Proposal Status | MAIN

Organization: Field Museum of Natural History

Panel Summary #1

Proposal Number: 1501610

Panel Summary:
Panel Summary

Population and Community Ecology Cluster
Doctoral Dissertation Improvement Grants Panel
December 2014

CRITERION I: Intellectual Merit

Intellectual Strengths: The panel felt that an intellectual strength of this proposal was the strong grounding in ecological theory. The work is fundamental to understanding of extinction dynamics and has the potential to affect our understanding of the Red Queen hypothesis. Panelists noted that the project would add a much-valued South American based perspective to a question that has received a lot of attention, but been primarily addressed with North American and European data. Strong preliminary data are presented.

Intellectual Weaknesses: The panel agreed that a minor criticism was that the ideas in this proposal are essentially an analytical extension of an existing issue. A major concern shared by the panel was the lack of detail to understand the analytical approach and the ambiguity in some of the key concepts used. Another major concern involved inadequate description of how a key collaborative relationship will proceed (i.e., with Madden) and why data from an arguably brief South America museum visit adds significantly to what is available from the Madden lab.

CRITERION II: Broader Impacts

Strengths: The panel noted that the co-PIs participation in the Meet the Scientist program at the Field Museum of Natural History is commendable.

Weaknesses: In terms of broader impacts, no weaknesses were noted by the panelists.

ADDITIONAL CONSIDERATIONS

Context for Improvement: Evaluating the context for improvement was a major challenge for the panel because, while this aspect was alluded to in the project description, it was not explicitly addressed by the PIs (i.e. it appears to be a missing section). Panel suggests that the PIs explicitly address the context for improvement should they decide to resubmit.

Data Management Plan: Panelists agreed that the data management plan was between satisfactory and excellent, noting storage via Dryad and Paleobiology Database, and a commitment was made to sharing the statistical code used for analysis.

SYNTHESIS AND RECOMMENDATION

The panel recommends that this proposal is not competitive because of inadequate methodological detail, feasibility concerns, and an undescribed but important collaboration, and a missing context for how the work constitutes a significant improvement to the existing dissertation work.

The panel recommendation is: not competitive.

This summary was read by the assigned panelists and they concurred that the summary accurately reflects the panel discussion.

Panel Recommendation: Not Competitive

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Organization: Field Museum of Natural History

Review #1

Proposal Number:	1501610
NSF Program:	POP & COMMUNITY ECOL PROG
Principal Investigator:	Angielczyk, Kenneth D
Proposal Title:	DISSERTATION RESEARCH: Cenozoic mammals and the biology of extinction
Rating:	Good

REVIEW:

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

Intellectual Merit strengths
The conceptual foundation for this proposal is excellent, as the PIs propose to incorporate species traits (diet, locomotion, body size) with the spatial distribution and extinction of taxa through time. The overriding question motivating the proposal is "why do species go extinct at different rates?". The PIs hypothesize that species traits modify extinction rates.

Promising preliminary data is presented on 1) the prevalence of diet strategies through time; and 2) survival curves based on locomotor categories.

Intellectual Merit weaknesses
I struggled to understand the rationale for the statements concerning ecologically similar taxa and the spatial heterogeneity of selection pressures. This is fundamental to the proposal, and should be better articulated.

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

Broader Impacts strengths
The Co-PI has already participated in public outreach programs, which will continue under this DDIG. The PIs will make this data publicly available on Dryad. The focus on mental health of researchers is a unique, admirable, and welcome aspect of the broader impacts statement.

Broader Impacts weaknesses
None noted.

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

The data management plan is satisfactory.

The PIs are able to carry out the proposed work, and they have the infrastructural support to do so. There is no plan for assessing success.

I could not find a statement for improvement; for this reason I ranked the proposal "good" instead of "very good", as this is a critical criterionùperhaps the critical criterionùfor a DDIG proposal.

Summary Statement

How the ecologies of species affect extinction risk is fundamental to understanding the Law of Constant Extinction, which is at the heart of the Red Queen hypothesis. The current proposal has the potential to significantly modify, if not aid in overturning, this long-standing idea.

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Organization: Field Museum of Natural History

Review #2

Proposal Number:	1501610
NSF Program:	POP & COMMUNITY ECOL PROG
Principal Investigator:	Angielczyk, Kenneth D
Proposal Title:	DISSERTATION RESEARCH: Cenozoic mammals and the biology of extinction
Rating:	Multiple Rating: (Very Good/Good)

REVIEW:

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

The PIS propose to investigate the factors that are associated with species extinction in the geologic record by focusing on Cenozoic mammal lineages. They propose to extend current dissertation work on the mammal taxa of Europe and N. America to the mammal communities of S. America by utilizing information from S. American museum holdings which to date have been largely ignored due to language barriers.
The work appears to be well-thought out, and of broader interest. While the question asked is not new, it is of fundamental importance to paleontology and has implications for modern-day conservation biology. The approach proposed is not necessarily radically creative, but it appears solid and represents an substantial extension of the current state of knowledge. It is therefore of high research merit.
The proposal is reasonably well written, though parts of the methodology (community analyses and survival analysis) are complex and lacking detail, and are therefore hard to evaluate. The PIs have a solid record of academic productivity and appear to be well poised to conduct the proposed research with two exceptions.

One concern stems from the fact that the co-PI claims to be able to obtain the necessary data over the course of a 2-week visit to Argentina, a proposition that appears overly optimistic. Secondly, while the intention to open the treasure trove of Spanish literature to the rest of the world paleontologist community is certainly laudable, it appears doubtful that this will happen if the co-PI is just now proposing to embark in learning Spanish. If the PIs decide to resubmit, demonstrating some sort of Spanish language facility would be an obvious way to increase reviewer confidence in the proposed research.

A couple of other minor ways to improve this proposal: as the authors point out body mass is associated with multiple extinction relevant characteristics (generation time, density, reproductive rate etc.) It would be nice if the authors could suggest ways to disentangle the relative contributions of these traits to extinction proneness. Last but not least, successful proposals often include a way to evaluate success in achieving the stated research goals and this one does not.

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 of the proposal appear to be well thought out and are sufficient for the scope of the proposal.

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

It is hard to evaluate the context for improvement as the relevant section appears to be missing. The proposal seems to be sufficiently distinct from much of the advisors research and no other funds are available to support this work. Also it seems that the proposed research is different from the rest of the co-PIs dissertation. As such the proposal seems to satisfy the DDIG criteria.

Summary Statement

A complex proposal that would advance our understanding of paleontology. While there was not enough information to follow some of the methodological details, the work comes across as intellectually ambitious and of broad interest. It is not clear however whether the co-PI will be able to complete the data collection in the time proposed.

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Organization: Field Museum of Natural History

Review #3

Proposal Number:	1501610
NSF Program:	POP & COMMUNITY ECOL PROG
Principal Investigator:	Angielczyk, Kenneth D
Proposal Title:	DISSERTATION RESEARCH: Cenozoic mammals and the biology of extinction
Rating:	Good

REVIEW:

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

Strength: A robust test of a foundational concept, the law of constant extinction.

Weakness: The work is not exceptionally creative or original, but uses an expanded data set to address a question that recently has received attention. There is no description (metadata) of McFadden Data set. How many specimans need to be measuerd in South America? No South American collaborator is mentioned or developed. In the proposal the use of Madden data is main rational in text, not measureing fossils in S. American Museums. Seems like South American data could be included anyway, i.e. without DIGGS support.

In terms of a qualified team, Madden participation is not clear from the text or budget.

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

Relevance and benefit to current desirted societal outcomes is unclear beyond a general or generic claim of increased understanding of extinction.

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

The data management plan is excellent. The context for improvement to the existing dissertation work is seems or unclear as the South American data already appears partially available. The specific context for improvement is not well described. Seems like South American data could be or is being included already.

Summary Statement

This proposal aims to add to the field of work addressing the question, "why do species go extinct at different rates?' To do so, the PIs will estimate changes in the spatial heterogeneity extinction along and

survival analyses based on ecological context, e.g. diet, locomotion, size.
The primary strength of this work is expanding the analysis to include South American data. The justification for the S. American travel is inadequate and it appears that the context for improvement is weak.

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