



COLONY OF SANDWICH TERNS ON DUTCH ISLAND REVEALS ITS SECRETS

The sandwich tern comes ashore

In the past few years, thousands of sandwich terns have started brooding on the Dutch island of Texel. An extraordinary development, as we generally associate these rare seabirds with remote sandbanks. What has made Texel so popular all of a sudden? Biologist Mardik Leopold has been investigating.

TEXT NIENKE BEINTEMA PHOTOS MARDIK LEOPOLD





Kirr-ick! Kirr-ick! A distinctive cry resounds across the mud flats behind the sea dyke. The unmistakable call of brooding sandwich terns. And not just one pair. No, a few thousand of them. A rare prospect in the Netherlands. ‘Fantastic, isn’t it?’ says Mardik Leopold of Wageningen Marine Research. We are standing on the Wadden Sea dyke on Texel island with our binoculars, backs to the sea. Before us lies a wide expanse of pools and little islands, teeming with water birds. Black-headed gulls, avocets, common shelducks, red-shanks – and an awful lot of sandwich terns. ‘Look, that one has a fish in its beak,’ Leopold points out. A stately grey and white bird with a black cap and a strong black beak is strutting across the sandbank with a fish. ‘See that young bird begging. It’s been able to fly for a while but it will be fed for another couple of weeks. Until they set off for South Africa.’ And the fish is gobbled up. This nature area is aptly named Utopia. It was dug out between 2009 and 2011 by nature conservation organization *Natuurmonumenten* for the express purpose of creating breeding grounds for species such as the avocet, and the common and arctic terns. ‘But much to our astonishment, 1500 pairs of sandwich terns started brooding there,’ says Leopold, who has been studying the colony ever since. ‘We think of sandwich terns as birds which brood on remote sandbanks, such as Griend. In the middle of the Wadden Sea, at the mercy of the wind and waves. But we didn’t expect to see them here in this sheltered area behind the dyke.’

TAKING RISKS

On windy sandbanks sandwich terns face relatively little competition or danger from birds of prey. So they don’t mind taking the risk of storm surges, says Leopold. ‘They can live to be 20 or 30 years old,’ he explains. ‘So it’s not such a problem if one brooding season doesn’t work out. That is

‘Sandwich terns can live to be 20 or 30’

why we now wonder why all the sandwich terns have suddenly started brooding in Utopia. And why are they doing so much better here than on Griend? We are keen to find that out. Because once we have that kind of knowledge we might be able to protect them better.’

In Utopia pairs of sandwich terns tend to have one baby per year – which is 50 percent more than on Griend or anywhere else along the European coast. This is good news for those familiar with the history of this species. Until the 1940s there were as many as 40,000 pairs of sandwich terns in the Netherlands. But during the Second World War their eggs were collected in large numbers for human consumption. Then came the industrial pollution of the 1950s. And in 1964 the important breeding ground of De Beer island was lost to the development of the Europoort docks. This marked the low point in sandwich tern numbers in the Netherlands: there were only about 500 brooding pairs, most of them on Griend. Since then, the population has slowly recovered to its current levels of about 15,000 pairs in the whole of the Netherlands. Most of them now brood in the southern part of South Holland, and on Texel, Griend and Ameland. ‘And recently on the mainland in North Holland as well,’ says Leopold. ‘The first 110 pairs started brooding last year in De Putten bird sanctuary near Schoorl, which is behind the dyke too. This year there were already 2000. So they are thriving.’

NO FOXES

We drive along the Wadden Sea dyke towards the ferry port in Leopold’s car. We pass a whole series of pools with little islands, surrounded by reeds and swampy grassland. ‘A string of wetland jewels,’ says Leopold with enthusiasm. These ponds were created when sand was dug up for raising the dyke back in the 1970s. Here too, sandwich terns have been brooding since 2013 –

this year in even greater numbers than in Utopia. ‘These human-made breeding grounds probably make a huge contribution to the recovery of the sandwich tern in the Netherlands,’ says Leopold as he drives. ‘You see, we think the lack of anywhere to breed could be a limiting factor.’

In the pre-war years, when sandwich tern numbers peaked, the birds bred in many places which are no longer suitable. These included the sandy heads of the Wadden islands and the Texel sandbank called De Razende Bol. ‘These days it’s just one big barbecue there,’ says Leopold cynically. ‘You don’t get any sandwich terns there any longer.’ And that is a pity, because the brooding birds are relatively safe on the Wadden islands, where there are no foxes. All in all, the population is still nowhere near its earlier level. ‘We don’t know exactly

why that is,’ says Leopold. ‘The possibility to brood is one thing, but maybe now more eggs and young are stolen by herring gulls and black-backed gulls. They are protected species these days, and have increased in number considerably.’

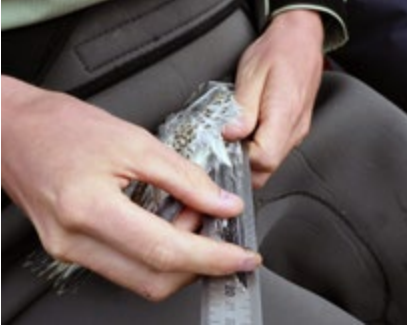
DECODING THE COLOURED RING

We get out of the car near the Wagejot nature reserve. Leopold expertly surveys the water birds with his binoculars. A lot of gulls, some ringed plovers and the occasional avocet. And here and there some sandwich terns: parent birds and brown and white young, now almost as big as their parents. ‘Hey, look at that!’ shouts Leopold. ‘A coloured ring!’ He grabs his telescope from the boot and focuses it on a stern on the sandbank. Reading the black letters on the yellow plastic ring around its leg takes >



PHOTO RICHARD DIEPSTRATEN

‘People who read a ring get sent a baby photo of their tern’



quite an effort. ‘What do you make it? I see 63T. Right leg. Can you write it down?’ Leopold and his colleagues started ringing sandwich terns on Texel four years ago. They’ve been doing it every year since then, with a dedicated group of volunteers. When the young can almost fly, the ringers wade out to the Utopia islands and load 150 chicks into large crates at lighting speed. They carry them ashore where they are all measured, weighed and ringed. And photographed. ‘Then, when people read that ring at some point and report back to us, we can send them a baby photo of ‘their’ tern as a thank-you. That works very well, keeping people motivated to report ring data.’ The ringed young birds are then quickly returned to the colony, where their parents track them down by their calls. And then the ringers start all over again, because they want to do another batch: 300 in all. ‘A major event,’ says Leopold. ‘Great fun, a ringing day.’

TO SCOTLAND

The coloured rings have a unique combination of numbers and letters that can be read from a distance. This enables the researchers to trace the birds individually. So now they know how widely they range: terns ringed on Texel fly effortlessly between the island and Denmark, Scotland or France. And Leopold now knows that the young only return to the breeding grounds for the first time after two to three years. ‘In the interim they stay at sea, somewhere between South Africa and Denmark.’ Thanks to the rings, Leopold hopes eventually to gain more understanding of how the population is built up. Who comes back to brood on Texel, and who tries their luck elsewhere? ‘With this amazing breeding success story, it is perfectly possible that Texel will become a source for new populations in other areas,’ he says. ‘Then we’d have a new Texel export product.’

We leave the bird areas and take the boat to Den Helder. There, in the former naval college, is the laboratory of Wageningen Marine Research, where Leopold is investigating exactly what sandwich terns eat. ‘Sandwich terns catch fish in the North Sea. It might simply be that they don’t have to fly as far from Utopia as from Griend. It can easily make a difference of 20 kilometres per feeding trip.’

Camera footage shows which fish the terns feed their young on: the parent birds always carry one fish quite visibly in their beaks. ‘The size of those fish tells us something about how the terns make their decisions. In practice it seems the bird eat up lots of small fish themselves out at sea and bring the bigger ones back for their young. But we want to know what the parent birds themselves eat too. That has never been studied. You don’t see it on the webcams because the parent birds eat out at sea.’ In former times biologists would just have shot down the birds to study the contents of their stomachs, says Leopold. ‘But we don’t like doing that anymore.’ There is another method of finding out about the parent birds’ diet: by getting hold of their droppings. This is done by means of a dozen or so flat plates placed between the nests, which are close together. Each plate remains in place for a week, as long as the eggs have not hatched, so only the droppings of adult birds fall into it. The plate is full enough after one week, and the droppings contain miniscule clues as to which fish they come from: otoliths, or bones from the inner ear (see inset).

CAREFUL WASHING

‘Sprat, herring and sand lance,’ declares Ilse van der Beek, a student of Wildlife Management at Van Hall Larenstein in Leeuwarden. She is seated at a big lab bench studying a petri dish full of neat rows of what look like tiny rice grains, some of them less than half a millimetre in size. Their

shape and the pattern of grooves on them give away the fish species; their size suggests how big it was.

Van de Beek has carefully washed, sifted and sorted the contents of the plates of droppings, and is now studying each otolith under the microscope. She takes a photo of it, measures the little bone, and records her findings in an enormous data file. 'Ten poop dishes keep me busy for a couple of weeks,' she says. 'Do I go cross-eyed? Oh no. I only spend a short time looking at them through the microscope. I do the rest on the computer.' She sees this painstaking work as just part of the job. And she is fascinated by the underlying questions. And by the birds themselves: she helped with the ringing too, as well as with positioning and collecting the plates. And she reads rings daily in the field. 'Really nice to do.'

The research is still in full swing, so many questions are still unanswered. Such as why the terns have only so recently discovered the artificial nature reserves behind the dyke. Slowly but surely the secret of Texel's breeding success story is coming out. A safe breeding ground that is not prone to flooding, close to the best fishing grounds: Utopia lives up to its name. And Leopold thinks Griend has become less attractive: a short-eared owl has taken up residence there and more and more herring gulls and lesser black-headed gulls come there. 'That doesn't do the terns any good. On Griend they now live under constant pressure and apparently a few birds tried their luck elsewhere, and with success!' The working day is over, but the researcher is nowhere near ready. 'This evening I'm going to read a few more rings. And then analyse some data and email observers. No, I don't get much sleep in the summer months. Sleep takes up too much time.' ■

www.wur.eu/sandwichterns



Young terns are weighed, measured, ringed and photographed.

MICRO-BONES FULL OF INFORMATION

Otoliths, or ear bones, are found in the inner ear of fish. They are relatively hard so they decompose more slowly than the rest of the fish. You can find them in the poop of fish-eaters and in fossil deposits. Otoliths reveal a lot about their original owner. Just like trees, they have growth rings which give away the age of the fish. And the shape of otoliths is different for each fish species, varying from a simple oval to a complex shape with lots of grooves and appendages. Experts like Mardik Leopold can often tell at a glance which species they are dealing with. And that knowledge is useful for ecology (which animals eat each other?), for archaeology (what did humans use to eat?), and for fisheries (how old is the fish that has been caught?)

'Otoliths do disintegrate in the acid stomachs of fish-eaters,' says Leopold. 'They get smaller, which could cause you to underestimate the size of the fish.' He is therefore working on an extensive correction table. 'I am always looking for predator stomachs containing a ball of fish of the same age range. For example, if a whale has eaten a whole school in one mouthful. Getting hold of stomach contents like that is a golden opportunity.' If the ball of fish has not yet been completely digested, there is still intact fish inside it. Towards the outside of the ball the fish is more digested. So Leopold can make a nice graph with different levels of erosion and the correction factor to match, in order to calculate the length of the fish correctly. He has completed such a graph for eight species to date, and colleagues from around the world have expressed interest in them.