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Commentary

"Population" and "community" are still not useful to conservation biology – Reply to Prado & El-Hani 2013

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ABSTRACT

Prado & El Hani suggested that use of the words "population" and "community" has not retarded the development of ecology, and they may be right. However, those words have outlived their usefulness in most applied research, and it is time to move forward. I am not the only ecologist to question the usefulness of those terms, and the argument that many people still employ them is not sufficient justification for their use in situations where vague terms are prejudicial to conservation and sustainable development.

Prado & El-Hani (2013) criticized my suggestion that it is time to move past populations and communities. They suggested that we should let "population" and "community" be, because when they are no longer useful they will disappear. I agree with them ± I am just trying to accelerate the process, and I do not think that I am alone in believing that it is time to move on.

Those authors cite Robert Ricklefs for new visions in community ecology. I also respect his vision, and asked him to review the original article after it was submitted. He said that it is not only the word "community" that is largely undefined and usually redundant; he had written his last book on ecology without using the word "niche", and nobody noticed. He also asked permission to present the draft article on populations and communities to his students; thus, I assume he considers it time for the next generation to at least start questioning the utility of such terms.

One of the keystone articles in community ecology is that by Eric Pianka (1973). He compared communities of lizards on different continents, and it could not be argued that those communities were not distinct geographically-isolated entities. However, he also once commented to me that he wished he could stand in one place in the desert for 100 years to see which species ran over his feet; the implication was that all the "communities" in the deserts of that continent would fuse into one over a long time scale. Weins" (2009) article cited in my original comment indicates that he also questions the validity of distinct communities through time.

The day before he died, Graeme Caughley told me that he had not used the term metapopulation in his soon-to-

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be-published book because it was just a simplistic model of processes that all competent population ecologists had always understood. I suggested to him that he should include it because, at the time, it was the only overt indication that population ecologists understood that demographic processes are not stationary in time and space. I still had not understood the fact that it was the concept of population (a unit in which demographic processes are modeled as stationary) that was impeding understanding by researchers less brilliant than Graeme. Conservation biologists do have to deal with subsets of individuals of given species, usually because they are pests, disease-transmitting, or economically useful. However, when we are dealing with small subsets of individuals for conservation, it is usually an indication that we have all but lost the battle because we did not stop the processes causing the decline before it was too late (Caughley 1994). Effective management is usually space management, and spaces with stationary demographic processes are generally not available in the real world.

Many conservation biologists take space into account (Landeiro and Magnusson 2011), but almost all the models assume that the spatial processes are stationary. I not only think that non-stationarity affects our interpretation of biological diversity, I suspect that it is important to generate biodiversity. Holding onto static categories (populations and communities) in which processes are temporally and spatially stationary instead of studying processes (demography, species assembly) that vary continuously in time and space can only impede progress.

I agree with Prado & El-Hani (2013) that many ecologists use "population" and "community". However, something is not necessarily the best strategy just because most people do it. It has not been long since most people thought smoking was a valuable personal and social tool. Polysemy generally does not matter, since most of our communication is to ensure social harmony, rather than to convey facts. Humans are social creatures, and the reason we are able to do so much, especially in science, is because we take advantage of teamwork. However, the use of jargon to maintain team spirit should be distinguished from its use to transmit objective information. The following argument is strong, but I do not think it sufficient. The great names in ecology use the words "population" and "community" and they appear to know what they are talking about. Therefore, if I use these terms I will appear to know what I am talking about.

I am neither a historian nor a philosopher, I am just a biologist enthralled by biological diversity (any of the definitions of diversity except the mathematical formulas). I live in a practical world in which people are facing practical problems. That is why I published the original article in this journal, rather than in a theoretical outlet. I appreciate the value of ambiguous words to stimulate us to speculate about vague entities that we feel should exist, even if we cannot define them, and I really do not know to what extent the use of sememes has been prejudicial to ecology in the past. However, I will repeat my recipe for conservation biologists, especially those just starting out in the field. Remove "population" and "community" from your vocabulary and you will gain a much deeper understanding of demographic processes and species assemblies. More importantly, your recommendations will be much more useful for the managers who will have to implement your proposals in a real, rather than conceptual, space.

REFERENCES

Caughley G, 1994. Directions in conservation biology. *Journal Animal Ecology,* 63:215-244.

Landeiro VL & Magnusson WE, 2011. The geometry of spatial analyses: implications for conservation biology. *Natureza & Conservação,* 9:7-20.

Pianka ER, 1973. The structure of lizard communities. *Annual Review Ecology Systematics,* 4:53-74.

Prado PI & El-Hani CN, 2013. Blaming the words "population" and "community" has outlived its usefulness in ecology – a reply to Magnusson 2013. *Natureza & Conservação,* 11:99-102.

Wiens JA *et al.*, 2009. Niches, models, and climate change: assessing the assumptions and uncertainties. *Proceedings of the National Academy of Sciences of the United States of America,* 106(suppl. 2):19631-19638.