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## Refereeing scientific papers and reports

*'It is a capital mistake to theorise before one has data' Scandal in Bohemia (The Adventures of Sherlock Holmes) - Sir Arthur Conan Doyle (1859-1930).*

*'An author is always pleased with his own work' - Ovid (ca 5 AD).*

*'No one is more to be feared than an enraged author' - French proverb.*

As your experience and standing as a scientist grows you will be asked by editors of scientific journals to referee papers submitted to them for publication. You may also be asked by colleagues or senior staff in the Department of Environment and Conservation (DEC) to referee draft papers before they are submitted to a journal.

Refereeing is an important step in ensuring that progress in science is based on sound scientific methods, with data being collected and analysed correctly and conclusions validly drawn, rather than being based on guess-work, incompetence, dogma or invention. It is also important in maintaining standards.

Typical reactions when a paper appears in someone's mail for refereeing vary from fright (when they see the name of the author) to annoyance that the job will interfere with their schedule.

However, you should not allow such reactions to prevent you from taking part in refereeing and, as a general rule, you should only decline to referee a paper if the subject matter is outside your area of competence or if you will be away from your office for an extended period.

Most journal editors will provide a series of questions you should address when refereeing. Usually these include:

- Does the paper make a significant contribution to science?
- Is the paper appropriate for the particular journal?
- Have the data been published before? Is there substantial overlap with already-published work?
- Is the title appropriate?
- Does the abstract adequately summarize the aim, the main results and the conclusions and is it understandable without reference to the paper?

- Is the manuscript written clearly and concisely? Are the aims clearly stated? Are the conclusions justified from the information presented?
- Were appropriate methods used? Are they sufficiently described to be repeatable by someone else? Was the experiment or survey well-designed? Are the statistical analyses appropriate and validly applied?
- Are all tables and figures necessary? Could information in text or tables be better presented in another format (e.g. as a graph or histogram)? Do legends allow comprehension without reference to the text?
- Should the paper be shortened, expanded, reorganized or clarified?
- Are all pertinent references cited?

Refer to pp 28-30 of *Guide to authors. Requirements for DEC's technical and scientific manuscripts presented for publication* by Marianne Lewis (1989).

It is important that you justify criticisms and make positive suggestions to the writer about ways to improve the manuscript. Destructive one-liners do nothing to help the author, the editor, or your reputation as a scientist. Even an appalling paper that would take days to referee thoroughly can be criticized concisely by selecting a small portion and showing how it could be improved. This is especially important for young scientists, who may be submitting one of their first papers and whose attitude to writing papers may be strongly influenced by their first few referees' reports.

The referee's report must always contain a recommendation on whether the paper should be:

1. accepted without alteration,
2. accepted with minor amendments,
3. refereed again after major alterations, or
4. rejected.

Even though most refereeing is carried out anonymously, your refereeing abilities will become known to editors and editorial committees. If you are a good and conscientious referee it will reflect well on you and on DEC. However, if you gain a reputation for being a bad or lazy referee it will reflect poorly on you *and* the organization.

Many journals now publish an annual list of referees consulted; this gives public acknowledgement that the editor of the journal recognizes your expertise.

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