111/1755-0998.12046	*This commentary provides an assessment of seven deficiencies that we identify as common in the DNA barcoding literature, and outline some potential improvements for its adaptation and adoption towards more reliable and accurate outcomes.*
Cong Q et al. (2017) *When COI barcodes deceive: complete genomes reveal introgression in hairstreaks.* Proc. R. Soc. B 284: 20161735. http://dx.doi.org/10.1098/rspb.2016.1735	*This study provides the first example of mitochondrial introgression in Lepidoptera supported by complete genome sequencing. Our results caution about relying solely on COI barcodes and mitochondrial DNA for species identification or discovery.*
Drohvalenko et al. (2019) *Application of DNA Barcoding in Taxonomy and Phylogeny: an Individual Case of COI Partial Gene Sequencing From Seven Animal Species* - Vestnik Zoologii, 53(5):375–384 - DOI https://doi.org/10.2478/vzoo-2019-0034	*There is a need for more local efforts in filling the global list of barcoded species.*
Meyer CP, Paulay G (2005) *DNA barcoding: Error rates based on comprehensive sampling.* PLoS Biol 3(12): e422.	*The use of thresholds does not bode well for delineating closely related species in taxonomically understudied groups. The promise of barcoding will be realized only if based on solid taxonomic foundations.*
Nymoen et al. (2024) *When standard DNA barcodes do not work for species identification: intermixed mitochondrial haplotypes in the Jaera albifrons complex (Crustacea: Isopoda)* - Marine Biodiversity 54:43 https://doi.org/10.1007/s12526-024-01435-7	*In operational terms, common protocols for metabarcoding will potentially underestimate sympatric species diversity with cases like the J. albifrons complex, if the members of this complex indeed represent different species.*
Packer et al. (2009) *DNA barcoding and the mediocrity of morphology* - Molecular Ecology Resources 9 (Suppl. 1), 42–50 doi: https://doi.org/10.1111/j.1755-0998.2009.02631.x	*'Keys are written by those who don't need them for those who can't use them.' (Packer 2008) But, 'Don't panic' (Adams 1979)*
Phillips et al (2022) *Lack of Statistical Rigor in DNA Barcoding Likely Invalidates the Presence of a True Species' Barcode Gap* - Front. Ecol. Evol. 10:859099. doi: https://doi.org/10.3389/fevo.2022.859099	*Arguments outlined herein specifically center on DNA barcoding in animal taxa and stem from three angles: (1) the improper allocation of specimen sampling effort <…>, (2) failing to properly visualize intra-specific and interspecific genetic distances, and (3) the inconsistent, inappropriate use, or absence of statistical inferential procedures in DNA barcoding gap analyses.*

Base Rate Fallacy



MASTERY OF STATISTICAL-MATHEMATICAL METHODS

Mason, M. 2010. **Sample Size and Saturation in PhD Studies Using Qualitative Interviews** . Forum Qualitative Sozialforschung / Forum: Qualitative Social Research, 11(3), Art. 8, http://nbn-resolving.de/urn:nbn:de:0114-fqs100387

Shetty, S. 2019. **Determining Sample Size For Qualitative Research: What Is The Magical Number?** - InterQ Research - recovered online, 15 June 2019 - https://interq-research.com/determining-sample-size-for-qualitative-research-what-is-the-magical-number/

Clarifications about *p*-values [edit source]

The following list clarifies some issues that are commonly misunderstood regarding *p*-values:[2][3][4]

1. **The *p*-value is *not* the probability that the null hypothesis is true, or the probability that the alternative hypothesis is false.**[2] A *p*-value can indicate the degree of compatibility between a dataset and a particular hypothetical explanation (such as a null hypothesis). Specifically, the *p*-value can be taken as the probability of obtaining an effect that is at least as extreme as the observed effect, given that the null hypothesis is true. This should not be confused with the probability that the null hypothesis is true given the observed effect (see prosecutor's fallacy). In fact, frequentist statistics does not attach probabilities to hypotheses.
2. **The *p*-value is *not* the probability that the observed effects were produced by random chance alone.**[2] The *p*-value is computed under the assumption that a certain model, usually the null hypothesis, is true. This means that the *p*-value is a statement about the relation of the data to that hypothesis.[2]
3. **The 0.05 significance level is merely a convention.**[3][5] The 0.05 significance level (alpha level) is often used as the boundary between a statistically significant and a statistically non-significant *p*-value. However, this does not imply that there is generally a scientific reason to consider results on opposite sides of any threshold as qualitatively different.[3][6]
4. **The *p*-value does not indicate the size or importance of the observed effect.**[2] A small *p*-value can be observed for an effect that is not meaningful or important. In fact, the larger the sample size, the smaller the minimum effect needed to produce a statistically significant *p*-value (see effect size).

Issues 1 and 2 can be illustrated by analogy to the Prosecutor's Fallacy in their shared underlying 2×2 contingency table format, where the user's convenient 90° rotation of attention replaces the intended sample space with an illicit sample space.[7]:18–19 These *p*-value misuses are thus analogous to probability's Fallacy of the Transformed Conditional and in turn to categorical logic's Fallacy of Illicit Conversion.[7]:12-13

Representing probabilities of hypotheses [edit source]

A frequentist approach rejects the validity of representing probabilities of hypotheses: hypotheses are true or false, not something that can be represented with a probability.[8]

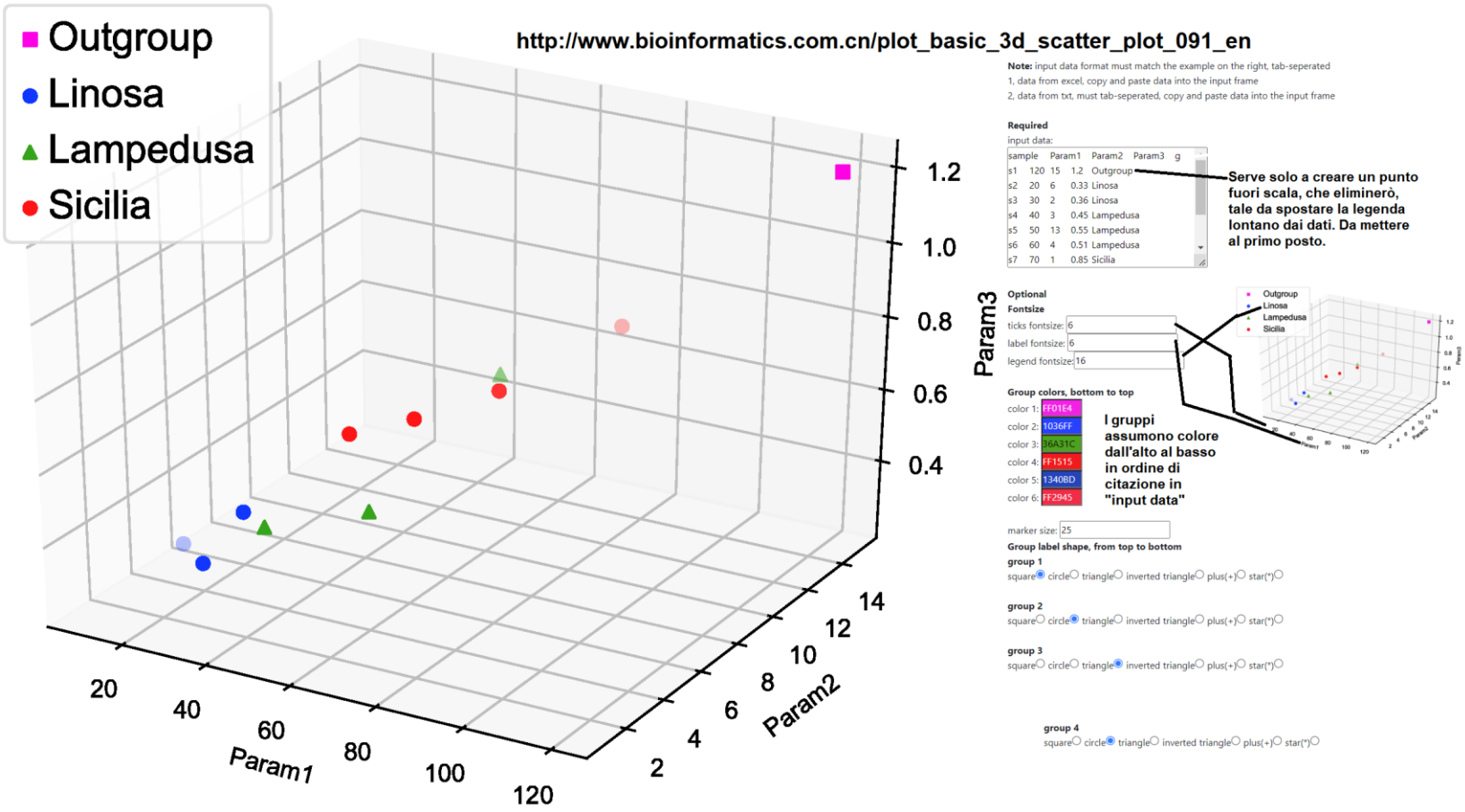
Bayesian statistics actively models the likelihood of hypotheses. The *p*-value does not in itself allow reasoning about the probabilities of hypotheses, which requires multiple hypotheses or a range of hypotheses, with a prior distribution of likelihoods between them, in which case Bayesian statistics could be used. There, one uses a likelihood function for all possible values of the prior instead of the *p*-value for a single null hypothesis. The *p*-value describes a property of data when compared to a specific null hypothesis; it is not a property of the hypothesis itself. For the same reason, *p*-values do not give the probability that the data were produced by random chance alone.[2]

MASTERY OF STATISTICAL-MATHEMATICAL METHODS

- **Cluster analysis** - https://en.wikipedia.org/wiki/Cluster_analysis
- **Consensus clustering** - https://en.wikipedia.org/wiki/Consensus_clustering
- **Curse of dimensionality** - https://en.wikipedia.org/wiki/Curse_of_dimensionality
- **Design of Experiments** - https://en.wikipedia.org/wiki/Design_of_experiments
- **Dimensionality reduction** - https://en.wikipedia.org/wiki/Dimensionality_reduction
- **Hierarchical Clustering** - https://en.wikipedia.org/wiki/Hierarchical_clustering
- **Misuse of p-values** - https://en.wikipedia.org/wiki/Misuse_of_p-values
- **Non-negative matrix factorization** - https://en.wikipedia.org/wiki/Non-negative_matrix_factorization
- **Normal distribution** - https://en.wikipedia.org/wiki/Normal_distribution
- **Null hypothesis** - https://en.wikipedia.org/wiki/Null_hypothesis
- **Principal Component Analysis** - https://en.wikipedia.org/wiki/Principal_component_analysis
- **Sample size determination** - https://en.wikipedia.org/wiki/Sample_size_determination
- **Statistical significance** - https://en.wikipedia.org/wiki/Statistical_significance
- **Standard score** - https://en.wikipedia.org/wiki/Standard_score
- **Z-test** - https://en.wikipedia.org/wiki/Z-test

SRPLOT – a free tool for three-dimensional scatter plots

https://www.bioinformatics.com.cn/plot_basic_3d_scatter_plot_091_en



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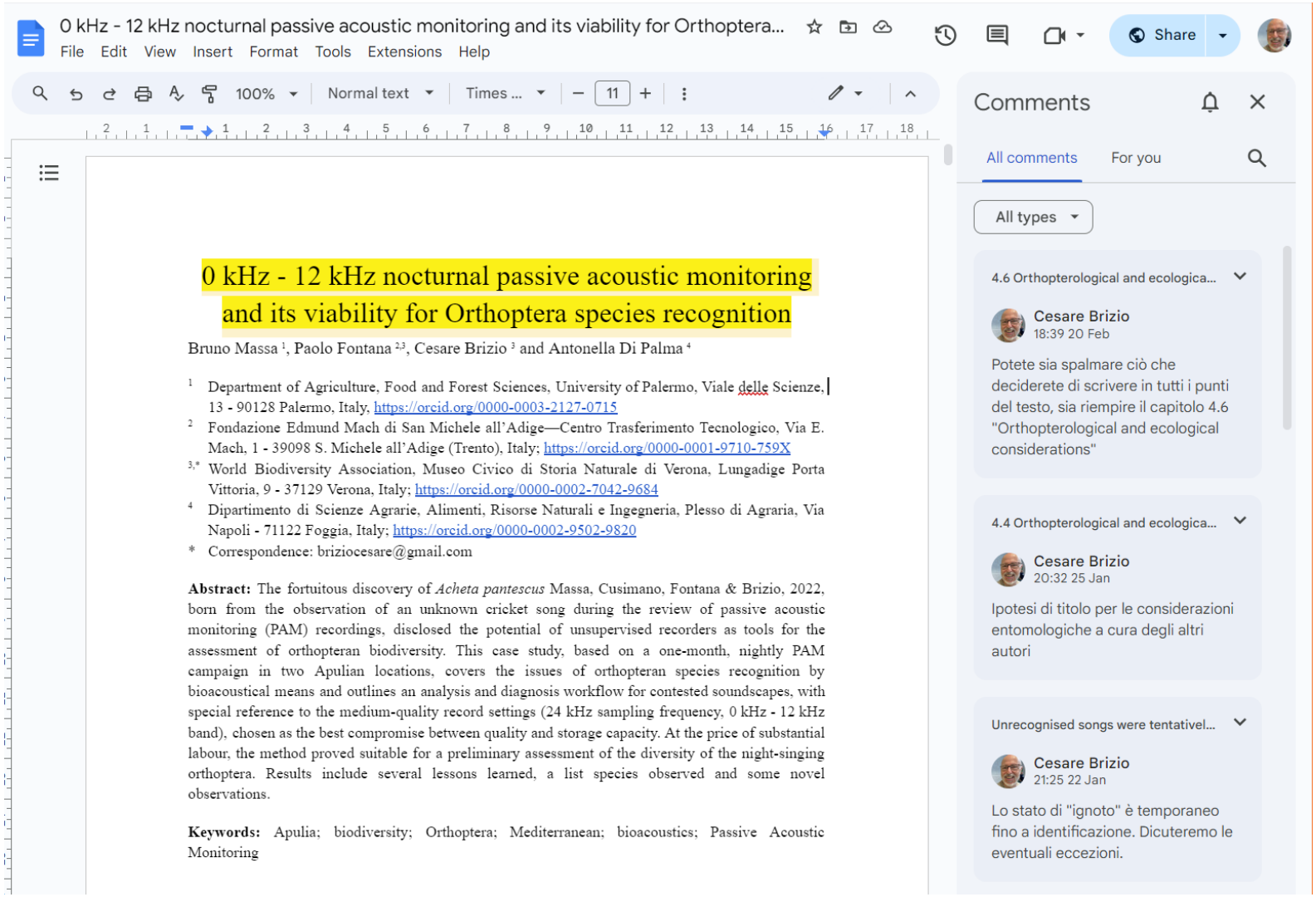

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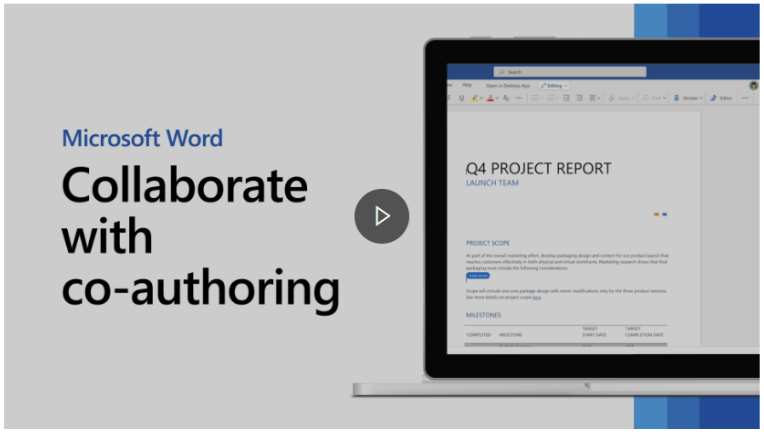

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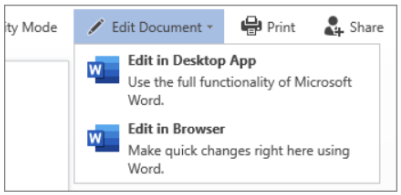

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Drafting the Manuscript

Structure: examples of format and meaning of the different sections of the manuscript

- **Title**
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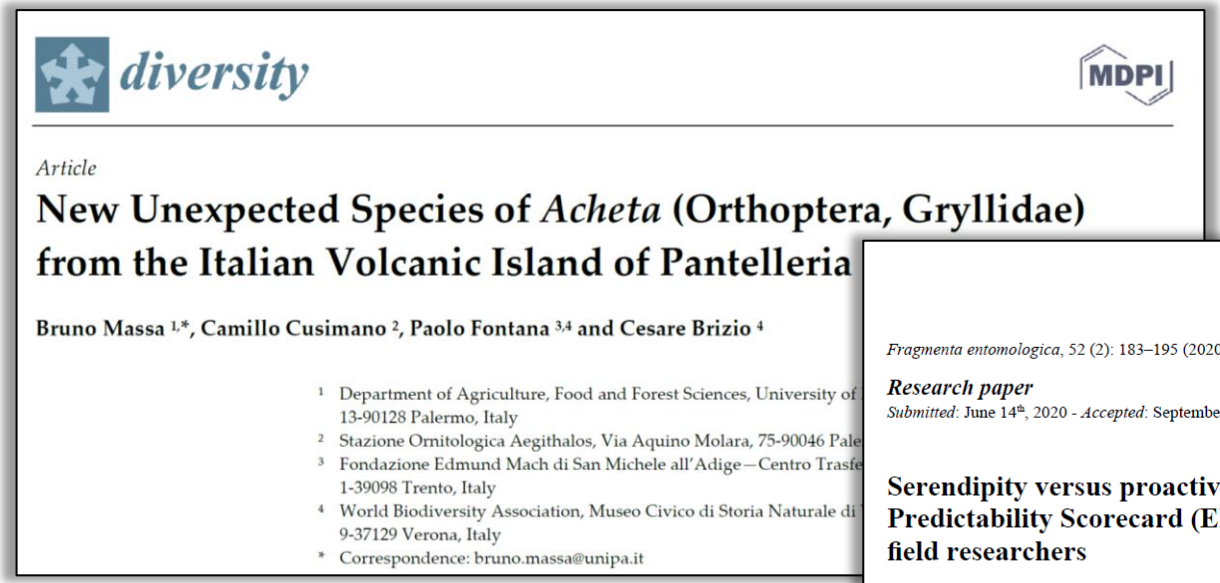

diversity

MDPI

Article

New Unexpected Species of *Acheta* (Orthoptera, Gryllidae) from the Italian Volcanic Island of Pantelleria

Bruno Massa [1,*], Camillo Cusimano [2], Paolo Fontana [3,4] and Cesare Brizio [4]

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13-90128 Palermo, Italy
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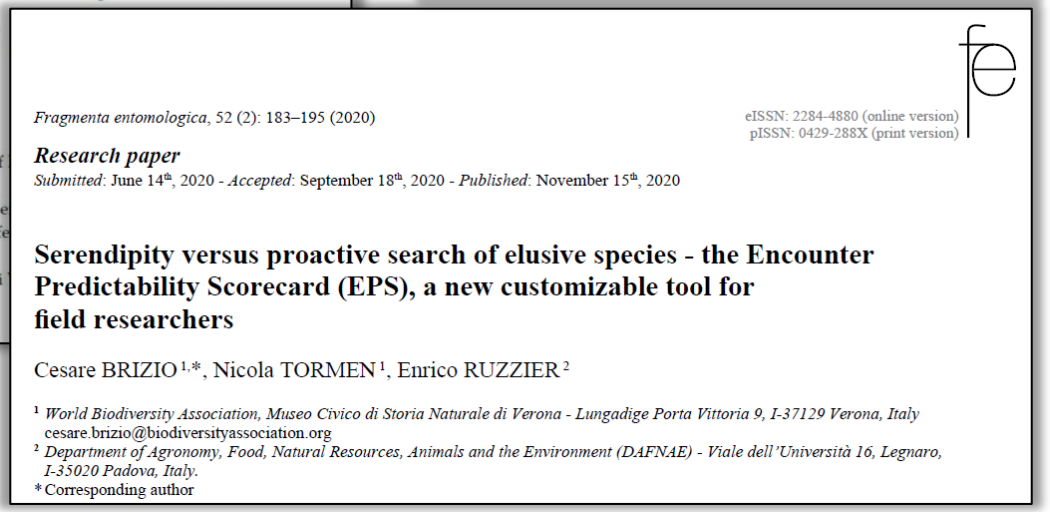

Fragmenta entomologica, 52 (2): 183–195 (2020)

eISSN: 2284-4880 (online version)
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Research paper

Submitted: June 14th, 2020 - *Accepted*: September 18th, 2020 - *Published*: November 15th, 2020

Serendipity versus proactive search of elusive species - the Encounter Predictability Scorecard (EPS), a new customizable tool for field researchers

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* Corresponding author

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Abstract + Keywords

Typically, it's limited in maximum no. of characters. It does not include citations.

WHAT DOES THE READER DO WITH IT??????????
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Citation: Massa, B.; Cusimano, C.; Fontana, P.; Brizio, C. New Unexpected Species of *Acheta* (Orthoptera, Gryllidae) from the Italian Volcanic Island of Pantelleria. *Diversity* **2022**, *14*, 802. https://doi.org/10.3390/d14100802

Abstract: In late April 2022, while listening to audio files from an unsupervised bioacoustic assessment of the shearwater populations (Aves, Procellariiformes) on the coast of Pantelleria island (Sicily, Italy), a cricket song of unknown attribution was heard. The first bioacoustic analyses, including FFT-based spectrograms and sound pressure envelopes, confirmed that it could not be attributed to the known sound of any Italian nor Mediterranean species of cricket. In the ensuing weeks, field research at the original station and further localities on the southern coast of Pantelleria provided photographs, living specimens, and further audio records. As soon as the photos were shared among the authors, it became clear the species belonged to the genus *Acheta*. Further bioacoustic analyses and morphological comparison with type specimens of Mediterranean and North-African congenerics in relevant collections and the scientific literature were conducted: they confirmed that the findings could only be attributed to a still undescribed species that escaped detection due to its impervious and unfrequented habitat. *Acheta pantescus* n. sp. is apparently restricted to the effusive coastal cliffs of the island of Pantelleria, a habitat whose scant extension and vulnerability require environmental protection actions such as the inclusion in a special Red List by the IUCN Italian Committee.

Keywords: new species; biogeography; Me

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Abstract
Since field research requires a lot of effort, time, economic and resource investment, it necessitates fact-based tools for a sound preliminary evaluation of the actual possibility to achieve its objective. Such a tool, the Encounter Predictability Scorecard (EPS), is here described for the first time. The rediscovery of the endemic Orthopteran *Uromenus annae* proved that field research is performed under strong biases including blind faith in previous scientific literature, and expectations about the biology and ecology of the target species. *U. annae* escaped field researches in the documented localities, and was rediscovered serendipitously in two new unrelated locations. This casts doubt on the capacity of field researchers to assess, even in general terms, the possibility of success of field expeditions. We conceived a method inspired by the performance management tools from the world of corporate strategy: scorecards. The most famous among closed-choice, qualitative-quantitative checklists, is the Balanced Scorecard, based on original work from the late 1980's. We adapted those methods to the constraints of field research, and field-tested in a retrospective way for the search of *U. annae*. The EPS is freely available as a digital spreadsheet, and can be tested and customised at any time. Although in its infancy, the EPS looks like a promising operational tool to help saving time and money, and to identify which objectives and organizational setups are more promising. Besides providing a clearer, more rational basis for operational decisions, the straightforward compilation of an EPS may also mitigate the impact of cognitive biases.

Key words: cognitive bias, cost-effectiveness, expedition, field research, assessment, elusive species.

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Introduction

- Definitions
- Framing the topic

1 | Introduction

The process of analog/digital conversion inherent in digital audio recording has a discrete nature: the continuum of an analogic signal is fractioned in as many discrete units, as the sampling rate allows following the Whittaker–Nyquist–Shannon cardinal theorem of interpolation (Nyquist [1], Shannon [2]). In the recording phase, each sample is separately assigned its specific value, directly proportional to the sound pressure collected by the microphone/recorder equipment during the sampling tempuscule and depending on the available bit depth (Boulanger & Lazzarini [3]).

Besides the instantaneous sound pressure at any time, frequency is the most relevant physical quantity for a qualitative description of acoustic phenomena. While sound pressure can be easily and immediately translated in a digital quantity by simple analog-to-digital converter (ADC) devices, computation is needed to discover which specific frequencies concur to the formation of sound: particularly in the field of bioacoustics, absolute frequency values and patterns of frequency emission are often the main, or the only, subject of study.

Dealing with frequencies, the most extensively adopted algorithm in user-application sound processing is without doubt the direct Fast Fourier Transform (FFT) – an algorithm

1. Introduction

On the night of 27 April 2022, during a survey aimed at the assessment of the presence of the pelagic birds Scopoli's shearwater *Calonectris diomedea* (Scopoli, 1769) and Yelkouan shearwater *Puffinus yelkouan* Acerbi, 1827 (Aves, Procellariiformes) on the island of Pantelleria (Sicily, Italy), BM and CC placed a Wildlife Acoustics sound recorder, set in unsupervised mode from sunset to dawn, near the cliffs of Punta Limarsi on the south-eastern coast of the island. After retrieving the recorder, they examined the content of the SD card. They noticed an Orthopteran song with Gryllinae affinities that, to the unaided ear, seemed not to match any species reported from Pantelleria or other Italian areas.

The recording was shared the same day with the other authors. Between 27 April and mid-May, with only acoustic evidence available, pursuant to the principle of parsimony, the authors engaged in a series of attempts to attribute the recorded song to a known species of cricket. With many decades of field experience in Orthopteran research, to ascertain the lack of comparable audio samples of Italian cricket songs, BM and PF could both rely on their first-hand knowledge and the systematical comparative hearing of the

Introduction

Fortuitous findings may be particularly rewarding, and have always played a role in science: yet, no serious researcher would rely on serendipity alone.

Naturalistic research is a time-consuming activity, requiring relevant economic support and often an important involvement of human resources (Fontaine et al. 2007, 2012; Schvartzman & Schvartzman 2008; Britz et al. 2020). Although many of the factors affecting cost-effectiveness are well-known, scientific methodology is seemingly lacking general-purpose, quick and easy methods for the preliminary assessment of the possible success of field searches for living specimens.

To improve the quality of predictions about future events, we should understand the psychological mechanism by which expectations are built. Among those who delved into the subject, the work by Kahneman (2000) provides many useful insights, including the following: «*When an evaluative summary of a temporally extended outcome is required, a representative moment that stands for the entire outcome is selected or constructed; the temporally extended outcome is then assigned the value of its representative moment*».

With oversimplification as a built-in feature of our brain, inaccurate predictions are unsurprising. We need methods capable of ensuring a systematic, consistent and complete planning phase: by collecting, storing and pondering as much information as possible about the factors influencing our target-event, we'll improve the reliability of our predictions.

The quest for an elusive Sardinian endemic orthopteran, *Uromenus annae* (Targioni-Tozzetti, 1881), whose last captures dated back to the 1960's, confirmed that a combination of blind faith in scientific literature and undetected cognitive biases - including those of the first discoverer - may generate misleading expectations. In the last 20 years, several academic and amateur naturalists, including author Cesare Brizio, were involved in the search for living specimens of *U. annae*. Analogously to what recently reported by Liu et al. (2019) in the emblematic case of the rediscovery of the pollen-beetle *Brassicogethes sal-*

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Materials & Methods

- Tools and methods you used + how you used them
- Why these methods and not others: which other methods (citations) and, if you adopt your own methods, your previous experiences in the research sector the article deals with, but only if it is functionally necessary for the topic you are dealing with. Declarations of non-essential expertise make a bad impression.

2. Materials and Methods

2.1. Discovery of the Cricket

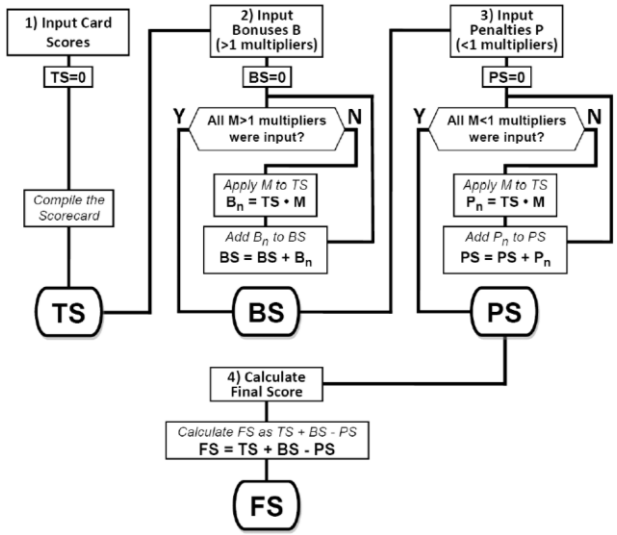
As reported in the Introduction, this new species of *Acheta* was discovered by chance while listening to the recording obtained from a Wildlife Acoustics sound recorder placed on the night of 27 April 2022 near the lighthouse of Punta Limarsi of Pantelleria (See Table 1 for a list of relevant locations).

Table 1. List of localities cited in the text, with dates and kind of evidence collected.

Map Ref. No.	Location	Dates of Visit	Audio Recording	Specimen Collected
1	Cimitero Scauri	5–6 July 2022	☑	☐
2	Salto la Vecchia	5–6 July 2022	☑	☐
3	Balata dei Turchi	27 April 2022–14–15 May 2022	☑	☐
4	Punta Limarsi lighthouse	27 April 2022–14–15 May 2022–5–6 July 2022	☑	☑
5	Punta Limarsi	27 April 2022–14–15 May 2022–5–6 July 2022	☑	☐
6	Cala Rotonda—Martingana	14–15 May 2022	☑	☑
7	Punta del Formaggio	5–6 July 2022	☑	☐

Later, during the nights of 14–15 May, it was possible to discover a second site, in the locality Martingana, where many cricket individuals were singing. On the same days, one male and one female adult were collected at the Punta Limarsi lighthouse and Martingana, respectively. Finally, during the night of 5–6 July 2022, Wildlife Acoustics sound recorders allowed to discover the presence of the same cricket in the localities Cimitero di

Fig. 2 – Confidence Threshold Space. Acronyms: TS, Total Score (sum of the indicator scores); MRS, Maximum Reference Score (total score when every indicator gets the maximum score); FS, Final Score (after the application of multipliers).



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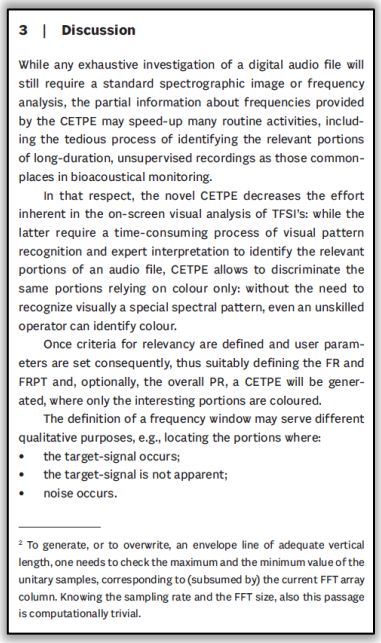
Discussion

It can appear before or after Results, or even together!

- Here may end up parts that are better moved to Introduction or Materials & Methods
- In practice, what did you do with the materials and methods you described? Why did you do one thing and not another? Is what you did in continuity or contradiction with previous scientific literature? What are the reasons for your position? How did you obtain your discovery?



3 | Discussion

While any exhaustive investigation of a digital audio file will still require a standard spectrographic image or frequency analysis, the partial information about frequencies provided by the CETPE may speed-up many routine activities, including the tedious process of identifying the relevant portions of long-duration, unsupervised recordings as those commonplaces in bioacoustical monitoring.

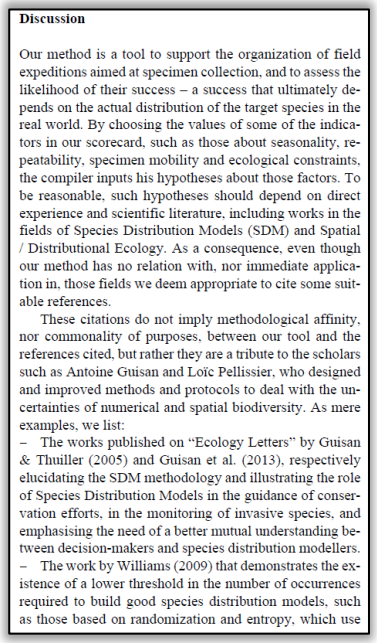
In that respect, the novel CETPE decreases the effort inherent in the on-screen visual analysis of TFSI's: while the latter require a time-consuming process of visual pattern recognition and expert interpretation to identify the relevant portions of an audio file, CETPE allows to discriminate the same portions relying on colour only: without the need to recognize visually a special spectral pattern, even an unskilled operator can identify colour.

Once criteria for relevancy are defined and user parameters are set consequently, thus suitably defining the FR and FRPT and, optionally, the overall PR, a CETPE will be generated, where only the interesting portions are coloured.

The definition of a frequency window may serve different qualitative purposes, e.g., locating the portions where:

- the target-signal occurs;
- the target-signal is not apparent;
- noise occurs.

[2] To generate, or to overwrite, an envelope line of adequate vertical length, one needs to check the maximum and the minimum value of the unitary samples, corresponding to (subsumed by) the current FFT array column. Knowing the sampling rate and the FFT size, also this passage is computationally trivial.



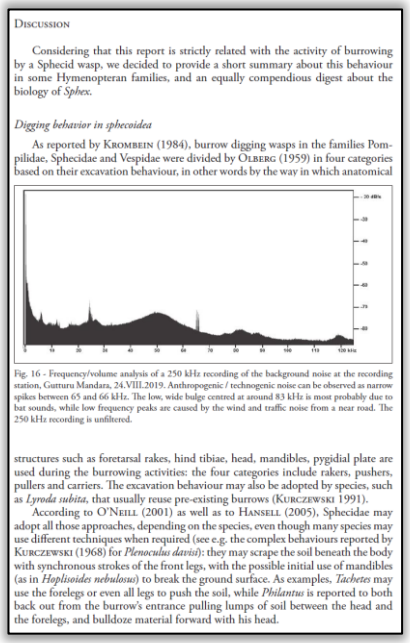
Discussion

Our method is a tool to support the organization of field expeditions aimed at specimen collection, and to assess the likelihood of their success – a success that ultimately depends on the actual distribution of the target species in the real world. By choosing the values of some of the indicators in our scorecard, such as those about seasonality, repeatability, specimen mobility and ecological constraints, the compiler inputs his hypotheses about those factors. To be reasonable, such hypotheses should depend on direct experience and scientific literature, including works in the fields of Species Distribution Models (SDM) and Spatial / Distributional Ecology. As a consequence, even though our method has no relation with, nor immediate application in, those fields we deem appropriate to cite some suitable references.

These citations do not imply methodological affinity, nor commonality of purposes, between our tool and the references cited, but rather they are a tribute to the scholars such as Antoine Guisan and Loïc Pellissier, who designed and improved methods and protocols to deal with the uncertainties of numerical and spatial biodiversity. As mere examples, we list:

– The works published on "Ecology Letters" by Guisan & Thuiller (2005) and Guisan et al. (2013), respectively elucidating the SDM methodology and illustrating the role of Species Distribution Models in the guidance of conservation efforts, in the monitoring of invasive species, and emphasising the need of a better mutual understanding between decision-makers and species distribution modellers.

– The work by Williams (2009) that demonstrates the existence of a lower threshold in the number of occurrences required to build good species distribution models, such as those based on randomization and entropy, which use



Discussion

Considering that this report is strictly related with the activity of burrowing by a Sphecid wasp, we decided to provide a short summary about this behaviour in some Hymenopteran families, and an equally compendious digest about the biology of *Sphex*.

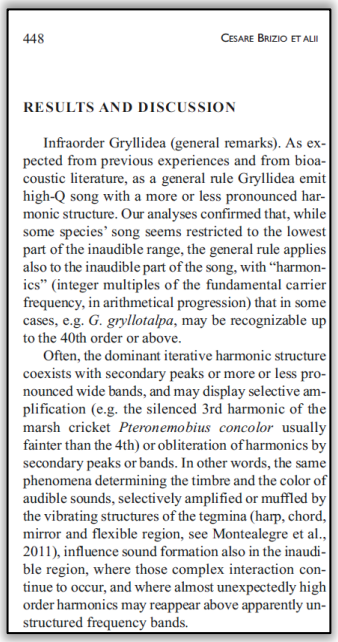
Digging behavior in sphecoidea

As reported by Krombein (1984), burrow digging wasps in the families Pompilidae, Sphecidae and Vespidae were divided by Olberg (1959) in four categories based on their excavation behaviour, in other words by the way in which anatomical

Fig. 16 - Frequency/volume analysis of a 250 kHz recording of the background noise at the recording station, Gutturu Mandara, 24.VIII.2019. Anthropogenic / technogenic noise can be observed as narrow spikes between 65 and 66 kHz. The low, wide bulge centred at around 83 kHz is most probably due to bat sounds, while low frequency peaks are caused by the wind and traffic noise from a near road. The 250 kHz recording is unfiltered.

structures such as foretarsal rakes, hind tibiae, head, mandibles, pygidial plate are used during the burrowing activities: the four categories include rakers, pushers, pullers and carriers. The excavation behaviour may also be adopted by species, such as *Lyroda subita*, that usually reuse pre-existing burrows (Kurczewski 1991).

According to O'Neill (2001) as well as to Hansell (2005), Sphecidae may adopt all those approaches, depending on the species, even though many species may use different techniques when required (see e.g. the complex behaviours reported by Kurczewski (1968) for *Plenoculus davisi*): they may scrape the soil beneath the body with synchronous strokes of the front legs, with the possible initial use of mandibles (as in *Hoplisoides nebulosus*) to break the ground surface. As examples, *Tachetes* may use the forelegs or even all legs to push the soil, while *Philantus* is reported to both back out from the burrow's entrance pulling lumps of soil between the head and the forelegs, and bulldoze material forward with his head.



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RESULTS AND DISCUSSION

Infraorder Gryllidea (general remarks). As expected from previous experiences and from bioacoustic literature, as a general rule Gryllidea emit high-Q song with a more or less pronounced harmonic structure. Our analyses confirmed that, while some species' song seems restricted to the lowest part of the inaudible range, the general rule applies also to the inaudible part of the song, with "harmonics" (integer multiples of the fundamental carrier frequency, in arithmetical progression) that in some cases, e.g. *G. gryllotalpa*, may be recognizable up to the 40th order or above.

Often, the dominant iterative harmonic structure coexists with secondary peaks or more or less pronounced wide bands, and may display selective amplification (e.g. the silenced 3rd harmonic of the marsh cricket *Pteronemobius concolor* usually fainter than the 4th) or obliteration of harmonics by secondary peaks or bands. In other words, the same phenomena determining the timbre and the color of audible sounds, selectively amplified or muffled by the vibrating structures of the tegmina (harp, chord, mirror and flexible region, see Montealegre et al., 2011), influence sound formation also in the inaudible region, where those complex interaction continue to occur, and where almost unexpectedly high order harmonics may reappear above apparently unstructured frequency bands.

Drafting the Manuscript
Discussion

Until a few decades ago, «Discussion» was a form of Attributed Peer Review: the reviewers' observations were presented and discussed in detail at the bottom of the manuscript.

Fox, C. J. B. 1909 *International Council for the Investigation of the Sea. Publications de Circonstance*, No. 44.
Fowle, F. E. 1918 *Smithson. Misc. Coll.*, **68**, No. 8.
Hettner, A. 1918 *Ann. Phys., Leipzig*, **55.**
Kincer, J. B. 1933 *Mon. Weath. Rev., Wash.*, **61.**
Mossman, R. C. 1902 *Trans. Roy. Soc., Edin.*, **40.**
Radcliffe Observatory 1930 *Met. Obs.*, **55.**
Rubens, H., and Aschkinass, R. 1898 *Ann. Phys. Chem.*, **64.**
Schmidt, H. 1913 *Ann. Phys., Leipzig*, **42.**
1927 and 1934 "World weather records." *Smithson. Misc. Coll.*, **79** and **90.**
Simpson, G. C. 1928 *Mem. R. Met. Soc.*, **3**, No. 21.

DISCUSSION.

Sir GEORGE SIMPSON expressed his admiration of the amount of work which Mr. Callendar had put into this paper. It was excellent work. It was difficult to criticise it, but he would like to mention a few points which Mr. Callendar might wish to reconsider. In the first place he thought it was not sufficiently realised by non-meteorologists who came for the first time to help the Society in its study, that it was impossible to solve the problem of the temperature distribution in the atmosphere by working out the radiation. The atmosphere was not in a state of radiative equilibrium, and it also received heat by transfer from one part to another. In the second place, one had to remember that the temperature distribution in the atmosphere was determined almost entirely by the movement of the air up and down. This forced the atmosphere into a temperature distribution which was quite out of balance with the radiation. One could not, therefore, calculate the effect of changing any one factor in the atmosphere, and he felt that the actual numerical results which Mr. Callendar had obtained could not be used to give a definite indication of the order of magnitude of the effect. Thirdly, he thought Mr. Callendar should give a little more information as to how he had calculated the results shown in Fig. 2. These contained the crucial point of the paper, but the paper did not explain how they were obtained. In Table 5 Mr. Callendar had given the effect of doubling the CO_2 in one band, 13 to 16μ, which included nearly the whole of the energy connected with the CO_2. The increase of temperature obtained by calculation from these results, however, was not the same for a similar increase in CO_2 as that shown in Fig. 2. This sort of discrepancy should be cleared up. Lastly he thought that the rise in CO_2 content and temperature during the last 50 years, must be taken as rather a coincidence. The magnitude of it was even larger than Mr. Callendar had calculated, and he thought the rise in temperature was probably only one phase of one of the peculiar variations which all meteorological elements experienced.

Dr. F. J. W. WHIPPLE expressed the hope that the author would give the Society an account of his investigation of the natural movements of carbon dioxide. It was not clear how the calculations regarding the gradual diffusion of CO_2 into the sea were carried out. The calculations embodied in Table IV depended on the assumption of high lapse rates of temperature everywhere. The inversions of temperature at night and throughout the winter in the polar regions were ignored. As an inversion implied a reversal of the new flow of radiation in the critical waveband,

it seemed necessary to make additional calculations to allow for the varying circumstances. Other processes besides radiation are involved in the exchange of normal energy between ground and atmosphere, but it may be justifiable to ignore these other processes in an investigation of the effect of variations in the amount of CO_2.

Prof. D. BRUNT referred to the diagrams showing the gradual rise of temperature during the last 30 years, and said that this change in the mean temperature was no more striking than the changes which appear to have occurred in the latter half of the eighteenth century, and whose reality does not appear to be a matter of defective instruments. The long series of pressure observations made in Paris showed clearly that there had been great changes in the mean path of depressions coming from the Atlantic. Prof. Brunt agreed with the view of Sir George Simpson that the effect of an increase in the absorbing power of the atmosphere would not be a simple change of temperature, but would modify the general circulation, and so yield a very complicated series of changes in conditions. He was not quite clear how the temperature changes had been evaluated. He appreciated, however, that Mr. Callendar had put a tremendous amount of work into his most interesting paper.

Dr. C. E. P. BROOKS said that he had no doubt that there had been a real climatic change during the past thirty or forty years. This was shown not only by the rise of temperature at land stations, but also by the decrease in the amount of ice in arctic and probably also in antarctic regions and by the rise of sea temperatures. This rise of temperature could however be explained, qualitatively if not quantitatively, by changes in the atmospheric circulation, and in those regions where a change in the circulation would be expected to cause a fall of temperature, there had actually been a fall; moreover the rise of temperature was about ten times as great in the arctic regions as in middle or low latitudes, and he did not think that a change in the amount of carbon dioxide could cause such a differential effect. The possibility certainly merited discussion, however, and he welcomed the paper as a valuable contribution to the problem of climatic changes.

Mr. L. H. G. DINES asked Mr. Callendar whether he was satisfied that the change in the temperature of the air which he had found was significant, and that it was not merely a casual variation.

Mr. J. H. COSTE congratulated Mr. Callendar on his courage and perseverance. He would like to raise some practical issues. Firstly, was the CO_2 in the air really increasing? It used to be given as ·04%, then as methods of chemical analysis improved it went down to ·03%, and he thought it was very doubtful whether the differences which Mr. Callendar made use of were real. The methods of determining CO_2 thirty or forty years ago were not sufficiently accurate for making such a comparison. A. Krogh calculated that for a constant difference in tension of $1/10^5$ atmosphere between the air and the ocean, the latter being less rich, the annual invasion of CO_2 would be equal to $3{\cdot}7 \times 10^9$ metric tons, which was about the annual contribution of CO_2 to the atmosphere by the burning of fuel; to this absorption by the ocean must be added the effects of vegetation, by photosynthesis. Thermometers thirty years ago were not instruments of very high precision and one would hesitate to consider variations of fractions of a degree based on observations made with such thermometers.

In replying, Mr. G. S. CALLENDAR said he realized the extreme complexity of the temperature control at any particular region of the earth's surface, and also that radiative equilibrium was not actually established, but if any substance is added to the atmosphere which delays the transfer of low temperature radiation, without interfering with the arrival or distribution of the heat supply, some rise of temperature appears to be inevitable in those parts which are furthest from outer space.

As stated in the paper the variation of temperature with CO_2 (Fig. 2), was obtained from the values of sky radiation, calculated for different amounts of this gas, substituted in expression (5) at S_1, S_2. If the *changes* of S shown in Table V are used for expression (5), it will be found that the temperature changes lie on the curve of Fig. 2 when the total sky radiation is 7/10 of the surface radiation. The sky radiation is calculated as a proportion of that from the surface, hence, at constant heat supply, a change of sky "temperature" involves an equilibrium change of surface temperature as in expression (5).

It was found that even the minimum numerical explanation of the method used for calculating sky radiation would occupy several pages, and as a number of similar methods have been published from time to time, it was decided to use the available space for matter of more direct interest.

In reply to Dr. Whipple, the author regretted that space did not permit an account of the natural movements of CO_2; he had actually written an account of these, but it was just eight times as long as the present paper.

For the calculation of the diffusion of CO_2 into the sea the effective depth was considered to be 200 m. at any one time.

The effect of CO_2 on temperatures has been calculated for a variety of lapse rates, including large inversions. In the latter case the effect on the surface temperature is small, but the protection for the warm middle layers remains.

In reply to Prof. Brunt, the author stated that the warm periods about 1780, 1797 and 1827, appeared to be of the nature of short warm intervals of up to 10 years, with some very cold years intervening, whereas recent conditions indicated a more gradual and sustained rise of temperature; this was perhaps best shown by a 40-year moving average.

In reply to Dr. Brooks, the author agreed that the recent rise in arctic temperatures was far too large to be attributed to change of CO_2; he thought that the latter might act as a promotor to start a series of imminent changes in the northern ice conditions. On account of their large rise he had not included the arctic stations in the world temperature curve (Fig. 4).

In reply to Mr. Dines, the author said he thought the change of air temperature appeared too widespread to be a casual change due to local variations of pressure.

In reply to Mr. Coste, the author said that the early series of CO_2 measurements he had used were probably very accurate; he had only used values observed on days when strong and steady west winds were blowing at Kew. The actual CO_2 added in the last 40 years was equal to an increase of 8%; the observed and calculated values agreed in giving an effective increase of about 6%.

The author is not aware of the solution coefficients for sea water used by A. Krogh to give the stated figure which appears to be far too high. It must be remembered that less than 1/1000 of the sea volume would be replaced at the surface in one year, and the annual increase of CO_2 pressure in the air is less than $1/10^6$ atmosphere. About 98% of the CO_2 used by vegetation appears to be returned by decay oxidation and respiration.

The author thought that very accurate temperatures were taken last century; if there was any doubt on this point the introduction to the long period tables from the Radcliffe Observatory (*Met. Obs.*, Vol. **55**, 1930), should set this at rest.

Callendar, 1938

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Results
It can appear before or after the Discussion, or even together!

- **The results obtained, and only them, with any figures that represent them**

As stated above, this paper concentrates on a general description of the songs, and the novelties cited above will be the subject of separate future publications: further investigation may reveal whether sex-specific targeting of the different parts of each echeme, as reported e.g. for the amphibian *Eleutherodactylus coqui* Thomas, 1966 (Narins & al., 1976), is present also in Orthopterans.

Phaneroptera nana Fieber, 1853

DISTRIBUTION. Europe, Middle East and North Africa.

SONG DESCRIPTION. It sings mainly in the evening and the night. The song consists of series of irregularly repeated short sounds of different character. High-pitched clicks (syllables) are mixed with short "zb"-sounds (syllables). The latter resemble the sounds of *P. falcata*. Syllables seem never to be grouped in echemes.

ANALYSES. Band spectrum, mostly sonic, peak at 19830 Hz (Table 2, Fig. 1).

Tylopsis lilifolia (Fabricius, 1793)

DISTRIBUTION: from southern Europe and North Africa to Middle East.

SONG DESCRIPTION. The song consists of short groups of about 3 (1–5) short ticks (syllables). These groups are repeated with intervals about 10s up to more than a minute. The song is mainly produced during the day.

ANALYSES. Band spectrum, mostly ultrasonic, peak at 23160 Hz (Table 2, Fig. 2).

Isophyia modestior modestior (Brunner, 1882)

ther research in the ultrasonic range is necessary on Italian and Balkan populations.

ANALYSES. Band spectrum, mostly ultrasonic, peak at 24890 Hz (Table 2, Fig. 3).

Barbitistes vicetinus Galvagni et Fontana, 1993

DISTRIBUTION. Italian endemic, the range being confined to the pre-alps of Veneto and Trentino.

SONG DESCRIPTION. The song is produced mainly in the evening and night. It consists of a sequence of quiet ticks (syllables), lasting for about 8–25s. Ticks are grouped in series of 10–25, with the exception of the last group, that usually only consists of 1–2 ticks. Sequences are separated by intervals of about 10s or more.

ANALYSES. Band spectrum, mostly ultrasonic, peak at 24530 Hz (Table 2, Fig. 4).

Leptophyes laticauda (Frivaldszky, 1868)

DISTRIBUTION. Central-eastern Europe to the Balkans.

SONG DESCRIPTION. This species sings in the afternoon, evening and night. The song consists groups of 1–3 very faint ticks (syllables). Groups are repeated more or less regularly, at a minimum interval of about 1s. The faint song can hardly be heard with the unaided ear, but the species is easily traced with a bat detector, tuned at 20 kHz (ultrasonic).

ANALYSES. Band spectrum, mostly ultrasonic, peak at 31430 Hz (Table 2, Fig. 5).

Polysarcus denticauda (Charpentier, 1825)

DISTRIBUTION: from Central Europe to the Balkans.

Family Subfamily	Species	Spectrum type	Most relevant emission	Recording distance cm (*)	Peak frequency Hz	Low-Q main band center kHz	Highest kHz emitted	Highest harmonic (High-Q)
Tettigoniidae Phaneropterinae	*P. nana*	Band	sonic	200	19830	20	45	n/a
	T. lilifolia	Band	ultrasonic	400	23160	25	80	n/a
	I. m. modestior	Band	ultrasonic	30	24890	24	75	n/a
	B. vicetinus	Band	ultrasonic	50	24530	24	60	n/a
	L. laticauda	Band	ultrasonic	100	31430	31	55	n/a
	P. denticauda	Band	ultrasonic	50	26510	24	70	n/a
Tettigoniidae Conocephalinae	*A. fusca*	Band	ultrasonic	100	29020	29	100	n/a
	R. nitidula	Band	ultrasonic	400	16290	15	75	n/a
Tettigoniidae Tettigoninae	*T. cantans*	Band	ultrasonic	50	8331	9	70	n/a
	T. viridissima	Band	ultrasonic	100	41530	40	90	n/a
	D. albifrons	composite	ultrasonic	300	8300	38	85	7 - 8
	D. v. verrucivorus	Band	ultrasonic	200	4.660	44	85	n/a
	P. a. affinis	Band	ultrasonic	200	23800	27	110	n/a
	T. t. tesselliata	Band	ultrasonic	250	31150	33	85	n/a
	B. b .bicolor	Band	ultrasonic	100	21660	22	85	n/a
	P. a. aptera	composite	ultrasonic	100	25840	28	75?	n/a
	P. l. littoralis	composite	ultrasonic	50	25200	35	80	12
	E. c. chabrieri	Band	ultrasonic	300	38900	35	90	n/a
	E. schmidti	Band	ultrasonic	50	38290	44	75	n/a
	Eupholidoptera sp. (Euganei Battaglia)	Band	ultrasonic	50	21540	35	85	n/a
	Eupholidoptera sp. (Chiampo)	Band	ultrasonic	50	39090	40	85	n/a
	A. italoaustriacus	Band	ultrasonic	30	36430	45	80	n/a
	R. baccettii (a)	Band	ultrasonic	200	51000	28	105	n/a
	R. germanica	Band	ultrasonic	150	28250	27	85	n/a
	R. n. neglecta	Band	ultrasonic	250	46690	46	90	n/a
	A. differmis	Band	ultrasonic	50	27700	28	65	n/a
Tettigoniidae Bradyporinae	*U. annae*	Band	ultrasonic	50	24070	22	65	n/a
	U. brevicollis insularis (a)	Band	sonic	200	13450	12	41	n/a
Gryllidae Nemobiinae	*N. s. sylvestris*	composite	sonic	50	3.997	n/a	60	3
	P. h. heydemi	High-Q	sonic	100	7.293	n/a	50	6
Gryllidae Gryllinae	*G. bimaculatus*	High-Q	sonic	100	4.913	n/a	60	11
	G. campestris	High-Q	sonic	80	3.723	n/a	70	19
	B. megacephalus (b)	High-Q	sonic	50	5.920	n/a	121.7	21
	S. p. palmetorum (a)	High-Q	sonic	20	6.317	n/a	32	5
	E. b. bordigalensis	High-Q	sonic	30 / 100	5.737	n/a	45	6 - 8
Gryllidae Oecanthinae	*O. dulcisonans* (a)	High-Q	sonic	50	2.960	n/a	44.7	15
	O. p. pellucens	High-Q	sonic	10	3.479	n/a	65	18
Gryllotalpidae	*G. gryllotalpa*	High-Q	sonic	20	1.434	n/a	55	38
Acrididae Gomphocerinae	*E. brachyptera*	Band	ultrasonic	50	29050	29	60	n/a
	C. (C.) d. dorsatus	Band	ultrasonic	50	22790	25	65	n/a
	C. (C.) p. parallelus	composite	ultrasonic	50	29930	28	65	n/a

Table 2. Synopsis of the ultrasound components of the species examined. Shaded lines mark species treated in separate papers: a) *O. dulcisonans*, *R. baccettii*, *S. p. palmetorum*, and *U. b. insularis* from Brizio & Buzzetti, 2014, integrated by recordings in July 2019 (*O. dulcisonans*) and August 2019 (*R. baccettii*). b) *Brachytrupes megacephalus*, data from Brizio, 2018. (*) Approximate distance between the microphone and the singing insect during recording.

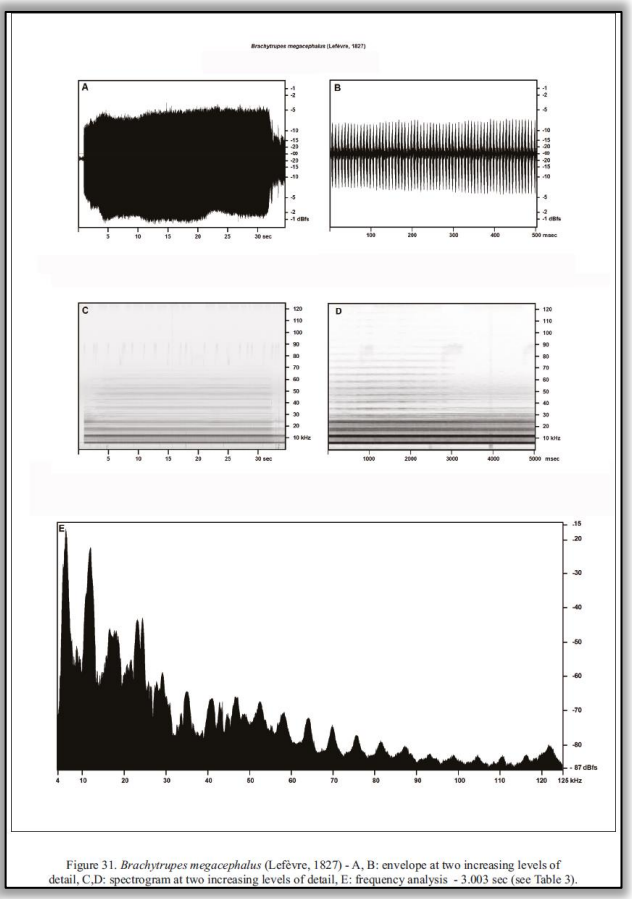

Figure 31. *Brachytrupes megacephalus* (Lefèvre, 1827) - A, B: envelope at two increasing levels of detail, C,D: spectrogram at two increasing levels of detail, E: frequency analysis - 3.003 sec (see Table 3).

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Conclusions

This section can be optional!!!

- **What can be concluded based on the results?Often includes a short summary, which makes the conclusions similar to the Abstract**

4 | Conclusions

At the price of a maximum time resolution equal to the TFSI on which it's based, necessarily lower than the maximum resolution of a standard TPE, the novel CETPE rendering contextually provides an on-screen visualization of three information items: time, sound pressure, and frequency – limited to the presence and above-threshold intensity of one or more user-defined frequency bands.

Besides its potential in speeding-up tedious activities, CETPE may allow to engage less skilled human resources in frequency-targeted spectral monitoring activities, such as the recognition of the portions that contain the song of a given species in a lengthy audio file generated by unmanned bioacoustical monitoring equipment.

As a matter of fact, contrary to the expert recognition and interpretation process of TFSI's, once an expert has set the user parameters according to the specific relevancy criteria, even an unskilled operator may identify the relevant, colour filled sections in the CETPE.

Likewise, the on-screen selection and deletion of noisy sections from a recording may be simplified without requiring a more time-consuming intervention on the TFSI screens.

CONCLUSIONS

From visual and bioacoustic observation, it can be concluded that the specimen observed was engaged in exactly the kind of digging and consolidation activity well-documented for its genus and family.

Considering that the tip of the abdomen was clearly and constantly visible vibrating at the entrance of the burrow, it's most probable that the insect was in the initial phase of the its digging / consolidation activity – and this may be confirmed by the fact that it never completely concealed itself by entering the burrow, and that it promptly exited the tunnel as soon as it was disturbed by the first flashes from the camera. Although suboptimal, the pictures of the head, covered in dirt, confirm that heads and mandibles were pressed against the soil.

Even though unaccompanied by specimen capture and extended observations, this short report elucidates how the buzzing sounds associated with the soil-compacting head thrusts aided by the activation of wing muscles in Sphecidae, generate also ultrasounds in a peculiar pattern. Being the first report of this kind, it's currently impossible to ascertain whether those sounds can be considered as species-specific as sexual calls in other insect groups.

In stereo recordings taken from 10-15 cm distance, two phenomena are apparent during the buzzing/vibrating action associated with digging:

– the decoupling of two contralateral or antero-posterior sets of wing muscles - by the blatant decoupling of right and left channel in frequency analyses;
– the concurrence of no less than two vibration sources in each set - by the appearance of two concurrent, phase-shifted pulse trains in the sound pressure envelopes.

The authors hope that this paper, born by serendipity, may promote further, more organized comparative field studies.

Conclusions

It is clear that the novel EPS scorecard is in its infancy, and some adjustments and rethinking shall be needed to improve its usefulness as an operational tool.

Yet, it is our impression that, if we had available a tool like the EPS, we might have performed a preliminary assessment of our previous expeditions that would have greatly helped in saving time and money, and would also helped us to identify which lines (and places) of field research to favour.

We strongly believe that the EPS can be repurposed, customized, and adapted to any field, even outside the zoological realm, where expeditions for specific target species are organized based on the evidence provided by previous reports: that may include Palaeontology, Archaeology and other Human Sciences.

Compiling an EPS may help overcome cognitive bias, including the most subtle and ill defined, that is hope, and provide a clearer, more rational basis for operational decisions.

Considering that our method and this paper in its entirety are the fruit of the reconsideration of the case of *Uromenus annae*, and to complement our criticism to the biased mindset of the researchers who followed his steps under the influence of cognitive biases, we deem necessary to point out the methodological errors by Targioni-Tozzetti (1881) in that specific case. Anybody can recognize as a major failure his incapacity to understand that under no circumstance correlation implies causation by default. None should postulate any kind of biological relation relying uniquely on the concomitant presence of two species in the same space and time, even less so when the number of observed specimens is low.

Targioni-Tozzetti (1881) observed just the coincident presence of a few specimens of the insect and Yew Trees, a common background at the times of the discovery, and never tried systematically to locate *U. annae* far from the Yew Trees, nor did observe any link between any fact in the biological cycle of *U. annae* and the *Taxus baccata* trees (e.g. feeding, egg deposition under the tree's bark, mimicry with the tree or with its parts...): this lack of proofs should have sufficed to take the wind out of the sails of the bio-ecological constraint hypothesis.

Also such a wrong inference is the effect of cognitive biases (including Availability Effect, making decisions based on immediate information or examples that come to mind; Recency Effect, where recent events are easier to remember, and can be weighed more heavily than past events or potential future events; Selection Bias, occurring when individuals or groups in a study differ systematically from the population of interest).

Furthermore, and even less excusably, Targioni-Tozzetti (1881) based his conclusions on a limited number of specimens, sufficient for a morphological description (which in fact is still valid today) but inadequate for substantiating a biological tie between *U. annae* and *T. baccata*, especially when no factual interaction between the two species was recorded.

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Acknowledgements

- Who helped you?
- Who should you thank?
- Reviewers are often thanked, but only if you actually interacted.

Acknowledgments: The first report of *Acheta pantescus* n. sp. was possible thanks to activities carried out during the Monitoring of Breeding Seabirds in the Sicilian Region, co-ordinated by Tommaso La Mantia (University of Palermo, Department SAAF) on behalf of Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA); we would thank T. La Mantia very much, who involved us in this research. The present publication was possible thanks to the Edmund Mach Foundation and the Pantelleria Island National Park. We are indebted to Marcello Romano, who photographed at high-resolution genitalia of the new species. We also thank Silvio Rotolo for his interesting information on the paleogeography of Pantelleria. The choice of the name of the new species of *Acheta* resulted from an opinion poll promoted by the Parco Nazionale di Pantelleria; we are indebted for this to Sonia Anelli and Andrea Biddittu. We also thank Marcello Romano and contributors to the forum entomologiitaliani.net very much. Further, we thank Andrej Gorochov, Axel Hochkirch, Vicenta Llorente and Emanuele Lodolo for the permission to use the drawings appearing on their papers cited in the references, as well as for the useful information they provided on morphology and songs of other Mediterranean species of *Acheta*, Laure Desutter-Grandcolas for the permission to use the photo of *Acheta meridionalis* preserved in the Muséum National d'Histoire Naturelle of Paris, Marco Bologna for information on the distribution of endemic *Stenostoma*, and Filippo Buzzetti for some data on conservation assessment. Sara Chiarello, Tommaso La Mantia, Rocco Lo Duca, and Marta Visentin shared with BM and CC the visit to Pantelleria in April 2022. Giovanni Bonomo and Denny Salvatore Almanza from Pantelleria gave us some useful information on Pantelleria. Finally, we thank the Servizio Informativo Agrometeorologico Siciliano, who provided data on temperature and humidity from Pantelleria.

Acknowledgements – We thank Dr Luciano Bani (Department of Earth and Environmental Sciences, University of Milano-Bicocca) and two other unnamed reviewers who provided insightful comments on the previous versions of our manuscript.

5 | Acknowledgements

The author thanks the anonymous reviewers for their insightful comments and suggestions.

Drafting the Manuscript

Other obligatory parts

Only if required by editorial policies

- **Statement of CONFLICTS OF INTEREST**
- **Statement of FUNDING RECEIVED**
- **«Institutional Review Board Statement»**
- **«Data Availability Statement»**
- **Statement of WHO DID WHAT (on board, only paying passengers!)**

Author Contributions: Conceptualization, B.M., P.F., and C.C.; methodology, B.M. and P.F.; software, B.M. and C.B.; field expeditions, B.M., C.C., and P.F.; bioacoustic investigation, C.B.; editing, proofreading, bibliographic researches, all authors. All authors have read and agreed to the published version of the manuscript.

Funding: 'Study on the honey bee population of Pantelleria' by the Technological Transfer Center of the Edmund Mach Foundation and the Pantelleria Island National Park; 'Monitoring of Breeding Seabirds in the Sicilian Region' by the University of Palermo, Department SAAF on behalf of Istituto Superiore per la Protezione e la Ricerca Ambientale.

Institutional Review Board Statement: Not applicable.

Data Availability Statement: Not applicable.

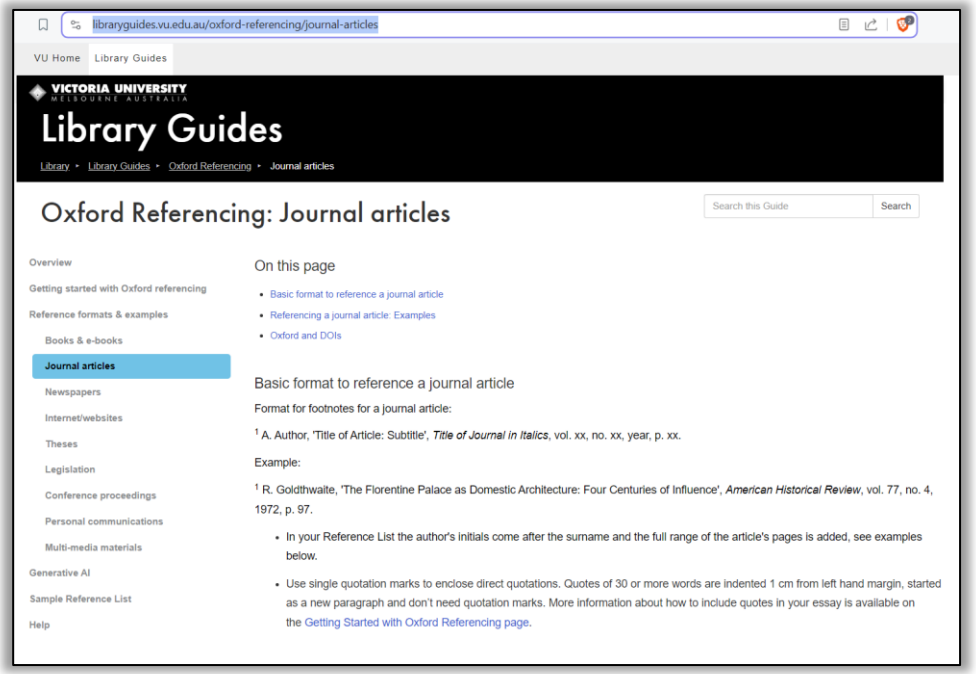
Conflicts of Interest: The authors declare no conflict of interest.

Drafting the Manuscript
References

- **REFERENCE STANDARDS, typically specified in the template provided by the publisher, for example the OXFORD REFERENCING STYLE (https://libraryguides.vu.edu.au/oxford-referencing/journal-articles)**

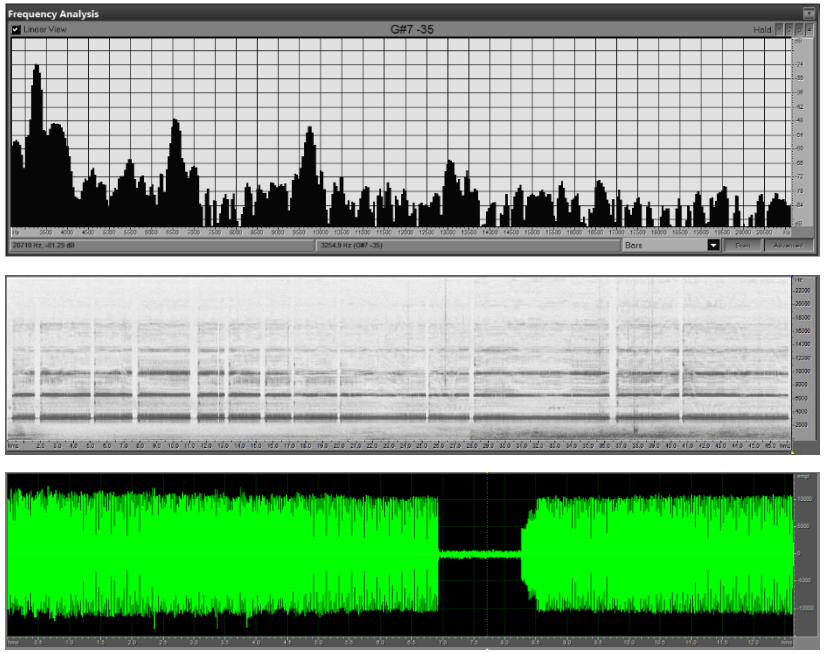
References are automatically indexed and end up in the indexing and scientometrics databases

- How to cite references in the text (in-text citation)
- How to cite references in footnotes
- How to make short text citations («inline») and long text citations («block citations»)
- How to compile the list of references (bibliography) in the different cases of works with one, two, three or more than three authors
- In what order to compile the list of references: alphabetical order of the surname of the first author, or order of appearance of the reference in the text – in this case the references in the bibliography are numbered

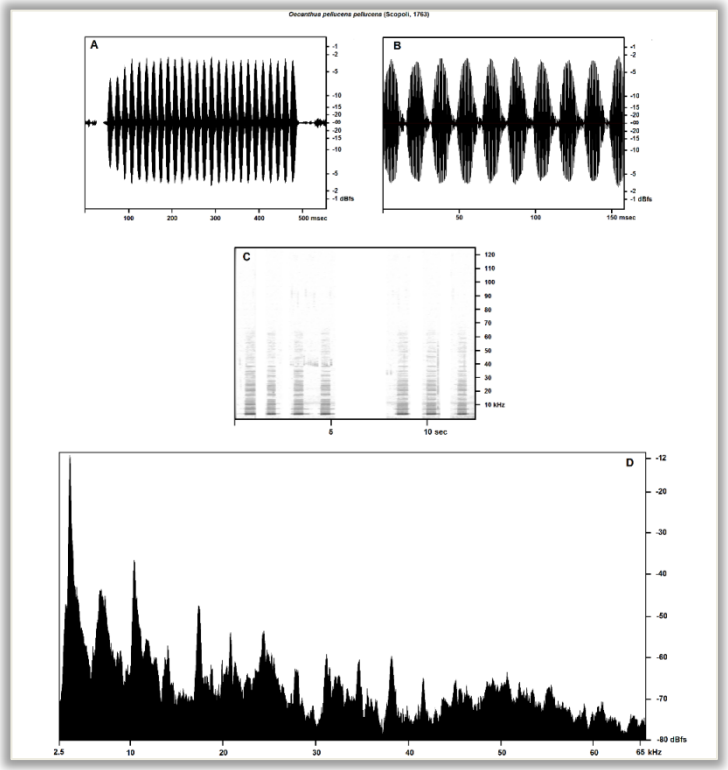


Figures in the Manuscript

CLEAR FIGURES AND CAPTIONS!!!!
Including the readability of graduated scales and numerical values accompanying the images
Particularly important if the paper publication in two columns is planned!



BAD EXAMPLE – my first bioacoustic paper… USELESS IMAGES!



A FEW YEARS LATER…You get the idea!

Addenda e Appendici del Manoscritto

«SUPPORTING MATERIAL»

DATA AND TABLES THAT WOULD NOT HAVE MADE SENSE TO INSERT INTO THE TEXT

Often provided through a URL that leads to an institutional or publisher server (not yours!)

Il CETPE può servire differenti scopi in qualsiasi ambito in cui sia richiesta l'analisi a schermo (o su stampa) dell'audio digitale: la tecnica può essere impiegata per evidenziare le porzioni di TPE in cui avvengono fenomeni coinvolgenti qualsiasi dominio numerico.

La frequenza, la pressione sonora e il tempo – da soli o in combinazione – possono fornire opportunità per generare CETPE, nella misura in cui le quantità digitali interessanti o i pattern interessanti possono essere riconosciuti algoritmicamente da un'implementazione software.

5 | Acknowledgements

The author thanks the anonymous reviewers for their insightful comments and suggestions.

6 | Supporting Material

The source code of the proof-of-concept Python software [12] [13], released under permissive Copyright Commons CC BY-SA 4.0 license [14] is freely available for download, along with the example audio file [15] based on the mix-down of the two songs analysed in Fig. 1, the same audio file used by the proof-of-concept application to generate Fig. 3.

7 | Appendix

7.1 | Colour Mapping

While 2-colour CETPE does not require any FWB-based colour mapping strategy, Multicolour CETPE can take advantage of a frequency-related colour rendition ("informative palette").

The concept of colour mapping as proposed here is strongly dependent on the 24-bit RGB colour model. By splitting the user-defined frequency range in 6, 12 or 24 uniform discrete FWB, it will be possible to map each FWB to a colour bit, thus generating a palette of 64, 4096 and 16M colours respectively.

7.1.1 | Matching the FFT frequency bin size, and the theoretically available number of bands in the RGB model

As clarified in the introduction, once a spectrogram array is generated, frequency-related information is not continuous, but is proposed in discrete units (bins) corresponding to array rows. So, rather than a natural frequency bracket (e.g., from 10000 Hz to 10500 Hz), it will be one or more frequency bin (e.g., in case of 100 Hz bins, array rows from 100 to 105) that will be mapped to a colour bit. The identification of the frequency bins included in a frequency band is computationally very trivial. The same frequency bin (e.g., the one including the 10000 Hz frequency) can be considered part of two adjacent frequency bands (e.g., the 9000 Hz-10000 Hz band and the 10000 Hz-11000 Hz band) with no relevant effect on the generation of a Multicolour CETPE. Hereinafter, for the sake of clarity, natural, continuous frequency bands will be cited even though the actual colour mapping computation will involve discrete frequency bins.

7.1.2 | One-bit-per-band, 24-bands full range colour mapping (white noise above threshold = &HFFFFFF)

In the full 24-bit range mapping, all possible colours are used, including lowest-brightness (darker) colours engaging the low-intensity bits 1-8 in each colour byte (R, G or B). This may allow for a more precise mapping, but – due to potentially reduced contrast – may be less effective visually. An "informative palette" is adopted, where the red channel maps the higher frequency range, the green channel maps the middle frequency range, and the blue channel maps the lower frequency range.

Table 1 includes an example: the definition of FWB boundaries is arithmetically trivial, based on user parameters.

Tab. 1 – Example of one-bit-per-band, 24-band full-range colour mapping for a frequency window spanning 12 kHz from 2 kHz to 14 kHz

Esempio di mappatura del colore a un bit per banda, su 24 bande (ambito completo) per una finestra di frequenza di 12 kHz da 2 kHz a 14 kHz

FWB	From/To Hz	Corresponding RGB bit	Colour byte	Frequency window range
Band 24	14000	Red bit 128 (MSB)	Red	Higher Range
	13501			
Band 23	13500	Red bit 64		
	13001			
Band 22	13000	Red bit 32		
	12501			
Band 21	12500	Red bit 16		
	12001			
Band 20	12000	Red bit 8		
	11501			
Band 19	11500	Red bit 4		
	11001			
Band 18	11000	Red bit 2		
	10501			
Band 17	10500	Red bit 1 (LSB)		
	10001			
Band 16	10000	Green bit 128 (MSB)	Green	Mid-Range
	9501			
Band 15	9500	Green bit 64		
	9001			
Band 14	9000	Green bit 32		
	8501			
Band 13	8500	Green bit 16		
	8001			
Band 12	8000	Green bit 8		
	7501			
Band 11	7500	Green bit 4		
	7001			
Band 10	7000	Green bit 2		
	6501			
Band 9	6500	Green bit 1 (LSB)		
	6001			

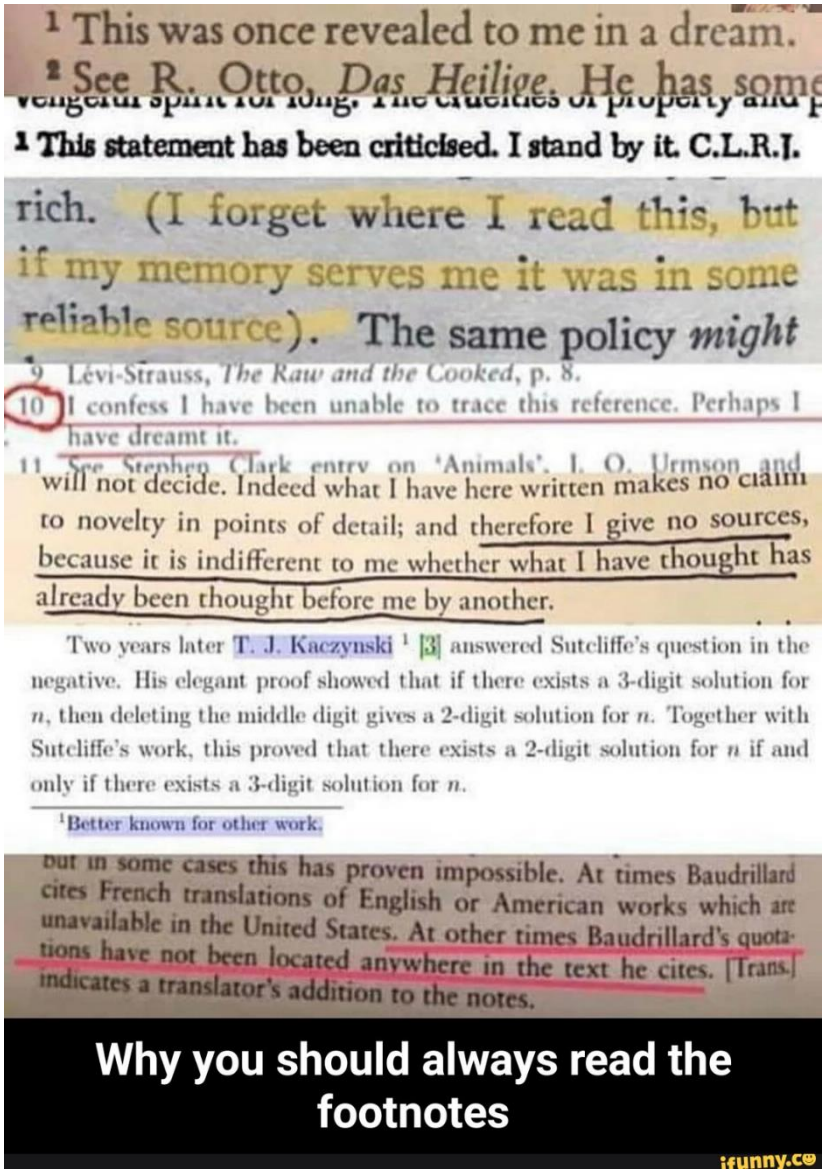
Supporting material

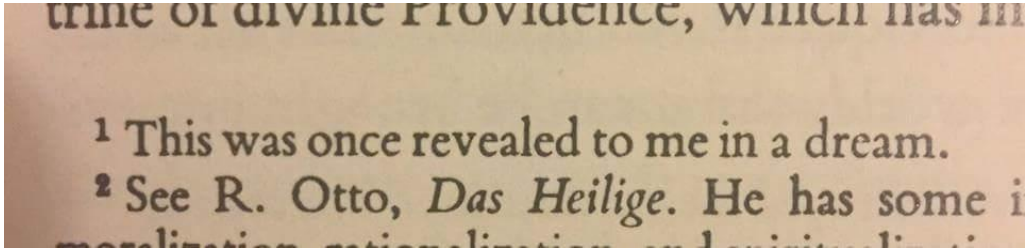
Available at the URL https:// bit.ly/2Mwt8gS includes 38 short excerpts (10 seconds or less) from 37 different species, provided for informative purposes. All the excerpts are extracted from the audio files used for song analysis, whose details are listed in Table 3. The initial number in the file name refers to the systematic order adopted in the paper and in the same table. Excerpts may be shorter portions of the analyzed samples, and in a few cases may not include the exact segment analyzed. The audio sample of *Tessellana tessellata tessellata*, less informative because of its extreme brevity, isn't included.

Materials and Methods

An Excel spreadsheet, configured as required by the current version of the EPS and implemented with the necessary dropdown lists and calculations, can be downloaded from the following URL, is released under CC-SA license and can be freely modified, provided that the authors are credited: https://bit.ly/3edYYeG.

CITATIONS, RECALLS AND REFERENCES (SOURCES)





- "this was once revealed to me in a dream" - **Nicolas Berdyaev, *From The Divine and the Human***, English Translation 1949, p. 6 – la nota a piè di pagina appare dopo la seguente frase: "The ego has been a fatality both for the human self and for God."

Reasons for Recalling or Citing References in Scientific Literature

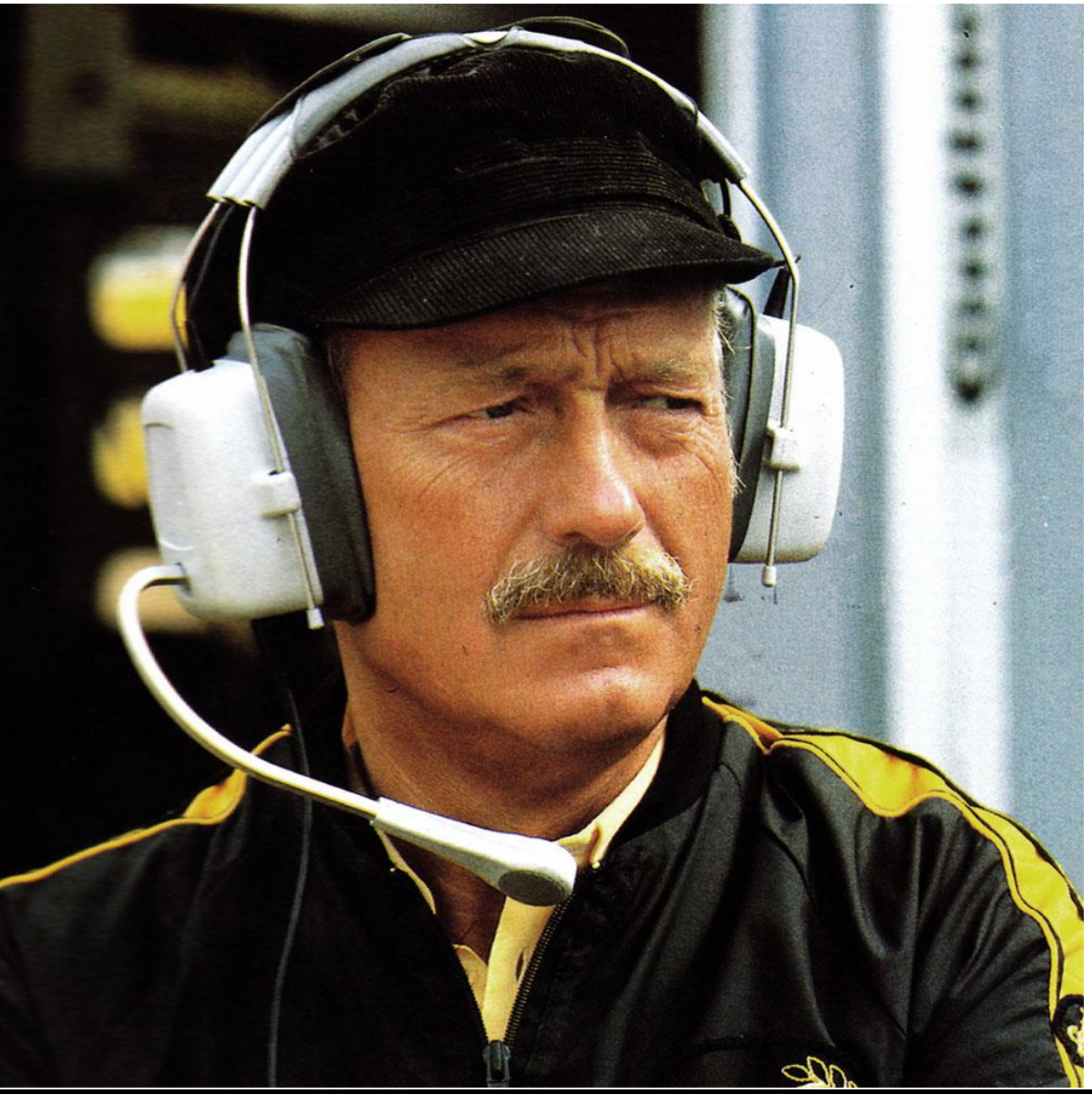
- **Provide DEFINITIONS of concepts** that, for reasons of space, it will not be possible to define in the text, but that must be understood to understand what you will be explaining. The number and nature of these references depends on several factors.
  - **Expected competence of readers:** in turn, it depends on the target of the journal. The more specialized the target, the fewer definitions it is necessary to provide.
  - **Breadth of the article:** a "review article", which provides an overview of the state of the art of a given sector, will contain more definitions than an in-depth manuscript.
- **Clarify where you started from:** on the shoulders of what giants do you find yourself?
- **Provide opportunities for in-depth study of topics outside of your treatment**

Reasons for Recalling or Citing References in Scientific Literature

- **Support your reasoning and conclusions:** this is the most delicate aspect, especially when you move from a simple reference to a bibliography to a real citation:
  - **Don't put words in anyone's mouth:** textual citations must be such, "textual" in the sense of complete and compliant with the originals.
  - **Don't pull the other authors' hair:** a reference or a citation to a scientific article only mildly related to your work does not add strength to your writing, but weakens it.
- **Offering different points of view:** obviously, if you include a reference to a point of view different from yours, it is important to make it clear why, despite being aware of it, you remain of your different opinion
- **Be careful of "cherry picking"!!!** On highly debated topics, it would be very strange to see you cite only studies that support your point of view.

ONE ONLY QUOTES AND REFERENCES WHAT ONE HAS ACTUALLY READ!!!!!!!!

STYLE EXAMPLES



“Simplify and add lightness!” (Colin Chapman)

STYLE EXAMPLES

IS DOCUMENT IS THE PROPERTY OF HIS BRIT[illegible]NIC MAJESTY'S GOVERNMENT).

SECRET.

W.P.(G)(40) 211. COPY NO. 51

9TH AUGUST, 1940.

WAR CABINET.

BREVITY.

Memorandum by the Prime Minister.

To do our work, we all have to read a mass of papers. Nearly all of them are far too long. This wastes time, while energy has to be spent in looking for the essential points.

I ask my colleagues and their staffs to see to it that their Reports are shorter.

(i) The aim should be Reports which set out the main points in a series of short, crisp paragraphs.

(ii) If a Report relies on detailed analysis of some complicated factors, or on statistics, these should be set out in an Appendix.

(iii) Often the occasion is best met by submitting not a full-dress Report, but an Aide-memoire consisting of headings only, which can be expanded orally if needed.

(iv) Let us have an end of such phrases as these: "It is also of importance to bear in mind the following considerations.....", or "Consideration should be given to the possibility of carrying into effect.....". Most of these woolly phrases are mere padding, which can be left out altogether, or replaced by a single word. Let us not shrink from using the short expressive phrase, even if it is conversational.

Reports drawn up on the lines I propose may at first seem rough as compared with the flat surface of officialese jargon. But the saving in time will be great, while the discipline of setting out the real points concisely will prove an aid to clearer thinking.

W.S.C.

10, Downing Street.

9TH AUGUST, 1940.

I ask my colleagues and their staffs to see to it that their Reports are shorter.

(i) The aim should be Reports which set out the main points in a series of short, crisp paragraphs.

(ii) If a Report relies on detailed analysis of some complicated factors, or on statistics, these should be set out in an Appendix.

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STYLE EXAMPLES

CORRECT MANAGEMENT OF THE SECTIONS

- Group things together correctly: it is normal for the manuscript to evolve with permeability between sections, particularly between introduction and discussion, and between both of these and Materials and Methods.
- In this regard, reread the manuscript a few days later.

STYLE EXAMPLES

SHORT SWORDS, SHORT SPEECHES!

To this day, I am unable to combat two of my worst defects:

- **VERBOSITY** (tendency to describe in words what would be better described in another way)
- **PROLIXITY** (tendency to use more words than strictly necessary).

These defects lead to others, including:

- **Abuse of parentheses and brackets** (some of my sentences would require the use of round brackets, square brackets and curly brackets…)
- **Tendency to place the verb at the end of the sentence, preceded by a long parentheticals**: bad practice, especially in English!

Here are the palliatives:

- **fewer words:** reread and ask yourself "could I manage to say this in fewer words?“
- **short sentences:** ask yourself "can I break up this sentence, making it clearer?“
- **correct use of images and tables,** to which you can refer the reader for explanations that would require elaborate circumlocutions
- **back-translate the passages of the text from your English to your language,** for example with Google Translate, and check that the speech is correct and sensible: it is better, however, to get help from a native speaker

STYLE EXAMPLES

DEPERSONALIZE THE EXPOSITION

- You don't just have to be objective; you have to sound objective!
- Write in the third person. You are "the author.“
- Normally, you avoid speaking in the first person; doing so loses the appearance of third-party status.
- If there is more than one author, "the authors," and "we" (first person plural) are acceptable.

AFTER THE SUBMISSION...

REVIEW AND PUBLICATION PROCESS

The editorial staff you work with may work in a more or less scattered way.

In the best case scenario, the reviewers' comments are sent to you all at once, so that you can intervene on the manuscript by addressing all the necessary adjustments.

In other cases, the comments of one reviewer at a time are sent to you. It is advisable to wait until you have received all the comments before intervening on the manuscript.

The referees' comments may be more or less clear. The editorial staff must clarify the meaning of requests that may not be immediately understandable.

Usually, the revised manuscript is sent to the editorial staff with the same tools, for example uploading to a specific Web page, with which the initial manuscript was submitted.

According to the instructions that you will find in the editorial policies or that you will request from the editorial staff, the interventions on the manuscript carried out in response to the requests of the reviewers may require particular formatting, in order to facilitate the editorial staff in verifying your intervention on the text.

AFTER THE SUBMISSION...

RELATIONS WITH PEER REVIEWERS

We always start from a presumption of competence and good faith.

As the system is designed, it is absolutely possible to refuse to make the requested changes, but it is essential to motivate the refusal with valid and documented reasons.

Here on a yellow background is an example of failure to accept the advice of a reviewer.

In my opinion, there is an important lack in Section 2.5. An example soundtrack should be processed with the three RGB models of 2.5.2, 2.5.3, and 2.5.4 and the resulting figures should be shown, allowing the reader to easily compare the differences between the methods.

THIS IS THE ONLY CONCERN BY THE REVIEWER THAT THE AUTHOR CANNOT, AND SHALL NOT, ADDRESS.

THE MANUSCRIPT IS AIMED AT DESCRIBING THE NOVEL WAY TO DISPLAY TIME PRESSURE ENVELOPES DEVISED BY THE AUTHOR, AND IN THAT RESPECT IT'S COMPLETELY SUCCESSFUL, CONSIDERING THAT NO REVIEWER REQUIRED CLARIFICATIONS ON THE CETPE CONCEPT ITSELF.

THE ONLY SOFTWARE THAT THE AUTHOR CAN CURRENTLY DEVELOP IS THE PROOF OF CONCEPT, WHICH IS ADEQUATE BOTH TO ELUCIDATE THE LOOK OF THE CETPE, AND TO DEMONSTRATE ITS ALGORITHMICAL FEASIBILITY TO ANYBODY THAT WOULD LIKE TO VENTURE INTO FURTHER DEVELOPMENT.

OTHER, MORE COMPLICATE AND COMPLETE IMPLEMENTATION WOULD REQUIRE AN AMOUNT OF TIME ABOVE THE AUTHOR'S CURRENT CAPABILITIES, WHILE DEVELOPING A FULL SOFTWARE SOLUTION BASED ON THE AUTHOR'S PROPOSAL IS DEFINITELY OUT OF THE SCOPE OF THE MANUSCRIPT, AND REQUIRING SUCH AN EXTENSIVE DEVELOPMENT AS A PRECONDITION FOR PUBLICATION MAY BE UNREASONABLE.

AFTER THE SUBMISSION...

RELATIONS WITH PEER REVIEWERS

My advice is to accept everything that is acceptable, even if it requires an effort to adapt your work (without distorting it) to the sensitivity of the reviewers: in the overall dynamics, regarding minor and “non-distorting" changes, **what costs you more time and effort, trying to convince a reviewer (often unknown and poorly accessible) that his suggestion is wrong, or accepting the suggestion even if it is perhaps not very good?**

The reasonableness demonstrated by accepting every observation that is acceptable without damage, *will allow you not to appear touchy and closed to discussion, and will therefore enable you to demand equal reasonableness from the reviewers when you resist your positions in the face of objectively unacceptable requests.*

Reviewers are usually thanked: **thanking is obligatory in case of actual interactions with them**. Often, they are people like you, who have volunteered. Other times they are great experts, who perhaps you already know. If the conversation with a particular reviewer becomes intense, you can ask if there is a way to establish direct contact, that is, as a minimum, ask the editorial staff to forward a message to the anonymous reviewer or, if possible, ask to know his/her mail address, as happens in Attributed Peer Review.

AFTER THE SUBMISSION...

THE COPYEDITING AND LAYOUT PHASE

The copyediting and layout phase begins when the text of the manuscript has been validated in final reading by the reviewers, because all their observations have been accepted or because their non-acceptance has been adequately justified.

This phase only concerns format adjustments, not content and, depending on the journal in which you are preparing to publish, it may or may not involve you.

You may be sent a print draft of your paper, with specific requests for interventions that you will carry out, and then you will send the revised draft back to the editorial staff.

Otherwise, you may be asked to send specific portions of text, or tables, or figures modified according to very specific requests.

Whether or not you have worked on it, barring exceptions, you should be sent a pre-print draft for final proofreading, after which you can suggest a list of small, specific interventions, usually in the form: «Page X, Column Y, Row Z: replace A with B».

This will be the last chance to revise the manuscript before publication.

AFTER THE SUBMISSION...

PREPRINT

Typically, a preprint is a version of a manuscript as it appears immediately before publication. In other cases, a preprint is considered a version that has not yet completed the copyediting process or even a manuscript that has not yet been peer reviewed. Whatever the reason, a preprint is inevitably different from what the article will be in its final version: for example, it may already be laid out in the journal style, but lack the DOI identifier (https://www.doi.org/) that will identify it after publication.

Because of these differences, editorial policies on preprints may be more flexible: for example, authors are allowed to share them on repositories such as **Researchgate** or **Academia.edu** even if they will then published in a closed access journal (this condition must however be verified in the declared policies, or by contacting the editorial staff).In some cases, the publisher himself encourages authors to distribute the preprint.

REMINDER: if you decide to use **a special preprint repository such as https://www.preprints.org/ or https://www.biorxiv.org/, do expect that you will be overwhelmed by requests from predatory publishers, that will beg you to publish your preprint on their journals, often unrelated with your field of research!!!**

AFTER THE SUBMISSION...

PUBLICATION

A fine moment arrives when the issue of the journal that includes your article is published.

From that moment, you are free to indicate it both in your resumes and profiles, and in those of your institutions (some of which are already connected to the automatic indexing systems mentioned much above).

If you have made your ORCID explicit in the affiliation details under the title, in a few days the article itself will become available on your ORCID profile and on your SciProfiles profile.

The last slides describe ResearchGate and Academia.edu, publication aggregator sites, also connected to indexing systems: by connecting to these sites, you will be asked questions such as "Are you the author of this manuscript?". If so, it will be added to your profile.

Where applicable, for journals that also come out in paper, it is possible to obtain paper copies ("reprints") of your article - a habit that has become less and less useful in recent decades of digitalization.

On-Line Repositories of Scientific Publications

There are many online repositories of scientific articles, freely accessible.

General points of attention: what can you publish outside the publisher's website?

The problem arises mainly for closed access online publications: for open access ones, the publisher does not lose anything if there are alternative sources of access to the same content, but may still prefer (for example for advertising reasons) that the article remains accessible only through its website: find out!

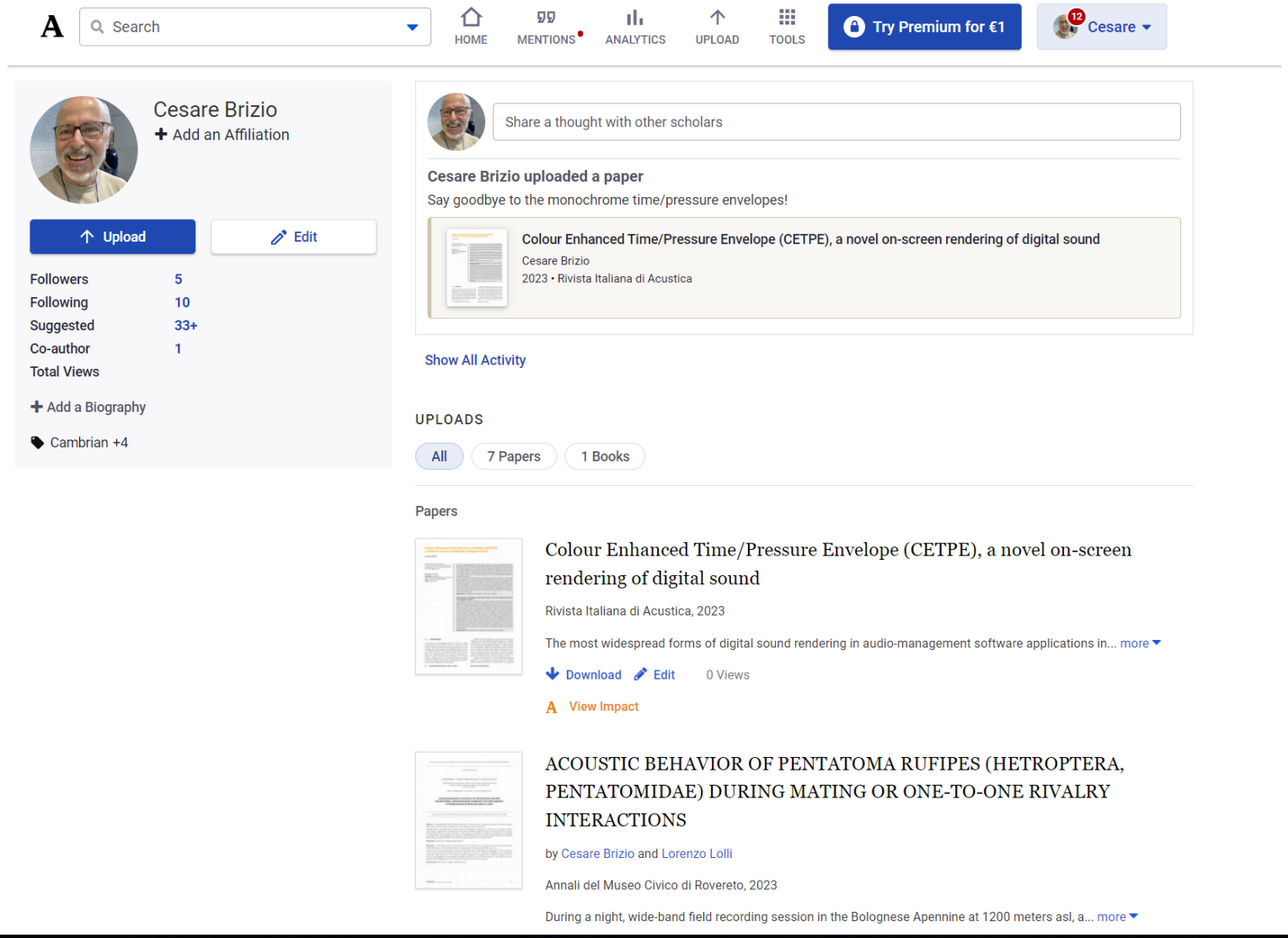
Read the policies carefully!

Usually the "preprint" (the last result of the copyediting phase) is freely shareable.

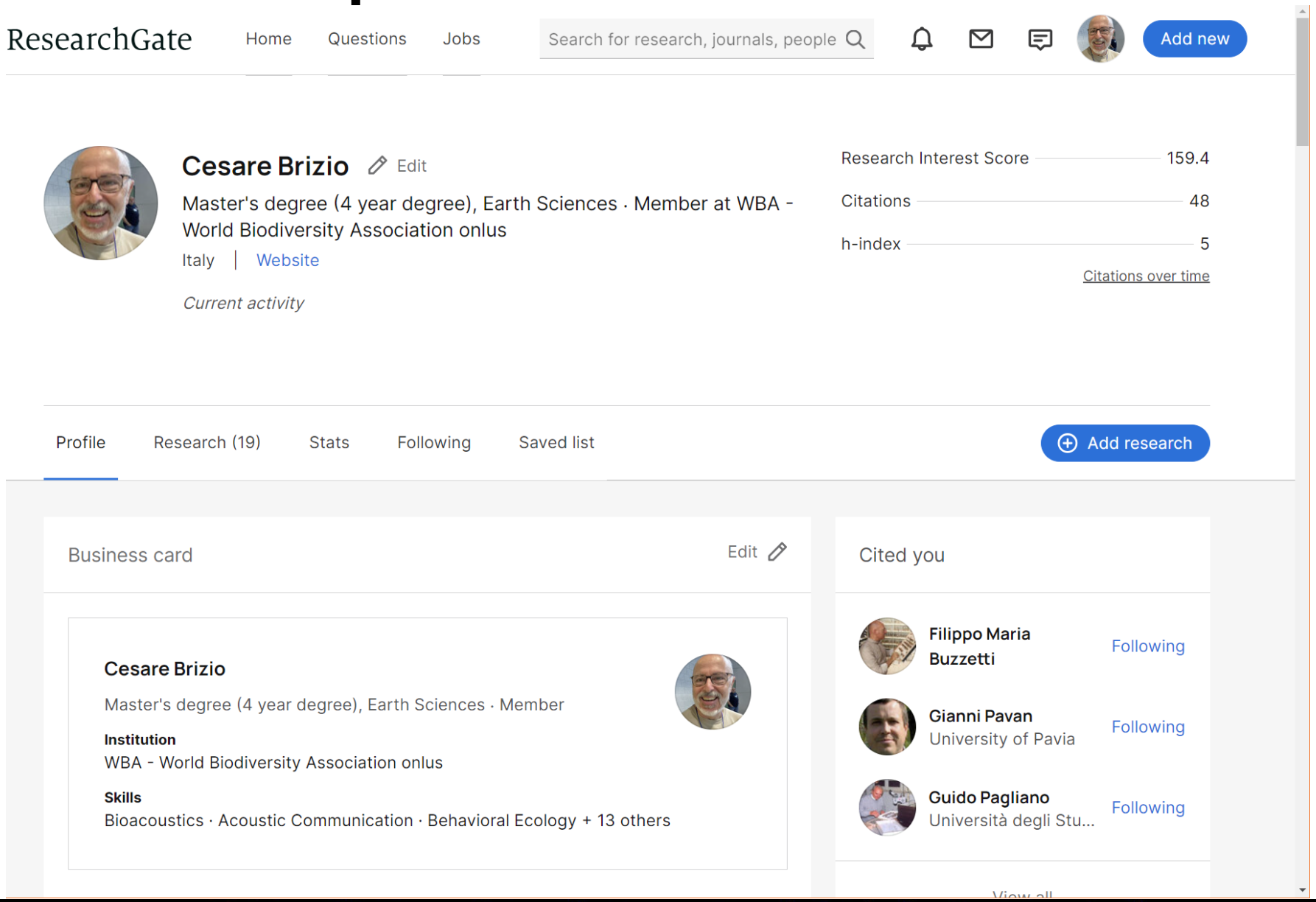
If you intend to publish the preprint on a special preprint repository such as https://www.preprints.org/ or https://www.biorxiv.org/ double-check that your target journal allows you to do so!

On-Line Repositories of Scientific Publications

Academia.edu



On-Line Repositories of Scientific Publications




Me
Anything else
Anything
QUESTIONS?