

## 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 change in salinity by adding well water to the tanks.

*Alternative* versus *alternate*.—The word “alternative” implies other possibilities:

An alternative explanation for the genetic differences that we observed is the founder effect.

The word “alternate” is sometimes used in this sense but more often as a synonym for “opposite” or “every other”:

Dipnetters were stationed on alternate sides of the low-head dam.

The fish were fed on alternate days.

*And/or*.—Logically speaking, the expression “x and/or y” is equivalent to “x or y or both,” implying that x and y can be taken *either* jointly *or* separately:

Mortality was caused by higher temperatures and/or oxygen depletion.

Even when that is the case, the “or . . . or both” construction is generally preferable.

In most cases, however, “and” or “or” alone is logically correct. For instance,

Wetland use is subject to state and federal regulations.

is more accurate than

Wetland use is subject to state and/or federal regulations.

because even though some wetlands may be subject only to state regulations, some only to federal regulations, and some to both, wetlands—as a group—are subject to both.

*And* versus *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.

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

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

*Bias*.—When used as a verb, this word should be accompanied by adverbs rather than adjectives:

biased upward *not* biased high

*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  $4.9 \pm 0.3$

within the 95% confidence limits 4.6 and 5.2

*Due to.*—This term may be used in the sense of “attributable to” but not in the sense of “owing to” or “because of”:

The poor recruitment in 1997 is probably due to abnormally high predation.

*but* Owing to the limitations of our data, we were only able to address the first hypothesis.

*Fish versus fishes.*—The term “fishes” should only be used as a synonym for “species of fish,” not as the plural of “fish”:

A large number of fishes are found in this ecosystem.

*but* We collected 422 fish by gill netting.

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

Fishery [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 senses 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 fixed value in an equation or statistical distribution and when it refers to a critical value of some sort:

The estimated parameters were as follows:  $a = -1.33$  and  $b = 0.59$ .

A relatively high water temperature ( $\geq 26^{\circ}\text{C}$ ) 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:

The most important variable was streamflow.

*Potentially.*—Avoid using this term with other terms indicating possibility:

This is a potentially important finding.

*not* This could be a potentially important finding.

*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, . . .

*Relationship versus relation.*—The word “relationship” should be used when referring to an association or causal connection:

the relationship between substrate type and reproductive success

*not* the relation between substrate type and reproductive success

*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*.—As a rule, the word “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, Methods, and other places in which a more condensed form of expression is 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 Atlantic Ocean the Illinois River the Appalachian Mountains

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

*There is/there are* versus *exists/exist*.—Use the more natural “there is” and “there are” instead of “exists” and “exist”:

There is conclusive evidence that. . . .

*not* Conclusive evidence exists that. . . .

*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.

*or* Several species were identified, of which green sunfish were 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.

## 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.

Also avoid using vague comparative terms:

Small fish (<78 mm) suffered greater mortality than larger ones.

*not* Smaller fish suffered greater mortality than larger ones.