

## Some like it hot -- European fish stocks changing with warming seas

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The first "big picture" study of the effects of rapidly rising temperatures in the northeast Atlantic Ocean shows that a major shift in fish stocks is already well underway. But it isn't all bad news. The research, published today (15th Sept.) in *Current Biology*, shows that some fishes' losses are other fishes' gain.

The study led by Dr Steve Simpson of the University of Bristol in collaboration with researchers from eight other institutions, is the first to combine a suite of European datasets, which included more than 100 million fish, to explore how warming is affecting the commercially important European fishery. The researchers analysed 28 years of fisheries agency data from 11 independent surveys covering more than a million square kilometres of the European [continental shelf](#).

The northeast Atlantic has been described as the "cauldron of [climate change](#)", with warming occurring at a rate four times the global average over the past 30 years. Dr Simpson, a researcher in the University's School of [Biological Sciences](#), explained: "While a 1.3° Celsius change in mean annual temperature in the North Sea over the past three decades may sound trivial, temperature has a strong influence on egg maturation rates, growth and survival of fish larvae, and impacts on the planktonic communities that underpin the food webs that sustain commercial fisheries.

"We see many more southerly warm-water species faring well on the European shelf than northerly cold-adapted species. This means more

small-bodied, faster growing species with shorter generation times, and potentially more diversity."

Indeed, the data show that fish in European waters have undergone profound community-level changes that are related to dramatic warming trends for the region. The vast majority – a whopping 72 percent – of common [fish species](#) have already shown a change in abundance that relates to the rising sea temperatures.

Of those, three out of every four fish species have grown in numbers with warming. Catches of cold-loving species, including haddock and cod, have dropped by half in the past three decades, whereas landings of warm-loving species, including hake and dab, have more than doubled.

The results show that studies focused only on changes to where particular [fish](#) species are found – species ranges – will miss the far more ecologically and economically relevant effects of warming. They also suggest there will be an unavoidable change in what's for dinner.

Simpson added: "We may see a further decline in cold-adapted species, many of which were the staple for our grandparents. The flip side is a likely increase in [species](#) that for the UK may seem relatively exotic now, such as red mullet and John Dory. Over time, with effective management and an appropriate response in consumer demand, European seas have the potential to yield productive and sustainable fisheries into the future."

Provided by University of Bristol

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