

INSIDE JEB

Feasting little auks suck



A little auk just after sucking in a copepod and closing its beak while the pouch beneath the tongue is still extended. Photo credit: Manfred Enstipp.

Despite their prodigious numbers – there are estimated to be 60–80 million little auks (*Alle alle*) living and breeding in the high Arctic – their situation is not assured. ‘They might be particularly vulnerable to climate change’, says Manfred Enstipp, referring to the immense energy costs incurred by the tiny birds as they forage and maintain their body temperature in the chilly waters. And, as the nutritious copepods (small crustaceans) upon which they dine – *Calanus glacialis* and *Calanus hyperboreus* – are driven out by a tinier species (*Calanus finmarchicus*) as sea temperatures rise, Enstipp warns that the diminutive seabirds may struggle to consume sufficient calories. Knowing that the seabirds may consume as many as 60,000 of the larger copepods per day to satisfy their energy demands, Enstipp and his colleagues David Grémillet from the Université de Montpellier and Jérôme Fort from the Université de La Rochelle, France, along with Sebastien Descamps from the Norwegian Polar Institute, decided to investigate how these Arctic aviators catch a snack.

As there are no little auks in captivity, thanks to the difficulty of providing their copepod diet, Enstipp travelled north to Ny-Ålesund on the Norwegian island of Spitsbergen, where he could briefly ‘borrow’ some of the birds from the wild. ‘It basically took a whole day to capture them’, says Enstipp, recalling how he accompanied Delphine Ruche and Saga Svavarsdóttir on excursions to collect the small birds from their colonies. ‘One thing I looked out for was birds with an empty gular pouch [situated beneath the tongue]’, he says, explaining that those birds should be hungry as they usually store copepods in the pouch when feeding their young. However, he admits that was no guarantee that they would feed while being filmed in the test tank. In addition, Enstipp collected copepods in the local fjord, battling technical difficulties with the plankton net winch, until he had a sufficient number to keep the test tank well stocked.

Unfortunately, the first pair of little auks that were introduced into the tank would not feed; Enstipp was concerned that the experiment was doomed. However, his

patience was eventually rewarded and when he returned to Spitsbergen the following year, the birds were far more cooperative. ‘It was so amazing to finally see them doing their business underwater’, smiles Enstipp, describing how the bird’s heads snapped left and right. ‘Clearly, they were doing something. Only later, when I could look at the recorded GoPro footage, could I see the details of their foraging behaviour’, he laughs.

Having thought that the birds would swim around taking indiscriminate gulps as they filtered copepods from the water, Enstipp was amazed to see that the birds were actively targeting individual crustaceans. And when he slowed down the video, he was astonished to see them extend their heads before opening the beak slightly and quickly extending the pouch beneath the tongue to suck in a copepod. ‘You can see the birds attacking the copepod and in the next frame it has disappeared’, says Enstipp. The little auks were sucking the copepods into their mouths in less than 100 ms; ‘In some cases, we witnessed three independent capture events per second’, he marvels.

Instead of filter feeding or snapping directly at copepods, the little auks were sucking them up, which may allow the birds to vacuum up more food per slurp than if they were simply pecking them from the water. ‘In terms of the visual capacity of little auks, I find this very interesting’, says Enstipp, although he adds that the birds in the wild may resort to filter feeding when plunging through thicker clouds of copepods.

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