

Peer Review: Local and long-distance colonization influence the distribution of a species in a fragmented landscape

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Collaborators: Brent Barry, Aidan Branney, Bryn Evans, Marie Tosa + 4 other reviewers

Credibility Score

100%
Accepted by 8 of 8 reviewers

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Conflicts of Interest

The authors declare no conflicts of interest.

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Reviewer Summaries

Brent Barry

Initial Submission

Do you have any conflicts of interest that could bias your ability to provide an independent review?

No

What did the authors do a good job with?

The authors leverage a long-term dataset to understand the spatial dynamics of patch colonization in an urbanized fragmented landscape. In this regard, the authors do a good job of exploring these nuanced processes which are not typically considered. The authors also provide an thorough explanation of their methods.

How do you think this research will contribute to the field?

This research will contribute to the field by providing an example of how treating colonization as several subprocesses can better inform the long-term occupancy dynamics of a species across the landscape. As noted by the authors, while the focal species here is generally not considered to be a species of conservation concern, the approach outlined by Broms et al. (2016) and built upon by the authors could benefit imperiled species elsewhere.

Regarding the study design and methods, what do the authors need to fix or improve upon to be fit for publication?

My greatest concern with the study design and methods of this work is that their Brier scores indicate the model was not very predictive. This could, of course, be due to the bias present in the hold-out test dataset where temporal trends result in over/under prediction. Alternatively, it could be due to the sampling design relying on transects where unaccounted for habitat patches (i.e., places outside of the transect) could be influencing colonization. For example, if random colonizations are >2.5km, are there other potential occupied patches that are more proximate but unsampled because they are "off" the transect? While I appreciate the thorough explanation of the bulk of their methods, the section needs to be rewritten so as to be more concise and digestible, as well as including other critical pieces of information such as the example outlined above. Overall, I would like to see the methods cleaned up after the authors have addressed my comments and those of the other reviewers prior to publication.

Regarding the analysis and interpretation of their findings, what do the authors need to fix or improve upon to be fit for publication?

We, as reviewers, need additional details to fully understand and the authors are perhaps a bit liberal with their interpretations. For example, using terms like "dramatic" in the results section when confidence intervals are overlapping. Generally, see my response in the prior section.

Is there anything else you think the authors need to fix in their article to be fit for publication?

A lot of minor, moderate, and major things. See line by line comments/edits for reference.

Do you have any concerns about the ethics of this research?

No

Do you believe the article, in its current form, is fit for publication?

Revise & Resubmit



Revised Submission

Do you have any conflicts of interest that could bias your ability to provide an independent review?

No

How well did the authors respond to your comments?

4/5

What - if any - feedback do you feel the authors did not adequately respond to?

The authors responded to each of my comments but many of them came down to personal preference rather than standard practices or inadequacies.

Based on your review, what should happen next?

This paper requires minor revisions but does not need further peer review

Would you like to be listed as a Collaborator on the final publication?

Yes, please list me as a Collaborator

Aidan Branney

Initial Submission

Do you have any conflicts of interest that could bias your ability to provide an independent review?

No

What did the authors do a good job with?

I think they did a good job modeling and built many beautiful figures. They also chased after a species that is often overlooked in the carnivore literature.

How do you think this research will contribute to the field?

I think it has many implications both in disease ecology management, furthering our understanding of colonization of patches in urban spaces, and how synanthropic species move without the use of GPS collars.

Regarding the study design and methods, what do the authors need to fix or improve upon to be fit for publication?

I think there are way too many details in describing their model, as it reads as a methods paper as opposed to a skunk occupancy paper. They can summarize a lot of the equations without describing every single parameter of the model. They also were vague in their camera design and need to give summary details on how the data was collected.

Regarding the analysis and interpretation of their findings, what do the authors need to fix or improve upon to be fit for publication?

Overall they need to tie their results back to movement ecology, foraging ecology, disease ecology, or urban ecology. Their results are interesting but they fail to tie it into any broader ecological principles or as to why their results fit into the web of what we know about mammals in urban spaces.

Is there anything else you think the authors need to fix in their article to be fit for publication?

The discussion could use more broad theory and whether this could be applicable to other urban and synanthropic mammals

Do you have any concerns about the ethics of this research?

No



Do you believe the article, in its current form, is fit for publication?

Revise and resubmit

Revised Submission

Do you have any conflicts of interest that could bias your ability to provide an independent review?

No

How well did the authors respond to your comments?

4/5

What - if any - feedback do you feel the authors did not adequately respond to?

Authors responded to all of my questions regarding the interpretations and implications of their modeling

Based on your review, what should happen next?

This paper requires minor revisions but does not need further peer review

Would you like to be listed as a Collaborator on the final publication?

Yes, please list me as a Collaborator

Bryn Evans

Initial Submission

Do you have any conflicts of interest that could bias your ability to provide an independent review?

No

What did the authors do a good job with?

They provide a thoroughly explained, novel method to incorporate spatial complexity in models of occupancy and colonization for multi-year datasets. The figures included summarize the findings very well, and with the increasing importance of camera traps for long-term monitoring, their work is a timely and important contribution

How do you think this research will contribute to the field?

Especially given the effort the authors have gone to to explain their model parameters and to provide guidelines in the discussion for readers that may attempt similar analyses, I think this paper will be valuable for ongoing monitoring projects

Regarding the study design and methods, what do the authors need to fix or improve upon to be fit for publication?

As other reviewers mentioned, the terminology should be defined and used consistently, and they need to clarify a few small points of study design without relying on previously published work

Regarding the analysis and interpretation of their findings, what do the authors need to fix or improve upon to be fit for publication?

I don't have specific feedback for the analysis and results sections, though authors should respond to other reviewer comments

Is there anything else you think the authors need to fix in their article to be fit for publication?

The discussion section contains some very useful guidelines, but is hard to follow in its current format. I suggest sub-headings and trying to par down redundancy where ever possible

Do you have any concerns about the ethics of this research?



No

Do you believe the article, in its current form, is fit for publication?

Accept

Revised Submission

Do you have any conflicts of interest that could bias your ability to provide an independent review?

No

How well did the authors respond to your comments?

5/5

What - if any - feedback do you feel the authors did not adequately respond to?

No issues were inadequately addressed

Based on your review, what should happen next?

This paper is ready for publication

Would you like to be listed as a Collaborator on the final publication?

Yes, please list me as a Collaborator

Matthew Hyde

Initial Submission

Do you have any conflicts of interest that could bias your ability to provide an independent review?

No

What did the authors do a good job with?

The study design, methodology, and focus of the manuscript are really interesting. The figures are great. The underlying research question about what's influencing colonization (local vs random) is fascinating and this methodology could be broadly applied.

How do you think this research will contribute to the field?

Estimating local vs random colonization with this method will be a great contribution, and it also contributes specifically to understanding skunk dispersal in urban areas.

Regarding the study design and methods, what do the authors need to fix or improve upon to be fit for publication?

I think you need to be more clear about how you're identifying and using covariates, the ranges of those values and consistent terminology. For example, sometimes you use permanent water bodies, sometimes it's streams and rivers, sometimes it's natural water sources. Consistency would help the reader understand. I also think the covariates that you're applying to observation model weren't clearly spelled out in the methods section. You don't present anything hypotheses for why that covariate could affect detection.

Regarding the analysis and interpretation of their findings, what do the authors need to fix or improve upon to be fit for publication?

I don't have any major comments about the analysis and interpretation of the findings.

Is there anything else you think the authors need to fix in their article to be fit for publication?



The first time that I read through the article I was confused by the inconsistent use of colonization and associated terms. Making sure that the terminology is clear and that you're defining them in the introduction then using them consistently throughout would help to understand how your results fit into skunk dispersal and larger applications of your model.

Do you have any concerns about the ethics of this research?

No

Do you believe the article, in its current form, is fit for publication?

Revise & Resubmit

Revised Submission

Do you have any conflicts of interest that could bias your ability to provide an independent review?

No

How well did the authors respond to your comments?

5/5

What - if any - feedback do you feel the authors did not adequately respond to?

I thought the authors did a great job of clarifying some of the language throughout the manuscript that led to confusion in the first version. I thought they did a good job improving the interpretation and the figures as well. Overall, the manuscript is really well done.

Based on your review, what should happen next?

This paper is ready for publication

Would you like to be listed as a Collaborator on the final publication?

No, I do not want to be listed as a Collaborator

Daniel Linden

Initial Submission

Do you have any conflicts of interest that could bias your ability to provide an independent review?

No

What did the authors do a good job with?

A full description of their statistical model and a nice a priori collection of hypotheses as represented by different models

How do you think this research will contribute to the field?

The concept of different types of colonization (neighborhood vs. random) is still fairly novel and will be applicable for many wildlife monitoring studies

Regarding the study design and methods, what do the authors need to fix or improve upon to be fit for publication?

Nothing, in my opinion. The methods were adequately documented and the code is freely available.

Regarding the analysis and interpretation of their findings, what do the authors need to fix or improve upon to be fit for publication?

I thought the analysis and interpretations were reasonable, and caveats addressed.

Is there anything else you think the authors need to fix in their article to be fit for publication?



Nothing major, the reviewers provided some good feedback though many opinions were presented as facts and the authors should be free to make reasonable choices with regards to what is specifically addressed.

Do you have any concerns about the ethics of this research?

No

Do you believe the article, in its current form, is fit for publication?

Revise and resubmit

Revised Submission

Do you have any conflicts of interest that could bias your ability to provide an independent review?

No

How well did the authors respond to your comments?

5/5

What - if any - feedback do you feel the authors did not adequately respond to?

N/A

Based on your review, what should happen next?

This paper is ready for publication

Would you like to be listed as a Collaborator on the final publication?

No, I do not want to be listed as a Collaborator

Gary Roloff

Initial Submission

Do you have any conflicts of interest that could bias your ability to provide an independent review?

No

What did the authors do a good job with?

Advancing a format for next generation of dynamic occupancy models.

How do you think this research will contribute to the field?

Advances dynamic occupancy modeling; provides an analytical framework for a deeper understanding of colonization processes.

Regarding the study design and methods, what do the authors need to fix or improve upon to be fit for publication?

Look to shorten the model description, potentially relying on already published content in Broms et al. paper (that is cited in the current manuscript).

Regarding the analysis and interpretation of their findings, what do the authors need to fix or improve upon to be fit for publication?

Perhaps include more ecological theory in the discussion to support some of the findings from this analysis. Summary stats on covariates that went into the model.

Is there anything else you think the authors need to fix in their article to be fit for publication?

The reviewer group made some very good recommendations and I believe if the authors take those recommendations seriously this paper will make a useful contribution to the literature.



Do you have any concerns about the ethics of this research?

None

Do you believe the article, in its current form, is fit for publication?

Revise & Resubmit

Revised Submission

Do you have any conflicts of interest that could bias your ability to provide an independent review?

No

How well did the authors respond to your comments?

5/5

What - if any - feedback do you feel the authors did not adequately respond to?

I thought the authors did an excellent job of responding to the review.

Based on your review, what should happen next?

This paper requires minor revisions but does not need further peer review

Would you like to be listed as a Collaborator on the final publication?

No, I do not want to be listed as a Collaborator

Marie Tosa

Initial Submission

Do you have any conflicts of interest that could bias your ability to provide an independent review?

No

What did the authors do a good job with?

Authors did a good job describing in detail the dynamic occupancy model and the way that it was different from typical dynamic occupancy models.

How do you think this research will contribute to the field?

This research uses striped skunks as a case study for thinking about colonization in a different light. Instead of thinking about colonization as independent of the surrounding environment, authors think about colonization as a biological process that occurs from neighboring sites, similar to metapopulation theory and metapopulation dynamics

Regarding the study design and methods, what do the authors need to fix or improve upon to be fit for publication?

Authors need to include more details about the study design and methods to increase reproducibility.

Regarding the analysis and interpretation of their findings, what do the authors need to fix or improve upon to be fit for publication?

There appear to be processes other than those tested in the hypotheses that are influencing persistence and random colonization (Fig. 4, seasons 1-3). I was also expecting some discussion regarding metapopulation theory and was disappointed to not find any.

Is there anything else you think the authors need to fix in their article to be fit for publication?

N/A

Do you have any concerns about the ethics of this research?



No

Do you believe the article, in its current form, is fit for publication?

Revise and resubmit

Revised Submission

Do you have any conflicts of interest that could bias your ability to provide an independent review?

No

How well did the authors respond to your comments?

4/5

What - if any - feedback do you feel the authors did not adequately respond to?

N/A

Based on your review, what should happen next?

This paper requires minor revisions but does not need further peer review

Would you like to be listed as a Collaborator on the final publication?

Yes, please list me as a Collaborator

Kara White

Initial Submission

Do you have any conflicts of interest that could bias your ability to provide an independent review?

No

What did the authors do a good job with?

The authors did well framing the rationale for their study, particularly in highlighting the deeper insights gained from incorporating dynamic processes, such as colonization and persistence, into our understanding of how species use space. The use of this modeling framework, coupled with nearly a decade of data, was a major strength.

How do you think this research will contribute to the field?

This research makes a valuable contribution to the field by advancing our understanding of species distribution dynamics in fragmented landscapes. These findings have broader implications for urban wildlife ecology, conservation planning, and human-wildlife conflict mitigation.

Regarding the study design and methods, what do the authors need to fix or improve upon to be fit for publication?

The study design is robust and the methods are generally well-executed, but there are areas that could be improved for greater clarity and accessibility. First, the methods section devotes significant space to detailed mathematical equations and modeling processes. While these are important, they could be condensed or moved to supplementary materials, allowing the focus to remain on how encounter histories were built (e.g., daily intervals) and providing more detail on the specific covariates included in the models. Additionally, the covariates could be described more thoroughly to better contextualize their selection and relevance to the ecological processes being studied.

Regarding the analysis and interpretation of their findings, what do the authors need to fix or improve upon to be fit for publication?



The analysis is thorough and appropriate for addressing the research questions, but a few aspects of the interpretation could be improved. While the authors clearly identify patterns in local and random colonization, they could strengthen the interpretation by more explicitly linking these results to broader ecological theories, such as metapopulation dynamics, dispersal ecology, urban ecology, etc.

Is there anything else you think the authors need to fix in their article to be fit for publication?

The manuscript could be revised to improve clarity and conciseness, particularly by addressing the frequent use of subjective or colloquial terms like "such that," "such as," and "such," which could be replaced with more precise language. Additionally, ensuring consistent use of terminology throughout the manuscript would enhance readability and comprehension.

Do you have any concerns about the ethics of this research?

No

Do you believe the article, in its current form, is fit for publication?

Revise & Resubmit

Revised Submission

Do you have any conflicts of interest that could bias your ability to provide an independent review?

No

How well did the authors respond to your comments?

4/5

What - if any - feedback do you feel the authors did not adequately respond to?

I felt that the author adequately responded to the feedback.

Based on your review, what should happen next?

This paper requires minor revisions but does not need further peer review

Would you like to be listed as a Collaborator on the final publication?

No, I do not want to be listed as a Collaborator