

Containing Plum Island Erosion

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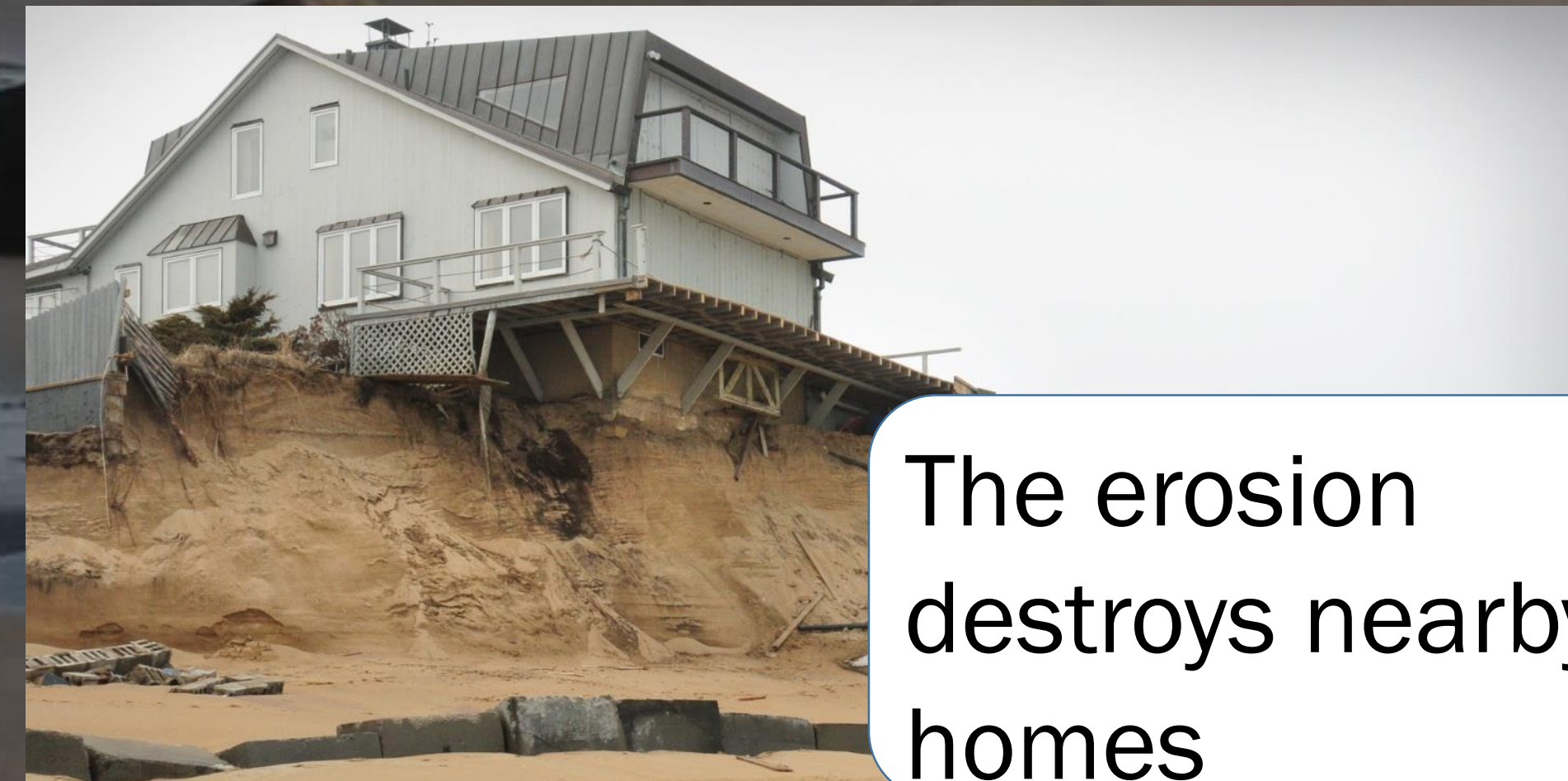
Problem

The increasing rate of coastal erosion on Plum Island, Massachusetts has led to destruction of both the beach and the properties along the beach.

Technical: The jetties are in disrepair. Hard structures are causing destructive wave refraction.

Economic: Shoreline property is damaged. It causes decreased tourism which hurts local small businesses in the Newburyport area.

Environmental: Ecosystems harmed by construction



The erosion destroys nearby homes

Research Plan

1. Identify the sources of the erosion on Plum Island through **interviews** with the Mayor of Newburyport and a local oceanographer.
2. Examine **other cases** of beach erosion to draw comparisons.
3. Develop a **cost benefit analysis** for solutions that can be implemented at Plum Island.

Our Goal:

Develop a strategy to stop or reduce the destructive erosion on Plum Island.

Problems	Solutions	Description
Destruction of the protective dune	Dunegrass/Sand nourishments	<ul style="list-style-type: none"> • Dunegrass keeps dune stable, providing buffer zone • Best solution • Needs maintenance
Intense storm wave forces	Biodegradable armoring	<ul style="list-style-type: none"> • Either geotubes or biodegradable sandbags • Release sand when they break • Should not refract wave forces
Shoreline construction	New build policies to prevent tragedy	<ul style="list-style-type: none"> • Should not construct in dangerous areas • Give relief to families who loose home • Minimize damage

Recommendations

Immediate

1. Finish repairing jetties
2. Stop shoreline construction
3. Plant dunegrass

Long term

1. Maintain dunegrass growth
2. Build up storm defense
3. Maintain terminal groins
4. Formally study Plum Island's storm intensity



Planting dunegrass, a solution we recommend

Solutions to Avoid: Breakwaters, beach scraping, putting rocks on beach, hard structures that refract waves.

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