Subject: Ecography - Decision on manuscript ECOG-05020
From: Maria Persson <onbehalfof@manuscriptcentral.com>
Date: 2019-12-30, 04:43
To: richard.schuster@glel.carleton.ca

http://mc.manuscriptcentral.com/ecogra

30-Dec-2019

Dear Dr. Schuster:

I write to you regarding manuscript # ECOG-05020 entitled "Integer linear programming outperforms simulated annealing for solving conservation planning problems" which you have submitted to Ecography.

In view of the criticisms of the reviewer(s) and the recommendation by the Subject Editor found at the bottom of this letter, I am sorry to report that your manuscript has been declined by Ecography. I hope the enclosed comments may be of value for you.

However, I think your paper is a candidate for publication in Ecology and Evolution. I would like to offer you the opportunity to transfer your paper (and the associated reviews) automatically to Ecology and Evolution. Please note that acceptance of the offer to transfer does not guarantee acceptance of your manuscript as the Editors of Ecology and Evolution will still need to undertake due evaluation of the manuscript. Once the transfer of the files, data and reviews is complete you will receive an email request from Ecology and Evolution asking you to log in to the submission site's Author Center, provide any missing information unique to Ecology and Evolution's submission process, and complete the submission.

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Please note that Ecography does not allow resubmissions of revised manuscripts unless explicitly invited.

Thank you for considering Ecography.

Sincerely,

Prof. Miguel Araújo
Editor-in-Chief, Ecography

Recommendation by the Subject Editor:
The reviewer comments are available below. Although both reviewers are appreciative of the work and make useful suggestions for improvement, both raise serious issues related to the novelty of the study. Having read their reviews and I concur with them. I suggest the paper could be perhaps publishable in Ecology and Evolution after careful handling of the reviewer comments.

Reviewer(s)' Comments to Author:
Reviewer: 1

Comments to the Author
The manuscript "Integer linear programming outperforms simulated annealing for solving conservation planning problems" presents a comparison of performance of Marxan and a marxan like formulation of ILP (prioritzr). The authors find that ILP outperforms SA both in time and cost. That an optimal solution outperforms a metaheuristic in terms of cost of solution is not surprising and the % savings of the optimal solution presented here are in line with previous studies that have completed similar studies. That an optimal solution is much faster is surprising and is one of the particularly useful points in this manuscript worth comparing to other studies which have found previously that optimal solutions were much slower. The methods and results are rigorous and the time savings finding is certainly a worthwhile contribution to the literature. However, the novelty of this manuscript is rather minor beyond this and the authors fail to properly acknowledge the wide range of similar studies that have compared a larger set of heuristics, metaheuristics and optimal solutions and for a wider range of data sets that provide deeper insight for readers around when and where to select a particular tool.
Of particular note the authors should refer to the comprehensive review of studies and tools presented by Sarkar et al. and a similar study by Moore that discusses the advantages and settings for different approaches (Moore et al. 2003; Sarkar et al. 2006). The authors need to place their study more appropriately in this wide literature. They only note a small number of relevant studies from this literature, and perhaps inadvertently, suggest that not much research has been done in this space to make such comparisons.
Secondly, the authors comparison of Marxan and PriortizR and the recommendations they make are rather shallow in terms of real world application – they suggest that an optimal solution is preferable and that time and cost savings would translate into further acquisitions – but the world is not optimal and only one documented minimum set style designed reserve has been implemented in full (see Sarkar for discussion of this) whereas the hundreds to thousands of other plans based on marxan like approaches have been applied piece meal and requiring dynamic planning. Thus, starting out with an optimal plan isn't really the end game here -it's about having a range of good solutions that stakeholders can use to guide decisions or a dynamic approach to acquisitions that allows strategic decisions as properties are made available. It's unclear to me what advantages PrioritizR has in this case and in fact may present some disadvantage by having only a singular solution rather than a range fo good solutions for stakeholders to negotiate over. A more thoughtful discussion of what role optimal solutions have in a complicated and messy world is needed.

Moore JL, Folkmann M, Balmford A, Brooks T, Burgess N, Rahbek C, Williams PH, Krarup J. 2003. Heuristic and optimal solutions for set-covering problems in conservation biology. Ecography 26:595-601.
Sarkar S, et al. 2006. Biodiversity conservation planning tools: Present status and challenges for the future. Annual Review of Environment and Resources 31:123-159.

Reviewer: 2

Comments to the Author
Comments in attached file.

Attachments:

review.pdf 92.3 KB