

Seagulls feel the benefits of climate change

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(Phys.org) -- It may be a wet summer, but seagulls are benefiting from climate change.

Scientists have shown that [climate change](#) has resulted in winners as well as losers with a study revealing that lesser black-backed gulls are booming in the [North Sea](#).

The warming water has created an abundance of swimming crabs that are picked off by the greedy gulls. The experts have identified that the arrival of a new warm water species - Henslow's swimming crab, *Polybius henslowii* - might be an important crustacean in the cycle.

It spends more time swimming at the surface than any other species, and the crab has colonised the North Sea as it has warmed by 1 degree C since the mid 1980s. That level of warming is four times faster than the global average.

The scientists, led by Dr Richard Kirby from Plymouth University, have shown that an increase in crab larvae in the plankton is followed the next year by an increase in adult crabs.

And three to four years later there is an increase in the numbers of breeding pairs of lesser black-backed gulls that feed upon the crabs. This time period is the same as it takes for chicks of the gulls to reach maturity and start to breed.

The research has been published today in the highly respected Royal

Society journal *Biology Letters*.

Dr Richard Kirby said: "What is really interesting is that we may have found a cascade of effects in the North Sea food web all induced by a change in the temperature of the sea. The relationship we found between sea temperature, crabs and gulls matches the life histories of these creatures.

"We already knew that there are more swimming crab larvae in the North Sea plankton in warm years than in cold years. Now we have shown that an increase in the larvae of swimming crabs in the plankton is followed by an increase in adult crabs the following year. And this in turn is followed three to four years later by an increase in the number of breeding pairs of lesser black-backed gulls.

"Interestingly, it takes three to four years for lesser black-backed gull chicks to reach maturity and reproduce. Swimming crabs are important because, unlike other crabs that spend their whole adult life on the seabed, they spend some of their adult life swimming at the sea surface where they can be caught by seagulls. One swimming crab may be particularly relevant to the story; this is Henslow's swimming crab *Polybius henslowii*, which spends more time swimming at the surface than any other species.

"Henslow's swimming crab is a warm water species and we have shown that as the North Sea has warmed the crab has colonised the North Sea. The team of scientists speculate that the linkages in the marine food web from [crabs](#) to [gulls](#) could indicate a pathway for the transfer of nutrients from the sea to the land."

Another of the international team, Christophe Luczak, said: "Our results provide further evidence for the extensive nature of the climate-induced reorganisation of the North Sea ecosystem, and further, that this may

now also extend to the land where the [seagulls](#) nest. We already know that guano - bird droppings - around seabird colonies can influence the local ecology by acting as a fertiliser."

Dr Gregory Beaugrand, who performed the statistical analyses in the study, said: "Our work demonstrates the importance of temperature in structuring how energy flows through a marine ecosystem like the North Sea."

The lesser black-backed gull *Larus fuscus* is slightly smaller than a herring gull. It has a dark grey to black back and wings, a yellow bill and yellow legs. The seagull is only found in Europe and the UK is home to 40 per cent of the total population where it is on the amber list of UK birds.

Provided by University of Plymouth

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