Daniel Buonaiuto
Harvard University
1300 Center St
Boston, Massachusetts 02131

March 23, 2017

Stephen Love, Editor
University of Idaho
Aberdeen R & E Center
1693 S 2700 W
Aberdeen, ID 83210

Dear Dr. Love:

Please consider my revised manuscript 'Outcrossing and fecundity in the woodland sedge, *Carex pensylvanica:* implications for ecological restoration' for publication in Native Plants Journal. Comments from the editor and reviewers have greatly improved this manuscript from its last submission.

In the current version, I have improved the conciseness of the introduction and discussion, commented on the character of the plant materials used in the experiment, and clarified my figures, in addition to the formatting changes suggested by the reviews.

I feel the new submission is much improved and detail my changes in the following pages (note that reviewer comments are in italics, while my responses are in regular text). As instructed, I have also retained the "track changes" in the revised document. I hope that you will find it suitable for publication in Native Plants Journal and look forward to hearing from you.

Sincerely,

Daniel Buonaiuto

Associate Editor (Comments for the Author):

Your manuscript appears to be well-written with few typographical and grammar errors. However, you should tighten up the introduction and discussion sections, and also clarify what is known about the source material for your plants. Although you call them "wild" plants, they're in an aboretum/park- could they have been planted?

Many thanks for the two reviews and for your comments. I have improved the conciseness of the introduction and discussion sections. The "track changes" feature of the manuscript captures all deletions in these sections. In lines 228-230, I clarified that while my sampling was conducted on land owned by the Matthaei Botanical Gardens, the study site was very remote from the cultivated areas of the garden, and the natural communities of sedges native and present before the garden's establishment.

In addition, please pay careful attention to the formatting suggestions provided by reviewer #2.

Additionally, I have made all of the formatting changes suggested by reviewer #2.

Reviewer #1 (Comments for the Author (Required)):
This is a well-written manuscript, with an interesting result. The introduction and discussion should be shortened by sharpening the focus on the study itself. Also, please add line numbers so the reviewers can more easily reference text that needs improvement

I thank Reviewer #1 for their careful read of this manuscript and thoughtful suggestions for improvement. I have added line numbers and corrected all of their specific comments, with special attention to shortening the introduction and discussion sections, and clarifying the origins of the plant materials (see response to Editor comments above).

Specific comments:
Abstract:
Omit the first line.
Change "Based on this data..." to "Based on these data..."
the numbers presented for seed set (4.692 and 2.835) appear to be too precise. you presumably measured these in whole seeds, so a single decimal will suffice.

I removed the first line of the abstract, fixed the typological errors, and rounded my seed set values to the nearest single decimal place. I performed this rounding in the results section.

Introduction
Shorten the introduction and keep it focused on your study

I have removed several paragraphs from the introduction which can be found in the "track changes" feature of the manuscript.

.Materials and Methods:
Please comment on how "wild" your wild C. pensylvanica plants were. Mightn't they have been planted?
On pg 9, fix the typo from "Coddingto n10x" to "Coddington 10x).
Also on pg 9- omit the "were" from "...I included only flowers that set one or more seeds were in the statistical...

As mentioned above, I have clarified the origins of the plants materials and fixed typological errors.

"Results:
In both results, the statement of whether or not the hypothesis was supported should be moved to the discussion.

These statements have been move to the discussion line 336-337 and 349-350.

Discussion:
Shorten the discussion to keep the focus on your research question. You shouldn't have to state, "To return to the applied question of this study..."

I have deleted several large statements (visible in track changes) and restricted my discussion to address the specifics of my experimental question.

Figures:
Provide more information in the captions- when/where was the study completed, and what to the error bars represent. Also- figure one does not appear significant, based on the error bars. Is there a reason for this?

This was a really important critique. My original figures were boxplots, which only show the distribution of data and provide no indication of statistical significance. I have replaced the boxplots with new figures showing the mean and standard error for both treatments and response variable and clarified my description of the figures in the caption.

References:
Please double-check to be sure that all in-text references are listed here, and vice/versa.

I have rechecked the reference list against the in text citations, and they now match appropriately.

Reviewer #2 (Comments for the Author (Required)):

This paper on outcrossing and fecundity of Carex is well-written and easy to read. The research appears to be based on sound principles. I have a few concerns with the paper and suggestions for improvements.

My biggest concern about this manuscript is the source plant material. I am thinking the issue is mostly a matter of lack of information. The authors state that C. pensylvanica were obtained from wild clones resident at the botanical gardens. What is the ultimate source of these clones? Were they native to the site before it was managed as a garden? Are the clones representative of a wider germplasm base? Is this material appropriate for making conclusions about the species on a wider scale? Is it representative of the species and can you expect the same results with samples from other populations? More information is required to help the reader define the scope of the study. Also, if in cannot be assumed that this material is representative of the species as a whole, the limitations need to be explained and the conclusions redefined on a narrower scale.

Thank you for this important comment. As mentioned above, I have clarified the wild origins and character of the plant materials I used in the experiment in lines 228-230. I greatly appreciate your question regarding the how representative these results may be across the species. To my knowledge, there have been no studies that have addressed the degree of local adaptation and population level variation in *Carex pensylvanica*. Because of this it is hard to conclusively answer your question, and as such, I have added lines to my discussion qualifying such conclusions (lines 386-388).

Another issue is whether a single sample date within one year is sufficient to allow solid conclusions. It is always better to duplicate a study more than one time to ensure repeatability. Justify this practice and discuss the limitations.

This is also a very important point. Which I have now addressed in the discussion section of the manuscript (line 365-371). Because I conducted this experiment under lab conditions, I believe I was able to control for most of the factors that produce inter-annual variation in populations such as pest, water and nutrient stress, temperature, and inter-organismal interaction. With this control, I feel that I was able to draw reasonable conclusions based on one year of data.

Conciseness in the Introduction needs improvement. One suggestion is to eliminate some of the "educational" elements included in this section and include only what is needed to define the problem.

As mentioned above, I have reduced the scope and length of the introduction, and was very appreciative of your guidance in this by suggesting removing the more “educational” aspects of the introduction.

Necessity of using a GLM prediction model is unclear. Either use the mean values to make the point of the results, or justify the use of a prediction model. Also, it would be helpful if the authors could give the reader practical assessment of what the difference in seed set will mean to actual production yields/profits.

While the seed set means were significantly different, I chose to expand my analysis using mixed models to account for the possibility of clonal influence on the response variables. Because I sampled multiple inflorescences from the same clone, mixed modeling removed pseudo-replication from my sampling design. I have elaborated on my modeling choices in lines 285-289. Your second point is an excellent one and I agree lies at the heart of this inquiry. However, because the yield and profit of growers will depend on many other factors in addition to biology, I did not feel confortable trying to project my result into this realm. With that said, I have added a statement to recognize this limitation in line 382-384 of the discussion.

In Figure 1, the caption indicated the presence of a significant difference in seed set. However, the SE bars do not necessarily support that conclusion. I would expect more separation of the error bars associated with significance. Double check your chart.

This was a really important observation. As I mentioned in response to Reviewer 1 above, the figures I produced originally were box plots, which do not measure the standard error, but rather the overall distribution of data. I have replaced these plots with mean and standard error plots to better reflect the conclusions I draw in the study.

There are also a few NPJ formatting issues that need to be addressed:

All units of measure should be expressed with SI units, followed by English Standard units in parentheses. Check to be sure they are all written in this format. Also, inches should be labelled as in rather than " and feet as ft rather than '.

These changes have been made in lines 232, 234-5,241-2. 245, 248, 257, 264.

There are some discrepancies between the citations and the list of references. Carefully go through and make sure all citations are listed in the references and vice versa, that the spelling of authors is consistent,and that the years match.

I have rechecked citations and the in text entries now match the list of references. I have also correct the year for one in text citation in line 64.

Throughout the text, change citation format from Author et al. to Author and others.

This change has been made.

Include a Nomenclature line after the Key Words. This is usually done by checking your species names against the USDA Plants Database, then including a citation and associated reference. Look at a copy of NPJ to see how this is done.

This change has been added in line 32.