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Usage of “Sex” and “Gender”

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The word “gender” is a stem of the Latin term “genus,” which means “kind” or “sort.” Early on, gender served as a synonym for “sex” (Haig 2004). However, in the 1970s, the definition of gender evolved to provide a clear distinction from the meaning of sex (Money and Ehrhardt 1972). The World Health Organization (2011) now provides very clear definitions of sex as “the biological and physiological characteristics that define men and women” and gender as “the socially constructed roles, behaviours, activities, and attributes that a given society considers appropriate for men and women.” Thus, sex is a biological distinction focused on reproductive organs and genetic makeup, whereas gender distinctions are defined or constructed by a culture or society and, thus, are subject to change as societal norms change (McCammon et al. 2007; Kramer 2010).

Given modern definitions, sex and gender are not synonyms and they should not continue to be used interchangeably in fisheries publications. Gender is used correctly when in reference to Latin names (i.e., a grammatical use). Outside of grammatical uses, gender would be used correctly only “to refer to social or cultural characteristics of males and females” (Sabin 2001:294). This use would likely be in reference to fishers rather than fish, because fishers are components of societies.

We searched for gender in the main text (i.e., excluding references) of all issues of all American Fisheries Society journals (except *Fisheries*), the *Canadian Journal of Fisheries and Aquatic Sciences* (CJFAS), and *Fisheries Research* (FR) published before 2011 to assess the use of the word gender in fisheries-related scientific publications. Gender was used incorrectly in 308 of the 311 (99%) articles reviewed and was used correctly only once in a nongrammatical usage; that is, “... social and gender roles have been redefined to permit a wider participation of women in village fishing activities ...” (Kronen 2004:123). Typical examples in which gender was used incorrectly included the following:

“... gender was determined by visually examining the gonads.” (Allen et al. 2003:846)

“Gender was determined by examination for the presence of testes or ovaries during surgery.” (Kuhn et al. 2008:362)

“Abdominal palpation and/or gamete extrusion was used to determine gender ...” (Noltie 1990:175)

“... skewed female:male gender ratios on the spawning grounds ...” (Larsen et al. 2010:565)

“... gender-specific mean age was 4.1 years for males ...” (Harris et al. 2007:1537)

“Dummy variables were used for gender (1 = male, 0 = female), ...” (Thunberg and Fulcher 2006:641)

“The ability to accurately determine the sex of individual fish in a nonlethal manner is useful because it precludes the need to sacrifice fish when gender represents a variable of interest to fishery scientists.” (Isermann 2010:352)

The incorrect usage of gender is not confined to journal articles; a recent introductory wildlife and fisheries textbook (Willis et al. 2009) contains sections entitled “Determination of Gender,” “Use of Gender Information,” and “Implications of Age, Growth, and Gender Information.” In all of these examples, the author was referring to the biological sex of the fish.

The use of gender instead of sex in fisheries publications appears to be a relatively recent phenomenon. We used dummy variable regression (Fox 1997) to examine the annual rate of change in the percentage of articles incorrectly using gender in *Transactions of the American Fisheries Society* (TAFS), *North American Journal of Fisheries Management* (NAJFM), CJFAS, and FR since the year gender was first used in each journal. The number of articles with gender in the main text remained very low until approximately 1990 for all publications except for FR, in which the use of gender remained low until approximately 2000. Since those years, the percentage of articles with gender has remained constant for CJFAS ($P = 0.2093$) but increased ($P < 0.00005$) at the same ($P = 0.1655$) annual rate of between 0.14% and 0.23% per year for NAJFM, TAFS, and FR. By 2010, between 2.7% and 3.9% of articles published in NAJFM, TAFS, CJFAS, and FR used gender in the main text.

Why has gender been used in place of sex in fisheries publications? Two possible reasons include (1) a misplaced form of political correctness resulting in an attempt to avoid the word sex or (2) an attempt to provide variability in the writing. We attempted to quantify these possible reasons by computing the proportion of times gender was used out of all of the times gender and sex were used in each article. The misuse was then classified as “avoiding using ‘sex’” if this proportion was greater than 0.8, as “providing a variety of speech” if this

proportion was between 0.2 and 0.8, and as “can’t tell” if this proportion was less than 0.2. Excluding the can’t tell situations, usage was approximately evenly distributed between the two reasons (50.4% avoiding using “sex”). Unfortunately, these results do not provide a conclusive reason for why gender has been used in place of sex.

Given that gender has roots as a synonym for sex, some authors and editors might argue that the usages of gender that we have identified as incorrect are indeed correct. However, we feel that this argument is spurious because sex would be both correct and unambiguous in these situations. Thus, the continued misuse of gender in the work of fisheries professionals can lead to a lack of clarity, misperceptions, and, because the usage is usually incorrect (according to modern definitions) or unneeded, an erosion of respect for our work. For these reasons, we urge all fisheries professionals to use the word sex rather than gender when sex—that is, biological differences—is meant. The word sex should be used in nearly all writings and presentations by fisheries professionals and students and, thus, we as writers, reviewers, and readers should work to eradicate the misuse of gender from our work.

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