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Experts unlock secret to ocean's acid levels

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THE ocean's fish population is playing a significant role in keeping fellow marine life healthy, research led by the University of Exeter has discovered.

Scientists from across the world examined how fish stocks affect the acidity of the oceans.

They found that a fish's gut produces a chalky material known as calcium carbonate, which makes the ocean acidic after it has been excreted.

In seawater, the substance dissolves to make alkaline and plays a major part in maintaining the ocean's delicate pH balance – a measure of its acidity.

But scientists say that when fish produce these "gut rocks", it is less harmful than when it is emitted by marine plankton, which oceanographers previously believed was the main source of the substance.

Scientists from the UK, US and Canada say this knowledge is crucial as acidity can damage the health of marine ecosystems, including coral reefs.

The pH balance is also important in controlling how many of the carbon emissions produced in the atmosphere the ocean can absorb.

Dr Rod Wilson, of the University of Exeter, said: "We have really only just scratched the surface of knowing the chemistry and fate of fish carbonates.

"Given current concerns about the acidification of our seas through global CO2 emissions, it is more important than ever that we understand how the pH balance of the sea is normally maintained."

He went on: "Because of the impact of global climate change, fish are likely to have an even bigger influence on the chemistry of our oceans in future.

"So, it is vitally important that we build on this research to help fully understand these processes and how this will affect some of our most precious marine ecosystems."

The study, which was supported by the Biotechnology and Biological Sciences Research Council, estimates that three to 15 per cent of marine calcium carbonate is produced by fish in their intestines.

Academics say this is a conservative estimate.

The team believes it has the potential to be three times higher.

They say calcium carbonate is being produced by 90 per cent of marine fish species, but not sharks or rays.

The white rocks excreted by fish, in a process that is separate from digestion and production of faeces, are less harmful than those produced by plankton as they completely dissolve in shallow waters.

Meanwhile, carbonates produced by microscopic plankton – or more specifically their external "skeletons" – remain intact and sink to much deeper depths.

The research also explains why the sea becomes more alkaline in shallow waters than expected, a phenomenon that has long baffled scientists.

The researchers predict that future increases in sea temperature and rising carbon emissions will cause fish to produce even more calcium carbonate.

Dr Wilson said: "These findings may help answer a long-standing puzzle facing marine chemists, but they also reveal limitations to our current understanding of the marine carbon cycle."

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