

Puffin with beakful of sandeels for its chick on Great Saltee Island, Co Wexford.

Photograph: Tom Ormond

Puffin

The Puffin is facing a very uncertain future. **Cóilín MacLochlainn** reports.

In 2015, the Puffin was added to the red list of species vulnerable to extinction globally. This followed precipitous rates of population decline in Puffins since the early 2000s.

Iceland, most notably, has lost around two million breeding pairs, a calamitous loss for a species whose overall population, distributed around the North Atlantic, amounted to around six million pairs.

Norway, too, has seen vertiginous crashes, with hundreds of thousands of adult Puffins in the once-teeming colony of Røst struggling to fledge any chicks in recent years.

Ireland and Britain between them held over 600,000 pairs during the last full census, **Seabird 2000**, which was carried out in 1999-2002. However, on twenty monitored sites across the Shetland Islands, the 33,000 Puffins that **Seabird 2000** counted have plummeted to just 570 individuals today – a catastrophic decline.

In Ireland, the 1,822 pairs found by **Seabird 2000** on the Saltee Islands off Wexford have fallen to around 50 pairs, although that could be an anomaly caused by rats feeding on eggs and chicks: similar collapses have not been noticed at other Irish colonies. In contrast, on the small Welsh island of Skomer, on the other side of the Irish Sea, Puffin numbers are booming, with nearly 31,000 individuals, up from 14,000 in 2013.

Iconic species

It would be a tragedy to lose this colourful and most instantly recognisable of all North

Atlantic seabirds, now a fixture of tourist advertising for the likes of Skellig Michael and the Cliffs of Moher, which hold two of its better known colonies. The largest Irish colony, with perhaps 4,000 birds, is found on the aptly-named but rarely visited Puffin Island, not far from Skellig Michael in Co Kerry.

Other Puffins return annually to breed on Lambay and Ireland's Eye off Dublin, Rathlin Island off Antrim and on islands and sloping grassy cliffs in Donegal and Mayo.

Most of our Puffins nest in burrows, similar to those used by rabbits, but where there is insufficient soil they will nest amongst rocks or in crevices.

Puffins are long-lived birds that raise just one chick a year. The chicks are fed on small fish that the adult carries cross-wise in its beak. In Britain and Ireland the commonest prey is the lesser sandeel, followed by sprat, herring and a wide range of small juvenile gadoid fish, whilst in arctic waters capelin can be a staple.

Causes of decline

There are old accounts of countless Puffins carpeting islands, whirling in front of cliffs like bees at a honey pot, but by the late 1800s it was apparent that numbers of Puffins were already starting to decline.



Puffin on Great Saltee, Co Wexford. **Photo:** Tom Ormond

Serious declines in the early 20th century were put down to factors such as oilspills, drowning in fishing nets and harvesting by man – vast numbers were captured for eating in Iceland and the Faroes.

Repeated reproductive failures in Norway were linked to reduced prey availability after herring stocks collapsed due to overfishing in the late 1960s.

The trawling of millions of tonnes of sandeels, sprats and other small oily fish, for farmed fish and animal feed, has denuded once prey-rich northern coastal waters of the food items on which Puffins rely.

Climate change

Evidence is mounting that climate change – and particularly sea warming – is disrupting the entire food web, from plankton through small shoaling fish to the Puffins and other seabirds which depend on them for survival.

The overall abundance of zooplankton has declined by as much as 70% in the North Sea in the last fifty years, an upheaval so dramatic as to be termed a 'regime shift' by oceanographers.

Climate change has warmed the North Atlantic, and scientists suspect that this is forcing cold-water fish species further north, meaning, in turn, that seabirds struggle to find food close to their traditional breeding



Puffins on Great Saltee, Co Wexford. Photo: Tom Ormond

grounds. The sandeels need to be in the right place at the right time for Puffins to be able to feed their chicks. Not enough sandeels, or sandeels that have moved too far away from Puffins' breeding grounds, and their pufflings will starve to death in their burrows.

Puffins come ashore for four months of the year to breed, with the rest of the year spent out at sea. Working out where they are feeding while at sea, and what kind of fish they are catching, is difficult. Researchers have tracked Puffins out at sea by attaching tiny

GPS locators weighing just four grammes to their backs to work out exactly where they were fishing during the breeding season.

Another study led by Dr Mark Jessop of UCC, and including BirdWatch Ireland staff, discovered that Skellig Michael Puffins migrate as far as Canada and Greenland every autumn, attracted by oil-rich capelin stocks on the other side of the ocean. Once the availability of this short-term prey resource diminishes, the tracked Puffins move back towards the north-east Atlantic. No other Puffin population travels as far, and the long-distance migration could be affecting the breeding performance of the Irish birds.

Other factors

Besides warming seas affecting their food supply, storms are making it more difficult for Puffins to forage, causing many to starve. If, as

predicted, storms become more frequent and extreme due to climate change, these seabird 'wrecks' will become more common.

The recovery and northward spread of mackerel (which prey on sandeels and other small fish) are also part of the story, adding to the competitive pressure on seabirds to find enough food for themselves.

Add in oil pollution and the perils of plastic build-up in the oceans and it is easy to see how Puffins are at ever-increasing risk.

From Shetland to Norway, the Faroes and Iceland, these environmental hazards and changes are being linked with widespread breeding failure and declines in Puffins, as well as in Kittiwakes and Arctic Terns.

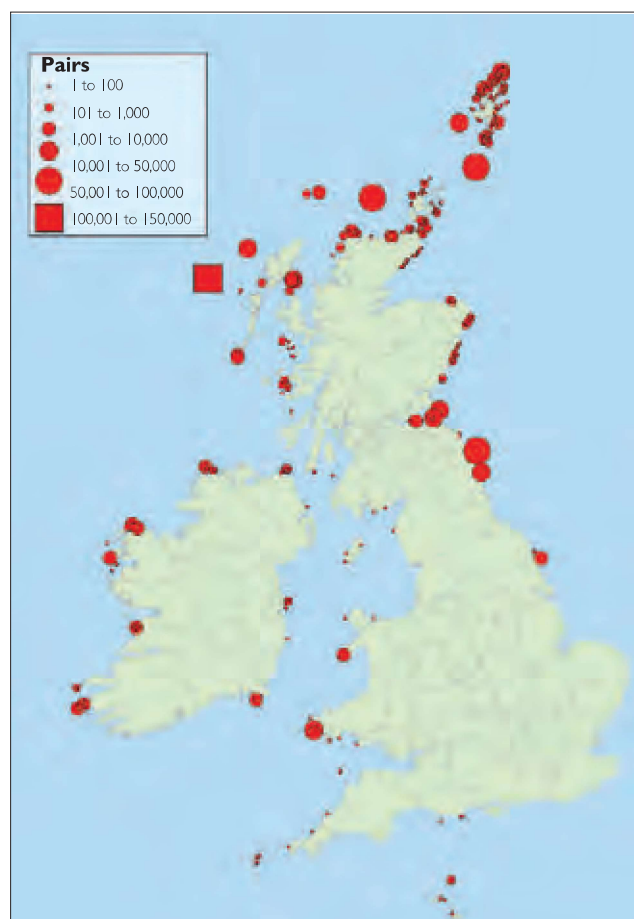
Kittiwakes and Arctic Terns, both sandeel specialists, have suffered periods of severe breeding failures in the Shetland Islands in years when changes of oceanic currents resulted in an almost complete absence of first-year sandeels.

The future

Governments across the world must tackle climate change, and EU politicians must adopt an ecosystem-based approach to fisheries which reflects the importance of forage fish for seabirds. One positive factor for Ireland is the absence of a commercial fishery for sandeels in our coastal waters, but more needs to be done to manage sprat and herring stocks sustainably.

Care must also be taken in keeping island colonies free of predatory rats and mink.

Seabird 2000 found over 21,000 pairs of Puffins in Ireland as a whole. A major new census of Britain and Ireland's seabirds is now underway, but it will be next year before it begins censusing our Puffin colonies, most of which are on offshore islands. We will have no indication until then as to how our Puffins are faring overall ■



Abundance and distribution of breeding Puffins in Britain and Ireland, 1998-2002 (the Seabird 2000 census years).