

王佳惠 教授 生物地球化學研究實驗室

最高學歷：英國利物浦大學生物系博士

經歷：國立臺灣海洋大學 環境生物與漁業科學學系 主任

國立臺灣海洋大學 環境生物與漁業科學學系 副教授

國立臺灣海洋大學 環境生物與漁業科學學系 助理教授

研究領域：魚類學、生物地球化學、海洋生物洄游研究

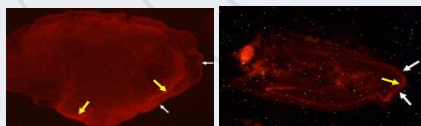
* 研究方向：

在於了解生物與環境間關係，探討水生生物之生活史、生物族群分布、生物洄游歷程與環境對生物之影響程度，進而應用在生物生態、漁業永續發展與生物保育。

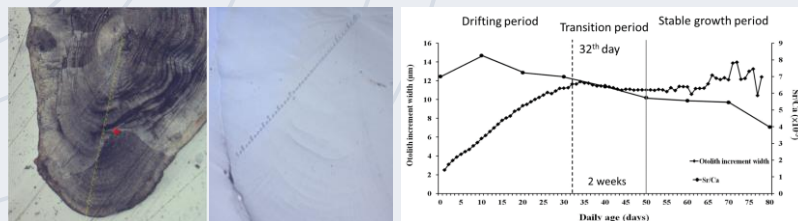
* 研究內容：

本研究室以臺灣週邊海域魚類與頭足類為主要研究物種，利用生物鈣化組織進行定齡、量測形態，分析微量元素及穩定同位素技術、螢光標定技術與生殖生物學等，探討生物生活史與環境之關係。

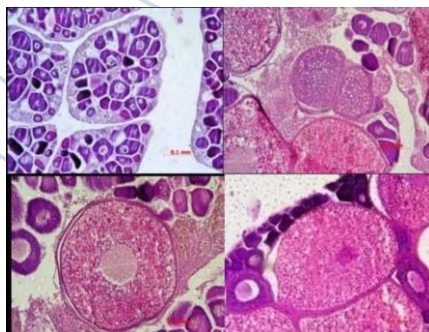
螢光標定技術



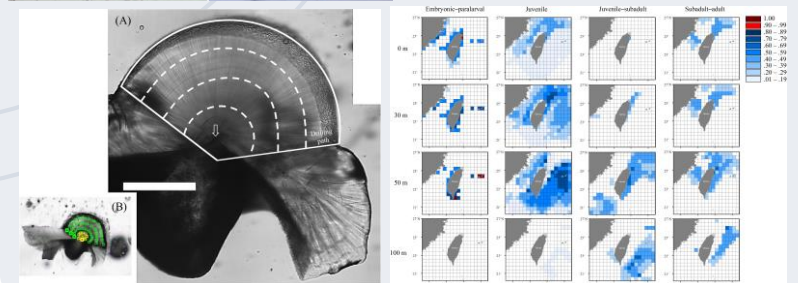
分析微量元素及穩定同位素技術



生殖生物學



定齡、形質量測





Prof. Chia-Hui Wang

Biogeochemistry laboratory

Ph.D. The University of LIVERPOOL

Professional experience :

Chair, Department of Environmental Biology and Fisheries Science, NTOU

Associate Professor, Department of Environmental Biology and Fisheries Science, NTOU

Assistant Professor, Department of Environmental Biology and Fisheries Science, NTOU

Specialty : Biogeochemistry, Marine invertebrates, Fish Otolith, Fishery Biology

Research interest :

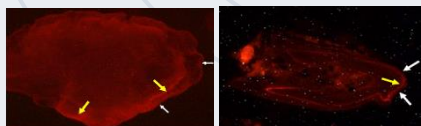
The research group works on the relationship between marine species and the environment and investigating their life history, distribution, migration and the impact of the environment on marine species. Further apply the biological knowledge on ecology, fisheries sustainable development and conservation.

Research content :

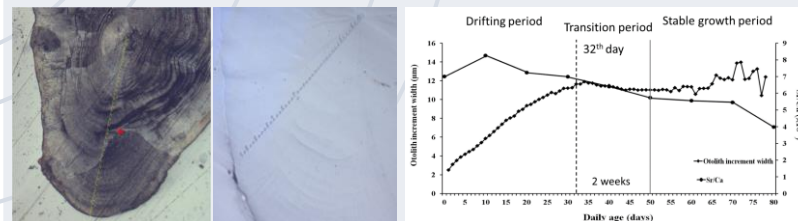
We study fish and cephalopods species around Taiwan coastal waters, proceed the structure of their calcification tissues for age determination, analyze the trace elements and stable isotopes for tracing their environmental history, apply the fluorescence marking technique and reproductive biology information for comprehensive research.



Fluorescence marking



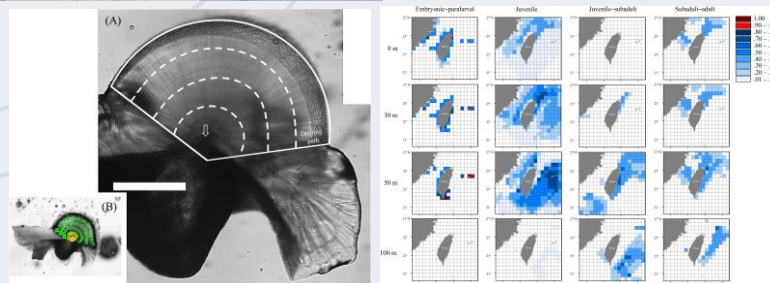
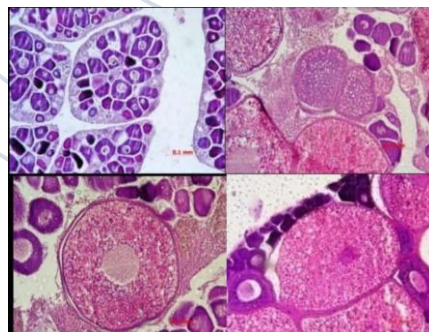
Analysis of trace elements and stable isotopes



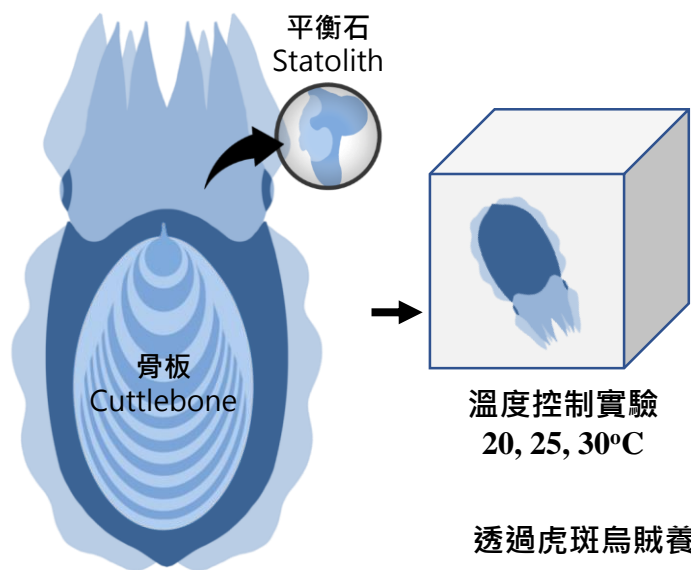
Otolith morphology & age determination



Reproductive Biology



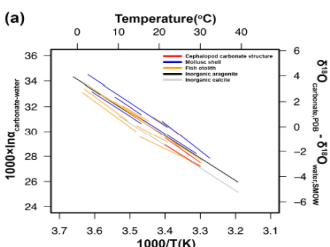
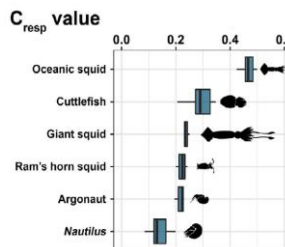
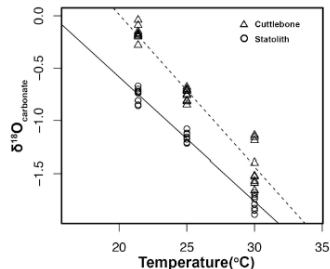
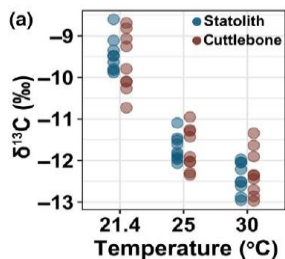
以硬組織之穩定同位素及微量元素作為頭足類物種的經歷環境與生理指標之研究



虎斑烏賊
Sepia pharaonis

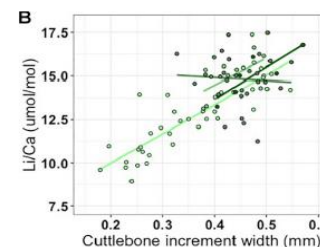
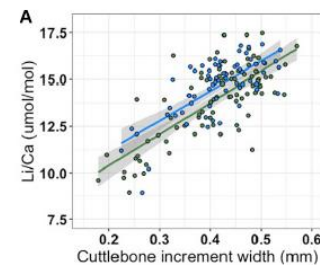
溫度控制實驗
20, 25, 30°C

Stable isotopes



Chung MT, Chen CY, Shiao JC, Shirai K & Wang CH (2021) Metabolic proxy for cephalopods: Stable carbon isotope values recorded in different biogenic carbonates. *Methods in Ecology and Evolution*. doi: 10.1111/2041-210X.13630
 Chung MT, Chen CY, Shiao JC, Lin S & Wang CH (2020) Temperature-dependent fractionation of stable oxygen isotopes differs between cuttlefish statoliths and cuttlebones. *Ecological Indicators* 115, 106457

Microchemistry

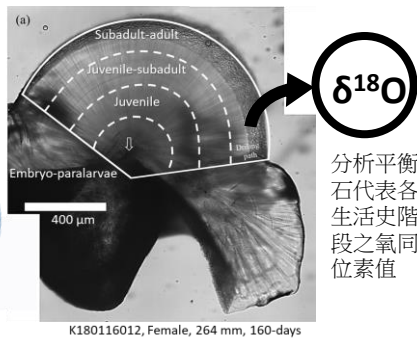


Chung MT, Huang KF, You CF, Chiao CC. & Wang CH (2020) Elemental ratios in cuttlebone indicate growth rates in the Cuttlefish *Sepia pharaonis*. *Frontiers in Marine Science* 6, 796. doi: 10.3389/fmars.2019.00796

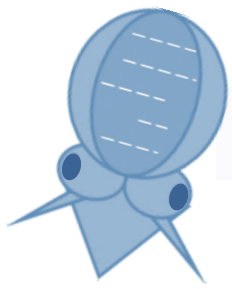
透過虎斑烏賊養殖控制實驗，分析骨板及平衡石之微量元素及穩定同位素變化，本研究證明：

- $\delta^{18}\text{O}$ 值與環境溫度成反比，所建立之關係式將可推估個體經歷水溫。
- $\delta^{13}\text{C}$ 值反映了個體在自然環境中的能量使用，進一步可轉換為耗氧便於相對新陳代謝之比較。
- 骨板Li/Ca比可為烏賊成長率的指標，可應用在烏賊生物學研究及漁業管理上。

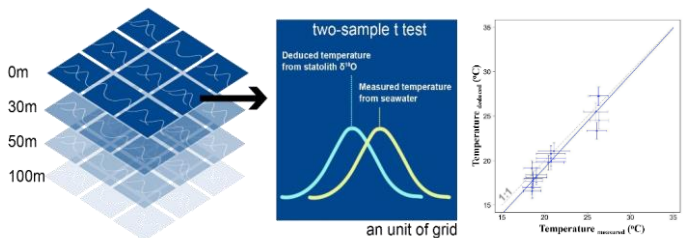
利用平衡石氧穩定同位素預測 萊氏擬烏賊之季節分布模式



分析平衡石代表各生活史階段之氧同位素值

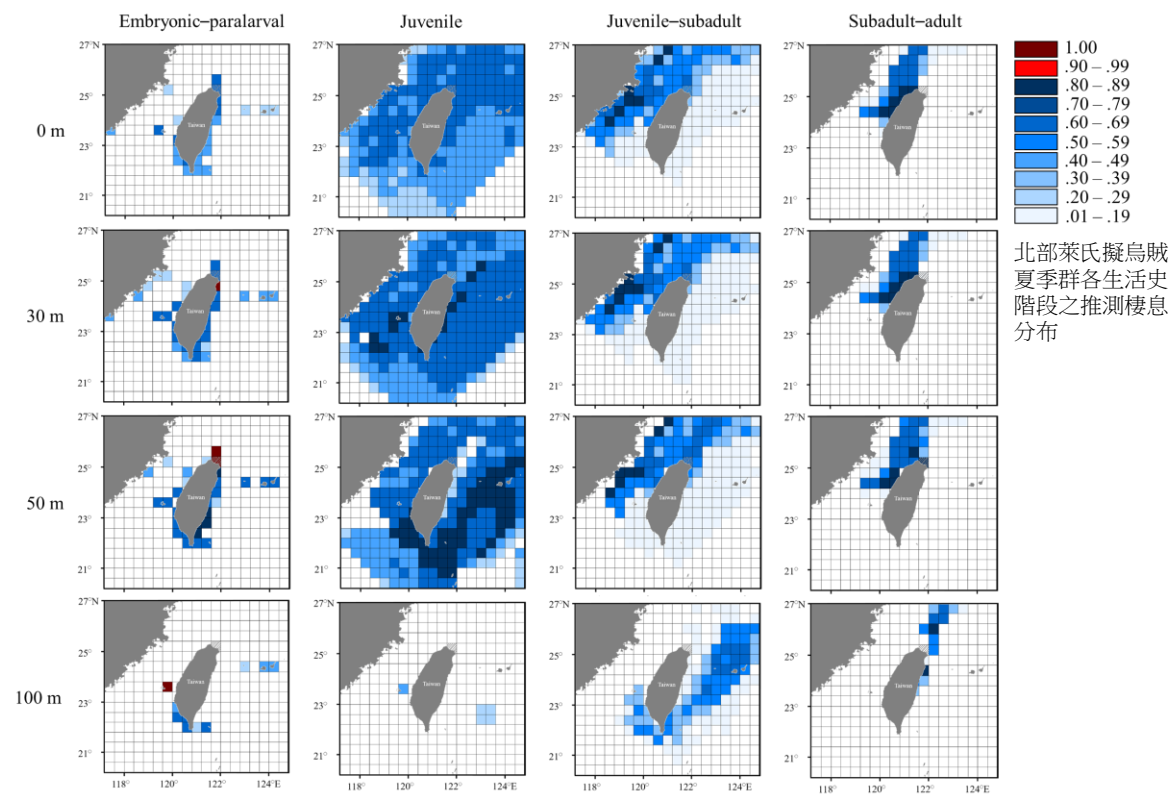


萊氏擬烏賊
Sepioteuthis lessoniana



棲息水域預測模式與環境溫度驗證

Chiang CI, Chung MT, Shiao JC, Wang PL, Chan TY, Yamaguchi A & Wang CH (2020) Seasonal movement patterns of the bigfin reef squid *Sepioteuthis lessoniana* predicted using statolith $\delta^{18}\text{O}$ values. *Frontiers in Marine Science* 7, 249. doi: 10.3389/fmars.2020.00249.



- 本研究為首次頭足類平衡石內氧同位素之時序列分析，根據棲息預測模式：
- 東北部沿岸為重要產卵場之一，其孵化水溫約在攝氏 20 - 28 度之間。
 - 萊氏擬烏賊之各季節群具有複雜且多樣的移動模式，其分布可能跟水溫及海流有關。
 - 萊氏擬烏賊在東北季風盛行期間傾向棲息於北部外海，暗示其具有避冬行為。