A Call for Mini-Reviews: An Effective but Underutilized Method of Synthesizing Knowledge to Inform and Direct Fisheries Management, Policy, and Research

M.R. Donaldson

Ph.D. Candidate, Pacific Salmon Ecology and Conservation Laboratory, Centre for Applied Conservation Research and Department of Forest Sciences, University of British Columbia, Vancouver, British Columbia, Canada, V6T 1Z4

D. D. Aday

Associate Professor, Fisheries Ecology and Aquatic Sciences Laboratory, Department of Biology, North Carolina State University Raleigh, North Carolina 27695-7617, USA

S. J. Cooke

Associate Professor and Canada Research Chair, Fish Ecology and Conservation Physiology Laboratory, Ottawa–Carleton Institute of Biology, Carleton University, Ottawa, Ontario, Canada K1S 5B6

ABSTRACT: *Remaining current on emerging research in fisheries science is challenging. While review articles are often a go-to resource for managers and researchers alike, reviews in certain fisheries science subdisciplines are either dated or simply do not exist. Although there are a number of journals that publish lengthy reviews on topics relevant to fisheries, these are not always accessible and may not be read by managers, policymakers, and legislators. To address these concerns, there is a need for direct, concise, and timely review articles that tackle emerging issues (i.e., mini-reviews). Reviews of this type are rarely published in American Fisheries Society journals or fisheries journals in general, despite the fact that they have been widely successful and influential (in terms of both academic measures of research "impact" and in affecting change in management and policy) in ecological and conservation journals. We provide suggestions for developing high-quality mini-reviews and propose that Fisheries is an ideal outlet for these short and timely articles aimed at reaching a broad, multidisciplinary audience, including scientists, managers, policymakers, legislators, and other stakeholders.*

Mini-artículos de revisión: un método efectivo pero subutilizado para sintetizar el conocimiento e informar y dirigir el manejo, la política y la investigación en pesquerías

RESUMEN: la vigencia del conocimiento de la nueva investigación en pesquerías representa un desafío. A pesar de que los artículos de revisión son una fuente obligada tanto para los manejadores como para los investigadores, en ciertas sub-disciplinas de la ciencia pesquera las revisiones son obsoletas o simplemente no existen. Si bien hay varias revistas que publican extensas revisiones en tópicos relevantes para las pesquerías, éstos no siempre son accesibles y pueden pasar desapercibidos por los manejadores, políticos y legisladores. Para atender estos problemas, existe la necesidad de producir artículos de revisión directos, concisos y oportunos que aborden temas emergentes (i.e. mini-artículos de revisión). Las revisiones de este tipo son rara vez publicadas por las revistas de la Sociedad Americana de Pesquerías pese a que han sido muy exitosas y trascendentes (en términos tanto de medida académica del impacto de la investigación como en la afectación en cuanto a cambios en el manejo y la política pesquera) en las revistas de ecología y conservación. Se hacen sugerencias para desarrollar mini-artículos de revisión de alta calidad y se propone la revista Fisheries como un sustrato ideal para este tipo de artículos cortos y oportunos, dirigidos a audiencias amplias y multidisciplinarias que incluyen científicos, manejadores, políticos, legisladores y otros interesados.

Introduction

The knowledge base in fisheries science and management is expanding rapidly, continually becoming more integrative and multidisciplinary (Stephenson and Lane 1995). While the generation of vast quantities of information for scientific literature is exciting, it also presents a challenge to fisheries scientists and managers wishing to stay abreast of the latest developments in their fields. Journal proliferation, globalization of scientific information exchange, and increased accessibility of grey literature result in a continually expanding literature base. We propose that mini-reviews, which we define as short, tightly focused, synthetic articles, could be a primary means of conveying information associated with new or developing fields that would reach a broad readership of managers and researchers through a general, widely read, and accessible journal such as *Fisheries*. Herein, we provide some concepts to consider when writing mini-reviews, and we make a call for considering *Fisheries* as a primary outlet for such papers.

What is a Mini-Review and Why Write One?

The primary purpose of traditional literature reviews is to synthesize and simplify expansive fields of study. Their function is to provide readers with a synthesis of current information,

to identify knowledge gaps, and to suggest directions for future research. Traditional review articles can take many forms, including descriptive (i.e., summarizing research or developing case studies) or quantitative (i.e., assessing numerical trends in the literature). They tend to be systematic, using reproducible methods to identify, synthesize, and critically review past and present knowledge on a subject. Mini-reviews follow the same format but tend to be more concise and direct, either focusing on very specific content or providing broad general overviews on rapidly developing or emerging topics. Consequently, mini-reviews tend to be shorter (i.e., 3,000–4,000 words) than traditional reviews, which can be expansive in both breadth and length, at times exceeding 25,000 words. Mini-reviews are currently being published by other ecological journals (e.g., *Ecology Letters*, *Trends in Ecology and Evolution*, *Frontiers in Ecology and Environment*, *BioScience*, *Conservation Letters*), yet mini-reviews are not actively solicited by fisheries publications (Table 1).

Both traditional review articles and mini-reviews may be written for many reasons, including providing context for a graduate thesis, synthesizing knowledge to provide management advice, identifying and critically reviewing research methods, identifying new sources of information, or simply for the sake of scientific inquiry (Fink 2004; Figure 1). Writing either descriptive or quantitative review articles may be a valuable exercise for scientists regardless of career stage. Mini-reviews may be a more feasible option for authors who do not have the time to undertake a full-breadth traditional review but still wish to contribute a synthesis article to their field. Graduate students may undertake mini-review articles to develop a conceptual framework for their thesis research and gain valuable knowledge and writing experience; established researchers may do so to provide context for grant applications or to weave together themes from research programs (Figure 1). In any case, the result is a concise, synthetic article that can be useful to researchers, managers, and policymakers.

TABLE 1. Contrasting fisheries science journals that publish reviews but have no provisions for mini-reviews with those from other disciplines that encourage the submission of mini-reviews.

Journal Name	Publisher	Journal Scope	Length of Review Papers	Review Scope
Fisheries science journals with no provision for mini-reviews				
Fish and Fisheries	Blackwell-Wiley	Primarily publishes review papers including perspective articles	Contributions should not ordinarily exceed 40 pages (10,000 words) but longer articles will be considered	Aims to publish review articles and articles that make new syntheses of old or synoptic, long-term data, introduce fresh concepts or theory, or briefly outline preliminary ideas or new ideas Though *Fish and Fisheries* aims to enable the wider consideration of significant and sometimes controversial issues, their ethos is one of impartiality and nonpartisanship
Journal of Fish Biology	Blackwell-Wiley	Aims to publish one or two review papers in each issue; have a special review editor whom authors are encouraged to consult prior to submission	Up to 30 printed pages of the journal	Reviews should be concise, critical, and creative. They should seek to stimulate topical debate and new research initiatives
Reviews in Fish Biology and Fisheries	Springer-Verlag	Primary focus on review articles	No limit on page numbers, words, references, tables, or figures	A quarterly international journal that publishes review articles on varied aspects of fish and fisheries biology. Coverage can include articles on any field of fish biology where the emphasis is placed on adaptation, function, or exploitation in the whole organism
Reviews in Fisheries Science	Taylor & Francis	Only publishes critical review papers	No limit on page numbers, words, references, tables, or figures	The sheer amount of literature produced in fisheries science often makes it hard to identify new concepts and judge the significance of new information. One of the principal objectives of *Reviews in Fisheries Science* is to make these assessments and judgments. The journal publishes only those critical reviews that present the latest, most significant developments in your field

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TABLE 1 (continued). Contrasting fisheries science journals that publish reviews but have no provisions for mini-reviews with those from other disciplines that encourage the submission of mini-reviews.

Journal Name	Publisher	Journal Scope	Length of Review Papers	Review Scope
Journals from other disciplines that encourage mini-reviews				
Bio-science	BioOne	Publishes overview articles, which are essentially mini-reviews. Also publishes themed sections, which are compilations of overview articles	Cannot exceed 6,500 words or 20 double-spaced pages (excluding figures, tables, and references) and can contain no more than 60 references	Overview articles include background information for biologists in a variety of fields
Conservation Letters	Blackwell-Wiley	Include mini-reviews in each issue	Mini-reviews may be up to 4,000 words in length and may contain up to 60 references; strict limits	Mini-reviews are overviews of emerging subjects that merit urgent coverage or succinct syntheses of important topics that are rarely encountered in the mainstream literature
Ecology Letters	Blackwell-Wiley	Publishes reviews and syntheses; commissioned by invitation from editor or by presubmission query	Reviews and syntheses should be no more than 7,500 words (main text) and contain no more than 10 figures or tables and no more than 100 references	Seeks reviews and syntheses on fast-moving and important topics that merit rapid consideration and publication. Reviews and syntheses can include the traditional literature review, along with more quantitative meta-analyses, syntheses, and modeling approaches, as long as those are placed in a broad context appropriate for the topic being covered. Reviews and syntheses are expected to be of broad interest to the readership of *Ecology Letters*, should focus on novel principles emerging over the past several years, and should include critical evaluation, synthesis, and/or prospects for future research directions
Frontiers in Ecology and the Environment	Ecological Society of America	Publishes timely, interesting, and informative articles on all aspects of ecology and related disciplines. Features synthetic reviews focusing on current research, new concepts and technologies, and the latest developments around the world	Cannot exceed 3,500 words and not more than 50 references and six to seven figures and/or tables. Additional tables or figures may be posted as online content on the journal's Website	Articles must be of broad interdisciplinary appeal not only to ecologists but also to those in other disciplines. Writing style must be crisp, concise, and accessible and should avoid or explain all terminology that might be unfamiliar to a multidisciplinary readership. Content should involve either research with important policy or resource management implications, research with practical applications, global environmental or resource issues, fundamental, novel advances in ecological science or related areas, or use of new approaches or technologies to address current or long-standing ecological/environmental issues
Trends in Ecology and Evolution	Elsevier	Publishes review, research focus, and opinion articles to help ecologists and evolutionary biologists stay abreast of the field	3,000- to 3,500-word limit, not including text in boxes, tables, figure legends, abstract, or references	Concise reviews of recent research in rapidly progressing or emerging areas. Should briefly set the background and then concentrate on setting recent findings in context. They should provide a balanced view of developments, even in fields that are controversial, and authors must never concentrate unduly on their own research. Although reviews do allow room for some speculation and debate, it should be made clear where the authors' own opinions are being presented

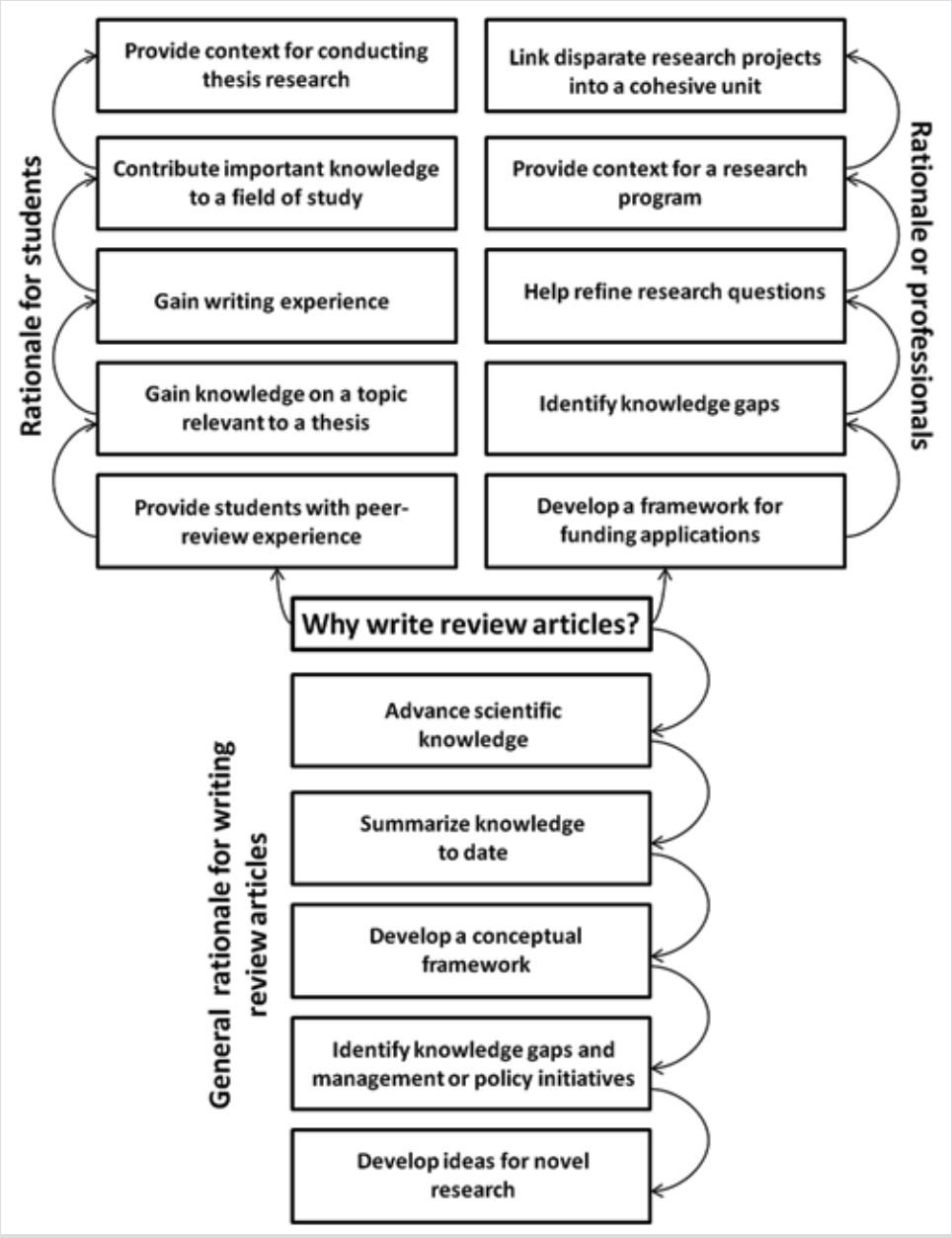

FIGURE 1. A conceptual framework illustrating the rationale for writing mini-review articles.

Developing a Mini-Review Article

Mini-reviews differ from full-length reviews (which tend to be long, sometimes exceeding 30 pages, e.g., Ward et al. 2006; 90 pages, e.g., Arlinghaus et al. 2007; and can even approach 200 pages, e.g., McDowall 2006) in that they are short and "punchy," providing a balanced summary of a larger suite of literature. In some cases a mini-review and "full" review are published on the same general topic by the same authors. For example, Cooke and Cowx (2006) wrote a lengthy and detailed paper that contrasted recreational and commercial fisheries but also published a much shorter persuasive article on the potential ecological and environmental consequences of recreational fishing (Cooke and Cowx 2004). The approach and detail for each paper was certainly different, but the take-home message was similar.

When writing a mini-review, authors must be cognizant of the primary objective of their review and strive to maintain fo-

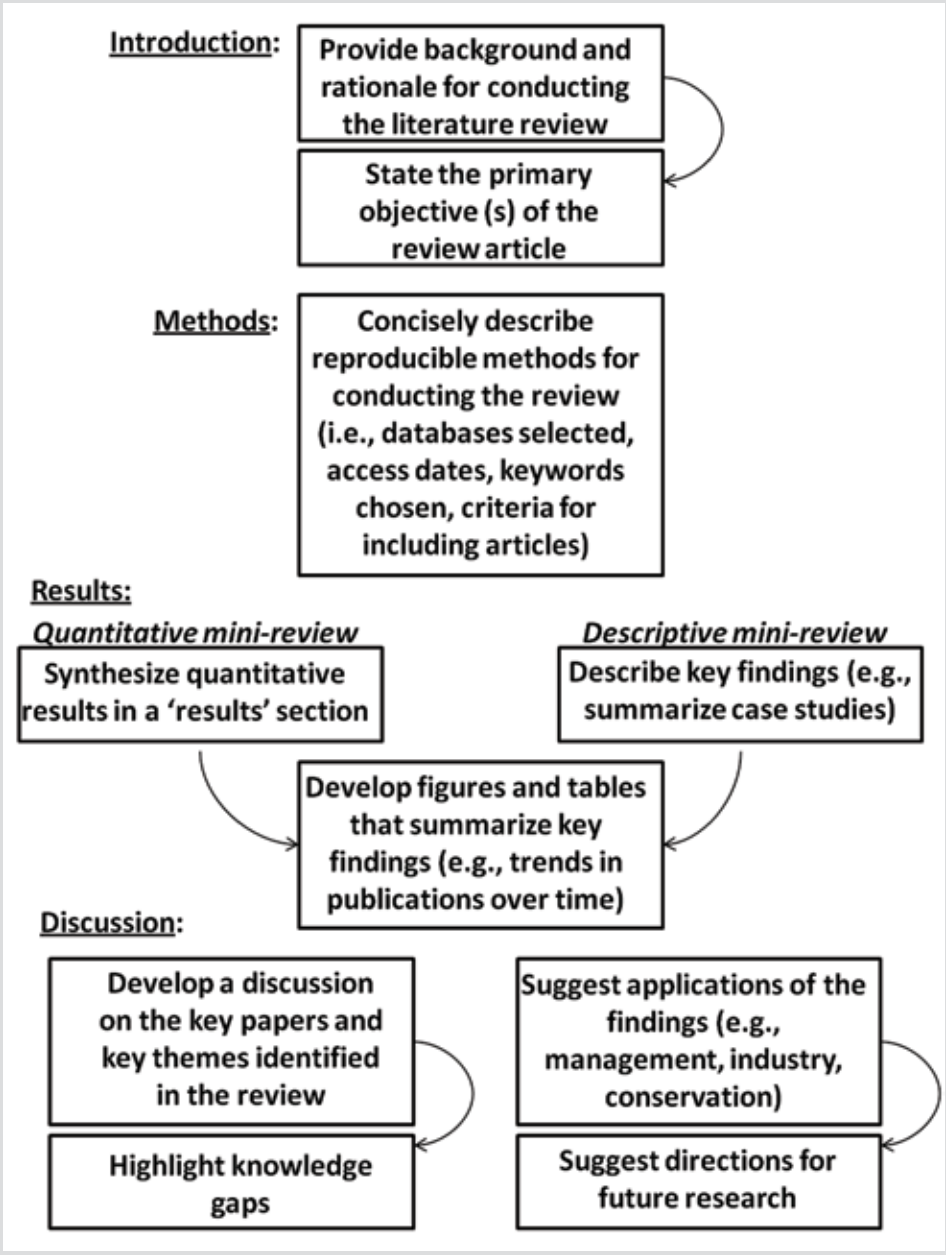

FIGURE 2. An example outline for writing a mini-review article.

cus and brevity. Clearly stating the objective and developing an outline for the review early in the literature search process can help guide the author from initial idea to final product (Figure 2). With a growing push toward systematic literature reviews in other fields of study (e.g., medicine, Mulrow 1994) there has been a call for adopting a more standard approach for literature reviews (e.g., see the movement toward "evidence-based conservation"; Roberts et al. 2006; Pullin et al. 2009). Much like the methods of a typical research paper, literature search methods must be explicitly described in order to be reproducible by other authors. In a mini-review, information that is particularly relevant includes the database(s) used, access dates, keyword search terms and Boolean operators, and a brief rationale for including and excluding papers that were identified in the search (Figure 2). Characterizing differences in methodology and interpretation within a field is a fundamental component of a great literature review and is a particularly useful means of proposing improved research methods in the future.

Opportunities for Developing Review Articles

Some of the best cited and most downloaded papers from American Fisheries Society (AFS) journals are traditional review papers. For example, Mazeaud et al. (1977) provided an early review of the factors that influence fish response to stressors in *Transactions of the American Fisheries Society*, a paper that has been cited over 450 times and is still often cited today. Recently, a paper in the *North American Journal of Fisheries Management* reviewed the effectiveness of mechanisms associated with stream prioritization and restoration (Roni et al. 2002) and it has already been widely cited (over 100 times). While these full-length review articles are certainly valuable, and the development of these types of articles in the future is certainly warranted (there are many outlets in which to publish such papers; Table 1), mini-reviews hold promise for complementing traditional reviews. As fisheries science and management becomes increasingly multidisciplinary and integrative, mini-reviews are needed to synthesize current information and keep researchers and practitioners up to date on time-sensitive results and emerging fields. Rapidly expanding and broad fields of study (e.g., climate change and fish), those that depend on emerging technologies (e.g., fish genomics), focus on applied objectives (e.g., fish conservation), and rely on older, outdated review articles contain topics that hold opportunities for developing novel or updated reviews. In addition, we learn more each year about specific aspects of fish biology, ecology, and management, offering opportunities for species-, site-, or discipline-specific reviews. We asked the Science Editors of *Fisheries* for a "wish list" of topics and general ideas for mini-reviews. We present a summary of those ideas, along with our own suggestions (Table 2). Though not exhaustive, we believe that the list illustrates the variety of topics that would be desirable for publication in *Fisheries*.

As fisheries science and management becomes increasingly multidisciplinary and integrative, mini-reviews are needed to synthesize current information and keep researchers and practitioners up to date on time-sensitive results and emerging fields.

Fisheries is a premier outlet for publishing reviews due to a broad and diverse readership, with circulation approaching 10,000 from AFS members around the globe with diverse research interests (e.g., Dunham et al. 2008). Perhaps more importantly, *Fisheries* is widely read by end-users of information, including fisheries managers and policymakers. *Fisheries* is also available online in open access format and publishes abstracts in Spanish and English, making the journal internationally accessible. Like many journals that publish reviews, style, format, and content guidelines for *Fisheries* are intentionally open ended, but topical articles that have a broad interest base are typically favored (Beard 2010; Box 1). Concise but thorough review papers on timely topics serve as the ideal means for practitioners to keep abreast of the latest trends related to a variety of problems and issues. Further, communicating with politicians and legislators can be improved by providing authoritative, balanced, and concise syntheses. While regular length review articles can still find a home in other AFS journals, *Fisheries* is an ideal outlet for mini-reviews.

TABLE 2. Ideas for mini-reviews as suggested by the editors of *Fisheries*.

1. What is the current state of knowledge on the relative successes and failures of different fish habitat restoration activities?
2. What is the role of genomics in fisheries management?
3. What is the current state of knowledge on modeling climate-induced shifts in species distribution and where have modeling efforts been applied to real-world landscapes or species?
4. What is the status and future of deep sea and ocean conservation efforts?
5. What are the most recent developments on the state of invasive fish species (e.g., silver carp, bighead carp)?
6. Why has participation in recreational fisheries declined in recent decades and can this trend be reversed?
7. What is our current state of knowledge and practice on using traditional and/or local ecological knowledge in fisheries management?
8. What are the recent developments in aquatic animal health and veterinary medicine that are relevant to fisheries science and management?
9. How does the availability of real-time data affect fisheries management?
10. What is the state of knowledge regarding emerging threats to fish and fisheries such as ocean acidification, anthropogenic noise, and nanoparticles?
11. What is the current state of knowledge on use of genetically modified organisms for aquaculture?
12. What is the state of knowledge on limited entry fisheries?
13. How do fish respond to stress across multiple levels of biological organization?
14. What is the state of knowledge on the effects endocrine disruptors in aquatic systems?

BOX 1. Author guidelines for mini-reviews in *Fisheries*.

Mini-reviews

Mini-reviews are direct, concise, and timely review articles that tackle emerging issues and are of broad interest to fisheries managers, scientists, legislators, policymakers, and stakeholders. Mini-reviews should not exceed 4,000 words (including boxes, tables, and references) and should include no more than 50 references. No more than six boxes, tables, and figures should be included in the article. The present article contains details on scope, format, and suggested content of mini-reviews.

Conclusions

Whereas standard length articles are important for covering a topic in detail, mini-reviews are an important yet underpublished means of reviewing an emerging topic or updating an existing one. This article serves as a call for the development of more mini-review articles and that authors will consider *Fisheries* as the outlet of choice for their work, particularly because the journal reaches a broad and diverse group of managers, researchers, and policymakers. With the rate at which fisheries science continues to expand and change, mini-review articles may become an increasingly important resource for fisheries scientists to help them remain current in their field of study.

Acknowledgments

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