

Submission date. 14/11/2025

Associate editor's decision after peer review (05/03/2026).

Dear Mr. Vasconcellos:

Manuscript ID NI-2025-0161 entitled "Resilience despite overfishing? Microsatellites reveal high genetic diversity and connectivity for *Umbrina canosai* (Sciaenidae) in the Southwestern Atlantic" which you submitted to the Neotropical Ichthyology, has been reviewed. The comments of the reviewer(s) are included at the bottom of this letter.

The reviewer(s) have recommended publication, but also suggest revisions to your manuscript. Therefore, I invite you to respond to the reviewer(s)' comments and revise your manuscript. Note that one of the reviewers provided an annotated copy of your manuscript, please include those comments in your response.

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When submitting your revised manuscript, you will be able to respond to the comments in the space provided. You can use this space to document any changes you make to the original manuscript. In order to expedite the processing of the revised manuscript, please reply POINT TO POINT all the suggestions of the reviewers and be as specific as possible in your response to the comments.

IMPORTANT: Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission.

Because we are trying to facilitate timely publication of manuscripts submitted to the Neotropical Ichthyology, your revised manuscript should be submitted before 05-May-2026. If it is not possible for you to submit your revision by this date, we may have to consider your paper as a new submission.

Once again, thank you for submitting your manuscript to the Neotropical Ichthyology and I look forward to receiving your revision.

Sincerely,

Dr. Osmar Luiz

Associate Editor, Neotropical Ichthyology

osmarluizjr@gmail.com, osmar.luiz@dbca.wa.gov.au

Anonymous reviewer #1

Recommendation. Minor Revision

Comments. A wonderful manuscript, well presented and discussed. See the PDF for a very few suggestions and the addition of a reference.

Anonymous reviewer #2**Recommendation.** Major Revision

Comments. The manuscript is the scientific article version of the first author's Master's thesis, co-authored by the co-advisor (Maíra Carneiro Proietti) and the advisor (Manuel Haimovici). It is strongly based on the last author's academic output, including fishery management (2006, 2016), reproduction (1989), and population structure (2002).

The authors use microsatellites to evaluate the resilience of *Umbrina canosai*, an endemic species of the Warm Temperate Atlantic province recognized as overfished, though I found no direct reference in the text to targeted commercial fishing throughout the study area.

The sampling seems to rely on the last author's datasets (the specific roles in sampling were unclear), and the molecular analyses are appropriate. Despite the new microsatellite data and the authors' extensive experience, many important aspects were not considered. This suggests the manuscript serves primarily as a publication of the first author's thesis and the last author's career-long data.

Below, I summarize the issues regarding Molecular Analysis and Conservation that should have been addressed to provide a comprehensive analysis. Without these considerations, the manuscript requires major revisions.

Point 1: Molecular Analysis

The study by D'Anatro et al. (2011) is of great importance to fishery biology in the Southwestern Atlantic, showing that *Micropogonias furnieri* represent a stock composed by two genetically distinct groups. Neutral markers, which do not encode proteins and are not under direct selection pressure, are used to measure gene flow and demographic history. In contrast, functional genes (EST-SSRs) are vital for detecting adaptation to different environments (e.g., temperature, salinity).

In this context, the work on *M. furnieri* found results that contrast sharply with the perceived homogeneity of *U. canosai*. In the former, markers detected significant genetic structuring, identifying two main stocks: one in Southeast Brazil (Rio de Janeiro and Espírito Santo) and another in South Brazil, Uruguay, and Argentina. The manuscript lacks a comparative analysis (in the introduction, results, and discussion) regarding the adaptive differences between *M. furnieri* and *U. canosai*. Without this, the reader may assume *U. canosai* is truly homogeneous, when it may simply have similar neutral markers while adaptive genes are already differentiated (as seen in the Whitemouth Croaker). The absence of adaptive gene analysis for *U. canosai* significantly limits the discussion and is a crucial methodological limitation.

Point 2: Conservation and Stock Management

1. Policy and Management: The manuscript focuses on resilience and overfishing but fails to adequately address the political fragility of *U. canosai* conservation across its range. Even if the species is managed as a single transboundary stock, the authors could have used the management of *M. furnieri* as a model—or a cautionary tale. Comparing the two would provide political relevance, translating molecular data into fishing quota recommendations and providing a global context for fishery resource conservation. The discussion should explicitly address the need for a Shared Management Plan between Brazil, Argentina, and Uruguay, turning biological data into a tool for fishery diplomacy.

2. Marine Currents and Connectivity: The discussion touches on connectivity and currents but does not adequately address "source-sink" dynamics. The authors must clarify how connectivity can become a trap; the entire population could collapse if the "source" area is depleted.

3. Vulnerability to Climate Change: A major weakness is the lack of focus on the fact that *U. canosai* connectivity depends entirely on the "larval elevator" provided by the Malvinas and Brazil Currents. Beyond overfishing, the authors should discuss how the weakening of oceanic fronts due to global warming could disrupt connectivity. Changes in current routes or temperatures could fragment the population, eroding the "resilience" highlighted in the study.

4. Discussion Emphasis: The authors found panmixia (a single genetic stock), but previous studies (Kikuchi et al., 2021) suggest two demographic stocks. The discussion must emphasize that genetic data can be misleading: if a demographic stock collapses, it may take generations for the genetic signals to reflect the problem. The title uses a question mark ("Resilience despite overfishing?"), yet the conclusion often sounds overly optimistic. The authors should add a caveat that the observed resilience is genetic (diversity) and not necessarily productive (biomass).

Author's Rebuttal Letter (18/05/2026).

Ref: Manuscript ID NI-2025-0161

Rio Grande, Brazil, May 2026

To Dr. José L. O. Birindelli, Editor-in-Chief

Dr. Osmar Luiz, Associate Editor

Neotropical Ichthyology

Point-by-point - Response to Editor and Reviewers

Editor: Manuscript ID NI-2025-0161 entitled "Resilience despite overfishing? Microsatellites reveal high genetic diversity and connectivity for *Umbrina canosai* (Sciaenidae) in the Southwestern Atlantic" which you submitted to the Neotropical Ichthyology, has been reviewed. The comments of the reviewer(s) are included at the bottom of this letter.

The reviewer(s) have recommended publication, but also suggest revisions to your manuscript. Therefore, I invite you to respond to the reviewer(s)' comments and revise your manuscript. Note that one of the reviewers provided an annotated copy of your manuscript, please include those comments in your response.

When submitting your revised manuscript, you will be able to respond to the comments in the space provided. You can use this space to document any changes you make to the original manuscript. In order to expedite the processing of the revised manuscript, please reply POINT TO POINT all the suggestions of the reviewers and be as specific as possible in your response to the comments.

Response: Dear Editor, thank you for the opportunity to submit a revised version of our manuscript for consideration in the Neotropical Ichthyology. We followed or justified point-by-point all the comments made by the reviewers, indicating the modifications in track changes mode or colored in blue. After this careful revision, we expect that the current version of the manuscript is worthy of being published in the Neotropical Ichthyology. Thank you for your time and we look forward to your reply.

Best regards,

Corresponding author: Davi M. Vasconcellos

Affiliation: Institute of Oceanography, Federal University of Rio Grande (FURG), Rio Grande, RS, Brazil.

Contact: davi.vasconcellos.m@gmail.com

Reviewer #1:

A wonderful manuscript, well presented and discussed.

See the PDF for a very few suggestions and the addition of a reference.

Response: We appreciate the comment and we thank her/his time reviewing our manuscript and recognizing our efforts. The modifications are detailed below.

Abstract:

Page 1: Added a comma after Brazil

Response: Added

Introduction:

Page 3: Added a comma after Brazil

Response: Added

Page 4: Abundant "in"

Response: Corrected

Page 4: References?

Response: Sentence modified to “Posteriorly, ecological and phenotypic approaches supported it: Canel et al. (2019) identified distinct parasitic assemblies, while Kikuchi et al. (2021) found different growth rates and sagittal otoliths shapes from these two regions.”

Material and Methods

Page 5: Southwards and northwards

Response: Corrected

Page 6: Delete the comma

Response: Corrected

Page 9: Not in References

Response: Added the reference.

Pritchard JK, Stephens M, Donnelly P. Inference of population structure using multilocus genotype data. *Genetics*. 2000; 155:945–959. <https://doi.org/10.1093/genetics/155.2.945>

Discussion:

Page 16: Please, explain what is the "rescue effect".

Response: Modified to: “In this scenario, the removal of individuals of a stock can be recovered by immigrants from the neighboring stock – a phenomenon known as “rescue effect” (Benestan, 2019). Conversely, overexploitation can cause the gradual depletion of both stocks”.

Reviewer #2:

The manuscript is the scientific article version of the first author's Master's thesis, co-authored by the co-advisor (Maíra Carneiro Proietti) and the advisor (Manuel Haimovici). It is strongly based on the last author's academic output, including fishery management (2006, 2016), reproduction (1989), and population structure (2002).

Response: We appreciate the comment.

The authors use microsatellites to evaluate the resilience of *Umbrina canosai*, an endemic species of the Warm Temperate Atlantic province recognized as overfished, though I found no direct reference in the text to targeted commercial fishing throughout the study area.

Response: Fifth paragraph of Introduction was modified to: “Fisheries exploit the Argentine croaker throughout its entire distribution: Southeastern Brazil (FIPERJ, 2016; Instituto de Pesca/SP, 2026, www.propesq.pesca.sp.gov.br), South Brazil (FURG/SEMA/MPA, 2026), Uruguay (Uruguay/DINARA, 2019) and Northern Argentina (Navarro et al., 2022)”.

These citations were added in references.

The sampling seems to rely on the last author's datasets (the specific roles in sampling were unclear), and the molecular analyses are appropriate. Despite the new microsatellite data and the authors' extensive experience, many important aspects were not considered. This suggests the manuscript serves primarily as a publication of the first author's thesis and the last author's career-long data.

Response: Material and Methods, section Sampling, were modified to: “Adult specimens of *U. canosai* were collected along approximately 2,400 km of coastline in the Warm Temperate Southwestern Atlantic province. Samples were obtained from commercial trawl and gillnet fisheries between 2015 and 2019, supported by partner institutions (Tab. 1). Three sampling regions were defined according to the marine ecoregions (Spalding et al., 2007), the main fishing areas of the species (Kikuchi et al., 2021, Defeo et al., 2025) and the previous studies evaluating their stocks (Canel et al., 2019; Kikuchi et al., 2021).”.

We appreciate the comments recognizing our efforts.

Below, I summarize the issues regarding Molecular Analysis and Conservation that should have been addressed to provide a comprehensive analysis. Without these considerations, the manuscript requires major revisions.

Point 1: Molecular Analysis

The study by D'Anatro et al. (2011) is of great importance to fishery biology in the Southwestern Atlantic, showing that *Micropogonias furnieri* represent a stock composed by two genetically distinct groups. Neutral markers, which do not encode proteins and are not under direct selection pressure, are used to measure gene flow and demographic history. In contrast, functional genes (EST-SSRs) are vital for detecting adaptation to different environments (e.g., temperature, salinity).

In this context, the work on *M. furnieri* found results that contrast sharply with the perceived homogeneity of *U. canosai*. In the former, markers detected significant genetic structuring, identifying two main stocks: one in Southeast Brazil (Rio de Janeiro and Espírito Santo) and another in South Brazil, Uruguay, and Argentina. The manuscript lacks a comparative analysis (in the introduction, results, and discussion) regarding the adaptive differences between *M. furnieri* and *U. canosai*. Without this, the reader may assume *U. canosai* is truly homogeneous, when it may simply have similar neutral markers while adaptive genes are already differentiated (as seen in the Whitemouth Croaker). The absence of adaptive gene analysis for *U. canosai* significantly limits the discussion and is a crucial methodological limitation.

Response: As suggested, we rewrote the Discussion section “Genetic patterns in the Warm Temperate Southwestern Atlantic” to compare the population genetics of different species, with emphasis on *M. furnieri* and *U. canosai*.

Point 2: Conservation and Stock Management

1. Policy and Management: The manuscript focuses on resilience and overfishing but fails to adequately address the political fragility of *U. canosai* conservation across its range. Even if the species is managed as a single transboundary stock, the authors could have used the management of *M. furnieri* as a model—or a cautionary tale. Comparing the two would provide political relevance, translating molecular data into fishing quota recommendations and providing a global context for fishery resource conservation. The discussion should explicitly address the need for a Shared Management Plan between Brazil, Argentina, and Uruguay, turning biological data into a tool for fishery diplomacy. Response: Added in Abstract: “Nevertheless, transboundary management measures by Brazil, Uruguay, and Argentina are necessary to prevent the economic collapse of *U. canosai* stocks”.

Added in Discussion, page 17: “Therefore, a collaborative management by Brazil, Uruguay, and Argentina is necessary for the *U. canosai* conservation, given that it is a migratory, transboundary and genetically connected marine fish (Defeo et al., 2025)”. Respectfully, we declare that to propose management policies is beyond the scope of our study.

2. Marine Currents and Connectivity: The discussion touches on connectivity and currents but does not adequately address “source-sink” dynamics. The authors must clarify how connectivity can become a trap; the entire population could collapse if the “source” area is depleted.

Response: Added in Discussion, pages 16–17: “In this scenario, the removal of individuals of a stock can be recovered by immigrants from the neighboring stock – a phenomenon known as “rescue effect” (Benestan, 2019). Conversely, overexploitation can cause the gradual depletion of both stocks”.

Regarding the “source-sink” dynamics, the Results states: “Likely due to the highly variable dataset, the models did not agree on which region showed the largest migration (Tab. S3)”.

3. Vulnerability to Climate Change: A major weakness is the lack of focus on the fact that *U. canosai* connectivity depends entirely on the “larval elevator” provided by the Malvinas and Brazil Currents. Beyond overfishing, the authors should discuss how the weakening of oceanic fronts due to global warming could disrupt connectivity. Changes in current routes or temperatures could fragment the population, eroding the “resilience” highlighted in the study.

Response: Added in Discussion, page 17: “Moreover, Southwestern Atlantic is considered an ocean-warming hotspot. In this sense, climatic changes can drive new impacts over *U. canosai* not considered in this study, such as the reduction of larval connectivity caused by tropicalization and alterations in current routes (Defeo et al., 2025)”.

4. Discussion Emphasis: The authors found panmixia (a single genetic stock), but previous studies (Kikuchi et al., 2021) suggest two demographic stocks. The discussion must emphasize that genetic data can be misleading: if a demographic stock collapses, it may take generations for the genetic signals to reflect the problem. The title uses a question mark (“Resilience despite overfishing?”), yet the conclusion often sounds overly optimistic. The authors should add a caveat that the observed resilience is genetic (diversity) and not necessarily productive (biomass).

Response: As suggested, we rewrote different paragraphs of the Discussion section “Implications for conservation and management”: to compare our data with previous studies on *U. canosai* stocks; to alert on microsatellites limitations; to discuss the necessity of measures to prevent stock collapse. The limitations of the neutral markers were discussed in the Discussion section “Genetic diversity and bottleneck”.

Associate editor’s decision after peer review (14/06/2026).

Dear Mr. Vasconcellos:

It is a pleasure to accept your manuscript entitled “Resilience despite overfishing? Microsatellites reveal high genetic diversity and connectivity for *Umbrina canosai* (Sciaenidae) in the Southwestern Atlantic” in its current form for publication in the *Neotropical Ichthyology*.

Congratulations for the acceptance of your article, and be aware on the following topics:

1. Publication Fee

NI will charge a publication fee if none of the co-authors is an active SBI member. This measure is essential to strengthen SBI and thus ensure the continuity of our journal, scientific society, and biannual meetings. SBI is not limited to Brazilians but is open to anyone interested in freshwater and marine Neotropical fishes. More details on SBI are available at <https://www.sbi.bio.br/>. Please email tesouraria.sbi@gmail.com to confirm whether any of your co-authors is a current SBI member and to activate your SBI membership if needed. Otherwise, if you will cover the publication fee of R\$1.000, please inform us at the same email. For authors outside Brazil, the fee will be converted to US dollars based on the official exchange rate on the date of payment. The only exceptions to this fee are invited articles.

2. Science Communication and Social Media

NI actively promotes published articles to both academic colleagues and the general public, including science journalists. To support this, we create social media posts and require images and/or videos of fish related to your work. If your article does not include such images, please send a photo of a representative fish species, preferably alive in its natural habitat. If you do not have your own photo, you may provide a link to an online image, along with the source, author, and, if applicable, authorization for its use. We also publish video summaries of articles in Portuguese on our Instagram (@neoichth). We ask you to designate one author to record a short video using a mobile phone, following the attached instructions. The video should include visual materials (photos, graphics) and a script for subtitles to enhance accessibility. Please email the completed material to our Social Media Editor, Igor Souto-Santos, at icass.ufrij@gmail.com within 30 days.

Additionally, if your article is taxonomic in nature and has been submitted to Zoobank, it is your responsibility to update the manuscript's status on Zoobank once it has been published.

All of the above information and materials are mandatory for the publication of your article, including the scientific dissemination component, which is crucial in the current

climate of science denial and misinformation. If you have any questions, please feel free to contact us at neoichth@nupelia.uem.br.

Please send an e-mail to neoichth@nupelia.uem.br within five working days to let us know you are aware of all the important points mentioned above.

Thank you for your fine contribution. On behalf of the Editors of the Neotropical Ichthyology, we look forward to your continued contributions to the Journal.

Sincerely,

Dr. Osmar Luiz

Associate Editor, Neotropical Ichthyology

osmarluizjr@gmail.com, osmar.luiz@dbca.wa.gov.au

Neotropical Ichthyology



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