

# *Journal of Wildlife Management, Wildlife Society Bulletin, and*

## *Wildlife Monographs*

### **Style Guide**

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This style guide is used by the Content Editors at The Wildlife Society to prepare accepted manuscripts for publication. Authors do not need to use this style guide before submission. We address required elements for submission in our [Author Guidelines](#). The Content Editor may direct authors to this document after acceptance to provide clarity on edits requested before publication.

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## FORMAT

### FORMATTING GUIDELINES

Upload the following files:

1. Text file arranged as follows: manuscript text, References, figure captions (**not figures**), tables, and appendices if applicable. Society journals will accept only .doc or .docx files for the main document.
2. Figure(s) compiled into one file or submitted in individual files. Label and mount figure parts (e.g., A and B) together into one figure as they are meant to appear in the typeset article and choose a horizontal presentation (page width) over a vertical arrangement. We accept figure files in only the following formats: .tif, .jpg, pdf, .doc, docx, .eps, and .ppt.

General guidelines

1. Double space all text except for the contact information at the top of the first page.
2. Do not justify the right margin.
3. Use Times New Roman font, 12-point type throughout the manuscript, including title, headings, and tables.
4. Do not use *italic* or **boldface** type for emphasis in text, tables, or figures. Under no circumstances should quotation marks or ‘scare quotes’ be used to highlight terms.

### TITLE PAGE: RUNNING HEAD, TITLE, AND AUTHORS

Type the running head (RH) on the first line following the date of the version. The RH is limited to 35 characters (including spaces). Left-justify the RH and capitalize the first word (e.g., Implanting transmitters in snakes). The RH is preceded by a dot (or raised period) and the last

name(s) of  $\leq 2$  authors. For  $\geq 3$  authors, use the name of the first author followed by “et al.” (e.g., Foster et al.). For example:

RH: Chamberlain et al. • Implanting transmitters in snakes in Ohio

The title follows the RH and is left-justified in bold font with the first word and proper nouns capitalized. The title identifies manuscript content and may not include abbreviations or acronyms. Titles should not exceed 15 words unless doing so forces awkward construction. Do not use scientific names in the title except for organisms that have easy to confuse common names, or lack them altogether.

Authors' names are left-justified. Each name is followed by the author's affiliation. The affiliation is usually where the author was employed during the study. Indent the second and subsequent lines of an author's address using the hanging indent function. In each address, use available United States Postal Service (USPS) abbreviations, zip codes, and the country (abbreviate USA, but spell out all others). Write out words like Street, Avenue, and Boulevard, but abbreviate directions (e.g., N and NW). Include the address after each author, even if multiple authors have the same address. Use footnotes to indicate current affiliation is different from the one listed. Add a line for the corresponding author contact information (physical address and email) below the author names and affiliations using the heading **Correspondence**.

## ABSTRACT

After the title page, begin with the word **ABSTRACT** (left-justified) in upper-case bold font.

The abstract text begins after a regular letter space on the same line and is one paragraph not

exceeding one line/page of manuscript text (3% of length of text), including References. The abstract includes:

- 1) Research question or hypotheses tested. Identify the problem or hypothesis and explain why it is important. Indicate new data, concepts, or interpretations directly or indirectly used to manage wildlife.
- 2) Pertinent methods. State methods used to achieve the results summarized (keep the methods brief unless a new, greatly improved method is reported). **Include the study period and location.**
- 3) Results. Emphasize the most important results, whether or not they agree with your hypotheses.
- 4) Interpretation of results and their value. Explain how, when, where, and by whom data or interpretations can be applied to wildlife problems or contribute to knowledge of wildlife science.

We offer authors the option to provide the title or title and abstract in an alternative language or languages. This could, for example, be the authors' native language or the language relevant to the country in which the research was conducted. Alternative language titles and abstracts will not be copyedited and will be published as provided by the authors. Authors who wish to take advantage of this option should provide the alternative language title(s) and abstract(s) in the main document below the English language version of each.

## KEYWORDS

Keywords follow the abstract. The phrase **KEYWORDS** (left-justified, upper-case bold font) is followed by a regular space and  $\leq 10$  keywords in alphabetical order, ending with a period.

Include essential words from the title and others that identify: 1) common and scientific names of principal organisms in the manuscript; 2) the geographic area, usually the state, province, or equivalent, or region if its name is well known; 3) phenomena and entities studied (e.g., behavior, populations, habitat, nutrition, density estimation, reproduction); 4) methods (only if the manuscript describes a new or improved method); and 5) other words not covered above but useful for indexing. For example:

**KEYWORDS** author, format, guidelines, instructions, manuscript, policy, style

## TEXT PAGES

Number each line of the text continuously (i.e., do not restart numbering on each page).

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## *HEADINGS*

Reduce or eliminate the need for subheadings by writing clearly and logically. Avoid writing sections that consist of only one paragraph. Examples of the 3 heading types follow:

### **STUDY AREA**

First-level heading: upper-case lettering, bold type, and flush left. Text follows flush left on the succeeding line.

### **Burrow availability hypothesis**

Second-level heading: bold type, flush left, with first word capitalized. Text follows flush left on the succeeding line.

Assessment of available natural burrows

Third-level heading: regular type, flush left, with first word capitalized. Text follows flush left on the succeeding line.

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*MAJOR SECTIONS OF A MANUSCRIPT*

The introduction to the manuscript does not include a heading. Articles include the following first-level headings: **ABSTRACT**; **KEYWORDS**; **STUDY AREA**; **METHODS**; **RESULTS**; **DISCUSSION**; **MANAGEMENT IMPLICATIONS**, **CONSERVATION IMPLICATIONS**, or **RESEARCH IMPLICATIONS** (author choice of implication headings; From the Field, Tools and Technology, and Emerging Research articles in *WSB* do not include this section); **ACKNOWLEDGMENTS**; **ETHICS STATEMENT**; and **REFERENCES**. It is not permissible to combine Study Area and Methods or Results and Discussion. Merging these sections leads to superfluous wording, unnecessary discussion, and confusion. Most articles will include all major sections, but some sections may not be appropriate for all articles.

The introduction (no heading) starts below the **KEYWORDS** and contains a concise synthesis of literature specific to the manuscript's main topic. The end of the introduction should state clearly and concisely the objectives of the study, predictions, and the hypotheses tested. Do not summarize methods or results in the Introduction section.

Use past tense for **STUDY AREA** descriptions (e.g., average annual precipitation was 46 cm, vegetation was primarily grass). Exceptions include geological formations that have been present for centuries (e.g., mountains). **METHODS** should be brief and include dates, sampling schemes, duration, research or experimental design, and data analyses. Cite previously published methods without explanation. Identify new or modified methods and explain them in detail.

Methods must be described in adequate detail for a reader to duplicate them if initiating a new study.

Present **RESULTS** in a clear, simple, concise, and organized fashion. Avoid overlapping text with information in tables and figures, but highlight the most important results in the text; do not explain analyses that should have been described in the Methods section. **Describe the value and magnitude of the biological effect rather than focusing on the results of statistical analyses.** That is, terms such as fewer or smaller tell us little, and stating that something was statistically different ( $P < 0.01$ ) without providing the actual difference conveys little meaning to the reader. For example, stating, *A* ( $\bar{x} = 43 \pm 3$  ha) was 25% larger than *B* ( $P < 0.001$ ) conveys more information than simply stating, *A* was significantly larger than *B*. Present Results in past tense (e.g., body mass loss occurred during winter).

The **DISCUSSION** provides an opportunity for interpreting data and making literature comparisons. Begin the Discussion by synthesizing your results with regard to your objectives and then relate your work to other literature and research. Systematic discussion of every aspect of research leads to unnecessarily long manuscripts; be concise and relate your findings directly to your overall project goal, objectives, and hypotheses as appropriate. Reasonable speculation and new hypotheses to be tested may be included in the Discussion. **Do not repeat results in this section.**

The next section can be titled **MANAGEMENT IMPLICATIONS, CONSERVATION IMPLICATIONS,** or **RESEARCH IMPLICATIONS** (author choice depending on study focus). It should be short (usually about 1 paragraph) and direct but explain issues important to



management, conservation, or advancing wildlife science that are derived directly from or addressed in your results. Do not restate material from the Results or Discussion sections, and do not make recommendations that are beyond the scope of your study. Address specific wildlife research, management, or conservation opportunities or problems in this section. From the Field, Emerging Research, and Tools and Technology articles in *WSB* should not have a Management Implications section.

The **ACKNOWLEDGMENTS** (note preferred spelling) section appears immediately before References. This section should be brief and include 2 initials (when appropriate) and the last name of individuals cited (without affiliations). Acknowledgments should be straightforward without ornate and qualifying adjectives or personal remarks. Begin with disclaimers (if any) and end with funding thanks. For example: “Portions of this manuscript have been extracted from Ratti and Ratti (1988) and Gill and Healy (1980) with permission of The Wildlife Society. This is Contribution 836, University of Idaho Forest, Wildlife, and Range Experiment Station. We thank G. A. Baldassarre, M. S. Boyce, C. E. Braun, H. E. Hodgdon, and R. L. Lee for review comments and contributions to this manuscript. G. C. White assisted with revision of the mathematics and statistics subsection. We thank the Gainesville Feist Society and Melanerpes Forever for funding this study.”

The **ETHICS STATEMENT** section appears below acknowledgments and should explicitly state that the study adhered to relevant regulations and guidelines regarding the ethics of animal welfare and include protocol numbers parenthetically. If the study involved humans

(e.g., surveys), provide appropriate documentation that you obtained proper approval to perform research involving humans.

## REFERENCES

*Also see: [Citing Literature in Text](#)*

Type the References immediately following the Acknowledgments, and do not insert a page break (see [Appendix A](#) for specific examples). Double-space References and use hanging indents for second and subsequent lines of a citation. Spell out all words in the References (i.e., do not use abbreviations or acronyms). The following 3 exceptions are allowed in author and publisher locations: 1) Washington, D.C., 2) U.S. (e.g., U.S. Forest Service), and 3) USA. Spell out all author names for each citation instead of using dashes for authors in multiple citations.

In the References, alphabetize by authors' surname(s), regardless of the number of multiple authors for the same publication. Within alphabetical order, the sequence is chronological (see [Appendix A Multiple Citations for the Same First Author](#) for an example). If a reference has >10 authors, list the first 10 authors followed by et al.

Use title-case (not small caps) for all names in References, and place a comma between all names, even if there are only 2 (e.g., Schmidt, B. R., and J. Pellet). Use 2 initials (where appropriate) with one space between each initial. Only reverse the name order of the first author (e.g., Thogmartin, W. E., J. R. Sauer, and M. G. Knutson). For serial publications, show the issue number only if the pages of each issue are numbered separately. As in the text, spell out ordinal numbers (e.g., Third edition). Do not include words such as Publishing, Inc., or Company. Use the word Thesis to denote Master of Science (M.S.) or Master of Arts (M.A.), and use the word

Dissertation for Doctor of Philosophy (Ph.D.). Do not write the total page number of books at the end of the citation. Otherwise, simply cite the product in text following the examples in [Citing Literature in Text](#) section below. For foreign language publications, note the language of publication at the end of the citation in brackets (e.g., [In Spanish.]).

## FIGURES, TABLES, AND RICH MEDIA

On a new page following the References, compile figure captions (**not figures**) and tables.

**Submit figures as a separate file(s).** Submit only essential tables and figures. Do not submit tables if the information overlaps with information presented in the text, can be easily presented in the text with less journal space, or presents the same data in another table and a figure.

Number tables and figures independently. **Reference tables and figures parenthetically (Table 4, Figure 3) and avoid statements such as, “The results are shown in Tables 1–4.”**

Tables and figures must stand alone (i.e., be self-explanatory) and avoid reference to the text or other tables and figures. Accordingly, define relevant abbreviations and acronyms in each table and figure (except items that appear in [Appendix B](#)). When possible, minimize the use of abbreviations, especially with long lists of variables. The space saved is not worth the tedium for the reader trying to understand the table. **Table and figure titles must include the species or subject of the data studied and when and where (region or state and country) 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 a table includes a list of species, order species taxonomically and not alphabetically.

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*FIGURES*

Begin figure captions on a new page immediately following the References. Figure captions tend to be longer than table titles because figures are not footnoted. The caption may be several sentences and include brief suggestions for interpreting the figure content. Like table titles, figure captions must allow the figure to be self-explanatory (do not include abbreviations without defining them in the caption), **describing the variables displayed and where and when data were collected**. Do not include statistical results in the caption. Label and mount figure parts (e.g., A and B) together into one figure. Beginning in 2021 TWS journals will be in single-column format so for figures with multiple frames, page-width presentation is preferred to vertical arrangement.

Upload figures files separately (**do not include them in the main document**) and use the following guidelines to assure image quality is adequate. Pictures must have a reference scale if size is important. All image files must have a resolution of >300 dots per inch (dpi) at final typeset size. Only capitalize the first word and proper nouns on axis labels and keys. Use italic letters only where they are essential to the meaning, as in mathematical terms (see [Mathematics and Statistics](#) section and [Appendix B](#)). Identify arbitrary symbols in a figure key within the figure or in a note that is part of the caption.

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*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. Put such data or a summary of them in the text.

Table titles may differ, but we recommend this sequence: 1) name of the characteristic that was measured (e.g., mass, age, density), 2) measurement unit or units in parentheses (e.g., cm, individuals/ha, male:female, or %), 3) name of organism or other entity measured (e.g., of Canada geese), and 4) location(s) and date(s). Define all abbreviations used in the table title (e.g., AIC). We allow for listed standard abbreviations and symbols ([Appendix B](#)) in the table body without definition.

The lines in tables are called rules, and they should be used according to the following standards:

1. None drawn vertically within the table.
2. Each table contains at least 3 rules – below the title, below the column headings, and at the bottom. Insert each as one continuous line. Do not use bold or extra-thick rules.
3. Use rules that straddle subheadings within the column heading.
4. None to show summation; use Total or equivalent in the row-heading.

Type main headings flush left, and indent their subheadings. For column- and row-headings, only capitalize the first word and proper nouns (e.g., Number of times detected in NV), and do not use bold font. In the data field, do not use dashes (often misused to mean no information) or zeros unless the item was measured, and 0, 0.0, or 0.00 correctly reports the precision (measurement). Similarly, 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 only use 3

digits past the decimal, and do not list  $P = 0.000$ ; the correct form is  $P \leq 0.001$ . Do not use naked decimal points in the data field (e.g., use 0.057 instead of .057).

Use lower-case Roman (not italic) letters for table footnotes. Place letters alphabetically in the following sequence: in the title, then left-to-right, and then down. The most common errors in tables are the use of undefined abbreviations (e.g.,  $AIC_c$ ,  $K$ ) and incomplete titles.

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#### *EMBEDDED RICH MEDIA*

The journals have the option for authors to embed rich media (i.e., video and audio) within their final article. These files should be submitted with the manuscript files online, using either the Embedded Video or Embedded Audio file designation. If the video or audio includes dialogue, a transcript should be included as a separate file. The combined manuscript files, including video, audio, tables, figures, and text must not exceed 350 MB. Find full guidance on accepted file types and resolution [here](#). Ensure each file is numbered and cited in the text (e.g., Video 1, Video 2, Audio 1). Legends for the rich media files should be placed after the figure legends.

The content of the video should not display overt product advertising. Educational presentations are encouraged. Any narration should be in English, if possible. A typed transcript of any speech within the video or audio should be provided. An English translation of any non-English speech should be provided in the transcript.

All embedded rich media will be subject to peer review. Editors reserve the right to request edits to rich media files as a condition of acceptance. Contributors are asked to be succinct, and the Editors reserve the right to require shorter video or audio duration. The video or audio should be high quality (both in content and visibility or audibility). The video or audio

should make a specific point; particularly, it should demonstrate the features described in the text of the manuscript.

It is the responsibility of the corresponding author to seek informed consent from any identifiable participant in the rich media files. Masking a participant's eyes, or excluded head and shoulders, is not sufficient. Please ensure that a consent form

(<https://authorservices.wiley.com/author-resources/Journal-Authors/licensing/licensing-info-faqs.html>) is provided for each participant.

## APPENDICES

Appendices are different than online supporting information; they are essential to the manuscript and are typeset with the text. Include appendices in the text file after all figure captions and tables. Use first-level headings for Appendix titles. Appendices are presented at the end of the article and are used to add understanding to the manuscript without disrupting the flow of the text.

## SUPPORTING INFORMATION

Supporting Information is manuscript information that adds depth to the manuscript **but is not essential to readers' understanding of the manuscript** (e.g., spreadsheets of raw data, code, in-depth tables and figures that are not essential to the objectives of the study (e.g., model selection results for a large list of unsupported models, results of preliminary analysis). Any methods or results pertaining to the objectives of the study must be included in the main text (i.e., do not use the supporting information document simply to shorten the text). All supporting

information will be reviewed by the editors and content edited by journal staff. The publisher does not copyedit, typeset, or format supporting information; thus, the material must be ready for publication when the manuscript is submitted for review. Upload supporting information in Scholar One in a separate file and choose Supporting Information for review and online publication only from the file type drop-down menu. The file that you upload will be the exact file that readers will be able to download so use a file type that will be accessible to readers.

Reference the supporting information parenthetically in your manuscript. For example, “We created a project-cost worksheet to assist other researchers planning monitoring projects (Table S1, available in Supporting Information).” After the location has been established, simply refer to the table without the additional text.

Because supporting information is published separately from the manuscript, it needs to stand alone. List all references cited in the supporting information at the end of the file. References that only appear in the supporting information should not be listed in the References section of the manuscript. Arrange the file as follows:

Supporting Information

Date

Citation for your manuscript (e.g., Smith, L., and M. Jones. 2016. Southern ground hornbill nest survival. *Journal of Wildlife Management*)

Begin supporting information text here (table, equations, photo).

References



Manuscripts with publishable data may be rejected because of poor writing style (e.g., long and complex sentences, superfluous words, unnecessary information, and poor organization). Most editors are patient with this problem and are willing to offer helpful suggestions. Reviewers, however, may be less tolerant of poor writing, which may result in negative reviews. Use a direct and concise writing style and minimize repetition among sections of your manuscript. Do not use one-sentence paragraphs. Many common problems may be avoided by use of a carefully prepared outline to guide manuscript writing. Many problems can be corrected by having your manuscript critically reviewed by colleagues before submission for publication.

**The most common error in manuscripts is use of passive voice.** Use first person and active voice throughout the manuscript to avoid superfluous or unclear wording. For example, instead of writing “false absences were estimated” write, “we estimated false absences.”

## NUMBERS AND UNIT NAMES

Use digits for numbers (e.g., 7, 45) unless the number is the first word of a sentence or is used as a pronoun (e.g., We conclude one would benefit from...), in which case the number is spelled out. Use numerals for 0 and 1 only when they are connected to a unit of measure, when they are used as an assigned or calculated value, or when they are part of a series or closely linked with numbers other than 0 and 1 (e.g., 0 of 4 subspecies; 2 applications instead of 1 ...). Otherwise, spell out zero and one (e.g., zero-based budgeting, on the one hand, one doctor). Indicate units after each item unless it is a range with an en dash (e.g., elevations ranged 3,000 m to 5,000 m or elevations ranged 3,000–5,000 m) and use standard abbreviations for measurement units that follow a number (e.g., 75%, 30 kg) unless the number is indefinite (thousands of hectares).

Avoid using introductory phrases (e.g., a total of ...). Spell out ordinal numbers (e.g., first, second) in text and References, but use digits for cases such as 3-fold and 2-way. Convert fractions (e.g., 1/4, one-third) to decimals or percentages except where they misrepresent precision. Avoid presenting more than 3 digits past the decimal.

Hyphenate number-unit phrases used as adjectives (e.g., 3-m<sup>2</sup> plots and 3-year-old male) but not those used as predicate adjectives (e.g., plots were 3 m<sup>2</sup>, males were 3 years old). Insert commas in numbers  $\geq 1,000$  (except for pages in books, clock time, or year dates). Do not insert a comma or hyphen between consecutive, separate numbers in a phrase (28 3-m<sup>2</sup> plots). Do not use naked decimals (i.e., use 0.05, not .05). When identifying items by number, use lowercase for names (e.g., plot 1, site 5, day 3). Use a slash (/) instead of per when describing rates or densities (e.g., 5 elk/km<sup>2</sup>, 10 surveys/day).

## TIME AND DATES

Use the 24-hour system: 0001 hours through 2400 hours (midnight). Date sequence is day month year, without punctuation (e.g., 4 March 2000). Do not use an apostrophe for plural dates (e.g., 1970s). Authors can use 3-letter abbreviations for months in parentheses, table bodies, and figures (e.g., 31 Mar 1947), but please ensure consistent usage throughout the manuscript.

## MATHEMATICS AND STATISTICS

Use italic font for Roman letters used as symbols for quantities (e.g., *n*, *X*, *F*, *t*, *Z*, *P*, and  $\bar{x}$ ; [Appendix B](#)). Report degrees of freedom used in a statistical test as subscripts to the relevant test statistic (e.g.,  $t_2 = 1.45$ ). Insert symbols from the symbol directory in your word processing program as opposed to creating the symbol with keyboard functions (e.g., chi-square should

appear as  $\chi^2$  [found in the symbol directory], as opposed to  $X^2$ ). Use the minus sign from the symbols menu (–) to indicate minus and negative values instead of using the keyboard hyphen. Use times (×) to indicate multiplication or dimensions instead of using an asterisk (\*) or a lowercase x. These mathematical symbols may also be copied and pasted from this document.

Insert a space on both sides of symbols used as conjunctions (e.g.,  $P > 0.05$ ) but close the space when symbols are used as adjectives (e.g.,  $>20$  observations). Where possible, report exact probabilities ( $P = 0.057$ , not  $P > 0.05$ ). A subscript precedes a superscript ( $X_i^3$ ) unless the subscript includes  $>3$  characters.

Avoid redundant use of the word significantly (e.g., write “the means differed [ $P = 0.016$ ]” instead of “the means differed significantly [ $P = 0.016$ ]”). Report results of statistical tests or central tendency as in the following examples: ( $t_1 = 2.47, P = 0.013$ ), ( $F_{3, 12} = 33.10, P = 0.01$ ), ( $\chi^2_{10} = 22.1, P = 0.029$ ), or ( $\bar{x} = 7.8, SE = 3.21, n = 46$ ). Present  $P$ -values  $<0.001$  as  $P \leq 0.001$ . Type the names of statistical programs or analytical methods (that are not acronyms) in capital letters (e.g., PROC LIFEREG, POPGEN, Program MARK).

## EQUATIONS

Center long equations on their own line. Add spaces around operators such as = and + . If authors choose to number multiple equations in a paper, place the labels such as (1) or (2) on the right-hand margin with the equation centered. To cite these equations in the text, describe them as equation 1 in the sentence or as (eq. 1) parenthetically.

## ABBREVIATIONS AND ACRONYMS

The use of numerous abbreviations and acronyms can detract from the flow of a paper. This is particularly the case when used for variables, agencies, and organizations. Use of abbreviations and acronyms should be done judiciously. Some abbreviations and acronyms are well established and may be used in the text without definition: metric units, DNA, ID, and certain measurement units ([Appendix B](#)). Define all other abbreviations or acronyms the first time you use them in the abstract and text (e.g., geographic information system [GIS], analysis of variance [ANOVA], Akaike's Information Criterion [AIC]). Reestablish acronyms in the text that were first established in the abstract. Do not start sentences with acronyms, and do not use an apostrophe with plural acronyms (e.g., ANOVAs). Abbreviate state names in parentheses except when they appear in the title of an academic institution or agency.

## PUNCTUATION

Use a comma after the next-to-last item in a series of >2 items (e.g., red, black, and blue) and avoid the phrase “as well as” when you mean “and” (they are not synonyms). Write clearly enough so that you do not need to put quotation marks around words or phrases unless they are direct quotations. Follow these 3 rules to avoid common hyphenation errors: 1) a phrase containing a participle or an adjective is hyphenated as a compound when it precedes the word modified, and it is written without a hyphen when it follows the word modified (e.g., “a small-mammal study” and “a study of small mammals” are both correct but have a different meaning than “a small mammal study”); 2) a modifier containing a number is usually hyphenated (e.g., 2-km study area, a 6-year-old mammal); and 3) a 2-word modifier containing an adverb ending in -ly is not hyphenated (e.g., a carefully preserved specimen, spatially explicit model).

Avoid ambiguous use of nouns as modifiers (e.g., wolf researchers, women hunters). Use prepositions to avoid using nouns as adverbs (e.g., nesting by birds, instead of bird nesting; hunting with dogs, instead of dog hunting) and to avoid noun strings exceeding 3 words (e.g., radio-telemetry locations of dens in fall, instead of fall den radio-telemetry locations). Closing quotation marks are always placed after periods and commas, but they may be placed either before or after other punctuation. Brackets must appear in pairs, but the sequence varies. Use ([]) in ordinary sentences, use {[()]} in mathematical sentences, and use (()) only in special cases such as chemical names. Brackets are used to enclose something not in the original work being quoted (e.g., insertion into a quotation or a translated title).

Only use a slash (/) to indicate divided by or per (e.g., avoid using and/or, shrub/scrub, 2017/2018). Use trademarks (i.e.,™, ®) at the first mention of a product name, where appropriate, and not thereafter (if introduced in the abstract, re-establish the information in the text).

## ENUMERATING SERIES OF ITEMS

A colon must precede a series of numbered items unless the list is preceded by a verb or preposition. For presentation of a simple series, place numbers followed by a closing parenthesis only (see example in [Keywords](#) section) and separate phrases with commas or semicolons. 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 [Measurement Units](#) section).

## COMMON AND SCIENTIFIC NAMES

Do not capitalize common names of species except words that are proper names (e.g., Canada goose [*Branta canadensis*], Swainson's hawk [*Buteo swainsoni*], and white-tailed deer [*Odocoileus virginianus*]). Scientific names follow the first mention of a common name, except in the title. If a scientific name is established in the abstract, re-establish it in the text. Place scientific names following common names in parentheses and italic font with the first letter of the genus name capitalized and the species name in lower-case letters. Abbreviate genus names with the first letter when they are repeated within a few paragraphs, provided the meaning is clear and cannot be confused with another genus mentioned in the manuscript with the same first letter; for example: We studied snow geese (*Anser caerulescens*) and Ross' geese (*A. rossii*).

Do not use subspecies names unless essential, and omit taxonomic author names. Use sp. (singular; not italicized) or spp. (plural) to indicate that the identity of species within a genus was unknown. For example: The field was bordered by willow (*Salix* sp.) and we trapped several species of mice (*Peromyscus* spp.). Use the most widely accepted nomenclature for all species mentioned in your manuscript (e.g., American Ornithological Society Check-list [[checklist.aou.org](http://checklist.aou.org)]). Omit 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 ([Appendix B](#)). Place a space between numbers and units or symbols (e.g., 10 m, 80° C). Do not use hyphens between numbers and units unless you are using a number-unit phrase to modify a noun (e.g., correct usage: 12-

mm mesh, 3-year study, 12 mm in diameter, and 2 mm wide; see section on [Punctuation](#)). Use English units (or, rarely, another type of scientific unit) in parentheses following a converted metric unit only in cases that may misrepresent the statistical precision of the original measurement or the correct interpretation of the results. These non-SI units are permitted:

1. Area: hectare (ha) in lieu of  $10^4$  m<sup>2</sup>;
2. Energy: calorie (cal) in lieu of Joule (J);
3. Temperature: Celsius (C) in lieu of Kelvin (K);
4. Time: minute (min), hour (hr), day, in lieu of seconds (sec);
5. Volume: liter (L) in lieu of dm<sup>3</sup>.

## CITING LITERATURE IN TEXT

In most cases reference citations parenthetically at the end of a sentence. Cite published literature by author and year, e.g., Jones (1980), Jones and White (1981). Use et al. for publications with  $\geq 3$  authors, e.g., (Jones et al. 1982). Do not separate the author and date by a comma but use a comma to separate a series of citations. Use chronological order for citations in a series, e.g., (Jones 1980, Hanson 1986). If citations in a series have  $>1$  reference for the same author(s) in the same year, designate the years alphabetically (in italics) and separate citations with semicolons, e.g., (Peek et al. 1968*a, b*; Hanson 1981; White 1985, 1986). If citations have  $>1$  reference for the same author in different years, designate the years chronologically after the author's name (e.g., Andrews 2001, 2005; Chamberlain 2002; Foster 2006). For citations in a series with the same year, use alphabetical order within chronological order (Brown 1991, Monda 1991, Rotella 1991, Allen 1995). Do not give  $>5$  citations in the text to reference a specific issue or scientific

finding. For a quotation or paraphrase, cite author, year, colon, and page number(s) (e.g., Krebs 1989:216).

Cite documents that are cataloged in major libraries, including theses and dissertations, as published literature. Published literature includes symposia proceedings and United States Government reports that have been widely distributed. Cite all other documents as unpublished data in the text only.

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#### *CITING UNPUBLISHED SOURCES IN TEXT*

If references are not easily available or are not widely distributed, cite them in the text only.

Unpublished sources include reports that are not published or widely distributed, manuscripts that have not yet been accepted for publication, and personal communications and observations.

Avoid overusing unpublished information because these citations are not as credible as published literature and will make your text cumbersome. Do not use unpublished citations if you have peer-reviewed citations that support your statement(s). Cite unpublished references in the text as follows:

1. Personal communications: (J. G. Jones, National Park Service, personal communication);
2. Unpublished report: (D. F. Timm and E. J. Jones, North Carolina State University, unpublished report);
3. Unpublished data (including manuscripts in review): (D. E. Brown, Arizona Game and Fish Department, unpublished data).



Always include the affiliation in the first citation, even if citing unpublished data or personal observation of one of the authors, but do not repeat the affiliation in subsequent references (e.g., J. G. Jones, personal communication). Do not list >2 authors for an unpublished source.

A manuscript accepted for publication is cited as a published manuscript in the text using the anticipated publication year. In the References section, show the year after the name(s) of the author(s) and in press after the volume number. Do not cite manuscripts that are in review; use the unpublished style listed above. Refer to detailed instructions for References style ([Appendix A](#)).

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#### *CITING EQUIPMENT AND STATISTICAL SOFTWARE*

For field equipment, note the manufacturer name and location parenthetically the first time you mention the equipment in the text (e.g., Advanced Telemetry Systems, Isanti, MN, USA).

Inclusion of information for purchasing equipment or software is inappropriate and not permitted.

Cite software in References as the software manual or an affiliated publication describing the function of the program if available, e.g., "...Program MARK (White and Burnham 1999)." For software without an associated author, in-text citations can be used to include the software company (as in equipment above) immediately following the first use of the statistical product name (e.g., SAS Institute, Cary, NC, USA; Esri, Redlands, CA, USA). To cite R, use the year of the version used, e.g., "...using R (R Core Team 2020)," and add it to the References section as R Core Team. 2020. R: a language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. For R packages, check the citation field on the R

package CRAN page for publication information; if there is not an associated publication, cite as in the following example: Kranstauber, B., M. Smolla, and A. K. Scharf. 2020. move: visualizing and analyzing animal track data. Version 4.0.6. <https://cran.r-project.org/web/packages/move/index.html>.

## APPENDIX A. REFERENCES

A list of example citations follows.

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### *BOOKS: GENERAL FORMAT*

*Note:* If the state appears in the publisher or agency name, do not repeat it after the city.

Kleinbaum, D. G., L. L. Kupper, A. Nizam, and K. E. Muller. 2008. Applied regression analysis and other multivariable methods. Fourth edition. Duxbury, Belmont, California, USA.

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

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### *BOOKS: MORE THAN ONE PUBLISHER*

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

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### *BOOKS: MORE THAN ONE VOLUME*

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

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### *BOOKS: EDITOR AS AUTHOR*

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

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### *BOOKS: REPRINT*

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

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### *BOOKS: CHAPTER*

Zeleny, L. 1978. Nesting box programs for bluebirds and other passerines. Pages 55–60 in S. A. Temple, editor. *Endangered birds: management techniques for preserving threatened species*. University of Wisconsin Press, Madison, USA.

Gutiérrez, R. J., A. B. Franklin, and W. S. LaHaye. 2020. Spotted owl (*Strix occidentalis*). Version 1.0 in A. Poole and F. Gill, editors. *Birds of the world*. Cornell Lab of Ornithology, Ithaca, New York, USA.

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*COURT CASES*

Cite complete title and year of case in text only.

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*FOREIGN LANGUAGE PUBLICATIONS*

Angulo, E. 2003. Factores que afectan a la distribución y abundancia del conejo en Andalucía. Dissertation, Complutense University, Madrid, Spain. [In Spanish.]

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*GOVERNMENT PUBLICATIONS*

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

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*GOVERNMENT PUBLICATIONS: 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, Washington, D.C., USA.

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*GOVERNMENT PUBLICATIONS: 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 parenthetically as (National Research Council 1977).

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*JOURNALS: GENERAL FORMAT*

*Note:* Issue numbers are included only if the pages of each issue are numbered separately. See PLoS ONE example below for journals with e-locators rather than page numbers.

Bélisle, M., and A. Desrochers. 2002. Gap-crossing decisions by forest birds: an empirical basis for parameterizing spatially-explicit, individual-based models. *Landscape Ecology* 17:219–231.

Cox, W. A., F. R. Thompson III, B. Root, and J. Faaborg. 2012. Declining brown-headed cowbird (*Molothrus ater*) populations are associated with landscape-specific reductions in brood parasitism and increases in songbird productivity. *PLoS ONE* 7:e47591.

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

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*JOURNALS IN PRESS: YEAR AND VOLUME KNOWN (BUT NO PAGE NUMBERS OR E-LOCATOR)*

Polasik, J. S., M. A. Murphy, T. Abbott, and K. Vincent. 2016. Factors limiting early life stage survival and growth during endangered Wyoming toad reintroductions. *Journal of Woodpecker Ecology* 80:in press. doi:10.1002/jwmg.1031.

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*JOURNALS IN PRESS: YEAR AND VOLUME UNKNOWN*

*Note:* Manuscripts in review may not be included in the References.

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

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*MULTIPLE CITATIONS FOR THE SAME FIRST AUTHOR*

*Note:* List in alphabetical order by second author (then third, fourth, ...), then chronological for identical authorship. Order *a* and *b* as they appear in the References not the order they appear in text.

Peek, J. M. 1970. A review of wildlife management. Prentice-Hall, Englewood Cliffs, New Jersey, USA.

Peek, J. M., and A. L. Lovaas. 1968. Differential distribution of elk by sex and age on the Gallatin winter range, Montana. *Journal of Wildlife Management* 32:553–557.

Peek, J. M., A. L. Lovaas, and R. A. Rouse. 1968*a*. Population changes within the Gallatin elk herd, 1932–1965. *Journal of Wildlife Management* 31:304–316.

Peek, J. M., and R. A. Rouse. 1966. Preliminary report on population changes within the Gallatin elk herd. *Wildlife Science* 82:1298–1316.

Peek, J. M., R. A. Rouse, and R. L. Smith. 1968*b*. Elk survival in a fragmented landscape. *Journal of Wildlife Management* 31:1–5.

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*NEWSPAPER, NEWSLETTER, AND MAGAZINE ARTICLES*

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

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

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

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

*Note:* Citing from newspapers, newsletters, and magazines is discouraged and is only acceptable in certain rare circumstance (e.g., in manuscripts dealing with public perceptions).

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*SOFTWARE PACKAGES*

R Core Team. 2020. R: a language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria.

Kranstauber, B., M. Smolla, and A. K. Scharf. 2020. move: visualizing and analyzing animal track data. Version 4.0.6. <https://cran.r-project.org/web/packages/move/index.html>.

*Note:* For more details, please see [Citing Equipment and Statistical Software](#).

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*SYMPOSIA AND PROCEEDINGS: COMPLETE VOLUME*

DeGraaff, R. M., technical coordinator. 1978. Proceedings of workshop on management of southern forests for nongame birds. U.S. Forest Service General Technical Report SE-14, Washington, D.C., USA.

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*SYMPOSIA AND PROCEEDINGS: INDIVIDUAL ARTICLE*

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

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*SYMPOSIA AND PROCEEDINGS: PART OF A NUMBERED SERIES*

Palmer, T. K. 1976. Pest bird control in cattle feedlots: the integrated system approach. Proceedings of Vertebrate Pest Conference 7:17–21.

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*SYMPOSIA AND PROCEEDINGS: COMPLETE VOLUME (NOT PART OF A NUMBERED SERIES)*

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, 12–14 December 1993, St. Louis, Missouri, USA.

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*SYMPOSIA AND PROCEEDINGS: INDIVIDUAL ARTICLE (NOT PART OF A NUMBERED SERIES)*

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, 28 October–1 November 1995, Portland, Maine, USA.

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*THESES AND DISSERTATIONS*

Breitwisch, R. J. 1977. The ecology and behavior of the red-bellied woodpecker, *Centurus carolinus* (Linnaeus; Aves: Picidae), in south Florida. Thesis, University of Miami, Coral Gables, Florida, USA.

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

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*WEB CITATIONS*

Council of Biology Editors [CBE]. 1999. CBE homepage. <<http://www.councilscienceeditors.org>>. Accessed 7 Oct 1999.

National Oceanic and Atmospheric Administration [NOAA]. 2005. National Weather Service internet services team. Monthly precipitation for Reno, Nevada. <[http://www.wrh.noaa.gov/rev/hydrology/monthly\\_precip.php](http://www.wrh.noaa.gov/rev/hydrology/monthly_precip.php)>. Accessed 23 Aug 2005.



## APPENDIX B. OPTIONAL ABBREVIATIONS FOR TABLES, FIGURES, AND PARENTHETIC EXPRESSIONS

We allow abbreviation of the following terms when used within parentheses, table bodies, and figures (not table titles and figure captions unless used parenthetically). Abbreviate all items with an asterisk in the text when they appear immediately after or before a number, but do not abbreviate other listed terms in regular text. Authors do not need to define terms listed in this table; however, all additional abbreviations must be defined the first time they appear in the text.

Term	Abbreviation or symbol	Term	Abbreviation or symbol
Approximately	~	Meter	m*
Calorie	cal*	Minimum	min.
Celsius	C*	Minute	min
Chi-square	$\chi^2$	Month names	Jan, Feb...
Confidence interval	CI	More than, greater than	>*
Confidence limit	CL	Multiple correlation	$R^2$
Correlation, simple	$r$	Parts per billion	ppb*
Determination, multiple	$R^2$	Parts per million	ppm*
Determination, simple	$r^2$	Percent	%*
Degrees of freedom	df	Population size	$N$
Diameter, breast height	dbh	Probability <sup>a</sup>	$P$
Directions	N, S, NE, SW	Sample size	$n$
Equation(s)	eq(s)	Sample mean (of $x$ )	$\bar{x}$
Fewer than, less than	<*	Second	sec
$F$ ratio	$F$	Spearman rank correlation	$r_s$
Gram	g*	Standard deviation(s)	SD
Hectare	ha*	Standard error(s)	SE
Hour(s)	hr	Student's $t$	$t$
Joule	J*	Temperature	temp
Kilocalorie	kcal*	Variation	CV
Liter	L*	Versus	vs.
Logarithm, base $e$	ln or log <sub>e</sub>	Volt	V*

Logarithm, base 10	$\log_{10}$	Volume: liquid, book	vol, Vol.
Maximum	max.	Year(s)	yr
		Z-statistic	Z

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<sup>a</sup> Use *P* to indicate a specific probability value (e.g.,  $P < 0.001$ ) but not in more broad definitions (e.g., We calculated the probability that a juvenile survives first month).

