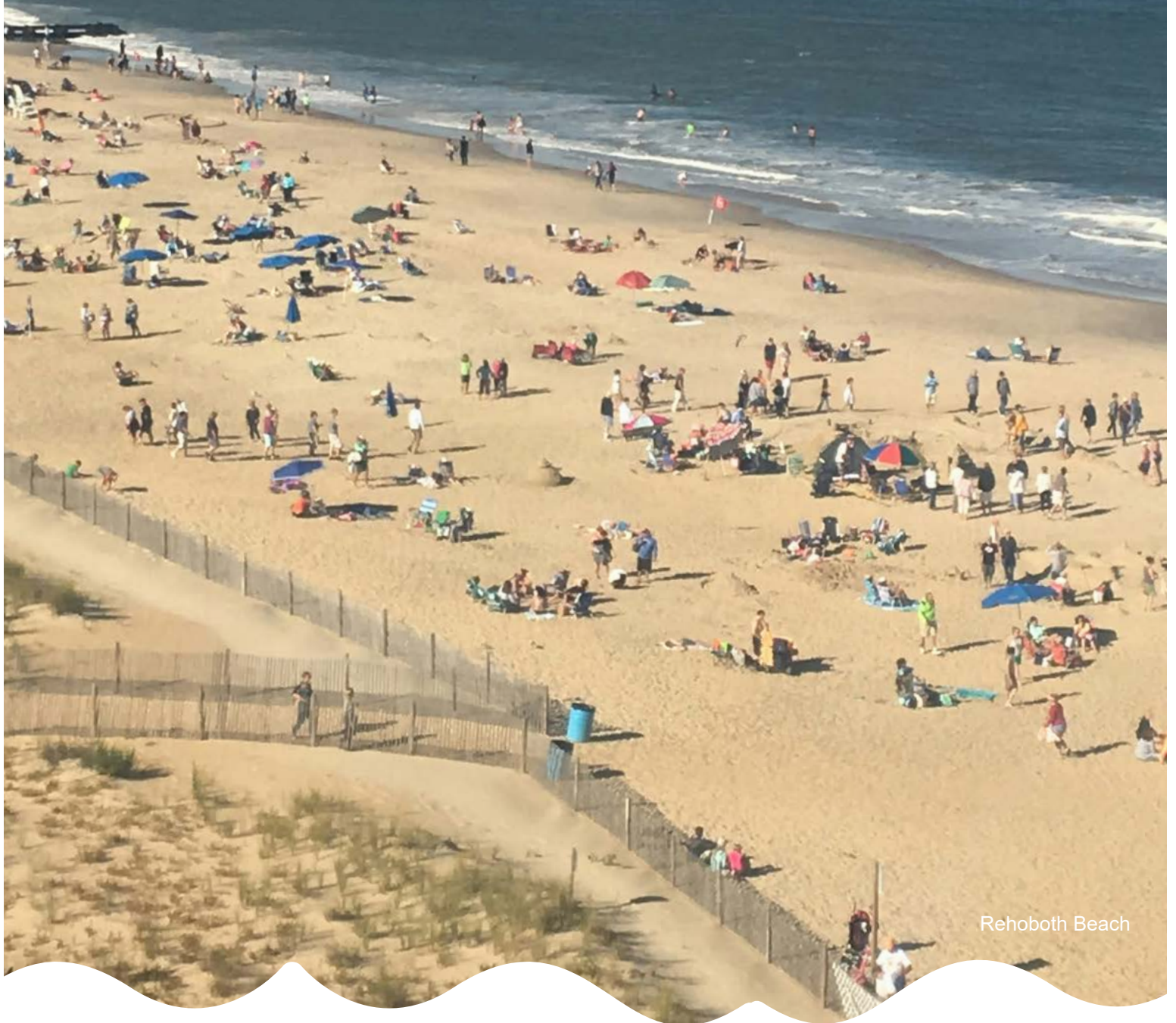


# Who Benefits From Beach Nourishment in Delaware?

December 2024



Rehoboth Beach

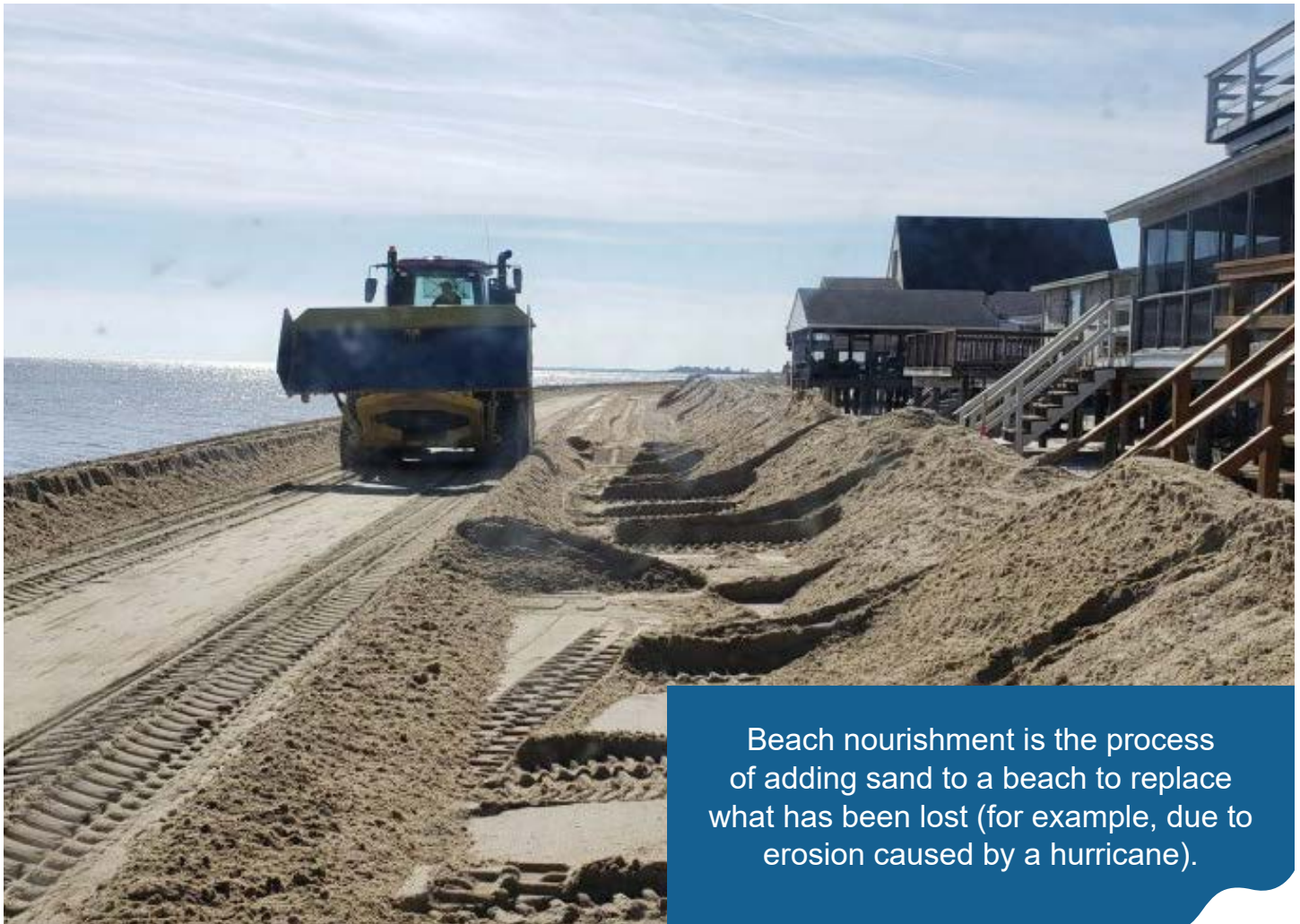


DELAWARE DEPARTMENT OF  
**NATURAL RESOURCES AND  
ENVIRONMENTAL CONTROL**



DNREC DIVISION OF  
**WATERSHED  
STEWARDSHIP**

## Who Benefits From Beach Nourishment in Delaware?



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Beach nourishment is the process of adding sand to a beach to replace what has been lost (for example, due to erosion caused by a hurricane).

### Why is DNREC studying this?

Delaware beaches are valuable. Healthy beaches and dunes protect coastal infrastructure (homes, businesses and roads) from damage during coastal storms. They also provide valuable recreational opportunities, fueling the state's tourism economy and habitat for many plant and animal species. The beaches are increasingly threatened by storms battering the coast more and more frequently. These storms remove sand and increase the vulnerability of coastal communities and ecosystems.

Beach nourishment has been happening in Delaware since the 1950s, but the number of projects has increased in recent decades to keep pace with the growing number and intensity of coastal storms. Not only has the need for beach nourishment become more widespread and frequent in Delaware, but

the costs per nourishment project have also been rising. In 2023, DNREC nourished the Atlantic Coast beaches at a total cost of over \$30 million, paid with federal and state tax dollars.

DNREC implemented this study to better understand the relative benefits to different groups who rely on the beaches. This includes shorefront property owners, recreators, commercial businesses and county and state residents more broadly. The study is the first step in exploring a more equitable policy to share the cost of these projects with the people who benefit from them. Several other coastal states, including New Jersey, North Carolina and Florida, have already established policies to share the cost of beach nourishment projects with those who benefit most directly.

## How was the analysis completed?

DNREC focused on 11 beach sites that have been regularly nourished, offer public recreation and support coastal development. To complete the study, DNREC partnered with experts from Woods Hole Group and Industrial Economics, Incorporated. Coastal engineers modeled how the nourishment projects affect erosion, flooding and wave energy during storms, as well as how the projects influence longer-term shoreline change. Economists evaluated how the nourishment projects at each site reduce storm-related risks to communities, ecosystems and the economy.

The analysis looked at four key benefit categories:

- 1. Infrastructure Protection** – Safeguarding homes, roads, and other structures from coastal storm damage.
- 2. Recreation Value** – Preserving beaches for Delaware recreators.
- 3. Tourism Impact** – Supporting Delaware’s tourism economy.
- 4. Ecological Benefits** – Enhancing and protecting habitats for plants and animals.

In addition to measuring these benefits, the analysis identified how they are distributed among state, county and local populations.

The 2024 study measured the benefits of beach nourishment at local, county, and state levels.



### What did the analysis find?

The study confirms that beach nourishment provides essential benefits to Delaware's communities, ecosystems and economy. However, the distribution of these benefits varies according to the characteristics of the beach. In particular, there are significant differences between the highly developed Atlantic Coast beaches that are popular tourist destinations and the smaller Delaware Bay beach communities.

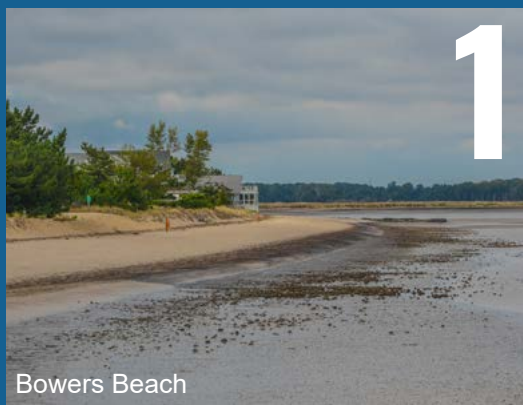
**Local populations experience between 50-75% of total project benefits, depending on the beach. The remaining benefits occur at the state or county level.**



Dewey Beach

Tyler Smiley/iStock

## Key Findings from the Study



### Infrastructure protection is a key benefit across all project sites.

Bay beach communities are at risk of loss due to gradual shoreline erosion and sea level rise, whereas damage from coastal storms presents the main threat to Atlantic Coast communities. Beach nourishment reduces these risks, providing about \$34 million in infrastructure protection each year across all of the beaches in this study.

Owners of the vulnerable infrastructure receive this benefit. On the Bay, these tend to be residential property owners. On the Atlantic Coast, the benefit is shared among residential and commercial property owners, towns and the state.

### Recreation value is an important benefit at some beaches, but surprisingly less so at others.

Nourishment supports recreation by creating more space for beachgoers. Some beaches are more popular than others, and some beaches are more at risk of losing space than others. Many of the popular Atlantic Coast beaches, for example, are wider and not as vulnerable to shoreline erosion as the Bay beaches. In total, nourishment supports 20,000 trips to Bay beaches and 1.2 million trips to Atlantic Coast beaches by Delaware residents each year.

Local populations, as well as recreators from across the state, benefit from beach recreation opportunities. At many (though not all) of the beaches in the study, locals visit more frequently than people visiting from elsewhere in the state. The value associated with recreators coming from outside Delaware is captured in the next category, tourism impacts.



### Tourism impacts are relevant at Atlantic Coast beaches but not at Bay beaches.

The Atlantic Coast beaches are vital drivers of Delaware's tourism economy, attracting millions of out-of-state visitors each year. The spending by these visitors supports local businesses and generates significant economic activity at the county and state levels. On the other hand, tourism impacts do not register as a benefit at the Delaware Bay beaches, where tourism is not nearly as significant.

## Key Findings (continued)

### Ecological benefits occur at all project sites but are generally more limited than other benefit categories.

Coastal ecosystems and the species they support (for example horseshoe crabs) are highly valuable and require long-term protection. However, the contribution of beach nourishment to the protection of the species and ecosystems is relatively modest over the 30-year time period of the study. In addition, there may be negative ecological effects associated with using heavy equipment to move sand.



All Delaware residents benefit from the protection of coastal ecosystems. Therefore, ecological benefits are considered a state benefit.

### Residents of the communities in this analysis experience social vulnerability primarily due to age.

Aging populations experience social vulnerability in multiple ways, including:

- Increased social isolation and health deficits;
- Reduced access to social support, healthcare facilities, and other services; and
- Limited ability to respond (for example, evacuate) or recover from natural hazards.



Beach nourishment helps protect these vulnerable populations by reducing storm-related damage and the risk of displacement.

### Sand spreading creates benefits to neighboring communities along the Atlantic Coast.

On some beaches, sand naturally spreads to nearby areas. This benefits neighboring communities by offering infrastructure protection outside the project area.

- Benefits to neighboring communities along the Atlantic Coast account for up to 35% of total benefits, depending on the location and the extent of sand movement.
- Bay beach communities are more isolated and the nourishment projects are generally smaller, so the infrastructure protection benefits do not go beyond the project site.



## What happens next?

This study marks an important first step toward addressing equitable cost sharing for beach nourishment in Delaware. By measuring the benefits provided by nourishment projects, it provides decision-makers with data-driven insight into how different groups benefit from these projects.

The findings from this report will be presented to DNREC leadership for consideration alongside other information. While this study provides valuable data, it is not the only consideration for developing a potential cost share policy. Any decisions regarding a policy will require further discussions, considering additional factors beyond the benefits evaluated in the study.

DNREC remains committed to maintaining Delaware's beaches through both scientific research and policy development. This ongoing effort reflects the state's dedication to balancing economic, ecological and social priorities for the benefit of all Delaware residents. Exact timing of next steps at this time is unknown. If any policy changes are proposed, additional public input will be requested in accordance with DNREC policy for the enactment of rules and regulations.



Ghost crab on a Delaware beach.

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Bethany  
Beach