STATUS OF FLORIDA BAY SEAGRASS COMMUNITIES FOLLOWING THE RECURRENCE OF SEAGRASS DIE-OFF AND THE IMPACTS OF HURRICANE IRMA: ADDING INSULT TO INJURY?

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Mass mortality of the tropical seagrass *Thalassia testudinum* in Florida Bay (USA)

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ABSTRACT This report documents rapid and widespread mortality of the seagrass *Thalassia testudinum* Banks ex König (turtle grass) in Florida Bay at the southern tip of the Florida peninsula (USA). More than 4000 ha of seagrass beds have been completely lost in recurring episodes of mortality since summer 1997. An additional 23,000 ha have been affected to a lesser degree. Loss of *T. testudinum* is the dominant macrophyte species in this highly productive system, may affect ecosystem function within the bay as well as estuarine-dependent sport and commercial fisheries. A pathogenic protist related to the causal agent of the eelgrass wasting disease may be involved in the mortality and may place *T. testudinum* populations outside Florida Bay at risk. Environmental factors and chronic hypoxia of bottom-ground *T. testudinum* tissue may also contribute to the die-off.

Florida Bay is a shallow, triangular lagoon at the southern tip of peninsular Florida bordered on the north by the Florida mainland and on the southeast by the Florida Keys. Its western margin is open to the Gulf of Mexico. Shallow carbonate mud banks divide the bay into basins, restrict circulation, and attenuate the Gulf’s lunar tidal influence. Freshwater enters the bay in the northeast from Taylor Slough, as overflow from the C-111 Canal that is part of the South Florida Water Management District’s canal system, and as sheet flow generated by local rainfall. Depending on the timing and amounts of local rainfall, water conditions in the

![Diagram of Florida Bay showing the distribution of Thalassia testudinum die-off areas.](image-url)
FLORIDA BAY FISHERIES HABITAT ASSESSMENT PROGRAM (FHAP)

FLORIDA MAINLAND

FLORIDA BAY

- Madeira Bay
- Whipray Basin
- Johnson Key Basin
- Calusa Key Basin
- Crane Key Basin
- Twin Key Basin
- Rabbit Key Basin
- Rankin Lake

Eagle Key Basin

Blackwater Sound

ATLANTIC OCEAN

FLORIDA KEYS
FHAP
25 YEARS (and counting...).
GO SEAGRASS RANGERS!
BRAUN-BLANQUET COVER SCALE

0.1 = Solitary shoot with small cover
0.5 = Few shoots with small cover
1.0 = < 5% cover
2.0 = 6-25% cover
3.0 = 26-50% cover
4.0 = 51-75% cover
5.0 = 76-100% cover
Halodule wrightii (shoal grass)

Thalassia testudinum (turtle grass)

Syringodium filiforme (manatee grass)

Halodule wrightii (shoal grass)
Die-off

Early Recovery

Continuing Recovery

Pre Die-off

Die-off

Continuing Recovery

Early Recovery
After Irma, dead seagrass ‘as far as the eye can see’ in Florida Bay

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Hurricane Irma left a massive footprint across the Florida Everglades.

From Florida Bay to Shark River, signs of the Category 4 hurricane could be seen in vast mats of floating dead seagrass, mangroves stripped of their leaves, and rafts of seaweed pushed far ashore. Along the northwest side of Cape Sable, where the powerful hurricane’s storm surge hit hardest, a
MAY 2019???
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