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### **Guidelines for authors and reviewers of *Human–Wildlife Interactions* manuscripts<sup>1</sup>**

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**Abstract:** This paper presents details on policies of *Human–Wildlife Interactions* (HWI) and describes procedures for submitting, reviewing, and editing manuscripts. This document includes guidelines for subject matter, a description of the reviewing and editing process, and details for format and style. Appendices are included for standard abbreviations.

**Key words:** format, guidelines, manuscript, policy, style

Publishing a professional paper proceeds most smoothly if authors understand the policy,

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<sup>1</sup>These guidelines are typed in proper format for manuscripts submitted to *Human–Wildlife Interactions*, with the exception of footnotes, which are not permitted in manuscripts.

procedures, format, and style of the outlet to which they are submitting a manuscript. In drafting *Guidelines for authors and reviewers of Human–Wildlife Interactions (HWI) manuscripts*, Andrews et al. drew heavily from *Guidelines for authors and reviewers of Wildlife Society Bulletin manuscripts* by Andrews and Leopold (2000), many sections of which remain intact.

## **General policy**

### **Submitting the manuscript**

Authors should submit an electronic version of their manuscript, along with a letter of transmittal indicating the paper is submitted for exclusive consideration by *HWI*. Email the submission to [hwi@aggiemail.usu.edu](mailto:hwi@aggiemail.usu.edu).

Without the exclusive consideration statement, the editor will not initiate review. The statement ensures that data and findings have not been published previously or submitted elsewhere for simultaneous consideration. A paper is considered published if it (1) appears in a serial publication abstracted by *Biological Abstracts* or a similar reference volume, (2) appears in a book (including conference proceedings) printed in >500 copies and widely distributed to libraries, or (3) has been published as part of a numbered series by an agency. These guidelines for previous publication are flexible in certain instances, such as technical analyses of findings published previously for lay audiences. Kendall (1981) elaborated on the seriousness of dual publication; *HWI* editors subscribe to his standards.

If any portion of the manuscript has been published or reported elsewhere, submit a copy of each report or publication electronically to *HWI*. If the manuscript relates to but does not duplicate other publications or manuscripts by the same author(s), submit a copy of each electronically to assist reviewers and editors in assessing the submitted manuscript.

Theses (M.S.) and dissertations (Ph.D.) do not constitute prior publication and need not be mentioned in the cover letter, but they should be cited in the manuscript (see *Literature cited style* below). Similarly, brief abstracts of talks given at meetings do not constitute prior publication. Generally, unpublished reports required by sponsors and not distributed as part of a numbered series (or in other ways that might result in accession by libraries) do not constitute prior publication. Most symposia proceedings are considered publications; however, *HWI* editors will decide to consider such manuscripts on a case-by-case basis. Authors should provide information that bears on ethical and copyright considerations (CBE Style Manual Committee 1994:599–600) and other information that might facilitate review and editing.

### **Page charges**

Page charges of \$100 per printed page are required. Authors must acknowledge acceptance of responsibility for page charges should the manuscript be accepted for publication.

### **Subject matter**

*HWI* was created to address the needs of professionals in the arena of human–wildlife conflicts and wildlife damage management. The intent of *HWI* is to publish original papers, usually scientific studies, on all aspects of wildlife damage management, including special features to promote dialogue among professionals concerning current issues.

### **Peer-reviewed articles**

The following subject matter areas are appropriate for peer-reviewed articles in *HWI*:

1. *Management*. These articles should describe the effects of specific practices or policies concerning the management of human–wildlife conflicts and wildlife damage. We

particularly welcome articles on economics, invasive species, human dimensions, nuisance wildlife, over-abundant species, urban wildlife, wildlife damage, and zoonotic diseases. Articles are usually the results of scientific studies and are sent out to other scientists for review.

2. *Techniques*. Techniques papers should report a significant evaluation of or improvement upon techniques used frequently in wildlife damage management. These articles usually are from 3 to 12 double-spaced manuscript pages.
3. *Contemporary issues*. This category offers great flexibility, featuring articles that relate to human–wildlife conflicts and the impact of human activities on wildlife or its habitat. Contributions on political or legal issues, special topics in wildlife damage management, refinement of state or federal natural resource programs or policies, regional or national surveys of wildlife management programs or policies, social movements affecting wildlife management, and related topics are welcomed.
4. *Philosophy*. Papers that address the principles, logic, and ethics under which wildlife damage managers and the profession operate are welcomed.

### **Feature submissions**

See *Format for features* below for instructions for formatting feature submissions. Other features may be created or changes may be made to existing features as *HWI* evolves.

1. *Opinion articles*. These manuscripts are essays that question values, priorities, precepts, and philosophical foundations under which wildlife management operates. These articles can uncover dogma, false assumptions and misguided policy, or otherwise stimulate thought and innovation. The editor may send opinion essays for peer-review but also may

- accept them without doing so. Such articles may appear as a *Soap Box* piece.
2. *Commentary*. Commentaries are of 2 types: reaction to a previous article in *HWI* or a response to an issue, movement, policy, or program that could impact the management of human–wildlife conflicts. In either case, the manuscript must be well-documented, prepared professionally, and include an abstract. The editor may accept *Commentary* submissions with or without peer-review. The purpose of this feature is to get important information in print in a timely way.
  3. *Research or Management Notes*. Manuscripts in this category are essentially a brief note pertaining to any subject discussed above under Peer-reviewed articles. Notes are distinct from peer-reviewed articles in that they may not exceed 5 total published pages, have no abstract, and contain no photos or diagrams except when such are essential to illustrate a new technique or new equipment.
  4. *Student Voices*. These articles by students either discuss issues of particular relevance to students within the natural resources field or are award-winning or otherwise outstanding student authored essays.
  5. *Book Reviews*. Book reviews provide a brief synopsis and commentary on a book relevant to some aspect of the human–wildlife conflicts field.

### **Reviewing and editing**

Upon receipt of a submission, the editorial staff examines the manuscript to determine if it is in proper style and format and if the subject matter is appropriate. If style and format are seriously flawed, the paper will be returned for revision before being sent to referees. If subject matter is inappropriate, the editor will return the paper to the author with an explanatory letter.

**Peer-reviewed manuscripts**

The editor assigns manuscripts that have been accepted for review to an associate editor and 2 to 3 qualified referees to review the paper. The editor considers expertise, affiliation, geographic location, date of last review, and performance on previous reviews when selecting referees.

Referees are contacted prior to e-mailing manuscripts and asked to complete their review within 3 weeks. If they are not able to review the manuscript in this period, an alternate reviewer is selected. Despite these measures, it is sometimes necessary to replace delinquent reviewers. It often takes >2 months before the managing editor receives a complete set of reviews.

Occasionally, the editor or associate editor judges that referees' comments reveal biases, lack objectivity, are illogical, or otherwise lack merit. In such cases, the editor or associate editor may proceed with revision despite negative comments from one or 2 referees. An alternative opinion from a different referee also may be requested.

Manuscripts returned to authors for revision must be revised and returned to the associate editor within a reasonable deadline set by the editor, or the manuscript will be withdrawn from the review process, requiring resubmission for further consideration. Once a completed revision is returned, the editor reviews it and either rejects it, returns it with a recommendation, or accepts it for publication. Sometimes the revision process requires several iterations before the editor makes a final decision.

**Acceptance and rejection policies**

Final acceptance of manuscripts is decided by the editor. The editor bears final

responsibility for the value and quality of materials that appear in *HWI* and makes decisions accordingly. These decisions may differ from referees' comments seen by authors and recommendations made by referees, including the associate editor. In rare instances, the editor's decision to accept or reject a manuscript may not agree with the recommendation made by the associate editor.

In rendering a decision, the editor evaluates the manuscript and comments of the review team. The following are some of the problems that typically result in manuscript rejection: (1) flaws in design or logic that make the results invalid, biased, or questionable; (2) failure to contribute new knowledge; (3) trivial subject matter; and (4) previous publication of the same or closely related material.

The author of a rejected manuscript may feel that referees' comments support publication and that the editorial decision was wrong. The author should realize that the editor receives 2 sets of comments from each referee, 1 open and 1 confidential. The confidential evaluation may reveal weaknesses not mentioned in comments seen by the author. One referee may have discovered weaknesses missed by the other referees. Further, the editor may identify problems missed by both referees and the associate editor.

*Appeal and resubmission.* The author may question the reasons for rejection by submitting a letter electronically to the editor, stating his or her case, and asking for reconsideration. Reconsideration of a rejected manuscript requires a convincing rebuttal letter from the author(s). Authors should not revise and resubmit the manuscript without electronically submitting the letter first. The reconsideration request saves time for the editor and the author.

*Accepted manuscripts.* Final versions of manuscripts accepted for publication must be

submitted via e-mail to the *HWI* editorial office at [hwi@aggiemail.usu.edu](mailto:hwi@aggiemail.usu.edu). See specifications under the Tables and figures section below.

### **Copyright**

If a manuscript not in the public domain is accepted for publication, authors or their employers must transfer copyright to *HWI*. Publications authored by federal government employees are in the public domain. Manuscript submission implies entrusting copyright (or equivalent trust in public-domain work) to the editor until the manuscript is rejected, withdrawn, or accepted for publication. If the manuscript is accepted, *HWI* retains copyright.

### **Format and style**

Authors should follow the style and format of *HWI*. Editors and reviewers expect manuscripts to adhere to *HWI* format and style. When manuscripts do not conform to *HWI* format and style, readers may be distracted or irritated and may consider the manuscript flawed.

### **Length of articles**

*HWI* considers articles of any length not likely to exceed 15 pages in print (about 45 manuscript pages, including tables and figures).

### **Page format**

#### *General guidelines.*

1. Double space the text throughout the manuscript, including title, authors' addresses, abstract, main body of the text, long quotations within the text, literature citations, footnotes, table titles, table bodies, and figure titles.
2. Do not break (hyphenate) words on the right margin. Breaks on the right margin can lead

- to confusion over compound modifiers and dashes that could cause an inappropriate word to appear in print.
3. Do not justify the right margin.
  4. Use Times New Roman font, 12-point type throughout the manuscript, including title and headings. Times New Roman is preferred because some typographical and mathematical symbols are difficult to distinguish in Courier and other fonts. **Do not use all capital letters or small capitals** except when references to brand or scientific name require it.
  5. Include only 1 space between sentences, not 2 spaces.
  6. **Do not use formatting styles** from a style menu, as these will need to be removed manually by the typesetter and result in unnecessary delays in production.
  7. Italicize words or symbols, such as scientific names and mathematical symbols, which should appear italicized in print. However, do not use italic type for emphasis. Instead, qualify terms verbally in the text when it is necessary to do so.
  8. Do not use quotation marks for emphasis. Instead, qualify terms verbally in the text when it is necessary to do so. Quotation marks may, however, be used for clarity to set apart a term or phrase under discussion (e.g., don't use the word "don't" or other contractions) when it would be confusing not to do so.
  9. Use boldface type only for the title, first-, and second-level headings. Do not use bold in text for emphasis. Third level headings should be indented and italicized, not boldfaced.
  10. Maintain margins of about 2.5 cm (1 inch) on all sides of the page. The 2.5-cm margins allow for notes among reviewer, author, and editor.

### **Title page**

The correspondence author's address appears single spaced (the only exception to the double-spaced-throughout rule) in the upper left corner of the first page of the manuscript.

Include a telephone number for the correspondence author, an e-mail address, and the date when the manuscript or revision was prepared.

Insert a running head (RH) at the top of each page with the author's or 2 authors' last names. For >2 authors, insert the principal author's last name followed by the abbreviation "et al." It is important to leave the space at the top of the title page empty for the editorial staff to record information about the manuscript. Maintain a 1-in page margin all around.

The article title should be ≤10 words, but longer titles are acceptable if shorter titles fail to communicate content accurately.

Type authors' names in mixed-case letters. The second, third, and subsequent lines of an address are indented. Include a complete address for each author. If an author's address has changed since the study was conducted, footnote his or her name with a numerical superscript positioned outside the comma following the name, and include the author's present address in the footnote and label it, "Present address." For the correspondence author, add the e-mail address at the end of the author's address in the list of authors on the first page of the manuscript. Also, footnote the contact author for reprints (if other than the correspondence author) with an e-mail address. Simply add a comma and then the appropriate information to the end of the address. Indent the first line of the footnote (2 spaces) and double-space the text. The footnote is followed by a period, but author addresses following the title have no period. Use

U.S. Postal Service abbreviations for states and provinces that appear in addresses (Appendix A).

The abstract, which appears in peer-reviewed and peer-edited manuscripts, should present a statement of findings in one paragraph not to exceed 3% of the length of the text, including the literature cited. It should include the following information:

1. Problem studied, question answered, or hypothesis tested and justification for study.  
What was it and why is it important? Indicate new data, ideas, or interpretations used directly or indirectly to manage wildlife.
2. Pertinent methods. State the methods used to achieve the results summarized in the Results (keep the methods brief unless a new, greatly improved method is being reported).
3. Results. Highlight the most important results, positive or negative.
4. Applicability of results. Explain how, where, when, and by whom data or interpretations can be applied to wildlife problems or contribute to knowledge of wildlife science.

### **Key words**

List from 4 to 10 key words, in alphabetical order, that best describe major topics in the manuscript. Your key words will help researchers locate your article using abstracting services, such as World Wildlife. In selecting key words, you should consider who would be interested in finding your article and what key words they will be using in their search. Key words should appear immediately after the abstract. Do not capitalize key words unless they are words that require capitalization, such as proper nouns (e.g., Canada goose). Key words should be separated by a comma; however, there is no punctuation after the last key word.

### **Text pages**

Place author name (e.g., Smith, Smith and Jones, Smith et al.) in the upper left corner of all pages following the title page; place page numbers in the upper right corner.

## **Headings**

As demonstrated in these guidelines, 3 levels of headings are used in *HWI* manuscripts: (1) primary headings are set in bold type and centered, with capital letters for only the first letter of the first word and the first letter of proper nouns; (2) secondary headings are the same font size and style, but are flush left; and (3) tertiary headings (run-in sideheads) are indented as part of a paragraph, italicized, and followed by a period and 1 space. Headings should be worded to accurately reflect content of the sections that follow them. For papers giving the results of management research, traditional headings (i.e., Abstract, Study area, Methods, Results, Discussion) are appropriate. However, more descriptive headings should be used if traditional headings do not effectively identify the content of the section.

## **Format for features**

Contributions to *Book Reviews* have a format identical to regular articles except that the author name and address section appears at the end of the article. Contributions to *Student Voices, Opinion, Commentary, and Research/Management Notes* have a format identical to regular articles except that these articles do not have an abstract.

## **Style and usage**

*Numbers and units.* Use digits for numbers (e.g., 7, 45). Spell out numbers that are the first word of a sentence or that are used as a noun (e.g., at least twenty escaped). Avoid using introductory phrases such as "A total of...". Spell out ordinal numbers (e.g., first, third) in text and in literature cited, but use digits for adjectives such as 3-fold and 2-way. Use decimals rather

than fractions except in equations and instances in which conversion to fractions misrepresents precision.

When identifying items by number, names should be lowercase (e.g., plot 1, site 5, day 3). Use symbols or abbreviations (e.g., %, kg) for measurement units that follow a number, unless the number is indefinite (e.g., thousands of hectares) or is the first word in a sentence. Hyphenate number–unit phrases used as adjectives (e.g., 6-m<sup>2</sup> plots, 1-year-old males) but not those used as predicate adjectives, i.e., after forms of the verb *to be* (e.g., plots were 3 m<sup>2</sup>). Insert commas in numbers 2:1,000 (except for pages in books, clock time, or year dates). Do not insert a comma or hyphen between consecutive, separate numbers in a phrase (e.g., 25 2-m<sup>2</sup> plots). Do not use naked decimals (i.e., use 0.05, not .05). Means and standard errors should not be reported to a decimal place beyond the precision measured in your experiment. Reporting of mean of 5.231 indicates that your experiment allowed you to detect the difference between 5.231 and 5.232. In most cases, means should not be reported beyond the tenths decimal place (e.g., 5.2).

*Times and dates.* Use the 24-hour system (0100 through 2400 hours) in discussions of time. Date sequence is month/day/year (e.g., February 4, 1947). Spell out the names of months except in figures and table bodies, using 3-letter abbreviations without a period (Appendix B). Do not use an apostrophe when referring to an entire decade (i.e., 1940s, not 1940's).

*Statistics.* When reporting values, follow the guidelines listed below.

1. Values should be taken only to the level that makes sense based on your sample size when reporting in percents, proportions, and means. If you are taking a value to the hundredths place, you are stating that you can measure things that finely and that the difference between values at that level are biologically meaningful (e.g., a mass of 455.456 g is really different from the value

of 455.457. As a rule-of-thumb, report only whole numbers for percents and hundredths place for proportions or means when sample sizes are less than 100. You need a sample size  $>200$  before you can take percents to the tenth place or proportions and means to the thousandths place.

2. Statistical test values ( $t$ ,  $F$ ,  $X^2$ ) should be reported to the hundredths place.

3.  $P$  values should be reported to the hundredths place unless the  $P$  value is  $>0.01$ . In that case, report it to the first values that is not a zero (e.g.,  $P = 0.001$ ,  $P = 0.003$ ).

Italicize Roman letters used in the text as symbols for statistics, tests, or variables (e.g.,  $n$ ,  $0$ ,  $R$ ,  $F$ ,  $t$ ,  $Z$ ,  $P$ ; Appendix B). Do not italicize numbers or names of trigonometric and transcendental functions or certain statistical terms (e.g.,  $\ln$ ,  $\max$ .,  $\min$ .,  $SD$ , and  $SE$ ). Insert symbols from your word processing program's symbol directory as opposed to creating the symbol with keyboard functions (e.g., chi-square should appear as  $\xi^2$  [found in the symbol directory], not  $X^2$  [created with keyboard functions]).

Insert a space on either side of symbols when used as conjunctions in an equation (e.g.,  $n = 12$ ,  $P = 0.002$ ), but not when used as adjectives (e.g.,  $>20$  observations). Where possible, report exact probabilities (e.g.,  $P = 0.057$ , as opposed to  $P > 0.05$ ). A subscript precedes a superscript (e.g.,  $x_i^3$ ) unless the subscript includes  $>2$  characters (e.g.,  $x_{jul}^3$ ).

Avoid redundant use of the word "significantly" (e.g., "the means differed [ $P = 0.016$ ]"). Report results of statistical tests or central tendency as in the following examples: ( $t_1 = 2.47$ ,  $P = 0.013$ ), ( $F_{3,12} = 33.10$ ,  $P = 0.01$ ), ( $\xi^2_{10} = 22.1$ ,  $P = 0.029$ ), or ( $\bar{x} = 7.8$ ,  $SE = 3.21$ ,  $n = 46$ ). Note that the appropriate degrees of freedom are subscripted with the test statistic.  $P$ -values

>0.001 should be presented as  $P < 0.001$ . (If mean symbol is unavailable on your computer program, simply write the word mean.)

*Abbreviations and acronyms.* Metric units, their appropriate prefixes, and abbreviations identified by an asterisk in Appendix B may be used in text. All other abbreviations or acronyms (except DNA) must be defined the first time used in the abstract and also in the text. Do not start sentences with acronyms; do not use an apostrophe with plural acronyms (e.g., ANOVAs).

Abbreviations in Appendices A–C may be used within parentheses, except for state and country names when they form part of organization or agency names (e.g., Mississippi Department of Wildlife, Fisheries, and Parks, not MS Department of Wildlife, Fisheries, and Parks). However, when referring to a federal agency, write the abbreviation (e.g., U.S. Department of Agriculture; U. S. Congress). Use the abbreviation U.S. when it is an adjective (e.g., U.S. laws that apply), but write out United States when it is used as a noun (e.g., in the United States).

*Punctuation.* Use a comma before the conjunction in a serial list of >2 items (e.g., red, black, and blue). Use a comma before the conjunction in a compound sentence (e.g., “Use an infrared scope at night, and be sure to record your results.”). Do not hyphenate prefixes, suffixes, or combining forms (e.g., postpartum) unless necessary to avoid misreading. Hyphenate compounds used as adjectives (e.g., 1-m plot, 2-day period, 14-cm dbh).

Although the rules for hyphenation are complex, there are a few basic principles:

1. a phrase containing a participle or an adjective is hyphenated as a compound when it precedes the word modified (e.g., home-range estimation) and is written without a hyphen when it follows the word modified (estimation of home range);
2. a modifier containing a number is usually hyphenated (e.g., 3-month-old fawn); and

3. a 2-word modifier containing an adverb ending in -ly is not hyphenated (e.g., publicly owned land).

However, excessive use of compound modifiers before nouns makes for difficult reading; they tend to obscure the true subject. Avoid ambiguous use of nouns as modifiers (e.g., wolf researchers, woman hunters). Use prepositions to avoid using nouns as adverbs (e.g., nesting by birds, not bird nesting; hunting with dogs, not dog hunting) and to avoid noun strings exceeding 3 words (e.g., “radiotelemetry locations of dens in fall”, not “fall den radiotelemetry locations”). Avoid using more than 3 adjectives to modify a single noun.

Do not use a slash (/) to indicate "and" or "or" or to express a range; use slash only to indicate "divided by" or "per".

Avoid using words in ways other than their standard meanings; only sparingly use quotation marks to imply a special meaning and never to denote emphasis.

Trademarks (i.e., <sup>TM</sup>, ®) should be used at the first mention of a product name, where appropriate, and not thereafter.

Closing quotation marks should be placed after periods and commas, but may be placed either before or after other punctuation (CBE Style Manual Committee 1994:177–181). Fences must appear in pairs; however, the sequence varies: use ([ ]) in regular sentences, use {[ ( )]} in mathematical equations, and use (( )) in special cases such as chemical names. Use brackets to enclose something not in the original work being quoted (e.g., insertion into a quotation or a translated title [CBE Style Manual Committee 1994:58–59]).

*Enumeration.* Do not number series within a sentence or paragraph (e.g., 4 study objectives) unless some of the clauses or sentences are lengthy or involve complex punctuation.

In such cases, place parentheses around the number, e.g., (1), (2), (3). When enumerating lengthy or complexly-punctuated series, place the numbers at the left margin, with periods but no parentheses, and indent run-on lines (see examples under the heading “Subject matter,” above.

*Species plurals.* When discussing a group of animals in a study, use the plural form, e.g., “We collected data about alligators in Louisiana.”, not “We collected data about alligator in Louisiana.” When speaking of a species in general, use the singular form and add “the,” e.g., “Very few studies have been conducted on the alligator, and more research is needed.” Also remember that data is a plural noun and requires an appropriate verb (e.g., the data are).

### **Common and scientific names**

Do not capitalize common names, except words that are proper names (e.g., Florida panthers [*Puma concolor*], Canada goose [*Branta canadensis*]). Scientific names (in italics, in parentheses) should follow the first mention of a common name, except in the title. Scientific names should be given the first time a species is mentioned in the abstract and again the first time it is mentioned in the text. Abbreviate genus names with the first letter when they are repeated within a few paragraphs, provided the meaning cannot be confused with another genus with the same first letter.

Do not use subspecies names unless it is essential, and omit the taxonomic author's name. Use "sp." (not italicized) to indicate species unknown and use "spp." for multiple species. Use the most widely accepted nomenclature in cases where disagreement occurs. Refer to the most current edition of the American Ornithologists' Union check-list of North American birds or the American Ornithologists' Union Birds of North America website (<http://bna.birds.cornell.edu/BNA>) as general references for North American bird species. For

mammals, use Nowak (1991), Wilson and Reeder (2005), or the Smithsonian Institution's Mammal Species of the World website (<http://nrmnhgoph.si.edu/msw>). Please note that websites cannot be cited as sources because they are not recognized as acceptable scientific references; however, those listed above may be used to check scientific names. There is no single reference source for North American plants; however, we recommend citing the most widely accepted regional flora reference (e.g., in northwestern states, Hitchcock and Cronquist 1973). Do not include scientific names of domesticated animals or cultivated plants unless a plant is endemic or widely escaped from cultivation or is a variety that is not described adequately by its common name.

### **Measurement units**

Use Systeme Internationale d'Unites (SI) units and symbols. Avoid using English units in parentheses. However, the following non-SI units are permitted:

Area: hectare (ha) in lieu of  $10^4 \text{ m}^2$ .

Energy: calorie (cal) in lieu of Joule (J).

Temperature: Celsius ( $^{\circ}\text{C}$ ) in lieu of Kelvin (K).

Time: minute (min), hour (hr), day (do not abbreviate), etc., in lieu of seconds (sec).

Volume: liter (L) in lieu of  $\text{dm}^3$ .

### **Securing appropriate approval(s)**

It is increasingly important in today's research community for scientists to ensure that their research activities are conducted such that the welfare of the animals they are studying (e.g., installing radiotransmitters) or the rights of human subjects (e.g., sending them a survey) is considered. Consequently, it is important that all peer-reviewed and peer-edited manuscripts

submitted for publication in *Human–Wildlife Interactions* demonstrate that these concerns have been addressed.

### **Animal care**

Appropriate documentation that proper animal care and use was applied when using live vertebrate animals for research must be submitted prior to publication. Acceptable means of documentation include an Institutional Animal Care and Use Protocol number (as designated by most U.S. universities), the number of the permit or license issued to hold animals (such as with private breeders), or the equivalent. This policy covers all vertebrate animals, including mammals, birds, reptiles, amphibians, and fish. Documentation will be requested after a manuscript is accepted, and prior to publication.

### **Human subjects**

Appropriate documentation that proper approval was obtained to perform research involving human subjects (primarily surveys) must be provided. Acceptable means of documentation include a Human Subjects Protocol number (as designated by most U.S. universities) or the equivalent.

### **Citing literature in text**

In most cases, you should reference citations parenthetically at the end of a sentence; e.g., Mallard brood survival was greater in the wettest years (Rotella 1992). Published literature is cited chronologically (e.g., Jones 1980, Jones and White 1981). For works with >2 authors, use "et al." after the first author's name (e.g., Jones et al. 1982). Do not separate the author and date by a comma, but commas to separate a series of citations. Citations in a series should be put in chronological order. For citations with the same year, use alphabetical order within the

chronological order (e.g., Jones 1980, Brown 1991, Monda 1991, Rotella 1991, Allen 1995). If citations in a series have >1 reference for the same author(s) in the same year, designate the years alphabetically (in italic type) and separate citations with semicolons (e.g., Jones 1980*a, b*; Hanson 1981; White 1985, 1986). Do not give >4 citations in the text to reference a specific issue or scientific finding. For a direct quotation, cite author and year, followed by a colon and page number(s), e.g., Manfredo et al. (1996:54) defined human dimensions as "an area of investigation which attempts to describe, predict, understand, and affect human thought and action...."

Cite documents that are cataloged in major libraries, including theses and dissertations, as published literature. These citations include symposia, proceedings, and U.S. government reports that have been widely distributed (see *Literature cited style*). All other documents, including information obtained from websites, should be cited as unpublished data in the text only.

### **Citing unpublished sources in text**

If references are not easily available or are not widely distributed they should be cited in text only. This includes reports that are not published or widely distributed, manuscripts that have not yet been accepted for publication, and personal communications and observations.

These references should be cited in text as follows:

Personal communication: (J. G. Jones, National Park Service, personal communication)

Unpublished report: (D. F. Timm, Alaska Department of Fish and Game, unpublished report) or (E. J. Jones, North Carolina State University, unpublished report)

Unpublished data (including manuscripts in review): (D. F. Brown, Arizona Game and Fish Department, unpublished data)

Unpublished data from websites (avoid if possible): (www.berrymaninstitute.org, April 4, 2005, unpublished data)

**NOTE:** State and country names are abbreviated in parentheses (Appendix A) except when they appear in the title of an academic institution or agency.

You should avoid overusing unpublished information. Not only are such references not as credible as published literature, but overuse of such citations will make your text cumbersome and difficult to read.

### **Literature cited**

Type the citations double spaced, immediately following the text, not necessarily on a new page. Spell out all words in the literature cited (i.e., do not use abbreviations). However, the following 3 exceptions are allowed in the literature cited and parenthetically in the text: (1) U.S. for United States and as the country at the end of a citation, when it should appear as USA; (2) Inc. (for incorporated) when it is part of a company name; and (3) D.C. for District of Columbia (no space between letters). USA is the only country abbreviation allowed; all others should be written out.

The citations should be alphabetized by authors' surnames, regardless of the number of multiple authors for the same publication. Within alphabetical order, the sequencing is chronological. Use upper- and lowercase letters (typing all capital letters complicates editing names such as DeGraaf and van Druff). Use 2 initials (where applicable) with one space between each initial. If citations have >1 reference for the same author(s) in the same year, differentiate the publications alphabetically and add *a*, *b*, *c* (in italics) etc. after the year for each entry (see the Kenall entry in the sample Literature cited below). Always write out all author names, even for

multiple citations by the same author(s).

Following is a list of examples to guide you in formatting the literature cited section of your manuscript. Please refer to a recent issue of the *HWI* for more examples. Please note that websites generally are not recognized as acceptable scientific references. Whenever possible, rather than Internet sources, cite the original sources (i.e., a hard or paper copy). However, many authoritative statistical records or reference sources (e.g., U.S. census figures or the American Ornithologists' Union Birds of North America website) are now posted on the Internet and are acceptable for citation.

In formatting Literature cited entries, use the word-processing ruler to create hanging indents, not tabs or space bar.

**Book—general format**

McCullough, D. R. 1979. The George Reserve deer herd: population ecology of a K-selected species. University of Michigan, Ann Arbor, Michigan, USA.

Miller, K. V., and L. Marchinton. 1995. Quality whitetails: the why and how of quality deer management. Stackpole, Mechanicsburg, Pennsylvania, USA.

**Note:** Do not write the total number of pages at the end of book citations.

**Book with >1 edition**

Smith, R. L. 1974. Ecology and field biology. Second edition. Harper and Row, New York, New York, USA.

**Note:** As in the text, write out all ordinal numbers (e.g., Second edition, Third edition, etc.)

**Note:** For publishers, do not include words like Company, Incorporated, Limited, Press,

or Publishing (e.g., Harper and Row, not Harper and Row Publishers), except when citing university presses (e.g., Yale University Press), which often are a separate entity from the university.

**Book with >1 volume**

Palmer, R. S. 1976. Handbook of North American birds. Volume 2. Yale University Press, New Haven, Connecticut, USA.

**Book with >1 publisher**

Sowls, L. K. 1955. Prairie ducks: a study of their behavior, ecology, and management. Stackpole, Harrisburg, Pennsylvania, USA, and Wildlife Management Institute, Washington, D.C., USA.

**Book with editor as author**

Temple, S. A., editor. 1978. Endangered birds: management techniques for preserving threatened species. University of Wisconsin Press, Madison, Wisconsin, USA.

**Book reprint**

Leopold, A. 1933. Game management. 1946, Reprint. Scribner's, New York, New York, USA.

**Chapter within a book**

Fite, E. 1994. The environmental protection agency's avian pesticide assessment model. Pages 519–530 *in* R. J. Kendall and T. E. Lacher, editors. Wildlife toxicology and population modeling integrated studies of agroecosystems. CRC, Boca Raton, Florida, USA.

**Theses and dissertations**

Brelsford, M. A. 1991. Effects of grazing by wapiti on winter wheat and winter rapeseed, and the effects of simulated wapiti use on winter wheat in northern Idaho.

Thesis, University of Idaho, Moscow, Idaho, USA.

Tacha, T. C. 1981. Behavior and taxonomy of sandhill cranes from mid-continent North America. Dissertation, Oklahoma State University, Stillwater, Oklahoma, USA.

**Note:** Use the word Thesis to denote Master of Science (M.S.) or Master of Arts (M.A.) and Dissertation for Doctor of Philosophy (Ph.D.).

### **Journal—general format**

Miller, M. R. 1986. Molt chronology of northern pintails in California. *Journal of Wildlife Management* 50:57–64.

Steigers, W. D., Jr., and J. T. Flinders. 1980. A breakaway expandable collar for cervids. *Journal of Mammalogy* 61:150–152.

**Note:** Issue numbers are included only if the pages of each issue are numbered separately.

### **Journals in press—year and volume known**

Zelenak, J. R., and J. J. Rotella. 1997. Nest success and productivity of ferruginous hawks in northern Montana. *Canadian Journal of Zoology* 75: in press.

**Note:** "In press" indicates that the manuscript has been officially accepted for publication. This does not include manuscripts that are being considered for publication; these references should be cited in the text as unpublished data.

### **Journals in press—year and volume unknown**

Giudice, J. H., and J. T. Ratti. In press. Biodiversity of wetland ecosystems: a review of status and knowledge gaps. *Bioscience*.

**Note:** These references are cited in text as (Giudice and Ratti, in press).

**Symposia and proceedings—complete volume**

DeGraaf, R. M., technical coordinator. 1978. Proceedings of a workshop on management of southern forests of nongame birds. U.S. Forest Service, General Technical Report SE-14.

**Symposia and proceedings—individual article**

Dickson, J. G. 1978. Forest bird communities of the bottomland hardwoods. Pages 66–73 *in* R. M. DeGraaf, technical coordinator. Proceedings of a workshop on management of southern forests of nongame birds. U.S. Forest Service, General Technical Report SE-14.

**Symposia and proceedings-part of a numbered series**

Kroll, J. C. 1994. These were the good old days: a new paradigm for white-tailed deer management. Proceedings of the Annual Southeastern Deer Study Group 17:20–21.

**Symposia and proceedings—not part of a numbered series—complete volume**

McAninch, J. B. 1995. Urban deer: a manageable resource? Proceedings of the symposium of the 55th Midwest Fish and Wildlife Conference. North Central Section of The Wildlife Society, December 12–14, 1993, St. Louis, Missouri, USA.

**Note:** These citations must include dates and location.

**Symposia and proceedings—not part of a numbered series—individual article**

Stout, S. L., and R. Lawrence. 1996. Deer in Allegheny Plateau forests: learning the lessons of scale. Pages 92–98 *in* Proceedings of the 1995 Foresters Convention. Society of American Foresters, October 28–November 1, 1995, Portland, Maine, USA.

**Note:** These citations must include conference dates and location.

**Government publication**

Lull, H. W. 1968. A forest atlas of the Northeast. U.S. Forest Service, Northeastern Forest Experiment Station, Upper Derby, Pennsylvania, USA.

**Government publication—part of a numbered series**

Anderson, D. R. 1975. Population ecology of the mallard: V. Temporal and geographic estimates of survival, recovery, and harvest rates. U.S. Fish and Wildlife Service, Resource Publication 125.

**Government publication—agency as author**

National Research Council. 1977. Nutrient requirements of poultry. Seventh edition. National Academy of Science, Washington, D.C., USA.

**Note:** Cite in text as National Research Council (1977) or, if it appears in parentheses, cite as (Natl. Res. Counc. 1977).

**Newspaper, newsletter, and magazine articles**

Associated Press. 1997. Feathers could fly over dove hunting. Columbus Dispatch. December 28, 1997; section E:15.

Eisler, P., and J. T. Buckley. 1996. Voters to get a shot at hunting laws. USA Today. April 25, 1996; section A:4.

Hogan, M. 1997. Political season as important as hunting season. Safari Times 9(8):18.

Jones, D. M. 1997. Protecting animals at the ballot box. Mainstream, Animal Protection Institute. Spring: 24–27.

Jones-Jolma, D. 1993. The fight to reform trapping in Arizona. The Animals' Agenda. March–April:20–24.

**Note:** Citing from newspapers, newsletters, and magazines generally is discouraged but may be acceptable only in certain circumstance (e.g., in papers dealing with public perceptions).

### **Internet sources**

FAA. 2008. National wildlife strike database select, Federal Aviation Administration, Washington, D.C., USA, <[http://www.wildlife.pr.erau.edu/databast/select\\_iv.php](http://www.wildlife.pr.erau.edu/databast/select_iv.php)>. Accessed March 10, 2010.

Prukop, J., and R. Regan. 2002. The value of the North American model of fish and wildlife conservation. International Association of Fish and Wildlife Agencies, Wildlife Resources Policy Committee, white paper. Orion: The Hunter's Institute, <<http://huntright.org/heritage/conservation.aspx>>. Accessed March 10, 2010.

**Note:** Format for Internet sources is: *author or organization, date, title of web page, sponsor of web page or publisher, location of publisher (city, state, country), web address, date last accessed.*

### **Court cases**

Cite complete title and year of case in text only.

### **Tables and figures**

Tables generally require more effort per page from the editorial staff than other parts of a manuscript perhaps because tables are subject to format and style rules not appreciated by many authors (Table 1). Write complete titles (double-spaced) so a reader can understand the table without referring to the text. The title should include names of characteristics and organisms

measured, measurement unit(s) in parentheses, places, and dates. Avoid >1 sentence, and use footnotes to explain details if necessary.

Submit only essential tables and figures. Often tables overlap with presentation in the text or the information can be printed easily in the text with less journal space. Do not present the same data both in a table and a figure. Number tables and figures independently. In the text, limit reference of tabular data to highlights of the most important information. In most cases, reference tables and figures parenthetically. Avoid statements such as "The results are shown in Tables 1–4." Prepare line drawings only for data that cannot be presented as clearly in a table. For general guidance, see CBE Style Manual Committee (1994:677–693).

Tables and figures should be self-explanatory; avoid references to the text, and be sure the title includes the species or subject of the data and where and when the data were collected. In rare cases, titles or footnotes of tables and figures may be cross-referenced to avoid repeating long footnotes or the same data. However, this violates the "self-explanatory" rule and should be avoided, if possible. Tables and figures should be included on separate sheets at the end of the text rather than inserted into the document. In addition, they should be submitted electronically as separate files in their original program, either via e-mail at [hwi@aggiemail.usu.edu](mailto:hwi@aggiemail.usu.edu) or through the USU Big File Transfer system.

## **Tables**

*Constructing tables.* Do not prepare tables for small data sets (those containing many blank spaces, zeros, repetitions of the same number or those with few or no significant data); include such data in the text. For data that must be shown in a table, items that provide the most important comparisons usually read vertically, not horizontally.

Tables should be created using the table function of the word processing software. Do not

use tabs or spaces to create tables. Put only 1 row of text in 1 row of cells, and never use a multiple-text column format within a table.

*Table titles.* Table titles should provide information succinctly in the following sequence: (1) name of the characteristic that was measured (e.g., weight, age, density), (2) measurement unit or units in parentheses (e.g., cm, No./ha, M:100 F, %), (3) name of species or other entity measured (e.g., "of white-tailed deer"), and (4) location(s) and date(s) of study. Keep in mind that each part of the sequence can include >1 item (e.g., "Carcass and liver fat [%] and adrenal and kidney weight [mg] of white-tailed deer in Ohio and Michigan, 1975").

Avoid beginning the table title with puff words (e.g., The..., Summary of..., Comparisons between...) and words that can be presented parenthetically as symbols or abbreviations (e.g., %). Symbols such as *n* and % in the table title seldom need repetition in table headings. Do not use abbreviations in table titles, except within parentheses. However, use standard abbreviations and symbols (Appendix A–C) in the table body.

*Rules.* The lines printed in tables are called "rules," and they should be used according to the following *HWI* standards:

1. Do not use vertical rules in tables. Each table should contain at least 3 rules—1 below the title, 1 below the column headings, and 1 at the bottom.
2. Use rules that straddle subheadings (straddle rules) within column headings.
3. Do not use rules to show summation. Use "Total" or its equivalent in the row heading.
4. Do not use rules to join the means in multiple-range tests. Use Roman uppercase letters instead of rules (e.g., 12.3A<sup>a</sup>, 16.2A, 19.5B) where the superscript "a" references a footnote, such as "<sup>a</sup> Means with the same letters are not different ( $P < 0.10$ )". Uppercase

letters may be used in a similar way to reference the relationship of data among columns.

Use straddle rules liberally to join related columns and reduce verbiage. Label columns to avoid unnecessary print in the data field. For example, instead of " $\bar{x} \pm SE$ ," label  $\bar{x}$  and SE as separate columns so that  $\pm$  need not be printed. Similarly, label sample size columns " $n$ " instead of using numbers in parentheses in the data field.

*Table headings.* Keep column- and row-heading words or symbols (e.g., %,  $n$ , SE) out of the data field. Type the main headings flush left, and indent their subheadings.

*Data field.* In the data field, do not use dashes (which are often misused to mean "no information") or zeros, unless the item was measured and 0, 0.0, or 0.00 correctly reports the measurement. If no information is available, leave a blank space. Also, respect digit significance in all numbers, particularly percentages. Do not use percentages where  $n$  is  $<26$ , except for 1 or 2 samples among several others where  $n$  is  $>25$ . Where the number of significant digits varies among data in a column, show each datum at its precision level; i.e., do not exaggerate precision. For  $P$  values, do not use  $>3$  digits past the decimal, and do not list  $P = 0.000$ ; the proper form is  $P \lesssim 0.001$ .

Never include naked decimal points in the data field. In other words, all decimal points should be surrounded by a number (e.g., 0.05, 1.00, etc.).

*Footnotes.* For footnote superscripts, use asterisks (\*, \*\*, etc.) for probability levels and lowercase Roman (not italic) letters for other footnotes. Place letters alphabetically in the following sequence: (1) title, (2) left to right in the table, and (3) down the table. Be certain that each footnote character in the title and table matches the explanation written below the table.

Left-justify run-on lines of footnotes. Use footnotes liberally to reduce cluttering the title and table with details.

Keep in mind that the most common errors in tables are single spacing, incomplete titles, naked decimal points, misalignment of table columns, and ambiguous or unnecessary characters in the data field. Being aware of these problems beforehand may save you time during the review and the revision process.

## **Figures**

*HWI* editors encourage the use of line drawings, photographs, or other illustrations that improve communication. Lettering in figures should be sentence case (i.e., mixed-case letters) and must be >1 mm tall when the figure is reduced. Suggestions for preparing high-quality illustrations can be found in Allen (1977) and the CBE Style Manual (1994:693–699). Provide all figures and photos that you intend to include in your article along with your original manuscript submission. Photos are considered figures and, as such, should include captions, such as those described below. Print-quality figures, glossy photo prints, or print-quality electronic figures are not required when the manuscript is submitted for consideration, but must be sent to the editor with the author's final revision after the manuscript has been accepted. Before sending final figures and photos, contact *HWI's* managing editor for special instructions. Do not submit figures larger than 215 x 280 mm (8.5 x 11 inches).

*Figure captions.* Type all figure captions on one page and label each figure. Figure captions tend to be longer than table titles. The caption may be several sentences long and include brief

suggestions for reading and interpreting the figure. If appropriate, include a statement of credit at the end of the caption (e.g., "Photo by R. Dolbeer.", or "Photo courtesy U.S. Fish and Wildlife Service.").

*Figure submission.* . Figures should be printed in black ink only, so line art must not contain or rely on color for interpretation. Scanned line art, such as graphs or drawings, should be saved as a tif file at a resolution of 1200 ppi in the black-and-white setting at a physical dimension of approximately 5 7 inches. If a figure is created electronically, the computer graphics file is preferred. Do not embed graphics or photos in a word processing program. The most desirable formats for figures include, in order of preference: tif, jpg, Postscript (eps, ps, prn), PowerPoint (ppt, pps), and Excel chart (xlc). Contact the editorial office if you have questions regarding formats.

Line drawings and photos must be high-quality, easily reproducible prints. Hand-drawn lines and lettering are not acceptable for line drawings. We recommend professional preparation of line drawings. Lettering from modern personal computer graphics software and printers is acceptable and recommended. When preparing figures, please keep in mind that components of the figure (including lettering) must be of sufficient size and clarity to be legible after its reduction to fit the size of *HWT*'s page (6 x 9 in). Often a figure or graph will be reduced to 1 or

slightly more than 1 column. Recommended letting font is sans serif, such as Arial or Helvetica.

Photos and slides that are submitted electronically should be high resolution, preferably 300 ppi (i.e., pixels per inch). When taking photos using a digital camera, set the camera to the highest resolution possible. Line drawings and graphs should be at a resolution of 1200 ppi., saved as a tif file, and sent to the *HWI* editorial office via e-mail or through the USU Big File Transfer system.

Photos must have sharp focus, high tonal contrast, and a reference scale if size is important to the purpose of the illustration. Sets of 2 to 4 related photos may be presented as one figure if they are the same width. Label photos that will appear in the same figure as A, B, C, and D for reference in the caption and in text. Cropping often improves composition of photos. An emailed statement of permission by the photographer for *HWI* to use the photos should accompany submissions.

*Text in figures.* Text used within figures should be sentence case (mixed-case), Roman (not italic) type, unless these special attributes are essential to the meaning of the text, as in mathematical terms (e.g.,  $n$ ,  $N$ , etc.) and most metric units (kW, m, etc.). Use standard abbreviations (Appendices A–C) in the figure body, but not in the figure caption. Identify any unusual symbols used in a legend within the figure (preferred) or in the figure caption.

*Acknowledgments.* The acknowledgments appear immediately before the literature cited section and should be brief. All acknowledgments should include both initials (where appropriate) and the last name of individuals acknowledged. Wording should be simple, without qualifying adjectives. A. Ballard provided valuable assistance in preparing the appendices for this revision. D. L. Minnis provided assistance with reviewing drafts. We thank L. S. Andrews and B. D. Leopold for allowing us to use sections of their 2000 guidelines for *WSB* in compiling *Guidelines for authors and reviewers of Human–Wildlife Interactions manuscripts*.

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Wilson, D. E., and D. M. Reeder, editors. 2005. Mammal species of the world: a

taxonomic and geographic reference. Third edition. Smithsonian Institution,

Washington, D.C., USA.

(Note: Most of the citations used as examples in the text do not appear in the Literature cited.)

Table 1. Format and style guidelines for tables accompanying manuscripts submitted to *Human–Wildlife Interactions*.

Item	Style Rule
Abbreviations	Use standard abbreviations.
Capitalization	Capitalize only the first letter for a column heading or phrase within a table.
Column heads	Required for each column. Do not submit tables with unlabeled columns.
Footnotes <sup>a</sup>	Use alphabetical superscripts, except for footnotes specifying probability levels.
Spacing	Double space throughout, including title and footnotes.

<sup>a</sup>The first line of a footnote is indented (2 spaces). The remaining lines are flush with the left margin and double-spaced. See the subheading for footnotes under the Tables heading above.

Table 2. Example of correct format of tables accompanying manuscripts submitted to *Human–Wildlife Interactions*.

Site	Animal Group			
	Avian		Mammalian	
	Insectivorous	Carnivorous	Insectivorous	Carnivorous
Xeric	5	3	2	4
Mesic	7	5	1	3
Hydric	12	7	5	8

Appendix A. Abbreviations for U.S. and Canadian political units. Use American National Standards Institute (ANSI) abbreviations in parentheses, table and figure bodies, and footnotes. Do not abbreviate in text. Use U.S. Postal Service (USPS) abbreviations in addresses with zip codes. A blank means do not abbreviate.

Unit	ANSI	USPS	Unit	ANSI	USPS
U.S. territories			U.S. territories (cont'd)		
Alabama	Ala.	AL	Montana	Mont.	MT
Alaska	Alas.	AK	Nebraska	Nebr.	NE
Arizona	Ariz.	AZ	Nevada	Nev.	NV
Arkansas	Ark.	AR	New Hampshire	N.H.	NH
California	Calif.	CA	New Jersey	N.J.	NJ
Colorado	Colo.	CO	New Mexico	N.M.	NM
Connecticut	Conn.	CT	New York	N.Y.	NY
Delaware	Del.	DE	North Carolina	N.C.	NC
District of Columbia	D.C.	DC	North Dakota	N.D.	ND
Florida	Flor.	FL	Ohio	Oh.	OH
Georgia	Ga.	GA	Oklahoma	Okla.	OK
Guam		GU	Oregon	Oreg.	OR
Hawaii	Haw.	HI	Pennsylvania	Pa.	PA
Idaho	Id.	ID	Puerto Rico	P.R.	PR
Illinois	Ill.	IL	Rhode Island	R.I.	RI
Indiana	Ind.	IN	South Carolina	S.C.	SC
Iowa	Ia.	IA	South Dakota	S.D.	SD

Appendix B. Abbreviations commonly used in tables, figures, and parenthetical expressions. Only those metric units and their appropriate prefixes identified by an asterisk (\*) may be abbreviated in text. A blank means do not abbreviate.

Term	Abbreviation or symbol	Term	Abbreviation or symbol
amount	amt	logarithm, base 10	log <sub>10</sub>
approximately	approx	logarithm, base e	log <sub>e</sub> or ln
average	*	male	M
calorie	cal*	maximum, minimum	max., min.
Celsius	°C*	meter <sup>a</sup>	m*
chi-square	2	metric ton	t
coefficient	coeff	mile	mi

coefficient of		minute	min
correlation, simple	$r$	month	
multiple	$R$	month names	Jan, Feb, ...
determination, simple	$r^2$	more than	>*
multiple	$R^2$	number (of items)	No.
variation	CV	observation	obs.
confidence interval	CI	parts per billion	ppb*
confidence limits	CL	parts per million	ppm*
day		percent	%*
degrees of freedom	df	population size	$N$
diameter	diam	probability	$P$
diameter breast height	dbh	range	
experiment	exp.	sample size	$n$
female	F	second	sec
$F$ -ratio	$F$	Spearman rank correlation	$r$
gram	g*	square	sq
gravity	$g$	standard deviation (s)	SD
hectare	ha*	standard error	SE
height	ht	Student's $t$	$t$
Hotelling's $T^2$	$T^2$	temperature	temp
hour(s)		versus	vs.
Joule	J*	volt	V*
kilocalorie	kcal*	volume	vol.
lethal concentration, 50%	LC <sub>50</sub>	watt	W*
lethal dose, median	LD <sub>50</sub>	week	
less than	<*	weight	wt
limit	lim	Wilcoxon test	$T$
liter	L*	year	yr
		Z-statistic	Z*

<sup>a</sup> All standard meter-based measurement units can be abbreviated in text when they appear

after a number (e.g., mm, cm, km, etc.).

Appendix C. Abbreviations<sup>a</sup> to be used in parenthetical expressions and table and figure bodies only. An asterisk (\*) indicates a frequently misabbreviated word; a blank means do not abbreviate.

Term	Abbreviation	Term	Abbreviation
abstract-	abstr.	circula-	circ.
academ-	acad.	clini-	clin.
acta		college(i)-	coll.
administr-	adm.	commerc-	commer.
advanc-	adv.	commission-	comm.
aeronautic-	aeronaut.	committee	comm.
affair-	aff.	commonwealth	commonw.
Afri-	Afr.	Commonw. Sci. and Ind.	C.S.I.R.O.
agency		Res. Organ.	
agricult-*	agric.	communications	commun.
agronom-	agron.	company[ies]	co.
Ameri-*	Am.	completion	
anali[y]-	anal.	confer-	conf.
anals	an.	congres-	congr.
anatomical	anat.	conserva-*	conserv.
animal-	anim.	contamina-	contam.
annal-	ann.	catalogue	cat.
annu-*	annu.	coopera-	coop.
Antarcti-	Antarct.	coordinator	coord.
appli-	appl.	corporation	corp.
approximately	approx.	council	counc.
archaeology	archaeol.	current	curr.
archiv-	arch.	depart-*	dep.
Arctic	Arct.	develop-	dev.
assistance	assist.	disease	dis.
associ-	assoc.	disserta-	diss.
Atlanti-	Atl.	district	dist.
atmos-	atmos.	divis-	div.
Australi-	Aust.	Doctor of Philosophy	Ph.D.
avian		east*	
bac(k)teriolog-	bac(k)teriol.	eastern*	east.
behavio(u)r-	behav.	ecolog-	ecol.
bibliogra-	bibliogr.	econom-	econ.
biennial	bienn.	education(al)	educ.
biochem-	biochem.	electric[q]-	elec.
biolo-	biol.	endocrinolog-	endocrinol.
biometri-	biom.	energy	

board		engineer- Engl-	eng.
botan-	bot.	entomolog-	Engl.
branch		environment-	entomol.
breeder		Europ-	environ.
British*	Br.	evol-	Eur.
bullet-	bull.	experiment-	evol.
bureau-	bur.	fauna	exp.
Canad-	Can.	federa- field-	
center-	cent.	naturalist	fed.
central	cent.	Finni- fishery[ies]	field-nat.
chapter*	chap.	forest- mountain	Finn.
chemic-	chem.	muse- national-*	fish. for.
chronicle	chron.	National Academy of	mt. mus.
foundation	found.		natl.
Franc-	Fr.		Natl. Acad. Sci.
French	Fr.		
gazette	gaz.		
		Science	
genera-	gen.	National Research Council	Natl. Res. Counc.
geogra-	geogr.	National Aeronautics and	Natl. Aeronaut.
geolog-	geol.	Space Administration	and Space Adm.
German-	Ger.	National Oceanic and	Natl. Oceanic and
Gesellschaft	Ges.	Atmospheric	Atmos. Adm.
		Administration	
go(u)vernment-	gov.	natural [al-] <sup>b</sup> [el-]	nat.
handb-	handb.	newsletter	newsl.
helmintholog-	helminthol.	nomenclat-	nomenclat.
herpetolog-	herpetol.	north*	
histo(i)r-	hist.	northeast*	
human	hum.	northeastern*	northeast.
ichthyolog-	ichthyol.	northern*	north.
immunolog-	immunol.	northwest*	
information	inf.	northwestern	northwest.
inland		Norwegian	Norw.
instit-	inst.	note(s)	
interi-	inter.	occasion-	occas.
internal	intern.	offi-	off.
internat[z]-	int.	organic[q]-	org.
investiga-	invest.	organis[z]a-	organ.
Japa[o]n-	Jap.	ornit(h)olog-	ornit(h)ol.
journal	J.	outdoor-	
laboratory	lab.	Pacific	Pac.
leaflet-	leafl.	pamf[ph]let-	pam.

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libra-	libr.	paper-	pap.
magas[z]i-	mag.	parasitolog-	parasitol.
mammalia-	mamm.	patholog-	pathol.
mammaolg-*	mammal.	pharmacolog-	pharmacol.
management*	manage.	philosoph-	philos.
manua[e]l	man.	physica-	phys.
manufacturing	mfg.	physiolog-	physiol.
marin-	mar.	Pittman-Robertson*	
Master of Science	M.S.	Polish	Pol.
mathemat-	math.	press	
maximum	max.	printer	
medi[e]ca[h][i]-	med.	proceedings	proc.
meeting	meet.	professional	prof.
memoir-	mem.	program*	
memorand-	memo.	progres-	prog.
memorial	mem.	project-	proj.
meteorol-	meteorol.	protection	prot.
method(s)		provincial	prov.
Mex-	Mex.	psycholog-	psychol.
microbiolog-	microbiol.	public	
midland	midl.	publica-	publ.
midwestern	midwest.	publishing company	publ. co.
minimum	min.	quantit-	quant.
minist-	minist.	radio	
miscel-	misc.	range	
monogra-*	monogr.	raptor	
month-	mon.	record-	rec.
morf[ph]olog-	morf[ph]ol.	region-	reg.
regulation	regul.	supplement	suppl.
report-	rep.	survey	surv.
reproduction	reprod.	symposium	symp.
research-	res.	systematic	syst.
resource-*	resour.	technical	tech.
restoration	restor.	technolog-	technol.
revi[u]-	rev.	telemetry	telem.
Russi[k]-	Russ.	toxicology	toxicol.
sanitar[t]-	sanit.	transactions	trans.
scien.	sci.	transportation	transp.
secti-	sect.	vertebrat-	vertebr.
seminar	semin.	veterinari-[y]	vet.
serie-	ser.	volum-	vol.
ser(i)olog-	ser(i)ol.	volunteer	
servi-*	serv.	west*	

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society	soc.	western*	west.
southeastern	southeast.	wildfowl	
special	spec.	wild life	
station*	stn.	wildlife	wildl.
statistical	stat.	workshop	
study(ies)	stud.	zoolog-	zool.

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<sup>a</sup> Words or roots followed by a hyphen indicate >1 word derived from the same root. Letters in brackets can substitute for the letters preceding the bracket(s).

<sup>b</sup> Abbreviate “Naturaliste Canadien” as “Nat. Can. (Que.)” and “Nature Canada” as “Nat. Can. (Ottawa).”