功能導向珊瑚礁生態系研究與保育國際研討會摘要報告

1. 研討（習）會名稱：

中文：功能導向珊瑚礁生態系研究與保育國際研討會

英文：International Symposium for Functional Approach of Research on Coral Reef Ecosystem and Conservation

2. 舉辦日期：103 年 6 月 19 日至 103 年 6 月 22 日（共計　4　天）

3. 主辦單位：中央研究院 生物多樣性研究中心

4. 舉辦地點：國立中山大學海洋科學學院海洋科學系演講廳

5. 主持人：陳昭倫 研究員

6. 協辦單位：國立中山大學 海洋科學學院東沙國際海洋研究站

國科會 生命科學研究推動中心

行政院 海岸巡防署

墾丁國家公園管理處

國立海洋生物博物館

7. 參加人數：共 36 人

8. 邀請貴賓/講員：

姓名（職稱）	現職	網址簡介
Dr. Andrew Baird	ARC Center of excellence for coral reef studies,	https://research.jcu.edu.au/portfolio/andrew.baird/

	James cook university, Townsville Australia	
Dr. Isabelle Côté	Marine Ecology in the Department of Biology, SFU	http://tmel.wordpress.com/research-2/dr-isabelle-cote/
Dr. David Mouillot	Ecology and Statistics of the University of Montpellier.	http://www.ecosym.univ-montp2.fr/index.php?option=com_content&task=view&id=22&Itemid=15

9. 議程及講題（流程表）:

Jun. 19th Thursday		
14:00 – 15:00 Welcoming participants (by invitation)		
Jun. 20th Friday		
8:00 – 9:00 Open Registration 9:00 – 9:20 Opening remarks (Dr. Allen Chen)		
SESSION 1: FUNCTIONAL ECOLOGY		
Time	Speaker	Topic
9:20 – 10:20	Dr. David Mouillot	Patterns and processes in functional diversity on coral reefs
10:20 – 10:40 : Coffee break / Poster time		

10:40 – 11:40	Dr. Andrew Baird	Coral Traits: progress towards a database of traits for scleractinian corals.
11:40 – 12:05	Dr. Vianney DENIS	A functional approach of coral communities based on colonies' morphology.
12:05 – 13:30 : Lunch		
13:30 – 13:55	Chao Yang Kuo	Long-term change of functional diversity in coral assemblage on inshore fringing reefs on the central GBR.
13:55 – 14:20	Lauriane Ribas Deulofeu	Structure and composition of the hard substrate benthic communities of Taiwan
SESSION 2: LIFE TRAITS		
14:20 – 14:45	Nien-Yun Cheng	Benthic Communities Status Survey of Coral Reefs at Kenting National Park on 2013.
14:45 – 15:10	Chia Yen Liu	Reproduction as a "trait" in response to climate change: a case study on *Platygyra verweyi*.
15:10 – 15:35	Stéphane de Palmas	*Symbiodinium* diversity: role and implication for coral functioning.
15:35 – 15:55 : Coffee break / Poster time		
15:55 –	Dr. Shashank	Phenomics of local and geographical response

16:20	Keshavmurthy	in *Acropora muricata* and *Acropora hyacinthus* to seawater temperature stress.
16:20 – 16:45	Yen-Chia Chen	*Symbiodinium* diversity and physiological responses to thermal stress on *Porites* holobionts in Taiwan.
16:45 – 17:10	Chia-Min Hsu	Fluorescent censusing and DNA barcoding as useful techniques for identifying “effective” coral recruitment.
18:00 – 21:00 : Dinner		
Jun. 21th Saturday		
SESSION 2: LIFE TRAITS		
Time	Speaker	Topic
9:20 – 10:20	Dr. Isabelle Côté	Rethinking synergies, resilience to climate change, and the management of coral reefs through a functional approach.
10:20 – 10:40 : Coffee break / Poster time		
10:40 – 11:05	Dr. Colin Wen	Functionality of preferable habitat for predatory fish recruits in coral reefs.
11:05 –	Dr. Allen Chen	Extraordinary diversity of reef corals and

11:30		conservation in the South China Sea.
11:30 – 12:10	Prof. Keryea Soong	Introduction of Dongsha Atoll.
12:10 – 13:30 : Lunch		
13:30 – 15:00	Dr. David Mouillot	Workshop - An introduction to the analysis of community ecology data in R.
15:00 – 15:30 : Coffee break		
15:30 – 17:30	Dr. Vianney DENIS	Workshop - An introduction to the analysis of community ecology data in R.
18:00 – 21:00 : Dinner		
Jun. 22th Sunday		
Visit to National Sun Yat-sen University (by invitation)		

10. 中文摘要報告（五百字內）:

若要瞭解生態系如何受到環境變遷影響，則必須要釐清生態系中的群聚組成與群聚功能在環境改變後的變化。過去，相關的研究著重於描述群聚內物種組成（例如，生物多樣性）的改變；近年來，將擁有類似生態功能的物種合併

為一個功能群並且探討功能群多樣性（functional diversity, FD）的改變成為主要的研究方向。在過去的研究中，功能群多樣性常以功能群豐富度（functional-group richness）代表，但近年來計算特定群聚內生物特性（species trait）的複雜程度則提供另一個估算功能群多樣性的方式。生物特性是指任何可以測量的生物特徵，這個特徵可以是生物的物理形態、生物化學特性或生物行為等。不僅單一的生物特徵可能會影響生物的表現以及適應能力；不同的生物特徵組合則會影響想生物對環境的適應能力以及對棲地選擇的需求。因此可藉以用來釐清生物如何對應環境變遷（包括天然以及人為擾動）的壓力並且預測群聚結構的變化。雖然功能群多樣性在陸域研究中已被廣泛使用，但在海洋生態系相關研究領域，尤其珊瑚礁生態系， 仍處於剛起步的階段。目前以功能導向研究珊瑚礁生態系主要以造礁珊瑚的生活史特性（life-history traits）對環境變遷的反應為基準，將珊瑚分成不同的類群，並以此預測珊瑚群聚受到環境擾動後的變化。在珊瑚礁群聚生態學研究上，此以生活史特性為標準的分類模式是一個重要的里程碑，但仍有更進一步的問題值得深入探討，例如如何挑選恰當的生活史特性？到底需要多少的資料才是足以反映珊瑚礁群聚的特色？以及在環境變遷影響下，這樣的分類模式是否仍然可以穩定的用以預測群聚在未來是否能夠抵抗（resistance）或是是否仍具有生態彈性（resilience）？如何將理論的研究成果實際應用在珊瑚礁保育層面？這些議題仍需更多的資料研究來解析。

11. 英文摘要報告（五百字內）:

Functional approach of coral reefs ecosystems. Changes occurring in the structure and the function of the communities are particularly important in our understanding on how environmental changes affect the ecosystems. To date, modification in the species composition (per se species diversity) has received most of the interest, and that's only recently that we start to see emerging the functional diversity (FD) as an important facet of the biodiversity. Functional-group richness has been often used as a surrogate for functional diversity, but development of trait-based approaches offer now interesting alternatives for measuring the FD. While this has become a popular approach in terrestrial ecosystem, information on FD in marine communities and especially in coral reef ecosystems, are still very sparse. Recently, a panel of life-history traits has been used to classify corals according to their response to current environmental change. This constitutes an important step to evaluate theories of community ecology in coral reef habitats; however it also highlighted the lack of data on traits from species of this ecosystem.

Functional traits. There is a growing need of data on life traits for the measure of the FD. To understand how species may respond to different environmental conditions and to predict the impact of environmental and anthropogenic stressors on species assemblages, it is essential that we

combine our knowledge on species traits. This workshop will be the first addressing these problems, with the expertise from leader researchers in this area we hope to stimulate exchange between research teams.

This workshop aims to be a state of the art of what have been done on the functionality of coral reefs ecosystems, what we know, and to draw the future directions to take. Presentation and discussion will be used as a basis to develop the future framework of research on the functionality of coral reefs. Organized around different presentations, round table and fieldwork this meeting aims to impulse a synergetic effort between the different research teams working in this area.

12. 本研討（習）會之效益：

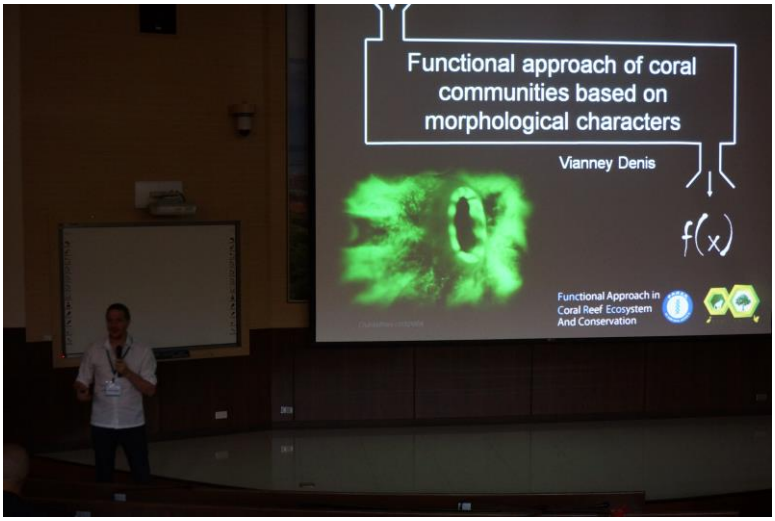
本研討會邀請澳洲、加拿大及法國研究團隊報告珊瑚礁生態領域中功能導向的研究成果與目前最新的知識，藉由與會學者的報告以及開放全球珊瑚研究團隊張貼研究成果海報及 R 軟體工作坊等交流活動，預期建立以功能導向議題為主的創新構想與未來研究方向的資訊平台。

13. 活動花絮（照片）

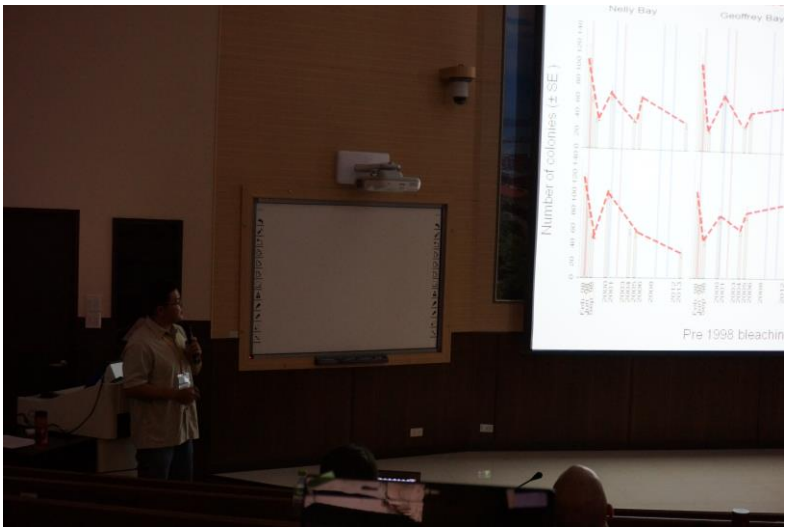
由陳昭倫老師開場

演講者：Dr. David Mouillot

演講者：Dr. Andrew Baird



演講者：Dr. Vianney Denis



演講者：Chao Yang Kuo

演講者：Nien-Yun Cheng

演講者：Lauriane Ribas Deulofeu

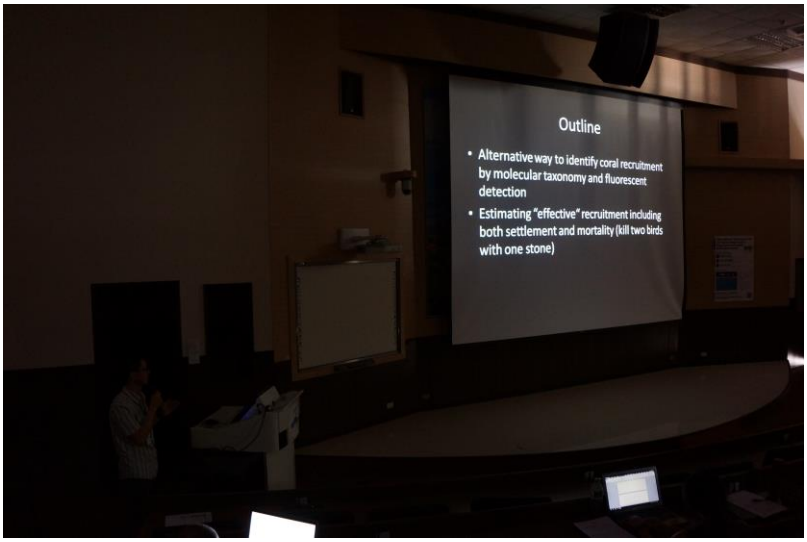
Dr. Shashank Keshavmurthy

演講者：Chia Yen Liu

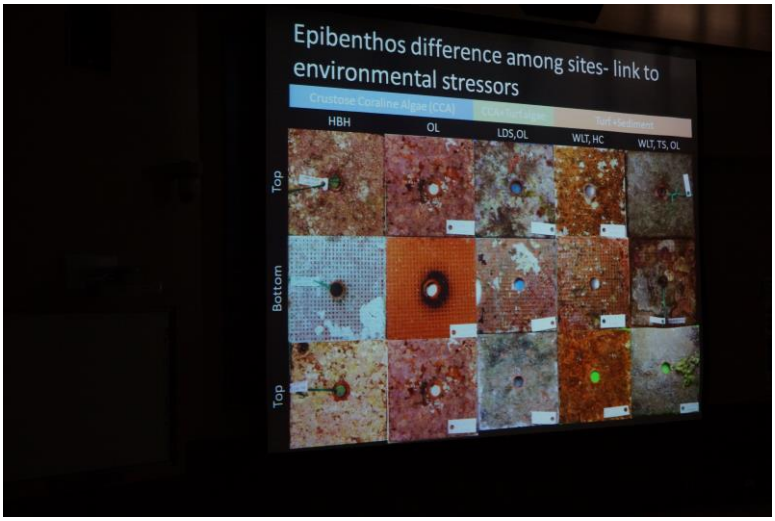
演講者：Stéphane de Palmas

演講者：Dr. Shashank Keshavmurthy

演講者：Yen-Chia Chen



演講者：Chia-Min Hsu



演講者：Dr. Isabelle Côté

演講者：Dr. Colin Wen

演講者：Dr. Allen Chen

演講者：Prof. Keryea Soong

應用程式 R 教學