Corals through the light: phylogenetics, functional diversity and adaptive strategies of coral-symbiont associations over a large depth range

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Finally here I am, writing this long-waited last bit of my thesis. Surely it is the most difficult part to accomplish as I owe the fact of being here now to the help and contribution of many. I fear I will not be able to mention them all, and that some may be unfairly forgotten in the rush of the moment.

First of all I have to thank my supervisor and PhD promoter Rolf Bak, who I first met in the year 2000 as Prof. Bak. For the last 5 years Rolf has guided me through the process of starting this research, helping me define questions and methods, deal with fieldwork and students, cope with writing and presentations. Rolf offered me a great balance between keeping me on track and giving me scientific freedom. I was lucky to have worked closely with Rolf and enjoyed his enthusiasm, experience and knowledge on coral reefs. We did not always agree but with a sufficient dose of respect and comprehension we always found ways of moving on and “keeping the flag up”. It was a pleasure to learn (or confirm) that there should always be time for other aspects of life besides work, and that one can actually be successful at both. I am sure we will collaborate in the future in this multidisciplinary approach to life in coral reef science.

I am also grateful to Jef Huisman, second promoter of this PhD. Even if we did not work on the same topic I felt my project was backed-up as much as possible in the Aquatic Microbiology group at the UvA. In the last writing period of this thesis, Jef contributed with comments and revisions which really improved my thesis.

I am grateful to the Portuguese Science and Technology Foundation for granting me with the PhD scholarship that paid my salary and supported most of the research described in this thesis.

Next I have to thank some people whose names should be in the front page of this thesis. The eight students I had the pleasure of working with. Floris de Jongh, Pim Bongaerts, Annemarie Winkelhagen, Francisca Vermeulen, Norbert Englebert, João Faria, Gloria Iglesias-Martín and Catalina Reyes-Nívia. I know things were not always paradise, even when working on a tropical island. We went through a lot of troubles, especially in the early beginning of this study, probably also related with the fact that I was an inexperienced PhD student. We really got loads of work done, both in the field and in the lab. I really appreciate all the effort you put, all those extra hours and days, and want to tell you that I would not have made it without you! I hope you had as much fun as I had and I am sure that the learning process was bidirectional! You were the best students I could have wished for and I am especially happy as I got to become good friends with all of you. Hope to see you all again underwater, or most likely, in a nearby lab (sorry for this!). Still I want to write some words about each of these guys in my team! Sorry if it will get boring for other readers...

Pim and Floris were with me during that first “messy” fieldwork of 2004. Thank you for coping with my doubts, trials, perfectionism attempts, hyperactivity, and some emotional instability! And also for turning me into a strict vegan for a few months!

Floris, your previous experience was a great help in the field. It is a pity you moved away from science, but I am happy you are now a doctor in the art of making babies!

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student yourself and I am sure we will work further together! Besides, I have learned how to enjoy “augurken” thanks to you, and will never forgive you for that!

In the fieldwork of 2005, Annemarie and Francisca made my life miserable! I had to carry all the diving tanks and the boat engine every morning! Just kidding… Actually these girls made quite a good combination and had a major contribution to this thesis.

Francisca is a real sports woman, practical and always ready to put her hands at work. It was great to do all that dusk diving in the twilight with you!

Annemarie was perhaps the most methodical and foreseeing student I had to supervise. We went through the pain of thinking and re-thinking lots of methods and results over and over and over. Believe me, your contribution really improved my science. I know we collided sometimes in details but besides that tiny little part, you know I do like your style!

In 2006, João and Norbert joined me for a short fieldtrip. We had the most efficient field season ever, thanks to the experience and ease these guys (and perhaps me?) showed whilst diving and working for long hours in the lab.

With João I could practice my mother language and remembered the good times spent in the Azores a couple of years before. Your dedication to science, autonomy and enthusiasm are greatly appreciated. Grande João!

Norbert is the perfect dive buddy! I remember well the 3-tank-each dives we did and the long lasting decos we spent in the shallows of Buoy One. Your calm and tranquillity are contagious and helped in several critical situations, such as when at 60 m with another diver nearly passing out!

We were always in a busy schedule in the CARMABI lab those days, but always found time in-between for the deserved beer at sunset!

I did not actually have the opportunity of working with Catalina and Gloria when they were in Curaçao. The project of Gloria was not a success due to external reasons, but I have to say she was the easiest person to teach. On my trips to the lab in Amsterdam I never had to repeat myself and she did a great deal in autonomously moving on with the culturing work we developed there. Gloria, I think you can make an excellent researcher if you would like to!

Catalina, que decir?, working with you was a pleasure and it was also great to have you in our small research group in the NIOZ. I know that for a Colombian the adaptation to the Netherlands and to Texel was not easy in the beginning, but once that was past, your experience, skills and independence really made all the research just go smooth! Besides becoming a great friend you were sometimes like a sister to me. I had a great time improving my Spanish and my Latin dancing “skills” and sharing an apartment with you in Amsterdam for a month. I am sure we will meet more often! I will come to visit you and Beto in Brisbane!

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In total I have probably spent two years of my life at CARMABI, in Curaçao. There I have grown a lot as a scientist but also as a person. I want to thank Dolfi Debrot for always welcoming me and all the staff for being friendly and making my stays as efficient as possible, and also a pleasure. I am grateful to Brian Leysner and Carlos Winterdaal for great efforts in logistic support and for some crazy events, such as hunting introduced caimans in Curaçao. Ella and Ragedi always welcomed me in the administration even when I came in wearing my wetsuit. Sislyn and Louise, thank you for being two real mammas! Lately it was a pleasure to work again with Mark Vermeij, who taught me a lot in the past. Mark, thanks for being a really enthusiastic and creative scientist and for all the nice dives and BBQs!

In the NIOZ, I have spend a long time in the Molecular Lab. Judith van Bleijswijk pushed me on the good direction since the beginning of this project. She has had her office door open all the time, sometimes to get to answer the most ridiculous of my questions. Thanks for being so friendly!

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To the people working in the NIOZ administration and helpdesk I want to thank for always being helpful and for always trying to cope with my lousy dutch. “We” tend to forget this, but research like this piece of work is not only the result of team work, but it is only possible thanks to the work of a large, very large team. This includes staff members at all levels. I was lucky that my research was underpinned by the supportive framework of the NIOZ. To Francis and Cenélia I also owe the best chats whilst circulating through the long corridors of the institute. To the colleagues within the MEE department, thanks for the great parties in the bird wing! There were some NIOZ colleagues that really contributed to my research. Marcel Veldhuis generously allowed me to run hundreds of samples in the flow cytometer. Marcel Wernand helped me through the spectroradiometer details. Eilke Berghuis spent hours with me and Annemarie next to the HPLC system. Eric Meesters, from Imares, was the best
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There is a very special person I got to become friends with… starting under a 3000 watt-power speaker, discussing the beautiful coincidences of life, or otherwise challenging the waves of devastating hurricanes! Jasper de Goeij, it was great to have someone near who understood the positive and negative sides of working and living long parts of the year in places separated by many hours in a plane. Discussing these “double-life” issues with you made me feel I was not alone. Jasperzito, thanks for being a great friend! Ah, and for generating the “Samenvatting” of this thesis!

In Curaçao I had the best moments and met really cool people I can surely call friends. Terry Chocolaad you are an inspiration! Thanks for showing me your world of fantasy! Michelle,
Imrat, Timo, it was great to share party vibes and funny adventures. Tineke, thanks for always receiving me with a hug! Johny, Iris and Tio, thanks for your generosity and for one of the best days of my life! Michael Brown has always been around and cheered me up with his nice reggae tunes! It was cool to remember the good times of 2001 with Rita Jahcinto! Tuki was also around for a nice chat and some of the toughest swearing words I have ever heard! Rosa always had a warm Dominican hug waiting for me in Piscaderabaai, cooled off by Presidente beers. Otmar and his singing skills were a good surrounding in some nights of insomnia, but a terrible one when I could actually manage to get some sleep.

Also in CARMABI I have met loads of other students and scientist I cannot count. Some of this people got to become good friends… Eefke, Chantal, Noam, Judith, Miriam, Ruben, Martijn, Monique, Arjan, Suzanne… Natascha got to be the craziest one and that is why I like her so much! Ah, and you have got the sexiest lips! Sorry mentioning it here! I also want to thank all the researchers showing up in Curaçao for the nice after-work discussions and for sharing their passion for science. Ben and Ron, you are among these! On Curaçao I had amazing diving trips to the North Coast and to Klein Curaçao. I cannot recall all the funny people I met in such events!

There were a couple of cats, dogs and chicken I have to thank for listening to me when no-one else did… Tigra was probably the only cat I have established a friendship with!

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I have been through several NIOZ PhD and Postdoc “generations”. With Cees, Ulrike, Francien, Thorsten, Lucas, Maarten K., Joost, Andrea, Isla, Adam, Oscar, Thomas, Maggy, Hawke, Marjan, Pieter, Rachel, Angela, Veronica W., Allert, Jenny, John, Babette, Tina, Frank, I always had great fun! Joakin, thanks for some andalucian nights! Alina, thanks for teaching me everything about herbal infusions! There were always loads of other Portuguese students around! Thank you Joana, Vânia, Sílvia, Sofia, Catarina L., Catarina C. and Catarina G. (why do portuguese always have the same names?), Carlos, for the nice chats in the canteen and for some typical nights! Raquel, thanks for teaching me criolo! Jeremy, nice you are around!
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I also had some tough times during these 5 years. I want to thank Jasper, Pim, Norbert and Catalina for taking care of me when I was passing out in pain because of a small but nasty kidney stone. This happened in Florida, the day after my presentation in the International Coral Reef Symposium. Guys, sorry I got you scared, I was too! Fortunately, dr. Jazz, dr. LuJo, dr. Mienis, dr. Peterse and their “proefkonijn” patient van der Land, sorted it all out for me!

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I have lived in about 10 different houses during this PhD, from Willemstad to Den Burg, from Diemen to Den Helder (including a super luxurious modified shipping container, for 5 winter months, my “hibernation capsule”, as I used to call it). Besides, I temporarily slept in all CARMABI rooms and a few of the old Potvis rooms. Also in the Potvis I shared a bungalow with Itziar! Thanks for being the best housemate ever! We both had south European schedules, coming home late from work, and still time to have great fun! My neighbours in the Bergwijkdreef in Diemen Zuid; sorry I was so busy all the time writing my thesis and could not join the parties! I also shared appartments with Jasper, Catalina, and more recently, with Craig and Julie. This last period of writing was extremely tough, but thanks to you two I managed to still have a life! I actually owe you my life, as you fed me when I had to lie on the sofa with cast around my leg for a week. Julie, thanks for teaching me the art of hanging things in bathroom walls and for preparing the best “kerrie-kas” toastes ever!

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Now some words in Portuguese. Hope I can still do it properly!

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