

Student Progress Reporting Form WAMSI Top-up Scholarship

STUDENT:	Saskia Hinrichs	DATE:	NOVEMBER 2008
SUPERVISOR:	Anya Waite		

PROJECT TITLE:	Anya Waite
NODE LEADER:	Ming Feng
PROJECT NUMBER:	

REPORTING REQUIREMENTS	
1	<p>PROGRESS REPORT FROM SUPERVISOR [TO INCLUDE]</p>
	<p>Overall aims of research [to be used on the WAMSI website]</p> <p>This project aims to clarify the role of local oceanography on coral health, particularly with regard to nutrient supply by reef currents.</p>
	<p>Progress made on the project [to be communicated to the WAMSI Board]</p> <p>Saskia has executed her first major field trial of a new flume. This extremely demanding and challenging project included development of new techniques for the culturing of picoplankton in the field, and execution of time series experiments documenting the interaction of coral communities with local waters supplied to the flume. Saskia now has expertise in experimental design and execution, and is moving confidently into the next stage of framing her coral sampling and assessment of coral health in the field, within a growing understanding of the physics of reef nutrient supply.</p>
	<p>Any major risk issues [that the WAMSI CEO should be made aware of]</p> <p>Technical problems with the flume operation in the field have led us to focus more on reef field work until this operation can be improved. In the interim, co-supervisors Ryan Lowe and Jim Falter have left the supervisory team while they work to improve flume function. We are in the process of consolidating a new supervisory structure for Saskia which will support a more field-based technical approach.</p>
2	<p>PROGRESS REPORT FROM STUDENT TO [INCLUDE]</p>
	<p>Summary of progress [to be used on the WAMSI website]</p> <p>During the first year a preliminary study has been carried out. The key objective was to determine whether corals from Ningaloo Reef take up picoplankton for their heterotrophic nutrition. Large volumes of picoplankton are depleted from the water column as oceanic water passes over the reef but it is still unclear whether corals are responsible for this depletion or if it could be other reef organisms. There is currently no proof in the literature that corals can feed on picoplankton.</p> <p>Uptake measurements were made in a flume on a reef community with corals and sponges as well as on the same coral community after removing the sponges. Data of plankton and nutrient concentrations as well as physical parameters (temperature, light) in the flume were recorded at day and night time given that heterotrophic and autotrophic feeding rates would</p>

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	<p>most probably vary over 24 hours. For better statistical results the experiment was replicated.</p> <p>Cultures of <i>Synechococcus</i> were intended to provide heterotrophic nutrition for the corals in the flume. Previous work has shown this genus is the most abundant over the Ningaloo Reef region and one of the genera which is obviously depleted by grazing as water passes over the reef. Unfortunately the cultures we grew were contaminated with a microbial contaminant after one week. In the end we used filtered lagoon water which still contained enough detectable picoplankton for the experiments.</p> <p>Water temperature in the flume varied extreme and made it hard to interpret results. A depletion of picoplankton was detectable for coral communities with and without sponges but it is unclear if that was related to the changes in water temperature or to the uptake by corals. Further investigations have to be made.</p> <p>Methods as flow cytometry, CTD handling, fluorometry have been learned during this period which will be important for the upcoming field work.</p> <p>Until now the research was mainly focusing on the impacts on the nutrition of corals during climate change but since there was a change in supervision the goal of the study changed to determine the health of corals under different environmental conditions in particular changes in current regimes on the health of corals for implications of climate change impacts.</p>
	<p>Summary of major findings to-date [to be used on the WAMSI website]</p> <p><i>Synechococcus</i> decreased over time while Chlorophyll a (<5µm) increased in a flume with a coral community as well as for a community of corals and sponges. We had problems to keep the temperature constant in the flume, so corals were stressed out and excreted zooxanthellae which explain the high Chlorophyll a values. If the <i>Synechococcus</i> were taken up by corals or died still has to be investigated.</p>
	<p>Presentations made at workshops & conferences</p> <p>Poster "Climate change impacts on the nutrition in the Ningaloo coral reef" was presented at the ANNIMS conference, 1-2 December 2009, Hobart</p>
	<p>Final report [approximately 10 pages if the project has concluded]</p>
3	OTHER REQUIREMENTS
	<p>Major findings to be reported immediately [to be used for media, website, increased funding opportunity]</p>
	<p>Supervisor & student present at a minimum of one WAMSI organised event</p>
	<p>Node Leader, supervisor and student to meet at a minimum of 2 times yearly [preferably more]</p> <p>Meetings have taken place more than 2 times a year</p>
	<p>Final report to be placed on WAMSI website</p>