The balance of marine bacteria in the Baltic Sea

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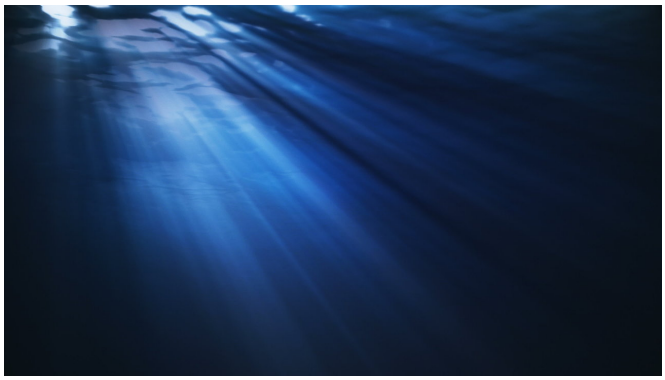

Credit: Linnaeus University

Carina Bunse has written a thesis on marine bacteria and how they respond to the changes in their environment. Bacteria affect nutrient turnover in the Baltic Sea and with it the balance of the sea. As they are invisible, our knowledge of marine bacteria is still limited. By studying these microbes and their genes, we can learn more about how the ocean will behave in the future.

Just as a tree loses its leaves in autumn, marine bacteria behave depending on the season of the year. They can help to transform the nutrients in the sea, just as bacteria in soil does in a garden. Carina has researched many Baltic Sea bacteria during the changing seasons, and how active they are in nutrient cycling. She has also investigated which genes the bacteria use to utilize different carbon sources, light energy or tolerate the lower pH in the Baltic Sea.

In her research, Carina and her colleagues discovered that marine bacteria can alter genes called proteorhodopsins for capturing energy from light, which they use to change their metabolism. This has helped researchers to understand that marine bacteria can tolerate lowered levels of pH in the sea, but the process is especially energy intensive, potentially affecting them during longer periods of pH stress such as ocean acidification.

Bacteria affect the nutrient turnover Baltic Sea. It is therefore vital to understand when this process happens, what the effect of it is, and how we can create a balanced sea in the future. Carina's thesis is a piece of the puzzle in ultimately understanding the marine nutrient chain, leading us to predict how the Baltic Sea will respond to environmental changes.

Provided by Linnaeus University