



## General Information for the case study:

WRL reference	M01 D03	
Module	M01 Ecosystems – Coral Reefs	
Data Set	D03 – Temperature tolerance of lionfish in Indonesia	
Research questions	<p>1. Do lionfish exhibit different thermal tolerance levels when acclimated at different constant temperatures?</p> <p>2. Is there a predictable relationship between acclimation temperature and thermal tolerance for red lion fish?</p>	
Keywords	<p><b>Adaptation</b>; abiotic; biotic; climate change; coefficient of variation; coral; environmental impact; error bars; ecosystem; <b>homeostasis</b>; <b>invasive (alien) species</b>; <b>physiology</b>; <b>statistics</b>; <b>temperature control</b>; <b>sampling</b>; standard deviation; standard error</p>	
Potential Curriculum links for Biology	<b>AQA</b>	3.2.1; 3.2.10; 3.4.1; 3.5.1
	<b>edexcel</b>	Topic 4-14; Unit 5, 8.1; App 10-2
	<b>IB</b>	G.1.8; 1.1.2 to 1.1.6; G.3.5
	<b>Camb.Pre-U</b>	3 – animal physiology; 5.1; analysis of data and conclusions
	<b>OCR</b>	2.3.3 (e)
	<b>WJEC</b>	5.8 (e); app. 3 – handling data
	<b>SQA</b>	Case studies; FH2H (2); HOAM
	<b>CCEA</b>	2.2; 2.3; 4.4; Maths and Stats knowledge
Summary	<p>This research looks at how lionfish adapt to different sea-water temperatures. This physiological experiment compares how 20 lionfish adapt to increasing water temperatures by being placed in specially designed water tanks. The data can be plotted simply or be treated in more complex manner using statistical tests. Lionfish are also significant predators on coral reefs and they are expanding their range by their ability to adapt to rising sea water temperatures. They could pose a real threat by being significant invasive species.</p> <p>Advanced statistics include standard deviation, regression and coefficient of variation.</p> <p><b>Difficulty:</b>  <b>Research Q1 - 5/10</b>  <b>Research Q2 - 9/10</b></p>	

