



Preserve Our Natural Resources



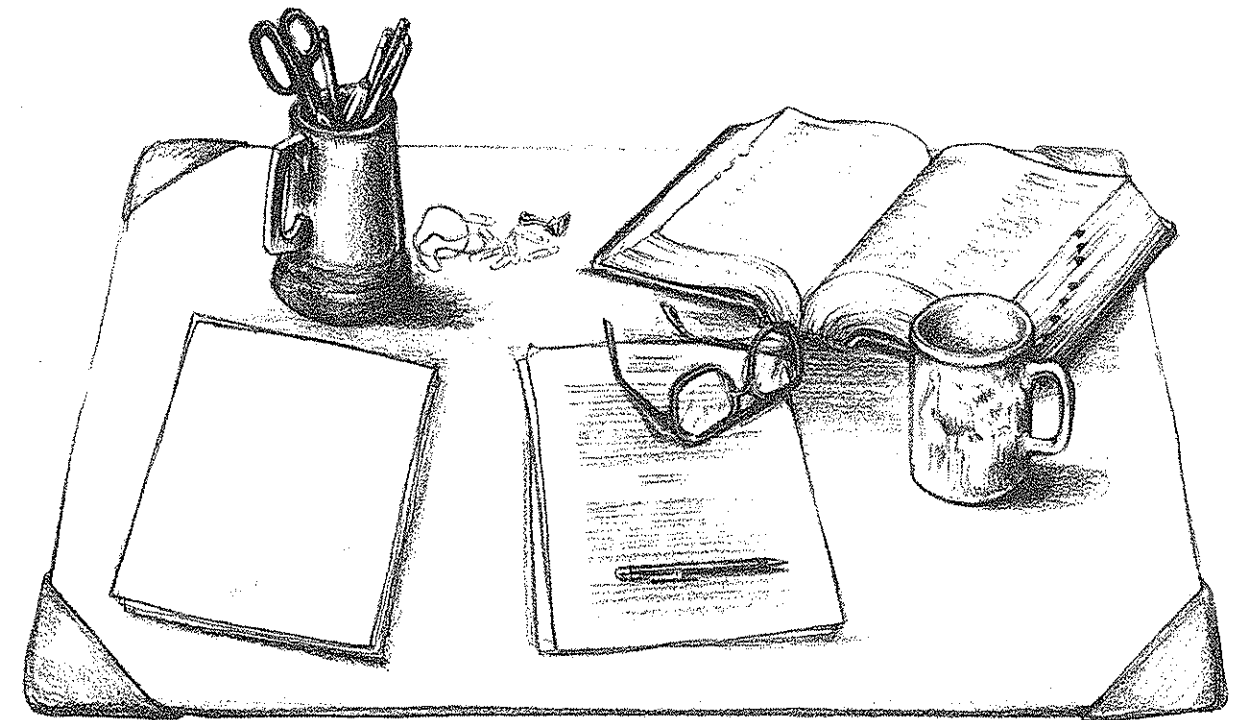
DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE



As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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SEPTEMBER 1987

BIOLOGICAL REPORT STYLE MANUAL



Fish and Wildlife Service

U.S. Department of the Interior

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BIOLOGICAL REPORT STYLE MANUAL

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PREFACE

The Biological Report series, one of several Research and Development series of the U.S. Fish and Wildlife Service, is managed and produced by the National Ecology Center, Fort Collins, CO, the National Wetlands Research Center, Slidell, LA, and the Office of Information Transfer, Fort Collins. The series continues the Biological Services Program's FWS/OBS series, begun in 1975 and managed by the program's National teams. After the demise of that program and subsequent reorganizations, the series came under the authority of Research and Development and was renamed in 1984.

The purpose of the Biological Report series and its predecessor has been to provide operational personnel, natural resource managers, and other decisionmakers with needed information in a timely manner. Typical subjects have been the results of applied research, developments in technology, ecological surveys, and the effects of land-use changes on fish and wildlife resources. Publications have taken such diverse forms as modeling reports, literature syntheses, workshop proceedings, annotated bibliographies, and atlas narratives. Authors have primarily been Service scientists or contracted scientists. Through the years various subseries within the series have emerged, including the Habitat Suitability Index Models, Community and Estuarine Profiles, Instream Flow Information Papers, and Coastal Characterizations. As their objectives have been met, some subseries have been phased out and replaced by new ones to meet the Service's changing needs.

This style manual is largely based on the Biological Services Program's "Appendix D: Communication Standards: Guidelines for Format and Style" of the Five-Step BSP Process for Ecological Information and Technology Management (Biological Services Program 1979). Although that appendix did an admirable job of providing guidelines for authors and editors, there has been a recognized need to update it, remove inconsistencies, add pertinent material, and provide a manual that itself can be used as a model for its own guidelines. Questions about this manual should be referred to the editors of the three managing facilities. Information regarding other publications in the Biological Report series should be directed to one of the following:

Information Transfer Specialist
U.S. Fish and Wildlife Service
National Wetlands Research Center or
1010 Gause Boulevard
Slidell, LA 70458
(504) 646-7564; FTS 8-680-7310

Publication Request Manager
U.S. Fish and Wildlife Service
National Ecology Center
2627 Redwing Road
Fort Collins, CO 80526
(303) 226-9300; FTS 8-323-5300

Suggested citation:

Farris, G.S., and J.R. Zuboy. 1987. Biological Report style manual. U.S. Fish Wildl. Serv. Biol. Rep. 87(8). 46 pp.

SUMMARY

This style manual for the Biological Report series of the U.S. Fish and Wildlife Service is a guide for authors, editors, and typists to use in preparing these publications.

This manual is the sole basis for the series' format and bibliography, although supplemental typing guidelines for producing double-columned or reduced-size copy may be provided by the editors as needed. The format section is arranged to follow that of a typical report, from cover to back matter, and includes specifications for typing drafts and camera-ready copy, headings, tables, figures, references, indexes, and appendixes.

Guidelines for style are based on the United States Government Printing Office Style Manual (GPO 1984a) and cover spelling, capitalization, compound terms, punctuation, numerals, abbreviations, symbols, measurement, and time. Spelling not covered by GPO is based on Webster's Third New International Dictionary, Unabridged (1971). Scientific conventions such as those for equations, formulas, and scientific names follow the CBE Style Manual, 5th ed. (1983).

Guidelines for format and style of bibliographies (references and literature cited) are based on an earlier CBE Style Manual, 3rd ed. (Council of Biology Editors 1972), with abbreviations of journal names following the current annual Serial Sources for the BIOSIS Data Base by BioSciences Information Service.

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ACKNOWLEDGMENTS

We wish to express our gratitude to the compilers of the U.S. Fish and Wildlife Service's "Communication Standards: Guidelines for Format and Style," which was Appendix D of the Five-Step BSP Process for Ecological Information and Technology Management (Biological Services Program 1979). Although we extensively revised Appendix D--which served as a style manual for the early Biological Report series and its predecessor, the FWS/OBS series--we maintained much of its basic organization and guiding principles. Because of our debt to that report, we also acknowledge the references used to compile it: Guide for Preparation of Waterways Experiment Station Technical-Information Reports by the U.S. Army Engineer Waterways Experiment Station (1975), and the Handbook for Preparing Office of Research and Development Reports by the U.S. Environmental Protection Agency (1976).

We also thank our reviewers, who made many helpful suggestions: Bonnie Boynton, Portland, MI; Robert Brown, Woods Hole Oceanographic Institute, Woods Hole, MA; Dana Criswell, Louisiana State University, Baton Rouge; Cresap Watson, University of New Orleans; Kent Andrews, Mike Bogan, Paul Opler, Mel Schamberger, Cathy Short, and Clair Stalnaker, U.S. Fish and Wildlife Service, Fort Collins, CO.

We are grateful to Robert C. McArtor, Chairman of the U.S. Government Printing Office's Style Board, for his many useful comments and for his editorial aplomb in understanding our occasional deviations from GPO style when necessitated by biological convention, series tradition, or the limitations of typed rather than typeset copy.

We especially appreciate the assistance of graphic artists Jennifer Shoemaker and Susan Strawn, National Ecology Center, Fort Collins, CO, and Sue Lauritzen, National Wetlands Research Center, Slidell, LA.

Finally, we thank our typists: Elizabeth Barstow, Ann Crance, Patricia Gillis, and Dora Ibarra of the National Ecology Center, and Joyce Rodberg and Daisy Singleton of the National Wetlands Research Center.

PURPOSE AND AUDIENCE

This style manual is intended to be a guide for authors, editors, and typists in the preparation of manuscripts for the Biological Report series. Although this manual is the sole basis for the series' format, supplemental typing guidelines for producing double-columned or reduced-size copy may be provided by the editors for certain subseries.

SOURCES

"Format" refers to the general makeup of a report and includes typing specifications, covers, page numbering, presentation of front matter, organization of main text, and presentation of back matter. This manual is the source of format specifications, including bibliographic format, for the Biological Report series.

"Style" refers to such considerations as spelling, capitalization, compound terms, punctuation, numerals, abbreviations, symbols, measurement, time, equations, and formulas. A detailed discussion of stylistic matters is beyond the scope of this manual, and users should follow the United States Government Printing Office Style Manual (GPO 1984a). If the GPO manual does not deal with a specific item, refer to the Council of Biology Editors' CBE Style Manual, 5th ed. (1983) (except for bibliographic style). Bibliographic style for the Biological Report series appears in this manual under the format specifications for references.

FORMAT

COVER

The cover of a printed report is always typeset (Figure 1). Covers are prepared by the National Ecology Center, the National Wetlands Research Center, or the Office of Information Transfer, and include a spine (Figure 2) if the report is longer than 90 pages. Authors are encouraged to submit appropriate ideas, artwork, or photographs for covers. Drafts do not require covers.

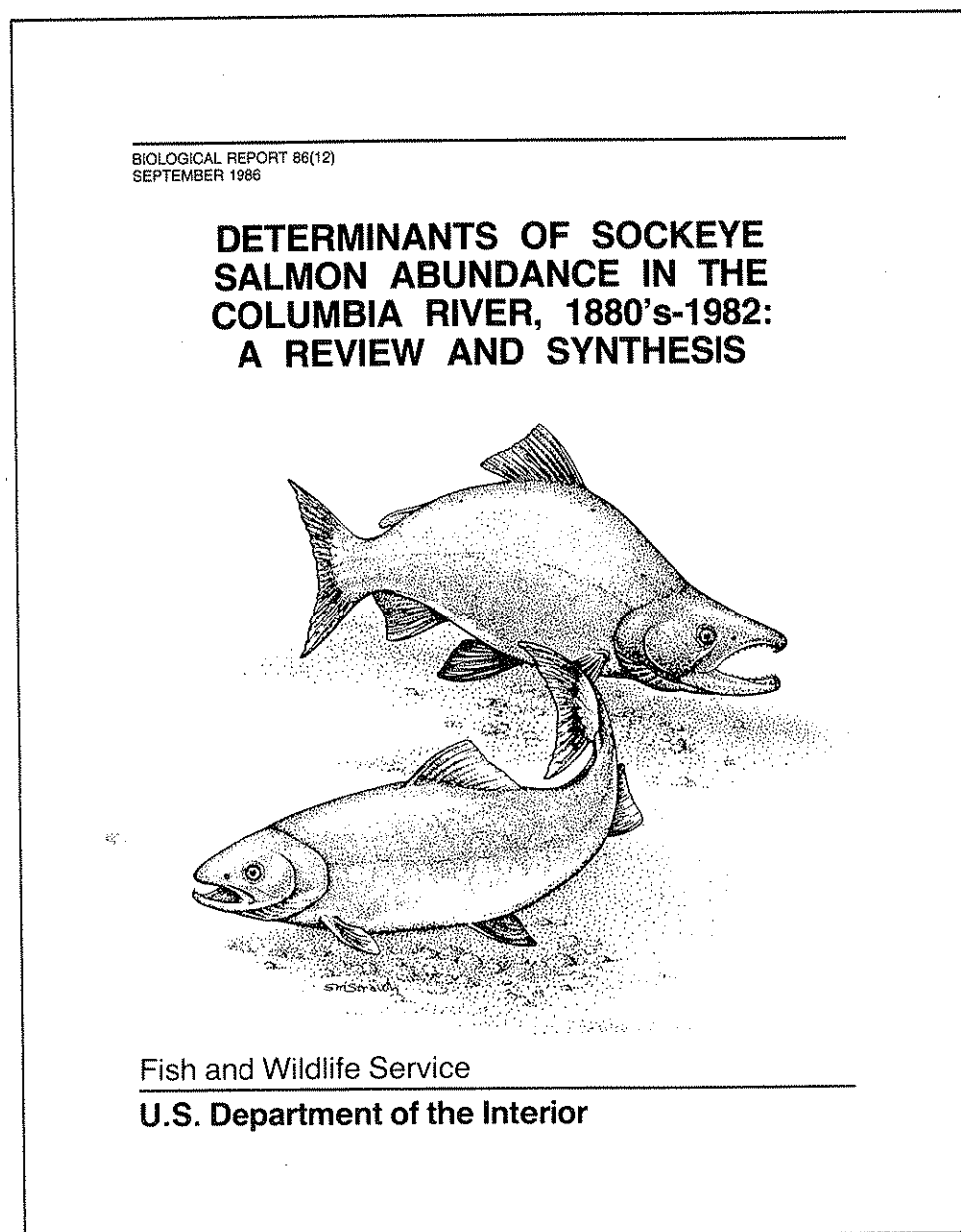


Figure 1. Cover format.

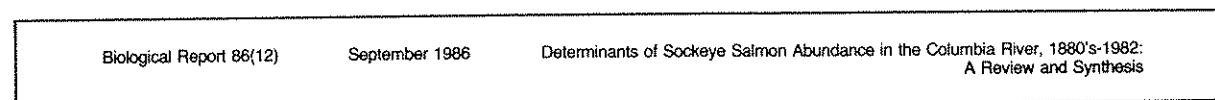


Figure 2. Spine format.

TYPING SPECIFICATIONS

Copy must be typed on good quality white paper measuring 8½ x 11 inches. Use a word processor or an electric typewriter with a carbon ribbon. The Letter Gothic typing element or an equivalent (sans serif style) is recommended. If available, use type that is 10 point (vertical measurement) and set at 12 pitch (horizontal measurement: 12 characters to an inch). The typing guide (Figure 3) shows the 1-inch margin and image area (6½ x 9 inches) within which all text, tables, figures, and page numbers must be placed, and indicates placement of the first line of text, dropped heading of a major section, last line of text, and page number. (Note: This sample page has not been reduced so that it can be used as an actual typing guide.)

For text, begin typing on line 7 below the top of the image area border. Type to line 58, skip a line, and type the page number on line 60. For major section headings (e.g., preface, summary, chapter or similar headings, references), begin typing on line 13. Specific typing instructions are included in the appropriate sections of this manual.

Some publications within the Biological Report series may have special format requirements (e.g., double columns, 10% page reduction). Editors will provide instructions to authors when appropriate.

Drafts

Drafts should be typed double-spaced on one side of a page. Skip four lines between paragraphs. Figures and tables should be placed on separate pages. Do not use end-line hyphenation in a draft.

Final Camera-Ready Copy

Final camera-ready copy should be typed single-spaced and right-justified on one side of the page. Begin paragraphs with a five-space indent; i.e., skip five spaces and begin typing on the sixth. Leave at least two lines of a new paragraph at the bottom of a page and at least two lines of a previous paragraph at the top of a new page. End-line hyphenation can be used, but do not hyphenate the last word on a page or a word that is already hyphenated (e.g., anti-inflation). If possible, avoid two or more end-line hyphenations in succession, and do not hyphenate a person's name. Typists may also refer to the "Word Division" supplement to the GPO manual (GPO 1984b).

PAGE NUMBERING

With the exception of both sides of the title page (which are counted as pages i and ii, but not indicated), number front matter (preliminary pages) consecutively with lowercase Roman numerals (iii, iv, v).

The first page of the body of the report (page 1, which is so marked) must begin on a right-hand page. Thereafter, each new section begins on the next available page (no blank pages between sections). The body of the report

Line 7

Continue text 1 inch from top of page

Line 13

Drop headings for major sections 1 inch from top of image area
(2 inches from top of page)

6½-inch-wide image area (1-inch outside margins)

9-inch-high image area (1-inch outside margins)

Figure 3. Typing guide. [Last line of text, table, or figure (line 58)]

Page number (Line 60)

4

and the back matter (references and appendixes) are numbered consecutively with Arabic numerals.

For handbooks that require frequent updating, a system of double numeration--numbering each page with the section number and its own serial number within the section (e.g., 7-4)--should be used rather than consecutive pagination. Figures and tables for such handbooks should also be numbered separately for each section (e.g., Figure 7-1, Table 7-1).

FRONT MATTER

Examples of the individual elements that may be included in the front matter appear in Figures 4-11. These elements are discussed in the order of their appearance.

Title Page

Information on the title page should be kept to a minimum to improve readability. The title page (Figure 4) may contain all of the items listed below. If the page is too crowded, include optional items in the acknowledgments.

Report number. Place number in the upper right-hand corner. A report number will be assigned only after the report has been reviewed and cleared for (imminent) publication.

Date. Place date below the report number in the upper right-hand corner. It is written as "month year" (e.g., June 1987) and indicates the date the report is sent for reproduction.

Report title and subtitle. Titles should be limited to about 12 words and exclude unnecessary words like "a study of" or "a report on." The title should be specific and should include all pertinent words that describe the study because it is used by indexing services and by those conducting literature searches. Type the centered title in all capital letters. If there is a subtitle, type it in initial capital and lowercase letters, and center it below the main title. Double-space between the title and subtitle (or between lines of a title of more than one line).

Name and address of personal or corporate author(s). Do not include degrees or titles. The address includes organization, street address, city, State (use postal abbreviations), and ZIP Code.

Contract number or interagency agreement number. Optional.

Project officer (optional). Include name (without degree or title) and address. When several contractors or project officers have worked on a report, list them in the acknowledgments.

Biological Report Number
 Month and Year of Publication

TITLE (ALL CAPS CENTERED)
 Subtitle, If Applicable
 by
 Author(s)
 Organization
 Street Address
 City, State, and ZIP Code

Contract Number (Optional)

Project Officer (Optional)
 Name
 Organization
 Street Address
 City, State, and ZIP Code

Cooperating or
 Cosponsoring Agency (Optional)

U.S. Department of the Interior
 Fish and Wildlife Service
 Research and Development
 Washington, DC 20240

Figure 4. Organization of the title page.

Outside funding sources, if applicable (optional). When a project receives major support from another governmental agency, the project is termed a cooperative effort. This fact is stated several spaces below the project officer's name and address as in the following example:

Conducted in cooperation with
 U.S. Department of Agriculture
 Beltsville, MD 20705

When a project is funded entirely by another governmental agency, the title page includes a statement similar to the following example:

Conducted as part of the
 Federal Interagency Energy-Environment
 Research and Development Program
 U.S. Environmental Protection Agency
 Office of Research and Development
 Washington, DC 20240

The Service's contract number, the interagency agreement number, and the name and address of the Service's and sponsoring agency's project officers should be included in the acknowledgments.

Sponsorship statement. This information indicates the publishing agency.

U.S. Department of the Interior
 Fish and Wildlife Service
 Research and Development
 Washington, DC 20240

Back of Title Page

The back of the title page (Figure 5) may contain any of the following elements.

Disclaimer. If used, the disclaimer appears at the top of the page. A disclaimer must be used in the case of contracted reports.

Library of Congress cataloging in publication data. The editor obtains this information (when appropriate), which appears on the lower half of the page.

Superintendent of Documents stock number. This number is assigned by the GPO for products selected for sale by the Superintendent of Documents.

Suggested citation. A suggested citation appears at the bottom of the page to aid users in referencing the report.

DISCLAIMER

The opinions and recommendations expressed in this report are those of the authors and do not necessarily reflect the views of the U.S. Fish and Wildlife Service, nor does the mention of trade names constitute endorsement or recommendation for use by the Federal Government.

Suggested citation:

Jahn, L.A., and R.V. Anderson. 1986. The ecology of Pools 19 and 20, Upper Mississippi River: a community profile. U.S. Fish Wildl. Serv. Biol. Rep. 85(7.6). 142 pp.

Figure 5. Organization of the back of the title page.

Foreword

The optional foreword (Figure 6) is an introduction written and signed (with title) by someone other than the authors. Frequently, an individual in a higher position of line authority writes the foreword. It should be brief and address the general significance and applicability of the report.

Preface

The preface (Figure 7) includes information that must appear in the product but is not relevant to the technical text. The author may include the reasons for undertaking the project or the limitations within which it was conducted. Reservations regarding the use of information contained in the publication should be explained. The preface may also contain a brief description of the contents of the document, explain how the material has been organized, and, if appropriate, indicate how the publication (such as a handbook) will be updated. If copyrighted materials have been quoted or reproduced, the preface states that permission to use the material has been obtained. The preface ends with the address to which comments or questions may be sent.

Acknowledgments are not part of the preface and should be contained in a separate section.

Summary

For some reports, a summary is appropriate. The summary (Figure 8) is a concise (one to three pages) overview of the product: a nontechnical statement of results, conclusions, and recommendations. Background information and descriptions of materials and methods should be kept to a minimum. The summary must be able to stand alone so that it can be made available to audiences who would not need the full report.

When published separately, the summary should refer to the published report and include a statement containing the following: name of the organization or contractor that performed the work on which the report is based, sponsoring agency, contract or interagency agreement number, and the date the work was completed.

Conversion Table

Including a conversion table (Figure 9) for metric and English units can increase readability by avoiding distracting in-text conversions. A series editor will provide camera-ready tables for those reports requiring them.

Table of Contents

The table of contents (Figure 10) is necessary in reports longer than 25 pages. It should list the exact headings and page numbers of all front matter, all first- and second-level headings in the text, and all back matter except the NTIS Report Documentation Page. The inclusion of third-level headings is

FOREWORD

The demand for electric energy often creates conflicts with the desire to preserve and protect the Nation's fish and wildlife resources. This is particularly true when the use of water for power plants is considered. Power plants require large volumes of water from rivers, lakes, reservoirs, and estuaries. Withdrawal of water for cooling purposes causes the loss of fish eggs, larvae, and juveniles through impingement or entrainment. The discharge of water causes thermal and chemical pollution, and can cause alteration of stream flow patterns and the disruption of the thermal and dissolved oxygen stratification in those water bodies.

The biological consequences of water use by power plants depend upon the species of organisms involved, the mechanical and physiological stresses on the organisms, and the ecological role of the organisms. To assess the impacts of power plants and other habitat modifications on fish populations, it is necessary to identify fish eggs, larvae, and juveniles of different species. Up to now, however, descriptions of the development stages of fishes have been scattered throughout a large number of sources.

The Development of Fishes of the Mid-Atlantic Bight is a compilation of descriptions of the egg, larval, and juvenile stages of over 300 fish species, and includes dichotomous keys useful for identifying species. Descriptions of spawning migrations and life habitats of adult fishes, their geographic range and distribution, and movements of fish at all life stages are also included.

With this kind of baseline taxonomic information, biologists will be able to assess the management implications of power plant siting and other habitat modifications on aquatic populations and provide information to decisionmakers. We believe these books are a major step in providing the type of information necessary to incorporate environmental considerations into resource development decisions.

(Signature)

Director, U.S. Fish and Wildlife Service

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Figure 6. Sample foreword.

PREFACE

This document is part of the Habitat Suitability Index (HSI) Model Series [Biological Report 82(10)], which provides habitat information useful for impact assessment and habitat management. Several types of habitat information are provided. The Habitat Use Information section is largely constrained to those data that can be used to derive quantitative relationships between key environmental variables and habitat suitability. This information provides the foundation for the HSI model and may be useful in the development of other models more appropriate to specific assessment or evaluation needs.

The HSI Model section documents the habitat model and includes information pertinent to its application. The model synthesizes the habitat use information into a framework appropriate for field application and is scaled to produce an index value between 0.0 (unsuitable habitat) and 1.0 (optimum habitat). The HSI Model section includes information about the geographic range and seasonal application of the model, its current verification status, and a list of the model variables with recommended measurement techniques for each variable.

The model is a formalized synthesis of biological and habitat information published in the scientific literature and may include unpublished information reflecting the opinions of identified experts. Habitat information about wildlife species frequently is represented by scattered data sets collected during different seasons and years and from different sites throughout the range of a species. The model presents this broad data base in a formal, logical, and simplified manner. The assumptions necessary for organizing and synthesizing the species-habitat information into the model are discussed. The model should be regarded as a hypothesis of species-habitat relationships and not as a statement of proven cause and effect relationships. The model may have merit in planning wildlife habitat research studies about a species, as well as in providing an estimate of the relative suitability of habitat for that species. We encourage model users to suggest improvements that may increase the utility and effectiveness of this habitat-based approach to fish and wildlife planning. Please send suggestions to:

Habitat Evaluation Procedures Group
National Ecology Center
U.S. Fish and Wildlife Service
2627 Redwing Road
Fort Collins, CO 80526-2899

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Figure 7. Sample preface.

SUMMARY

The Texas-Louisiana shelf ecosystem in the Gulf of Mexico is described (1) in terms of its physiographic, oceanographic, and biological characteristics and (2) as a recipient of oil and gas development activities and effluents. The northeast sector of the ecosystem is influenced by Mississippi River discharge, whereas high-salinity Caribbean water affects the southwest sector. Soft-bottom communities are prominent, characterized by economically valuable penaeid shrimps. The coral reef communities, because of their uniqueness and scarcity, are more important than normally would be assumed. Pelagic communities are little known and harbor only a few commercially valuable species. It is surmised that much of the primary productivity from the pelagic community is used by the bottom communities.

Observed effects of oil and gas development activities and effluents are described. Data from most field studies indicate that direct effects are limited in space, but the effects over time are unknown. One of the major problems has been separating effects of oil and gas development-related activities and other man-induced variations from natural changes. Particular concern is expressed relative to increased organic loading of the system and the apparently related low dissolved oxygen levels characteristic of some parts of the system during warm seasons. It is recommended that future research be directed towards defining key processes governing the ecosystem, with modeling workshops serving as the focus for these research and monitoring programs.

Figure 8. Sample summary.

CONVERSION TABLE

Metric to U.S. Customary		
Multiply	By	To Obtain
millimeters (mm)	0.03937	inches
centimeters (cm)	0.3937	inches
meters (m)	3.281	feet
meters (m)	0.5468	fathoms
kilometers (km)	0.6214	statute miles
kilometers (km)	0.5396	nautical miles
square meters (m ²)	10.76	square feet
square kilometers (km ²)	0.3861	square miles
hectares (ha)	2.471	acres
liters (l)	0.2642	gallons
cubic meters (m ³)	35.31	cubic feet
cubic meters (m ³)	0.0008110	acre-feet
milligrams (mg)	0.00003527	ounces
grams (g)	0.03527	ounces
kilograms (kg)	2.205	pounds
metric tons (t)	2205.0	pounds
metric tons (t)	1.102	short tons
kilocalories (kcal)	3.968	British thermal units
Celsius degrees (°C)	1.8(°C) + 32	Fahrenheit degrees
U.S. Customary to Metric		
inches	25.40	millimeters
inches	2.54	centimeters
feet (ft)	0.3048	meters
fathoms	1.829	meters
statute miles (mi)	1.609	kilometers
nautical miles (nmi)	1.852	kilometers
square feet (ft ²)	0.0929	square meters
square miles (mi ²)	2.590	square kilometers
acres	0.4047	hectares
gallons (gal)	3.785	liters
cubic feet (ft ³)	0.02831	cubic meters
acre-feet	1233.0	cubic meters
ounces (oz)	28350.0	milligrams
ounces (oz)	28.35	grams
pounds (lb)	0.4536	kilograms
pounds (lb)	0.00045	metric tons
short tons (ton)	0.9072	metric tons
British thermal units (Btu)	0.2520	kilocalories
Fahrenheit degrees (°F)	0.5556 (°F - 32)	Celsius degrees

Figure 9. Sample conversion table.

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Figure 10. Sample table of contents.

optional; if included, only the initial letter of the first word is capitalized.

Leaders (....) are typed without a space between the periods. In the camera-ready copy, entries are single-spaced. Double-spacing is used only to separate entries in the main text from those in the front and back matter.

List of Figures

List figures (Figure 11) when there are more than five. For each illustration, give the figure number, figure title as it appears in the report (shortened if necessary and always without parenthetical references to units or bibliographic citations), and page number. Entries are usually double-spaced, but lengthy lists may be single-spaced. If entries are single-spaced, indent runovers two spaces.

List of Tables

The list of tables (Figure 12) is necessary if there are more than five tables. For each table, give its number, title as it appears in the report (shortened if necessary and without parenthetical references to units or bibliographic citations), and page number. If lists of figures and tables are short, place them on the same page. Entries are usually double-spaced, but lengthy lists may be single-spaced. If entries are single-spaced, indent runovers two spaces.

List of Abbreviations and Symbols

Include a list of abbreviations and symbols if there are many nonstandard abbreviations or symbols within the text (Figure 13). List abbreviations and symbols alphabetically (Roman first, then Greek). Define each term when first mentioned in the text, give its abbreviation or symbol in parentheses, and use the abbreviation thereafter in the text.

Acknowledgments

Acknowledgments (Figure 14) recognize key individuals and organizations that significantly contributed to the report. External funding sources should also be mentioned. If several contractors or project officers were involved in preparing the publication, their names should be included in this section rather than on the title page.

MAIN TEXT OR BODY

Headings

Headings provide the author with a framework for the text and alert the reader to a change in subject. Biological Report publications use up to four levels of headings (Figure 15).

FIGURES

<u>Number</u>		<u>Page</u>
1	Revetment on East Nishnabotna River near Red Oak, IA	5
2	Wire retard on Skunk River near Ames, IA	7
3	Permeable steel jetties on Soldier River near Soldier, IA	10
4	Soldier River south of Soldier, IA	13
5	Impermeable rock jetties	15
6	Location of study sites	17
7	Frequency of three predominant game fish by sampling period	53

Figure 11. Sample list of figures.

TABLES

<u>Number</u>		<u>Page</u>
1	Location of bank stabilization structures	19
2	Dates of sampling visits	25
3	Mean and maximum current velocity at control and structure areas	31
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6	Mean number of selected organisms per can sample	37
7	Mean number of invertebrates per can sample	39
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Figure 12. Sample list of tables.

ABBREVIATIONS AND SYMBOLS

ABBREVIATIONS

EC	electrical conductivity
Jtu	Jackson turbidity units
kg/ha	kilogram per hectare
L	liter
meq	milliequivalent
μA	microamperes
r	coefficient of correlation
R ²	coefficient of multiple regression squared
SS	suspended solids
t/ha	metric ton per hectare
TS	total solids
VS	volatile solids

SYMBOLS

C	carbon
Ca	calcium
CH ₄	methane
Yb ₂ O ₃	ytterbium oxide

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Figure 13. Sample list of abbreviations and symbols.

ACKNOWLEDGMENTS

In preparing a comprehensive report such as this profile, it is not possible to mention all the individuals who provided information, guidance, and stimulus. Much of the credit goes to colleagues at Ohio State University and Eastern Michigan University, including Ronald Stuckey, Milton Trautman, Clarence Taft, David Johnson, and Loren Putnam. Students and staff of the F.T. Stone Laboratory at Put-in-Bay and the Ohio Sea Grant Program who helped in researching various aspects of the marsh ecology are Alan Riemer, Andrea Wilson, Gary Kirkpatrick, Mark Hageman, Laura Fay, and Suzanne Hartley. Tim Donnelly of Eastern Michigan University assisted with data collection.

Ted Ladewski of the University of Michigan, Stan Bolsenga of the Great Lakes Environmental Research Laboratory (NOAA), Karl Bednarik of the Ohio Division of Wildlife, Susan Crispin of the Michigan Natural Features Inventory, Brooks Williamson of the U.S. Army Corps of Engineers, Gary McCullough of the Canadian Wildlife Service, Joseph Leach of the Ontario Ministry of Natural Resources, and Bernard Griswold, Thomas Edsall, Bruce Manny, and Don Schloesser of the Great Lakes Fishery Laboratory, U.S. Fish and Wildlife Service, all provided useful information and encouragement.

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Figure 14. Sample acknowledgments.

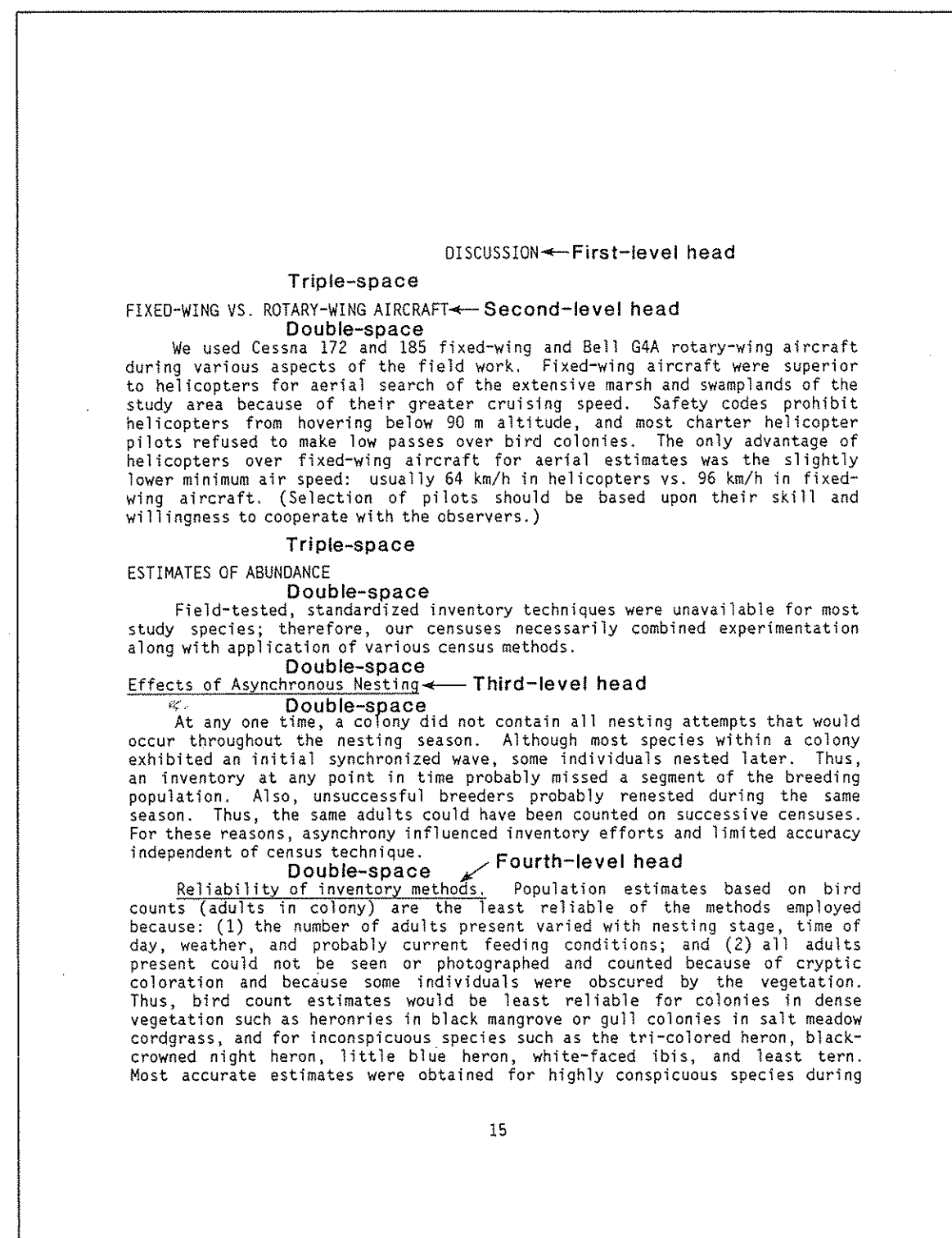


Figure 15. Sample page of text showing four levels of headings.

Numbered headings (Figure 16) can facilitate cross-referencing and are especially helpful in handbooks and procedural manuals that are updated periodically. Letter designations of fourth-level headings are optional. Two spaces are left between the number or letter designation and the heading.

First-level headings. First-level headings include the titles of each major part of a report (e.g., preface, summary, contents, acknowledgments, introduction and other major parts of the body of the report, references, appendixes). This type of heading is centered, typed in capitals, and not underlined. If the title requires more than one line, double-space between the lines. Triple-space between the last line of this heading and the second-level heading or text.

Second-level headings. Second-level headings indicate subordinate topics within major parts of a report. They are typed in all-capital letters, flush with the left margin. Triple-space above second-level headings and double-space between this heading and the following paragraph. If the heading requires two lines, single-space between the lines and type the second line flush left. These lines should be approximately equal in length.

Third-level headings. Third-level headings subdivide material appearing under a second-level heading. Third-level headings are typed in initial capital letters (except conjunctions, articles, and prepositions) and lower-case letters, and are flush left and underlined. Double-space above this heading and between this heading and the following paragraph. If the heading requires two lines, single-space between the lines and type the second line flush left. These lines should be approximately equal in length.

Fourth-level headings. Fourth-level headings are paragraph headings and are indented five spaces. Capitalize the initial letter of the first word and proper nouns and adjectives. The heading itself is underlined, including the period following it. The text follows on the same line.

Running heads. Running heads may be used to indicate the titles of the papers contained in proceedings or other collections of articles that may be reprinted separately. The chapter or section title may be used as a running head in a manual or handbook. In all cases, if the title contains more than 25 characters (including spaces), it should be shortened for use as a running head. The running head is centered on the first line within the image area. Use initial caps on the main words. Double-space between the running head and the text.

Citing References in the Text

In the text, references are cited by giving the author's surname and year of publication (name-and-year system). When there are two authors, list both names. When there are three or more authors, list the senior or first author's name followed by et al.

1. FIRST-LEVEL HEAD

1.1 SECOND-LEVEL HEAD

1.1.1 Third-Level Head

a. Fourth-level head.

"b. Fourth-level head.

1.1.2 Third-Level Head

Figure 16. Format for numbered headings.

"Recent data (Brown 1984) indicate that"

"Recent research results (Purcell and Wells 1985) indicate"

"Investigators (Arnold et al. 1983) reported"

List series of references in chronological order of publication with a semicolon between them. List articles by the same author chronologically with a comma between years. Articles published in the same year are listed alphabetically.

"Several investigators (Zupko 1980; Kerr 1981, 1985; Franks 1984; Robinson 1984) have stated that"

Personal communications and unpublished manuscripts or data should be reported parenthetically in text. Fully identify individuals the first time they are mentioned in the text. If unpublished manuscripts are cited frequently in lengthy reports, for convenience they may appear in the reference section, but should have brackets around the date and the words "Unpubl. MS." as the last element of the citation.

"D.J. Smith (Department of Biology, University of Michigan, Ann Arbor; pers. comm.) stated that" Subsequent references are written as "Recent data (Smith, pers. comm.) indicate that"

"D.J. Smith (Department of Biology, University of Michigan, Ann Arbor; unpubl. MS.) found that"

Manuscripts that have been formally accepted for publication are considered references and should be cited in text as "(Smith, in press)" and in the reference section with the words "In press" followed by a period as the last element in the citation.

Quotations must preserve the intent of the author. Indicate changes in direct quotations by brackets. Indicate omitted material within a sentence by an ellipsis, i.e., three spaced periods (four at the end of a sentence). Long quotations should be set-off from the text by double-spaces and indented 5 spaces from the left margin and 5 spaces from the right margin; quotation marks are not required in this case.

Footnotes to Text

Keep footnotes to a minimum. If possible, incorporate the material into the text or treat it as a reference. If a footnote is necessary, designate it in the text with a superscript Arabic numeral. Number footnotes consecutively throughout the report, including appendixes. Place footnotes at the bottom of the page on which they are referred to in text. Use a 2-inch line (24 spaces) beginning at the left margin to separate footnotes from text. Leave at least one space between the text and the rule. Text footnotes begin with the superscript numeral and are typed flush left, single-spaced. Double-space between

footnotes, as in the following example. Note that table footnotes, described under "Table Composition," follow a different format.

¹Old surface mine royalty: about 5% of coal price at tippie; underground mine royalty: one to two percentage points less. New surface mine royalty: 12.5% of coal price at tippie required by statute; underground: to be determined by Secretary of the Interior, probably about 8%.

²Old due diligence requirement: 2.5% extraction by end of 10th year; new requirement: only 1% by that time, but 40-year total extraction required.

³42 Federal Register 2706 (13 January 1977) proposes rule with exchanges of old and new leases for coal, phosphate, and other minerals.

Credits

If copyrighted material is used in the text, give credit in the preface as well as in a footnote, a bibliographic reference, or the body of the copy. The statement should read as follows:

Reprinted from Title of Publication, Year Published, by Name of Author with permission of Name of Copyright Owner (if different from author).

In tables, credits are part of the title or a footnote. In figures, credits are placed directly under the artwork or in parentheses at the end of the title.

For more details on copyrighted material, consult Chapter 8 in the CBE Style Manual (1983) and Section 7 in the U.S. Fish and Wildlife Service's Research and Development Policy/Procedures Handbook (1985).

Placement of Tables and Figures

Tables and figures should closely follow their first reference in the text and should be combined with the text when possible (Figure 17). When tables or figures are numerous in relation to the text, they may be grouped in numerical sequence at the end of the text or at an appropriate place within the text.

Number tables and figures consecutively using Arabic numerals (e.g., Table 1, Table 2; Figure 1, Figure 2). Unless page balance dictates otherwise, center the number and title two blank lines above the table; center the number and title two blank lines below the figure. The number is followed by a period, two spaces, the title, and a period. Capitalize the first word and any proper nouns or adjectives in the title. If more than one line is required, single-space between lines and type all lines flush left with the word "Table" or "Figure." Titles should not exceed the width of their tables or figures.

2.3.4 Platform Fabrication Yards

Production platforms are installed offshore to support drilling and production operations and to provide crew housing and supply storage (Figure 33). The types of platforms currently in use are fixed-pile platforms, usually made of steel, and gravity platforms, made of steel or concrete and held to the bottom by their own weight supplemented with ballast. Platforms are composed of a superstructure, called the "jacket," and a "deck" for drilling operations, which sits on top of the jacket. They are described in Section 2.2.3, Production Drilling.

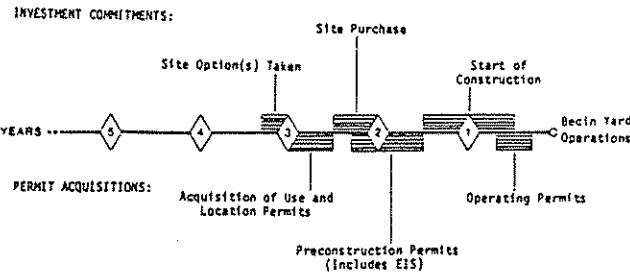


Figure 33. Platform fabrication yard--project implementation schedule.

The fabrication of these immense structures and the platform jackets is done in specialized facilities known as platform fabrication yards. These yards have the highest impact on coastal environments of any onshore facility required by offshore oil and gas development. A fabrication yard requires more land on the waterfront, more heavy industrial materials, and a much larger labor force than any other onshore project. Because of the extensive requirements of a fabrication yard, it will invariably become the nucleus of numerous ancillary service and supply companies--welding supply, marine repair, and heavy equipment sales.

Within the United States, there are four large fabrication yards that receive all the major platform business. Three of these are on the gulf coast, where the bulk of U.S. offshore activity has long been concentrated, and one is on the Pacific coast. Two of the gulf coast yards dominate the U.S. platform fabrication business--Brown and Root, whose yard is near Houston, TX.

Figure 17. Example of a figure combined with text.

When a table requires more than one page (Figure 18), its first page has no ending line (rule) and ends with "(Continued)." The table number, but not the title, appears on subsequent pages. Instead, the word "(Continued)" is typed after the table number on each page except the last, where "(Concluded)" is used (Figure 18). Box heading categories are always repeated.

All tables and figures, including their titles, must fit within the image area. If reduction is necessary, the typing or lettering must be legible, at least 6-point type (This is 6-point type). Titles are never reduced. Large tables may be divided and placed on consecutive pages. Another alternative is to place a table or figure broadside on a page so that the top is to the reader's left (Figure 19). Because of excessive costs, do not use foldouts.

When submitting figures and oversized tables, place the numbered layout page in the proper position, type the number and title or legend on the page, and indicate placement in nonphoto pencil. Mark each item for the desired print size and write the title of the publication, table or figure number, and page number lightly on the reverse side. Indicate the top of illustrations.

When marking photographs, write on a stick-on label and attach to the back of the photograph. Do not attach illustrations to the text with paste, paper clips, or staples. Put all illustrations in a separate package, adequately wrapped and protected from damage, and mark the package with the title of the publication.

Table Composition

In addition to the title and number, tables have (1) headings and subheadings (boxheads) identifying entries in the vertical columns, (2) a left-hand column (stub) identifying the entries on the horizontal lines, and (3) vertical columns (field) containing the data (Figure 20). Horizontal rules separate the parts of a table: a single rule and blank line above the boxhead, a single blank line and rule below the boxhead, and a single blank line are used in the boxhead to separate column headings and subheadings. Vertical rules are not used. Avoid the use of horizontal rules in the stub and field.

Headings are built from the horizontal rule under the heading that requires the most vertical space and are single-spaced. They are typed with an initial capital letter on the first word only. Units of measurement are abbreviated, typed in lowercase letters, set off in parentheses, and centered under the column heading.

If words and phrases are used within the field or stub of a table, only the first word of each entry begins with a capital letter. Within the stub, the first line of each entry is typed flush left; the second line is indented two spaces; and the following lines (if any) are flush left with the second line. When an item in the stub requires more than one line, entries in the field are aligned with the last line of the stub entry.

Table 28. (Concluded)

Bird species	Spring	Summer	Fall	Winter
Swamp sparrow	C	C	C	R
Song sparrow	A	A	A	R

Key to symbols:

A = abundant (present in large numbers)

C = common (certain to be seen but seldom in large numbers)

U = uncommon (present in smaller numbers or not always seen)

D = occasional (seldom seen, present in most years)

R = rare (present only in some years)

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Table 28. Relative seasonal abundances of birds that nest in the Pool 11 to 13 area (from GREAT II 1980e).^a

Bird species	Spring	Summer	Fall	Winter
Double-crested cormorant	C	C	C	R
Great blue heron	C	C	C	R
Green heron	C	C	C	R
Great egret (common egret)	C	C	C	R
Black-crowned night-heron	C	C	C	R
Yellow-crowned night-heron	C	C	C	R
Least bittern	C	C	C	R
American bittern	C	C	C	R
Wilde goose	C	C	C	R
Willet	C	C	C	R
Black duck	C	C	C	R
Green-winged teal	C	C	C	R
Blue-winged teal	C	C	C	R
Wood duck	C	C	C	R
Hooded merganser	C	C	C	R
Red-tailed hawk	C	C	C	R
Broad-winged hawk	C	C	C	R
Bald eagle	C	C	C	R
Sharp-shinned hawk	C	C	C	R
American kestrel (sparrow hawk)	C	C	C	R
Bobwhite	C	C	C	R
Ringed-necked pheasant	C	C	C	R
Gray partridge	C	C	C	R
King rail	C	C	C	R
Virginia rail	C	C	C	R
Corn	C	C	C	R
Common gallinule	C	C	C	R
American woodcock	C	C	C	R
Killdeer	C	C	C	R
Upland sandpiper (upland plover)	C	C	C	R
Spotted sandpiper	C	C	C	R
Solitary sandpiper	C	C	C	R
Rock dove	C	C	C	R
Mourning dove	C	C	C	R
Yellow-bellied cuckoo	C	C	C	R
Black-bellied cuckoo	C	C	C	R
Screech owl	C	C	C	R

(Continued)

60

Figure 18. Example of a continued table.

Table 15. Catch effort^a of three predominant game fish at control and structure areas, summer 1974 (Smith 1986).

Structure type	Structure location	Channel catfish		Black bullhead		Green sunfish	
		Control	Structure	Control	Structure	Control	Structure
Revetment	Maple	0.130	0	0.003	0.110	0.070	0.440
	Iowa	0	0	0	0	0	0
	E. Mishnabotna	0.410	0.840	0.001	0	0	0.002
Permeable jetty	Soldier 1	0	0.040	0.060	0.260	0	0
	Soldier 2	0.070	0.110	0.140	0.980	0	0.050
	E. Mishnabotna	0.310	0.780	0.010	0.010	0.100	0.220
Retard	Skunk	0.030	0.130	0.060	0.140	0	0.100
	W. Mishnabotna	0.340	0.410	0	0	0.010	0
	E. Mishnabotna	0.270	0.160	0.010	0	0.070	0.070
Impermeable Jetty	Iowa	0	0	0	0	0	0
	W. Mishnabotna	0.130	0	0	0	0	0
	E. Mishnabotna	0.820	1.680	0	0	0	0

^aNumber of fish caught per minute of electrofishing.

Figure 19. Example of a table displayed broadside.

Number and title

Table 21. Numbers of round whitefish and other incidental species tagged, and recapture rates in 1982 (Smith 1985).

Stub boxhead		Boxhead	
Stream and species	No. tagged ^a	Recaptures	
		No.	%
Spanner rule			
<hr/>			
Jim River			
Round whitefish ^b	54	3	5.6
Longnose sucker	6	0	0
Northern pike	3	0	0
Burbot	3	1	33.3
Humpback whitefish	1	0	0
	Stub		
Prospect Creek			
Round whitefish ^b	100	4	4.0
Northern pike	2	1	50.0
Longnose sucker	2	0	0
		Field	

- ^aGrayling were not included in the number tagged.
- ^bMost round whitefish were recaptured within 0.31 km of the tagging site.

Figure 20. Table with its parts indicated.

In columns of numbers, align decimals, hyphens indicating ranges, and plus and minus signs. Place zeros in front of decimals for numbers less than 1. The following are examples of properly aligned columns.

25	28.6	42.6	45	to	63	15.4	±	3.9
136	44	128.3 - 130	11.3	to	-10	212	±	26
22,359	9.25	34 - 34	-3	to	6	0.53	±	72.4
294	7.2	252 - 258	-5	to	-2.5	43.7	±	89
4,643	195	11.6 - 16.8	103	to	110	5.8	±	0.75

Footnotes to tables should be arranged in the order in which text is read, from left to right and from top to bottom. Designate footnotes by using lowercase letters (a, b, c) as superscripts. Footnotes should be placed one blank line below the bottom rule of the table, flush left, and single-spaced;

they may extend the full width of the table. Close each footnote with a period. Single-space between table footnotes.

For more details on table composition, see pages 74-80 of the CBE Style Manual (1983).

Figure Composition

When illustrating a report, various forms of artwork, including photographs, charts, line drawings, maps, and graphs, should be considered. For example, a photograph might better show a particular habitat type, but a line drawing would better illustrate the relationship of biological communities within the habitat.

Select photographs that are sharp in focus and have good contrast. Submit glossy black-and-white prints measuring 8 x 10 inches or 5 x 7 inches. Crop or mask photographs to eliminate insignificant details and unnecessary border frames. Indicate extraneous areas with a waxed pencil or an overlay, a sheet of thin paper laid over the print and taped to the reverse side. Use the cropped image area measurements for any sizing that is required. At no time mark or mar the face of a photograph.

Line art, including drawings, charts, maps, and graphs, should be kept simple to ensure legibility. When using patterns of lines, dots, stippling, or cross-hatching, avoid those that are too coarse, excessively fine, or distracting. Do not use large areas of solid black. Submit the originals of graphs and other line drawings, or glossy photographic prints that have sharp, precise lines, letters, and symbols.

Use white drawing paper, vellum, graph paper, or paper with a ruled grid. The curves should be the heaviest lines on the graph; the grid lines, the finest. Letters and numerals should be of medium thickness. Use capital letters (except for units of measurement) in a sans serif type. All letters should be at least 6 points in size (after reduction) to fit in the image area. The same type of lettering should be used in all illustrations in a report.

Whenever data permit, draw several curves on one graph. Use a different kind of line (solid, dotted, dashed) for each curve, or plot each point with a different symbol (dots, circles, squares, triangles). Label each curve or include a key on the graph (Figure 21).

BACK MATTER

References or Literature Cited

List references or citations in a separate section following the body of the report (Figure 22). A list of references includes works that are cited and uncited, published and unpublished: works referenced throughout the report, closely related work, background material, and publications offering

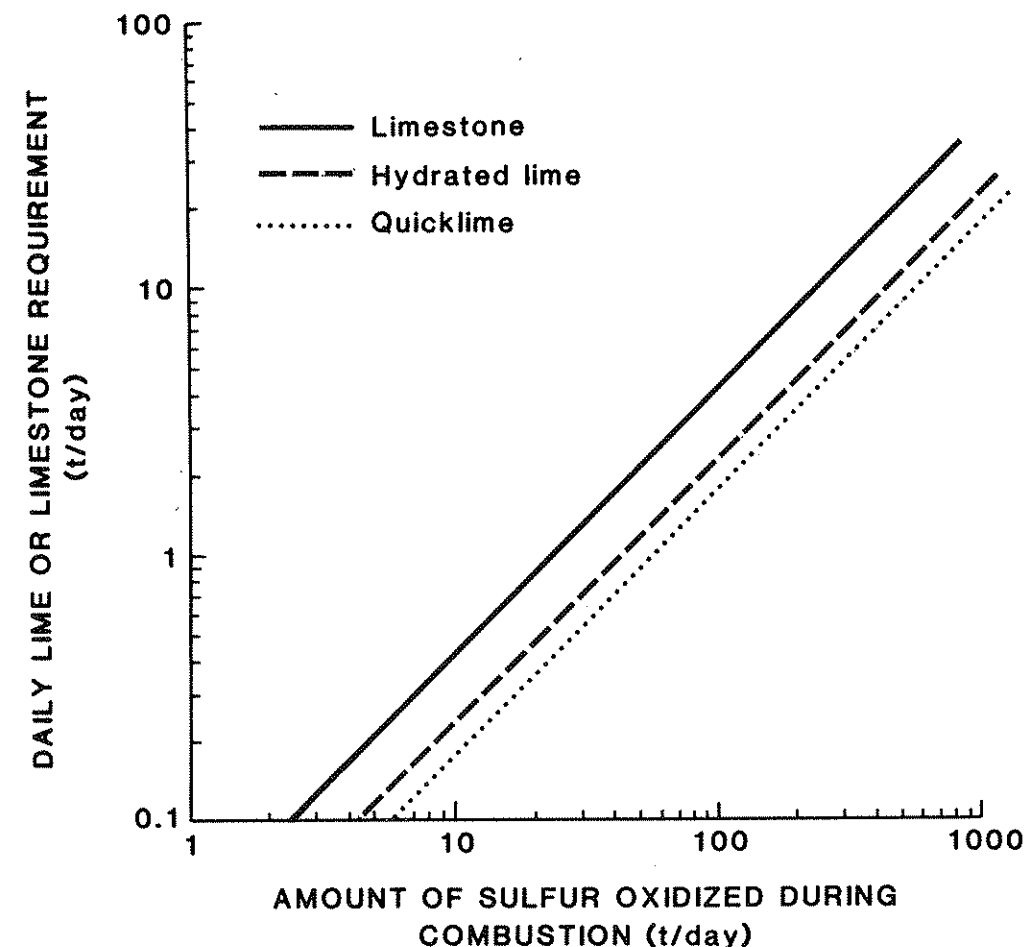


Figure 21. Example of a three-curve graph with key.

additional information. A literature cited section includes only published materials actually cited in the report.

List entries alphabetically by author's name. Multiple listings for the same author(s) are arranged chronologically by year of publication. If there are multiple entries for the same author in a given year, they are listed alphabetically by title (unless logic dictates otherwise, e.g., Part 1 before Part 2), and lowercase letters (a, b, c) are placed after the year of publication, e.g., 1986a.

Bibliographic format and style of the Biological Report series are largely based, with some modification, on the third edition of the CBE Style Manual (Council of Biology Editors 1972), with journal or series titles abbreviated

REFERENCES

- Teal, J.M. 1962. Energy flow in the salt marsh ecosystem of Georgia. *Ecology* 43:614-624.
- Teal, J.M. 1965. Nesting success of herons and egrets in Georgia. *Wilson Bull.* 77:257-263.
- Teal, J.M. The role of one salt marsh in coastal productivity in Productivity, pollution and policy in the coastal zone. *Proc. Conf. in Rio Grande, Brazil.* In press.
- Teal, J.M., and R. Howarth. 1983. Oil spill studies: a review of ecological results. *Environ. Manage.* 8:27-44.
- Teal, J.M., and J. Kanwisher. 1966. Gas transport in the marsh grass, *Spartina alterniflora*. *J. Exp. Bot.* 17:355-361.
- Teal, J.M., and W. Wieser. 1966. The distribution and ecology of nematodes in a Georgia salt marsh. *Limnol. Oceanogr.* 11:217-222.
- Teal, J.M., I. Valiela, and I. Berlo. 1979. Nitrogen fixation by rhizosphere and free-living bacteria in salt marsh sediments. *Limnol. Oceanogr.* 24: 126-132.
- Teal, J.M., A. Giblin, and I. Valiela. 1982. The fate of pollutants in American salt marshes. Pages 357-366 in B. Gopal, R.E. Turner, R.G. Wetzel, and D.F. Whigham, eds. *Wetlands: ecology and management.* *Proc. First Int. Wetlands Conf., New Delhi, India.* September 1980.
- Tippins, H.H., and R.J. Beshear. 1971. On the habitat of *Haliopsis spartinae* (Comstock) (Homoptera: Diaspididae). *Entomol. News* 82:165.
- Turner, R.E. 1976. Geographic variations in salt marsh macrophyte production: a review. *Contrib. Mar. Sci. Univ. Tex.* 20:47-68.
- Turner, R.E. 1977. Intertidal vegetation and commercial yields of penaeid shrimp. *Trans. Am. Fish. Soc.* 106:411-416.
- Valiela, I. 1982. Nitrogen in salt marsh ecosystems. Pages 649-678 in E.J. Carpenter and D.G. Capone, eds. *Nitrogen in the marine environment.* Academic Press, New York.

Figure 22. Sample list of references.

according to the latest Serial Sources for the BIOSIS Data Base.¹ If a title is not listed in BIOSIS, an abbreviated title may be constructed by using the latest International Standard Documentation--International List of Periodical Title Word Abbreviations.

Some examples of the most common bibliographic formats are given in Figure 23.

Appendixes

Appendixes are designated by capital letters (e.g., Appendix A, Appendix B). If a report has only one appendix, however, it should be designated "Appendix." Appendix pages are numbered continuously with the main text of the report, unless the report uses a handbook style of pagination, in which case, the pages are numbered with the appropriate appendix letter and page number (e.g., A-1, A-2, B-1, B-2).

Appendixes should contain related or additional material necessary for completeness yet too detailed for inclusion in the text (e.g., sample calculations; mathematical derivations; samples of forms, figures, and tables; descriptions of tests or equipment; extensive lists of species). This material should be kept to a minimum and should always be referenced in the text; for example, "Additional data are given in Appendix A." Appendixes may be (1) bound with a report as paper or microfiche, (2) issued separately but simultaneously with a report either in equal numbers or in a limited edition, or (3) published later to add information acquired after the report was issued.

Number tables and figures in appendixes sequentially, with Arabic numerals preceded by the letter designation of the appendix (e.g., Table A-1, Figure A-1). Requirements for tables and figures in the main text are also applicable to those in the appendixes.

When appendixes are bound with the text, their references are inserted among the references at the end of the main text. The first reference citation in the text of each appendix should be footnoted, explaining this arrangement.

When appendixes are bound separately, they may require a title page, table of contents, or other type of front matter, as well as a list of references.

Glossary

Use a glossary to explain technical terms or to specify the way terms with more than one meaning are used in a particular publication (Figure 24). A glossary follows the references unless the glossary is only one page, in

¹The radical changes in placement and punctuation that CBE introduced in its fourth edition and continued in its fifth have generally not been accepted by the natural resources community.

Book

Ricklefs, R.E. 1973. Ecology. Chiron Press, Newton, MA. 861 pp.

Baugh, A.C., and T. Cable. 1978. A history of the English language, 3rd ed. Prentice-Hall, Inc., Englewood Cliffs, NJ. 438 pp.

Article or chapter in a book

Link, G.K.K. 1982. Bacteria in relation to plant diseases. Pages 590-606 in E.O. Jordan and I.S. Falk, eds. The newer knowledge of bacteria and immunology. University of Chicago Press, IL.

Article in a journal

Losee, E. 1979. Relationship between larval and spat growth rates in the oyster *Crassostrea virginica*. Aquaculture 16(2):123-126.

Schimmel, S.C., and A.J. Wilson, Jr. 1977. Acute toxicity of kepone to four estuarine animals. Chesapeake Sci. 18:224-227.

Thesis or dissertation

Waddell, J.E. 1964. The effect of oyster culture on eelgrass (*Zostera marina*) growth. M.S. Thesis. Humboldt State University, Arcata, CA. 48 pp.

Whiting, M.C. 1983. Distributional patterns and taxonomic structure of diatom assemblages in Netarts Bay, Oregon. Ph.D. Dissertation. Oregon State University, Corvallis. 138 pp.

Article or book in press

Simmons, R.T. Fish production in the sea. Arlington Publishing Co., Chicago, IL. In press.

Unpublished manuscript

Jones, A.C. [1984.] Effects of noise on spiny lobsters (*Panulirus argus*) in aquaria. National Marine Fisheries Service, Miami, FL. 25 pp. Unpubl. MS.

Figure 23. Examples of the most common bibliographic formats.

GLOSSARY

Alfisols - Mineral soils that have no mollic epipedon, oxic, or spodic horizon, but do have an argillic or natric horizon that is at least 35% base saturated. Most soils classified as Gray-Brown Podzolic, Noncalcic Brown, and Gray Wooded in the old classification system belong in this order.

alluvial soil - A soil developing from recently deposited alluvium and exhibiting essentially no horizon development or modification of the recently deposited materials.

argillic horizon - A diagnostic illuvial subsurface horizon characterized by an accumulation of silicate clays.

association - Floristically and usually geographically distinct, but physiognomically similar and ecologically related.

bog - A tract of land with congested drainage where several layers of peat have accumulated.

bog soil - A great soil group of the intrazonal order and hydromorphic sub-order. Includes muck and peat. (See Histisols.)

boreal - Of high latitudes, more or less coincident with the needle-leaf forest formations.

bottomlands - Low land along a river which is seldom covered by standing water. (See Flood plain.)

climax - Barring disaster or a change in climate, the climax community may continue indefinitely because individuals that are lost for any reason are replaced by their own progeny.

community - An aggregation of living organisms having mutual relationships among themselves and with their environment.

dominant - Those individuals of the community that form the upper stratum of plants that control and characterize the community.

Entisols - Soils that have no natural genetic horizons or only the beginning of such horizons. Typified by Grumusols in the old classification system.

epipedon - A diagnostic surface horizon that includes the upper part of the soil that is darkened by organic matter, or the upper eluvial horizons, or both.

flooding - Covering the soil surface and part of the stem with water.

flood plain - The land bordering a stream, built up of sediments from overflow of the stream and subject to inundation when the stream is at flood stage.

Histisols - Soils characterized by their high organic matter content. Bog soils and half-bog soils are included in this soil order.

Figure 24. Sample glossary.

which case, it is placed in the front matter, after the list of abbreviations and symbols.

All terms, except proper nouns and proper adjectives, should be lowercase. Entries are typed single-spaced, flush left, with runovers indented four spaces. Definitions are separated from terms by a space, a hyphen, and another space.

Index

Include an index when the publication is lengthy and quick access to specific topics is desirable (Figure 25). Use a two-column format. All entries, except proper nouns and proper adjectives, should be lowercase. Main entries are typed flush left in a column, with runovers indented four spaces. Subentries are indented two spaces, and sub-subentries are indented four spaces. Entries are separated from page citations by a comma and a space. Individual index entries beginning with the same letters should be single-spaced. Separate citations beginning with different letters of the alphabet with three spaces. For further detail, consult Chapter 11, CBE Style Manual (1983).

NTIS Report Documentation Page

Authors fill out the NTIS Report Documentation Page (Figure 26) in accordance with the instructions issued by the National Technical Information Service. The form is bound in the back of the publication.

STYLE

SPELLING

The primary authority for spelling and hyphenation of words is the GPO Style Manual (GPO 1984a, pp. 63-72). For forms not appearing in the GPO manual, use Webster's Third New International Dictionary, Unabridged (1971). Some preferred spellings in GPO include "acknowledgments," "judgment," "mollusk," "modeler," "esthetic," and "gauge." Most biologists do not follow GPO on "crawfish" and use "crayfish" instead.

Some common spelling problems include distinguishing "phosphorous" (adj.) and "phosphorus" (noun), "mucous" (adj.) and "mucus" (noun), and the proper use of "physicochemical" versus "physiochemical" and "sewage" versus "sewerage."

CAPITALIZATION

Follow capitalization rules given in the GPO Style Manual, pp. 23-61. Some common problems are discussed below.

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Figure 25. Sample index.

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4. Title and Subtitle	5. Report Date		6.
7. Author(s)	8. Performing Organization Rept. No.		
9. Performing Organization Name and Address	10. Project/Task/Work Unit No.		
	11. Contract(C) or Grant(G) No. (C) (G)		
12. Sponsoring Organization Name and Address	13. Type of Report & Period Covered		
	14.		
15. Supplementary Notes			
16. Abstract (Limit: 200 words)			
17. Document Analysis a. Descriptors			
b. Identifiers/Open-Ended Terms			
c. COSATI Field/Group			
18. Availability Statement	19. Security Class (This Report)	21. No. of Pages	
	20. Security Class (This Page)	22. Price	

(See ANSI-Z39.18) See Instructions on Reverse

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

Figure 26. NTIS Report Documentation Page.

- The official designations of countries, national domains, and their principal administrative divisions are capitalized only if used as part of proper names, as proper names, or as proper adjectives (United States: the Republic, the Nation, the Government, Federal, Federal Government; New York State; the State, a State [first-rank political subdivision]; State abbreviations).
- A descriptive term used to denote a definite region, locality, or geographic feature is a proper name and is therefore capitalized (North Atlantic States, Central States, Far Western States, Eastern United States, the West, the Midwest, the Continent, the Western Hemisphere). The "gulf coast," however, is used when the Gulf of Mexico has previously been discussed. Pacific Coast States may be used, but "coast" is lowercase in most other uses (Pacific coast, the east coast).
- Only proper names in common names of species are capitalized. For reports dealing primarily with birds, however, capitalize common names of birds in accordance with the check-list of the American Ornithologists' Union (1983).

COMPOUND TERMS

Follow the GPO Style Manual on compound words and the use of prefixes and suffixes (pp. 73-116). Some common problems follow:

- Write as one word those formed by adding a prefix to the base element (after, anti, counter, de, non, pre, pro, re, semi, sub, super, under, un) or suffix (able, fold, ful, ize, less, like, ment, most, wise).
- Except after short prefixes (co, de, pre, pro, and re), which are printed solid (e.g., deemphasize), use a hyphen to avoid doubling a vowel or tripling a consonant (anti-inflation, intra-abdominal, semi-ionic, shell-like, hull-less).
- Use a hyphen when prefixes are duplicated (sub-subcommittee, super-superscript).
- Use a hyphen when the base element begins with a capital letter (mid-May, pro-French, un-American, but transatlantic).
- Use a hyphen with the prefixes "ex," "self," and "quasi" (ex-president, self-educated, quasi-governmental).
- Use a hyphen when the word form could easily be confused with another word (re-cover, recover; re-treat, retreat; un-ionized, unionized).
- Use a hyphen or hyphens when the prefix governs two or more words (non-civil-service job, anti-hog-cholera serum).

- Use a hyphen before "like," if the base element ends in "ll" or is a proper name (bell-like, Mediterranean-like) or is unusually long or unrecognizable (rhinoceros-like).

PUNCTUATION

For punctuation rules, see the GPO Style Manual, pp. 117-134. Some common problems follow:

- Use a comma after each member within a series of three or more words, phrases, letters, or numerals ending with a single "and," "or," or "nor" (birds, fish, and plants).
- Use a comma before the conjunction separating independent clauses in a compound sentence (Crustaceans were plentiful in the rivers, and turtles frequented the shore).
- Do not use a comma when a subject has two verbs connected by "and" (Species abundance is summarized and is further sorted by salinity type and habitat type).
- Use a semicolon to separate clauses containing commas if clarity is needed (Gallinaceous birds grind up the hardest seeds; reptiles, amphibians, and predatory mammals swallow their prey whole or in large pieces; and waterfowl take shellfish entire).
- Use parallel construction in all items when using bullets to present a series of brief points. Begin phrases with a lowercase letter and close the series with a period at the end of the last item only. Begin complete sentences with a capital letter and close each sentence with the appropriate punctuation mark.
- Underline or italicize scientific names of species; names of aircraft, vessels, and spacecraft; and titles of books in text (but not in the bibliography). Underline each word separately and do not underline the spacing between words (e.g., Cancer magister). Do not italicize commonly used foreign words or abbreviations (et al., in situ, versus, e.g., i.e., etc.).
- Indicate dashes in typewritten copy by two hyphens without spacing (They developed a model--a depiction of energy relationships).
- Do not space between abbreviations of two or more letters followed by periods (U.S. Fish and Wildlife Service; J.R. Robertson, Ph.D.).
- Place commas and periods that follow quoted material inside the quotation marks, whether or not they are part of the quotation.

L.R. Dean revised her paper, "Technology and Natural Resource Management," which she will deliver at the symposium, "Decisionmaking in the Eighties."

- Use ellipses (spaced periods) to indicate omitted words within quoted materials: three spaced periods within a sentence, four spaced periods at the end. Ellipses are normally not needed when the use of lowercase letters already implies omitted material.

"Science writers . . . must consider whether their meaning will be clear"

Smith stated that science writers "must consider whether their meaning will be clear to students of literature."

NUMERALS

Some general rules for the use of numerals follow. For greater detail, consult the GPO Style Manual, pp. 165-171.

- Use numerals for a single number of 10 or more (50 books, 10 pencils, 20 sheep).
- Use numerals for all items in a series containing some numbers of 10 or more and some of less than 10 (3 cars, 5 trucks, and 12 buses).
- Use numerals for numbers under 10 that are partly fractional (1.5 points).
- Use numerals with standard units of measure (5 mm, 10 km), time (5 h, 12 yr, 5 min 30 s), dates (June 1956, 23 June 1963), money (\$3.50, 75 cents per person, \$5 million), page designations (page 568, page 6), decimals (0.25 cm, 3.6 g), percentage (25%, 12 percentage points), clock time (1030 h, 0630 h), mathematical expressions (a factor of 3, 25 divided by 5), proportions (ratio of 1 to 5, 1:10 scale), abbreviations that are not units of measure (Vol. 1, Ch. 1), and age (7 years old, the 7-year-old, at age 2).
- Use numerals for ordinal numbers of 10 or more (10th, 50th, 25th); in a series containing some ordinal numbers of 10 or more and some of less than 10, use numerals for all ordinal numbers (1st, 4th, and 12th chapters).
- Use a comma with numerals larger than three digits (1,000; 736,000).

Do not use numerals in the following cases.

- Spell out numerals at the beginning of a sentence (Five years ago . . .).
- Spell out numerals from one through nine (six chairs, two doors), except as indicated above.
- Spell out numerals of less than 100 preceding a compound modifier containing a figure (twelve 6-inch boards, three 4-ft rods).

- Spell out indefinite expressions (in his twenties, a million reasons). Words such as "about," "around," and "approximately" are not considered indefinite expressions, nor are expressions such as the "1960's."
- Spell out fractions standing alone or if followed by "of a" or "of an" (one-tenth, one-half of a pie).

ABBREVIATIONS AND SYMBOLS

An abbreviation is a shortened form (generally not more than four letters) of a word or phrase (h, yr, rpm). An acronym is a type of abbreviation that is formed from the first letters of words in a series (Research Information Bulletin, RIB). The plural of an acronym is formed by adding "'s" (RIB's). Symbols may include standardized signs (Δ , \rightarrow , %) and letters (Pb for lead).

Abbreviations of standard units of measure may be used whenever they follow a number. Use the same abbreviation for the plural as for the singular (1 g, 3 g), and do not use a period. Abbreviate compound terms without periods or spaces between the parts (ppm, dpm). Spell out the word "inch," however, even after a number (1 inch, 3 inches) because the abbreviation "in" may be confused with the word "in." Spell out units that follow a spelled-out number. For example, "Ten feet is the clearance for the bridge." Also, spell out acres and English tons (metric tons are written as tonne or t).

Abbreviations for other than commonly used terms should be used with discretion. All but common abbreviations should be defined the first time they are used. The abbreviation should be given parenthetically following the definition as in "deoxyribonucleic acid (DNA)" and "parts per thousand (ppt)." When necessary, abbreviations can be defined in a table, footnote, or figure title. If abbreviations are numerous, list them in the front matter (Figure 13).

Write out chemical names in the text when using them in a general sense (e.g., "Carbon compounds were studied."). The symbols for chemical names (e.g., C, S, N) may be used in tables and figures.

State names, when used without the name of a city, should be written out. Abbreviate State names when preceded by a city; use the two-letter postal designation (CO, AL, MA).

Consistency in usage and style of abbreviations is mandatory. It is permissible to spell out words in the text and to abbreviate the same words in the tables and figures. The form adopted for the text, however, must be used consistently. For example, do not use "30 parts per million" in one place in the text and use "30 ppm" in another.

Some symbols, such as % and \$, are "bumpers" and are repeated when a range is given: \$5,000-\$10,000; 5%-10%. The temperature degree sign, however, bumps the abbreviations for Celsius or Fahrenheit, not the numeral: 5-10 °C.

For further details on abbreviations and symbols refer to the GPO Style Manual, pp. 135-160.

MEASUREMENT AND TIME

Metric System

Use the metric system of measurements whenever possible. Customary or English equivalent units may be expressed parenthetically after the metric units or in a table of equivalents. When legal description or requirements are given in customary units (e.g., a law specifies dredging to 6 ft), the report should use the same units.

Decimal System

Use the decimal system, not fractions (0.25, not $\frac{1}{4}$; 3.5, not $3\frac{1}{2}$). Non-metric measurements and fractions may be used where they are the convention (e.g., printing and publishing, fishing gear).

In writing numbers of less than 1, place a 0 before the decimal point (0.25). Omit the 0 after a decimal point unless an exact measurement is being indicated (10, not 10.0). Retain no more digits to the right of the decimal point than are required for precision.

Time

Use the 24-h time system, which is written in four digits--the first two for hours and the last two for minutes. The day begins at midnight, 0000, and the last minute is 2359. Thus, 0630 is the same as 6:30 a.m., 1200 stands for noon, and 2345 means 11:45 p.m. For further details on measurement and time, consult the GPO Style Manual, pp. 166-168. For dates, use the day-month-year method (12 January 1987).

EQUATIONS AND FORMULAS

Simple formulas should be treated as part of the text. Do not break a formula in the text at the end of a line. If necessary, begin the formula on the next line. Type simple fractions on one line by using a diagonal line and parentheses to avoid ambiguity. See the 1983 CBE Style Manual, p. 29, for recommended forms of notation.

Complete formulas and equations should be displayed on separate lines, centered, with two lines of space above and below. Two or more equations in series should be aligned on the equal signs and centered on the longest equation in the group. Figure 27 shows an example of a page with equations.

Equations are numbered consecutively with Arabic numerals in the order of their presentation in the text and appendixes. The equation number is enclosed in parentheses and placed in the right-hand margin, aligned with the last line of the equation if space permits.

The number of survivors of all sources of mortality at time (t) can be calculated using the simple exponential equation:

$$N_t = N_0 e^{-kt} \quad (1)$$

where N_0 = initial number

N_t = number left at time t

k = instantaneous rate of total mortality

The value of k can be subdivided into natural mortality (m) and entrainment mortality (p) such that:

$$k = m + p$$

Therefore, without the operation of the intake, Equation (1) becomes:

$$N_{1t} = N_0 e^{-mt} \quad (2)$$

With the operation of the intake, Equation (1) becomes:

$$N_{2t} = N_0 e^{-(m+p)t} \quad (3)$$

The fractional reduction in the number at time t when intake is operating is then given by:

$$1 - \frac{N_{2t}}{N_{1t}} = 1 - \frac{N_0 e^{-(m+p)t}}{N_0 e^{-mt}} \quad (4)$$

If an equation or a mathematical expression must be divided, break before a sign of operation. Care should be taken to ensure that a break does not occur within a term unit. The parts are balanced as closely as possible.

The GPO Style Manual (p. 156) gives examples of formulas indicating horizontal alignment, enclosure of expressions, subscripts and superscripts, and spacing.

SCIENTIFIC NAMES

Latin names of a species or subspecies are underlined or printed in italics and enclosed in parentheses (Anas strepera) following the common name the first time it is used in a publication. Abbreviations of genus names (A. strepera) are acceptable after the full name has been given, but abbreviations should never begin a sentence.

If parentheses are not used, commas must separate the specific common name from the Latin name; no commas are used to separate a general term from a Latin name:

They are studying the gadwall, Anas strepera.

They are studying the waterfowl Anas strepera.

If there are many Latin names, they may be listed separately in a table or appendix.

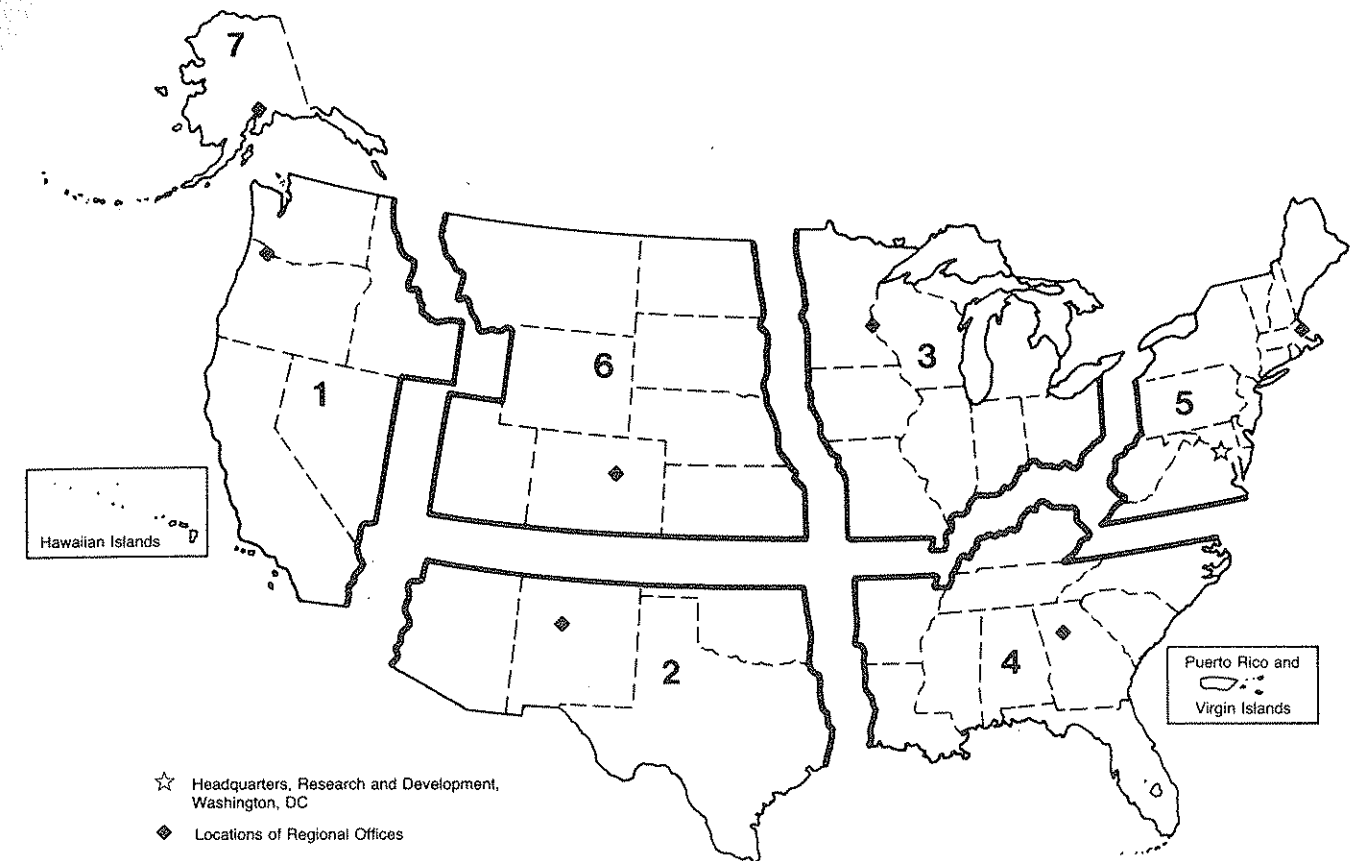
Figure 27. Example of a page with equations.

REFERENCES

- American Ornithologists' Union. 1983. Check-list of North American birds, 6th ed. American Ornithologists' Union, Washington, DC. 877 pp.
- Biological Services Program. 1979. Communication standards: guidelines for format and style. Appendix D in Five-step BSP process for ecological information and technology management. U.S. Fish and Wildlife Service, Washington, DC. v.p.
- BioSciences Information Service. 1986. Serial sources for the BIOSIS data base. Philadelphia, PA. 386 pp.
- CBE Style Manual Committee. 1983. CBE style manual: a guide for authors, editors, and publishers in the biological sciences, 5th ed. rev. Council of Biology Editors, Inc., Bethesda, MD. 324 pp.
- Council of Biology Editors. 1972. CBE style manual, 3rd ed. American Institute of Biological Sciences, Washington, DC. 297 pp.
- International standard documentation--international list of periodical title word abbreviations, ISO 833-1974. 1974. American National Standards Institute, New York. 38 pp.
- U.S. Government Printing Office. 1984a. United States Government Printing Office style manual, rev. ed. Washington, DC. 479 pp.
- U.S. Government Printing Office. 1984b. Word division, 8th ed. Supplement to United States Government Printing Office style manual. Washington, DC. 218 pp.
- U.S. Army Engineer Waterways Experiment Station. 1975. Guide for preparation of Waterways Experiment Station technical-information reports, 2nd ed. Vicksburg, MS. 52 pp. + appendixes.
- U.S. Environmental Protection Agency. 1976. Handbook for preparing office of research and development reports. Washington, DC. 32 pp.
- U.S. Fish and Wildlife Service. 1985. Research and Development policy/procedures handbook. Washington, DC. v.p.
- Webster's third international dictionary of the English language, unabridged. 1971. G. & C. Merriam Company, Springfield, MA. 2,662 pp.

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