BRITISH ECOLOGICAL SOCIETY

Better Science Guides

# Peer review

Through science we can

# Contents



BRITISH ECOLOGICAL SOCIETY



Part of the **BES Better Science Guides**

**British Ecological Society**
britishecologicalsociety.org

# Preface to the updated edition

The British Ecological Society has been publishing scientific journals since it was first formed in 1913. The first issue of *Journal of Ecology* was published in time for the Society's inaugural meeting on 12 April 1913. Since then, the Society's publishing portfolio has grown to include: *Journal of Animal Ecology* in 1932, *Journal of Applied Ecology* in 1964, *Functional Ecology* in 1987, *Methods in Ecology and Evolution* in 2010, *People and Nature* in 2019, *Ecological Solutions and Evidence* in 2020, in addition to *Ecology and Evolution* which we publish in partnership with Wiley.

The BES has published over 35,000 research articles to date. Each paper receives an average of two reviews; this equates to around 10,000 reviewer reports each year. Countless ecologists have helped authors improve their articles and supported our editorial teams in assessing what should be published in our journals.

Peer review has been providing a valuable service to the scientific community since it was first employed in 1665 by the Royal Society. The integrity of scientific literature rests on a peer review system that is robust, independent and fair. Most researchers accept the peer review process because – whilst it is not a perfect system – it has proven to provide real benefits to both authors and the reviewers themselves.

Reviewing is a skill, learned through practice and experience. Evaluating another researcher's work hones critical thinking skills, it provides insights into topical work, it builds a broad knowledge of different experimental methods and data analyses, and it helps develop an understanding of the way science is presented.

Researchers who enjoy reviewing, provide constructive reviews, and show an aptitude for identifying papers ready for publication, are often invited to join journal editorial boards. Some editorial board members then go on to become Editors. These appointments are highly regarded by the scientific community.

While the basics of peer review haven't changed since this guide was first written in 2014, there have been some valuable updates to the process. As we strive for improved transparency, fairness and equity in the publication process, the BES journals now employ initiatives such as double-anonymous peer review and transparent peer review, and improved reproducibility of the research we publish. There is increased awareness of unethical practices,

such as paper mills and peer review manipulation, making detection of these practices more important. Ethical standards for research using humans, animals, and plants have become more stringent, resulting in more robust editorial policies. The growth of technologies such as AI, has also impacted the way authors, reviewers and publishers work, and policies have been implemented to reflect these changes.

This guide provides a succinct overview of the many aspects of reviewing, from hands-on practical advice about the actual review process to explaining less tangible aspects, such as reviewer ethics. We hope it encourages you to review!

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# Introduction to peer review

### What is peer review?

Peer review is the evaluation of scientific articles by other scientists who are experts in the field. It is an essential part of the scholarly publication process. Most journals rely on peer review to help Editors assess the quality of articles submitted to their journals.

There are over 24,000 journals indexed on Clarivate's Web of Science, across 254 subject disciplines. The journals listed have recognised standards of peer review that provide the literature published with a degree of authority. In most instances the reviewing of articles is an unpaid voluntary activity and conducted in the reviewer's own time.

### Why peer review?

Within scholarly publishing it is important for readers to be confident that the article they are reading has been checked for its scientific validity and to be reassured that the article has reached a quality level that justifies their faith in taking time to read it. Whilst not a perfect process, it is generally accepted that peer review:

- improves the quality of articles that are published
- provides an assessment of the science in the literature
- assists the editorial decision-making process
- acts as a gatekeeper for unethical practice

Most academics, throughout their careers, will peer review articles, and institutions often take the activity into account when assessing those applying for academic positions, tenure or promotion. For young scientists, acquiring the skills necessary to conduct good and authoritative reviews that are helpful both for Editors and authors is considered to be an important part of their career development. Many see this work as a service to their scientific community and an important way in which they can contribute to raising the profile of the area of science within which they work.

| Category | Number of journals listed* | Number of articles published* |
|---|---|---|
| Biodiversity Conservation | 75 | 5,858 |
| Ecology | 196 | 22,190 |
| Evolutionary Biology | 54 | 5,630 |
| Plant Science | 268 | 36,467 |
| Zoology | 186 | 14,752 |

**Table 1.** Numbers of journals listed and articles published in a set of Web of Science subject categories in 2023. *Some journals are listed in more than one category

### Who should peer review?

Peer review provides a valuable service to science, it should be carried out by those suitably 'qualified' to do so. This expertise can come from many years' of academic and research experience in a subject area, it can come from in-depth study in a specific area during a PhD and it can come from practical experience in the field. Editors often select reviewers who have recently published articles on a related subject to the article under consideration.

### How does peer review work?

The most widely used, traditional form of peer review involves the article being submitted to a journal and entering a process whereby it is assessed by a combination of Editors and reviewers, resulting in a decision that may or may not lead to publication. For many journals, particularly those ranked highly in the field, the majority of submissions are not sent for peer review, and less than 20% of submitted manuscripts are eventually accepted for publication. Articles published in highly selective journals are chosen based on scientific merit, quality and novelty, as well as their fit within the journal scope. Many articles are declined as a result of the reviewers' and Editors' assessment of their novelty, however, many are still good articles – just not appropriate for the targeted journal.

Articles not accepted at a journal will usually need to start the submission and peer review process again at a different journal (however see **Transfer networks**). Some journals do not make novelty assessments, but rather select the articles they publish based only on the fit with the journal scope and the quality and ethical standards of the science, not on the importance of the

work – you may sometimes hear these called 'sound science' journals (e.g. *Ecology and Evolution* and *PLOS One*). You can find out if a journal selects manuscripts based on novelty by reading their aims and scope.

The main types of peer review are[1]:

| | |
|---|---|
| **Single anonymised:** | Reviewer identity is not made visible to author<br>Author identity is visible to reviewer<br>Reviewer and author identity is visible to (decision-making) Editor |
| **Double anonymised:** | Reviewer identity is not made visible to author<br>Author identity is not made visible to reviewer<br>Reviewer and author identity is visible to (decision-making) Editor |
| **Triple anonymised:** | Reviewer identity is not made visible to author<br>Author identity is not made visible to reviewer<br>Reviewer and author identity is not made visible to (decision-making) Editor |
| **All identities visible:** | Reviewer identity is visible to author<br>Author identity is visible to reviewer<br>Reviewer and author identity is visible to (decision-making) Editor |

Other forms of peer review:

**Reviewer discussion** is allowed at some journals (e.g. *People and Nature* and *Ecological Solutions and Evidence*). This includes a discussion period after all reviews have been submitted, in which all reviewers are given the opportunity to comment on each other's reports. The comments are then incorporated into the decision by the Editors.

**Transparent peer review** is when the reviewer reports, authors' responses, and the Editor's decision letter are made public alongside a published manuscript. Authors may have the opportunity to opt out during the submission process, and reviewers can decide whether or not their name appears on their report.

**Transfer networks** is a system whereby journals can refer some articles that are declined for publication to another journal, either before or after peer review. If the authors agree to transfer their manuscript, any reviewer and Editor comments are securely forwarded to this second journal. The authors are able to address the reviewer and Editor comments in this transfer process, therefore allowing them to publish more quickly without having to go through further rounds of review. Cascading peer review typically only operates between journals using the same publisher and submission system, and where a formal arrangement has been made. Reviewers are made aware that their comments might be used by a second journal.

**Post-publication peer review** platforms offer immediate article publication with post-publication peer review. For example, *F1000Research* publishes submitted articles that pass very basic checks and invites peer review comments after online publication. Reviewer comments are then posted alongside the article. Articles that eventually gain 'approved' status are then indexed, amongst others, in PubMed Central, Scopus and Google Scholar.

**Preprint** servers provide an online facility where articles can be posted online in advance of submission and peer review at a journal (e.g. *arXiv* and *bioRxiv*). Whilst these websites offer immediate online posting of research articles, most do not offer formal peer review. However, peer feedback can be used to assist authors to revise their articles in preparation for journal submission. Most journals allow authors to use preprint servers before submission, but not all, so authors should check this before submission.

**Preprint review** services are offered by some organisations (e.g. *eLife* and *Peer Community in*). These models seek to provide a new solution to sharing peer reviewed findings faster than traditional publishing, though it is worth noting that these work significantly differently from regular peer review, so if you are interested in peer reviewing for one of these models you should do some research into how they work first.

**Who does what?**

The structure of editorial boards and the job titles of their members differ widely between journals, as does the way in which Editors and editorial board members collaborate to reach decisions on papers. Figure 1. outlines the basic peer review workflow and the tasks assigned to those participating in the peer review process. More than one iteration of the revision workflow might be needed before a final decision is reached.

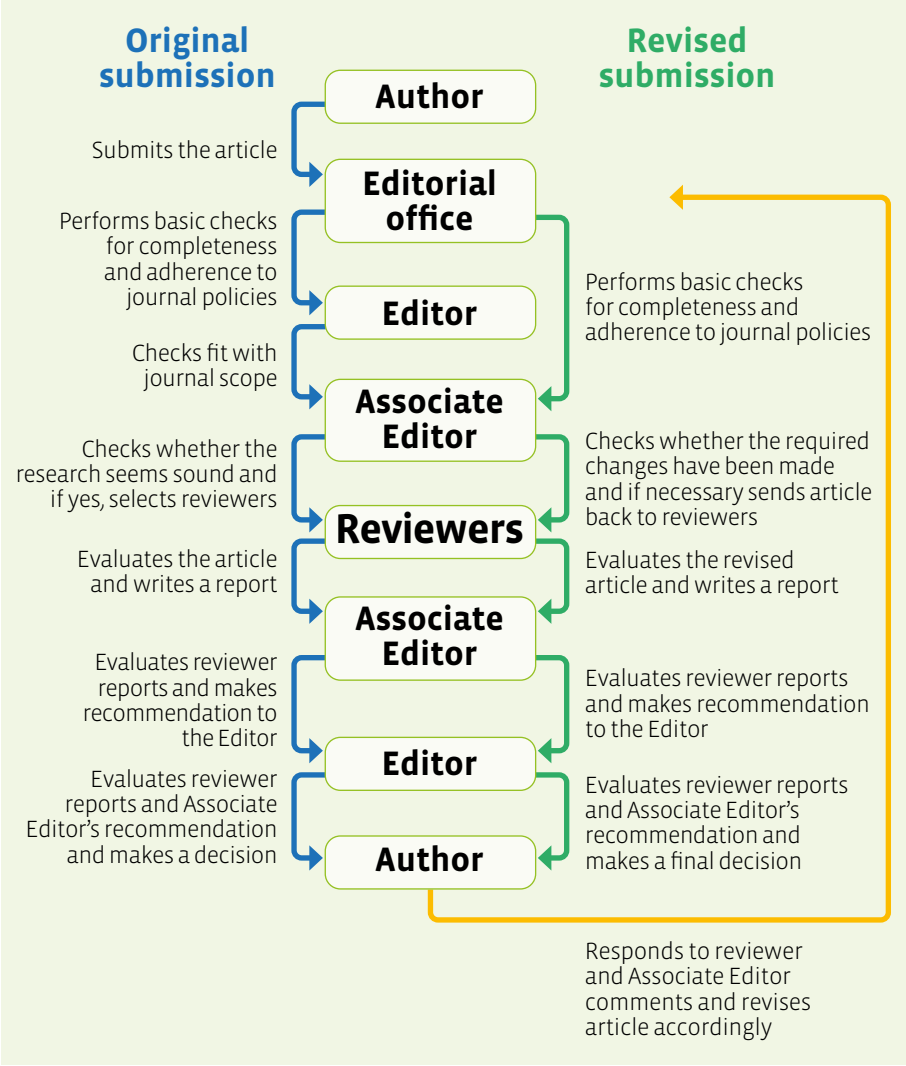


**Fig 1.** Peer review workflow and roles.

## Editors

The primary role of a journal Editor (also referred to as Editor-in-Chief, Executive Editor or Senior Editor) is to manage the strategic direction of the journal and take responsibility for the articles published in it. This includes making the final decisions on articles that have been submitted. Decisions are made using a number of considerations including:

- aims and scope of the journal
- Associate Editor recommendation
- reviewer comments
- other articles recently published in the journal
- journal priorities
- journal page budgets (for print publications)

The Editors also take responsibility for balancing the workloads of the editorial board, appointing Associate Editors and resolving any conflicts that arise during the peer review process in collaboration with the journal Managing Editor.

## Associate Editors

Associate Editors (handling Editors or subject Editors) make up the editorial board of a journal. They are assigned manuscripts to handle which are broadly within their area of expertise. Their responsibilities are to:

- make an initial expert assessment of the article assigned to them
- select appropriate reviewers
- scrutinise the reviewers' comments
- provide their own assessment of the article with suggestions for improvement, and guidance on addressing the reviewer comments
- judge the merits of publishing the article in the targeted journal using the expert feedback from the reviewers
- make a recommendation to the Editors regarding the final decision that should be made on the article
- support the Editors in promoting the journal within the scientific community

### Reviewers

Reviewers (sometimes called referees) are subject area experts who are asked to evaluate an article. Their responsibilities are to:

- provide a detailed, objective report on the merits of an article
- identify flaws in the design of the research, and in the analysis and interpretation of results
- highlight ethical concerns
- comment on the appropriateness of the literature cited
- offer their view on the suitability of an article for the journal

### Editorial office

At the heart of each journal is the editorial office. A journal will typically have a Managing Editor and an Editorial Assistant or Assistant Editor, although the number of staff can differ between journals, and especially if a journal is owned by a large publishing house, Managing Editors and Editorial Assistants often are responsible for more than one journal. The editorial office usually manages the peer review process on behalf of the Editors by:

- checking that article files are complete and the content has been structured according to the author guidelines for the journal, and that journal policies are adhered to
- providing a central contact for all enquiries throughout the process
- giving essential feedback to all parties so that the publication experience is as straightforward as possible for authors and reviewers
- providing professional publishing advice to the Editors
- handling correspondence, including some decision letters
- ensuring that copy provided for publication is prepared in house-style, with complete content and files

In addition to managing the peer review process the editorial office is sometimes also responsible for putting issue content together, driving marketing initiatives and – together with the Editors – dealing with complex publishing/research ethics cases and the strategic development of the journal.

# Best Practice

### Invitation

When invited to review an article there are a few key questions to consider before accepting the invitation:

- Does the subject area of the article match my expertise?
- Do I have time to review within the timescale requested by the journal? Many journals ask for articles to be reviewed within 2-3 weeks. Be realistic!
- Do I have any conflicts of interest that might prohibit me from reviewing the article objectively? (see also **Publication ethics**)
- Do I actually want to review this article?

If there are any reasons for declining the invitation, respond straight away. It is okay to say no, and better – for you, the journal and the authors – than not replying to an invitation or committing only half-heartedly, procrastinating over the review and submitting it late or not at all.

If you want to review the article, it is important to commit the time needed to make it a thorough review. If your review will be late or you are no longer able to honour your commitment, inform the editorial office as soon as you can.

### Basic principles

- Always treat the paper with the utmost confidentiality.
- Take an objective, independent approach to the work, putting aside subjective feelings about the topic and the authors, if known to you.
- Be attentive to the task as your report will influence the decision on the article, which may have an impact on the career of the author(s) or the reputation of the journal.
- Your role is to improve the science in scholarly publications and critical scrutiny of the article is essential.
- Provide evidence, where appropriate, for the statements you make in your report.
- Ensure that the language in your report is simple and does not include any unnecessary jargon, cultural references, or anything else that could limit its understanding.
- If grammatical errors or unclear wording make the text difficult to understand, you can say this and refer to some specific examples. Do

not suggest that a native English speaker should review the text (in cases where the author identities are not visible, assumptions should not be made. Poor writing can result from both native and non-native English speakers and should be flagged regardless, without making reference to the authors nationality).
- Always conduct the review professionally, courteously, collegially and politely.
- Never contact the authors directly; all correspondence should be via the editorial office.

## How to get started

If you have not reviewed for a particular journal before, read the aims and scope of the journal and consult the reviewer guidelines. Also look at the form the journal asks reviewers to complete to find out which questions you are expected to answer and the specific issues that you are being asked to comment upon. In most journals, the majority of your report will be free-text comments to the authors and confidential comments to the Editor. Before looking in detail at each section in the article, read it from start to finish: this will give you an overview and provide a clear understanding of everything the article covers.

## Writing the report

### Overview comments

After reading the article ask yourself the following questions, the answers should form the opening comments in your report:

- Is there a clear and valid motivation for the study?
- Is the research question/hypothesis/prediction of the research clearly presented?
- Does the research follow logically from prior knowledge? Is it timely, and does it have the potential to advance the field?
- Is the article appropriately structured and clearly presented?
- Is the article written in a clear way that is free from unnecessary jargon and cultural references?
- Can you easily summarise the key message in the article?
- Does the title reflect the contents and is it engaging?
- Does the article fit with the scope of the journal that has asked you to review it?
- Does it take account of relevant recent and past research in the field?

- Is there significant overlap with material that has previously been published?

### Detailed comments

Most articles are structured into sections commonly labelled 'summary/abstract', 'introduction', 'methods', 'results' and 'discussion'. There may also be a 'conclusion'. It is recommended that you take a methodical approach to assessing the article by appraising each section in turn. In your comments remember to provide evidence for the statements you make, whether positive or negative.

### Summary/abstract

- Is it concisely written?
- Does it provide a clear overview of the work?
- Does it contain the essential facts from the paper?
- Does the final point place the work described in a broader context, highlighting its significance?

### Introduction

- Does it provide a clear, concise background to the study?
- Does it enable you to understand the aims of the study and hypotheses questions the authors are exploring?
- Have the authors elaborated sufficiently on the context in which the work is set?
- Has the motivation for the work been adequately explained?
- Is there satisfactory citation of prior literature?

### Methods

- Is the methodology sound?
- Have the procedures followed been sufficiently described?
- Is there enough detail here for the study to be replicated?
- Is it clear what was recorded and which units of measurement were used?
- Are the statistical design and analyses appropriate?
- Have important details been left out?
- Where appropriate, has ethical approval been obtained for the work?

### Results

- Are the results provided in a form that is easy to interpret and understand?
- Have results for all the questions asked been provided?
- Are the data of sufficient quality and quantity?
- Are the figures and tables appropriate?
- Have the correct units of measurement been used?

### Discussion and conclusions

- Have the authors answered their research question(s)/hypotheses?
- Are the conclusions drawn from the results justified?
- Has the significance of the study been fully explained?
- By how much has this study advanced the current understanding of the science?

**In summary**

- Be objective
- Include details of what is good about the article, but also highlight any problems
- If appropriate for the journal, look for the novelty and importance of the work
- Recognise that no study is perfect
- Be constructive
- Be thorough and thoughtful
- Evaluate both the quality of the ideas and experimental details/results
- Be specific and factually accurate
- Recognise opinion versus fact
- Be civil
- Never recommend that someone seeks a native English speaker to edit their paper, though you can suggest that the language is checked

**Post Review**

- Whenever possible, agree to journal requests to review revisions or resubmissions of articles you have previously reviewed. This helps provide consistency and you are best placed to determine whether advice has been followed.
- Do not include anything that appears to be a decision about the paper in your comments to the authors. The decision is made by the Editors who need to consider many criteria when deciding which papers to accept and reject.
- As a courtesy to reviewers, many journals will send a copy of the other reviewers' comments to you. From these you will learn how different people review papers and read comments about issues that you may have missed.
- The journal will never reveal your identity to authors without your permission. However, if you have signed your review and a dispute arises about a decision on the article that you have reviewed, you should not enter into direct discussion with authors, but advise them to contact the editorial office. The journal will follow best practice guidelines (e.g. those provided by the Committee on Publication Ethics [COPE]) in dealing with difficult situations.

**Appealing a decision**

Although appeals are not common, authors can request that a journal reconsiders a decision to reject an article. Appeals can often be dealt with by the Editor and the Associate Editor, but in rare cases where the appeal hinges upon technical details, the Editor may approach reviewers for further comments.


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# Ethics in peer review

### Confidentiality

Unless peer review is conducted publicly, you are bound to confidentiality about the work you have been asked to review. You must not take ideas presented in articles you evaluate and pass them as your own, and you must not disclose any data presented in the article before it has been published. It is acceptable to ask a colleague for advice as long as the authors' names are not revealed and unnecessary details remain confidential.

### Bias

When commenting on someone else's work, your opinion should be based solely on the presented work and not on any prejudices you may have. In science publishing you are advised to be sensitive towards the risk of bias, in particular:

- **gender bias**: the possibility that articles will be subject to different standards of review because of the authors' gender
- **geographical bias**: the concern that the authors' country of origin will influence the assessment of their work
- **seniority bias**: the possibility that articles by authors at different stages in their careers will be subject to more or less favourable review
- **confirmation bias**: the concern that articles reporting controversial results or putting forward new, revolutionary ideas will be less favourably reviewed than articles that do not challenge conventional wisdom

Being aware of these possible unconscious biases and checking whether your opinion about an article may have been influenced by them are important first measures you can take, regardless of the peer review system a journal employs.

In 2015 *Functional Ecology* published the results of study using a 10-year dataset, which found that Editor gender, seniority and geographic location affect who is invited to review, and how invitees respond to review invitations, but not the final outcome of the peer review process. The authors suggested that to increase diversity of reviewer populations, journals should increase gender, age and geographic diversity of their editorial boards[2].

In 2015 *Functional Ecology* published the results of a study which found that patterns of authorship differed notably between gender for papers submitted to *Functional Ecology* over a 4-year period. However, outcomes of editorial and peer review were not influenced by author gender[3].

In 2023 *Functional Ecology* published the results of a 3-year study on the effects of single- vs double-anonymous peer review. The results suggest that a double-anonymous system reduces positive bias towards authors from higher-income and English-speaking countries, thereby increasing equity in the review process[4]. The British Ecological Society journals are therefore rolling out double-anonymous peer review.

**Use of Generative Artificial Intelligence (GenAI) tools in peer review**

GenAI tools should be used only on a limited basis in connection with peer review. A GenAI tool can be used by an Editor or peer reviewer to improve the quality of the written feedback in a peer review report. This use must be transparently declared upon submission of the peer review report to the manuscript's handling Editor. Independent of this limited use case, Editors or peer reviewers should not upload manuscripts (or any parts of manuscripts including figures and tables) into GenAI tools or services. The peer review process is a human endeavour and accountability for submitting a peer review report, in line with the journal editorial polices and peer review model, sits with those individuals who have accepted an invitation to conduct a review. This process should not be delegated to a GenAI tool. GenAI is a fast moving field so always check the journal policies in advance.

### Publication and research ethics

If you are concerned that publishing ethics may have been violated in connection with the article you are reviewing, or if you are worried that research ethics may have been breached, you should notify the editorial office.

Most journals have set procedures for dealing with ethical concerns and will be able to investigate such concerns further without you having to reveal your identity to the authors or even become involved personally.

## Examples of publication ethics problems

### Duplicate/multiple submission and publication

- Submitting an article to various journals concurrently, before a decision from the first journal has been received or submitting considerably overlapping material, especially results, in different articles to different journals.
- Duplicate publication is a potential consequence of multiple submission; Editors are unaware that an article is considered by other journals at the same time and more than one journal accepts and publishes the same article or one with considerable similarity.

### Authorship

- Authorship is granted to those who meet the journal authorship criteria, usually set out in the author guidelines. At the BES journals, and in accordance with COPE guidelines, authors should have substantially contributed to the work presented in an article, given final approval of the version to be published, and agreed to be accountable for all aspects of the work that they conducted.
- Unjustified authorship: gift, honorary or guest authorship is authorship assigned to people who have not met the journal authorship criteria.
- Ghost authorship: where those who have substantially contributed to authorship of the paper are omitted from the list of authors on the article. This is especially problematic when co-authors deliberately exclude colleagues who fulfil authorship criteria.

- Artificial Intelligence Generated Content (AIGC): AIGC tools cannot fulfil the role of, nor be listed as, an author of an article. In accordance with COPE guidelines, if an author has used this kind of tool to develop any portion of a manuscript, its use should be described transparently in the Methods or Acknowledgements section. Tools that are used to improve spelling, grammar, and general editing may be permissible, and journal guidelines should be referred to for confirmation.

**Conflict of interest**

Conflicts of interest prevent a reviewer from impartially evaluating someone else's work. Potential sources of conflict of interest include but are not limited to: having recently collaborated with, supervised or been mentored by any of the authors of the manuscript, or having a close personal relationship with any of the authors.

**Paper mills**

Paper mills pose a considerable threat to academia's research integrity. They produce fake manuscripts using falsified data which are submitted to a journal for a fee on behalf of researchers with the purpose of providing an easy publication for them, or to offer authorship for sale.

**Peer review manipulation**

Authors might recommend fake reviewers when submitting their manuscript to a journal, in order to receive fake positive reviewer reports.

**Citation manipulation**

These are actions intended to inflate citation counts for personal gain, such as: excessive self-citation of an authors' own work, and excessive citation between groups of authors in a coordinated manner (citation cartels).

## Examples of research ethics problems

### Fabricated data

Data that are made up rather than the result of actual measurements.

### Falsified data

Data stemming from measurements that have subsequently been unjustifiably altered in order to yield more impressive/convenient results.

### Image manipulation

Images that have been altered in order to mislead readers about the research results or overstate the importance of the conclusions.

### Stealing data

Using someone else's data without their consent.

### Animal welfare practices

Codes of conduct that need to be adhered to when carrying out research that involves animals or protected species of any kind.

### Ethical approval and consent

Codes of conduct that need to be adhered to when carrying out research involving human data or subjects.

### Plant research

Plant-related research must adhere to institutional, national and/or international ethics standards and guidelines (e.g. if dealing with protected species, or if collecting genetic resources as stated in The Nagoya Protocol)

**Field studies**

Field studies, whether they are interventional or observational, must have appropriate licences and permits.

All reviewers should take responsibility for reporting concerns regarding unethical practice involving any of the above topics, and it is the duty of the journal editorial office to investigate issues that are highlighted during the peer review process.

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# Frequently asked questions

### How do I become a reviewer?

Contact the journal editorial office directly, expressing your interest and summarising your expertise. They may advise you to create a reviewer account on their submissions system. In addition, ensure you are discoverable online, and that your contact details and keywords are up to date.

### How does an Editor make a decision?

After the editorial office has received the required number of reviews, the Associate Editor reads the article and the accompanying reviewer comments, and will recommend a decision to the Editor. The recommendation is not a vote-counting exercise, meaning that a majority of views in favour of acceptance or rejection will not necessarily lead to that decision being made. Associate Editors will provide their own opinion to the Editor and may also give advice on which of the reviewers' suggestions need to be followed.

In making a decision, the Editor is guided by the reports from the reviewers and the Associate Editor. The Editor does not usually read the entire article, but may examine sections of it to form their own judgement, especially if there is disagreement between the reviewers and the Associate Editor.

Most journals inform the reviewers of the decision and share the reviewers' comments with all reviewers of the article (see also **Transparent peer review**). If the journal you are reviewing for does not follow this practice and you would like to see the other reports, you can request them from the editorial office. The other reviewer reports can help you understand why a particular decision has been made.

### Why has the Editor disagreed with my evaluation?

The role of the reviewer is mainly to judge the soundness of the science and to assess the quality of the work in the context of the existing literature in the field. Sometimes reviewers' opinions about an article may differ and the Editor's decision may not reflect your recommendation, because:

- you have overlooked a (serious) flaw in the article that other reviewers have identified
- other reviewers may have judged the importance or novelty of the work

differently
- the article does not meet the standard required by the journal
- the work presented in the article is not of sufficient interest to the journals' core audience
- the work is not novel enough for the journal
- you may have advised that additional work needs to be done or judged the work to be of insufficient importance, whereas the Editor is prepared to accept the article as it is

It is important to remember that although you are asked your opinion about an article, the final decision about publication or rejection lies with the journal. The better-argued your views are, the more likely it is that they will they hold up against someone else's opinion and the more useful they will be to an Editor. Should you feel very strongly that a decision is wrong, especially if you are concerned that a fatal flaw has been overlooked, contact the editorial office so that the decision can be revisited and, if appropriate, revised.

**Is reviewing a revision different to reviewing the original submission?**

On submitting a revision, authors are expected to provide a point-by-point explanation of the way in which they have responded to reviewers' comments. If you have reviewed the article before, check whether the points you raised have been addressed, but also judge the revision afresh. You may not have spotted certain issues in the original submission, new mistakes may have been introduced in the revision, or some previously unseen problems with the article may only have become apparent in the revision.

**Can I pass a review request on to one of my students?**

If you are an established, well-known scientist you will typically receive more invitations to review than you are able to agree to. If an early career colleague in your lab happens to be an expert on the subject matter of the article you have been invited to review, it is perfectly fine to either:
- decline the review invitation, but suggest your student or post-doc to the journal as an alternative reviewer; or
- use this as a mentoring opportunity and have the article reviewed by one of your students, but under your supervision

If you want to mentor someone through a review, you must check with the journal first and get their permission. You should also carefully check your

student's review and ensure that you are happy with their comments before you return them to the journal. Make sure to include your student's name in the 'confidential comments to the Editor' section so they get the credit they deserve. If the student does most of the work, we recommend going with the first option so that the student can claim the reviewer recognition.

**Can I review with my supervisor?**

This is a good way of practicing reviewing with the safety net provided by your supervisor. When discussing the article you will learn the important points to look out for, and develop ideas of your own on how best to review. You should get permission from the journal first, and if they agree, you should include your supervisor's name in the 'confidential comments to the Editor' section.

**Can I ask for advice on a review?**

Even the most experienced reviewers can get stuck with a particular aspect of an article, for example, the statistical analyses. In such cases, it is acceptable to ask a colleague for advice, as long as you do not disclose the authors' names and you keep any unnecessary article details confidential. It is also best practice flag to the journal when you lack expertise to review particular aspects of an article, so that the journal can seek alternative or additional reviewers, if needed.

**What do I need to know about data archiving?**

Many journals in ecology and evolution – including all British Ecological Society journals – mandate that data associated with an article is archived in a publicly accessible repository. In line with the minimum standards for data and code[5], which were built on the FAIR principles[6], data should be findable, accessible, interoperable and reusable. Journals often require that data is deposited once an article has been accepted for publication, however some journals require this at submission or revision, which will be outlined in the author guidelines. For journals employing a double- or triple-anonymous peer review system, authors should ensure that any data provided at submission is anonymised. Some data repositories, e.g. Dryad, allow authors to set their data as 'private for peer review' until a decision is rendered on their article. Reviewing the data is not part of your duties as a reviewer unless stated otherwise by a journal. Most journals allow embargo periods to be agreed with authors where the data is associated with other articles in preparation. At some journals, e.g. *Methods in Ecology and Evolution*, authors are also

required to make code for simulations, new applications and non-standard analyses freely available. To find out more about good data management, see the British Ecological Society Data Management Guide[8].

### What do I do with supporting information?

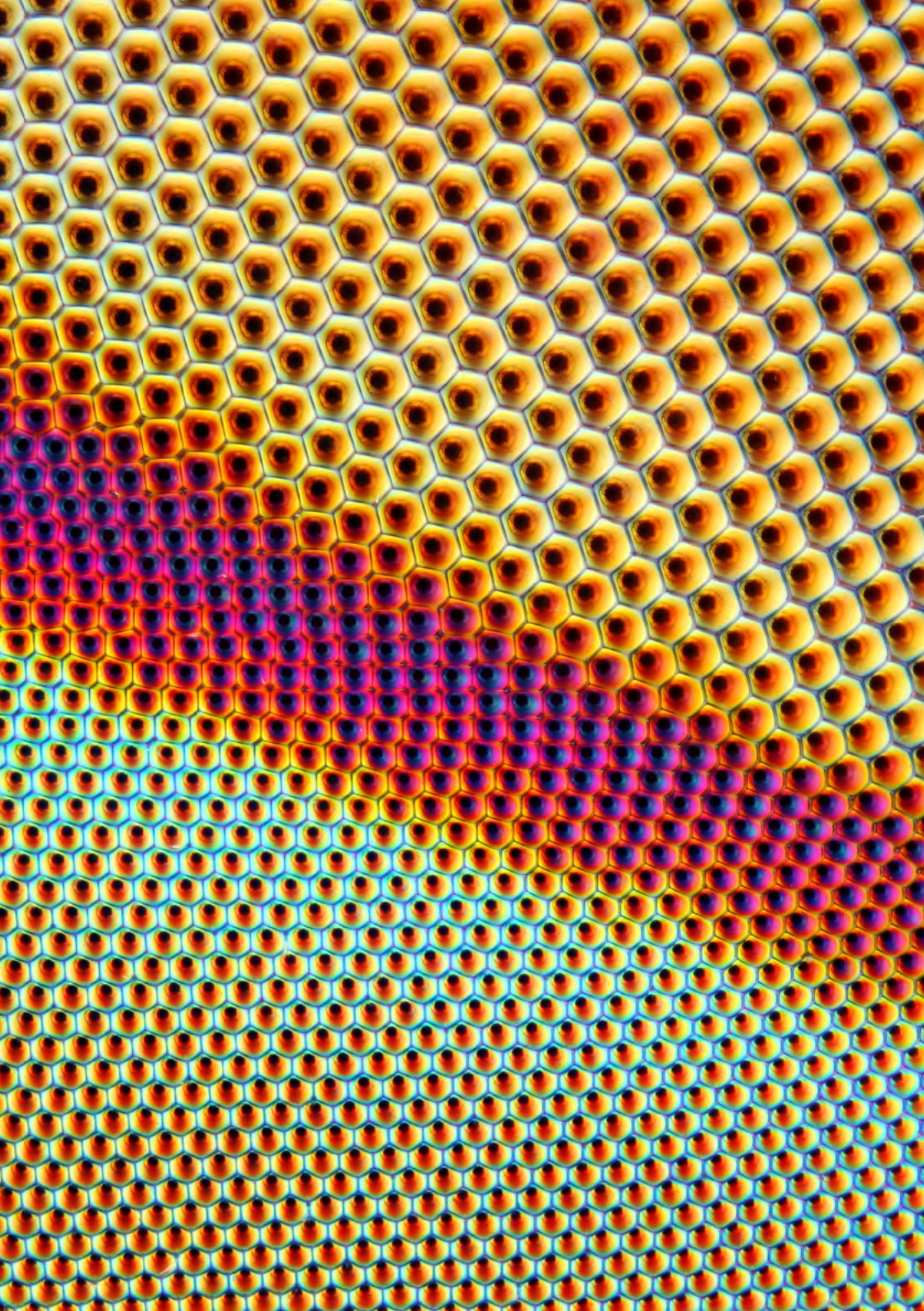
Supporting information are made available to a journal at submission, but most journals do not expect them to be reviewed. Although the files do not form part of the published version of record of the article and their permanence is not guaranteed, they are usually posted online with the published article or archived in data repositories. As a reviewer you can consult the information in this section for further understanding of the article, or you may suggest that some information from the actual article be moved to supporting information. You may also request that additional information be made available in this section, but the main article should contain everything that is needed to support the conclusions made. Some journals (e.g. *Journal of Ecology*) encourage the submission of supporting dynamic documents that combine code with code output to improve the reproducibility and transparency of research published in the journal – reviewers are not required to check these, but if a reviewer has any concerns regarding the reproducibility of the analyses they can be raised in the reviewer report. Data must not be provided in the supporting information as it should be archived in a suitable repository (see **What do I need to know about data archiving?**).

### Is reviewing for an open access journal different to reviewing for a subscription journal?

There is no difference between reviewing for an open access (OA) or a subscription journal, though journals – whether OA, subscription or hybrid, will have slight differences for what they ask you to assess as a reviewer, so it is important to familiarise yourself with journal guidelines regardless of the journal business model.

### Should I apply different standards when reviewing for different journals?

Although your main role as reviewer is to judge the science presented in an article, you should also keep in mind the journal aims and scope and the quality and types of articles you expect to read in the journal in question. Similarly, an article might be of utmost interest and importance for researchers in a particular subfield, but the journal for which you are reviewing may have a more general remit.



**If I haven't heard of a journal, how can I check whether it's reputable when asked to review?**

Do some quick internet searches – look at where the journal is indexed (journals must pass quality checks to be indexed e.g. on DOAJ, Scopus, Web of Science), its bibliometric measurements (e.g. watch out for fake metrics that sound similar to well-established metrics), details of editorial board members, and whether is it published by a well-known local or global publisher or by a relevant society. Some researchers choose to spend their review time specifically on society-owned journals, to support their society and its community. If a journal is society-owned, it will be listed on their website.

**How much time should I spend on a review?**

How long it takes you to review an article depends on many factors:

- how familiar you are with the topic
- your experience as a reviewer
- the clarity of the presentation in the article
- the difficulty of the subject matter
- the length and type of the article

The 2018 Publons Global State of Peer Review report found that reviewers in STEM (science, technology, engineering and medical research) spent a median of 5 hours writing each review[8]. This might be considerably more or less depending on the subject area, but it is advisable to set aside 3–5 hours for the task, although time spent will vary depending on the type and length of the article.

Although generally you will only be asked to review articles that pass the Associate Editor's initial assessment, occasionally it will quickly become apparent that an article is of insufficient quality to justify a detailed review. If you notice major and consistent problems throughout an article, indicate this constructively and politely in your reviewer comments and give a small number of specific examples, but do not feel obliged to spend significant amounts of time correcting all errors.

### Do I need to correct the language in an article?

If there are significant language problems in a text, please flag this in your comments referring to specific examples, so that the authors can be asked to improve this aspect of their article (see **Basic principles**). You do not need to copyedit the manuscript.

### How different should the confidential comments to the Editor be?

Confidential comments to the Editors should not be significantly different to the comments to the authors in that the overall message of both should be the same. However, statements regarding whether or not an article should be published in the journal should only be made in the comments to the Editor.

### What should I do if I have already reviewed the same article for a different journal?

If you agree to review an article that you have already reviewed for a different journal, check whether the authors have taken your original suggestions on board. If they have, provide comments on the new, revised article. If they have not and the article is completely unchanged, let the editorial office know and either send your original comments or a summary of what your concerns were when you first reviewed the article.

### Will I receive recognition for my review?

Peer review is usually an unpaid voluntary service, although journals and organisations seek to recognise the efforts of reviewers where possible. Reviewers may choose to build a profile on Web of Science Reviewer Recognition Services and link it to their ORCID code, which allows them to record their reviewer activity as a measurable research output. Some organisations offer a reviewer recognition certificate, and some journals present reviewer awards, or they may publish annual reviewer lists as a mark of recognition.

# Conclusion

In the 2019 Sense about Science peer review survey, 90% of researchers surveyed felt that peer review improves the quality of research published[8]. Since the preceding 2009 study[9], researcher satisfaction with peer review has increased - researchers don't want to replace the process; they just want to improve it. It is evidence like this that supports the value of peer review.

As a human endeavour peer review does have its weaknesses; however, no other system has yet been devised that can deliver the widespread improvements to the body of scientific literature in a better way.

The overall conclusions of the Sense about Science surveys show that contributing to the peer review process is viewed as an important part of being in the scientific community. Hopefully, this guide will encourage you to review. If you are already an active reviewer, it should answer some of the questions you have always wanted to ask but never had the opportunity to.

# Footnotes

[1] NISO Standard Terminology for Peer Review, (2023), National Information Standards Organization, 10.3789/ansi.niso.z39.106-2023

[2] Fox, C.W., Burns, C.S. and Meyer, J.A. (2016), Editor and reviewer gender influence the peer review process but not peer review outcomes at an ecology journal. Funct Ecol, 30: 140-153. https://doi.org/10.1111/1365-2435.12529

[3] Fox, C.W., Burns, C.S., Muncy, A.D. and Meyer, J.A. (2016), Gender differences in patterns of authorship do not affect peer review outcomes at an ecology journal. Funct Ecol, 30: 126-139. https://doi.org/10.1111/1365-2435.12587

[4] Fox, C. W., Meyer, J., & Aimé, E. (2023), Double-blind peer review affects reviewer ratings and editor decisions at an ecology journal. Functional Ecology, 37, 1144–1157. https://doi.org/10.1111/1365-2435.14259

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[6] Wilkinson, M., Dumontier, M., Aalbersberg, I. et al. (2016), The FAIR Guiding Principles for scientific data management and stewardship. Sci Data 3, 160018. https://doi.org/10.1038/sdata.2016.18

[7] Data Management Guide, (2018), Better Science Guides, British Ecological Society

[8] Sense about Science, (2019), Quality, trust & peer review: researchers' perspectives 10 years on, https://senseaboutscience.org/wp-content/uploads/2019/09/Quality-trust-peer-review.pdf (accessed 07 November 2024)

[9] Sense about Science, (2009), The Peer Review Survey 2009 https://senseaboutscience.org/wp-content/uploads/2016/12/Peer_Review_Survey.pdf (accessed 07 November 2024)

# Further reading


COPE guidelines http://publicationethics.org/

Peer review: The nuts and bolts, (2021) Sense about Science

Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication, (2010) International Committee of Medical Journal Editors http://www.icmje.org/urm_full.pdf (accessed 05 July 2013)

Peer Review and Manuscript Management in Scientific Journals: Guidelines for Good Practice (2007), Irene Hames, Blackwell Publishing, Oxford

The Peer Review Process: A Report to the JISC Scholarly Communications Group, J F Rowland http://www.jisc.ac.uk/uploaded_documents/rowland.pdf (accessed 05 July 2013)

Peer review in scholarly journals: Perspective of the scholarly community – an international study, Mark Ware Consulting on behalf of the Publishers Research Consortium http://www.publishingresearch.net/documents/PeerReviewFullPRCReport-final.pdf (accessed 05 July 2013)

Reviewing manuscripts for scientific journals. R L Balster.(2008) In: Publishing Addiction Science: A guide for the perplexed, Second Edition, T F Barbor, K Stenius, S Savva & J O'Reilly (Eds). Multi-Science Publishing Company, Brentwood http://www.parint.org/isajewebsite/bookimages/isaje_2nd_edition_chapter10.pdf (accessed 05 July 2013)

Peer Review: no alternative to expert judgement, Science in Parliament Vol 69, No 2 Whitsun 2012 http://www.vmine.net/scienceinparliament/sip69-2-7.pdf (accessed 05 July 2013)


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# Notes

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