Toktok Talkie
by Joh Henschel

## Appetite for Apatite

Among the most abundant Namibian creatures are giants with the strangest appetite: unusually large bacteria, which form thick mats of slimy mud covering the seabed off our coast. These bacteria consume hydrogen sulphide, hence their name *Thiomargarita namibiensis*, or, Namibian Sulphur-Cocktail. They excrete phosphate crystals, known as Apatite. We owe more to these bacteria for our welfare than many people may realise, largely thanks to their associate, the Two-Bearded Goby *Sufflogobius bibarbatus*, a fish barely the length of your hand. A Small Fish with an Enormous Role.

As every Namib toktokkie knows, individuals don't exist in isolation, as each creature has its own capabilities and requirements which often depend on or support other creatures. Foodwebs are one such communal characteristic by which one can not only trace how nutrients and energy flow through a system, but also reveal some peculiar behaviours and relationships.

Adjacent to the Namib, the Benguela is one of the world's most productive marine ecosystems with a correspondingly complex foodweb. Its creatures eat and are eaten by many creatures, and nutrients such as phosphate follow paths of consumption and decay. Since the collapse of the Benguela sardine population due to overfishing, there has been a drastic shift in its main players. Our little friends, Bearded Gobies, have come to play a key role. These gobies live in the oxygen-poor bacterial mud where they feed on worms and snails which live on the bacteria. In the mud gobies are safe from predators, which would suffocate. In order to raise their own energy levels and digest food more quickly, gobies rise to the oxygen-rich surface waters by night. There they run into jellyfish, which have proliferated since sardines no longer compete with them for plankton. Jellyfish have few enemies and would be a cul-de-sac for nutrients and energy if it were not for gobies, which chomp their way through the jellies. The goby population has consequently boomed. Many predators such as hake and horse mackerel, seabirds and seals, in turn, cash in on the numerous gobies at night. At daybreak, when the hunting threatens to become too frantic, the gobies again retreat into the muddy restaurant in the ocean's basement. The Benguela balances on the goby see-saw.

Take out gobies, and several fish populations important for the Namibian fishing industry would collapse. Disturbance of mud by phosphate mining could trigger such a catastrophe, as gobies could no longer retreat nor feed in the mud and be homelessly exposed. Also, mining would release large quantities of hydrogen sulphide from the mud and poison many creatures in the water column.

We may not be able to bring back our large swarms of sardines, but it is encouraging to know that the abused Benguela has found new stability with gobies. Last year the Science journal recorded astonishment "that an insignificant little fish could have turned out to save the day". Nature's come-back may, however, be short-lived if we cannot reign in or moderate mining's appetite for Apatite.

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