

Title: Development of operational criteria for assessing species' relative vulnerabilities to climate change

Climate change has eclipsed habitat loss as the leading global threat to biodiversity, but objective means of characterizing the relative vulnerabilities of species to this threat are lacking, and ecologically-based criteria (IUCN) remain the only means of objectively assessing species' relative endangerment. Unfortunately, ecological criteria assume that populations can respond dynamically if afforded protection (e.g. habitat conservation); this is unlikely in the face of climate change, which will impact even vigorous, protected populations. It is widely recognized that organismal persistence in the face of climate change will be dictated by three aspects of biology, which are not necessarily exclusive: **tolerance** of changing conditions within existing ecophysiological stress tolerance zones; **migratory capacity** to track optimal habitat patches as climate change ensues; and the **evolvability of these two factors** in response to changing conditions by shifts in tolerance zones (height, breadth or optimum of tolerance norm). Although there are theoretical and empirical insights about the potential of organisms to respond in all of these ways, such insights have not been integrated in any operational way to the enterprise of actually evaluating how species differ in their relative vulnerabilities to climate change. This lunch will provide an introduction to these issues ahead of a planned working group that will assemble expertise of leading specialists in several key fields to develop objective criteria for assessing species' relative endangerment due to climate change. We will develop tools that marshal insights from ecophysiology, population genetics, quantitative genetics and phylogenetics, to address key aspects of species' relative potential to respond to climate change.