

Seagrass Ecosystems: Beyond the Confines of the Meadows

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Seagrass v Seaweeds (Algae)

- ▶ Kreol: both = "Gomon"
- ▶ Seagrass = Flowering plants (~55 species worldwide)
 - Flowers & seeds
 - Vascular plants with roots, stems, leaves
- ▶ Seaweeds = Multi-cellular algae (~5,000-6,000 spp worldwide)
 - Little or no vascular tissue

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Seagrass or Algae?

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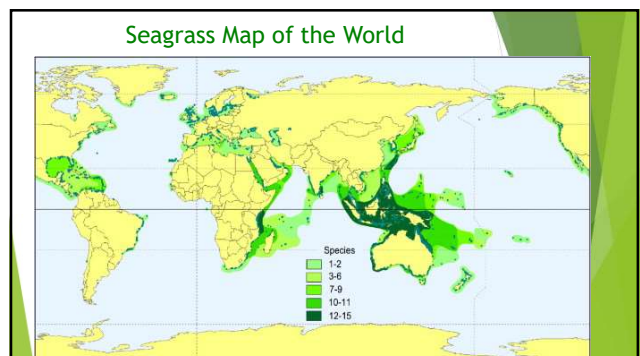
Seagrass or Algae?

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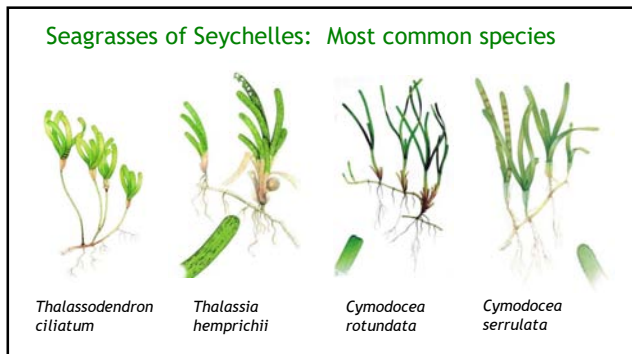
What is a seagrass?

- ▶ Flowering plants
- ▶ **Not** true "grasses"
- ▶ Special features:
 - Grow underwater
 - Disperse pollen & seed underwater (most plants, even aquatic plants, disperse above water)
- ▶ 4 families worldwide:
 - Seychelles: 2-3 families
- ▶ ~60 species worldwide:
 - Seychelles: 9-12? species

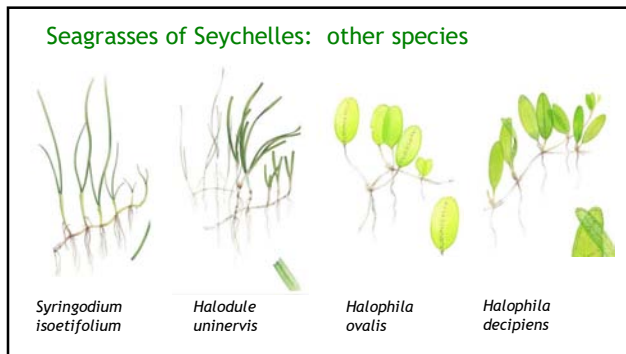
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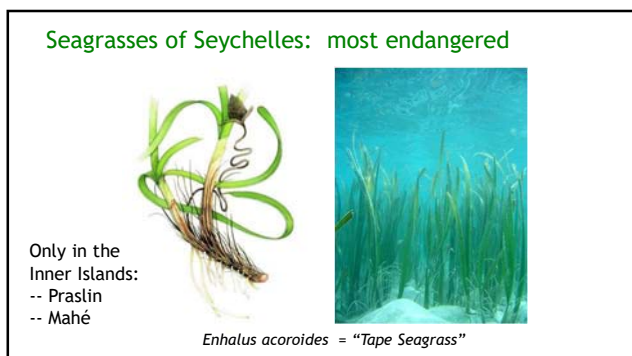
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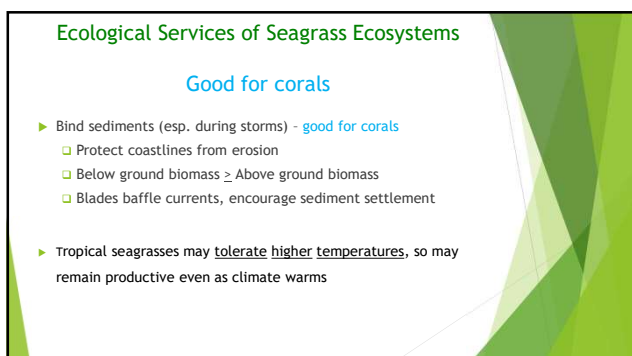
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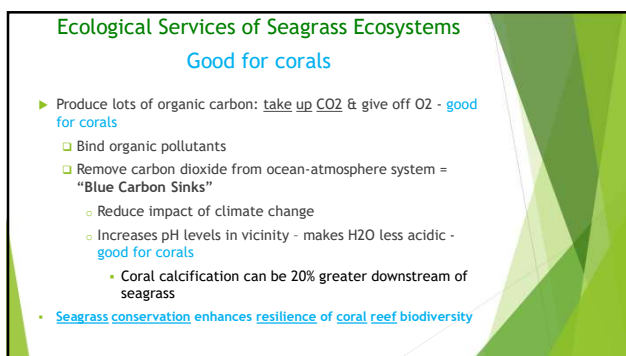
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Seagrass Survey Protocol:

- ▶ Quadrat sampling: 50 cm x 50 cm square
- ▶ Thrown randomly at intervals
- ▶ Record:
 - GPS location
 - Photo
 - Sediment type
 - Total seagrass cover (% of total)
 - % Contribution per seagrass spp
 - % Macro-Algal cover
 - Associated Fauna
 - Canopy Height (cm)



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Poivre Atoll: shallow water surveys

- early Dec 2017
- low spring tides
- 3 spp seagrass
- evidence of turtle cropping



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Poivre reef-flat seagrass survey



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Beautiful seagrass pastures in Seychelles



Thalassodendron ciliatum
-- among the tallest canopies in world
-- > 100 cm tall

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Washes up on beach, fertilizes vegetation



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Nekton Expedition



- Seagrasses & Algae -- to what depth?
- Differences among island groups?
- Previous records -37m


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Nekton Expedition Activities Relevant to Seagrass & Algae study:

- ▶ Snorkel & SCUBA surveys (including in seagrass meadows)
- ▶ Neuston Sampling of the surface waters
- ▶ Deep sea Surveys

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Neuston Sampling



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Neuston Sampling



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Neuston Sampling



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Deep Sea Surveys

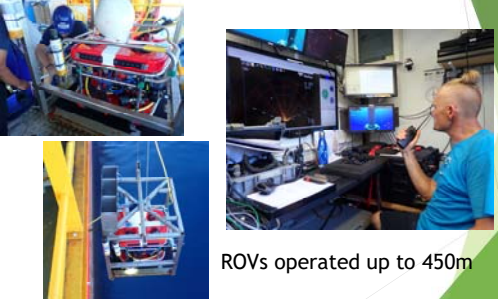


Submersibles:

- Operated from 30 m to 250 m
- Video records of all dives using several cameras

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Deep Sea Surveys



ROVs operated up to 450m

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Dead Seagrass Leaves at all depths:

ROV screen
shot
-300 m

Blue Carbon Sink:
Carbon Sequestration:
i.e., keeps Carbon out
of the atmosphere



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In Summary:

- ▶ Seagrass important to most marine ecosystems in Seychelles:
- Seagrass meadows themselves (& associated species)
- Beach vegetation (prevents erosion; provides nutrients)
- Coral reefs (binds sediments; less acidity; adds O2)
- Surface waters (habitats for small organisms)
- Deep sea (provides nutrients)

Serves as Blue Carbon Sink that keeps Carbon out of Atmosphere

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Thank you!



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