

14. *Word Usage*

AFS publications restrict the use of certain terms in the interest of ensuring 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.

Although the word “alternate” is sometimes used in this sense, AFS style prefers to treat it 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.—The expression “x and/or y” may be used when the meaning is “x or y or both,” i.e., when x and y can be taken *either* jointly *or* separately:

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

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

Wetland use is subject to state and federal regulations.

is preferable to

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, that term 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 may be used in both passive and active constructions:

The sample comprised fish from 15 species.

The sample was comprised 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 95% confidence limits 4.6 and 5.2

Due to.—This term may be used in two senses: (1) as a synonym for “attributable to” and (2) as a synonym for “owing to” or “because of”:

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

Due to the limitations of our data, we were only able to address the first hypothesis.

Note that the first sense generally requires a verb in the present tense.

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.—This word may be used as a synonym for “after,” although the latter term is generally preferable:

After [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 either as an adjective meaning “probable” or as an adverb meaning “probably”:

Early spawning is likely.

Spawning will likely be early.

Over.—This word may be used in the sense of “more than” as well as that of “during”:

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: (1) when it refers to a fixed value in an equation or statistical distribution and (2) 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 prefers to follow 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.—Traditionally, the use of this term was restricted to sentences in the active voice in which the agent is clearly specified:

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

Through common usage, however, constructions such as

Data on water temperature were obtained using a data logger.

are now acceptable as long as their meaning is clear.

Where.—This term should be used to introduce a relative clause only when it refers to a place or other location:

The sites where spawning occurred were. . . .

but Models in which the reproductive rate is exogenous resulted in. . . .

“Where” may be used to define the variables in an equation, however (see section 4.8)

While.—This term may be used as a synonym for “although” or “whereas” as well as in a temporal sense:

While the Bluegills were largely unaffected by this change, the White Crappies suffered high mortality.

With.—AFS style permits “with” to be used as a conjunction; generally, this construction requires a present participle of the verb:

Several species were identified, with Green Sunfish being the most numerous.

not Several species were identified, with Green Sunfish 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. . . .

Verb Tense in Describing Results

A past tense should be used to describe completed actions:

We sampled the fish at each site every 2 weeks for 3 months.

The present tense should be used to describe general or “enduring” results:

Our data suggest that the spawning period is relatively short for this species.

but The spawning period was slightly shorter in 1978.

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.