SULAWESI BIODIVERSITY EXHIBITION: WILDLIFE, CHALLENGES AND CONSERVATION

蘇拉威西生物多樣性展覽: 生態、威脅及保育

K11 ECO-LEADERS

The HKU-K11 Eco-Leaders Training Programme was found in 2009. It has been jointly organized by K11 Concepts Limited and The University of Hong Kong. Students who joined the programme would receive training on ecological surveys and biodiversity conservation in Hong Kong. They would then practice these skills on an ecology field expedition to an overseas biodiversity hotspot. On the trip, they would collect biodiversity information, take pictures and videos. Back in Hong Kong, they needed to compile a rapid biodiversity survey report and prepare web sites, seminars, videos and exhibitions for public education. In January 2018, they went to Indonesia to explore the wonderful terrestrial and marine biodiversity of North Sulawesi.

香港大學K11生態領袖訓練計劃於2009創辦，多年來由K11有限公司及香港大學合辦。參與計劃的學生會先於香港學習生態調查的方法及保育相關的知識，並透過到海外的生物多樣性熱點實踐在訓練中所學得的技巧，搜集當地的生態資料，拍攝照片及錄像等。回港後，同學們要撰寫生態調查報告、製作網頁、簡報、短片及展覽作生公眾態教育用途。2019年一月份，同學們到訪了位於印尼的北蘇拉威西，考察當地的陸上及海洋生態。

Sulawesi is an island in Indonesia, and also the world‘s eleventh-largest island. It is located in a region called Wallacea. Wallacea is a biogeographical region that has a mixture of both Asian and Australasian species. It is also the center of the Coral Triangle, which is a global marine biodiversity hotspot. The unique geographical location of Sulawesi has resulted in rich biodiversity and high endemism. Wallacea attracts a large number of scientists and naturalists from time to time.

蘇拉威西是位於印尼的一個島嶼，是世界第十一大島。蘇拉威西位處於華萊士區，一個同時擁有亞洲及澳洲大陸物種的生物地理區域，它亦處於「珊瑚礁三角區」的中部，是一個全球海洋生物多樣性熱點。蘇拉威西的特殊地理位置造就了她的豐富生物多樣性及特有物種，長久以來一直吸引大批科學家及自然學家到訪。

In this field trip, students encountered many species from different taxa. More than 100 bird species, 3 large endemic mammal species and many marine species such as sea turtle, coral and other invertebrates were recorded. At the same time, the biodiversity of Sulawesi is threatened by logging, hunting and the pressure from increasing population. Students witnessed some of these threats during the trip. This exhibition is intended to let students and general public in Hong Kong to know more about the biodiversity of Sulawesi and the threats behind. We hope you would enjoy the wonder of Sulawesi's biodiversity and be aware of the threats that it is facing through watching this exhibition. *For those who are interested to know more about different species in Sulawesi, please feel free to download our booklet through the QR code !!*

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在本次考察中，我們遇見了不同的品種，例如超過100種鳥類，3種哺乳類以及大量海洋生物，包括海龜，珊瑚以及其他無脊椎動物。但與此同時，蘇拉威西的生物多樣性亦面臨不少威脅，例如樹木砍伐，捕獵以及當地人口增加所造成的壓力等，在考察中我們亦親身目擊了部份威脅。本展覽旨在增加學生及大眾對蘇拉威西生物多樣性及其所面對的威脅的認識。我們希望您在本展覽能夠感受蘇拉威西生物多樣性的魅力，同時亦對其面對的威脅有所認知。*各位如有興趣認識更多蘇拉威西的生物，歡迎透過二維碼下載我們預備的小冊子!!*

K11

格物 明德
SAPIENTIA·ET·VIRTUS

INTRODUCTION TO SULAWESI BIODIVERSITY
蘇拉威西的生物多樣性

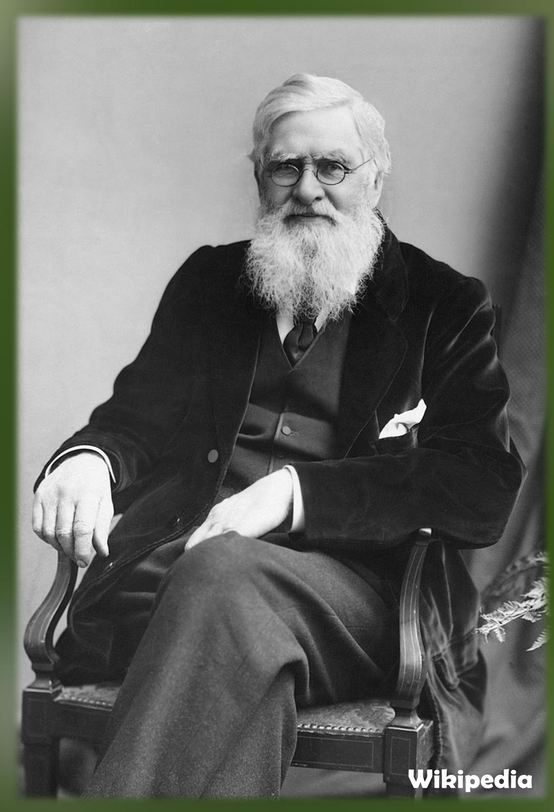
ECO-LEADERS

Situated in Indonesia, east of Borneo, Sulawesi is a well-known biodiversity hotspot. The island is home to more than 1100 fauna species with around half of them showing endemism, meaning that they can be found nowhere in any other parts of the world but on this island. But why is Sulawesi such a special place for these species? Sulawesi's distinctive geographical location explains it all.

位於印尼，婆羅洲東側的蘇拉威西是著名的生物多樣性熱點。她是超過一千一百種動物的棲息地，當中近半是蘇拉威西特有種，即於只棲息於蘇拉威西這個地方。但為何蘇拉威西會如此獨特? 我們可以透過她特殊的地理位置窺探一二。

The Wallacea region, where Sulawesi situated in, is a biogeography region first discovered by Alfred Russel Wallace, who is also the co-discoverer of theory of natural selection (The other one is Charles Darwin). Wallace discovered that species distribution between Bali and Lombok, and Sulawesi and Borneo have significant difference despite the fact that these islands are geographically close. He discovered that species in Bali and Borneo had species similar to Asian mainland (e.g. woodpeckers, tigers, fruit-thrushes) while Lombok had species similar to Australia (e.g. Australian cockatoos, honey-eaters, marsupials). This "invisible" boarder between Bali and Lombok is known as the "Wallace Line".

華萊士區，即蘇拉威西的所在地，是亞爾佛德·羅素·華萊士所發現的其中一個生物地理區域。華萊士同時亦是進化論的提倡者之一 (另一位是著名的查爾斯·達爾文) 。華萊士發現在印尼一些地理上相近的島嶼，例如峇里與龍目島，及蘇拉威西與婆羅洲，有顯著不同的物種分佈。他發現在峇里和婆羅洲的物種分佈與亞洲比較接近 (例如有啄木鳥、老虎等)，而龍目島的物種分佈則與澳洲比較接近 (例如有蜂虎、有袋目動物等)。這道位於峇里與龍目島的隱形分界線被稱為華萊士線。



Wikipedia

Alfred Russel Wallace

After Wallace, numbers of scientist have contributed to the studies of the biogeography of the Malay Archipelago, new "lines" such as Weber Line and Lydekker Line were established. The region between Wallace Line and Lydekker Line is now known as "Wallacea region", the transition zone between Asian and Australian wildlife, place where the mixture of animals from two different continents can be found, especially in Sulawesi and its surrounding islands.

繼華萊士之後，不少科學家亦參與了馬來群島生物地理學的研究，新的物種分界線如韋伯線和萊德克線等相繼出現。而在華萊士線與萊德克線中間的區域則被稱為「華萊士區」，是亞洲及澳洲物種分佈的過渡區，即兩個地域的物種交匯之處，特別是在蘇拉威西及鄰近島嶼。

Wikipedia

An illustration from depicts the flying frog Wallace discovered.

INTRODUCTION TO SULAWESI BIODIVERSITY
蘇拉威西的生物多樣性

ECO-LEADERS

Sulawesi has a mixture of fauna from the Oriental and Australian realm. Boundaries of the Wallacea ranges from the Wallace's line in the west, which strictly defines Asian fauna after passing west of the line, to the Lydekker's line in the east, which strictly defines Australian fauna after passing east of the line. Near the center of the region is the Weber's line, which indicates a 50:50 boundary of mammals from the Oriental and Australian realm. That is why both Oriental mammals, like tarsiers and Australian mammals, such as marsupials can be found in Sulawesi.

在生物地理學上，華萊士線以西的物種均是亞洲物種，而萊德克線以東的物種均是澳洲物種。而鄰近韋伯線的華萊士區，則同時擁有亞洲及澳洲大陸的物種。這亦解釋了為何蘇拉威西例如眼鏡猴的亞洲哺乳動物動物，以及澳洲的有袋目動物。

The Wallace's and Lydekker's line also marks a deep oceanic trench which isolates Sulawesi from the other nearby islands of the area throughout most of the time in history. Species that arrived on Sulawesi during Ice Age when the islands were still connected stayed on the Sulawesi after that. Dispersal to nearby islands was limited due to isolation. This results in a high number of endemic species on the island, for example, 62% of mammal species and 36% of bird species are endemic to Sulawesi .

華萊士線及萊德克線實際上皆是海洋深溝，包圍蘇拉威西被使其成為一個孤島。在冰河時期抵達蘇拉威西並於島上棲息的動物因被深溝阻止而無法離開，島上的生物因而漸漸演變成新物種，成為了蘇拉威西為數眾多的特有種，例如島上62%的哺乳類及36%的鳥類物種皆為蘇拉威西特有種。

Sulawesi in the Wallacea region

Sulawesi in the Coral Triangle

Other than its unique terrestrial biodiversity, Sulawesi is also known for its varied marine environment. The island is located in the centre part of the coral triangle, global hub of the planets' richest marine life. More than 70% of the world's coral species can be found in this area together with marine fauna that rely heavily on the reefs. The region nurtures 6 out of 7 sea turtle species, over 2000 species of fish and other invertebrates. The coral triangle also supports a large population of the highly valued tuna and the industry that comes with it, sustaining lives of over 120 million people living in this region. During our trip, we mainly visited Bunaken and Lembeh Strait in North Sulawesi. The rare living fossil, coelacanth, and some endangered marine mammals like Dugong can be found in Bunaken, and Lembeh is a popular site for nudibranchs and seahorses, as well as the endangered and restricted Banggai Cardinalfish.

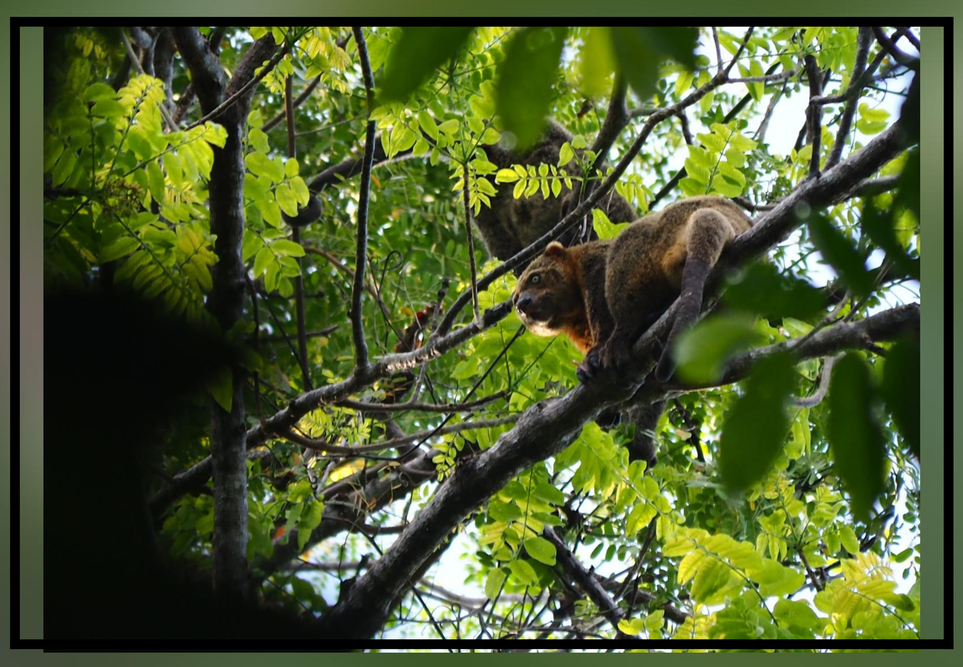
蘇拉威西的海洋生態及多樣性絕不比陸地遜色。她位處於著名的海洋「珊瑚礁三角區」中部，該三角區是全球海洋生態多樣性最豐富的地方，擁有過7成的珊瑚物種及大量棲息於珊瑚礁 的 動物，當中包括全球7種海龜的其中6種，超過2000種魚類以及其他無脊椎動物。珊瑚礁三角區同時亦擁有大量具經濟價值的商業魚類例如吞拿魚，同時約有超過1.2億人依賴三角區生存。在本次的考察期間，我們到訪了位於北蘇拉威西的布納肯及藍碧海峽。布納肯擁有被稱為「活化石」的腔棘魚以及瀕危海洋哺乳動物如儒艮，而藍碧海峽則是著名的「微距天堂」，擁有多種海蛞蝓，海馬以及其他珍稀動物如蘇拉威西獨有的考氏鰭笠鯛。

TERRESTRIAL SPECIES
陸棲動物

MAMMALS 哺乳類

Mammals in Sulawesi are characterized by high percentage of endemic species and the mixture of two biogeographic region (i.e. Asian and Australian), which is different from Hong Kong where only Asian mammal can be found and there is no endemic mammal species. Mammals in Sulawesi are heavily threatened by various human activities, such as hunted for food by local people, for commercial products in bushmeat market and pet trading and deforestation which resulted in habitat loss. Population of many mammal species in Sulawesi, as predicted by the IUCN, will continue to decrease either significantly or gradually, depends on the species.

蘇拉威西哺乳動物的特別之處在於其高特有種比率的及同時擁有亞洲及澳洲兩個生物地理區的物種，而香港只擁有亞洲的物種及並沒有本地特有的哺乳動物。然而，蘇拉威西的哺乳動物正受到不同人類活動的威脅，例如被當地人狩獵以作食物，，蘇拉威西的不同哺乳動物被當作野味或寵物出售，以及因砍伐樹林而導致導致棲息地消失。根據國際自然保護聯盟的預測，蘇拉威西的哺乳類物種數量將會持續甚至急劇減少。



Sulawesi bear cuscus (*Ailurops ursinus*)
Endemic to Sulawesi. A species of porched mammal with thick, dark and bear-like fur. Their elongated claws and prehensile tail allow them to live at the elevations of lowland forest.

蘇拉威西袋貓
袋貓是蘇拉威西特有的有袋目動物，牠們身上被有又厚又黑的毛，令牠們看起來像熊。
牠們的長爪及尾巴有助於牠們遊走於樹冠之間。

Sulawesi Tarsier (*Tarsius tarsier*)
World's smallest primate. Can be found in primary, secondary and mangrove forests. Usually live in a small group of 2-6 individuals. It is a nocturnal species that usually preys on insects with some small vertebrates.

蘇拉威西眼鏡猴
蘇拉威西眼鏡猴是世界上體型最小的靈長目動物。主要棲息於原生林、次生林以至紅樹林。牠們是群居的夜行性動物，主要以昆蟲及其他小型動物為食糧。

Celebes Crested Macaque (*Macaca nigra*)
One of the seven macaque species endemic to Sulawesi forests. Distinctive crests on their heads are eye-catching! Usually live in groups of 50 - 97 individuals. You may see the foraging, feeding, and moving around. Although listed as Critically Endangered in IUCN Red List since 2008, they are still seriously threaten by illegal hunting for bushmeat and pet trading.

黑冠獼猴
7種蘇拉威西特有獼猴的其中一種。牠們擁有獨特奪目的黑色髮冠。族群由5-75隻獼猴組成，在蘇拉威西的樹林中可見到牠們休息、覓食等等。儘量牠們被列為極度瀕危物種，但牠們依然受到捕獵作野味及寵物的威脅。

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TERRESTRIAL SPECIES
陸棲動物

BIRDS 鳥類

The forests of Sulawesi support high diversity of bird species, including families that have not been recorded in Hong Kong, such as Bucerotidae (hornbills) and Megapodiidae (mound-builders). However, birds in Sulawesi are threatened by habitat loss due to logging for timber productions and agriculture such as palm oil and coffee. Deforestation has significantly reduced forest habitats for birds and caused significant decrease in population. Like mammals , population of many bird species in Sulawesi will continue to decrease either significantly or gradually, depends on the species, as predicted.

蘇拉威西的熱帶雨林擁有豐富多樣性的鳥類，當中包括一些香港沒有的鳥科，例如犀鳥及塚雉。但蘇拉威西的鳥類正受到棲息地消失的威脅，當中的成因包括砍伐樹木作木材或將該土地轉為農業用途以種植咖啡及橄欖油。砍伐樹林令到鳥類的棲息地大量消失，從而影響牠們的族群數量。一如蘇拉威西的哺乳動物，國際自然保護聯盟的預測，蘇拉威西的鳥類數量將會持續甚至急劇減少。

Kingfishers:
Kingfishers are attractive bird species to bird watchers. There are 10 kingfisher species in Sulawesi including both water and forest dependent species, and 5 of them are endemic to Sulawesi. While in Hong Kong, 5 species of kingfishers were recorded and all are water dependent species and they are not endemic to Hong Kong.

翠鳥一向深得觀鳥人士青睞，蘇拉威西擁有10種翠鳥，包括依賴水體及森林的物種，當中更有5種是蘇拉威西特有。相比之下，香港則有5種翠鳥的紀錄，所有品種皆依賴水體生存，而且並沒有本地特有種。

Pictures of endemic kingfishers in Sulawesi:
蘇拉威西特有的翠鳥


Green-backed Kingfisher 綠背翡翠


Scaly-breasted Kingfisher 斑頭翡翠


Sulawesi Dwarf-kingfisher 小三趾翠鳥


Sulawesi Lilac Kingfisher 蘇拉藍耳翡翠


Great-billed Kingfisher 大嘴翡翠

Knobbed Hornbill (*Rhyticeros cassidix*) - Male
Endemic to Sulawesi. The male has distinctive red casque on the top of his bill. Forages mainly in the canopy of forest and depends on large trees for breeding. They usually feed on fruit but will also take insects and small vertebrates. The population of Knobbed Hornbill is expected to decline 40% over three generations due to habitat loss. Some of it's relatives in Asia suffered from the increasing demand of "red ivory" in China, a precious ornamental material derived from hornbills, while Hong Kong play a "key role" in this illegal trading

蘇拉皺盔犀鳥 - 雄性
蘇拉威西特有種，雄性雄性的喙上有巨大的紅冠。牠們主要棲息於樹林的頂層並且依賴大樹繁殖。皺盔犀鳥主要以果實為食糧，偶爾會捕捉昆蟲及其他小型動物。由於棲息地消失，蘇拉皺盔犀鳥的數量大幅下跌近4成。而牠們於亞洲的一些近親，亦由於「鶴頂紅」—即以犀鳥的喙部製成類似象牙的珍貴材料　—在中國的需求急劇增加而面臨過度捕獵的威脅。在「鶴頂紅」的交易中，香港不幸地扮演了重要的角色。

Maleo (*Macrocephalon maleo*)


Helen Fong@HKBWS

A distinctive bird endemic to Sulawesi and Buton Islands of Indonesia. Macrocephalon species are usually found in Australian region. Females dig pits on ground for egg incubation by solar and/or geothermal radiation. However, they are seriously threatened by deforestation and overharvesting on their eggs by human, hence listed as Endanger in IUCN Red list.

蘇拉塚雉
蘇拉塚雉是蘇拉維西及鄰近島嶼特有的品種，塚雉科的其他品種主要見於澳洲地區。雌性蘇拉塚雉會於沙灘及其他沙質生境挖洞下蛋。雌性塚雉並不會孵蛋，而是利用太陽的熱力或地熱協助。然而，牠們亦受到樹林砍伐及人類盜蛋的威脅，因此牠們被列為瀕危物種

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TERRESTRIAL SPECIES
陸棲動物

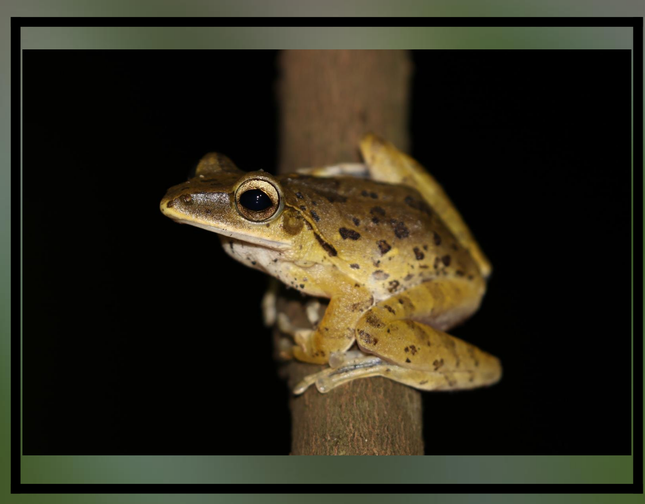
OTHERS 其他

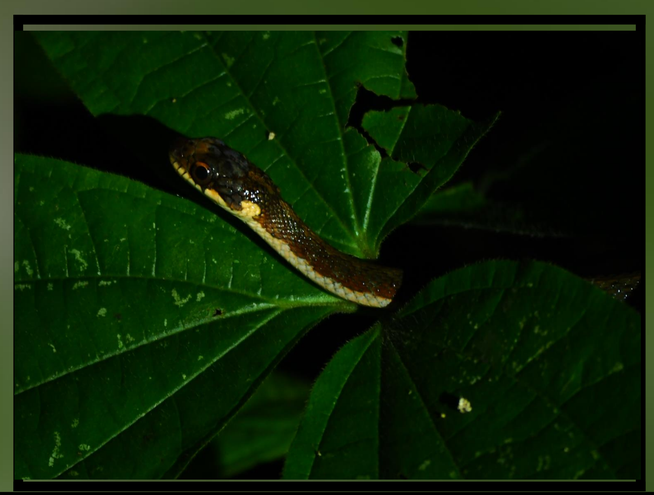
Besides mammals and birds, there are many other fascinating species in Sulawesi that we are not able to see in Hong Kong:
除了哺乳動物及鳥類，蘇拉威西亦擁有一些其他香港沒有的物種:

Amphibians and Reptiles:
兩棲爬蟲類:

Sulawesian toad (*Ingerophrynus celebensis*)
Endemic to Sulawesi. It can be found in a variety of habitats including primary forest, disturbed secondary forest, fields, etc. Adult can live in dry areas some distance away from water

蘇拉威西蟾蜍
蘇拉威西特有，牠們能夠適應及棲息於不同生境，例如原生林、次生林、農田等，甚至生活於離水源比較遠的生境。





Other amphibian species encountered in Bogani Nani and Tangkoko
其他於邦加尼納尼及淡可可遇見的其他兩棲類動物

Sulawesi Lined Gliding Lizard (*Draco spilonotus*)
Endemic to Sulawesi. You may see them gliding through the forest from one tree to another.

蘇拉威西飛蜥
蘇拉威西特有，在蘇拉威西的森林中有機會看見牠們滑翅。

Other reptile species encountered in Tangkoko
其他於淡可可遇見的爬蟲類動物

Butterflies:
蝴蝶

Around 50% of butterfly species are endemic to Sulawesi, here are some of those:
大約一半的蝴蝶是蘇拉威西特有:

Menado Faun (Faunis menado) [Top right]
Amathusia virgata [Top left]
Celebes Map (*Cyrestis strigata*) [Bottom]

KLN
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MARINE SPECIES
海洋動物

Sulawesi is located in the centre part of the coral triangle, global hub of the planets' richest marine life. More than 70% of the world's coral species can be found in this area together with marine fauna that rely heavily on the reefs. We have visited Bunaken and Lembeh in our trip, and encountered some amazing creatures such as the endangered and restricted Banggai Cardinalfish.

蘇拉威西位處於著名的海洋「珊瑚礁三角區」中部，該三角區是全球海洋生態多樣性最豐富的地方，擁有過7成的珊瑚物種及大量棲息於珊瑚礁動物。布納肯及藍碧海峽是本次海洋生態考察到訪的地點當中我們遇見不少**珍稀**及有趣的物種**如蘇拉威西獨有的考氏鰭竺鯛。**

***Acropora* sp.**
The colonies have a branching growth form which are thick and finger-like. The branches originate from a thick plate base with the secondary branching and typically white in colour on the top.

鹿角珊瑚
珊瑚群落是分枝的生長形式，其厚且指狀。分支起源於厚板基部，具有次級分支，頂部通常為白色。

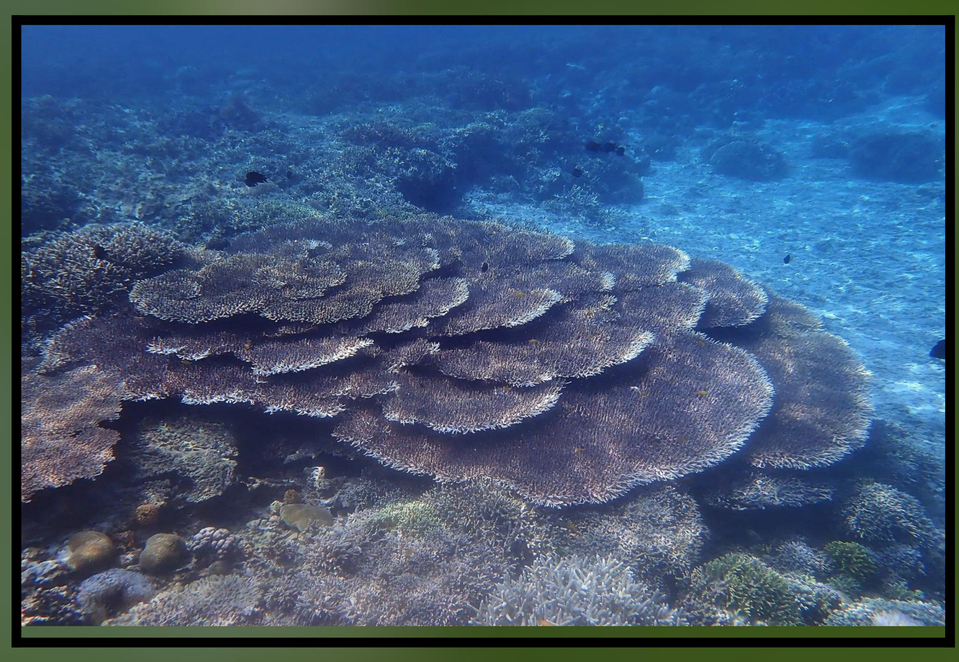


Table coral (*Acropora* sp.)
They are disk-shaped and this pattern of growth increases the exposed surface area of the coral to the water column. Most types of the table coral can be observed the growing upwards from the seabed. This is how the polyps can receive the greater access to sunlight for their food.

鹿角珊瑚
牠們是圓盤狀的，這種生長模式可以增加了珊瑚的覆蓋的面積。大多數的鹿角珊瑚是從海床向上生長，這樣可以令珊瑚蟲更容易得到更多的光線作光合作用提供食物。

Frogfish *(Antennariidae* sp.)
Frogfishes have a stocky appearance, atypical fish with their plump, high-backed, unstreamlined body, scaleless and bare, often covered with bumpy, bifurcated spinules. They are brightly colored with different colours (white, yellow, red, green, or black) to blend in with their coral surroundings.

躄魚
躄魚外觀粗壯，非一般典型的魚，具有豐滿，高背的身體，無鱗片和裸露，通常覆蓋著凹凸不平的分叉刺。牠們顏色鮮豔，顏色各異（白色，黃色，紅色，綠色或黑色），與周圍珊瑚環境融為一體。這也是牠們其中一種防禦的機制。

MARINE SPECIES
海洋動物

Coconut Octopus (*Amphioctopus marginatus*)

Due to its many unusual but cute behaviors, it becomes a favorite species among the divers and underwater photographers. One of the most special is referred to its defense system. It usually carries the coconut shells for the shelter by walking and sometimes even collapsing into and rolling with them. So that it was also called “Coconut Octopus”.

椰子章鱼

由於其許多不尋常但可愛的行為，牠是大部份潛水員和水下攝影師都十分喜歡的物種， 其中一個可愛地方就是牠的防禦系統。 牠經常被發現帶著椰子殼走路，有時甚至會躲藏在內並隨之滾動。 所以牠也被稱為椰子八爪魚。

Batfish (*Platax* sp.)
The juvenile is brown or yellow in color and looks very much like a floating leaf. As an adult, it is a silver or grey color with a dark blotch on the lower body just above the yellow pelvic fins

蝙蝠魚
少年的蝙蝠魚是棕色或黃色，看起來非常像浮葉。 但當牠成年後，牠會變成銀色或灰色，在黃色骨盆鰭上方的下半身有深色斑點。

Porcelain crab (*Neopetrolisthes* sp.)
It has a white undercolor with numerous fine spots and a smooth carapace. This crab is equipped with feathery appendages as it is a filter feeder, netting plankton in the water column.

瓷蟹
牠有白色底色和細小的斑點光滑的甲殼。 這種蟹配有羽毛狀的附屬物，因為牠是一個過濾器餵食器，在水中捕食浮游生物。

Banggai cardinalfish (*Pterapogon kauderni*)
Endemic to the Sulawesi, Indonesia. They are small, mainly distinguished by the three black bars across the head and body, and the division of the dorsal fin into two separate fins. This species is vulnerable to aquarium trade and is listed on the IUCN Red List as ‘Endangered’.

考氏鰭竺鯛
在印尼蘇拉威西島特有和罕見的物種。 牠們很小，主要通過頭部和身體上的三個黑條以及背鰭分成兩個獨立的鰭來去區分。 該物種很容易受到水族貿易的影響，被列為世界自然保護聯盟紅色名錄中的“瀕危物種”。

MARINE SPECIES
海洋動物

Green Sea Turtles (*Eretmochelys imbricata*)
Green Turtles are marine reptiles. Their body is covered by keratinized scale and they can swim using their four flippers. Juvenile Green Turtles feed on jelly fish and shrimps. While the adults switch to become a vegetarian diet with algae as the major food.

綠海龜
綠海龜是海洋爬行動物。 牠們的身體被角質鱗片覆蓋，牠們可以用鮨狀四肢來划水。 少年綠海龜主要以水母和蝦為食物，但 當成年時，會轉而成為素食者，以藻類為主要食物。

Groupers (*Cephalopholis* sp.)
Groupers typically having a stout body and a large mouth. They are not built for long-distance, fast swimming. They can be quite large, and lengths over a meter and weights up to 100 kg.

石斑
石斑通常具有粗壯的身體和大嘴。 牠們身體結構不適合長距離和快速游泳。 牠們身型可以非常大，長度最多可以超過一米，重量更可以超過100公斤。

Stargazers (*Uranoscopidae* sp)
They have top-mounted eyes and a large, upward-facing mouth in a large head. Their usual defensive habit is to bury themselves in sand, and leap upwards to ambush prey that pass overhead.

鮫鰳魚
牠們的眼睛是生在頂部和一個朝上的大嘴。
他們的防禦習慣是將自己埋葬在沙子中，並以伏擊方式，突然向上跳躍從頭頂飛過的獵物。

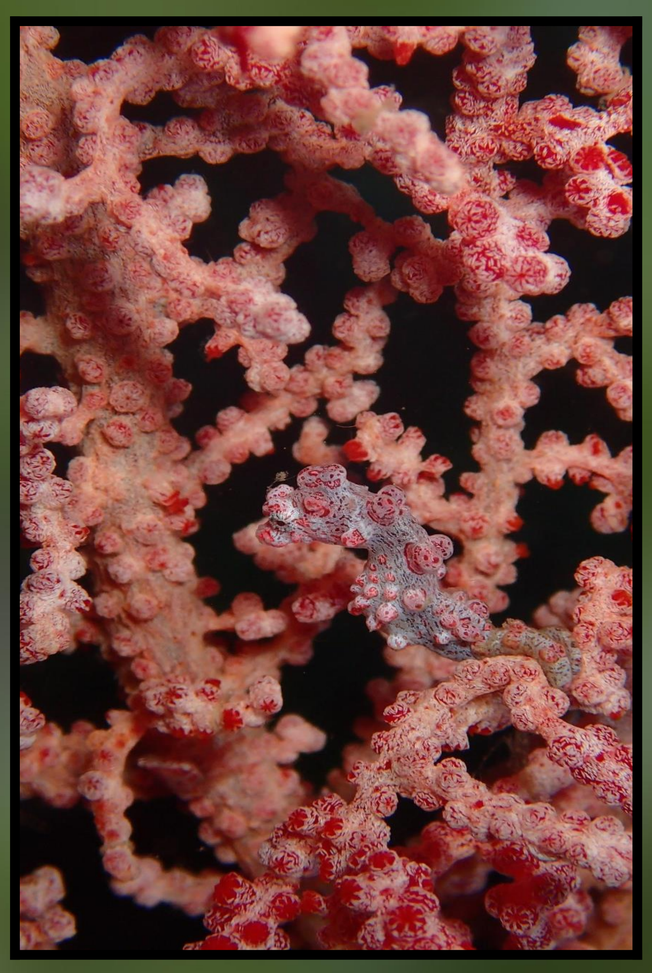
MARINE SPECIES
海洋動物

Flamboyant cuttlefish (*Metasepia* sp.)
This small but feisty cuttlefish can be found walking along the seafloor using arms and fins. It is a kind of rarer mode of transit. The species is active during the day and has been observed hunting fish and crustaceans.

火焰花枝
這種小而活潑的墨魚可以以手臂和鰭上沿著海底行走，這是一種罕見的運輸方式。 主要在白天比較活躍，並曾紀錄到狩獵魚類和甲殼類動物。

Giant Moray (*Gymnothorax* sp.)
They are usually nocturnal feeders and spend the whole days in the crevices or rocks. Most moray eels lack the pectoral and pelvic fins that other fish have. Moray eels come in a wide variety of colors which may occur as spots, blotches and stripes

海鰻
牠通常是夜間飼養者，整天大部份時間都會留在裂縫或岩石中度過。 大多數海鰻缺乏其他魚類所具有的胸鰭和腹鰭。 而海鰻有各種各樣的顏色，有些更會出現斑點和條紋。



Pygmy seahorse (*Hippocampus* sp.)
The small size of the Pygmy Seahorse makes it very hard for them to be able to live along. In order to survive, they attach to a host Gorgonian corals. And the coloring of them will blend with Gorgonian. This is how they are able to survive so long time since they are not good swimmer and they are too small to duel with the strong water currents.

豆丁海馬
細小的侏儒海馬使牠們很難能夠生活。為了生存，牠們會依附於宿主柳珊瑚。 牠們的顏色會與牠們混合。 這是牠們能夠一直生存的方式，因為牠們不能很好地游泳，加上牠們體型太小而很容易被水流沖走。

THRESTS ON BIODIVERSITY IN SULAWESI
蘇拉威西生物多樣性面臨的威脅

Beside the threats that we have mentioned previously, following are also some major threats on Sulawesi 's Terrestrial and Marine Biodiversity.
除了以上提及的威脅外，下列亦是一些對蘇拉威西的陸上及海洋生物多樣性構成主要威脅的問題。

Population Pressure

Increasing population causes numerous threats to the terrestrial and marine biodiversity of Sulawesi, including conversion of coastal area and forest to fulfill the demand of development and also pollution from human activities. Massive tourism could also impact the marine ecosystem.

人口壓力

人口增加對蘇拉威西的陸上及海洋生物多樣性造成了許多威脅，包括改變森林及沿海地區以滿足發展需求和人類活動造成的污染。 大規模的旅遊業也可能影響海洋生態系統。

Warning notice on a dive ship reflecting the problem caused by tourism
潛水船上的告示反映了 旅遊業對生態的潛在影響

Garbage become fish's "new home"
垃圾成為魚兒的「新居」

Logging in Sulawesi
樹木砍伐

Coral Reef Degradation

Destructive fishing method such as using explosives to increase the catch amount has confirmed to be one of the most significant cause of coral reef damage. Moveover, quarrying of corals and coral stones for construction posed exploitation pressures on the coral communities of Sulawesi.

珊瑚礁退化

破壞性捕撈方法例如使用爆炸物增加捕獲量已經被證實是其中一種最破壞珊瑚礁。 另外開採珊瑚和珊瑚石都對蘇拉威西島的珊瑚群落造成了開採壓力。

Coral reef destroyed by explosive fishing
被炸藥捕魚破壞的珊瑚礁

CONSERVATION MEASURES
保育措施

In order to protect the natural environment and biodiversity of Sulawesi, governement and non-government organizations (NGOs) are working together to establish and implement various conservation measures, including establish protected areas, and organize conservation and education programmes . Hong Kong also adopt similar measures in conserving our biodiversity, for example, we have country park and marine park, NGOs are conducting ecological monitoring in different sensitive areas and they also organize numbers of education programme.

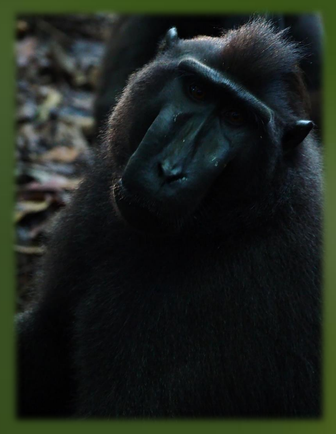
為了保育蘇拉威西的自然環境及生態，政府與不同的非政府組織合作推行不同的保育措施，包括設立保育區，推行保育及教育計劃等。香港於生態保育上亦採取相似的措施，例如我們有郊野公園及海岸公園，非政府組織會於敏感的生態地帶進行監察調查，同時亦會推行不同的教育計劃。

Protected Areas

At least four types of protected areas can be found on the island of Sulawesi, including national parks (NP), nature reserves (NR), wildlife reserves (WR) and Marine Reserve.. These protected areas are important in preserving avifaunal diversity, particularly the endemic and forest species, as well as marine biodiversity. During the K11 field trip, we have visited the Tangkoko Nature Reserve, Bogani Nani Wartabone National Park and Bunaken Marine Reserve.

蘇拉威西最少有四類生態保育區，包括國家公園、自然保育區、野生動物保育區及海洋保育區。這些保育區對於保育鳥類，特別是特有種及林樓鳥類，及海洋生物多樣性尤為重要。　本屆的K11生態考察分別到訪了淡可可自然保育區、加尼納尼國家公園及布納肯海洋保育區。

The logo of Tangkoko Conservation Education
淡可可生態保育教育計劃的標誌



Threatened species in Sulawesi
蘇拉威西的瀕危物種

Education Programmes

A conservation education programme named Tangkoko Conservation Education has taken place around the Tangkoko Duasudara Nature Reserve from 2011 to 2013 to conserve the critically endangered crested macaques. Education and conservation activities in schools have been conducted to increase local population's knowledge and awareness towards the crested macaques and the local biodiversity.

一個名為「淡可可生態保育教育」的計劃於2011至2013年期間展開，目的是為了保育當地極度瀕危的黑冠彌猴。計劃中的教育及保育活動旨在提高當地居民對黑冠彌猴及蘇拉威西生物多樣性的認知及知識。

Conservation Programmes

International Conservation Fund of Canada have launched conservation programmes to protect iconic wildlife species in Sulawesi, such as Endangered maleo bird, sea turtles and fruit bats. Conservation actions include patrolling of maleo and sea turtles nesting beaches, setting up protected areas for bat roosting and undergoing community education.

加拿大國際保育基金在蘇拉威西推行了保育當地具象徵性物種的計劃，例如蘇拉威西塚雉、海龜及果蝠等。當中的保育行動包括在塚雉和海龜繁殖沙灘上巡邏，將果蝠的棲息地劃為保育區以及推行社區教育計劃等。