

The ongoing biological consequences of climate change: lessons from and for ectotherms

Steven Chown *¹

¹ Centre for Invasion Biology, Stellenbosch University, Private Bag X1, Matieland 7602, South Africa

Climate change is proceeding apace, with forecasts now routinely including consideration of a +4°C world, when previously, dangerous levels had been set at +2°C. Moreover, concern is mounting that changes to water availability may have as significant a consequence as changes in temperature, especially for areas that are water-limited. Documentation of biological responses to these changes and forecasts for their continuation are well-developed for temperature effects in some, especially north temperate, areas. However, for elsewhere current and likely future biological responses are less clearly understood and especially outcomes as a consequence of interactions with other environmental change drivers. Moreover, how animals will respond to changes in water availability is also less obvious than how plants might do so, with interactions among abiotic and biotic drivers remaining relatively under-investigated. Given the significance of ectotherms in global ecosystems, understanding how they are responding to climate change, how they might continue to do so, and how these responses and efforts to mitigate them might be detected, are among biology's greatest modern challenges. Here I explore these challenges using examples from our recent research and from similar studies undertaken by other groups.

