

Sailing the Wadden Sea

The Wadden Sea, a UNESCO World Heritage Site, is an intertidal zone in the southeastern part of the North Sea. Reaching from Den Helder, Netherlands along the German North Sea coast to Skallingen, Denmark it encompasses the shallow waters, mud flats and wetlands between the coastline and the Frisian Islands of the Netherlands and Germany. Famous for its unique natural beauty and biodiversity it is a very special sailing area., both well-protected and challenging.

Protected by islands and sands the Wadden Sea has enabled the transport of goods and people with boats which were and are not completely sea-worthy and thus enabled trade between the English Channel and the Baltic Sea for thousands of years.

On the other hand the Wadden Sea can be very dangerous with local strong winds and currents not to be underrated by sailors, who are not familiar with this area.

Consequently we would like to inform you, our guests from elsewhere, about the particulars of good seamanship special to the area of the Wadden Sea. Please take them into account when you plan your trip to Bremerhaven.

Systematics of the Wadden Sea

When, during ebb tide, the water runs out of the Wadden Sea into the open North Sea the significant morphological structure and its main elements become clearly distinguishable. The water runs down from the Wadden high, the watershed, through tidal creeks and out into the open North Sea through the gats, the tidal inlets (in German: Seegat) at either end of the Frisian islands. Interestingly the watershed is always two-thirds to the east of the western end of each island. The lower the tide the more the tidal flat behind an island resembles a system of rivers with small rivulets flowing into bigger ones. Once the flood sets in the tidal current changes, the water level rises. The water flows up the tidal creeks and, when they are full, spreads over the mud or sand flats of the Wadden Sea until, at high tide, it covers the whole of the tidal flat.

Sailing in the Wadden Sea means sailing over the shallowest part of the tidal flat with tidal creeks and tidal rivers being the natural fairways in this area. That is why they are marked by perches or buoys. Depending on the draught of your boat you may be able to get across the wadden high even at low tide by following the marked fairway or you will have to precisely time your crossing over the wadden high.

Why sail in the wadden sea instead of the open Waters north or west of the islands?

Particularly in rough weather the difference between open sea and the Wadden Sea is

astounding and it makes the mud flats the safest places for a boat in stormy weather. Also: Given you have enough time it is an interesting adventure to find your way through the Wadden Sea following the poles and perches alongside the tidal creeks. And last but not least: Anchoring and falling dry on a mud flat is a marvellous, peaceful experience.

But you have to take into account some **particulars** of the Wadden Sea.

The **wadden high** resembles a duck pond when there is a slight or medium wind outside. And even in a storm the wave height is decidedly less here, simply because the water is too shallow for the waves to increase. In a strong wind or storm the height of the waves reaches $\frac{1}{4}$ to $\frac{1}{3}$ of the water depth. Then the crest of the waves is bound to break. The lack of high waves is particularly important if you want to anchor or dry out in a tidal creek or on a mud flat. As there is hardly any current to be felt the bow of your boat will turn into the wind on anchor – the best position it can have.

But beware of the steep edges of mud flats or tidal creeks. The closer you get to the edges, the deeper the water becomes and, consequently, the higher the waves in stormy weather. Also the tidal current becomes stronger and can turn the boat across the wave direction.

The conditions of sailing in **tidal creeks** strongly depends on the relation between the directions of wind and current. In tidal creeks the water is deeper than on the mud flats and – apart from the short stretch of high or low tide- there is a current. In a slight wind the creeks are distinguishable by more small wind waves, when current and wind go in different directions. In the same situation (wind against tide), the stronger the wind becomes the higher and steeper the waves get, with breaking wave heads /overfalls in stormy weather. The condition worsens if the tidal creek runs against the wind direction for a longer stretch and thus has a longer fetch.

At low tide the tidal creeks can become calm rivers even in strong winds with the relation between the direction of wind and current the decisive factor.

The big **tidal rivers** in the East Friesian Waddensea are $\frac{1}{2}$ to 1 sm wide and often more than 10 m deep and they can be 3 – 5 sm long. They mostly run in a W-E or SW-NE direction. Usually they are peaceful waters. But in a fresh to strong wind in the direction of their course they need to be respected. What is sheer pleasure in moderate winds turns to harsh conditions in fresh winds of force 5 or more against the tide: a rough sea with steep, often breaking waves of $\frac{3}{4}$ -1 m, occasionally even 2m. For a wholly seaworthy boat it will be a wet trip, for a less seaworthy one it may not be a viable course. Better avoid the dangers and plan your course through tidal creeks and/or across the mud flats.

In the North Friesian Wadden Sea the tidal rivers are even wider and, with 10 – 15

sm, longer. Expecting strong winds you will have to plan your route very carefully if your boat is less seaworthy.

The **tidal inlets** between the Frisian Isles, the entries or exits to and from the Wadden Sea, may be crucial to your trip to Bremerhaven. All the water masses of the Wadden Sea have to run through them within six hours. They are deep with steep edges at the outside barrier and the currents here become enormous, especially at mid -tide. Imagine a fast-running tide against a strong northerly wind: the sea state can be nothing but chaotic.

Consequences for your trip:

Get up-to-date charts of the ever-changing Wadden Sea. Last year's charts are bound to be out-dated. And get acquainted with calculating the tidal currents (online tide tables). Plan carefully and include alternatives in case you take longer than expected in a tidal river and are surprised by the turn of the tide. The waters which have just been calm or lively will become rough within a very short time and the steep, short waves (also overfalls) will slow down your progress and will make life uncomfortable. If you are going with the tide against the waves in a small boat, you should slow down your engines: Even with little speed though the water the tidal current will give you enough speed over ground to get forward.

Should you be surprised by a strong wind against an unfavourable current in one of the big tidal rivers, you could safely run into a tidal creek on your side or onto the mud flat where you can continue your trip or anchor in calm waters. Anchoring and drying out on a mud flat is always second best to entering a good harbour.

Fair winds on your trip to Bremerhaven and back home!

Some links, all of them in German:

Anchorage in the East Frisian Wadden Sea: www.wattsegler.de/toernplanung.html

Anchorage in the North Frisian Wadden Sea: <https://www.johannavonamrum.de/segeln-im-wattenmeer-zwischen-den-s%C3%A4nden/segeln-im-wattenmeer-nf/>

General information: <http://mediamaritim.de/segeln-und-motorbootfahren-auf-der-nordsee/>