



جامعة الإمارات العربية المتحدة
United Arab Emirates University

**The College of Graduate Studies and the College of Science Cordially Invite
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Master Thesis Defense

Entitled

*THE ECOLOGICAL IMPACTS OF CLIMATE CHANGE IN HOT REGIONS – ARE HAWKSBILL
TURTLES LIVING ABOVE THEIR OPTIMUM TEMPERATURE IN THE UAE?*

by

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Date & Venue

11:30 AM

Thursday, 18 April 2019

Room 043, Building F3

Abstract

It is getting warmer throughout the world but it is not getting warmer by the same amount in all regions, leading to speculations where the biggest impacts will be. The impact on species living in the hot regions is widely assumed to be slight in comparison to the temperate and higher latitude regions. Temperature changes in hot regions are smaller, but it may be that the species in those regions have reached their optimum temperatures. In which case the effects of even a small temperature increases could be steeply negative. To test this thoroughly in term of demographic parameters I had to quantify demographic parameters and reconstruct their relationship with temperature. For this I needed long term population data which allowed me to quantify the fitness and the probability of species breeding. Within the United Arab Emirates, extensive monitoring programs have been in place for Hawksbill Turtle (*Eretmochelys imbricata*) with systematic nesting counts being conducted annually since 2001. Sea turtles as a species is an endangered one, and are an interest in their own right as well as being a good study species to determine whether a species in hot regions is vulnerable to climate change. Using a generalized linear model (glm), I reconstructed two separate relationships. One is the relationship between fitness and temperature and the other is the relationship between breeding probability and temperature. Although I was not able to detect any significant relationship between fitness and temperature, I found that there is a direct positive relationship between temperature in the nine months prior to breeding and the probability of female turtle to nest which implies that hawksbill turtles in Abu Dhabi waters may not be living above their optimum temperature yet.

Keywords: climate change, climate impact, hawksbill turtle.