14. *Word Usage*

AFS publications restrict the use of certain terms in the interest of technical accuracy and not sounding too colloquial. This chapter reviews these restrictions and addresses other instances of word usage that may cause difficulty.

SPECIFIC TERMS

Affect versus *effect*.—Except in certain psychological contexts, the word "affect" is a verb meaning "to have an effect on"; the word "effect," by contrast, may be either a noun meaning "result" or a verb meaning "to bring about":

The slight change in salinity strongly affected the fish.

The slight change in salinity had a strong effect on the fish.

We effected the decrease in temperature by adding well water to the tanks.

And/*or*.—Avoid using this term altogether. From a logical standpoint, it is only appropriate in those rare instances in which two items can actually be taken either jointly or separately. Even when this is the case, the term is usually more awkward than its alternatives. For instance,

Recent advances in molecular biology should be useful to geneticists and/or bacteriologists.

is more cumbersome than

Recent advances in molecular biology should be useful to geneticists, bacteriologists, or both.

As.—This word may be used to indicate causation:

We terminated sampling early, as the storm had made the lake very choppy.

Compare to versus *compare with*.—There is an important distinction between the expressions "compare to" and "compare with"; to compare one thing *to* another is to indicate that they are similar in some respect, whereas to compare one thing *with* another is simply to examine them side by side:

This situation may be compared to one in which. . . .

We compared the results from the first treatment with those from the second.

In most of the cases encountered in AFS publications, "compare with" is the proper expression. However, it should generally be avoided in actual comparisons:

The fish in the first treatment attained higher weights than those in the second.

not The fish in the first treatment attained higher weights compared with those in the second.

Comprise.—This word should only be used in the active voice; in passive constructions, substitute "composed of," made up of," or a similar term:

The sample comprised fish from 15 species.

but The sample was composed of fish from 15 species.

Confidence interval versus *confidence limits*.—The term "confidence interval" refers to a range of values, the term "confidence limits" to the smallest and largest values within that range:

within the 95% confidence interval 4.9 ± 0.3

within the confidence limits 4.6 and 5.2

Due to.—This term has generated a lot of controversy within the publishing profession. Grammatically, the word "due" is an adjective, and in principle it should modify a noun in some meaningful way. For example, some grammarians would replace the sentence

The experiment was successful due to the perseverance of the researchers.

with

The success of the experiment was due to the perseverance of the researchers.

because the first sentence literally states that "the experiment (i.e., the noun that "due" modifies) was due to the perseverance of the researchers," which is not the intended meaning. As such sentences are both commonplace and perfectly clear, however, AFS style allows them. Bear in mind, though, that in many cases it may be more graceful to use a synonym such as "owing to," "because of," or "as a result of."

Fish versus *fishes*.—Although both terms are accepted plurals for this group of animals, it is generally preferable to use "fishes" only as a synonym for "species of fish":

We collected 422 fish by gill netting.

A wide variety of fishes are found in this ecosystem.

Fishery versus *fisheries*.—Both terms may be used as adjectives with the same meaning:

Fishery management is increasingly focusing on angler behavior.

Fisheries management is increasingly focusing on angler behavior.

Following.—Avoid using this word as a synonym for "after":

After exposure to the pathogen, the fish. . . .

not Following exposure to the pathogen, the fish. . . .

If versus *whether*.—Use the word "if" only when the intended meaning is "in the event of"; use the word "whether" when stating an indirect question with more than one possible answer:

If hypoxia develops, mortality will rise significantly.

The purpose of this study was to determine whether this type of marking has any deleterious effects on juvenile fish.

Increased/*reduced* versus *higher*/*lower*.—The terms "increased" and "reduced" should only be used in situations in which the researcher has actually altered the variable of interest; "higher" and "lower" should be used in other situations:

The increased temperature in the first two tanks during the second phase of the experiment led to. . . .

The lower average temperature in the more northerly of the two creeks was apparently responsible for. . . .

In order to.—Although in rare cases euphony may call for using this term, in most cases "to" alone will suffice:

To test this hypothesis, we. . . .

not In order to test this hypothesis, we. . . .

Likely.—This word may be used as an adjective but not as a synonym for the adverb "probably":

Early spawning is likely.

Spawning will probably be early.

Over.—This word may be used in the sense of "during" and "more than":

We carried out the research over a period of several months.

Over 500 anglers returned completed survey forms.

Parameter.—Although this word has acquired a number of meanings in recent years, for the sake of clarity AFS style restricts its use to two situations, namely, when it refers to a constant in an equation or statistical distribution and when it refers to a critical value of some sort:

The parameters of the von Bertalanffy growth equation are the asymptotic length (L_∞) and the growth coefficient (K).

A relatively high water temperature is one of the reproductive parameters for this species.

The term "parameter" should never be used when the term "variable" or, more generally, "characteristic" is meant.

Prior to.—Although euphony may occasionally call for the use of this term, "before" is a better choice in most cases:

Before the start of the experiment, . . .

not Prior to the start of the experiment, . . .

Significant.—With the exception in the second example below, AFS style restricts the use of this word to cases of statistical significance:

The difference between means was significant ($P < 0.05$).

Though significant statistically, the result was not considered significant biologically.

In other cases, substitute words such as "major," "important," and "substantial" for "significant."

Since.—This word may be used as a synonym for "because" as well as in its temporal sense:

Since the previous research on this question seemed credible, we chose not to replicate it.

Care should be taken to avoid ambiguity, however, as in the phrase

Since the regulations were implemented, . . .

which can be either causative or temporal.

That versus *which*.—As these terms can have different logical implications, AFS style follows the traditional rule of using "that" to introduce dependent clauses and "which" to introduce independent clauses:

The fish that were moribund. . . . [i.e., only some of the fish were moribund]

The fish, which were moribund, . . . [i.e., all of the fish were moribund]

The.—This little word has been a real sore point between authors and copy editors, the former often omitting it and the latter inserting it wherever felicity of expression seemed to call for it. AFS has chosen a compromise position. As a rule, "the" should be included whenever the statement refers to a particular situation as distinct from a general one:

Channel catfish [in general] are unusual in this regard.

The [particular] channel catfish in our study were unusual in this regard.

However, in the abstract and Methods (where a more condensed form of expression is often desired) the word "the" may be omitted from statements referring to particular situations as long as the context is clear:

> We obtained a sample consisting of 298 juvenile Chinook salmon from the Snake River above Hell's Canyon Dam. At the laboratory, fish were weighed (g), measured (mm), and inspected for gross abnormalities. Fish were then randomly assigned to one of three treatments.

Care must be taken when "the" is used with plurals, however. For instance, the statement

The experts in this area have concluded that. . . .

implies that *all* of these experts have reached the stated conclusion, which may not be the case. When it is not, one should state, for instance, that

Some [Many] experts in this area have concluded that. . . .

The word "the" is also required before some place names:

the West the Atlantic Ocean the Illinois River the Appalachian Mountains

but Antietam Creek Oneida Lake McMillen Reservoir Bonneville Dam Mount Saint Helens

Using.—As a rule, AFS style restricts the use of this term to sentences in the active voice in which the agent is clearly specified:

Using a data logger, we obtained data on water temperature.

not Data on water temperature were obtained using a data logger.

Terms such as "by means of" and "with" should be used in passive constructions:

Data on water temperature were obtained by means of a data logger.

While.—This term may be used as a synonym for "although" or "whereas":

While the bluegills were largely unaffected by this change, the white crappies suffered high mortality.

With.—AFS style adheres to the traditional rule prohibiting the use of "with" as a conjunction:

Several species were identified, green sunfish being the most numerous.

not Several species were identified, with green sunfish being the most numerous.

OTHER MATTERS

Voice

AFS style permits authors to use the active voice, the passive voice, or a mixture:

We captured 108 specimens in gill nets deployed at three points within the study section. These fish were transported to the laboratory with 4 h of capture and. . . .

Conditional Terms

Conditional terms are ones that express possibilities as distinct from definite facts; examples include the terms "perhaps," "suggests," and "appears to." As a rule, there should be only one such term per sentence:

These results suggest that black crappies are. . . .

not These results suggest that black crappies may be. . . .

Singular versus Plural with Variables

Unless the context clearly calls for a plural, terms referring to variables should be in the singular:

Temperature was recorded at all study sites.

but Temperatures were compared across study sites.

"And" and "Or" in Series

In series, the term "and" should be used to indicate that the items listed are to be taken together, the term "or" that they are to be taken separately:

The treatments used in this experiment were x, y, and z.

but Each fish was subjected to one of three treatments: x, y, or z.

Quantitative Comparisons

Expressions such as

Mortality was four times greater in the second treatment than in the first.

should be avoided because they are ambiguous. Logically, the expression "four times greater" means "five times as great," whereas most authors mean "four times as great."

In the same vein, the term "times" should be avoided in describing decreases:

The treatment value was one-fourth that of the control.

not The treatment value was four times lower than that of the control.