



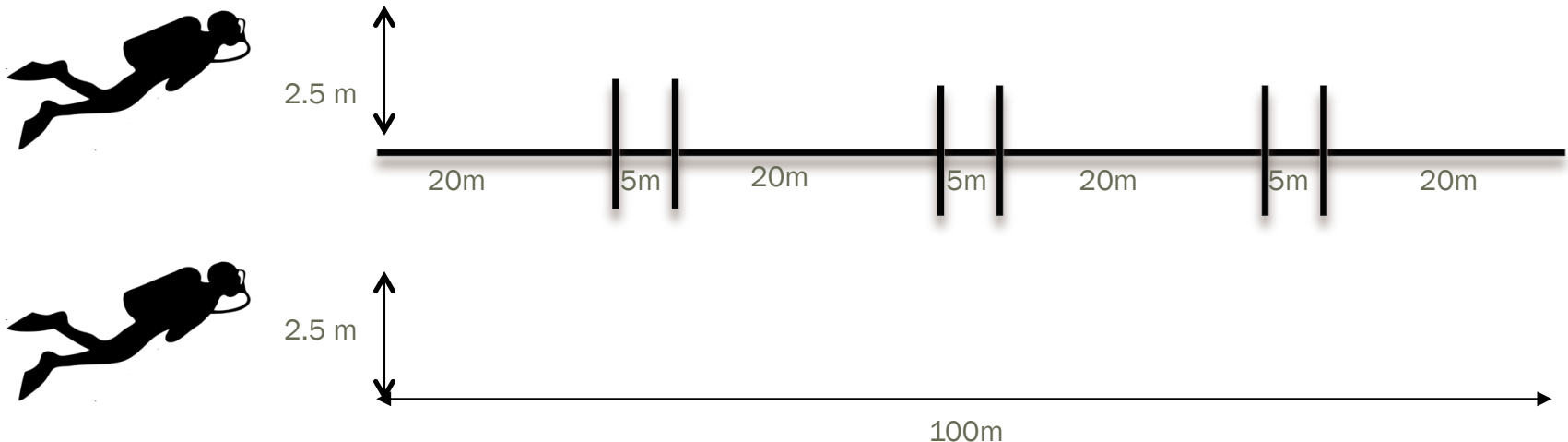
# Fish indicator species

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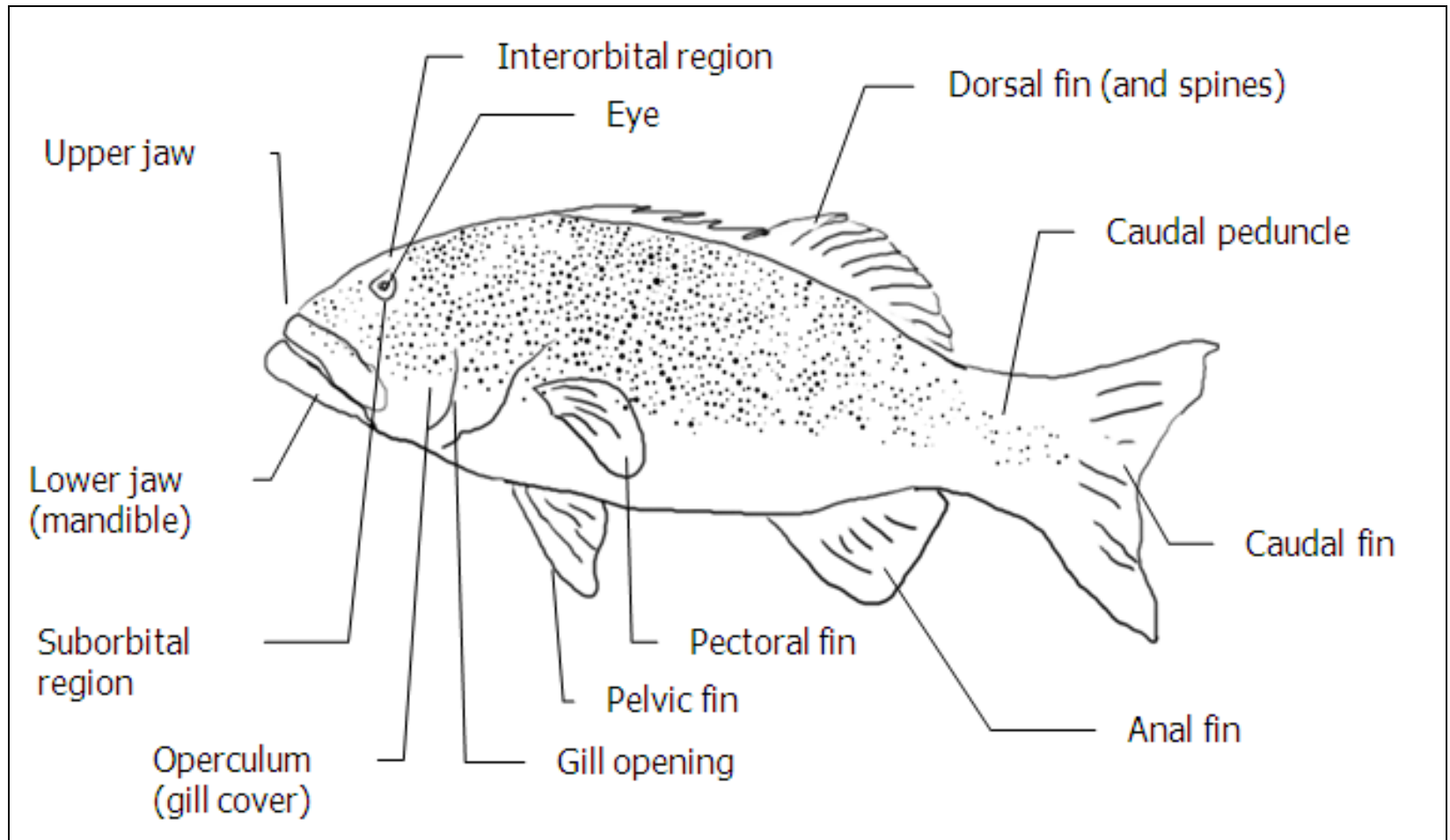
# INTRODUCTION

- This booklet will present you the indicator species selected for the fish survey along with advice to identify them underwater.
- During this survey we will record 7 different categories of fish. The families selected are highly targeted for food or aquarium trade.
- The basic idea of the Reef Check protocol is to swim, snorkel or dive along a 100 meter measuring tape (called a transect) and count fish, typically targeted by fishermen, aquarium collectors and others, in four 20 m long sections.
- Fish are counted in a 5 m wide (centered on the transect line) and 5 m height tunnel.
- It is very important to respect the 5 meters gap between each 20 meter segment and to avoid double counting.





# FISH IDENTIFICATION AREAS



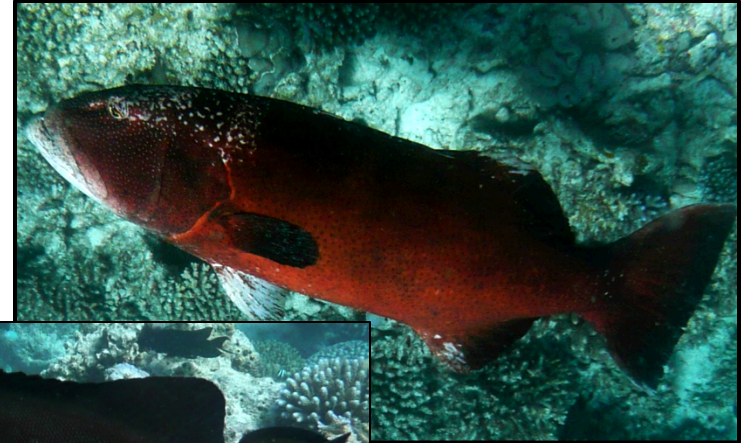
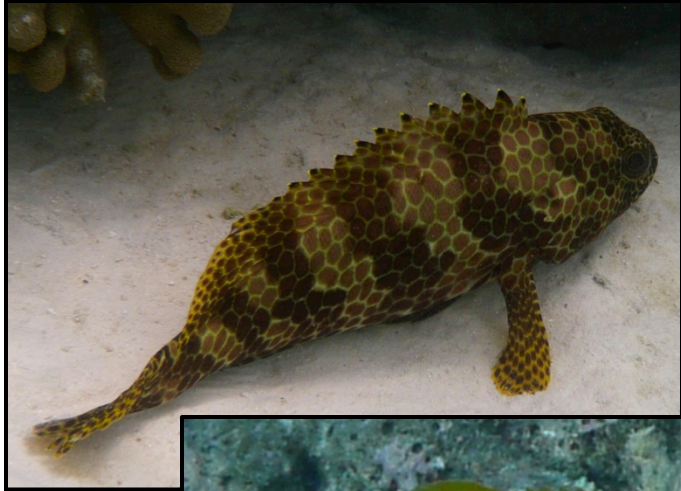
# GROUPERS : *Serranidae*

- ✗ Size : 30 – 70 cm.
- ✗ Groupers (or Cods) have a protruding lower jaw.
- ✗ Their eyes are close to the mouth and on situated on the top of the head.
- ✗ They have a wedge-shaped tail and a thick peduncle.



- ✓ Groupers are ambush predators waiting motionless (often laying on the reef or rocks) and active at dusk.
- ✓ They are carnivorous fish that feed on a wide variety of mobile fish and invertebrates.
- ✓ On a healthy reef, up to 20 large specimens can be recorded on one Reef Check transect.
- ✓ They are highly priced food fish.

Count groupers over 30cm and size them to the nearest 10 cm





# SWEETLIPS : *Haemulidae*

- ✗ Size : 40 – 80 cm
- ✗ Sweetlips have a protruding upper lip above the bottom lip.
- ✗ Their greatly thickened lips is characteristic of the group haemulidae.
- ✗ The forehead slope is more steeply than groupers and appears as a quarter of a circle.



- ✓ Sweetlips can be seen in groups or are solitary.
- ✓ They are commonly seen motionless with their head facing the current.
- ✓ They are common food fish in many countries throughout the world (not targeted in the Maldives).

Count any Sweetlips present in the transect





# SNAPPERS : *Lutjanidae*

- ✗ Size : 20 – 50 cm
- ✗ Snappers are often seen in large groups.
- ✗ Their lips are thinner than the Sweetlips.
- ✗ They have a shallow sloping forehead.



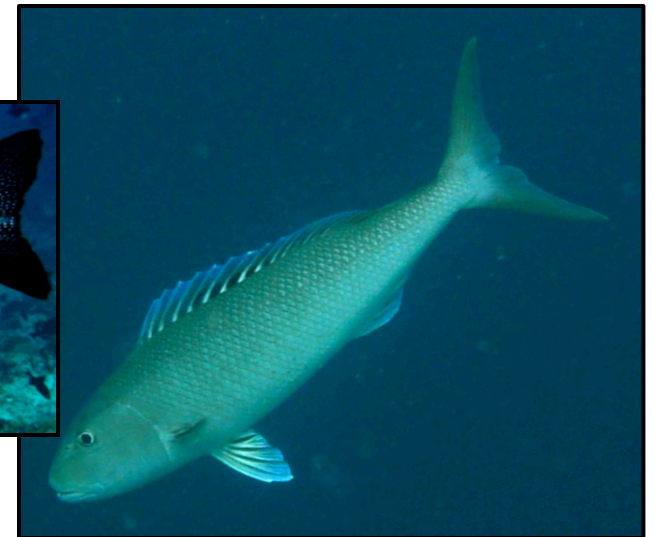
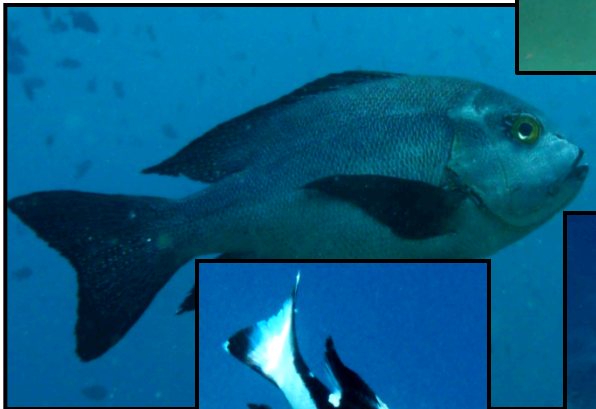
- ✓ Snappers tend to dart away when disturb, especially solitary animals
- ✓ They are highly demanded food fish.



Emperorfish :

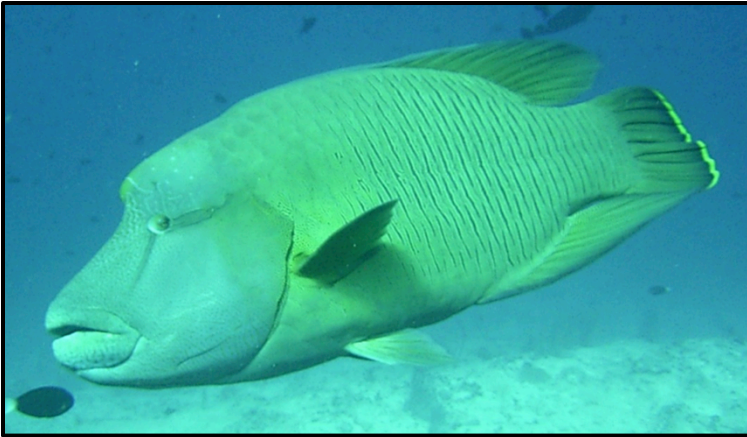
- Fork-shaped tail
- Straight -line profile

Count any Snappers present in the transect

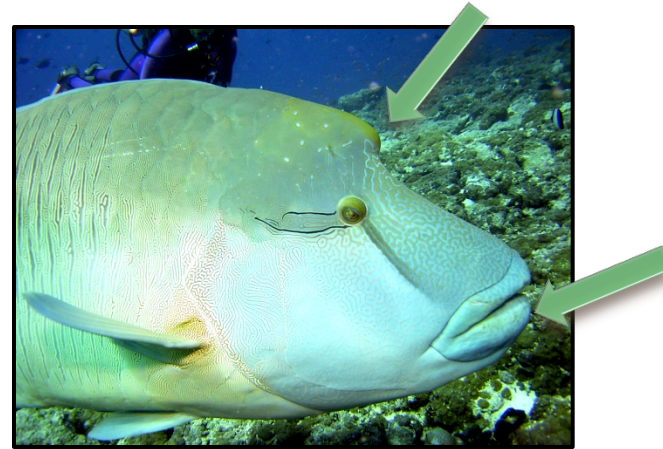




# HUMPHEAD WRASSE : *Cheilinus undulatus*



- ✗ Humphead wrasse are very large fish >2m.
- ✗ The males have a hump on the forehead.
- ✗ They have very thick lips.



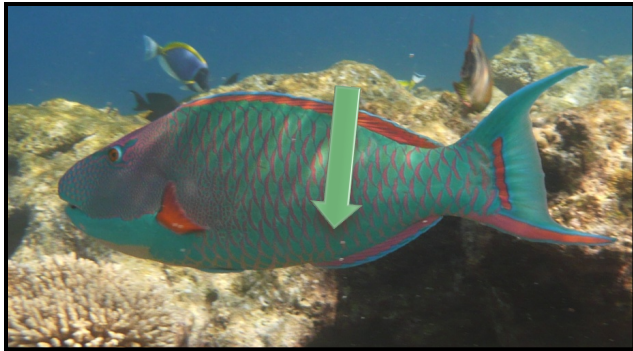
- ✓ Napoleon Wrasses are solitary animals often seen along deep walls or shipwrecks.
- ✓ They swim in deep water when approached by divers unless they have been fed by humans.
- ✓ They keep the population of toxic invertebrates under control (Crown of Thorns, Sea Hares).
- ✓ The Napoleon Wrasse is the highest priced fish in the live food fish trade in Asia (US \$ 10,000)

Count any Napoleon Wrasse present in and off transect



# PARROTFISHES : *Scaridae*

- ✗ Parrotfish have fused, beak-like teeth used for scrapping macro algae.
- ✗ They have large scales on their body.
- ✗ The males display bright colors (often green with blue and pink marks) and are surrounded by drab-colored females.



- ✓ They are often observed excreting streams of sand in the water column or on the top of the reef.
- ✓ They swim with their pectoral fins and the caudal fin stays still.
- ✓ They are large grazers that keep algae under control, preventing it to smother the coral colonies.
- ✓ They are main producers of sand and contribute to the reef building process.
- ✓ The Parrotfish is a key stone species, maintaining the balance of tropical reef ecosystem.

## Count Parrotfishes over 20cm



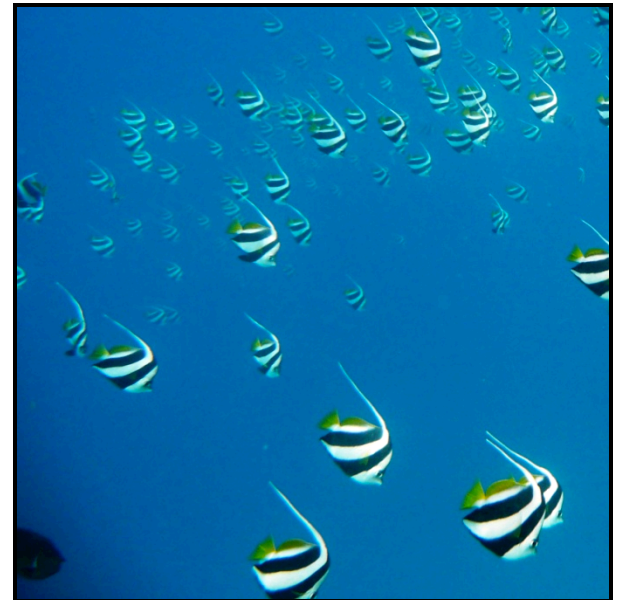


# BUTTERFLYFISHES : *Chaetodontidae*



- ✗  $\approx 15$  cm
- ✗ Butterflyfishes are small, disc-shaped fish and are laterally compressed.
- ✗ They display yellow, black and white colors.
- ✗ They have a small protruding mouth.
- ✗ They have a black stripe running across their head to camouflage the eyes.

- ✓ They can be seen swimming in between the branches of corals, using mainly pectoral fins.
- ✓ They are often in pairs.
- ✓ They feed on coral polyps, small invertebrates, fish eggs and filamentous algae.
- ✓ Butterflyfishes are valuable fish for the aquarium trade.





Do not confuse Butterflyfishes with Angelfishes :

- Angelfish are more colorful (blue / orange colors).
- They tend to be larger than butterflyfish (30 cm).



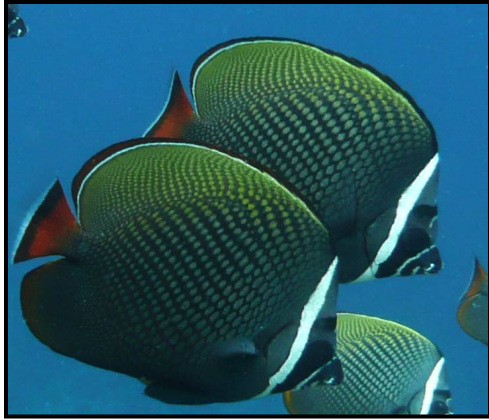
Do not confuse Bannerfishes with Moorish Idols :

- Moorish Idols have black fins.
- Their scales are not apparent.
- Butterflyfishes do not have yellow on the body, only on the fins.





Count any Butterflyfishes present in the transect



# MORAY EELS : *Muraenidae*

- ✓ Moray Eels have a snake like shape.
- ✓ Their head is sticking out of the hole during the day and are rarely seen swimming.
- ✓ They are valuable fish for food and tourist attraction.



Count any Moray eels present in the transect