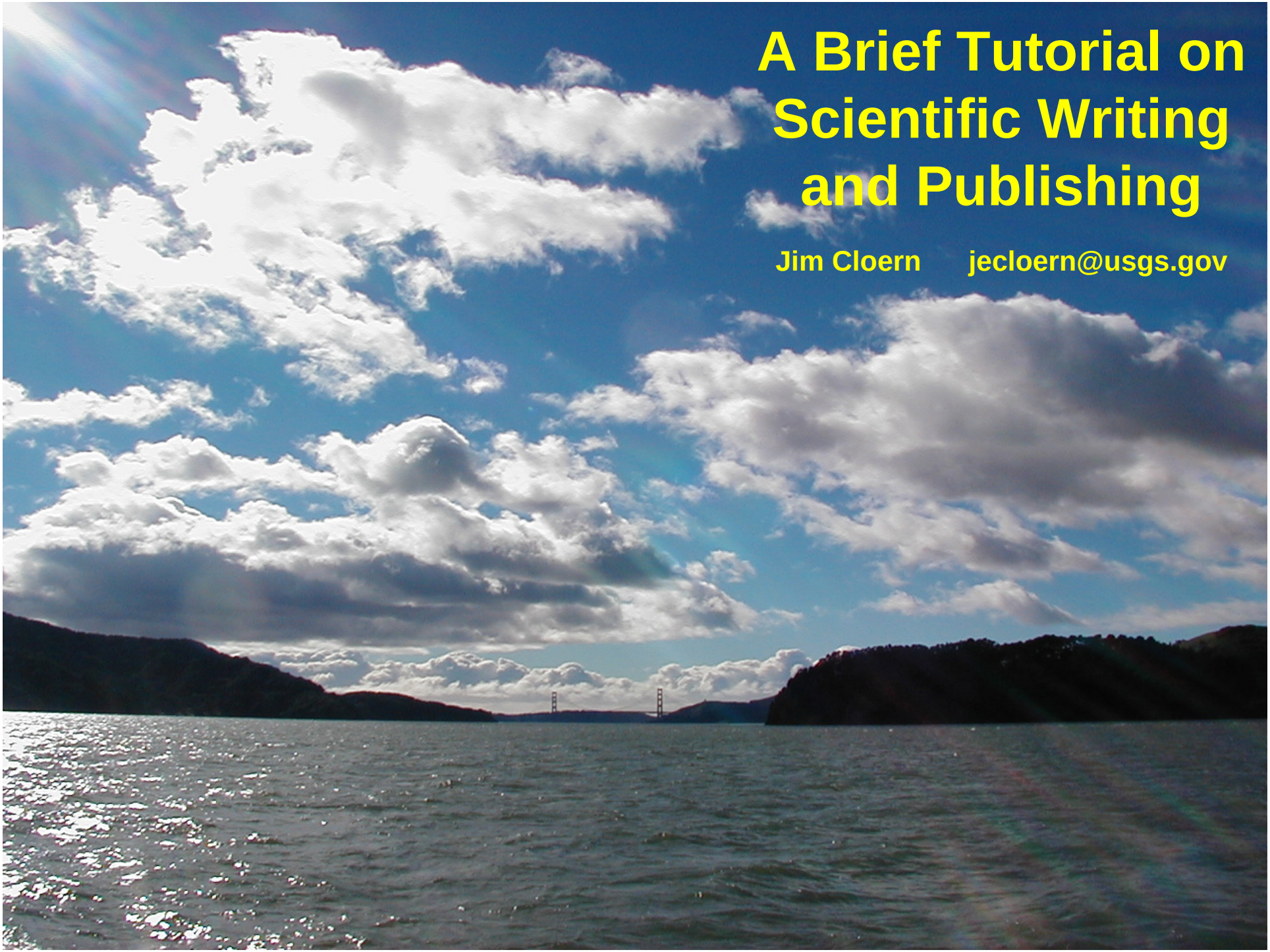


A Brief Tutorial on Scientific Writing and Publishing

Jim Cloern jecloern@usgs.gov

Part I

Attributes of well written scientific articles

The 1986 Lake Nyos Gas Disaster in Cameroon, West Africa

GEORGE W. KLING, MICHAEL A. CLARK, HARRY R. COMPTON, JOSEPH D. DEVINE, WILLIAM C. EVANS, ALAN M. HUMPHREY, EDWARD J. KOENIGSBERG, JOHN P. LOCKWOOD, MICHELE L. TUTTLE, GLEN N. WAGNER

Science 236:169-175
April 10, 1987

1. Story Line
2. Logic
3. Clarity
4. Relevance

1. Story Line

FOR THE SECOND TIME IN 2 YEARS THE COUNTRY OF Cameroon has been struck by an unusual natural disaster involving the release of lethal gas from crater lakes. The first of these events occurred on 15 August 1984 at Lake Monoun, and it caused the deaths of 37 people (*1*). The second event on 21 August 1986 was much more devastating. The lethal gas released from Lake Nyos spread for distances up to 10 km from the lake and killed about 1700 people and 3000 cattle (Figs. 1 and 2). To our knowledge, these are the only recorded events in which gas released from lakes has caused the loss of human life. We describe here the results of a field investigation of Lake Nyos that began on 27 August 1986 and involved studies of the surrounding area and nearby lakes and springs.

2. Logic: one level = structure of the paper

FOR THE SECOND TIME IN 2 YEARS THE COUNTRY OF Cameroon has been struck by an unusual natural disaster involving the release of lethal gas from crater lakes. The first

Describe the event – release of lethal gas from a lake

Geology

General geology. A number of small, young basaltic volcanoes have formed cinder cones and lava flows in northwestern Cameroon

Geologic setting & lake origin

Gas Origin

Three possible sources for the gas released on 21 August are volcanic, magmatic, or biogenic. As the terms are used in this article,

Deduce the origin of CO_2 gas

Gas Accumulation

Numerous soda springs in Cameroon contain high concentrations of dissolved CO_2 (*20*) that biogenic processes alone could not produce. The major ion chemistry of Lake Nyos is similar to that

Explain CO_2 supersaturation in the lake

Release of Gas from the Lake

The gas cloud was produced by the rapid exsolution of large amounts of CO_2 from Lake Nyos. The burst of gas leaving the lake resulted in the formation of surface waves. Areal distribution of dead

Infer an event that release CO_2 gas

Pathology

Testimonies of survivors indicate that the perceptions and effects of the gas cloud changed with distance from the lake. Survivors from

Deduce that deaths were caused by CO_2 asphyxiation

Conclusions

The geochemical and geophysical characteristics of Cameroon magmas together with expected geologic conditions in the Lake

Summarize the full story

Logic: deductions

Three possible sources for the gas released on 21 August are volcanic, magmatic, or biogenic.

A volcanic injection of magma or of gas from a phreatic explosion would have been accompanied by an input of heat and an increase of water temperature.

The bottom temperatures in Lake Nyos were no higher than those in other tropical lakes at similar elevation and latitude

Inconsistent with volcanic source of CO_2

Logic: deductions

A substantial input of lava or volcanic gas into the lake would add sulfur and chlorine compounds. An example of this is found in Soufrière crater lake,

Lake Nyos, however, showed no such enrichment of sulfur and chlorine compounds in either lake waters or sediments

Sudden release of a large reservoir of gas stored below the lake sediments would likely disrupt lake bottom topography during its ascent through the sediments. A series of four depth-sounding profiles across the lake revealed no crater or disturbance on the lake bottom corresponding to a localized vent,

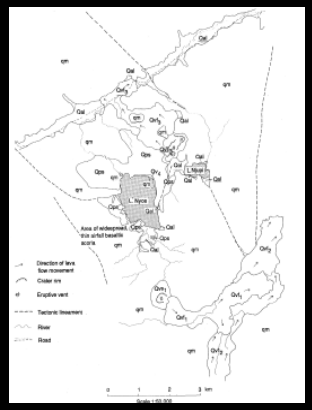
Inconsistent with volcanic source of CO_2

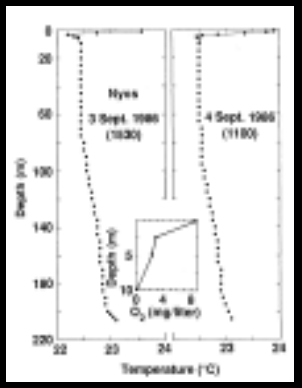
Inconsistent with biogenic source of CO_2

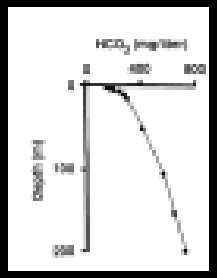
Taken together, however, the ^{14}C, He, and $\delta^{13}C$ data clearly indicate that most of the CO_2 in Lake Nyos is of magmatic origin.

Logic: weight of evidence

- geology
- gas concentrations in lake and springs
- isotopic composition of CO_2
- ionic composition of lake waters
- temperature structure of the lake
- bathymetric survey of lake
- 14C age of CO_2
- ratio of $^3He/^4He$
- $\delta^{18}O$ and δD of lake and spring waters
- change in lake level and volume of CO_2 released
- seismic records
- testimonies of survivors
- assays of regional plant damage (IR images)
- post mortems







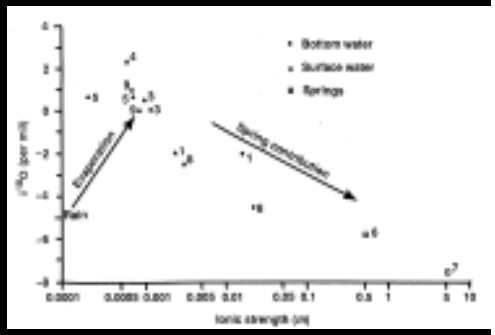
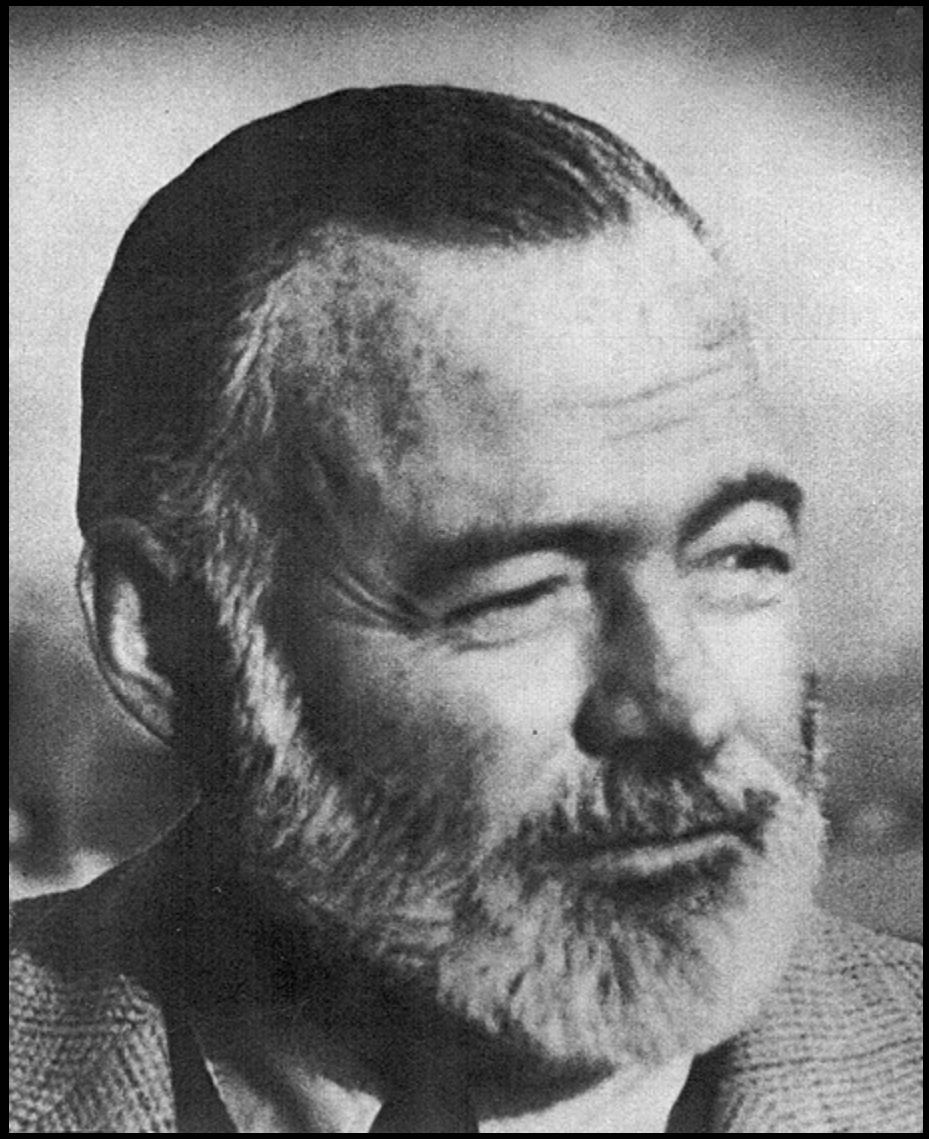


Table 1. Gas concentrations in percentage by volume. Values of isotopes in per mil. The $\delta^{13}C$-HCO_3 is measured on all of the CO_2 species present. The Lake Nyos sample taken on 3 September 1986 from 200 m is representative of samples at 103 and 155 m. The Usu volcano data are from Matsuo *et al.* (11). Hydrocarbons from C_1 to C_4 were detected in the range from 10 to 100 ppb in Lake Nyos samples.

Gas	Lake Nyos 3 Sept. 1986	Lush spring 11 Sept. 1986	Good spring 11 Sept. 1986	Usu volcano 28 Sept. 1979
He	0.0005	0.0013	<0.0001	0.0003
H_2	<0.0001	<0.0001	0.0001	8.16
Ar	0.0150	0.0150	0.2000	0.0010
O_2	0.2880	0.0512	2.650	
N_2	0.892	0.708	10.2	1.35
CH_4	0.2860	0.0029	0.1100	<0.0001
CO_2	98.3	98.9	86.6	64.9
HCN	<0.001	<0.001	<0.002	
H_2S	<0.0002	<0.0002	<0.0005	15.6
CO	<0.0005	<0.0005	<0.0001	0.111
SO_2	<0.005	<0.005	<0.01	5.90
Totals	99.8	99.7	99.8	100.0
$\delta^{13}C$-CO_2	−3.3	−8.0	−8.0	
$\delta^{13}C$-HCO_3	−3.8	−7.2	−0.7	

3. Clarity:



Clarity: the paragraph as the basic unit

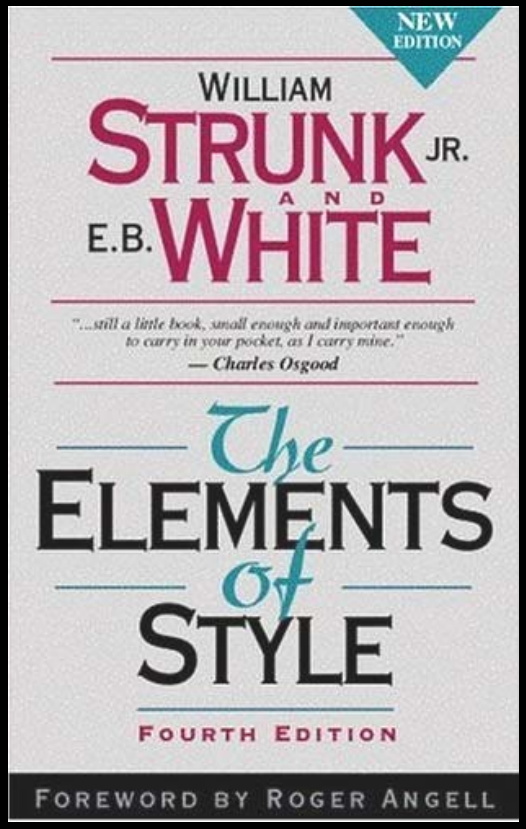
Topic sentence

Three possible sources for the gas released on 21 August are volcanic, magmatic, or biogenic. As the terms are used in this article, volcanic gas is associated with high-temperature, eruptive processes; magmatic gas is released from magma below the earth's surface, is relatively cool when it reaches the surface, and has lost its reactive constituents such as sulfur and chlorine compounds and carbon monoxide; biogenic gas is produced by decomposition of organic matter. Our data suggest that the bulk of the gas released from this event was at low temperature and of magmatic origin.

Clarity: define & provide the essential information for readers

As the terms are used in this article, volcanic gas is associated with high-temperature, eruptive processes; magmatic gas is released from magma below the earth's surface, is relatively cool when it reaches the surface, and has lost its reactive constituents such as sulfur and chlorine compounds and carbon monoxide; biogenic gas is produced by decomposition of organic matter.

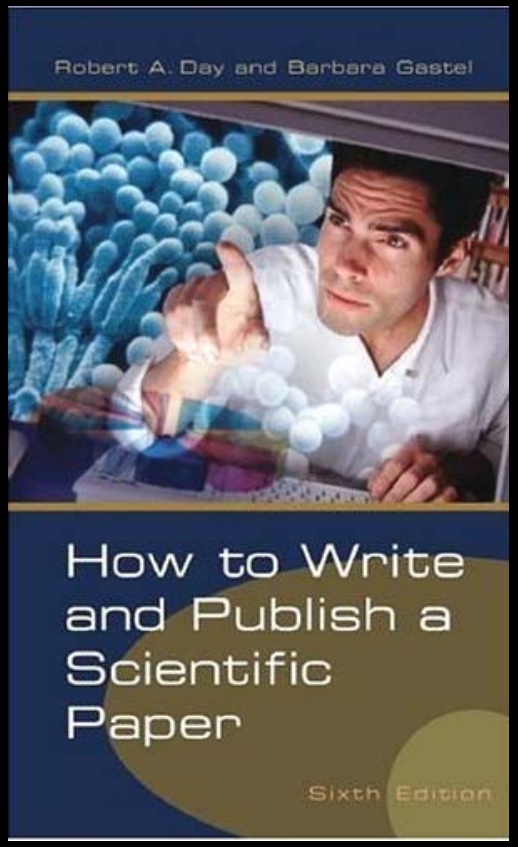
Clarity:



Rule 17: Omit Needles Words

Vigorous writing is concise. A sentence should contain no unnecessary words, a paragraph no unnecessary sentences, for the same reason that a drawing should have no unnecessary lines and a machine no unnecessary parts. This requires not that the writer make all his sentences short, or that he avoid all detail and treat his subjects only in outline, but that every word tell.

Clarity: omit needless words



Robert A. Day & Barbara Gastel

Oryx Press, 2006

Words and Expressions to Avoid

Jargon	*Preferred Usage*
a considerable amount of	much
a considerable number of	many
a decreased amount of	less
a decreased number of	fewer
a majority of	most
a number of	many
a small number of	a few
absolutely essential	essential
accounted for by the fact	because
adjacent to	near
along the lines of	like
an adequate amount of	enough
an example of this is the fact that	for example
an order of magnitude faster	10 times faster
apprise	inform
are of the same opinion	agree
as a consequence of	because
as a matter of fact	in fact (or leave out)
as a result of	because
as is the case	as happens
as of this date	today
as to	about (or leave out)
at a rapid rate	rapidly
at an earlier date	previously
at an early date	soon
at no time	never

238

Clarity: use first person, active voice

We describe here the results of a field investigation of Lake Nyos that began on 27 August 1986 and involved studies of the surrounding area and nearby lakes and springs.

Instead of "*Results of a field investigation are described*…

we estimated that 1 liter of hypolimnetic water in Lake Nyos contained 1 to 5 liters of dissolved gas.

We confirmed these observations by studying the photographs and film,

4. Relevance

Experimental ecosystem manipulations can reveal which properties of ecosystems are likely to be sensitive to particular stresses. They can also elucidate interactive features of ecosystem organization that would aid in the interpretation of results from smaller scale studies and allow the calibration of paleoecological methods. Such studies can play a key role in the detection and interpretation of man's impact on natural ecosystems.

Long-Term Ecosystem Stress: The Effects of Years of Experimental Acidification on a Small Lake

D. W. Schindler, K. H. Mills, D. F. Malley, D. L. Findlay
J. A. Shearer, I. J. Davies, M. A. Turner
G. A. Linsey, D. R. Cruikshank

Science 228:1395-1401
June 21, 1985

The 1986 Lake Nyos Gas Disaster in Cameroon, West Africa

GEORGE W. KLING, MICHAEL A. CLARK, HARRY R. COMPTON, JOSEPH D. DEVINE, WILLIAM C. EVANS, ALAN M. HUMPHREY, EDWARD J. KOENIGSBERG, JOHN P. LOCKWOOD, MICHELE L. TUTTLE, GLEN N. WAGNER

Science 236:169-175
April 10, 1987

1. Story Line - **Creativity**
2. Logic - **Rigor**
3. Clarity - **Hard Work**
4. Relevance - **Knowledge**

Abstract

Experimental acidification of a small lake from an original pH *value of 6.8 to 5.0 over an 8-year period caused a number of dramatic changes in the lake's food web. Changes in phytoplankton species, cessation of fish reproduction, disappearance of the benthic crustaceans, and appearance of filamentous algae in the littoral zone were consistent with deductions from synoptic surveys of lakes in regions of high acid deposition. Contrary to what had been expected from synoptic surveys, acidification of Lake 223 did not cause decreases in primary production, rates of decomposition, or nutrient concentrations. Key organisms in the food web leading to lake trout, including* Mysis relicta *and* Pimephales promelas, *were eliminated from the lake at* pH *values as high as 5.8, an indication that irreversible stresses on aquatic ecosystems occur earlier in the acidification process than was heretofore believed. These changes are caused by hydrogen ion alone, and not by the secondary effect of aluminum toxicity. Since no species of fish reproduced at* pH *values below 5.4, the lake would become fishless within about a decade on the basis of the natural mortalities of the most long-lived species.*

Long-Term Ecosystem Stress: The Effects of Years of Experimental Acidification on a Small Lake

D. W. Schindler, K. H. Mills, D. F. Malley, D. L. Findlay
J. A. Shearer, I. J. Davies, M. A. Turner
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Science 228:1395-1401
June 21, 1985

Opening Sentence and Paragraph

Humanity has long been perplexed by erratic fluctuations in the abundance of commercially exploited marine populations, such as sardines, herring, squid, lobsters, and crabs. One of the first models of theoretical ecology was proposed by Vito Volterra to explain such fluctuations as oscillations resulting from a nonlinear predator-prey interaction. Although Volterra's model is still of mathematical interest, fluctuations in marine populations are not regular enough to be considered oscillations and their cause has remained mysterious.

Recruitment Dynamics in Complex Life Cycles

JONATHAN ROUGHGARDEN, STEVEN GAINES, HUGH POSSINGHAM

Science 241:1460-1466
September 16, 1988

Part II

- authorship ethics
- which journal?
- manuscript preparation
- submission
- editorial evaluation/peer review
- revision/resubmission
- proofing galleys
- rejection
- citations

Authorship Ethics

Syrett, Kristen L. & Rudner, Lawrence M. (1996). Authorship ethics. *Practical Assessment, Research & Evaluation*, 5(1). Retrieved November 9, 2006 from http://PAREonline.net/getvn.asp?v=5&n=1 . This paper has been viewed 13,683 times since 11/13/1999.

Presented here is a summary of key ethical standards outlined in the "*Uniform Requirements for Manuscripts Submitted to Biomedical Journals*," developed by the International Committee of Medical Journal Editors. Adopted by over 500 scientific and biomedical journals, including the New England Journal of Medicine, Science, and Lancet, these ethical standards are effective guidelines for educational publications.

AUTHORSHIP

All persons listed as authors must have made a substantial intellectual contribution to the overall study and accept public responsibility for it. In other words, the author must give input beyond general supervision or instruction of a research group, have a clear understanding of the methodology and implications of the work, and be able to defend the contribution against academic challenge.

Specifically, individuals identified as authors should have made significant contributions:

1. to the conception and design, or analysis and interpretation of data, or both;
2. to drafting of the manuscript or revising it critically for intellectual content; and
3. on final approval of the version of the manuscript to be published.

All three conditions must be met. Participation solely in the acquisition of funding or the collection of data does not merit authorship status.

CONCEPTS AND QUESTIONS

Authorship in ecology: attribution, accountability, and responsibility

Jake F Weltzin[1*], R Travis Belote[2], Leigh T Williams[1], Jason K Keller[3], and E Cayenne Engel[1]

Quality and quantity of publications are among the most important measures determining the success of ecologists. The past 50 years have seen a steady rise in the number of researchers and collaborative manuscripts, and a corresponding increase in multi-authored articles. Despite these increases, there remains a shortage of useful and definitive guidelines to aid ecologists in addressing authorship issues, leading to a lack of consistency in what the term "author" really means. Deciding where to draw the line between those who have earned authorship and those who are more appropriately credited in the acknowledgments may be one of the more challenging aspects of authorship. Here, we borrow ideas from other scientific disciplines and propose a simple solution to help ecologists who are making such decisions. We recommend improving communication between co-authors throughout the research process, and propose that authors publish their contributions to a manuscript in a separate byline.

Frontiers in Ecology and the Environment 4(8): 435-441, 2006

Journals: redundant publications are bad news

Publishing the same work twice is unethical and casts doubt on the integrity of research.

Sir — We have developed an electronic systematic search tool to estimate the amount of duplicate publications in the 70 ophthalmological journals listed by Medline. Our results show that there is a considerable number of duplicate publications. If this holds true for other disciplines, it is bad news for research.

For our survey, we matched the title and author(s) of each of the 22,433 articles published in the 70 journals between 1997 and 2000 using a duplicate-detection algorithm[1], and found that 13,967 pairs of articles give a matching score of 0.6 or more. Of these, we manually reviewed a random sample of 2,210. We found 60 genuinely 'duplicate' publications and estimate that 1.39% of the analysed articles are redundant. Because of the very restrictive selection process and the impracticality of detecting all duplicate publications, and because the estimated amount of duplicates increases with lower matching scores (Fig. 1), we regard this estimate to be the tip of an iceberg.

Of the 70 journals, 32 were victim to duplicate publication — 27 journals published the first paper and 26 the duplicate, on average 6.4 months later (standard deviation 4.7, range 0–21.3 months). We found no statistically significant difference between the average journal impact factor of the first (1.13) and the second journal in which the duplicate article was published (1.42) (Wilcoxon-signed ranks test $P > 0.1$). The analysed publications were by 210 authors, suggesting by extrapolation that a total of 1,092 authors could have been involved in redundant publication during the time period that we analysed. The scientific conclusions of the original and of the duplicate(s) were identical in 88.3% of cases; we found slight changes in 6.7%; and major changes (different results despite identical samples, or omission of patients) in 5% of cases.

Duplicate publications are unethical. They waste the time of unpaid, busy peer reviewers and of editors; inflate further the already over-extensive scientific literature; waste valuable production resources and journal pages; lead to flawed meta-analysis; exaggerate the significance of a particular set of findings; distort the academic reward system and copyright laws; and bring into question the integrity of medical research. Republication of data yields no benefit other than to the authors.

It is important that journal editors can trust their authors. Although many duplicate publications are discovered by careful peer-reviewers or editors, they cannot provide complete protection. Scientific journals can combat redundant publication in various ways[2], but in practice the penalties for duplicate publication are minimal[3].

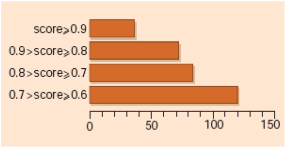

Figure 1 **Estimated number of redundant publications for matching scores of 0.6 or more, where 1 = total overlap.**

Proper deterrents are needed: for example, better education on publication guidelines, the introduction of registers for planned and ongoing clinical trials, and a change in assessment criteria from quantity to quality when papers are submitted for posts or grants. As long as publications remain the central requirement for academic advancement, a reasonable solution seems unlikely. Nevertheless, it is imperative that the problem of redundant publications be addressed, for it is the responsibility of all those who care about objective research and evidence-based medicine.

Stefania M. Mojon-Azzi*, Xiaoyi Jiang†‡, Ulrich Wagner*, Daniel S. Mojon‡§

**Research Institute for Management in Health Services at the University of Applied Sciences, St Gallen, Switzerland*

†*Department of Electrical Engineering and Computer Science, Technical University of Berlin, Germany*

‡*Department of Ophthalmology, Kantonsspital, 9007 St Gallen, Switzerland*

§*Scientific Secretary, Swiss Society of Ophthalmology, Kantonsspital, St Gallen, Switzerland*

1. Jiang, X. & Mojon, D. S. in *Proc. 1st Int. Workshop New Developments in Digital Libraries* 79–88 (ICEIS, Setúbal, Portugal, 2001).
2. Cho, B. K. *et al. Ann. Thorac. Surg.* **69**, 663 (2000).
3. Franken, E. A. *Acad. Radiol.* 5, 407–408 (1998).

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Nature 421: 9
January 16, 2003

Which Journal? Scope

The American Naturalist

About the Journal

Since its inception in 1867, *The American Naturalist* has maintained its position as one of the world's most renowned, peer-reviewed publications in ecology, evolution, and population and integrative biology research. While addressing topics in community and ecosystem dynamics, evolution of sex and mating systems, organismal adaptation, and genetic aspects of evolution, *AN* emphasizes sophisticated methodologies and innovative theoretical syntheses--all in an effort to advance the knowledge of organic evolution and other broad biological principles.

Articles

The *American Naturalist* will consider articles of any length but prefers manuscripts that have 21 manuscript pages or fewer of text, not including the literature cited, and have no more than six tables and/or figures for the print edition. Additional material can appear in the expanded online edition. Such material can include appendixes, tables, and figures as well as electronic enhancements such as video, sound, and data files (see details below). The expanded online edition is the full-text edition, is copyrighted, and will be maintained by the University of Chicago Press. Symposium articles are by invitation only (usually as part of a supplement issue).

Notes

Notes communicate concise points, using either data or theory, that substantively enhance the broader conceptual advances that typify articles in the *American Naturalist*. Notes generally are not as fully developed as articles but do present observations or insights of broad general significance and interest. Notes are no more than 12 manuscript pages of text (not including the literature cited) and have no more than three figures and/or tables in print. Notes must have abstracts of no more than 150 words.

Which Journal? Publication Time

Ecosystems (2006) 9: 422–440
DOI: 10.1007/s10021-005-0113-7

ECOSYSTEMS

Ecological Values of Shallow-Water Habitats: Implications for the Restoration of Disturbed Ecosystems

Cary B. Lopez,[1] James E. Cloern,[1]* Tara S. Schraga,[1] Amy J. Little,[1] Lisa V. Lucas,[1] Janet K. Thompson,[1] and Jon R. Burau[2]

> 20 months

Received 3 September 2004; accepted 29 March 2005; published online 13 April 2006.

GEOPHYSICAL RESEARCH LETTERS, VOL. 32, L14608, doi:10.1029/2005GL023321, 2005

Climate anomalies generate an exceptional dinoflagellate bloom in San Francisco Bay

James E. Cloern, Tara S. Schraga, Cary B. Lopez, and Noah Knowles
U. S. Geological Survey, Menlo Park, California, USA

Rochelle Grover Labiosa
Department of Geophysics, Stanford University, Stanford, California, USA

Richard Dugdale
Romberg Tiburon Centers, San Francisco State University, Tiburon, California, USA

Received 28 April 2005; revised 3 June 2005; accepted 17 June 2005; published 20 July 2005.

< 3 months

Which Journal? Publication Cost

Page Charges

No page charges are required or requested for publication in *Geochimica et Cosmochimica Acta*. The only exception is if authors wish to have their published contributions include color figures.

GLOBAL AND PLANETARY CHANGE

Reprints

The corresponding author, at no cost, will be provided with a PDF file of the article via e-mail or, alternatively, 25 free paper offprints. The PDF file is a watermarked version of the published article and includes a cover sheet with the journal cover image and a disclaimer outlining the terms and conditions of use.

ASLO Limnology and Oceanography

Publication Charges

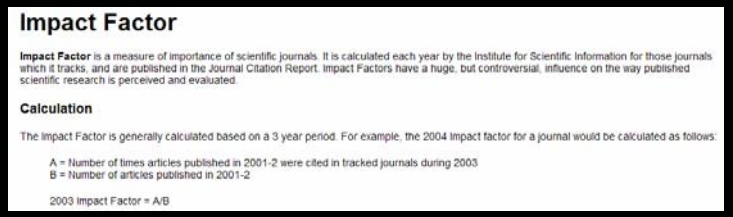
Authors are responsible for paying the following publication charges: $100 for each printed page (or fraction) over 10 (there are about 2-3/4 double-spaced manuscript pages per printed page); $5 for each equation, figure, and table; $10 for each PDF page of Web appendices; and $3 for each line changed by the author in the galley proof.

The charge for color figures (one page or any portion of a page) when set from hard copy is $600 for one figure, and $150 for each subsequent figure to a maximum of 8 figures. If figures are submitted in an approved digital format the charges will be reduced to $500 for one figure, and $50 for each subsequent figure to a maximum of 8. The charges for combinations of hard copy and digital submissions, or for situations that are not covered above, will be determined by the editorial office.

If none of the authors is a member of ASLO at the time of billing, there is a $100 publication fee. These charges may be waived if financial hardship can be proved.

Which Journal? Impact Factor

Journal Impact Factor is .... a product of Thomson ISI (Institute for Scientific Information). ...; it is a measure of the frequency with which the "average article" in a journal has been cited in a particular year .... Wikipedia.



Impact Factor

Impact Factor is a measure of importance of scientific journals. It is calculated each year by the Institute for Scientific Information for those journals which it tracks, and are published in the Journal Citation Report. Impact Factors have a huge, but controversial, influence on the way published scientific research is perceived and evaluated.

Calculation

The Impact Factor is generally calculated based on a 3 year period. For example, the 2004 Impact factor for a journal would be calculated as follows:

A = Number of times articles published in 2001-2 were cited in tracked journals during 2003
B = Number of articles published in 2001-2

2003 Impact Factor = A/B

Journal Citation Report - 2003 Science Edition

Journal full name	2003 Total	Impact Factor	Immediacy Index	2003 Articles	Cited Half-life
AAPG BULLETIN		01.380	00.220	012	099.90
AAPS PHARMSCI		01.558	00.071	001	002.90
AATCC REVIEW		00.459	00.063	012	
ABDOMINAL IMAGING		00.996	00.194	006	005.00
ABHANDLUNGEN AUS DEM MATHEMATISCHEN SE		00.152		001	099.90
ACADEMIC EMERGENCY MEDICINE		01.844	00.470	012	004.10
ACADEMIC MEDICINE		01.104	00.340	012	005.70
ACADEMIC RADIOLOGY		01.409	00.431	012	004.00
ACCOUNTS OF CHEMICAL RESEARCH		15.000	02.168	012	006.00
ACCREDITATION AND QUALITY ASSURANCE		00.637	00.126	012	003.10
ACI MATERIALS JOURNAL		00.614	00.050	006	008.20
ACI STRUCTURAL JOURNAL		00.473	00.179	006	007.40
ACM COMPUTING SURVEYS		07.500	00.154	004	007.40
ACM SIGPLAN NOTICES		00.246	00.013	012	008.20
ACM TRANSACTIONS ON COMPUTER SYSTEMS		02.800	00.333	004	099.90
ACM TRANSACTIONS ON DATABASE SYSTEMS		01.957	00.200	004	099.90
ACM TRANSACTIONS ON DESIGN AUTOMATION		00.707	00.069	004	004.40
ACM TRANSACTIONS ON GRAPHICS		02.124	00.198	004	008.30
ACM TRANSACTIONS ON INFORMATION SYSTEM		03.533	00.667	004	007.10
ACM TRANSACTIONS ON MATHEMATICAL SOFTW		00.979	00.192	004	099.90
ACM TRANSACTIONS ON PROGRAMMING LANGUA		01.676	00.250	006	099.90
ACM TRANSACTIONS ON SOFTWARE ENGINEERI		02.240	00.000	004	006.50
ACOUSTICAL PHYSICS		00.326	00.139	006	004.40
ACSMS HEALTH & FITNESS JOURNAL		00.488	00.111	006	
ACTA ACUSTICA UNITED WITH ACUSTICA		00.409	00.052	006	
ACTA AGRICULTURAE SCANDINAVICA SECTION		00.812	00.040	004	005.90
ACTA AGRICULTURAE SCANDINAVICA SECTION		00.125	00.022	004	007.20
ACTA ALIMENTARIA		00.299	00.000	004	007.30
ACTA ANAESTHESIOLOGICA SCANDINAVICA		01.680	00.198	010	006.80
ACTA APPLICANDAE MATHEMATICAE		00.626	00.090	012	007.30
ACTA ARITHMETICA		00.481	00.096	012	009.50
ACTA ASTRONAUTICA		00.307	00.010	024	008.50
ACTA ASTRONOMICA		03.500	00.500	004	006.30

Gaming the impact factor

It seems to be open season on impact factors (IF) at the moment. First, the *Wall Street Journal* (5 June 2006) ran an "exposé" on how unscrupulous editors of scientific journals try to boost their IF, either by requiring that authors cite more articles from their journal or by writing "best papers of the year"-type articles, in which most, if not all the citations refer to their own journal. In that same month, *Public Library of Science (PLoS) Medicine* published a highly critical editorial, accusing Thomson Scientific, publishers of the Journal Citation Reports (JCR), which list the impact factors and placing of the top ranked journals, of being secretive, subjective, and unscientific in the way they do their calculations (DOI: 10.1371/journal.pmed.0030291).

"Not so", says James Testa, Director of Editorial Development at Thomson Scientific. "We try to be as transparent as possible and consider very carefully what items should or should not be counted, based on their likelihood of having an impact on future scientific research." There are a number of clues: does the item have a scientifically descriptive title, named authors plus addresses, and an abstract? Does it include numerous references (ie is it based on prior work), tables, or figures? Nevertheless, Thomson Scientific realizes that for something as crucial as journal rankings, they need to communicate their policy, based on many years of data and practice, in order to clarify their methodology for defining citable items. They anticipate publishing such a policy later this year.

Let's back up a minute and look at how impact factors are produced, because, as the *PLoS* editorial points out, while almost everybody knows impact factors are important, most have only a vague idea of how they are calculated. Taking *Frontiers* as an example, Thomson Scientific will count how many times articles published in the journal in 2003 and 2004 were cited in papers appearing in 2005. This number is then divided by the number of citable articles published in *Frontiers* in 2003 and 2004. On the whole, only full scientific articles (primarily Research Communications and Reviews in our case) are counted in the denominator, but if, for instance, an editorial or a Forum is cited somewhere, that is added to the numerator, thereby increasing the IF. There is some pressure on Thomson Scientific not to include particular article types in the denominator, and after the publication of the JCR they receive hundreds of calls from publishers, although only a few actually visit the Thomson offices in Philadelphia, as *PLoS Medicine* did, and start arguing about it beforehand.

Sue Silver
Editor-in-Chief
Frontiers in Ecology and the Environment

Frontiers in Ecology and the Environment 4(6): 283, 2006

Instructions to Authors

Manuscript Preparation

The *American Naturalist* now uses the Web Peer Review system developed by the University of Chicago Press. This means that there are two sets of standards for manuscript preparation--one set for the review process and another for the production process after a manuscript is accepted. The journal office will contact authors of accepted manuscripts about changes that might be needed to prepare the manuscript for production.

Manuscripts that deviate from the following standards may be returned without review.

The first page of the manuscript file should be a title page that includes the title; the names, affiliations, and e-mail addresses of all authors; a list of four to six keywords; and a list of all the elements of the manuscript that will appear in the expanded online edition by title (e.g., app. B, table A1, color version of fig. 1). Also list any figures that are to print in color. The title page should indicate whether the manuscript is an article, note, synthesis, comment, reply, or symposium (invited) article. **E-mail addresses for every author are required before a manuscript can be processed.**

The *American Naturalist* does not allow titles with numerals indicating a sequence of papers. The title of each paper must stand on its own.

The second page should be the one-paragraph abstract, without citations, of 200 words or less for articles, 150 words or less for notes, and 100 words or less for comments. The third page should begin the text.

Manuscripts should be in the following order: title page, abstract, text, acknowledgments, appendixes, literature cited, and tables (each table should begin on a new page). For the review version, authors are strongly encouraged to place their figures and legends in the manuscript at the point where each figure is first mentioned. If this is difficult, place figures and legends last in the file.

Submission: cover letter

Basic info

Subject and Importance of paper

Suggested reviewers

The American Naturalist
The University of Chicago Press
1427 E. 60th Street
Chicago, IL 6063

To the Editorial Board,

Would you please consider the enclosed manuscript, "Habitat Connectivity and Ecosystem Productivity: Implications from a Simple Model", for publication as an Article in *The American Naturalist*? The manuscript comprises 22 pages of text, including five figures. The manuscript presents original research results that are not being considered for publication elsewhere and have not appeared in any form of electronic publication.

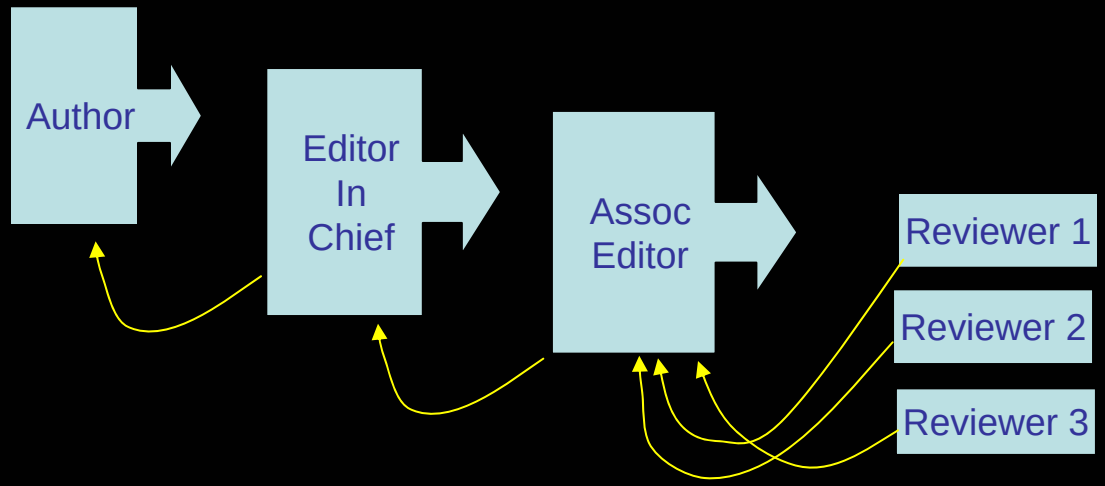
Ecologists are actively engaged in research to understand how the movement of individuals and genomes across spatially variable landscapes builds communities and sustains populations. This research is relevant to our incomplete conceptual understanding of how complex biological systems evolve, and it also has relevance to our goal of sustaining biodiversity as ecosystems become progressively more fragmented. Much of the ongoing research is directed to understand how the openness of ecosystems sustains populations or communities. But the transport of energy and resources across spatially-variable landscapes is an equally important process that constrains emergent ecosystem properties such as rates of production and nutrient cycling. In this paper I use simulations with a simple nutrient-producer-consumer model to address a fundamental question that is largely unexplored in the literature: does overall ecosystem productivity and nutrient cycling efficiency vary with the strength of connectivity between functionally-variable habitats? This question is one key to understanding the biophysical constraints on building and maintaining complex biological systems, with important implications for strategies to sustain diverse communities through habitat restoration.

The following researchers would be highly qualified to review this manuscript:

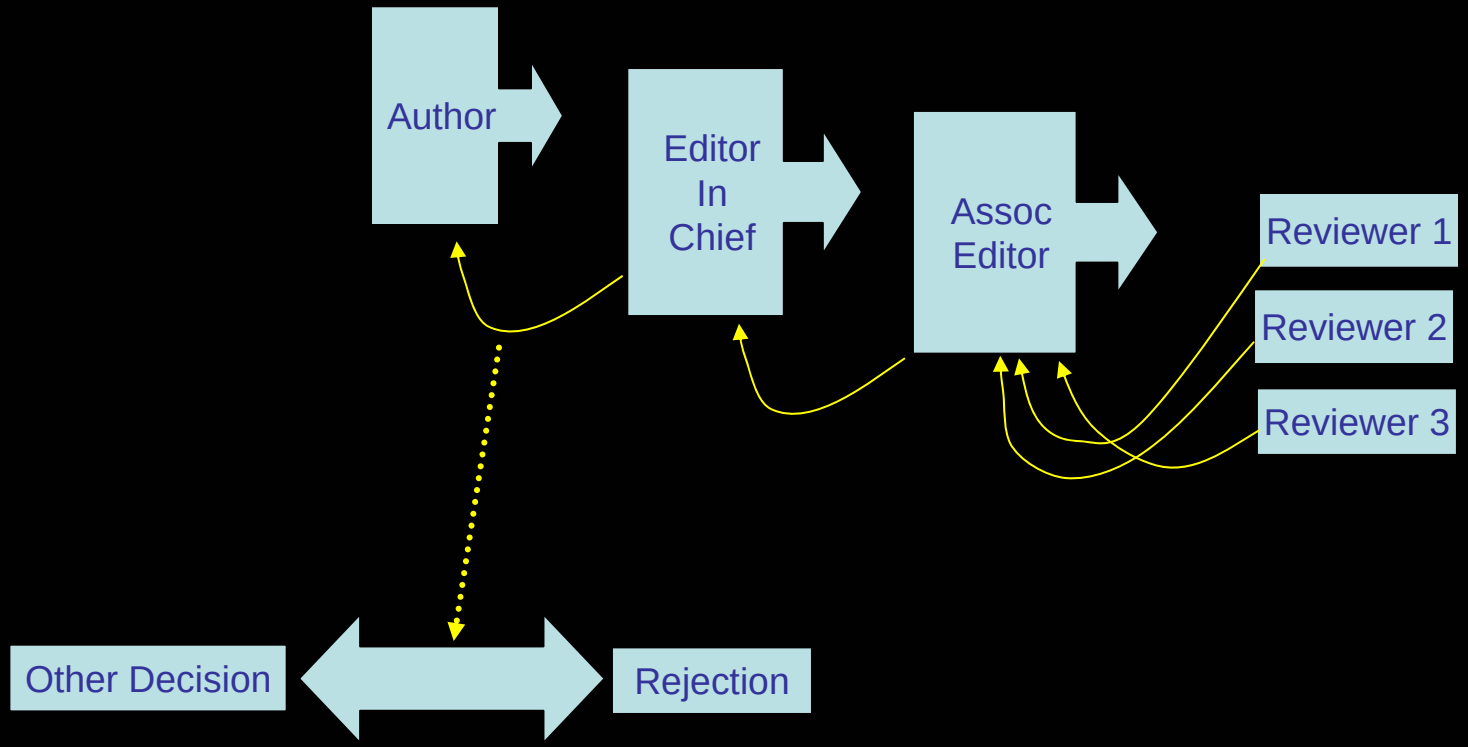
Dr. William A. Reiners
Department of Botany
University of Wyoming
Laramie, WY
Tel (307)-766-2380
reiners@uwyo.edu

Dr. Catherine Pringle
Institute of Ecology
University of Georgia
308 Biological Sciences Building
Athens, GA 30602-2602

The Review Process



The Review Process



Rejection

pnas@nas.edu
03/24/2004 04:58 PM

To: jecloern@usgs.gov
cc:
Subject: PNAS Decision Notification

March 24, 2004

Title: "Phytoplankton and Land Plants Follow Different Diversity Rules"
Tracking #: 2004-00458
Author(s): Cloern

Dear Dr. Cloern,

I regret to say that your manuscript [MS# 2004-00458] has been rejected for publication in PNAS. The Academy Member who served as the editor obtained 2 reviews from expert reviewers, whose comments are attached. After considering reviews and re-reading the manuscript, the Member has concluded that it must be rejected. A single negative review, with which the Member agrees, is sufficient to recommend rejection.

Once a paper has been rejected by a Member, it may not be resubmitted through another Member.

Thank you for submitting to PNAS. I am sorry we cannot be more encouraging this time, and I hope you will consider us in the future.

Sincerely yours,
Nicholas R. Cozzarelli
Editor in Chief
Proceedings of the National Academy of Sciences
pnas@nas.edu

Professional Biologist

Publication and Rejection among Successful Ecologists

PHILLIP CASSEY AND TIM M. BLACKBURN

Scientific rejection is a frequent part of the publication process that is rarely explicitly discussed. Peer review is an essential and well-established part of the scientific method. But to what degree is manuscript rejection indicative of scientific inadequacy? Here we quantify the extent to which a sample of scientists with successful publication careers in our discipline, ecology, have experienced manuscript rejection. We show that publication success and manuscript rejection are definitely not exclusive. Notably, we find that the ecologists with the highest number of publications also suffered the largest proportion of manuscript rejections. Rejection is not easy even for the most successfully publishing ecologists; however, manuscript rejection does not seem to have deterred our respondents or to have hampered their career advancement. We hope that our results will encourage ecologists (and particularly research students) to continue submitting their studies for publication.

BioScience 54(3): 234-239, 2004

Other Decision

March 27, 2006

Dear Dr. Cloern:

One of our associate editors (Dr. James P. Grover), two reviewers, and I have now read your manuscript. At this time, the **Editorial Board is unsure of the manuscript's suitability for the American Naturalist**. Consequently, **we will require a major revision of your manuscript** "Habitat connectivity and ecosystem productivity: implications from a simple model" before we can make a decision. **Your revision will be subject to review**.

I absolutely agree with Dr. Grover's comments and recommendations. **Your paper is not well organized, and the model description is too lengthy** at present. The construction and results of the one-habitat NPZ model **should go into an online appendix**. The description of the two-habitat model should go into a brief "Model Formulation" section. Also, following Dr. Grover, the "Results" and "Discussion" sections should be separated. That should improve the readability of your paper. Hopefully, you can **keep your main text down to about 19 or 20 pages**, which I feel is about right in length to get your points across.

I want to be straightforward about this manuscript's prospects. On one hand, the manuscript seems to have the potential to meet the Naturalist's goals. On the other hand, **serious comments have been raised,** and the Editorial Board is uncertain whether these objections can be met. Therefore, I want to encourage revision of this manuscript, but I also need to be clear that, even in revised form, the manuscript ultimately may not be accepted.

Pasted below you will find copies of Dr. Grover's letter and the reviewers' comments. Please address all of the issues raised by the comments.

Please submit your revised manuscript to the AmNat web peer review website at http://mss.uchicago.edu/AN/ within 60 days. If you will not be able to meet the 60-day deadline or if you decide to withdraw the manuscript, please notify the journal office.

Please **upload a detailed cover letter explaining your responses to the comments** (using the "author's response to referees" upload feature). This letter will be available to the associate editor and to any reviewers. Confidential messages should be e-mailed to the journal office. Any revision not accompanied by a detailed response may be returned without consideration. Your revision may be subject to some review.

Sincerely,

Donald L. DeAngelis
Editor

ASSOCIATE EDITOR'S RECOMMENDATION

Referees had somewhat differing opinions of this paper. One was very positive and saw a need for only minor revisions. The other was more negative, suggesting that major revisions would be needed for the paper to meet the standards of the journal, and I tend to **agree with this viewpoint. I think the paper has strong potential for a more specialized journal like Ecosystems. To be convinced that the paper has sufficient broad appeal for American Naturalist, I think that major revisions need to be made**. The main themes don't stand out well, mostly due to presentation issues that can be fixed with reorganization. Perhaps more difficult is what seems to me to be **a questionable assumption** (as explained below). There are positive aspects, in that the role of spatial processes is examined in a way that is both theoretical and empirical, with a real attempt to evaluate it in a natural system. There is a potential nugget here too, the suggested use of the ratio C/PG to judge when connectivity will have the ecosystem effects suggested here, but I'd like some reassurance that this idea is robust and has general applicability.

Specific Comments

Organization: This paper is primarily about connectivity and productivity, as explored by running an NPZ model in two connected sub-habitats. However, the main model involved is not presented in the section on model formulation ("The NPZ Model"), but is constructed in the middle of a section called "Results and Discussion". I think **this buries the most interesting parts of the approach** and could distract readers into some rather standard and detailed material on NPZ models. The most important results (Figs. 3-5) follow a detailed presentation of simpler, one-habitat NPZ results that are again rather familiar. I suggest the following changes in organization to the authors.

Put the construction and results of the one-habitat NPZ model into an appendix. A new section on "Model Formulation" should present the two-habitat coupled model, equations (24) - (26), with explanations focusing on the parameterization of transport terms (eqs. 21 - 23), and those terms that couple N, P, and Z. Put the details of temperature- and light-dependence in another appendix, along with other parameterization issues (eqs. 7 - 10). That way, the material that is familiar (and of interest only) to specialists is separated from material that more general ecologists will find interesting. It will then be easier for them to grasp that the heart of this paper involves two spatially coupled food chains. The presentation of the spatially coupled NPZ model can say that zero connectance is the special case of isolated food chains, but leave the details of these in appendices.

I also **suggest separating "Results" from "Discussion"**. With the material on the results of the one-habitat NPZ model put into an appendix, the central results on connectivity (Figs. 3-5) would be the only thing to present in the results section, better emphasizing the paper's contribution. The discussion could then focus on generalizing the results by way of the C/PG principle and related issues.

Assumption that I'm worried about: In the spatially coupled formulation, N and P are transported between sub-habitats but not Z. This doesn't have a biological rationale, and in fact

REVIEW 1

The importance of resource transfer from donor to recipient habitats to sustaining subsidized communities (in particular in resource-limited habitats) is an important but mostly unexplored issue in ecology. Aquatic ecosystems in particular are open systems that exhibit intense exchange rates of energy, matter, and organisms with adjacent aquatic and terrestrial habitats.

The present modeling exercise was motivated by the collapse of planktivorous fish in the Sacramento-San Joaquin Delta. The main reasons for reduced production of food resources are considered to be the massive reduction of tidal marshes, the damming of tributaries, and their disconnection from former floodplains.

The strength of the present paper is that it integrates connectedness (or connectivity) as a key component that can amplify overall system production in a metazoan food web. In addition, simulated values were compared with actual data from the Delta. However, although multiple alterations of the degree of connectivity are considered as being responsible for the collapse of the fish (and their food resources) in the Sacramento-San Joaquin Delta, the author only focused on the linkage between shallow and deep pelagic habitats. **Is this the most important linkage?** And **what would be the outcome of the modeling exercise if one would include an additional linkage** (e.g. estuary-river)? And **how does the coupling change with nutrient pulses** as a consequence of flood pulses and season?

Page 2, line 5: It is stated that the spatial connectivity is viewed as a zero sum process. However, **in the introduction, something different is said** (page 4, lines 2-8). There, the author says that it is not clear. In addition, stream-hyporheic exchange processes enhance the production in both systems, primary in the water column and secondary in the hyporheic.

p.3 L.10: ".... and the earth sciences (Rougharden et al. 1988)". **It is not clear how earth sciences should be integrated into this model.**

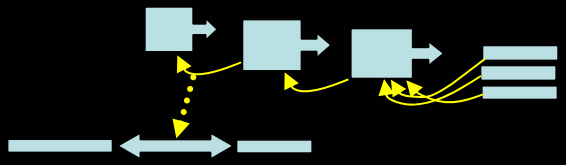
p. 6, L.7: **Is nitrogen the key limiting nutrient?** What is with other nutrients such as silica and P? Damming of the tributaries might modify the silica concentration, therefore altering the Si:N ratio and the composition of the phytoplankton (shift from a diatom to a blue-green algae community). How sensitive is the model for differences in planktonic community composition?

- Page 6, lines 10-12. Here the author describes the system, but **a lot of basic information on the system is missing.** Maybe a clear differentiation between methods, results and discussion might help.

- Page 14, plot 3. Why is P of the shallow section not affected by nutrient depletion? It seems that there is an effect of the nutrient concentration on P, but P is always really high through nearly all the year. If P is mainly a result of phytoplankton development, then the changes are really much faster than the model says. I mean, nutrients can be rapidly depleted during a boom, and then there is a decline in the phytoplankton.

Major revision

Resubmission



June 12, 2006

Donald L. DeAngelis, Editor
The American Naturalist
1427 E. 60th St.
Chicago, IL 60637

MS #41465, version 1

Dear Dr. DeAngelis,

This letter accompanies a revised version of MS #41465, "Habitat Connectivity and Ecosystem Productivity: Implications from a Simple Model". The paper has been revised substantially, following the detailed guidelines provided by you, Associate Editor Grover and two referees. Those comments and guidelines are highlighted below in yellow, and each is followed by a description of how the analyses and text have been modified.

Editor Donald L. DeAngelis:

Your paper is not well organized, and the model description is too lengthy at present. The construction and results of the one-habitat NPZ model should go into an online appendix. The description of the two-habitat model should go into a brief "Model Formulation" section. ... the "Results" and "Discussion" sections should be separated ... keep your main text down to about 19 or 20 pages.

I followed, almost exactly, the suggestions by James Grover to reorganize this manuscript. All details of model construction, one-habitat NPZ simulations, and process equations and parameters have been excised from the manuscript and placed in two appendices. A new section "Model Formulation and Hypothesis Testing" presents the general structure of the two-habitat model and explains how simulation experiments are used to test the null hypothesis presented in the Introduction. Separate "Results" and "Discussion" sections have been created, following Dr. Grover's guidelines. The manuscript comprises 18 pages of text and figures (within your target length); the appendices and references comprise an additional 9 pages.

Associate Editor Dr. James P. Grover:

To be convinced that the paper has sufficient broad appeal for American Naturalist, I think that major revisions need to be made. The main themes don't stand out well, mostly due to presentation issues that can be fixed with reorganization. Perhaps more difficult is what seems to me to be a questionable assumption (as explained below).

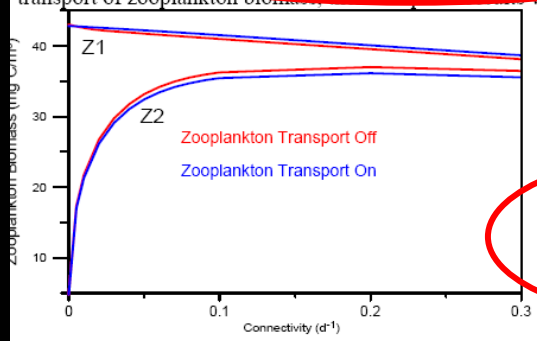
I suggest the following changes in organization to the authors. Put the construction and results of the one-habitat NPZ model into an appendix. A new section on "Model Formulation" should present the two-habitat coupled model, equations (24) - (26), with explanations focusing on the parameterization of transport terms (eqs. 21 - 23), and those terms that couple N, P, and Z. Put the details of temperature- and light-dependence in another appendix, along with other parameterization issues (eqs. 7 - 10). The presentation of the spatially coupled NPZ model can say that zero connectance is the special case of isolated food chains, but leave the details of

these in appendices. I also suggest separating "Results" from "Discussion". With the material on the results of the one-habitat NPZ model put into an appendix, the central results on connectivity (Figs. 3-5) would be the only thing to present in the results section, better emphasizing the paper's contribution. The discussion could then focus on generalizing the results by way of the C/PG principle and related issues.

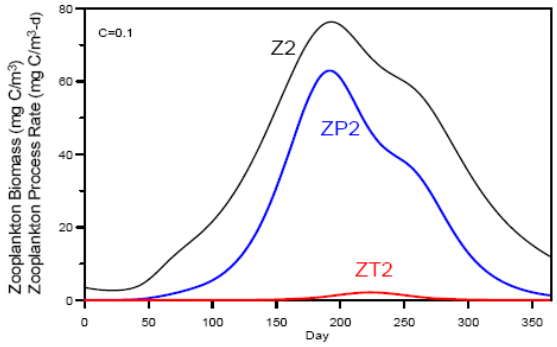
As explained above, the revised manuscript includes these suggested changes in format and organization. I believe the primary results of this study and their significance are more clearly highlighted, and the paper is more accessible for a general reader.

Assumption that I'm worried about: In the spatially coupled formulation, N and P are transported between sub-habitats but not Z. .. I don't see a strong rationale for this assumption, and I would like some assurance that the main results are robust to relaxing it, and going with what seems to me to be the more natural assumption that Z is transported along with N and P. Alternatively, can the author present a convincing explanation that there's a good biological reason for this assumption?

Crustacean zooplankton are not transported as passive particles because they can swim and have behavior. Cladocerans migrate laterally between shallow littoral zones during daylight (to avoid predation) and to open pelagic habitats during dark (to feed). Copepods have vertical migration behavior phased with tidal currents to maintain their longitudinal position along estuarine salinity gradients. However, this behavior doesn't help guide the treatment of zooplankton transport in a two-box model. So, in response to this comment I revised the model to include dispersive transport of zooplankton biomass, then compared results with the original model formulation in which zooplankton transport was assumed to be zero. This figure shows results as originally presented in Figure 3c (red curves), compared to simulations with zooplankton transport added (blue lines). Simulated mean annual zooplankton biomass is insensitive to the addition of Z transport. This was a bit surprising, and the following figure provides an explanation:



This figure shows an annual simulation of zooplankton biomass in the recipient habitat, Z2 (black line), for connectivity C=0.1. The blue line shows simulated daily zooplankton production and the red line shows simulated daily zooplankton transport. This experiment reveals that the rate of



biomass transport is much smaller than the rate of biomass production, explaining why model results are insensitive to the addition or inclusion of zooplankton transport. In response to Dr. Grover's understandable concern about the implications of excluding a zooplankton transport process, I re-ran all simulations with zooplankton transport treated identically to the transport of P and N. This modification of the model did not lead to altered conclusions about the implications of connectivity strength, but it is based on a consistent treatment of NPZ dynamics.

C/PG: I really like the suggestion that C/PG is a dimensionless number governing when coupling like this enhances total production. But I think this suggestion needs more emphasis, and could be used to make generalizations. As one referee suggests, there might be enough literature to tentatively identify ecosystems and circumstance where C/PG is > < = 1. The components of this number are commonly measured (spatial coupling like this has been widely used in engineering models of water quality, so there's a lot of parameterization information related to C available, and PG is a classic subject of aquatic ecology). I think a paragraph or two along these lines would raise the general appeal of the paper.

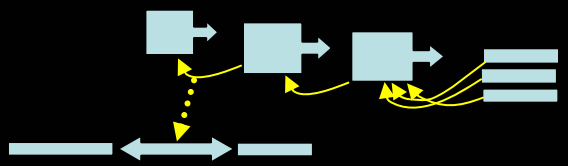
In response to this comment, and a comment from Reviewer 1 below, I conducted a new set of simulation experiments to explore the robustness of the functional relationship between system productivity and the ratio C/PG. These results are presented in a new Figure 5, and they are discussed in a section of the Discussion "Scaling Rules of Pelagic Ecosystem Productivity". I included a new simulation of time-variable nutrient influx, such as a system that receives river pulses of nutrients. I ran a second new simulation in which the habitats are only seasonally connected, such as a river-floodplain system. Then I ran simulations in which the connectivity rate was modified by daily fluctuations in: wind stress to depict exchange between a lake's littoral and open pelagic habitat; tidal currents that drive mixing across bathymetric gradients of estuaries; and river inflow to depict a fluvial system in which connectivity varies with discharge. Results show that inclusion of a continuing nutrient source amplifies overall system production, intermittency of connectivity decreases overall system production, and daily changes in wind-, tidal-, or river-driven connectivity have little effect on system production. However for each simulation, regardless of nutrient supply or the treatment of time-variable connectivity, the model results showed the same functional form between connectivity rate and system primary and secondary productivity. In each simulation, optimum system productivity occurred when the nondimensional number C/PG_1 approached one. These new simulations add confidence that this primary model result is robust and that system production is influenced by the balance between rates of transport and biological production. A mechanistic explanation of this outcome is included now in the Discussion.

Minor comment: Fig. 4, please define line types in the legend.

Done

REVIEW 1

the author only focused on the linkage between shallow and deep pelagic habitats. Is this the most important linkage? And what would be the outcome of the modeling exercise if one would include an additional linkage (e.g. estuary-river)? And how does the coupling change with nutrient pulses as a consequence of flood pulses and season?



Climate anomalies generate an exceptional dinoflagellate bloom in San Francisco Bay

James E. Cloern, Tara S. Schraga, Cary B. Lopez, and Noah Knowles
U. S. Geological Survey, Menlo Park, California, USA

Rochelle Grover Labiosa
Department of Geophysics, Stanford University, Stanford, California, USA

Richard Dugdale
Romberg Tiburon Centers, San Francisco State University, Tiburon, California, USA

Received 28 April 2005; revised 3 June 2005; accepted 17 June 2005; published XX Month 2005.

[1] We describe a large dinoflagellate bloom, unprecedented in nearly three decades of observation, that developed in San Francisco Bay (SFB) during September 2004. SFB is highly enriched in nutrients but has low summer-autumn algal biomass because wind stress and tidally induced bottom stress produce a well mixed and light-limited pelagic habitat. The bloom coincided with calm winds and record high air temperatures that stratified the water column and suppressed mixing long enough for motile dinoflagellates to grow and accumulate in surface waters. This event-scale climate pattern, produced by an upper-atmosphere high-pressure anomaly off the U.S. west coast, followed a summer of weak coastal upwelling and high dinoflagellate biomass in coastal waters that apparently seeded the SFB bloom. This event suggests that some red tides are responses to changes in local physical dynamics that are driven by large-scale atmospheric processes and operate over both the event scale of biomass growth and the antecedent seasonal scale that shapes the bloom community.
Citation: Cloern, J. E., T. S. Schraga, C. B. Lopez, N. Knowles, R. Grover Labiosa, and R. Dugdale (2005), Climate anomalies generate an exceptional dinoflagellate bloom in San Francisco Bay, *Geophys. Res. Lett.*, *32*, LXXXXX, doi:10.1029/2005GL023321.

1. Introduction

[2] Phytoplankton primary production is the energy source that sustains pelagic food webs and drives variability in the cycling of key elements. Primary production is an unsteady process, varying at time scales from minutes to millennia as phytoplankton biomass and its turnover rate vary continuously. Much of this variability in the ocean is associated with phytoplankton blooms that are triggered by changes in physical dynamics, such as seasonal thermal stratification that initiates the North Atlantic spring bloom, and events that transport nutrient-rich deep water into the euphotic zone such as hurricanes [*Davis and Yan*, 2004] and upwelling.

[3] The ecological and biogeochemical significance of blooms depend strongly on the species composition of the community that grows [*Cloern*, 1996]: diatom production in upwelling systems fuels pelagic food webs supporting fisheries, whereas blooms of toxic flagellates suppress growth and reproduction of herbivores and endanger human consumers. Expanding programs of global surveillance suggest that the frequency of red tides and harmful algal blooms (HABs) is increasing in coastal ecosystems as a response to anthropogenic nutrient enrichment [*Hallegraeff*, 1993]. However the conversion of land-derived nutrients into harmful-algal biomass is dependent upon a pelagic habitat that can sustain fast population growth. Fertilization of coastal ecosystems increases the potential for HAB development, but the realization of that potential is regulated by physical dynamics. HABs often develop when nutrient-rich waters become stratified, so their dynamics are tightly coupled to mixing dynamics driven by ocean-atmosphere interactions.

[4] Unresolved questions remain about the mechanisms and scales of linkage between physical dynamics and blooms [*Cullen et al.*, 2002]. For example, how do small-scale physical processes generate and maintain dense accumulations of phytoplankton cells in thin layers [*Dekshenieks et al.*, 2001]? What processes select the species that proliferate during algal blooms? If species composition is determined by "precedent and stochasticity" [*Reynolds et al.*, 2000], what are the time scales over which precedent conditions shape communities and their biomass? Coastal HABs are regulated by nutrient supply rate and climate-driven physical dynamics, but how will the accelerating human mobilization of nutrients interact with climate change to alter the frequency, severity and ecological impairments caused by harmful blooms?

[5] Ocean observing systems provide an empirical basis for building conceptual and numerical models to address these fundamental questions. Sustained observations capture anomalous events that can be exploited as natural experiments, and they provide context for understanding the significance of events and revealing their underlying mechanisms. Oceanographers are compiling libraries of event observations, building toward a synthetic understanding of the mechanisms of pelagic physical-biological coupling. Here we present observations of a large dinoflagellate bloom that developed in San Francisco Bay during a short-term anomaly of local climatic conditions following a seasonal-scale anomaly in coastal oceanographic conditions. This natural experiment suggests that some red tides

0094-8276/05/2005GL023321$05.00

SIGNS USED IN CORRECTING PROOFS

^	Insert marginal correction at this point in line	⌣	Less space
tr	Transpose; indicate by ⌒ in text	⊂	Close up entirely
cap	Capital; put 3 lines under letter or word	⊙	Period
sc	Small capital; put 2 lines under letter or word	^,	Comma
lc	Lower-case letter; put oblique line through letter	⊙:	Colon
ital	Italic; underline letter or word	;	Semicolon
rom	Roman letter; circle letter or word	^'	Apostrophe
sp out	Spell out; circle abbreviation	^" or ^'	Quotation
bf	Boldface; underline letter or word with wavy line	|=|	Hyphen
wf	Wrong font; circle letter or word	||	Straighten lines
X	Defective letter	⊏	Move left
⌣	Push down space	⊐	Move right
ⓒ	Turn over	□	Em-quad space
⌒	Take out	1/m	One-em dash
^v^	Space evenly	¶	Make paragraph
#	Insert space	no ¶	No paragraph

If you substitute a word or phrase, make the substitution as nearly as possible the same number of letters as the deleted matter. If this is not done, the balance of the paragraph may have to be redone. See the examples below.

BEFORE

(Allen, 1981)

A recent demonstration vividly portrays how changes in type in proof can increase your costs. The addition of the citation "(Allen, 1981)" makes it necessary to reset all of the remaining lines of the paragraph. This occurs because the addition of a word or phrase forces words to spill over from one line to the next. This continues until the typesetter can squeeze enough space out of a line to have the words fall into the same exact position that they occupied before the addition was made.

AFTER

A recent demonstration (Allen, 1981) vividly portrays how changes in type in proof can increase your costs. The addition of the citation "(Allen, 1981)" makes it necessary to reset all of the remaining lines of the paragraph. This occurs because the addition of a word or phrase forces words to spill over from one line to the next. This continues until the typesetter can squeeze enough space out of a line to have the words fall into the same exact position that they occupied before the addition was made.

all reset

BEFORE

The reverse of this problem can also and will often occur. The deletion of the phrase "and will often" from the first line of the paragraph causes a reverse waterfall effect. Type must be pulled back from line to line to fill up the hole left by the deletion. This results in the need to reset all of the lines until once again the words occupy the same position as they did before. To avoid this extra cost follow the rules below.

AFTER

The reverse of this problem can also occur. The deletion of the phrase "and will often" from the first line of the paragraph causes a reverse waterfall effect. Type must be pulled back from line to line to fill up the hole left by the deletion. This results in the need to reset all of the lines until once again the words occupy the same position as they did before. To avoid this extra cost follow the rules below.

all reset, minus one line

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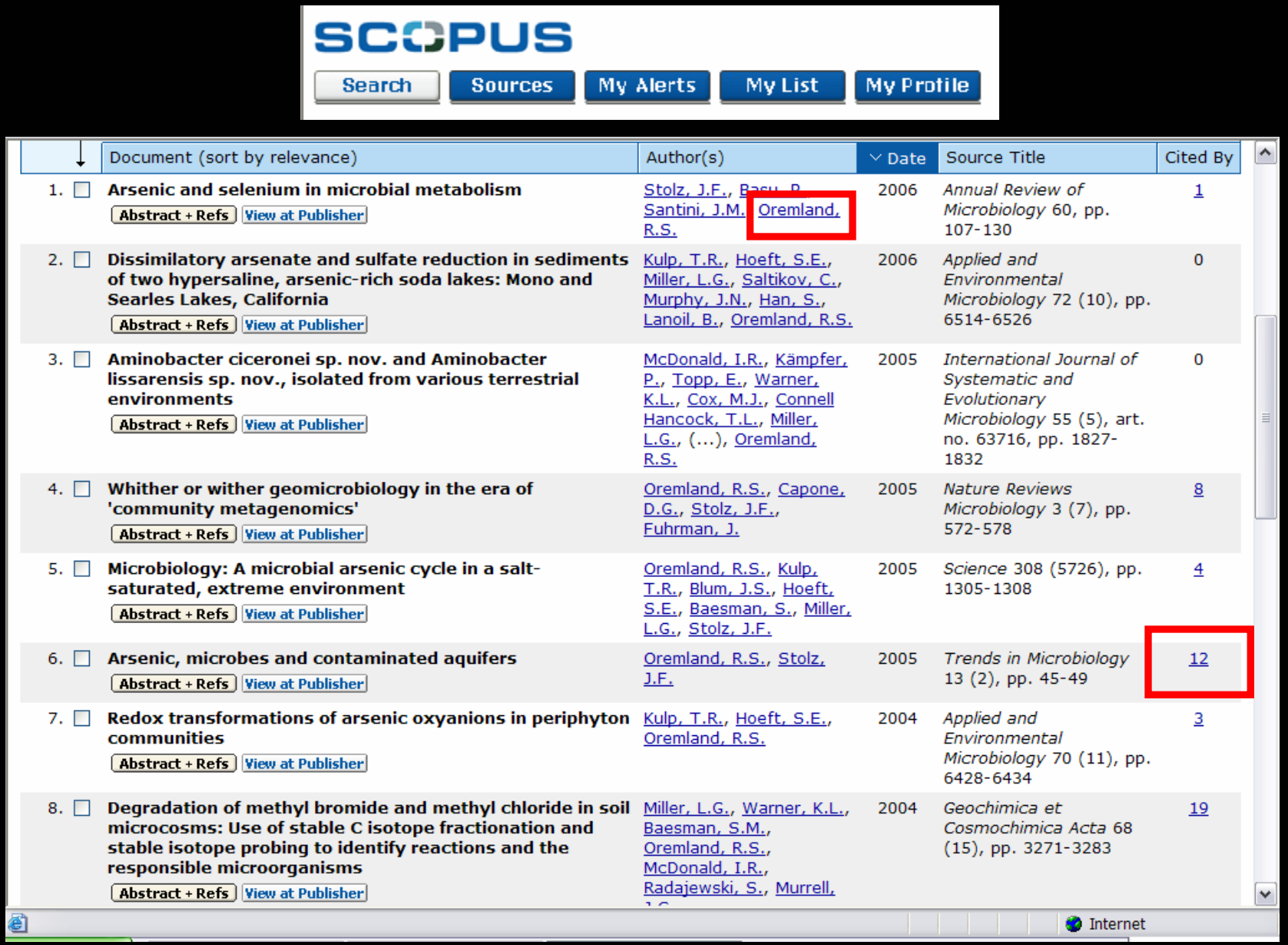
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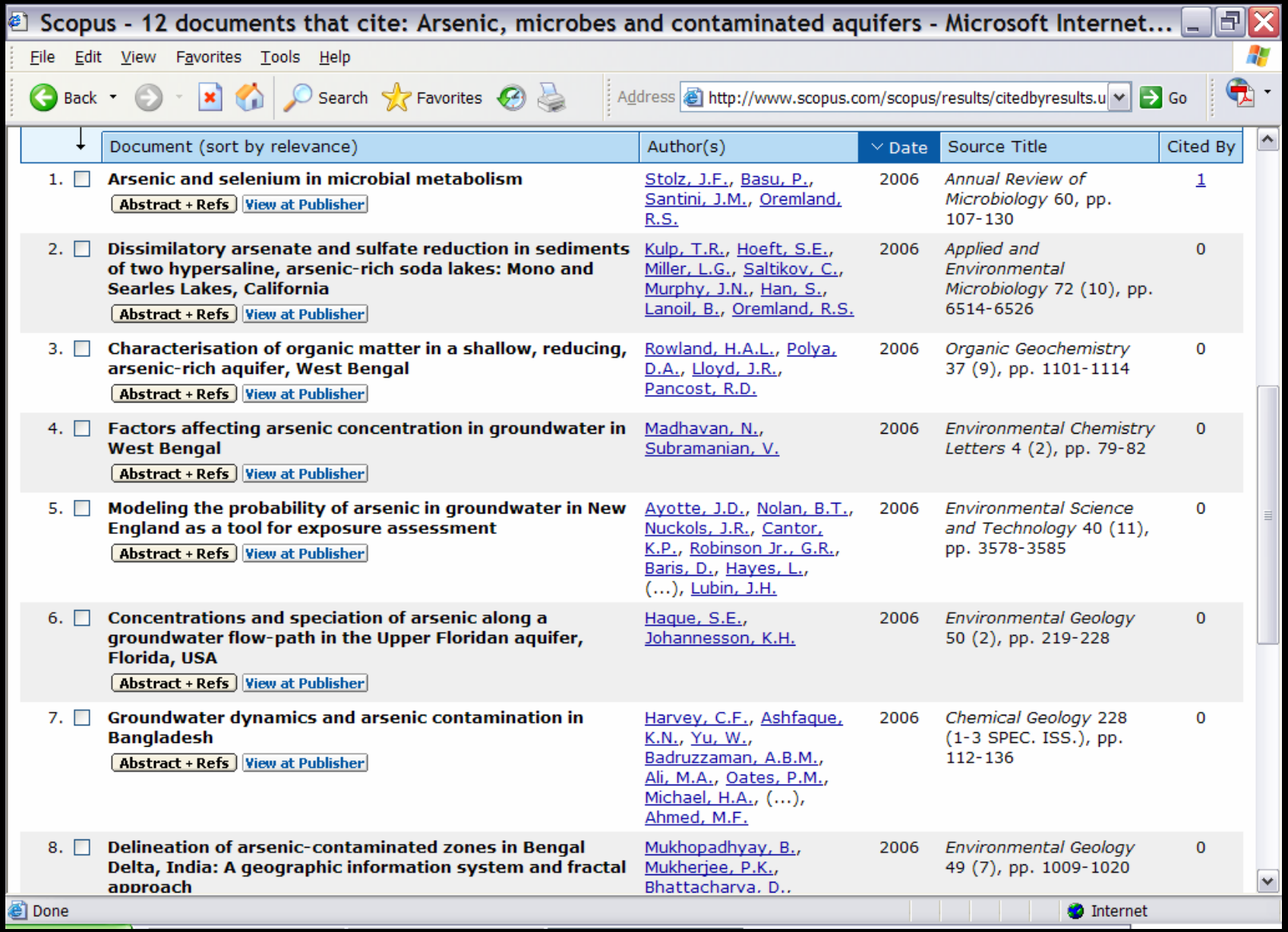

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