

Peer Review File

Evolution of a river management industry in Australia reveals meandering pathway to 2030 UN goals



Open Access This file is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. In the cases where the authors are anonymous, such as is the case for the reports of anonymous peer reviewers, author attribution should be to 'Anonymous Referee' followed by a clear attribution to the source work. The images or other third party material in this file are included in the article's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/>.

Web links to the author's journal account have been redacted from the decision letters as indicated to maintain confidentiality

16th Sep 22

Dear Dr Russell,

Your manuscript titled "Evolution of a river management industry reveals meandering pathway to 2030 UN goals" has now been seen by 3 reviewers, whose comments are appended below. You will see that they find your work of some potential interest. However, they have raised quite substantial concerns that must be addressed. In light of these comments, we cannot accept the manuscript for publication, but would be interested in considering a revised version that fully addresses these serious concerns.

We hope you will find the reviewers' comments useful as you decide how to proceed. Should additional work allow you to address these criticisms and meet our editorial thresholds outlined below, we would be happy to look at a substantially revised manuscript. Editorially, based on reviewer comments, we require that you:

- Provide compelling new insights into stream management in Australia over the past 25 years;
- Demonstrate that your analysis is robust and not biased, for example by the applied text analysis approach or conference themes;
- Clearly articulate the advance this analysis offers beyond your earlier work;
- Provide an in-depth discussion of the limitations of your findings and their wider applicability, beyond potentially regional insights.

If you choose to take up this option, please either highlight all changes in the manuscript text file, or provide a list of the changes to the manuscript with your responses to the reviewers.

Please bear in mind that we will be reluctant to approach the reviewers again in the absence of substantial revisions.

If the revision process takes significantly longer than three months, we will be happy to reconsider your paper at a later date, as long as nothing similar has been accepted for publication at Communications Earth & Environment or published elsewhere in the meantime.

We understand that due to the current global situation, the time required for revision may be longer than usual. We would appreciate it if you could keep us informed about an estimated timescale for resubmission, to facilitate our planning. Of course, if you are unable to estimate, we are happy to accommodate necessary extensions nevertheless.

We are committed to providing a fair and constructive peer-review process. Please do not hesitate to contact us if you wish to discuss the revision in more detail.

Please use the following link to submit your revised manuscript, point-by-point response to the reviewers' comments with a list of your changes to the manuscript text (which should be in a separate document to any cover letter) and any completed checklist:

[link redacted]

** This url links to your confidential home page and associated information about manuscripts you may have submitted or be reviewing for us. If you wish to forward this email to co-authors, please delete the link to your homepage first **

Please do not hesitate to contact me if you have any questions or would like to discuss the required revisions further. Thank you for the opportunity to review your work.

Best regards,

Clare

Clare Davis, PhD
Senior Editor
Communications Earth & Environment

www.nature.com/commsenv/
@CommsEarth

EDITORIAL POLICIES AND FORMAT

If you decide to resubmit your paper, please ensure that your manuscript complies with our editorial policies and complete and upload the checklist below as a Related Manuscript file type with the revised article:

Editorial Policy Policy requirements (Download the link to your computer as a PDF.)

For your information, you can find some guidance regarding format requirements summarized on the following checklist:(<https://www.nature.com/documents/commsj-phys-style-formatting-checklist-article.pdf>) and formatting guide (<https://www.nature.com/documents/commsj-phys-style-formatting-guide-accept.pdf>).

REVIEWER COMMENTS:

Reviewer #1 (Remarks to the Author):

Dear Editor,

The manuscript “Evolution of a river management industry reveals meandering pathway to 2030 UN goals” performs a topic modelling review of the conference papers of a single Australian conference about river management. They found that river management is evolving to become more interdisciplinary and collaborative. From a methodological

standpoint, the presented topic modelling is sound. The constraints they placed on the texts under analysis, nevertheless, seem overly restrictive and (consciously or unconsciously) preset to achieve that outcome. According to the authors, many different stakeholder segments who submit papers to the conference do not publish in journals. That's OK, but doesn't this bias their sample?

On the other hand, it is plausible that academics who publish articles on more theoretical aspects of river management do not send full papers to conferences because they place a higher priority on journal publishing. The Australian Stream Management conferences are very management and industry oriented. As a result, a greater diversity of stakeholders is anticipated. Is this discovery applicable to river management as a scientific discipline or not? Why not include conferences about river management from North America and Europe in the analysis to see if the findings are applicable generally? This might be biased—even in the Australian context. Stream management content is also available at other conferences, such as the AFSS. Why then concentrate only on the ASM conference? It is concerning that all ASM conferences have been hosted in the so-called "southern states," and that despite a meeting being held in Townsville in 2014, Western and Northern Australia have been ignored by this conference because there has never been a gathering there. This is hardly indicative of Australian River Management as a whole, given more than half of the country has less access to it than managers situated on the country's south-east. The authors' skewed perspective that "Australian stream management has often been viewed as an exemplar of this shift" could be the result of this bias. Water management in Australia has been unjust and unequal to first nations people for a long time (see Sue Jackson's essays in "The Conversation"), and the management troubles of the Murray-Darling basin as a result of insufficient scientific advice speak for themselves.

If authors are adamant about restricting the scope of this study limited to papers from a single conference. I suggest them to consider whether presenting this study for the following conference proceedings would be more appropriate.

<https://theconversation.com/australia-has-an-ugly-legacy-of-denying-water-rights-to-aboriginal-people-not-much-has-changed>

Reviewer #2 (Remarks to the Author):

In the manuscript entitled "Evolution of a river management industry reveals meandering pathway to 2030 UN goals" the authors reviewed the content of conference proceedings from the ten Australian Stream Management conferences that have occurred over the past 2.5 decades to assess how river management in Australia has evolved over this time frame. This manuscript details an interesting and somewhat novel approach to quantitatively assess how the focus and composition of the river management community has changed. The authors framed the study hypotheses to address some of the goals of the UN Decade of Ecosystem Restoration. The hypotheses focused on the who, what, and how of integrating water resources management, and results suggested that Australian water resource management has become more interdisciplinary but is still lacking broader community participation and has not focused on adaptive management and water policy. Overall, I thought the focus and approach for this assessment was valid and offered a unique attempt

to incorporate social science into river management assessment. This paper would be of interest to river managers across the world who are trying to integrate community participation, interdisciplinary science, and natural and ecosystem-based solutions into river management and restoration.

The approach was not entirely novel as some of the authors had done a similar assessment of the conference proceedings for the first six Australian Stream Management conferences (<http://dx.doi.org/10.1071/MF12355>). For their earlier study, the researchers assessed if river management was using the best available science, incorporating adaptive management, and was using cross- and trans-disciplinary approaches. As the current manuscript also had a focus on the latter two (adaptive management and interdisciplinary science), I challenge the authors to address how their new research enhances and builds upon this previous study. I liked how the authors placed the different articles into the 60 topic areas and then more broadly into the five different disciplines. The figures displaying the trends (Figures 1 and 3) allowed a clear visualization of how the different topics and author demographics have changed over time. It would be helpful if the authors clearly identified which topics aligned with which hypotheses. In particular, which topic areas were used to assess the changes in ecosystem-based and nature-based approaches (Hypothesis 2a)? The authors give some examples in lines 135-142, but I suggest adding some columns to Supplemental Table S2 that specifically identify ecosystem-based approach and nature-based approach similar to the “Adaptive management topic?” and “Policy topic?” columns. Adding this information would easily allow the reader to visualize the information the authors used to assess how river management has matured.

I thought the structured review and topical modeling approaches were valid although it seems like some of the identified trends, especially the non-linear changes over time, may have been more of a result of the main themes of the conference and not a change in management or science focus. Did the authors consider how the conference themes may have impacted their findings? Six of the ten conferences have distinct themes which likely influenced that information that was presented during the conference. For example, in lines 173-187, the authors explain how topics related to environmental flows, flooding, and fire response peaked in 2012 after severe flooding and fires occurred in Australia. The theme of the conference in 2012 was “Managing for Extremes”, which may have caused the increase in presentations about floods and fires. Another example is in lines 192-194 where the authors noted that “stream condition assessment” and “river values in condition assessment” peaked in the early 2000s. The theme of the conference in 2001 was “The value of healthy streams” and the theme in 2004 was “Linking rivers to landscapes”; both of these themes may have led to an increase in adaptive management topics during these two conferences.

I thought the recommendations provided in the discussion were very useful and are a good way to improve river management. However, the transition from the results section to the section that included the discussion and recommendations for future management was abrupt and the two sections were highly disconnected. I suggest adding a sentence to each recommendation that describes how the results presented illustrate that this recommended management action is not currently occurring in Australian river management.

Reviewer #3 (Remarks to the Author):

i have read and reviewed the paper 'Evolution of a river management industry reveals meandering pathway to 2030 UN goals'. I have to say I quite enjoyed the paper. Although I felt myself resisting early on because I felt that the idea of reviewing systematically papers submitted to a conference series in Australia was a little bit niche, the idea grew on me as I read through and the discussion really brought home the value of the paper as it broadens out the findings too stream management on a global scale. I really think that this is just a nice little paper with some really well thought through conclusions and recommendations for global stream management. The paper was really nicely written . I found no typos or anything substantive that I would suggest needed improving . The graphics provided are well presented . I have nothing more substantial to say than congratulations to the authors and I recommend publishing as is.

Response to Reviewers - Evolution of a river management industry reveals meandering pathway to 2030 UN goals

Thank you for the constructive comments. We have carefully considered all comments and addressed them as fully as possible in the manuscript, and have detailed changes in the following table. We believe this substantially revised manuscript has been much improved by the review process.

Page numbers refer to the marked-up version of the revised manuscript.

Reviewer comment	Our response
Reviewer 1	
The manuscript “Evolution of a river management industry reveals meandering pathway to 2030 UN goals” performs a topic modelling review of the conference papers of a single Australian conference about river management. They found that river management is evolving to become more interdisciplinary and collaborative. From a methodological standpoint, the presented topic modelling is sound. The constraints they placed on the texts under analysis, nevertheless, seem overly restrictive and (consciously or unconsciously) preset to achieve that outcome.	We thank Reviewer 1 for their constructive comments. We believe that by considering and addressing these comments we have produced a manuscript that more fully explores the biases inherent in text analysis, while also considering the biases avoided by the selection of this dataset. We have now included an explicit discussion of bias in the methods section, and limitations in the discussion. We do not believe that the selection of the ASM texts is biased towards confirming our conclusions. We suggest the consistency in the focus of the data source (conference proceedings consistently focused on waterway management) is one of the strengths of the study. Our approach is to identify gaps and challenges for the future as well as examining whether maturation of the industry has occurred in the way that many believe. Preconceptions are not used here as preset, rather they are to be tested by the data. We make this clearer in the introduction: “We explore past shifts as the industry has transformed and matured. This sets the context for identifying future challenges and opportunities for the industry and recommending ways forward.” (p. 2) “The findings of our analysis document how this industry has continued to evolve and mature, while identifying gaps, challenges and opportunities.” (p. 2)
According to the authors, many different stakeholder segments who submit papers to the conference do not publish in journals. That's OK, but	We see the diversity of stakeholder segments represented in the ASM papers as a strength. ASM includes papers from a cohort of stream management stakeholders including those who likely don't publish their works in journals, which

doesn't this bias their sample? On the other hand, it is plausible that academics who publish articles on more theoretical aspects of river management do not send full papers to conferences because they place a higher priority on journal publishing.	provides a fuller perspective of applied knowledge than could be gleaned from a review of published literature. We have added to the manuscript to clarify our approach: “Unlike many published proceedings and journals (e.g. International Symposium on Ecohydraulics²⁶), the ASM conference is not heavily biased towards academic contributions, but includes high proportions of government and consultant authors.” (p. 12) “Compared to journals on the same topic, the ASM proceedings better reflect how stream management is being done in practice, and how knowledge is being shared.” (p. 16) “Other conferences in Australia cover aspects of stream management but tend to focus on narrower sub-topics or broader themes that only partly intersect with stream management, e.g. those focusing on freshwater science, the water industry, or stormwater management. Every conference has biases arising from geographic location, disciplinary and philosophical focus. The ASM proceedings dataset that we use may be influenced by such biases, but avoids other biases that would be present in other conference or journal datasets. “ (p. 16) “The philosophical focus of the conference leans towards pragmatic management applications rather than theoretical advances⁹. Papers tend to highlight novel and important advances in management, or theory that is ready to influence management. Other, more academic conferences and journals may include more theoretical and scientific advances but it is unclear how many of those advances go on to influence practice and what the time lag is. By interrogating proceedings which focus on the boundary between theory and practice we are able to interpret the evolution of the industry itself.” (p. 17)
The Australian Stream Management conferences are very management and industry oriented. As a result, a greater diversity of stakeholders is anticipated. Is this discovery applicable to river	We have provided comparison to other conference analyses where possible. The most comparable one we are aware of is Casas-Mulet et al. (2016), which has a more academic focus. We added:

management as a scientific discipline or not?	“The increase in consultant representation and collaboration between researchers and consultants is a global trend (see Casas-Mulet, et al. 30 for an example from an international ecohydraulics symposium), and reflects the rise of private sector participation in knowledge creation and dissemination in neoliberal economies³¹. The strong central core of collaboration that we observed between government, researchers and consultants indicated integration of knowledge creators and end-users that differed from the ecohydraulics discipline³⁰, although that could reflect the greater emphasis on management at ASM compared to more scholarly international symposia.” (p. 12) We also added some comparison to analyses of river research as a scientific field: “Stable and reasonably high rates of cross-disciplinary and transdisciplinary work (~35% of papers each) contrast with findings of low interdisciplinarity of the scientific field of river research³³, suggesting that better integration of disciplines is occurring in the broader industry than the scientific literature.” (p. 12)
Why not include conferences about river management from North America and Europe in the analysis to see if the findings are applicable generally? This might be biased—even in the Australian context. Stream management content is also available at other conferences, such as the AFSS. Why then concentrate only on the ASM conference?	We decided early on that we were not able to compare this conference with other similar conferences held elsewhere. This was for several reasons: 1) We know of no other conferences in the river management space (globally) that has such a rich, long-term archive of peer-reviewed conference papers that have maintained their structure and coherence. Our dataset therefore provides a unique opportunity. The reviewer did not provide any alternatives here on where such datasets exist, so we will take this as a comment. 2) The aims of the paper were never intended to compare across ‘industries’ from other parts of the world. Rather, it aims to situate this ‘industry’ within a global context of achieving international goals alongside describing trends in the maturation of this ‘industry’. Many of these trends are globally applicable, but it is well outside the scope of this short note to undertake that analysis even if we had a comparable high quality dataset. 3) We are unsure why the reviewer thinks that the analysis should be compared to only those in North America and Europe. There are many ‘industries’ all over the world, so we could argue that this would

	add bias and a lack of inclusivity to the analysis that could be widely criticised. We clarified the following in the article: “We use the industry in Australia as an example of an industry operating in a developed western nation. As for other large nations, Australia has a geographically and climatically diverse range of stream types and management problems that need tailored solutions⁸” (p. 2) We also added: “This paper provides insights for stream management industries elsewhere, but it is also relevant for a wide range of environmental management industries.” (p. 3) “The patterns we observe in south-eastern Australia may be more or less representative of other locations (likely more representative in countries which are more culturally, institutionally and geographically similar to Australia). Nonetheless, this analysis of one geographically-defined area can be used as a model for other similar analyses where long-term text datasets can be found that reflect the industry.” (p. 17-18)
It is concerning that all ASM conferences have been hosted in the so-called “southern states,” and that despite a meeting being held in Townsville in 2014, Western and Northern Australia have been ignored by this conference because there has never been a gathering there. This is hardly indicative of Australian River Management as a whole, given more than half of the country has less access to it than managers situated on the country’s south-east.	We agree that geographic bias is present in the dataset and have added a detailed discussion of geographic bias: “The ASM conference has always been dominated by attendees and authors from Victoria, New South Wales, and Queensland, which are also the most populous states (containing 77% of Australia’s population) and where most of the stream management industry is based. Victoria, which contains 25% of Australia’s population, tends to be somewhat overrepresented, with 37% of all papers having a first author from Victoria. Australian Capital Territory is also overrepresented with respect to population, reflecting the concentration of river management organizations in the nation’s capital. Western Australia, where the conference has never been held, is severely underrepresented (1% of first authors from 11% of population) and has become more so over time, suggesting a separation of the Western Australian industry from that of the south-eastern States.

	Rural and regional areas are well-represented. For example, delegate data for 9ASM (see Supplementary Table S2) revealed that for Victoria, 33% of delegates were from rural or regional areas, compared to 25% of the total population. Rural and regional representation was even higher for New South Wales. It is perhaps natural that the stream management industry is slightly more distributed across the landscape than the general population, providing greater geographic coverage of areas where rivers and streams exist. It is likely, however, that Aboriginal and Torres Strait Islander peoples are under-represented in the conference authorship and attendance, given that Victoria is overrepresented yet contains only 8% of Australia's Aboriginal and Torres Strait Islander population. The location of conferences appears to have an influence on the distribution of attendees and authors, but this effect is inconsistent. For example, the representation of South Australian, Tasmanian and Queensland authors showed appreciable peaks when the conference was held in those states, while the representation of Victorian authors was highest in New South Wales in 2016. 10ASM, which was planned to be a hybrid format and might therefore be expected to have less bias associated with conference location, had similar distributions of authors to earlier conferences (see Supplementary Table S1)." (p. 16-17) We have also added a section to the discussion titled <i>Limitations of findings</i>. We address geographic bias as follows: "The findings are derived from a knowledge-sharing forum that brings together a subset of the Australian stream management industry, mainly from the more populous, south-eastern states." (p. 12) "Geographic bias in the authorship and attendance at the conference mean that the findings may not be representative of river management in underrepresented states such as Western Australia, South Australia and the Northern Territory." (p. 12)
The authors' skewed perspective that "Australian stream management has often been viewed as an exemplar of	We have deleted this statement from the abstract as we believe it was too easily misinterpreted as our opinion. Instead, we explain more fully in the introduction how

this shift” could be the result of this bias. Water management in Australia has been unjust and unequal to first nations people for a long time (see Sue Jackson’s essays in “The Conversation”), and the management troubles of the Murray-Darling basin as a result of insufficient scientific advice speak for themselves. https://theconversation.com/australia-has-an-ugly-legacy-of-denying-water-rights-to-aboriginal-people-not-much-has-changed	Australia can be used as an example of a stream management industry in a developed western nation. “We use the industry in Australia as an example of an industry operating in a developed western nation. As for other large nations, Australia has a geographically and climatically diverse range of stream types and management problems that need tailored solutions⁸” (p. 2) We agree that water management in Australia is unjust and unequal to First Nations people, and that the slight increase in Indigenous perspectives we see in our analysis is nowhere near enough. We now comment more explicitly on underrepresentation of First Nations people in the ASM dataset, and likely in Australian stream management: “There are still significant gaps in integration of First Nations and community perspectives, as has been found globally³⁴, although counter-examples exist such as Māori co-management of New Zealand’s rivers ³⁵.” (p. 12) “Furthermore, Aboriginal and Torres Strait Islander peoples are underrepresented at ASM, and Indigenous knowledge and practices in use in stream management are poorly captured in the ASM papers.” (p. 12) “It’s likely, however, that Aboriginal and Torres Strait Islander people are underrepresented in the conference authorship and attendance, given that Victoria is overrepresented yet contains only 8% of Australia’s Aboriginal and Torres Strait Islander population.” (p. 17)
If authors are adamant about restricting the scope of this study limited to papers from a single conference. I suggest them to consider whether presenting this study for the following conference proceedings would be more appropriate.	We have now included more discussion of the biases in the dataset and the opportunities it presents, as detailed above and in the revised manuscript. We still believe that the opportunity to analyse a comprehensive set of management-focused papers in relatively standardised format is compelling, and the biases in the dataset do not diminish its usefulness.
Reviewer 2	

In the manuscript entitled “Evolution of a river management industry reveals meandering pathway to 2030 UN goals” the authors reviewed the content of conference proceedings from the ten Australian Stream Management conferences that have occurred over the past 2.5 decades to assess how river management in Australia has evolved over this time frame. This manuscript details an interesting and somewhat novel approach to quantitatively assess how the focus and composition of the river management community has changed. The authors framed the study hypotheses to address some of the goals of the UN Decade of Ecosystem Restoration. The hypotheses focused on the who, what, and how of integrating water resources management, and results suggested that Australian water resource management has become more interdisciplinary but is still lacking broader community participation and has not focused on adaptive management and water policy. Overall, I thought the focus and approach for this assessment was valid and offered a unique attempt to incorporate social science into river management assessment. This paper would be of interest to river managers across the world who are trying to integrate community participation, interdisciplinary science, and natural and ecosystem-based solutions into river management and restoration.	We thank the reviewer for their detailed comments and have responded to specific suggestions below.
The approach was not entirely novel as some of the authors had done a similar assessment of the conference proceedings for the first six Australian Stream Management conferences (http://dx.doi.org/10.1071/MF12355).	The earlier work had a different approach and different questions. We did initially follow the same approach to update the dataset, but then transitioned to the more robust topic modelling approach, and added items specific to our questions to the structured review. The results we use in the manuscript are almost entirely new. The only

For their earlier study, the researchers assessed if river management was using the best available science, incorporating adaptive management, and was using cross- and trans-disciplinary approaches. As the current manuscript also had a focus on the latter two (adaptive management and interdisciplinary science), I challenge the authors to address how their new research enhances and builds upon this previous study.	overlap now is the use of structured review to assess whether we are reporting success or failure of stream management approaches, and we have now bolstered those findings with an independent approach from the topic modelling. We have clarified in the methods what is inherited from the earlier work and what is new: “The first six ASM proceedings were previously analysed for disciplinary areas, interdisciplinarity and evidence of adaptive management⁹. The present analysis provides a more robust exploration of author demographics, collaboration patterns, topics and interdisciplinarity, using a combination of metadata review, structured expert review and automated topic modelling. It tests specific hypotheses related to the advances in stream management that are needed to support the UN SDGs. It also reveals patterns over a longer time-scale (25 years compared to 15), allowing us to assess long-term trends and evolution of topic areas over that time.” (p. 16) “Our analysis catalogued the demographics of authors (gender, institution type and location) and their collaboration networks. We also assessed whether papers documented adaptive management practices (building on the dataset developed by Fryirs, et al. ⁹ of 1ASM to 6ASM) or policy-related content.” (p. 18)
I liked how the authors placed the different articles into the 60 topic areas and then more broadly into the five different disciplines. The figures displaying the trends (Figures 1 and 3) allowed a clear visualization of how the different topics and author demographics have changed over time. It would be helpful if the authors clearly identified which topics aligned with which hypotheses. In particular, which topic areas were used to assess the changes in ecosystem-based and nature-based approaches (Hypothesis 2a)? The authors give some examples in lines 135-142, but I suggest adding some columns to Supplemental Table S2 that specifically identify ecosystem-based approach and nature-based approach similar to the “Adaptive management topic?” and “Policy	We appreciate the suggestion and have added columns for ‘nature-based solutions’ and ‘engineering’ topics to Supplemental Table S3 as suggested.

topic?” columns. Adding this information would easily allow the reader to visualize the information the authors used to assess how river management has matured.	
I thought the structured review and topical modeling approaches were valid although it seems like some of the identified trends, especially the non-linear changes over time, may have been more of a result of the main themes of the conference and not a change in management or science focus. Did the authors consider how the conference themes may have impacted their findings? Six of the ten conferences have distinct themes which likely influenced that information that was presented during the conference. For example, in lines 173-187, the authors explain how topics related to environmental flows, flooding, and fire response peaked in 2012 after severe flooding and fires occurred in Australia. The theme of the conference in 2012 was “Managing for Extremes”, which may have caused the increase in presentations about floods and fires. Another example is in lines 192-194 where the authors noted that “stream condition assessment” and “river values in condition assessment” peaked in the early 2000s. The theme of the conference in 2001 was “The value of healthy streams” and the theme in 2004 was “Linking rivers to landscapes”; both of these themes may have led to an increase in adaptive management topics during these two conferences.	We have now added a section to the methods on bias in the dataset (p. 16-17), and a section to the discussion on limitations of findings (p. 12). We discuss the effect of conference themes as follows: “Conference themes might have a minor influence on the trends we see in the data. They can provide subtle influence on particular topics and/or vocabulary for particular conferences (e.g. discussion of floods at the ‘managing extremes’ conference in 2012), but any such shifts do not markedly alter the long-term, 25-year trends for these variables. It is unlikely that conference theme significantly influenced the more sustained trends for authorship demographics, collaboration, industry structure and disciplinarity.” (p. 12) “Each conference from 1999 to 2016 had a theme and some of the more specific themes likely had some influence on submission topics and the vocabulary used in papers, which may have skewed the results of our analyses for particular conferences. However, specific conference themes were specifically selected as they were topical within the industry at the time. It is therefore difficult to assign causality for shifts in the topic focus or vocabulary of papers to conference themes. For example, the theme in 2012, which came after several years of the industry needing to respond to major drought, fires and floods, was ‘managing for extremes’. Additionally, the analysis was focused on longer term trends across all conferences, which are likely minimally influenced by any anomalous shifts associated with the themes of individual conferences. Further, most of the themes were general in nature (e.g. <i>Australian rivers: making a difference</i> (2007); <i>twenty years on</i> (2016)), and the final two conferences had no theme, following a recognition by the organising committee that themes had little function or value in shaping the conference.” (p. 17)

I thought the recommendations provided in the discussion were very useful and are a good way to improve river management. However, the transition from the results section to the section that included the discussion and recommendations for future management was abrupt and the two sections were highly disconnected. I suggest adding a sentence to each recommendation that describes how the results presented illustrate that this recommended management action is not currently occurring in Australian river management.	We appreciate the suggestion and have added two sections to the start of the discussion to link the recommendations to the results. We believe this sets up the transition to the recommendations well. Please refer to the marked up manuscript (p. 12) for details. We also added a concluding sentence to Recommendation 5 to link to our analysis and to the UN Goals: “We demonstrated some successes with a relatively rapid transition of ideas from science to policy to adoption (e.g. flood management, environmental flows). This leads us to be confident that incorporating the vision and aspirations of the UN goals directly into policy and legislation would likely lead to their successful implementation.” (p. 14-15)
Reviewer 3	
i have read and reviewed the paper 'Evolution of a river management industry reveals meandering pathway to 2030 UN goals'. I have to say I quite enjoyed the paper. Although I felt myself resisting early on because I felt that the idea of reviewing systematically papers submitted to a conference series in Australia was a little bit niche, the idea grew on me as I read through and the discussion really brought home the value of the paper as it broadens out the findings too stream management on a global scale. I really think that this is just a nice little paper with some really well thought through conclusions and recommendations for global stream management. The paper was really nicely written . I found no typos or anything substantive that I would suggest needed improving . The graphics provided are well presented . I have nothing more substantial to say than congratulations to the authors and I recommend publishing as is.	We very much appreciate this reviewer’s comments. They have picked up exactly the intent and the contributions of this paper as we intended. We note with delight the recommendation to “publishing as is”.

10th Feb 23

Dear Dr Russell,

Your manuscript titled "Evolution of a river management industry reveals meandering pathway to 2030 UN goals" has now been seen by our reviewers, whose comments appear below. In light of their advice I am delighted to say that we are happy, in principle, to publish a suitably revised version in Communications Earth & Environment under the open access CC BY license (Creative Commons Attribution v4.0 International License).

We therefore invite you to revise your paper one last time to address the remaining concerns of our reviewers. At the same time we ask that you edit your manuscript to comply with our format requirements and to maximise the accessibility and therefore the impact of your work.

EDITORIAL REQUESTS:

Please review our specific editorial comments and requests regarding your manuscript in the attached "Editorial Requests Table".

*****Please take care to match our formatting and policy requirements. We will check revised manuscript and return manuscripts that do not comply. Such requests will lead to delays. *****

Please outline your response to each request in the right hand column. Please upload the completed table with your manuscript files as a Related Manuscript file.

If you have any questions or concerns about any of our requests, please do not hesitate to contact me.

SUBMISSION INFORMATION:

In order to accept your paper, we require the files listed at the end of the Editorial Requests Table; the list of required files is also available at <https://www.nature.com/documents/commsj-file-checklist.pdf>.

OPEN ACCESS:

Communications Earth & Environment is a fully open access journal. Articles are made freely accessible on publication under a [CC BY license](http://creativecommons.org/licenses/by/4.0) (Creative Commons Attribution 4.0 International License). This license allows maximum dissemination and re-use of open access materials and is preferred by many research funding bodies.

For further information about article processing charges, open access funding, and advice and support from Nature Research, please visit <https://www.nature.com/commsenv/article-processing-charges>

At acceptance, you will be provided with instructions for completing this CC BY license on behalf of

all authors. This grants us the necessary permissions to publish your paper. Additionally, you will be asked to declare that all required third party permissions have been obtained, and to provide billing information in order to pay the article-processing charge (APC).

Please use the following link to submit the above items:

[link redacted]

** This url links to your confidential home page and associated information about manuscripts you may have submitted or be reviewing for us. If you wish to forward this email to co-authors, please delete the link to your homepage first **

We hope to hear from you within two weeks; please let us know if you need more time.

Best regards,

Clare Davis, PhD
Senior Editor
Communications Earth & Environment

www.nature.com/commsenv/
@CommsEarth

REVIEWERS' COMMENTS:

Reviewer #1 (Remarks to the Author):

I read the revised version of this manuscript, and while I believe it still has some flaws and biases, I believe the authors have expressed these issues more openly in the current version, and I recommend it to be published.

Reviewer #2 (Remarks to the Author):

This is a rereview for me of “Evolution of a river management industry reveals meandering pathway to 2030 UN goals.” The authors have adequately addressed all my concerns about the previous version of this manuscript. I appreciate that they have added two new sections at the beginning of the discussion which provide a great transition from the results to the discussion. I especially value the inclusion of the “Limitations of findings” section. I recommend that the manuscript be published as it provides a unique perspective of how river management in Australia has evolved over the last 25 years.