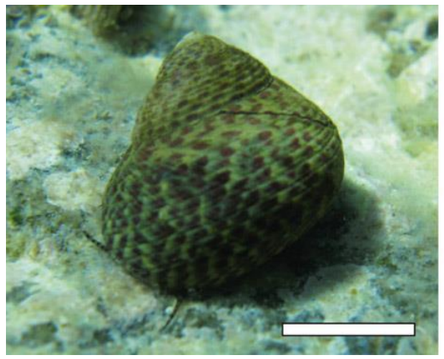
# 9. The Acidification of the Oceans

## Why are the oceans turning acidic with climate change?

Dotted snail shell still intact at a pH of 8.2

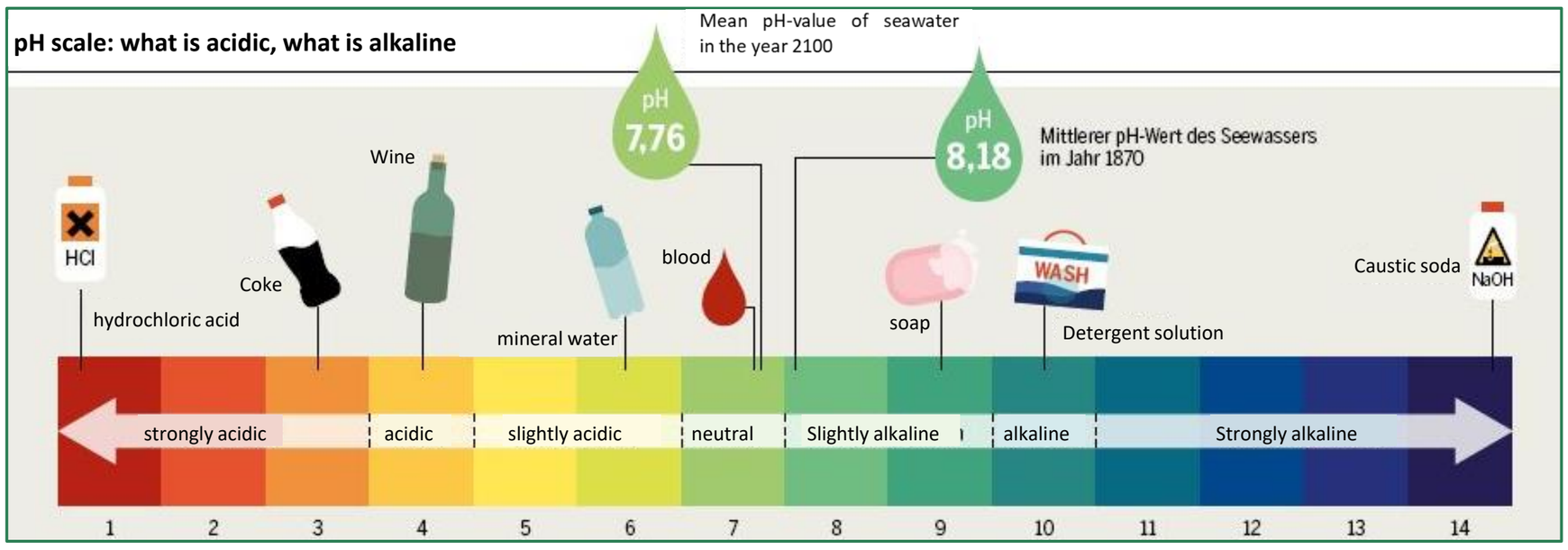


Snail shell at a pH of 7.3 shows clear signs of dissolution

### Backround:

Measurements of the pH value in the oceans show an increasing acidification of the water. If the content of the greenhouse gas $CO_2$ in the Earth's atmosphere rises (for example due to the burning of fossil fuels), it will also increasingly be dissolved in seawater, where it chemically reacts to carbonic acid ($H_2O + CO_2 \rightleftharpoons H_2CO_3$). This has fatal consequences for the life of algae and animals living there, which are not adapted to the increasingly acidic environment.

In addition, the shells of calcareous algae, for example, become thinner (see figure) and corals lose their calcareous skeleton. The $CO_2$ fixing of the oceans is decreasing overall.




Measurements of pH in the oceans show increasing acidification of the water.

Sources of illustration: pH scale: Heinrich Böll Foundation (2017) Ocean Atlas. Facts and figures on ocean stewardship.; pH globe (IPCC (2013): Climate Change 2013, Working Group I: The Science of Climate Change, Figure 6.2.8; Snail shell (Hall-Spencer et al. (2008) at https://worldoceanreview.com/de/wor-1/meer-und-chemie/ozeanversauerung/ (12.10.2020)).