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EDITOR'S MESSAGE

A Perspective on the Journal of Wildlife Management

The *Journal of Wildlife Management* (*JWM*) Editor-in-Chief, P. R. Krausman, invited the lead author of this editorial to convene other senior and mid-career scientists to assess the good, bad, and ugly aspects of publication in *JWM* relative to similar journals. The 15 authors have considerable experience and are well published in *JWM* and other journals. The number of years of experience will go unreported here, but the number of papers published in *JWM* by each author ranges from 2 to 37, with a median of 13. We therefore bring a broad perspective to this editorial.

We focused on 4 questions:

1. What are the positive aspects of publishing in *JWM*?
2. What are the negatives of doing so?
3. Should The Wildlife Society (TWS) be concerned about the relatively low impact factor of *JWM*?
4. Do we have any suggestions for improvements for *JWM*?

Because the authors brought unique perspectives to the effort, our editorial is not intended to be a consensus document. Although most authors agreed with most of the comments, we chose not to water down any opinions to gain total agreement. Hence, although most of us are primarily researchers, we hope our views capture those of many members of TWS, recognizing that TWS members will also hold a diversity of views.

THE POSITIVES

The *JWM* is the flagship journal of our professional society and of wildlife ecology in general. *Journal of Wildlife Management* articles directly address the core TWS mission: to inspire, empower, and enable wildlife professionals to sustain wildlife populations and habitats through science-based management and conservation. Consequently, publishing in *JWM* directly supports and promotes the Society in many ways, such as enhancing its reputation as a source of reliable peer-reviewed information for policy makers.

The journal is well respected by practitioners and scientists in the wildlife profession. Its readership is the most relevant and appropriate for wildlife science. Authors need not wonder if the right folks are reading what they published. For these reasons, *JWM*, along with its sister publication, the *Wildlife Society Bulletin* (*WSB*), are the go-to journals for wildlife management science in North America. Both seek to publish research and commentary that address management questions, leaving most basic science to alternative journals. Other journals publish on wildlife conservation but provide little specific guidance for on-the-ground actions to conserve wildlife and its habitat.

Many articles in *JWM* include scientists and managers as coauthors. This integration helps ensure the credibility and the relevance of those articles and acceptance by the management community. Criteria for earning authorship is a different question, which we do not address here.

THE NEGATIVES

The main concerns voiced about publishing in *JWM* were 1) page charges, 2) slow publication, 3) a tedious and often rigid (not to be confused with rigorous) review process, 4) a perceived over-emphasis on game species, and 5) low impact factor, which we defer to a subsequent section. Page charges can be a deterrent for authors lacking funding support for publishing. Among such authors are retired scientists, state agency or nongovernmental organization staff, academics without grant funding, scientists from developing nations, and graduate students. In contrast, higher-profile journals and European journals do not assess page charges. Thus, *JWM* may lose some good papers simply because of financial considerations.

Our sense regarding the slowness of publication is that the problem may not be as severe as it had been and relates primarily to a slow review process (next paragraph). Still, some authors prefer to publish in online journals because of their timelier publication of results and accessibility, especially on topics that are socially or politically sensitive for which timing and access can be important for decision making.

Concerns about the review process were manifold and the process caused at least some of the slowness in publication mentioned above. Many wildlife biologists have had enough negative experiences with *JWM's* refereeing process such that they no longer consider *JWM* first as an outlet for their work. One concern was termed "draconian formatting," noting that *JWM* submission guidelines run to 61 pages, whereas those of similar journals rarely exceed 15–20 pages. To this point, a colleague conducted an informal Twitter survey about *JWM*, and the formatting issue was offered as the single major deterrent to submitting a paper to the journal. Another concern was a dogmatic view of which statistical approaches are acceptable, with reference made to the "AIC police." Similarly, individual writing styles should not be discouraged. For example, some authors felt as though certain referees and associate editors (AEs) act like territorial mammals, needing to leave signs of their presence on each manuscript they encounter. A final concern was the perception that AEs and editors sometimes blindly accepted recommendations of reviewers even when there were indications that the reviews were biased or inappropriate.

Associate editors and editors should consider reviewer comments in context with their own review. This requires an array of AEs with expertise in the variety of topics encountered. Further, they also should help guide the author's revision by pointing out which elements of a reviewer's comments they believe have merit and which may not.

The Game Versus Nongame Conundrum

The historical emphasis on game species in *JWM* has diminished in recent years but still persists. This pattern exists despite the greater number of nongame wildlife species and the fact that more of them are in trouble, and much less studied, than game species. Although we can acknowledge this disparity, emphasis on game species is not a policy of *JWM*. The historical dominance of papers about game species might be explained by several reasons. First, funding for research on game species is more plentiful than that for nongame species, as much management research is funded, directly or indirectly, by hunters. Better financial support will influence the numbers of publications. Second, research on game species likely is better integrated into management decisions than research on nongame species. Publications about nongame species may claim management relevance but may be less likely to represent work requested by, and therefore used by, a management agency. Finally, papers on nongame species are welcomed by taxon-specific journals, general ecology journals, and those that include "conservation" in their titles, whereas papers dealing with harvest management of game would not necessarily be well received by such journals, so *JWM* gets most of them.

Our experience suggests, in fact, that the perception of an excess of game species articles is a mirage, in that *JWM* and *WSB* provide 2 of the very few refereed outlets for such research simply owing to a prejudicial dismissal of papers on game species by some ecological journals. True, relatively few nongame papers are published in *JWM*, but this is not because *JWM* discourages them but because many alternative conservation and taxon-specific journals welcome them. Thus, addressing this long-standing perception of game species dominating *JWM* may require the journal to be more proactive in soliciting nongame papers.

Because game species are hunted, they are handled more frequently by humans, and thus we have much better information about important aspects of their population biology than we do for most nongame species. That fact, in combination with the greater research attention they have received, means we know much more about most game species than nongame species. Because much knowledge is transferable to nongame species, nongame investigators can learn a lot from studies of game species, such as modeling approaches. We believe that *JWM* could be instrumental in facilitating that information transfer by encouraging more nongame biologists to become readers of, and authors for, *JWM*.

Many articles that would be suited to *JWM* but address nongame species go to biological conservation journals. Conservation biology is a relatively new field, whereas wildlife management is much longer established. The 2 disciplines appear to have very different objectives: the basic goal of conservation biology is to preserve natural biodiversity, whereas a traditional goal of wildlife management is typically to obtain sustainable yield of game species. To bring that distinction into clear focus, consider the ring-necked pheasant (*Phasianus colchicus*). This species is nonnative to North America and thereby scorned by most conservation biologists. But it is a popular hunted species on much of the continent and many wildlife agencies and biologists seek to increase its numbers.

Regardless of the objectives of the 2 disciplines, the tools they have available to address their objectives are very similar. They typically involve habitat management, at local through regional scales, although game managers have harvest regulation as an additional tool. Thus, conservation biology and wildlife management are closely related endeavors that share biological foundations and many research, conservation, and management methodologies. It seems entirely appropriate for *JWM* to be home to articles that are identified as belonging to either of these disciplines. Increasing the number of nongame publications in *JWM* could be accomplished through invited articles and special sections on topics of current interest.

JOURNAL IMPACT FACTOR

We identified a relatively low impact factor as discouraging many authors from submitting manuscripts to *JWM*. Correcting some of the problems related to the review process identified earlier in this editorial likely will encourage authors to be more inclined to submit their work to *JWM*. We offer 3 other recommendations.

1. Increase visibility of and access to the journal; papers that are easy to find (e.g., via search engines) and have open access get more attention and are therefore more likely to be cited. This issue is especially relevant for international audiences. Ensure that the relevant ecological theory and findings are clearly articulated, particularly in the abstract. Many abstracts dwell on methods and results, rather than on any important implications of the study. Develop a better media strategy to disseminate key findings published in *JWM* and the Society's other journals beyond TWS members. One simple way to increase dissemination is through effective use of social media and better choices of key words. Despite the importance of this short but important list of terms for literature searches, many authors put little thought into their selection of key words.
2. Continue to invite opinion pieces and essays dealing with current cutting-edge or controversial topics. Invitees could include high-profile individuals who might not normally consider *JWM* as an outlet. Dueling point-counterpoint essays could be especially appealing.
3. Expand the focus beyond the traditional management audience. The most-cited papers in *JWM's* recent history are quantitative, methodological contributions. The most-read articles largely address the conservation of nongame species or transparency in decision processes.

> In addition to traditional concerns such as harvest management, conservation agencies face problems associated with climate change, habitat loss, invasive species, emerging infectious diseases, human-wildlife conflicts, and others. The content of *JWM* should reflect these important issues.

Recommendation 3 was not unanimously endorsed by all co-authors, in part because the scientific community already has many good outlets for general ecological papers, so is there a need to include *JWM* in this group?

Counterpoint to this discussion is a fundamental question: should *JWM* have a high impact factor? If *JWM* continues to strive to publish applied research that provides useful management guidance, then impact factor ratings could be a low priority. Impact factors are important primarily to researchers; managers care little how often a publication is referenced by others. It is likely that papers in *JWM* are read more often than they are cited because many consumers of *JWM* papers apply their findings without citing them. Also, they are often cited in agency management plans and other gray literature that is not covered by journal citation indices. These citations are no less important to the core purpose of TWS and *JWM* than are formal citations in journal articles. Some sort of application factor by which papers are rated according to how their results are incorporated into wildlife management and conservation decisions could be developed, but what journals other than *JWM* and *WSB* would adopt it?

Most research with direct management application is specific in terms of species, location, and management treatments. There generally is an inverse relationship between such specificity and the number of times a paper is cited. So, theoretical articles focusing on general ecology or ecological principles (or just have well-articulated arm waving) may be cited numerous times, whereas articles dealing with particular species, places, and treatments that are management-focused, such as those published in *JWM*, are less likely to be cited, leaving *JWM* with a lower impact factor.

Impact factor may be a poor reflection of actual impact if the average reader is a manager who rarely publishes in scientific journals, especially those with high impact factors. But we wonder how many managers actually read *JWM* anymore (a survey among state and federal wildlife agencies may be enlightening). So perhaps a better goal would be to increase readership especially by managers as opposed to increasing the journal's impact factor.

SUGGESTIONS FOR IMPROVEMENT

Beyond addressing the drawbacks mentioned above, we offer several suggestions to improve *JWM*. One is to remove the requirement for a Management Implications section. One author randomly selected 100 Management Implications sections from the last decade or so and assessed whether the article was consistent with their interpretation of the current guidance for a Management Implications section. Examples of articles without direct management implications involved topics such as monitoring designs, human dimensions surveys, a new method to estimate a critical parameter in a population model that heretofore had not been possible, and an analysis of potential disease transmission between an invasive and native species. These noncompliant articles constituted 43% of the sample, acknowledging their relevance to the readership. That these articles were published indicates a broad interpretation of management was taken and suggests that a separate Management Implications section may be superfluous. Such a section might be perfectly suitable for many articles but should not be required for all. Eliminating the Management Implications section also might end the presumption of management being narrowly defined based on traditional TWS foci such as game species and hunting.

For a time, *JWM* was a preferred outlet for accessible quantitative methods articles (accessible, in contrast to, say, *Biometrics*). The *JWM* is no longer the only game in town. *Methods in Ecology & Evolution*, for example, is one appealing alternative. The inconsistent support by *JWM* editors of quantitative papers has reduced the desire of authors to publish these papers in TWS journals. For example, the seminal papers on occupancy estimators, one of the most widely used quantitative methods in wildlife monitoring and surveillance, were published in other journals (e.g., *Ecology*).

The TWS should encourage, but not require, authors to archive their data and code used in TWS publications in open repositories, available to other researchers. Archiving data and programs is increasingly a requirement of many universities and journals. Making them readily available to others is less common. Doing so, however, will encourage greater use of data published in *JWM* by other investigators and enhance *JWM's* impact. As Simon Levin (Princeton University, personal communication) noted, "science is best when it is viewed as a team sport where everyone is on the same team." Reasons for not making data available include governmental regulations inhibiting releasing sensitive information, legal restrictions, and ongoing analysis of those data.

One longstanding problem in the wildlife profession is the lack of integration of research and management. Researchers often see managers as resistant to new information and recommendations, whereas managers frequently view researchers as concerned more with their own interests and favorite projects than with informing difficult management decisions. Perhaps *JWM* could play a more active role in encouraging integration of research and management by publishing special sections featuring papers that demonstrate true and effective collaborations between researchers and managers. Such papers would typically be authored by researchers and managers and could describe ongoing management programs that are based on research-informed decisions. An emphasis could be on specification of exactly how research results and other (e.g., monitoring) information are used to make decisions. Such encouragement by *JWM* would hopefully broaden the appeal of *JWM* to managers and encourage research scientists to focus on exactly the questions and information that would be

most useful to managers. The emphasis would be on science serving management (one possible title for such a *JWM* section), with the perspective that science is 1 component of a larger decision process that affects wildlife management. We hope that such an effort would not only increase the interest of managers in *JWM* but also promote integration and collaboration within the wildlife profession.

We believe that the *JWM* continues to play a key role in conservation efforts. This role may be enhanced by capturing (or re-capturing) the attention of managers and mid- to upper-level administrators, many of whom have little interest in or time for reading journal articles. Opinion pieces, essays, and point-counterpoint discussions on controversial and high-visibility topics and less emphasis on nuts-and-bolts techniques might be a good way of stimulating interest. For example, review articles on critical issues would capture wider audiences, especially if they effectively translate research to broadly interest a wide audience of researchers, managers, and policy makers.

CONCLUSIONS

A first principle of marketing a product, such as a journal, is identifying its target audience. Historically *JWM* was oriented toward on-the-ground and harvest managers. We suspect that over the years the journal has become more read by researchers and students and less used by actual managers. An argument could be made in favor of changing its title to the *Journal of Wildlife Science*, but much history would be lost causing a reset in the impact factor rating. We believe that both audiences can be served, but it will not be easy.

Collectively, our group offers a wide set of perspectives stemming from our personal experiences publishing in many journals including *JWM*, but we certainly do not reflect the entire spectrum of members of TWS. Therefore, we offer the following conclusions in support of our general comments above with the expectation that others may either endorse our ideas or refute them. All of us have long held high regard for our society's primary journal. Yet we also believe that *JWM* could be improved. Some of our suggestions are easily implemented (e.g., focus more on facilitating author submissions than on the format of papers—layout and format of a journal are never as important as its content); others will be more challenging (e.g., deciding if the focus of *JWM* should be on game species because other journals provide more options to publish nongame research). In TWS, a possible way forward is for leadership to assess whether new directions in emphasis for *JWM* are warranted. But even if new directions are desired, given a more thorough evaluation than we have provided, we believe there is a perception among many potential authors that structural impediments discourage submission to *JWM*. Therefore, we hope our comments are taken in the context with which we wrote them: to improve the quality and stature of *JWM*.

All decisions, including any recommended changes to *JWM*, should be guided by objectives. For example, if our primary objective is to increase the impact factor of *JWM*, then we might take certain actions, whereas if we want to increase the value of *JWM* to managers we might do something very different. If we prefer a compromise that includes both objectives, perhaps unequally weighted, then our actions would again differ from those that focus only on one of them. We believe that any recommendations for changes to *JWM* must be preceded by a clear statement of what we would like these changes to accomplish. We authors differ in our opinions about the importance of journal impact factor, with some of us concerned that it is too low and others believing that it does not closely relate to the use of the journal. This variation suggests that the TWS membership should be involved in developing the objectives that are required to guide decisions about any changes to *JWM*.

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