**Responses to Editor’s, Associate Editor’s, and Reviewers’ Comments**

ID UJFM-2018-0128

29-Aug-2018   
  
Dear Dr. Parrish:   
  
Thank you for submitting to North American Journal of Fisheries Management your manuscript entitled "Size and age of Lake Champlain Stonecats; estimating growth at the margin of their range".  We have completed a review of your paper.     
  
This manuscript was previously submitted to NAJFM (old manuscript number was 2018-0058).  In my decision letter on the original version I indicated that the Associate Editor and reviewers did not believe the manuscript was suitable for publication in our journal and I rendered a decision of reject.  Subsequent to my decision, you contacted me and asked if I would consider a revision of the original paper and resubmit as a new submission.  I agreed and asked you to prepare a point-by-point response which you did.   
  
The revised manuscript (referenced above) was reviewed by three new reviewers and the same Associate Editor.  I also read the manuscript.  The reviews are mixed.  All the reviewers are recommending major revision with one of the reviewers questioning whether this manuscript represents a significant advancement suitable for publication by our journal.  The Associate Editor also questions whether this paper is suitable for publication in the journal because it is not broadly applicable.

**Response:**  **Our interpretation of the reviews are that two of the reviewers found only minor issues to address at this point. Their comments are inconsistent with the statement that they are recommending a major revision. We agree that one reviewer expressed concerns. We understand that the AE questions whether this paper is suitable for this journal. Unfortunately, we did not get that explicit feedback on our original submission so we did not attempt to bring in more details that were specifically aimed at management. We have now made modifications to address this specific concern in the revised manuscript.**  
I've read through the paper as well as your response to the comments on the first draft.  The new manuscript is improved in writing and the addition of Dr. Ogle as an author has improved the understand-ability of the modeling results.  I agree with the reviewers that there is some interesting data here that might be worth publishing.  Two of the three reviewers suggest that the information you present will improve management of the species.  However, one of the reviewers and the AE question whether the manuscript contributes to the management of stonecats.  At present I'm struggling to find a connection of the manuscript to a fisheries management issue that will be of interest to our readers.  I've read through the paper a couple times and neither the introduction or most of the discussion relate to a management issue.  It isn't until the last paragraph of the discussion that you bring the topic around to a management issue.  As you know this journal is all about fisheries management and unless a manuscript has clear implications to that topic, I'm hesitant to accept it for publication.

**Response: We obviously agree with the two reviewers that believe the information we present will improve management of the species or at least provide that opportunity. We would hope that readers would be interested not only in Stonecat, but in the approach we took to gain an understanding of individual growth in a species that we don’t know a lot about. Just because this is a non-game fish does not mean its future existence isn’t the responsibility of the state management agency. Admittedly, we did not address this issue well in the previous version, but we were not instructed to do so. However, we have taken steps to bolster the management-related aspect and broader applicability of our methods in the newly revised manuscript.**  
I don't necessarily reject papers when they are of regional interest if they have a strong management connection to the species studied because my assumption is that readers of a good paper will be able to extrapolate the findings from the regional population to their population of interest even if it's outside the geographic area.  However, when the management connection is not strong, then regionalism becomes more of an issue because transfer-ability to other areas is problematic.

**Response:** **We think the approach we used is applicable to other species and systems, especially when hard parts cannot be collected because of the status of the species. We have included a statement to that effect in the Abstract and Introduction.**

From correspondence with the journal it appears that you are looking for a decision on this paper sooner rather than later.  I'm afraid that I can't yet tell you if I'm going to be able to accept the paper for publication even if you decide to revise and send back to NAJFM.  At this point it is not acceptable for publication but I'm willing to give you another opportunity to revise and submit with the hope that you can convince me how your work contributes to the management of stonecats so that others outside the very narrow geographic range will find the results compelling.  But even if you revise and resubmit, there is no guarantee that I will accept your paper for publication in NAJFM or that I will be able to give you a quick answer upon receiving another revision.  My final decision will depend on your revision as well as, I'm afraid, on another round of reviews to ensure that the relevancy is there for our readers.  So you should enter into your decision knowing that I'm not going to provide you a quick answer on whether your paper will be suitable for publication in NAJFM.   
  
I'd suggest that you consider whether a regional journal might be better suited for this work.  Or perhaps a journal less focused on fisheries management where the readership is more interested in basic information on the life history or growth characteristics of fishes.  For example, it looks like your 2016 paper in TAFS on stonecats was more about basic life history information than about specific management applications.  I'm not sure that this version of the paper would be sent out for review by the EIC at TAFS but perhaps your ability to revise for submission to TAFS would be easier than for NAJFM because you wouldn't be tied to a management topic and could explore more basic life history and growth information.  It's just a thought.

I'm sorry I can't be more encouraging and give you any more certainty than you had when you submitted the revision.  If you decide to revise and resubmit the paper to NAFJM, the instructions are below.  If you decide to go elsewhere, I hope you find the comments useful and instructive.

Reviewer(s)' Comments to Author:   
  
Reviewer: 1   
  
Recommendation: Reconsider following revision. This manuscript should be re-evaluated for acceptance after consideration of the changes suggested by the review team.   
  
Comments:   
Size and age of Lake Champlain Stonecats; estimating growth at the margin of their range   
  
by Elizabeth Puchala, Donna Parrish & Derek Ogle   
  
General Comments:   
This manuscript describes a study analysing and comparing the growth rates and maturity age of two Stonecat populations to each other and with other populations using information drawn from the literature.   
The manuscript is well written and easy to follow. The scientific analysis is sound and provides valuable information for the management of this endangered species in the Lake Champlain watershed in Vermont, USA.   
  
Major Concerns:   
I don’t have any major concern with this manuscript. I find that comments from previous reviewers have been adequately addressed.

**Response: Please note that this reviewer does not have any major concerns and states that we have adequately addressed previous reviewers’ concerns.**

Minor Comments:   
I would suggest to refer to the species as Stonecat. Consequently, throughout the entire manuscript please change “Stonecats” to “Stonecat”.

**Response: OK. Done.**  
  
l.46: Change to … conservation actions”.

**Response: The proposed change is incorrect. According to most style manuals, and AFS technical editors, the period goes inside the end quotes.**  
L80: How was it determined that captured Stonecat did not experience obvious distress? What were the signs for obvious distress? Please elaborate. Why were these other fish excluded, the distress would not have affected growth and maturity stage? How many fish were captured but not analysed?

**Response: Fish that exhibited normal swimming behavior in the bucket were not stressed. Our E & T permit required that any mortalities that occurred in our presence must be reported to the Secretary of the Vermont Agency of Natural Resources within 24 hours of the event. This restriction obviously made us extremely careful in handling fish such that we did no harm. There were only 8 captured fish that were not analyzed. We added text on Line 86 to clarify.**  
l.168: Why were not all captured Stonecat PIT tagged? Were the fish that were not tagged, morts from the lampricide treatment? Please explain.

**Response: Only fish that were too small (< 90 mm) or too stressed were not tagged (see Methods). These results apply only to the LaPlatte River fish and at that time the LaPlatte River was not treated with TFM.**

Additional Questions:   
(1) Is the paper understandable, scientifically sound, and technically reliable?   
Yes, the paper is well laid and scientifically sound.   
  
(2) Does the title clearly reflect the contents of the paper? Is the abstract informative? Are the   
objectives clearly stated? Is the methodology sound?]   
The title describes well the study. The abstract summaries appropriately all required components. The study objectives are clearly stated. Material and Methods are detailed enough to be able to repeat the study design.   
  
(3) Are the results clearly presented? Are the tables sufficiently complete and the figures adequate?   
The results are well described and the figures illustrate the results nicely.   
  
(4) Are the statistical tests, if any, appropriate for the data and correctly applied? Has the decision probability been stated and properly applied?   
Applied data and statistical analyses appear sound.   
  
(5) Are the findings well integrated with existing knowledge? Are the conclusions adequately supported by the data? Is the information new, or has it been published in some form (other than in the institutional or contractual report literature)?   
Yes, the results have been compared with findings from the literature.   
  
(6) Does the paper represent a substantial or minor advance beyond existing knowledge? Is it relevant to its field?   
Although the here presented growth rates and length-age relationships for Stonecat are not ground breaking, they provide valuable information to support management decision for the Stonecat populations in the studied ecosystem.   
  
(7) If this is a review paper, does it cover its subject adequately and objectively?   
n/a   
  
Additional Questions:   
Is the subject of the work consistent with the aims and scope of the journal? If not, please explain.: Yes, the paper is providing information to support management decision for Stonecat populations in Vermont.   
  
Does the title clearly encapsulate the contents of the manuscript? If not, please explain.: Yes, the title describes well the study.   
  
Does the abstract provide a clear and concise summary of all the major components of the manuscript, including the implications of the work? If not, please explain.: Yes, all major components of the manuscript are summarized in the abstract.   
  
Does the introduction develop a logical, justifiable basis for the work, complete with an appropriate review of the current literature on the subject? If not, please explain.: Yes, the introduction is well written.   
  
Is the methodology appropriate to address the objectives of the study? Is there sufficient detail provided to enable readers to replicate the study? If not, please explain.: Sufficient details are provided in M&M.   
  
Are the statistical analyses (if required) appropriate for the data and correctly applied? If not, please explain.: Data and statistical analyses appear sound.   
  
Are the results, tables, and figures presented in a clear and organized fashion? If not, please explain.: Results are well presented and the figures are good.   
  
Does the discussion adequately explain the major findings of the study, draw conclusions that are supported by the data, and integrate the findings within the broader literature on the topic? If not, please explain.: Yes, the discussion includes all above mentioned components.   
  
Are the implications of the work clearly stated and appropriate? If not, please explain.: The value of the study for management is clearly stated.

**Response: Please note that here, and in several responses above, this reviewer indicates that the manuscript does have value with respect to management decisions.**

Given the scope of the study, the depth and breadth of the analyses, and its utility to the readership of the journal, this manuscript is best suited for publication as a: No opinion. I wish to leave this decision to the discretion of the editors.   
  
  
Reviewer: 2   
  
Recommendation: Reconsider following revision. This manuscript should be re-evaluated for acceptance after consideration of the changes suggested by the review team.

Comments:   
The manuscript is well written and I only have a few minor comments that the authors should consider.

**Comment: As with Reviewer 1, please note that this reviewer does not have any major concerns and states that they have only minor comments for us to consider.**

Line 80: What happens to individuals "experiencing stress"? Where they euthanized or released? not used for PIT tags but data collected otherwise?

**Response: A few fish were not swimming normally after netting during electrofishing. This was considered significant stress. We held the fish in a separate bucket to ensure the fish recovered or expired in our presence so we could report the mortality as required by our E & T permit. If the fish resumed normal swimming we released it back into the river.**

Line 114-115: What does t<sub>1</sub> and t<sub>2</sub> indicate? I assume they are used in the equation for S<sub>i</sub> when i = 1 and 2 but it is not clear.

**Response: We revised the notation and description, which clarifies the seasonal component of the growth model.**Line 202-203: Could population size also result in the faster growth of Stonecats in Lake Champlain tributaries compared to streams in the middle of their distribution? Or a combination of population size and more prey?

**Response: We would suppose these could be true. We added text to address this (lines 213-216).**  
  
Additional Questions:   
Is the subject of the work consistent with the aims and scope of the journal? If not, please explain.: Yes, the manuscript evaluates growth of Stonecats, a state endangered species. There is limited previous research on the population dynamics of this species in their study area and throughout it's range. Therefore, this work adds to the management of the species locally but is also relevant to the overall management of this species in North America

**Response: As with Reviewer 1, this reviewer indicates that the manuscript has value for management of this species.**  
  
Does the title clearly encapsulate the contents of the manuscript? If not, please explain.: Yes, the title adequately describes the manuscript. No changes are recommended.   
  
Does the abstract provide a clear and concise summary of all the major components of the manuscript, including the implications of the work? If not, please explain.: Yes, the abstract provides all the necessary detail for a reader to get a quick overview of the study, their findings, and recommendations   
  
Does the introduction develop a logical, justifiable basis for the work, complete with an appropriate review of the current literature on the subject? If not, please explain.: Yes, the introduction is very well developed and provides a "big picture" description of Stonecats, followed by the importance of understanding age and growth, and ends with their objectives where are tied to the limited information on age and growth of this species.   
  
The only thing I would suggest is a different concluding sentence to paragraph one that might tie better into paragraph two. One suggestion would be a sentence that describes how understanding life history of species is important to improve management of species, particularly when their population abundance has been observed to be decreasing.

**Response: We considered adding this sentence at the end of the paragraph as suggested by this reviewer. However, we feel that it would be redundant with our 1st sentence of the 2nd paragraph and, thus, have decided not to add such a sentence.**   
  
Is the methodology appropriate to address the objectives of the study? Is there sufficient detail provided to enable readers to replicate the study? If not, please explain.: Yes, the methods are appropriate to meet the objectives of the study. I will also point out the it is nice to be able to use data from a study that doesn't specifically target this species (TFM treatments in the Great Chazy River) to give insight on their population characteristics.   
  
Are the statistical analyses (if required) appropriate for the data and correctly applied? If not, please explain.: Yes, I did not review the original submission but I did read the comments from the first review. The changes made to the statistical analysis are appropriate and improved the manuscript considerably. No other changes are necessary.   
  
Are the results, tables, and figures presented in a clear and organized fashion? If not, please explain.: Yes, no changes are suggested for results, tables, and figures.   
  
Does the discussion adequately explain the major findings of the study, draw conclusions that are supported by the data, and integrate the findings within the broader literature on the topic? If not, please explain.: Yes, the discussion does a good job at drawing conclusions that are supported by the data and integrated into the the broader literature.   
  
Are the implications of the work clearly stated and appropriate? If not, please explain.: Yes, the authors do an excellent job at linking their results to the TFM treatments and how their growth and maturity could be affected by the current 4+ year rotation for treatments.

Given the scope of the study, the depth and breadth of the analyses, and its utility to the readership of the journal, this manuscript is best suited for publication as a: Management brief. This manuscript describes an initial or small-scale assessment of new techniques or observations, policy changes, or management actions specific to a narrow range of species or systems.   
  
  
Reviewer: 3   
  
Recommendation: Reconsider following revision. This manuscript should be re-evaluated for acceptance after consideration of the changes suggested by the review team.   
  
Comments:   
Introduction:   
Line 44. Other than the Quist and Isermann endorsement, and that Stonecats are generally understudied, why is it important to provide the information sought in this study? Reading through the Introduction, there is limited sense of how this information will really be used to further conservation and management of these particular populations.

**Response: We can appreciate that for some, results have to be linked to an action and perhaps that is a benchmark. For some of us, we think the results have value for management because the new information can inform future actions. We have added text in the Abstract, Introduction, and Discussion addressing this concern.**

Line 51 describes them as Stonecats in Lake Champlain, but is that accurate? Is “Lake Champlain Stonecat” an accepted name?

**Response: We know it is a stacked modifier, but the construct is not typically confusing to most readers. We have changed to “Stonecat populations in Lake Champlain.” We made similar changes when referring specifically to Stonecat from the LaPlatte River or Great Chazy River.**

Methods:   
Line 86. I also assume the conservation status of the species prohibited methods that might result in severe injuries or mortalities?

**Response: Yes. We have clarified this with a statement of remaining in compliance with our E & T permit.**

Line 94. Great Chazy River Stonecats were frozen and thawed prior to length

measurements.  For how long were they stored?  Effect on lengths (could result in some shrinkage)?

**Response: These fish were collected by other agencies and, thus, frozen before being sent to us; we could not process these fish before being frozen. We have addressed this concern by noting in the methods how long these fish were frozen before processing and adjusting the measured lengths for a presumed effect of freezing before including those lengths in our models. As noted in the revised manuscript, we are unaware of any information about the specific amount of shrinkage for Stonecat (not surprising given the general lack of information in the literature about this species). We did not find one paper that described shrinkage in TL of the related Channel Catfish. However, the individuals in this study were much larger than the fish in our study and we were hesitant to assume that its result directly applied to Stonecat. Thus, we calculated the average shrinkage for several species, including the Channel Catfish results, and applied that to our Stonecat. We understand that this is not a perfect adjustment, but a perfect adjustment is not possible with our current state of knowledge. We do think that this adjustment is an improvement and addresses this reviewer’s concern. It should be noted that this adjustment affected our results only by increasing all length-related metrics from the growth model by the shrinkage adjustment amount (2.5%). These changes did not materially change our conclusions.**

Line 113-115. Regarding the equation I would start by defining the response variable, check case on delta t for consistency.

**Response: Done.**

Line 149. “starting” values

**Response: Done.**

Line 152. “between LaPlatte and Great Chazy rivers”

**Response: Done.**

Additional Questions:   
Is the subject of the work consistent with the aims and scope of the journal? If not, please explain.: Without the final paragraph of the Discussion, appropriateness of the paper for publication in NAJFM is questionable.  The authors could make a stronger case for a management need related to understanding growth in the context of conservation.  Threat evaluation, potential uniqueness of an edge of distribution population that is endangered, etc. are compelling and could be better developed.

**Response: The use of value-laden words is typically discouraged, if not forbidden, by the USGS. One of the authors is a USGS scientist and she must avoid those type of statements.** **However, we have taken the reviewer’s comment and, as noted elsewhere, attempted to bolster the management-related context throughout the manuscript.**

Does the title clearly encapsulate the contents of the manuscript? If not, please explain.: The title could better communicate the conclusions and allude to conservation.  Suggestion: “Size and age of Stonecats in Lake Champlain tributaries; estimating growth to aid threat evaluation and population management.”

**Response: See above response. We have revised the title to “Size and age of Stonecat in Lake Champlain; estimating growth at the margin of their range to aid in population management**.”

Does the abstract provide a clear and concise summary of all the major components of the manuscript, including the implications of the work? If not, please explain.: Overall the abstract is sufficient.  It could more effectively communicate the management need/benefit of the study, especially if the paper is revised to strengthen that focus.

**Response: We have revised the Abstract to better link to management, especially the last sentence.**  
  
Does the introduction develop a logical, justifiable basis for the work, complete with an appropriate review of the current literature on the subject? If not, please explain.: As suggested above, a stronger indication of the benefits of this study to conservation management of Stonecats would be helpful.  Relating the work more directly to TFM treatment of these streams would be a way to do that.

**Response: We mentioned TFM only as an example of a stressor, which is one of several which we now mention in the revised manuscript.**

Is the methodology appropriate to address the objectives of the study? Is there sufficient detail provided to enable readers to replicate the study? If not, please explain.: Mostly. In the interest of brevity, some detail related to collecting Great Chazy River Stonecats could be removed.  However, it would be helpful to have some idea of the spatial range over which fish were collected in both streams. Were collections spread throughout the mainstems among several sites? It is implied only the mainstems were included, but if sampling occurred more broadly please describe. In some way we need to understand how representative the samples are of the two streams as generalized comparisons are being made.

**Response: On line 94, we state that 33 km of the Great Chazy was the area from which Stonecat were collected. We added sentences to the sections where they were collected from the LaPlatte. The short answer is that the samples came from throughout major portions of both rivers that had been previously documented by the management agencies. We did not mention the tributaries because there is no information indicating Stonecat are anywhere but the mainstems. These rivers are mostly small and mostly wadeable, especially the LaPlatte. Tributaries are almost non-existent.**  
Are the statistical analyses (if required) appropriate for the data and correctly applied? If not, please explain.: The use of the modified and traditional VBGF seem appropriate.   
  
Are the results, tables, and figures presented in a clear and organized fashion? If not, please explain.: Is Figure 2 necessary? Lines 178 -181 seem sufficient or could be slightly expanded in detail to avoid the figure.

**Response: We think that our textual summary is good, but it is important to consider the breadth of times-at-large that are present in our data. This plot demonstrates that the times-at-large are not overly discrete, which is not evident from our textual statement. This breadth of times-at-large is partially what led us to needing to fit a seasonal growth model (i.e., we could not assume an integer time-at-large). Additionally, the breadth of times-at-large make for a more robust fitting of the seasonal mark-recapture growth model. We think readers should see this information. Thus, it is our preference to keep this figure in the manuscript. Of course, if this is a deal-breaker for acceptance of the manuscript, we would remove it.**

Does the discussion adequately explain the major findings of the study, draw conclusions that are supported by the data, and integrate the findings within the broader literature on the topic? If not, please explain.: I appreciate the final paragraph that connects the study to a management activity.  Rather than waiting until the Discussion to consider implications of TFM treatment on Stonecats, I recommend working it into the Introduction to directly support the purpose of the study.  It would link a threat to a species of concern, collection due to the mortality event, and a management prescription (TFM treatment interval) that could be evaluated given the new information about Stonecat growth and likely age at maturity.

**Response: We mentioned TFM only as an example of a stressor, which is one of several. We cannot argue that we did this work primarily for our results to inform the management community of Lake Champlain solely on TFM. We have added text to name some of the other stressors.**

Are the implications of the work clearly stated and appropriate? If not, please explain.: Comparisons to other populations are qualitative, but the significance of apparent differences to conservation or management are unstated.  Why is knowing this information important?  What is the significance of these results for an edge of distribution species? Do the results from this study support the management need for similar information for other benthic species in these or similar systems affected by TFM treatment?

**Response: We have added text in the Abstract and Introduction that better indicates why the information we present is important.**

Given the scope of the study, the depth and breadth of the analyses, and its utility to the readership of the journal, this manuscript is best suited for publication as a: Management brief. This manuscript describes an initial or small-scale assessment of new techniques or observations, policy changes, or management actions specific to a narrow range of species or systems.   
  
Associate Editor   
Comments to the Author:   
The manuscript describes growth of Stonecats from two tributaries (Great Chazy River and LaPlatte River) of Lake Champlain.  These populations occur on the eastern edge of their range. The growth was compared to growth of Stonecats from other locations. The results expand the literature on Stonecats.   
  
Three reviews were received for this manuscript. In general the reviewers found the manuscript to be well written. Each reviewer has provided comments on how the manuscript can be improved. A concern with the manuscript is whether the information presented is broad enough for the North American Journal of Fisheries Management.

**Response: Reviewer 3 expressed concern about whether the information was broad enough for the journal. We have now explicitly stated that our approach is transferable, which should clarify why the information is extends beyond Stonecat in Lake Champlain.**

Reviewer 3 suggests that the information presented may not be appropriate for publication in the North American Journal of Fisheries Management unless the authors can build upon the concept on how growth can be used to manage and conserve the species. Additionally, reviewer 1 indicates the information presented is not ground breaking. I concur that the data is limited and appropriateness for the North American Journal of Fisheries Management is questionable.

**Response: We don’t disagree with these statements, but we think the journal should be an outlet for briefs such as this. Management agencies need to know something about these understudied species for which they are responsible. Knowledge is power and management agencies in particular can use the approach we used here for other species. Vermont F&W wanted population-level information like what we present here for the purpose of managing Stonecat in Vermont. For other states where Stonecat populations occur, they now have information that has largely been lacking.**   
  
The authors should follow AFS formatting recommendations when submitting manuscripts. A few examples of formatting not followed were: format of headings, numbers with four or more digits should contain commas, scientific names are not enclosed in parentheses, list of figure captions should be used rather than putting a caption with each figure and only the first word of axis titles should be capitalized.

**Response: We apologize for the oversight and have corrected these errors in the revised manuscript.**Abstract   
Lines 24, 37, 221 – no parentheses around scientific names

**Response: Done.**

Line 25 – need to be consistent with common names change madtom to stonecat

**Response: Ok. We can do this, but our intent was to indicate that Stonecat is a species that belongs to a group of fish known as madtoms. It is likely that more biologists have heard of madtoms than Stonecat.**

Line 27 – how was growth determined?

**Response: We have added this information.**

Line 27 – provide the names of the tributaries

**Response: Done.**

Line 32 – how do you know they reach maturity by age 3? Did not see anything in the manuscript from the work you completed that refers to this.

**Response: We revised the sentence to clarify (lines 28-29).**

Lines 33- 35 - Yes it expands the literature, but how does it help with management of Stonecats and other fishes in Lake Champlain tributaries?

**Response: We have provided data that were not available before and knowing how these fish grow is valuable to management in and of itself. We have added text to address this concern.**

Introduction   
Line 42 – What is the recent evidence?

**Response: We have added text to clarify (lines 22-23).**

Line 47 – Why does being imperiled make a species understudied? Many imperiled species are extensively studied.

**Response: We have revised the statement. We did not mean to suggest that all imperiled species are understudied.**

Line 55 – Isn’t the primary objective to describe growth in both the LaPlatte River and Great Chazy River? The abstract indicates this.

**Response: We admit that we have had difficulty in writing this with the correct emphasis on the moving parts. The main objective was to describe the growth of fish from the LaPlatte River because Stonecat are endangered in Vermont. Stonecat are not endangered in NY. We only collected fish from NY for the purpose of obtaining age-growth data that we could use for comparing to the size of the LaPlatte River fish. We have revised this in the Abstract, which hopefully, will provide better clarity (lines 21-22).**  
Methods   
Lines 67-68 - Were Stonecats collected throughout each river or select segments?

**Response: We added a description of the areas we sampled in the LaPlatte River (lines 81-82).**

Line 74 – Indicate direct current (DC) was used.

**Response: Done.**

Line 80 – Were fish experiencing distress released? What constituted significant stress?

**Response: A few fish were not swimming normally after netting during electrofishing. This was considered significant stress. We held the fish in a separate bucket to ensure the fish recovered or expired in our presence so we could report the mortality as required by our E & T permit. If the fish resumed normal swimming we released it back into the river.**

Line 96 - Need to indicate why (i.e., age estimation) spines were removed.

**Response: Done.**

Line 96 – Have other studies used dorsal spines to estimate Stonecat ages?

**Response: Yes, Manny et al. 2016, cited here, used dorsal spines in addition to otoliths.**

Line 114 – need to define S1, S2, and Si

**Response: We have revised the notation and show two equations for the seasonal component. This is much clearer now.**

Lines 135-136 – Can you make this assumption? Spines and vertebrae are vastly different. A recent publication showed that thermal stress resulted in formation of false annuli on Saugeye dorsal spines but not otoliths (Snow et al. 2018).

**Response: We slightly modified the sentence in question. Also, we are sensitive to the reviewer’s concern. However, no information exists in the literature on when growth on the spine commences or ceases during the year. The evidence for vertebrae, which we cited from Carlson (1966), seemed like a good place to start for when growth commences on the spine. There was no similar evidence for when growth ceased during the year, so we chose a conservative late fall date of 1-Nov. We did conduct a sensitivity analyses for these choices, which we did not feel was appropriate for the manuscript. In this analysis, we fit the growth model for all combinations of dates on 1-Jun and 1-Nov and two weeks before and two weeks after those dates (i.e., nine analyses). In addition to the model parameters, we used each model to predict the mean length at ages 1, 2, and 3. The results from these analyses are in the table below. These results showed that estimates of Linf changed by at most 2 mm (range from 175 to 177 mm). Estimates of K and t0 were more sensitive to our assumptions, which is not surprising given how these parameters are more closely linked to the seasonal component in the von Bertalanffy model. Despite this, the predicted lengths at ages 1, 2, and 3 were largely insensitive to changes in our assumption about the seasons of growth on the spines and varied at most by 4 mm at age-1, 2 mm at age-2, and 1 mm at age-3. Thus, our characterization of growth was not largely affected by our assumption of the season of growth. From this, we conclude that our choice of 1-Jun and 1-Nov were reasonable based on the literature and the presumed growing season in Vermont and that changes of at least two weeks in either direction for either date would not substantively change our results.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Begin | End | Linf | K | t0 | L1 | L2 | L3 |
| 1-Jun | 1-Nov | 176 | 0.79 | 0.13 | 136 | 158 | 168 |
| -14 | 1-Nov | 176 | 0.78 | 0.13 | 135 | 158 | 168 |
| +14 | 1-Nov | 176 | 0.80 | 0.13 | 136 | 159 | 168 |
| 1-Jun | -14 | 175 | 0.82 | 0.23 | 134 | 158 | 167 |
| 1-Jun | +14 | 177 | 0.77 | 0.03 | 137 | 159 | 168 |
| -14 | +14 | 177 | 0.76 | 0.04 | 137 | 158 | 168 |
| -14 | -14 | 175 | 0.81 | 0.23 | 133 | 157 | 167 |
| +14 | -14 | 175 | 0.84 | 0.25 | 135 | 158 | 168 |
| +14 | +14 | 176 | 0.78 | 0.03 | 138 | 159 | 168 |

Results   
One of the objectives was to compare growth to other populations, but there is no mention of this in the results. Figure 4 is not referred to in the results.

**Response: We have moved those sentences to the Results as requested, but we purposefully had them in the Discussion because we felt the presentation was really discussion and not our results alone.**

Figure 2 is not needed, the information is presented.

**Response: As we responded to one of the reviewers, we think our textual summary is good, but it is important to consider the breadth of times-at-large that are present in our data. This plot demonstrates that the times-at-large are not overly discrete, which is not evident from our textual statement. This breadth of times-at-large is partially what led us to having to fit a seasonal growth model (i.e., we could not assume an integer time-at-large). Additionally, the breadth of times-at-large make for a more robust fitting of the seasonal mark-recapture growth model. We think readers should see this information. We hope that this figure can remain.**

One of the benefits of this research is to provide growth estimates for others to compare to. Thus, it would be beneficial to provide mean TL at age in the text or a table. It is hard to discern exact numbers from the figure.

**Response: If we had this information in a table then we presume that we would need to remove Figure 4 as the information would be duplicated. Our goal in the figure was to show the patterns across the systems. This is always a difficult choice. But, if exact numbers are more important than the patterns, we can delete Figure 4 and make the table below. We are torn on what will mean the most to readers. Please advise.**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Age | | | | | | | | |
| Location | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| LaPlatte R. (VT) | 75 | 117 | 146 | 165 | 178 | 187 | -- | -- | -- |
| Great Chazy R. (NY) | 88 | 136 | 158 | 168 | 173 | -- | -- | -- | -- |
|  |  |  |  |  |  |  |  |  |  |
| Vermillion R. (SD) | 69 | 98 | 117 | 136 | 158 | 172 | 180 | -- | -- |
| Wisconsin | 51 | 95 | 124 | 152 | 162 | -- | -- | -- | -- |
| Ohio streams | 64 | 86 | 105 | 122 | 136 | 152 | -- | -- | -- |
| Lake Erie (OH) | 81 | 142 | 190 | 212 | 229 | 238 | 244 | 262 | 277 |

Line 168 – separate four digit numbers with comma

**Response: Done.**  
Lines 179-181 – percentages exceed 100%

**Response: Only the percentages of the 10% that were recaptured should total to 100%. We revised to clarify (lines 185-186).**

Line 182-183 – Not sure of the purpose of the sentence “One fish was 192 mm at recapture.”

**Response: We have deleted this sentence. The intent was to show that the maximum length observed throughout the study was somewhat larger than the maximum length we describe for fish at the time of marking only.**

Line 190 – How many fish were used in the regression?

**Response: Added. N=177 (line 192).**

Discussion   
Any information on why growth appears to be better in the Lake Champlain tributaries?

**Response: We do not have specific information on this, but we have added text that follows the tenet that populations of low abundance often have individuals with faster growth than those in larger populations (lines 213-216).**

Need to expand on how your results can be used to help with management of the species.

**Response: The management agency needs to know how these fish are growing for a variety of reasons, mostly related to their current status and the need to assure their survival, if possible. This knowledge is important because it can inform any decision related to management of the LaPlatte River or the Stonecat in the river (216-218).**

Lines 196-202 – These sentences are results.

**Response: We have moved those sentences to the Results, but we purposefully had them in the Discussion because we felt the presentation was really discussion and not our results alone.**

Line 205 – need scientific name Ephemeroptera sp.

**Response: Done.**

Lines 212-213 – What are you basing reasonableness of the growth estimates on?

**Response: We are confused by the question. We state that we think that our age estimates are reasonable, not the growth estimates. We clearly state (we think) that the reasonableness of the age estimates from spines is based on the comparability of the growth curves (as stated in the “Given that …” phrase of this sentence).**