

*A Guide to AFS Publications Style*

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## *Preface*

The term “style” refers to the various editorial conventions adopted by a publisher. Many of these—notably the ones pertaining to grammar, spelling, punctuation, and so forth—are common throughout the publishing world. Others—notably those pertaining to reference formats and the treatment of technical terms—vary from publisher to publisher. As a scientific publisher, the American Fisheries Society (AFS) uses a highly precise style that is intended both to facilitate communication within the fisheries profession and to ensure the integrity of its publications.

The first comprehensive guide to AFS style appeared in 2004. The present guide differs from the first one in two respects: it reflects the changes in AFS style that have occurred over the last six years, and it offers more detailed coverage of difficult points.

The guide is intended to serve two different groups of users, namely, authors and the copy editors and others responsible for putting manuscripts into final form. As a result, not all of the information in the guide will be of interest to all users. For instance, it includes sections on grammar and so forth that will be “old hat” to copy editors but that may be useful to authors; in the same vein, it provides explanations of several scientific concepts with which copy editors will probably be unfamiliar.

Every effort has been made to enable users to obtain the information they want with a minimum of time and effort. The sections have been kept short, with numerous headings; style points are presented in terms of simple rules; and the examples that are given deal with situations that are encountered frequently. In many cases it may be possible to resolve a style question simply by looking at the examples.

To facilitate locating all of the information on a particular topic, a number of cross-references are provided. There is also some intentional redundancy in the presentation. For instance, the fact that gene names are italicized is noted both in the chapter on symbols and in the chapter on the use of italics.

Although most of the guide is devoted to specific style points, the introduction offers some general pointers on scientific writing that should be of value to both authors and copy editors.

Given the vast number of style questions that can arise, no guide can really be complete. For points that aren’t covered, users should contact the Journals Department at 301-897-8616 or [journals@fisheries.org](mailto:journals@fisheries.org).

Finally, in the interest of making this guide as useful as possible and keeping it up-to-date, users are encouraged to offer suggestions for future editions.

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## *Introduction*

Published articles are the permanent records of research efforts. They may be read well beyond the author's professional circle and even beyond his or her lifetime. For this reason, among others, they must meet strict standards for both content and presentation.

The peer review process is designed to ensure that the papers published by the American Fisheries Society (AFS) are relevant and scientifically sound, that is, that the approach is acceptable, the evidence presented is adequate, and the conclusions are reasonable in light of the evidence.

The editing process focuses primarily on presentation. Authors sometimes wonder why editors are so strict, given that violations of the rules of composition seldom interfere with the communication of ideas. There are two reasons. First, poor writing places an additional burden on readers—it forces them to work out what the author means rather than grasping it directly. To take a simple example, suppose that an author uses different terms for the same concept, say, “sampling sites” in some places and “locations” in others. Readers have to make the connection between the two terms on their own, expending effort that would be better devoted to understanding the substance of the paper. The second reason is that poor writing lowers the author's credibility. However subtly, errors such as faulty grammar cast doubt on the quality of the underlying research; readers instinctively begin to wonder whether they can trust the author on more substantive points.

This guide contains a wealth of information on the fundamental elements of composition—grammar, spelling, punctuation, and so forth—as well as the ways in which AFS publications treat technical terms and symbols. The first step in writing a good paper is thus to become thoroughly familiar with the material in this guide and to consult it as needed during the writing process.

Over the years, the editorial staff have noticed that certain problems occur over and over in papers submitted for publication, so it will be useful to highlight them here. One overarching problem is a lack of formality—the use of slang, undefined acronyms, abbreviated forms of expression, and so forth. Many authors, for instance, violate the general rule on using the full common names for fish species at each mention, using, say, “Chinook” for “Chinook salmon.” (While AFS style permits the use of “salmon” or even “fish” when the species is mentioned frequently [see section 9.4], it does not permit the use of “Chinook” alone.) In the same vein, authors frequently use acronyms such as dNTP (deoxynucleotide triphosphate) without explanation. If such a term is used only once or twice, it must be spelled out; if it is used more often, it must be spelled out the first time but may then be abbreviated as long as the abbreviation is given the first time (see section 1.2).

Another overarching problem is the use of language that is not natural. Although the use of technical terms is certainly acceptable, in other respects papers must be written in ordinary English and not read like transcriptions of lab notes or seminar presentations. One particularly egregious example is the omission of the words “the” and “that” when the rules of grammar clearly require them. Consider the sentence

Fish we studied were age-0 hybrids.

In general, this sentence should be written

*The fish that we studied were age-0 hybrids.*

(see chapter 14 for the exceptions to this rule). Additional examples of unnatural language are given in the sections that follow.

So far, then, we have the general rule: *write naturally but with the formality required of a scientific paper*. We can flesh this rule out by noting that good writing must fulfill three conditions: it must be correct, it must be clear, and it must be reasonably smooth. Let us look at the three conditions in turn.

### *Correctness*

From the standpoint of presentation, correctness means (1) adhering to the accepted rules of composition and the particular elements of AFS style and (2) expressing ideas accurately.

As noted above, much of this guide is devoted to helping you meet the first objective. Let's say that you are uncertain whether to write "main stem reaches" or "main-stem reaches"; section 10.12 will show you that "main-stem" is the correct form when the term is used as an adjective, as it is in this case. Similarly, section 2.9 will show you that the first word in the term "upper Mississippi River" is not capitalized because it is not part of a formal name.

One area in which authors frequently make errors is word choice. Take the classic example, "that" versus "which." Although the two terms can sometimes be used interchangeably, at other times the distinction is crucial. For instance, the expression "The fish that were moribund" implies that only some of the fish were moribund, whereas the expression "The fish, which were moribund" implies that all of them were. Other examples are given in Chapter 14 of this guide.

Authors are also frequently in doubt as to the correct treatment of technical terms and symbols. For instance, should family names such as Ictaluridae be italicized? The answer is no (see section 9.3). What is the accepted abbreviation for the dosage that is lethal to 50% of the test animals? Appendix B shows that it is LD50 rather than LD<sub>50</sub>.

With respect to the second element of correctness, expressing ideas accurately, consider the following example showing both the original and edited versions:

The ~~variable concerns about~~ pH is primarily of concern because of ~~center on~~ its effects on ~~the toxicity of~~ other variables, such as the toxicity of ammonia and heavy metals ~~toxicity~~.

There are two problems with the original version. First, variables per se cannot be toxic; second, it refers to the toxicity of (ammonia and heavy metal) *toxicity*, which is tautological.

Here is another example of inaccurate expression:

As lampreys lose body mass, the branchial basket appears to remain constant in size ~~compared with~~ other body parts.

The original version is logically flawed because the size of the branchial basket remains constant regardless of what happens to the other body parts.

A classic (and often comic) case of inaccurate expression is the dangling participle. Here's an example:

By hatching prematurely, the diffusion barrier created by the chorion and the water in the perivitelline space disappears.

What the author meant was

When fish hatch prematurely, the diffusion barrier created by the chorion and the water in the perivitelline space disappears.

The original literally states that the diffusion barrier hatches, which is not the case.

### *Clarity*

A statement may lack clarity because its meaning is simply unclear or because it is ambiguous (i.e., more than one interpretation is possible). Here is an example of simple lack of clarity:

Each fish received an intraperitoneal injection with 0.1 mL ~~of one of the two vaccines of the vaccine Furogen 2 or 0.1 mL of sterile 0.9% NaCl (control). Control fish were vaccinated with an injection of 0.1 mL of sterile 0.9% NaCl.~~

The original version fails to make clear that only one vaccine (Furogen 2) was compared with NaCl (the control) and errs in calling the latter a vaccine.

Here is an example of ambiguity:

Blood was taken ~~while fish were anesthetized~~ by inserting heparinized needles into the caudal vasculature while fish were anesthetized.

The original version is ambiguous because it is not clear whether the insertion of heparinized needles into the caudal vasculature was for the purpose of anesthetizing the fish or drawing blood from them.

### *Smoothness*

There are several issues to consider in constructing smooth statements.

*Awkwardness.*—Awkward sentence structure crops up in virtually all types of writing. Perhaps the best advice for avoiding it is to state your ideas as simply as possible. Consider the following two examples:

Counts became lower as sampling moved to deeper water ~~because due to~~ the latter quadrants ~~were being~~ less likely to have favorable substrate and therefore fewer red sea urchins.

~~There were only four instances in which issues regarding transceivers detected, a transponder's code but displayed it incorrectly. displaying a transponder's code were rare in this study. In fact, the only instances in which tag codes were encountered (N = 4). All of these involved AVID-encrypted transponders.~~

In the first example, only two simple changes are needed to eliminate the awkwardness. In the second example, more extensive streamlining is required, including the transfer of some information from the second sentence (in the original) to the first.

*Verbosity.*—Using more words than necessary to convey the idea is a common problem in scientific writing. Consider a particularly bad example:

Fish that were vigorously chased showed significantly higher plasma cortisol levels than control fish. Although the plasma cortisol levels of these alewives were significantly higher than the levels of fish that did not experience vigorous chasing, the plasma glucose levels in these alewives were not affected.

This can be streamlined to

Although the alewives that were vigorously chased had significantly higher plasma cortisol levels than those that were not, they experienced no change in their plasma glucose levels.

Here's a less egregious example:

~~Although our reasoning for drawing this conclusion does not completely match that of the reasoning used by Smith (1970), we agree with Smith (1970) that the restoration of Great Lakes fish communities will require further reductions in the number of alewives.~~

In this example, the phrases “for drawing this conclusion” and “with Smith (1970)” have been deleted because they contribute nothing to the meaning of the sentence and the phrase “the reasoning used by” has been changed to “that of” to avoid unnecessary repetition.

As the last example suggests, one way to reduce verbosity is to use pronouns (“that”) in place of nouns (“the reasoning”) whenever the meaning is clear. Despite the widespread belief to the contrary, pronouns are perfectly acceptable in formal writing and do much to improve it.

Another way to avoid verbosity is to use shortened forms of expression for concepts that have already been stated in full:

The fish in zone 1 were the heaviest ( $130 \pm 17$  g [mean  $\pm$  SD]), followed by those in zone 2 ( $125 \pm 12$  g [mean  $\pm$  SD]) and then those in zone 3 ( $122 \pm 13$  g [mean  $\pm$  SD]).

Since it is clear from the first mention that all of the values given are means  $\pm$  SDs, repetition of that information is not necessary.

*Noun “sandwiches.”*—Closely related to verbosity is the practice of piling up nouns one after the other. Here's a relatively inoffensive example:

This development would lessen ~~the responses of the Norris Lake largemouth bass populations responses in Norris Lake~~ to the imposition of length limits.

In addition to being inelegant, noun sandwiches can obscure the key relationships involved.

*Lack of parallelism.*—Parallelism means presenting similar information in a similar fashion. Here's an example:

~~Winter in~~ Mortality due to harvesting and other causes was lower in winter than in summer.

Apart from being awkward, the original leads readers to believe that the subject is winter mortality rather than mortality per se, a misconception that is only corrected when they have read the entire sentence.

Here's another example:

We recorded the reactions of the rainbow trout but not those of the brown trout.

The addition of the words “those of” makes it clear that it is the *reactions* of the two species that are the object of the sentence.

*Unidiomatic expression.*—Every language has its own particular conventions known as “idioms.” For instance, in English one would say “English is the principal language of the United States.” In French, however, one would say the equivalent of “The English is the language principal of the United States.” Unidiomatic expression is surprisingly common in scientific writing. Here's a simple example:

We designed the experiment to ~~answer~~address this issue.

Alternatively, the sentence could have been rewritten as

We designed the experiment to answer this question.,

but the phrase “to answer this issue” may not be used because it is not idiomatic.

Here's a more complicated example of unidiomatic expression that is also somewhat awkward:

This stems from the direct role that ~~causal relationship~~ the growth factor plays in ~~directly~~ regulating cellular proliferation.

The original is incorrect because growth factors do not “play” causal relationships.