

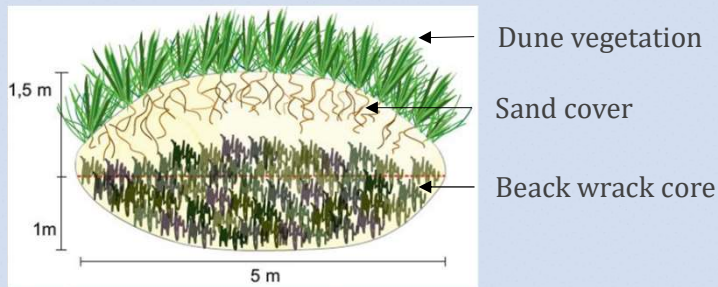
# Beach Wrack Dunes

## Measures for sustainable coastal protection

**Beach wrack** is any marine-generated organic material that is washed up onto the beach by waves and currents. It can generally be found in the swash zone, in lines along the foreshore and sometimes at the back of the beach especially after storms. The type of beach wrack landing on a beach is a result of what is growing in near-shore waters and the weather conditions. It usually consists of drifting and decomposing marine life debris. In the Baltic Sea region, the latter mostly includes torn off sea grass, macro algae (brown and red species) and shells.



*Beach wrack at the Schönberger Seabridge.*



*Stylised dune profile*

### Implementation in Eckernförde

In an attempt to reduce erosion and to lower costs for beach wrack disposal, the city of Eckernförde constructed two 100m long and 5m wide beach wrack dunes in 2014 and in 2018. Up to now, both dunes have withstood all flood events.



- 1) Excavation of a 1,5m deep and 5m wide ditch
- 2) Ditch filled in with beach wrack and covered with excavated sand
- 3) Planting the dunes with representative vegetation

### Use

- Combines a nature-based coastal protection measure and aesthetic landscaping for attractive tourist beach
- Could save costs on the disposal of beach wrack

### Challenges

- Beach wrack needs to be screened for litter first
- Communication between municipalities and public authorities
- Individual cost analysis on a local level
- Compliance with local policies needs to be checked individually
- It is not known yet whether beach wrack dunes can withstand extreme flood events

### Long-term potential

- Erosion protection
- Beach wrack supports dune vegetation with additional nutrients and acts as a water reservoir
- Provides dune vegetation with enough water during droughts
- Vegetation helps to accumulate sand, thus promoting natural dune growth

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Sources: HOOTON, N.; MILLER, D.; THETFORD, M.; CLAYPOOL, S. (2016): Building Coastal Dunes with Sea Oats and Surrogate Wrack. University of Florida, Gainesville. • ILLERA, M.; LABANDEIRA, S. S.; LÓPEZ-MOSQUERA, E. (2013): Production of compost from marine waste: Evaluation of the product for use in ecological agriculture. Springer Netherlands, Dordrecht. • MACHNICKI, B. (2018): Analyse von Treibselndünen zu Küstenschutzwecken. Kiel. • POSIMA (2019): Treibselanspülungen am Ostseerand – nicht nur lästig sondern wertvoll. Kiel. • STERR, H.; AHRENDT, K.; ENDERWITZ, S. (eds., 2019): Seegras und Treibsel –altbekannte Strandressource neu entdeckt. Coastline Reports 26. Warnemünde. Fotos: SINJA DITTMANN FÜR POSIMA, JANE HOFMANN, MICHAEL PACKSCHIES

