Proposal Review 3 : 2127466

Back to Proposal

Agency Name:	National Science Foundation
Agency Tracking Number:	**2127466**
Organization:	
NSF Program:	OCE Postdoctoral Fellowships
PI/PD:	Gatins, Remy
Application Title:	OCE-PRF-Deleterious mutational load in climate driven marine range expansions
Rating:	Excellent

Review

Summary

In the context of the five review elements, please
evaluate the strengths and weaknesses of the proposal with respect to intellectual merit.

This proposal aims to examine expansion load in Black Sea Bass populations. Gatins proposes a combination of genomic analysis, measurements of fitness proxies, and population genetic simulations to examine the dynamics of this recent range expansion. Much of the phenomenological data would suggest that range expansions in marine environments are different than those in terrestrial environments, yet few mechanistic studies exist. This proposal has the potential to provide important insight into the fitness affects of range expansion in marine species. Overall I think the proposal is well thought-out and has a high probability of success. Dr. Gatins already has an established track record in population genetics of marine fish, but stands to gain several new skill sets (fitness estimates, simulations) in Dr. Lotterhos's group.

Generally, I think the project is well designed and impressively integrates genomic data with phenotypic measurements of fitness proxies and simulations. I have a few minor concerns about the methodology that I'm sure can be addressed as the project is moved forward:
1) The sampling design is not clear – how many sites will be sampled from in each part of the range? I know that this is sometimes difficult to plan ahead of time, but a plan would serve to determine whether the site-level replication was appropriate for the questions.
2) The statistical model proposed in objective 2 only answers the question of whether fitness is lower in the expanded range if pD varies as expected across the range. It seems like there should be some geographical variable in the model (latitude maybe?).

In the context of the five review elements, please
evaluate the strengths and weaknesses of the proposal with respect to broader impacts.

The broader impacts are well thought out. Gatins has collaborators that will facilitate connections with fisheries stakeholders. In addition, there are solid plans for K-12 and community college outreach.

Please evaluate the strengths and
weaknesses of the proposal with respect to any additional solicitation-specific review criteria, if
applicable

Summary Statement

This is an excellent proposal and a qualified team. The results are likely to add substantially to our knowledge of marine range expansions.