Seagrass habitats of Bocas del Toro, Panama

A balance between river, mangrove and coral influences

Seagrass meadows within the Bocas del Toro archipelago, Panama, are strongly influenced by their proximity to coral reefs, mangrove forests, and coastal rivers. Reef, mangrove, and river inputs influence sediment composition and water clarity, two of the most important factors responsible for the occurrence and abundance of seagrass meadows. Large volumes of siliclastic sediment (sila sand) are deposited by the large rivers, high organic matter comes from the mangrove forest as well as associated wetlands, and eroding coral produces carbonate sediment. An important modifier of these habitats and determinant of the type of seagrass that will survive is the amount of protection from water motion. The resulting seagrass communities within the Bocas del Toro archipelago can be divided into the following five categories, each linked to a dominant influence: wetland, river, mangrove, coral, and ocean swell.

Locations of the five seagrass habitats throughout the Bocas del Toro archipelago. The watersheds are indicated in yellow and green, and coral reefs in golden brown.

**Wetland-influenced habitats**

These habitats are characterized by highly organic ‘oozy’ sediments and contain Thalassia testudinum. These meadows have a shoot density of 270 ± 66 shoots m⁻² and the maximum depth limit to which the seagrass grows is typically 1.5–2.5 m deep. Resuspension of the fine sediments is common, reducing light penetration through the water. Although macroalgal epiphytes are not common on the seagrass leaves, some seagrass leaves are covered in diatoms and leaves are commonly covered with a fine sediment layer.

**River-influenced habitats**

These habitats have deep sediment, often fine sand with high organic content, however they contain variable carbonate content from various sources. Characteristically, these meadows are highly protected from water movement. Sediment from the river contains less sediment but more fine sand, and while enough, water clarity is often high and seagrass grows down to 4–6 m.

**Mangrove-influenced habitats**

These habitats have deep sediment, often fine sand with high organic content, however they contain variable carbonate content from various sources. Characteristically, these meadows are highly protected from water movement. Coral, mangrove, and river inputs influence sediment composition and water clarity, two of the most important factors responsible for the occurrence and abundance of seagrass meadows. Large volumes of siliclastic sediment (sila sand) are deposited by the large rivers, high organic matter comes from the mangrove forest as well as associated wetlands, and eroding coral produces carbonate sediment. An important modifier of these habitats and determinant of the type of seagrass that will survive is the amount of protection from water motion. The resulting seagrass communities within the Bocas del Toro archipelago can be divided into the following five categories, each linked to a dominant influence: wetland, river, mangrove, coral, and ocean swell.