

Birds with attit

No two great tits are alike. Great tits have personalities: some are bold and enterprising, others are timid and hesitant. Some are somewhere in between these poles. PhD researcher Lysanne Snijders is studying the role of character in the behaviour of the great tit and its social network.

text: Roelof Kleis / **photo:** Guy Ackermans

Since the beginning of this week, a number of great tits have been flying around the Westerheide forest area near Arnhem with a transmitter on their backs which records exactly where the little birds are at any time. These are Snijders' birds. At least, they are participating in her experiment to see how great tits respond to intruders on

their territory. The focus lies on the function of the song and the personality of the great tit. Yes, personality: because animals have just as much of a character, temperament and personality of their own as you or I do.

It has already been established that the way great tits respond to intruders depends on their personalities. Marc Naguib, professor of Behavioural Ecology and Snijders' supervisor, proved this a couple of years ago when he was still working at the Dutch Institute for Ecology (NIOO). Naguib exposed great tits in Westerheide, a wood near Warnsborn estate near Arnhem, to the sound of intruders, and recorded their behaviour. The less courageous males clearly responded differently to their more outgoing fellows in both behaviour and song. But that was not all. The behaviour of the great tit also influenced its neighbour. In fact, this was a more influential factor than the neighbour's own personality. Behavioural biologists call this a playback experiment.

TRANSMITTERS

With this experiment, Naguib demonstrated that personality plays a role in the communication network of great tits. Snijders' work takes Naguib's research further – including literally looking further. She looks, not just at the great tit and its neighbour, but at the response of the entire community. Naguib: 'So we look at the whole social network. The research question is what this kind of network looks like. Nobody really knows, because it is so difficult to continuously monitor groups of birds in their

PEEPSHOW

How does a great tit select its mate? And does personality play a role? Under the supervision of great tit experts Camilla Hinde and Kees van Oers (NIOO), PhD student Lies Zandberg is trying to answer these questions. A key method in her research on individual differences in partner selection is an experiment in which a great tit in a cage is surrounded by six more cages containing

potential partners. A kind of peepshow in reverse, Zandberg laughs. Does the female go for the brightest yellow feathers (a sign of fitness), for instance, or for the widest ventral stripe (a sign of dominance)? Or is the song, the behaviour or the (previously ascertained) personality the decisive factor? Ten females and ten males have been tested this way at the NIOO in the last few weeks. The birds are now back in

the woods where the experiment is being conducted at Warnsborn. There, Zandberg will track down the birds in the spring to see what has happened to them. Will the mate they finally select match the preference displayed in the cage, and does this have any consequences for the investment in their descendants?

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natural environment. Now we can do that for the first time.' Thanks to modern technology. Snijders uses a new generation of lightweight digital transmitters that give off a continuous signal. A network of 180 receivers in Westerheide makes it possible automatically to establish the whereabouts of many great tits at the same time. The females as well as the males, because although female great tits may not sing, they do play a role in defending the territory.

Great tits respond fiercely to intruders into their territory, explains Snijders. Singing on someone else's territory is enough to provoke a reaction. 'What kind of song it is does not matter, as far as we know. It's not so much what you sing as how you sing. But we are working with standardized songs. Songs that were recorded four years ago, so the birds cannot be familiar with them.' And then it's a question of seeing (and measuring) what happens. 'We actually look at two different networks,' adds Naguib. 'The spatial network: who is where, and who has contact with whom. And the conversational network: who responds to song, and how.'

TWITTER

Snijders' work should provide a better understanding of the social relationships among great tits, and the role of individual character in them. Great tits are perfect subjects for such research, since they have a lot of social

'Great tits have a lot of social contacts. They twitter away to their hearts'

contacts. They twitter away to their hearts' content. Good to know, for scientists – and Naguib sees the practical uses of such knowledge. 'If you know what such a network looks like, you can also predict how birds behave when their habitat gets fragmented. The effect of corridor formation, for example. Personality plays a role in how animals respond to large-scale developments.' **R**



Marc Naguib with one of the 44 great tits in the Heiderbos which he has fitted out with a transmitter in the last month. The transmitter is hidden under their plumage. The long antenna is visible on the left.

MODEL BIRD

The great tit is a model bird for research on the relation between behaviour and personality. The main reason for this is practical: the great tit is one of the commonest birds in Europe and therefore easy to get hold of. Its yellow plumage also makes it quite visible, it does not migrate and is therefore present in the

wild all year round. Another handy feature of the great tit is that it likes to brood in nesting boxes, making it easy to monitor the fitness (breeding success) of a population: all you have to do is count the eggs and the young that reach maturity. The great tit is robust as well, and can cope with a disturbance. You can catch

it, use it in an experiment and release it again without apparently upsetting it. But don't set foot on its territory, because then it goes crazy. Great tits are very territorial. Along with their song, that makes them highly suitable models for behavioural research.