潛攝

DO & DON'T

無論你是哪類型攝影師...

DO

保護我們的海洋環境

DON'T

破壞我們的海洋環境

過程：

觀察

↓

概念

↓

構圖

↓

拍攝影像

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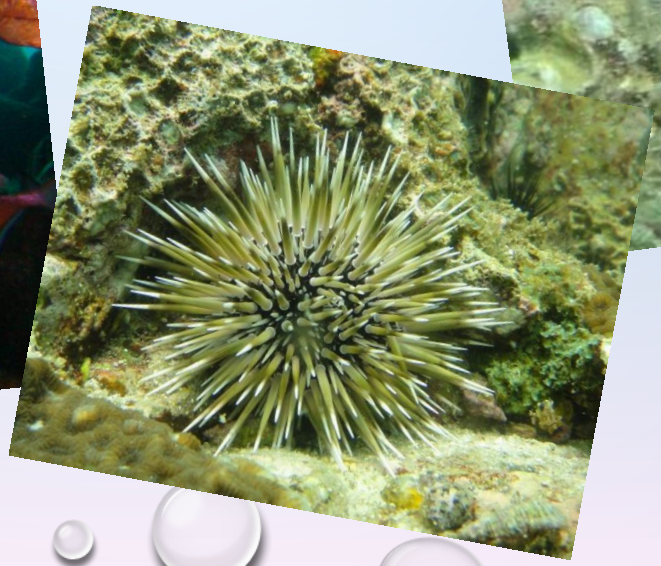

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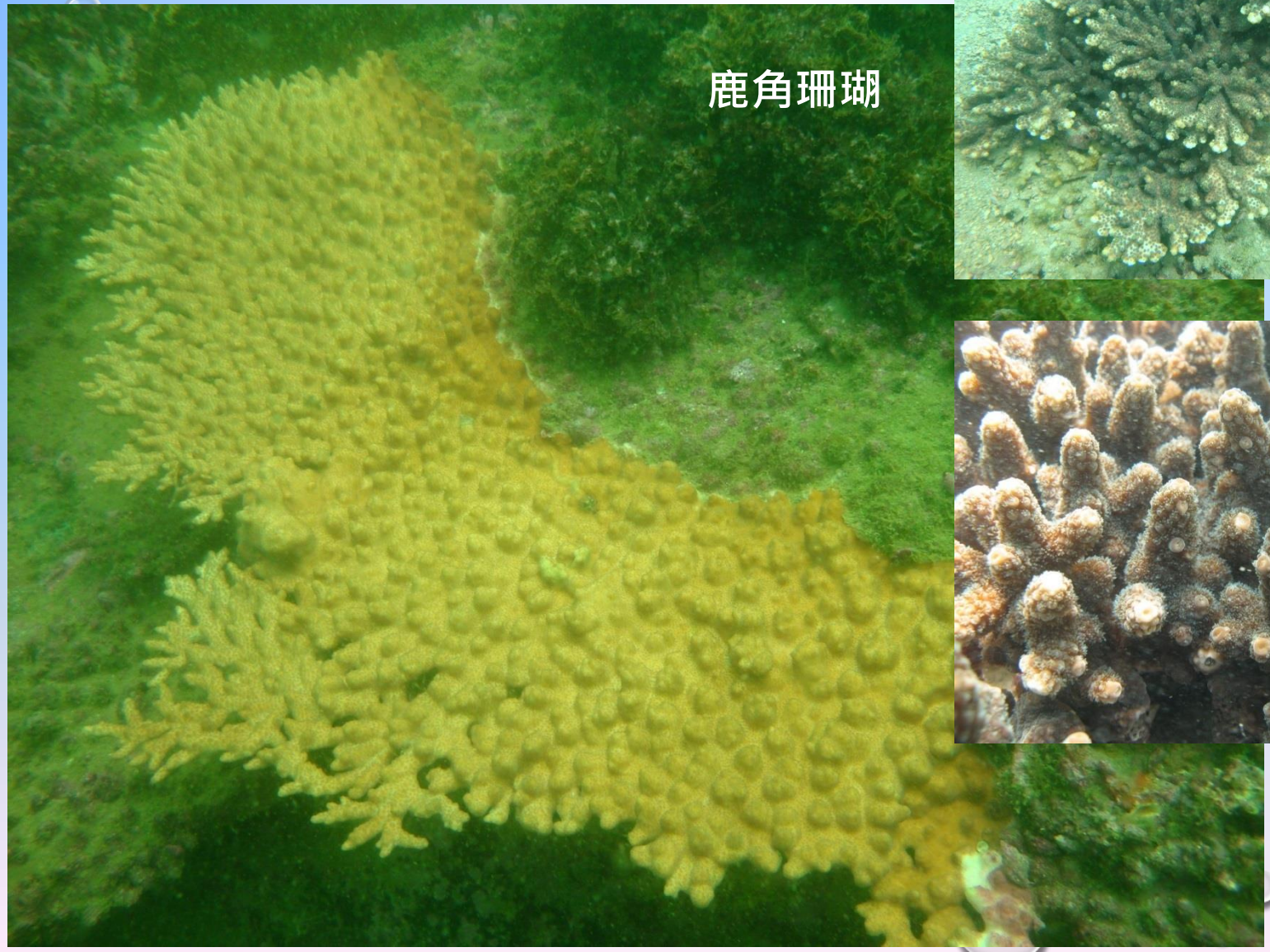
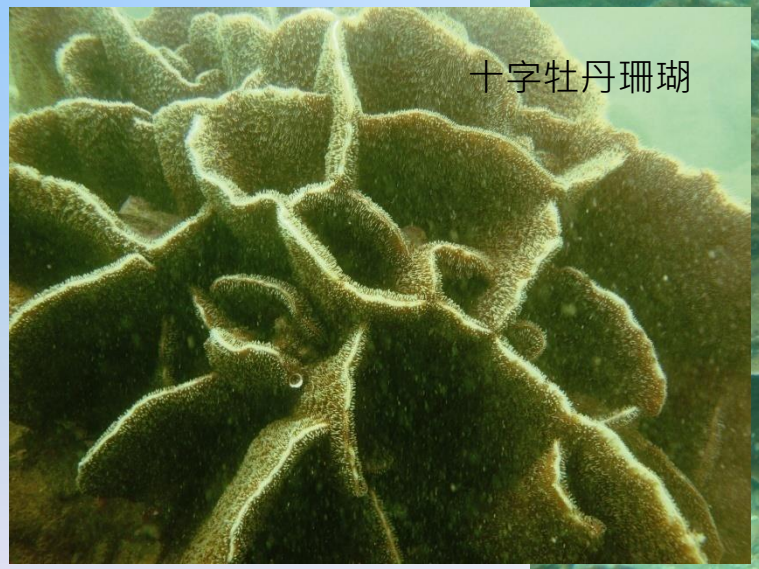
珊瑚 - 分枝形



珊瑚 - 板塊形



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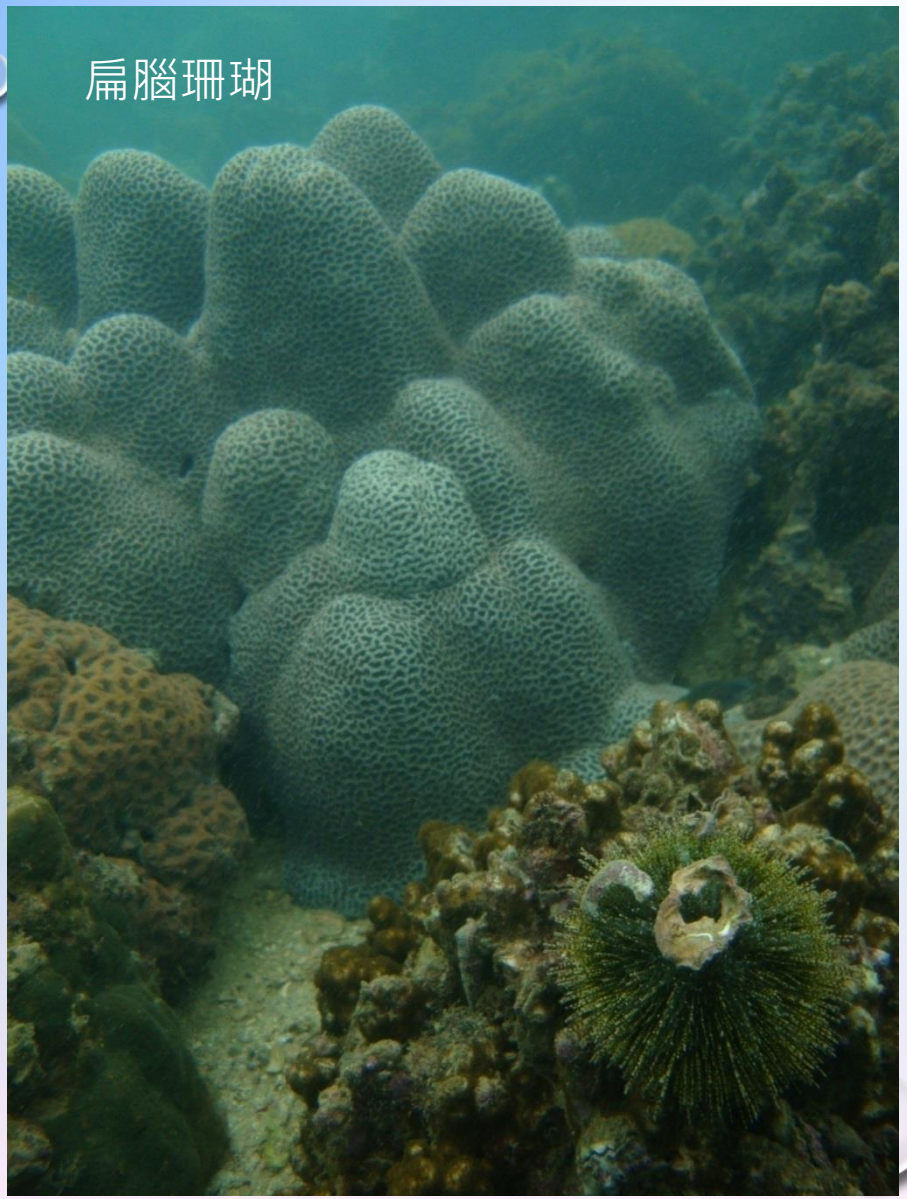
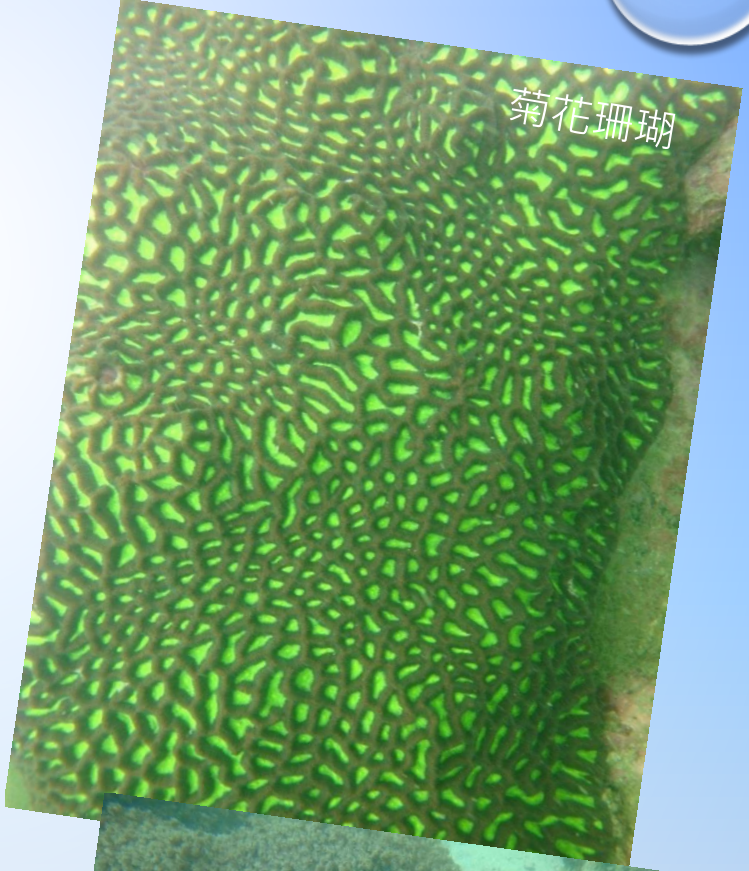
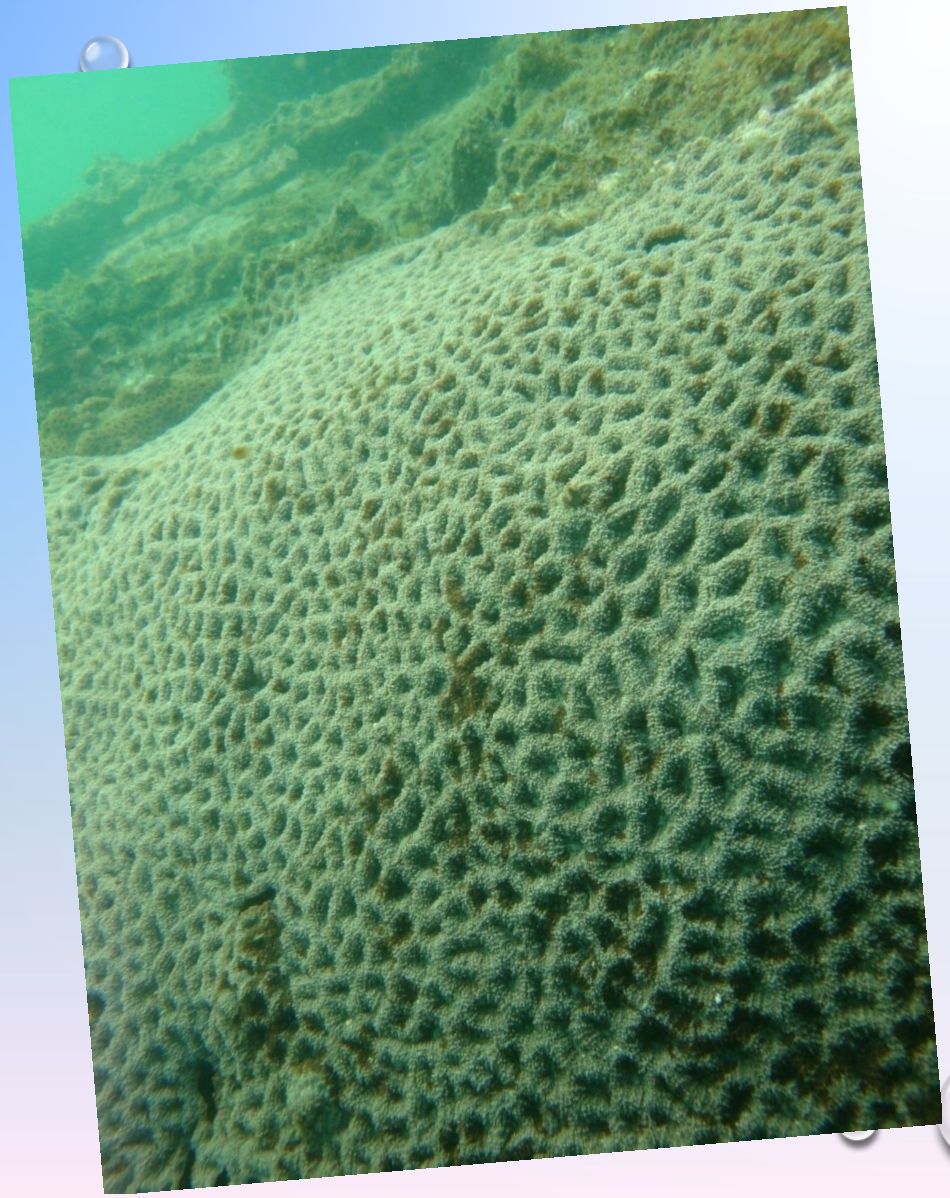
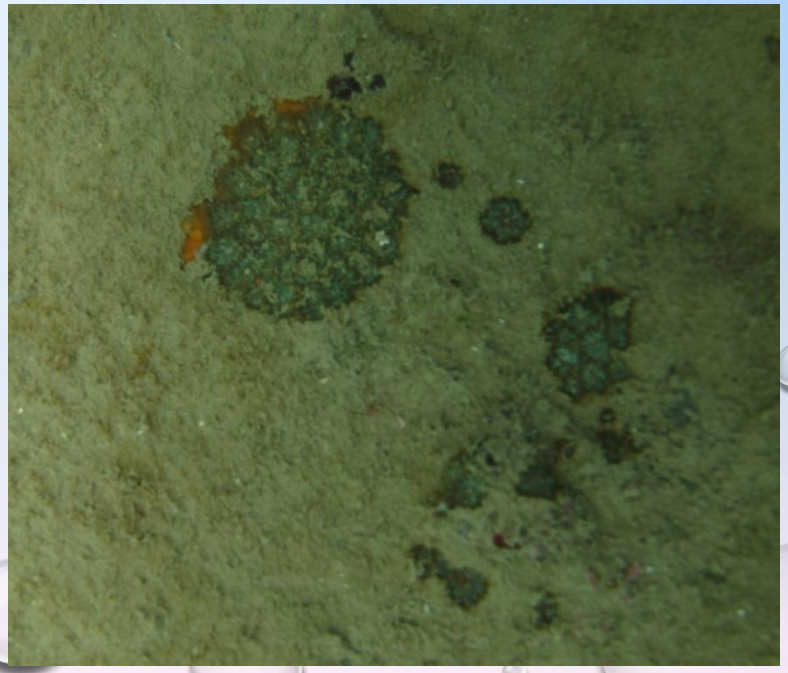


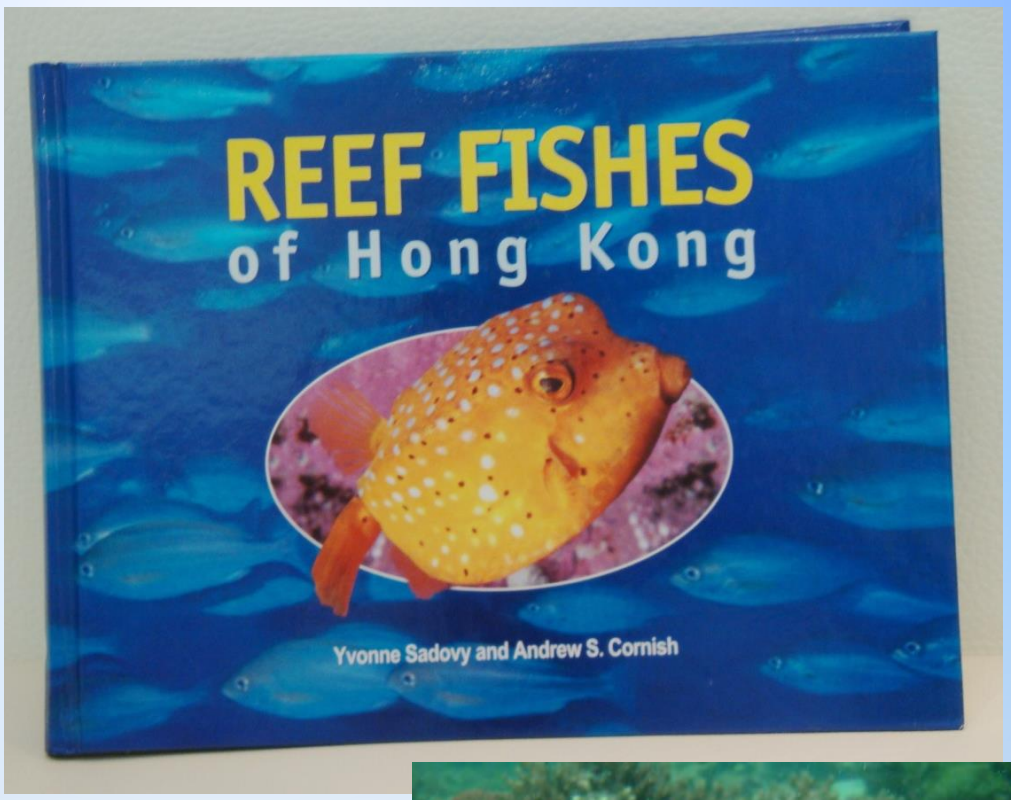


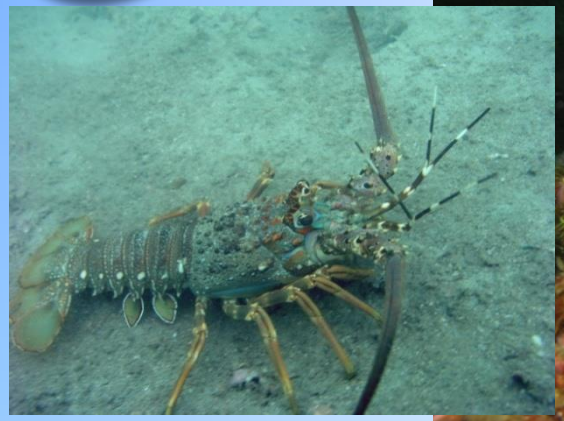
珊瑚 - 表覆形

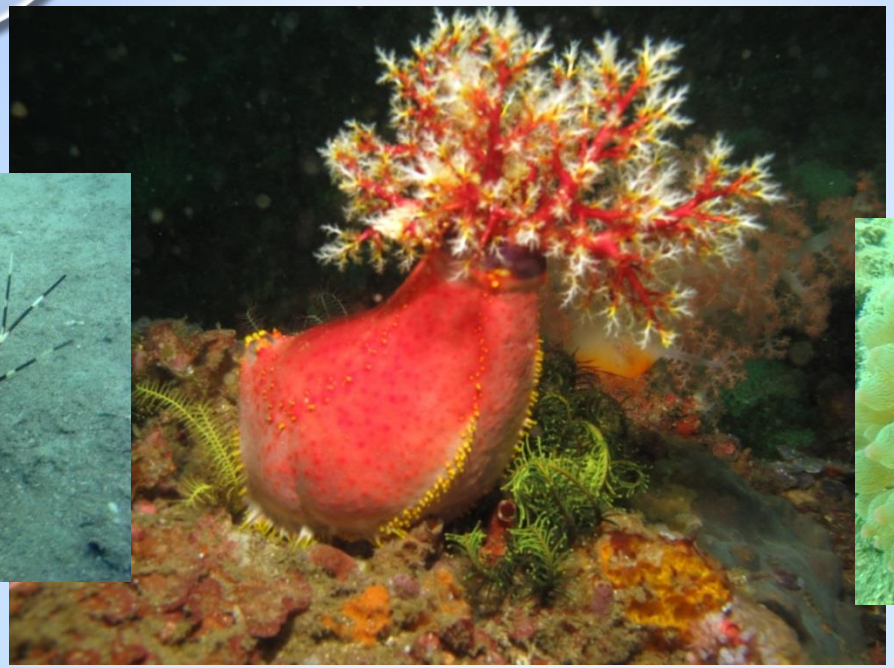




魚類 - 常見約250種







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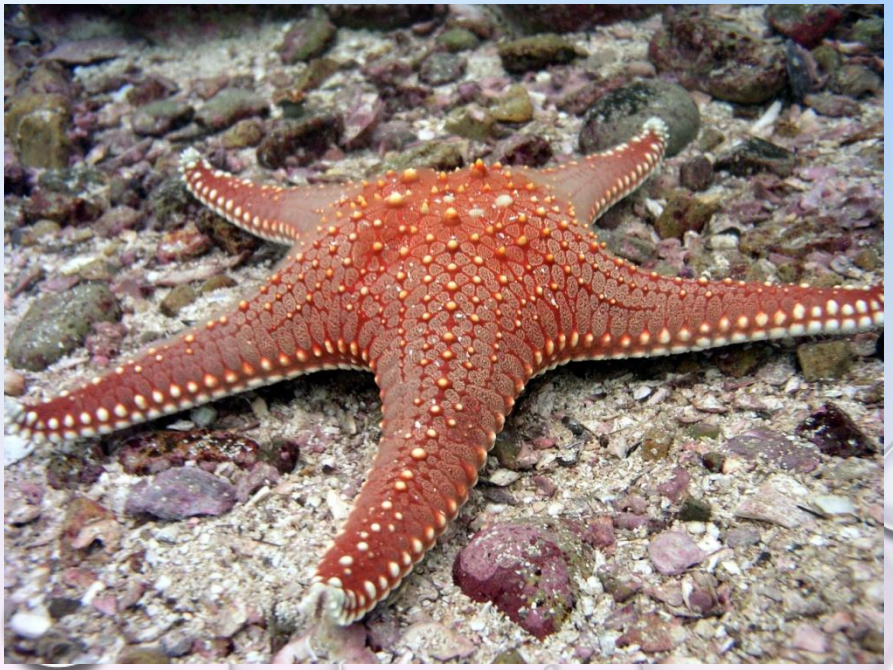


DO & DON'T

攝影師如何保護珊瑚？

DO & DON'T

配重系統

- 過重/過輕
- 分佈

DO & DON'T

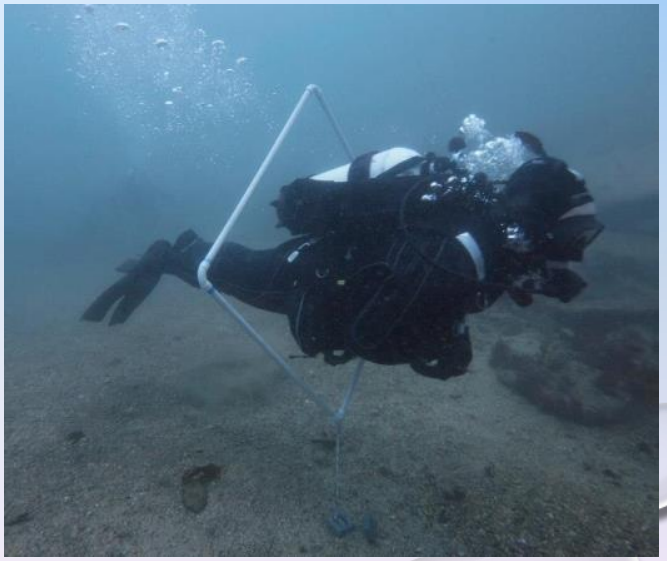
浮量控制

- 呼吸微調浮量
- 不要憋氣
- 浮量控制衣

DO & DON'T

保持流線型

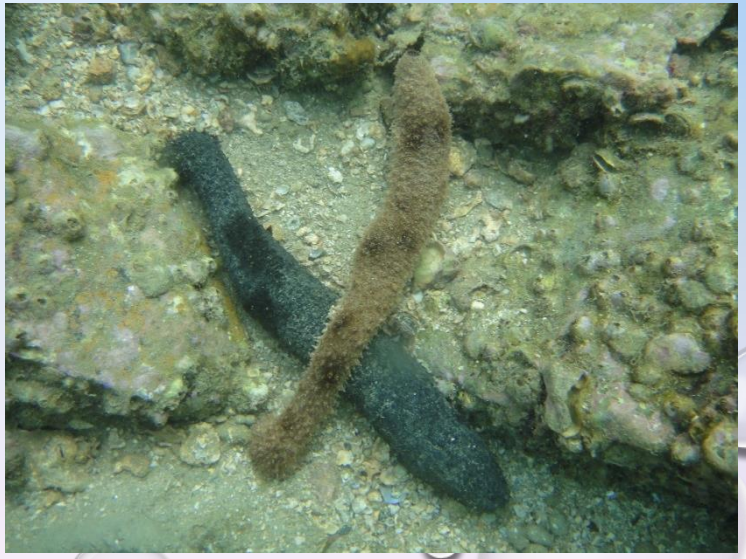
- 省卻力氣
- 保護海床
- 海洋生態及裝備

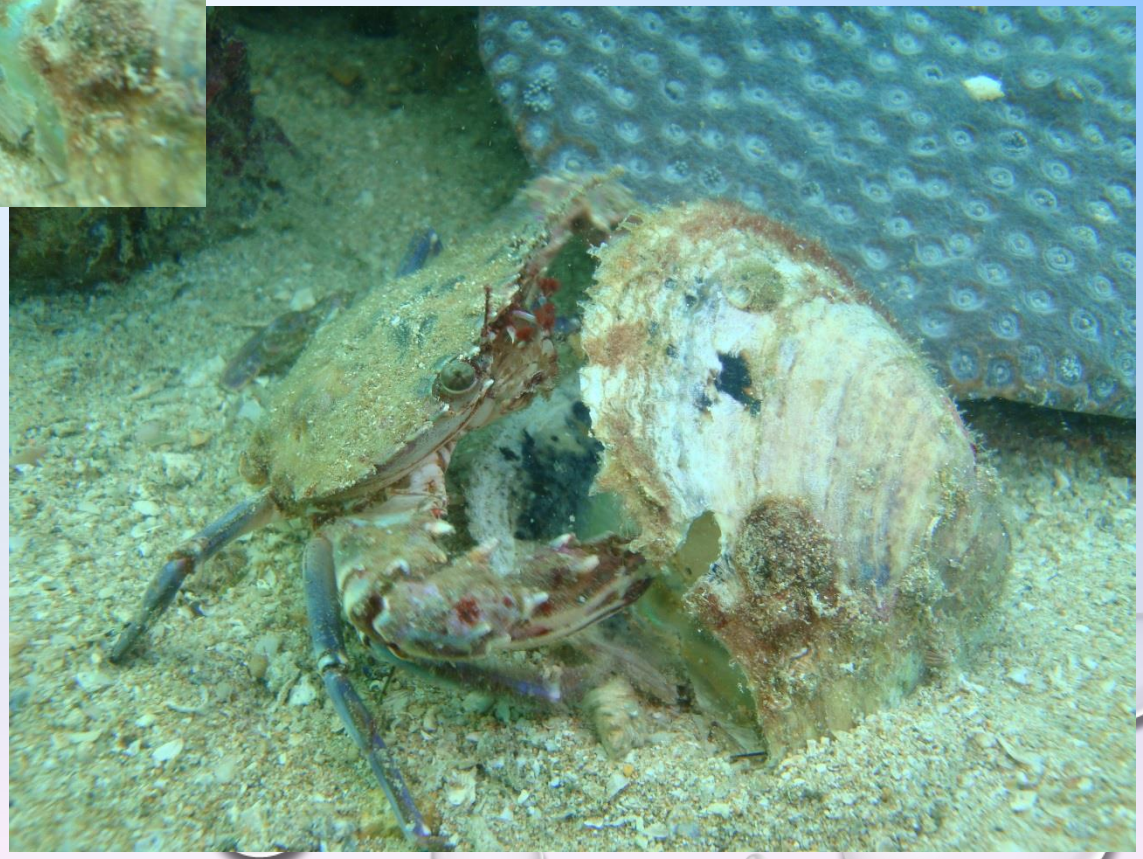


DO & DON'T

概念 - 構圖 - 拍攝

- 尋找/靠近目標
- 製造場景



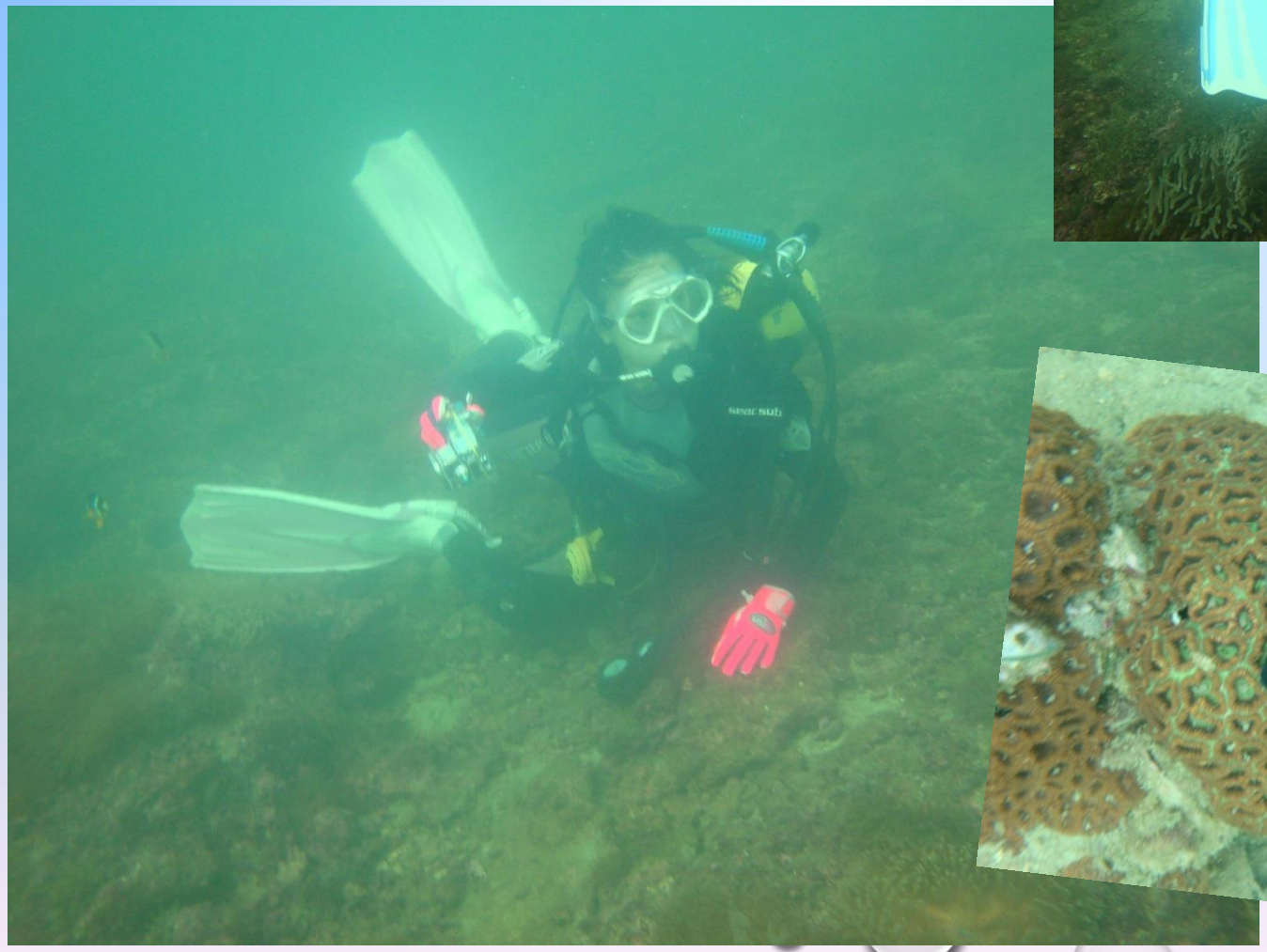


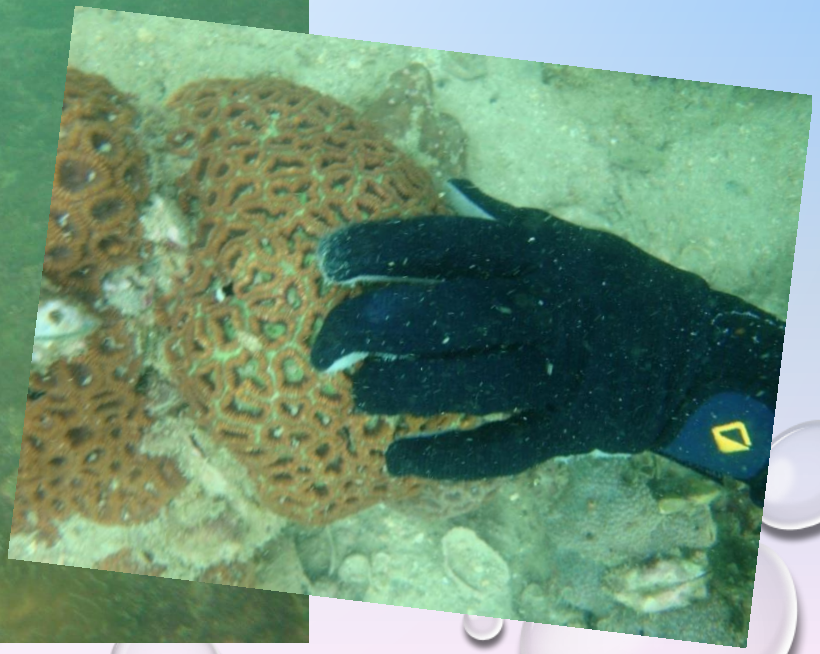
DO & DON'T

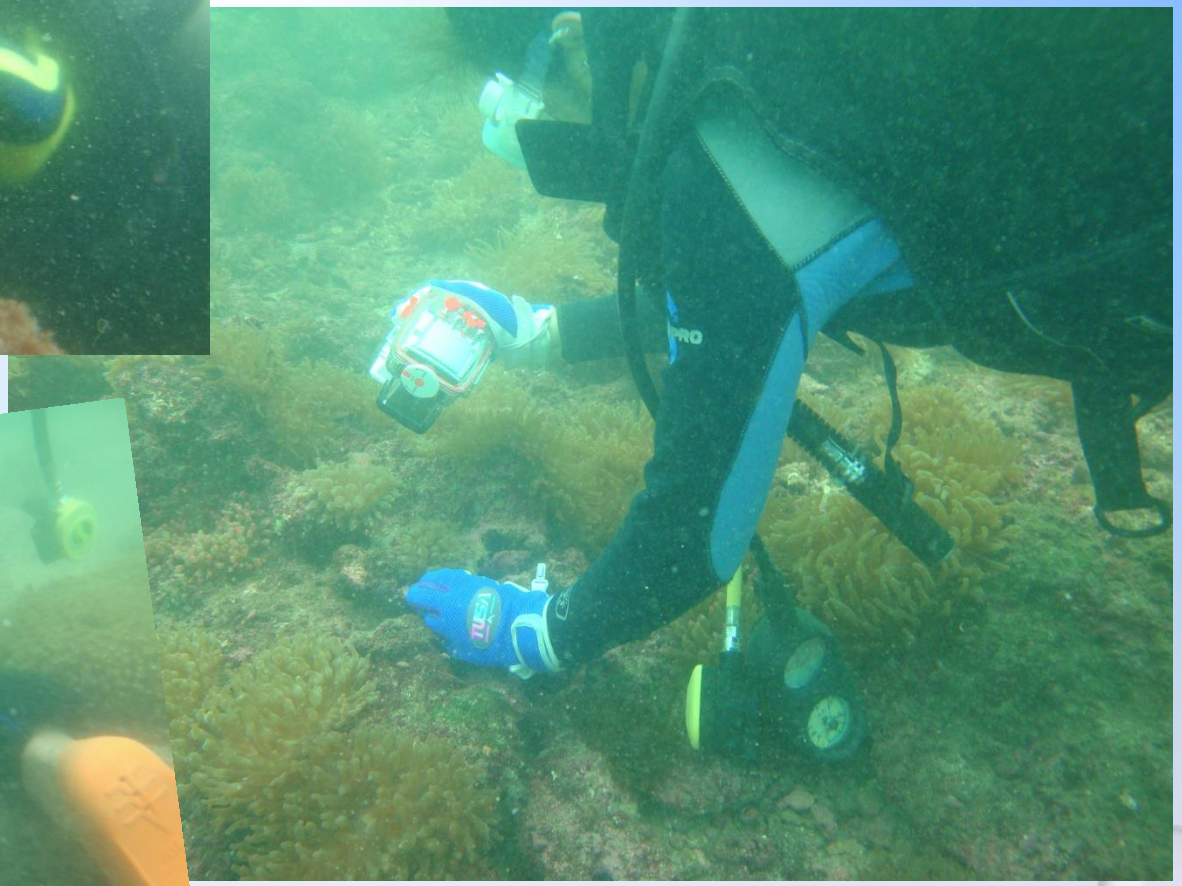
拍攝影像

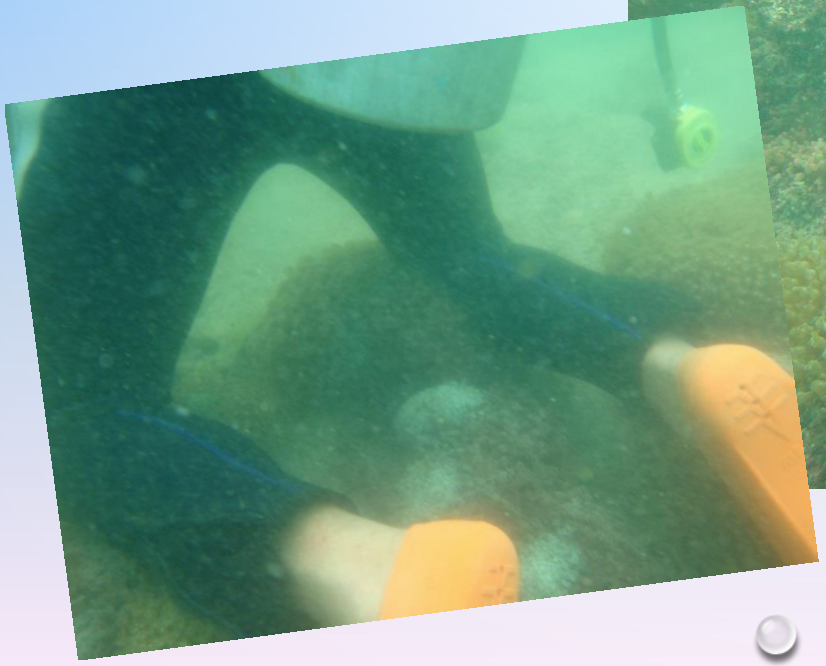
不經意的接觸…

- 身體或器材的碰撞









DO & DON'T

潛水區可見的現象

- 破損的珊瑚

DO & DON'T

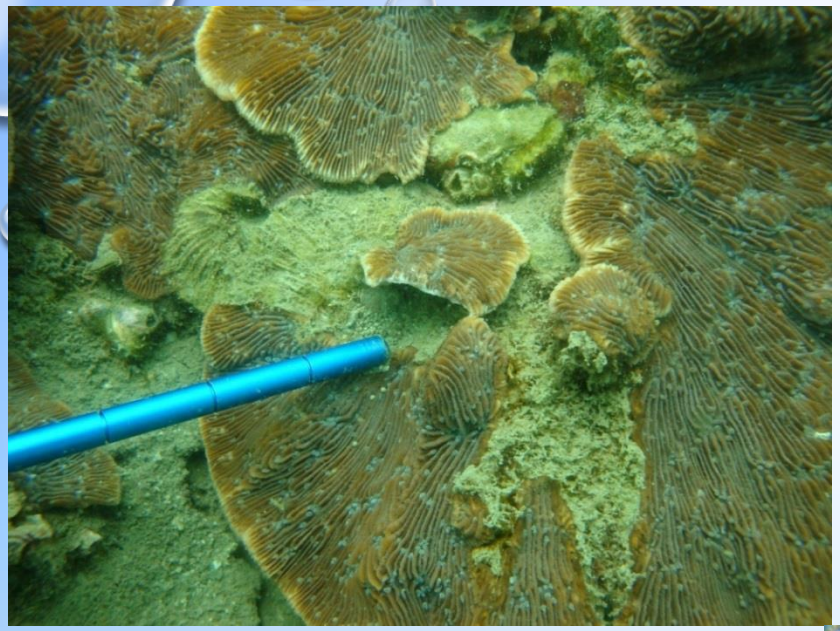
破損的珊瑚 與 潛水活動的關係

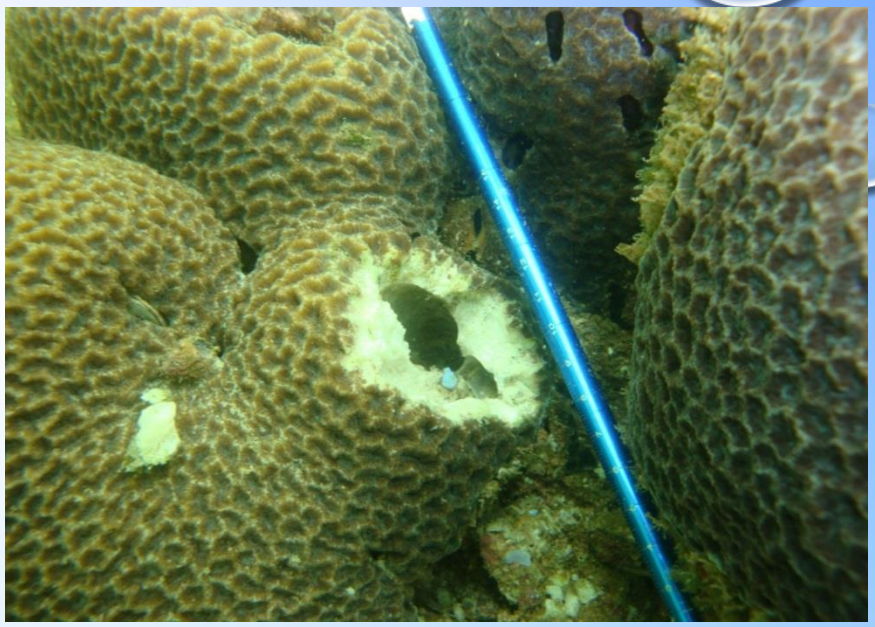
↓

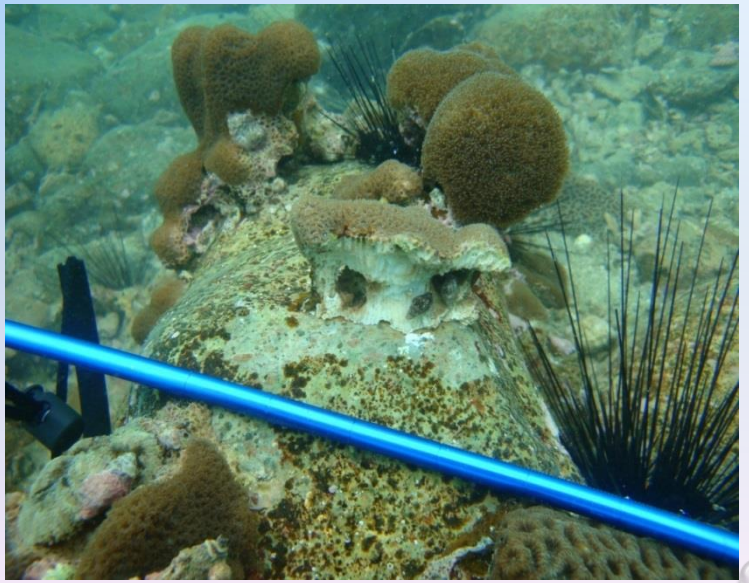
進行全面水下研究

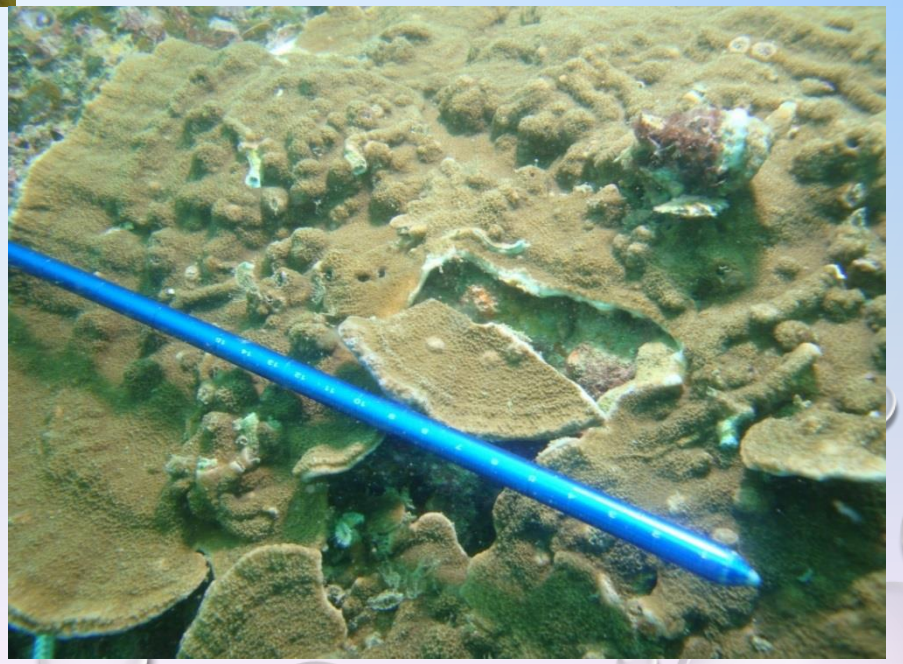
研究項目

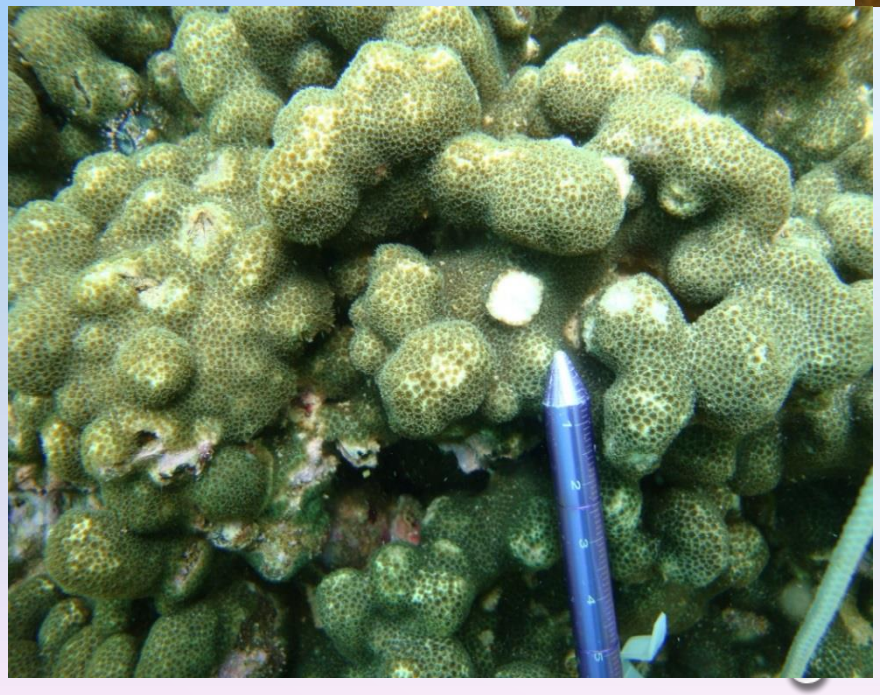
- 潛水區破損珊瑚資料搜集









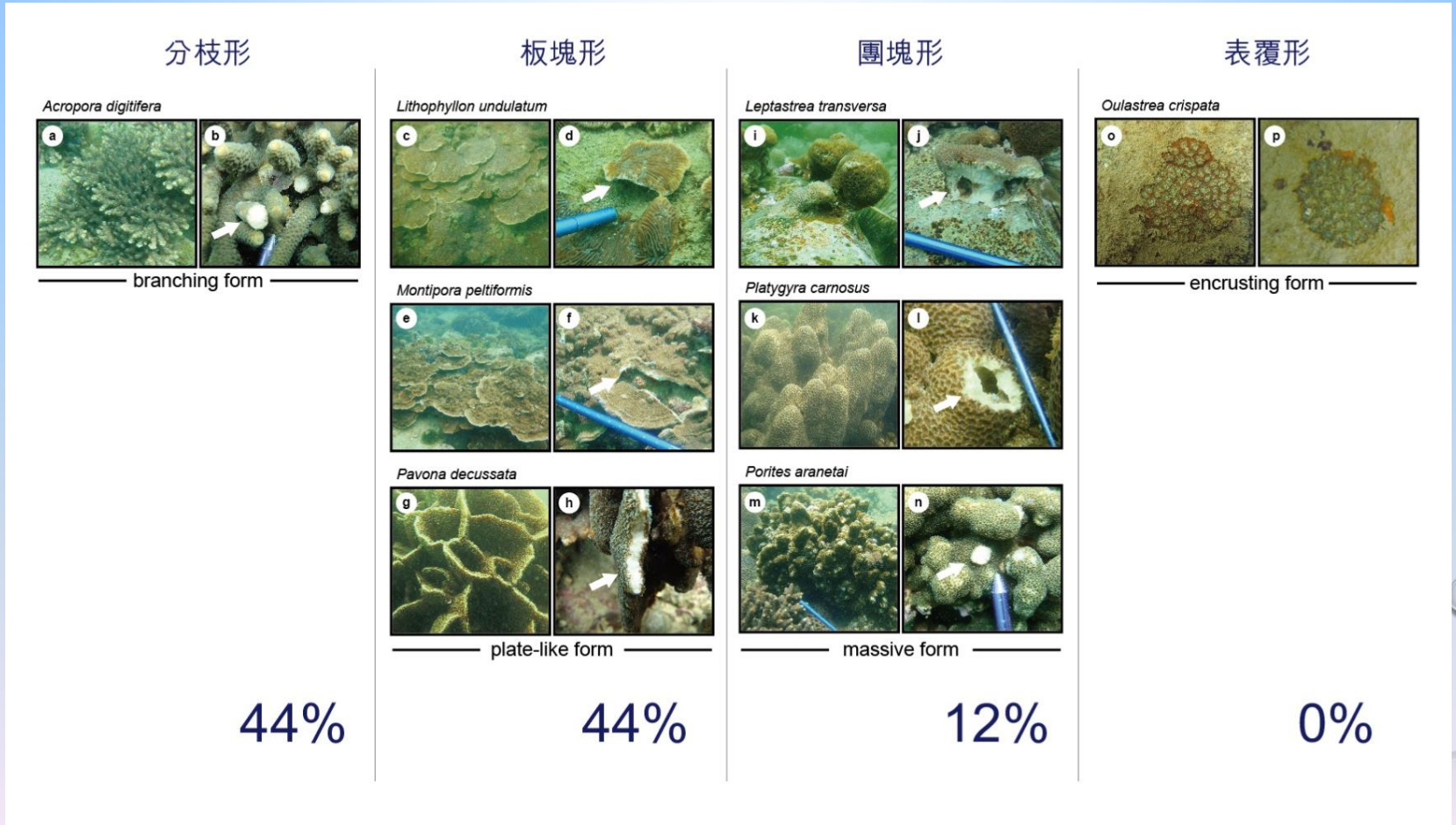


研究項目

- 潛水員水下活動行為

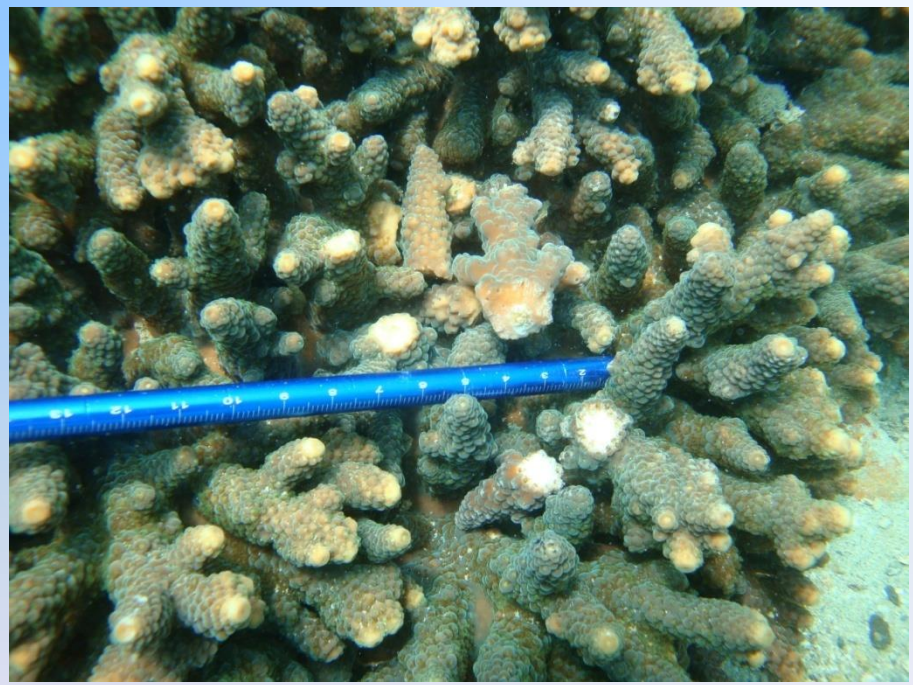
結果

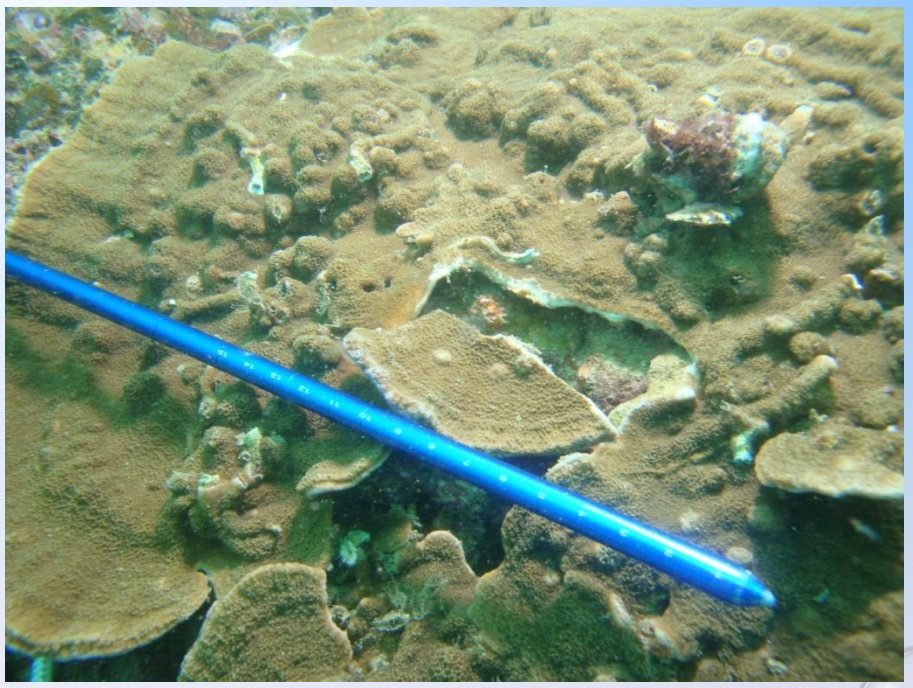
- 珊瑚的破損程度


分枝形
板塊形
團塊形
表覆形
Acropora digitifera
a
b
branching form
Lithophyllon undulatum
c
d
Montipora peltiformis
e
f
Pavona decussata
g
h
plate-like form
Leptastrea transversa
i
j
Platygyra carnosus
k
l
Porites aranetai
m
n
massive form
Oulastrea crispata
o
p
encrusting form
44%
44%
12%
0%

結 論

- **分枝形**珊瑚與**板塊形**珊瑚較易破損



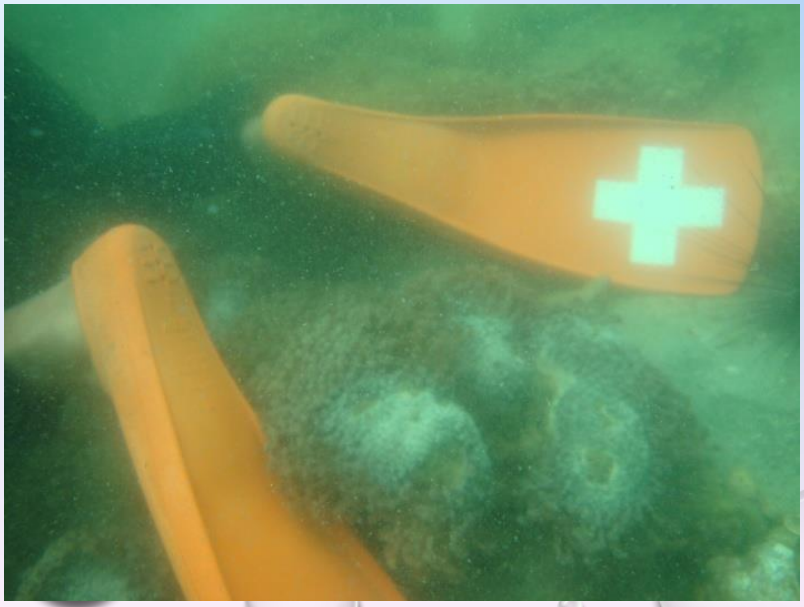


結果

- 潛水員對水下生境的碰觸：平均 14.65 次

  (40%觸及珊瑚)

- 蛙鞋的騷擾最多



結 果

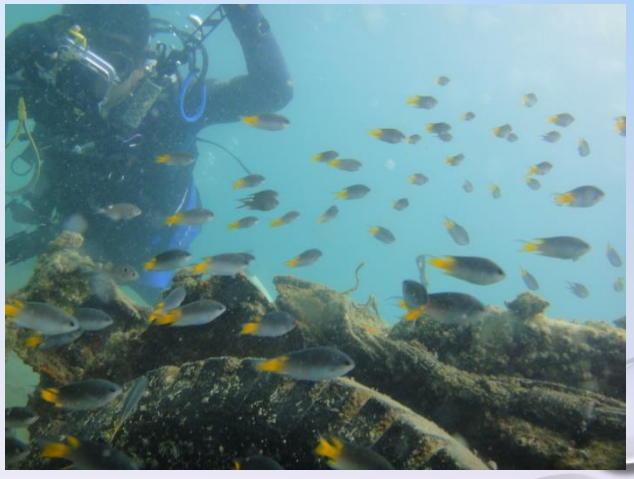
- 潛水員手持攝影機比沒有攝影機的觸碰次數平均多出9.8次

結 論

- 珊瑚破損與潛水活動有關

結 論

- 潛水員及水下攝影人士須特別留意避免觸及珊瑚



每次下潛平均「不小心觸碰」15次

逾七成潛水者破壞珊瑚

鍾姍姍在七個主要潛水點，觀察潛水人士對珊瑚造成的影響。 林芷雅攝

浸大研究發現，超過七成潛水人士潛水時，曾經觸碰或破壞珊瑚，而每名潛水者每次下潛平均觸碰海洋生物約十五次，大部分屬「不小心觸碰」，亦有人會直接踐踏珊瑚。學者提醒，潛水活動對海洋生態造成沉重壓力，建議政府應加強保育珊瑚，例如把淺水珊瑚區列為禁止潛水活動區域。

記者：林芷雅

有關研究在二〇一〇年六月至十一月進行，浸大研究團隊於本港七個主要潛水熱點，觀察了八十一位水肺潛水者，合共一百二十七次下潛活動，發現每名潛水者每次下潛平均觸碰海洋生物十四點七次，當中七成四屬不小心觸碰，以初學者和水底攝影者佔大多數。觸碰次數最多的是潛水者的「蛙鞋」，包括踢、踐踏和碰撞，亦有潛水者會用手接觸珊瑚，導致珊瑚組織破損。

浸大生物系教授鍾姍姍指出，初學者的潛水技巧較差，通常較少察覺自己的「蛙鞋」已經踢到珊瑚；又有攝影者有時為求在水中穩定身體，以拍攝最佳照片，會手握水底物件幫助平衡，珊瑚通常就會成為他們的把手。

分枝形珊瑚是其中一種容易受損的珊瑚。

鍾教授說，分枝形和平塊形的硬珊瑚最容易受損，有個別品種的珊瑚亦特別脆弱，「一碰就會碎」，她曾經看見一種翼形薔薇珊瑚，本來只損害了一少部分，但一個月後，發現該珊瑚全棵死掉，被水流沖走。

學者倡淺水區禁潛

研究亦發現，愈多潛水者的地方，愈多珊瑚受到破壞，研究團隊在西貢橋嘴島發現了十九棵受損珊瑚。但相對外國，潛水者在本港水域對珊瑚造成的損害，未算最差，泰國的珊瑚「最受罪」。

鍾教授指出，硬珊瑚多生長於淺水區域，部分只有一至兩米水深，她曾經在海下灣看見潛水者「貪方便」，直接在珊瑚上行走，這種做法對珊瑚的破壞極大，而淺水區域水流不穩亦不適合潛水，她建議政府把淺水珊瑚區列為禁止潛水活動區域，以保護珊瑚。初學潛水人士應先到泳池練習潛水技巧，稍後才出海，避免因技術欠佳而損害珊瑚。至於潛水旅遊經營者應在安排潛水活動前，向潛水者講解保育訊息，確保他們知悉潛水行為有機會破壞海洋生態，潛水教練或導師也要定期參加保育訓練。

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Diving associated coral breakage in Hong Kong: Differential susceptibility to damage

Alfred Cheuk-sun Au [1], Liye Zhang, Shan-shan Chung *, Jian-Wen Qiu *

Department of Biology, Hong Kong Baptist University, Hong Kong, China

ARTICLE INFO

Keywords:
Coral damage
Impact of diving
Coral morphology
Coral breakage
Coral management
Sustainability

ABSTRACT

We conducted the first quantitative assessment of coral breakage along a gradient of diving activities in Hong Kong, the most densely populated city in southern China. A survey of six 1 × 25 m transects at seven sites revealed a total of 81 broken corals, among which 44% were branching, 44% plate-like and 12% massive. There were 3–19 broken colonies per site. At most study sites, the percentage of broken corals exceeded the recommended no-action threshold of 4%, suggesting that management intervention is justified. There was a significant positive correlation between the number of broken coral colonies and the number of divers visiting the site. The branching *Acropora* and the plate-like *Montipora* suffered from much higher frequency of damage than their relative abundance, raising the concern that the cumulative impact of such differential susceptibility to breakage may affect coral community composition.

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1. Introduction

Scuba diving is one of the fastest growing sports in the world, with around 1 million new divers being certified annually (Davenport and Davenport, 2006). According to the Professional Association of Dive Instructors (PADI), its certified divers have increased from 81,321 in 1996 to 135,710 in 2012, with an annual increment of 4.2% (PADI, 2012). The increased popularity of SCUBA diving in recent years can be attributed to a number of factors: growing interest in marine environment, higher accessibility of dive sites, and availability of safe and affordable diving equipment (Musa 2002), but the cumulative impact can reduce the esthetic value of the dive site, and alter the community structure. In some Red Sea reefs frequented by divers, up to 60.6% branching corals and 57.2% of massive corals were damaged (Zakai and Chadwick-Furman, 2002). Tissue loss and abrasion caused by divers can invite attack by coral predators (Guzner et al., 2010), facilitate disease transmission (Hawkins et al., 1999) and enhance macroalgal growth (Hall, 2001), leading to a reduction in hard coral cover by as much as 43% (Jameson et al., 2007).

Located just south of the Tropic of Cancer at 22°10′ to 22°30′N, Hong Kong's climate is subtropical, with distinct seasonal changes

養成良好水下攝影習慣

是

成功第一步

互相尊重 = 雙贏