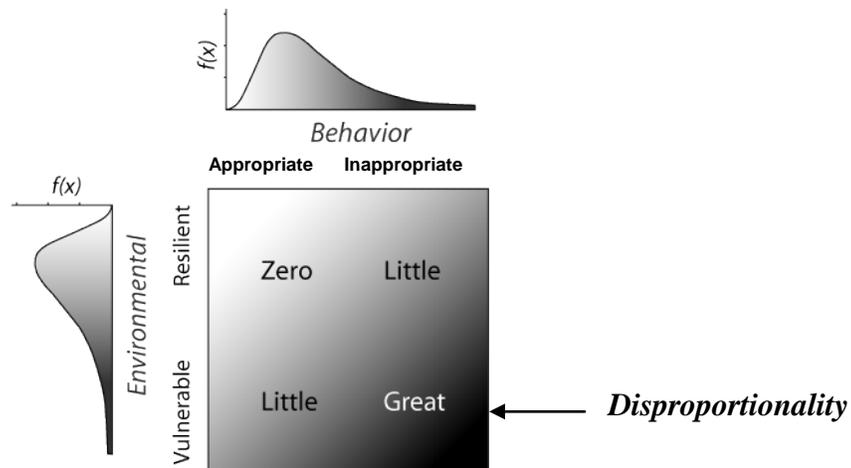


2006 LTER – ASM; Thursday 21, 2006
 Report of Session 8; Disproportionality (Nowak and Grove)

The meeting was well attended with an overflow audience, and had sufficient diversity in participants between biophysical scientists and the various social science disciplines. The workshop was structured with a 20 minute presentation on the disproportionality concept, an example from the area of agriculture, and a series of questions to help stimulate the discussion (Nowak et al. 2006). It was clearly stated that the goal of the brainstorm session was to explore and develop the concept of disproportionality such that it could be used as a framing concept to generate research at the network level.

Disproportionality can be defined as occurring when there is a significant degree of asymmetry between the appropriateness of social behaviors and the buffering capacity, landscape sensitivity, or resiliency of the specific biophysical setting where or when these behaviors occur. The concept of disproportionality can be represented in the following graphic:



It was pointed out that the concept of disproportionality is inherently interdisciplinary in that it is derived from the interaction of the social and biophysical. One cannot interpret social behaviors without explicitly considering their spatial and temporal ecological context. Time was also spent explaining how this concept differs from the disproportionality associated with the environmental justice and ecological footprint literatures.

There was general agreement coming from the workshop that this concept could be used in a network research proposal and applied in a number of social-ecological contexts. However, some felt that more time should be spent developing a “theory” of disproportionality, and linking it to the theoretical efforts associated with social and ecological resilience, vulnerability, adaptive management, and/or complex systems. It was suggested that a workshop at the National Center for Ecological Analysis and Synthesis (NCEAS) could be used to develop this theoretical framework based on data from various sites. Other options would be to seek a small network grant to bring interested researchers together for a workshop with this objective. It was also observed that the opportunity to develop theories, data, and analysis using this disproportionality

perspective in the Planning Grant effort would yield novel and robust results from a number of different sites.

Disproportionality probably emerges from a scale mismatch between the human and natural systems. Time was used to discuss the scale(s) associated with disproportionality analyses. The original example was in agriculture regarding phosphorus management at the sub-meter spatial scale across two years (NTL). Other potential examples included the changing definition of the appropriateness of subsistence hunting across the life cycle dynamics of the game species in the context of changing fire and climate regimes (Bonanza Creek), and the varying appropriateness of urban development activities across diverse biophysical settings (CAP, BES, FCE, NTL). Questions posed to the participants regarding how to examine disproportionality when moving to coarser or finer scales went largely unanswered.

Finally, it was suggested that disproportionality may be strongly associated with the “pulses” emerging from social systems (Planning Grant Q5). That is, how does one explain how a “press” becomes a “pulse” or, conversely, a pulse becomes a press in the planning diagram? It is hypothesized that disproportionality may be associated with these dynamics. We propose that disproportionality analyses is important for understanding change or lack of change in social-ecological systems, both within and between social and ecological systems. As such, it can contribute to developing cutting-edge social-ecological research within and among LTER sites.

Nowak, P., S. Bowen and P.E. Cabot.

2006. Disproportionality as a framework for linking social and biophysical systems. *Society and Natural Resources* 19:153-173.