



◀ Sparrowhawks are known to hunt around feeders where small birds congregate.

SPARROWHAWKS in a predictable environment?

Senior Research Ecologist **Ian Henderson** explains the results of a pilot study looking at the movements of Sparrowhawks.

Studies of the impacts of predation on birds are commonplace, but how predators themselves modify their behaviour in response to environmental influences is poorly understood, because the species concerned are invariably highly elusive. This means the causes of observed predation rates can be obscure and overlooked. Now, tracking technologies present opportunities to ‘flip the coin’, to investigate patterns of behaviour in the predators themselves.

Humans tend to simplify environmental gradients. Examples include cropping, moorland and forestry

management and ‘designer’ nature reserves, as well as the deliberate provision of habitats or food intended to mitigate wildlife declines. This simplification creates a more predictable countryside, with the potential to alter predator–prey dynamics by making it easier for predators to track prey, and potentially increasing their hunting efficiency.

This is a particular issue in farmland, where the attraction of flocks of passerines to habitat management that is intended to provide them with seed resources will inevitably also attract predators, so it is important

SPARROWHAWK MOVEMENTS AROUND SOUTHERN THETFORD

Male adult Sparrowhawk locations over a 14-day period in March 2017. Active bird feeders were present at the centre of each of the locations circled in yellow. The wood in which the bird roosted is circled in white. During the day, the bird was almost exclusively recorded near active bird feeders, though the first hour of daylight was invariably spent visiting the roosting wood. The game-crop strips on the farmland were not producing seed at the time.

● GPS fixes tightly aggregated at bird feeder locations in gardens or on nearby farmland.



▲ UK Sparrowhawk numbers fell by 22% between 1995 and 2018, according to results from the Breeding Bird Survey.



MAP SOURCES: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEX, GETMAPPING, AEROGRIID, IGN, IGP, SWISSTOPO, GIS USER COMMUNITY

Two clear results emerged from the study: first, the tagged individual's activities were based on a tiny home range of approximately 500 m radius. This was smaller than the size our former Chair, Prof Ian Newton, found in 'good habitat' (mean of 405 ha), suggesting the habitat in this part of Thetford is excellent, with sufficient prey to provide the bird with all it needed at this point in the year. Second, the pattern of movement closely mapped the presence of known, active bird feeders. These were mainly garden feeders, as the bird-seed crops in the nearby farmland had no remaining seed at the time. The Sparrowhawk almost exclusively visited these locations, to the point where one could have accurately mapped the distribution of the feeders based on the bird's movement alone.

RESEARCH TO REVISIT

It is no surprise that a Sparrowhawk has the capacity to cue in on aggregations of passerines, but it is good to be able to demonstrate the scale of response, as a point of principle. An almost perfect match to active feeder locations suggests that this individual's hunting effort was primarily influenced by that collective habitat artefact.

This trial involved only one bird and we cannot infer much about other birds or habitats. However, it is interesting to note how strongly human feeding activity influenced the pattern of hunting, which could unwittingly exacerbate predation impacts on prey species that are already in decline due to other causes, such as loss of food, habitat or disease. The capacity to expand this work to a more representative sample of individuals is currently hampered by their unpredictable habits in winter and their small size, and the limits these factors place on catching birds and the devices we can use to track them over extended periods of time. However, technology is a fast-moving field and the opportunity to understand more about how this fascinating raptor adapts to modern-day challenges will come. ■

to understand how predators use the landscape. Therefore, in 2017, we used funds generously donated to the Farmland Bird Appeal to investigate the frequency of interaction between Sparrowhawks and specific locations designed to attract concentrations of small birds, such as seed-rich crops on farmland or garden feeders. One benefit of simplification, as a definable arrangement of feeding locations, is that it allows animal responses to be studied in less complex circumstances than for a true wilderness. Still, the work needed an accurate portrayal of movement and habitat use.

EXCLUSIVE FEEDING HABITS

A Sparrowhawk's stealthy habits and small size present many challenges to behavioural observation. GPS tracking can help with this, but Sparrowhawks are too small to wear the sorts of solar-powered, remote-download tags used by BTO to study other species, such as large gulls (pages 14–15). Their behaviour is also too unpredictable to recapture them and retrieve tag data that way. As such, we had to 'commission' the help of a known resident, adult male Sparrowhawk with one or two semi-predictable habits and track this bird using short-range

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Bluetooth methods of data transfer. This ringed individual reappeared in certain gardens from time to time, which allowed us to locate Bluetooth antennae accurately, to improve the chance of retrieving data from the passing bird's tag. The small tag's battery provided only two weeks of high-quality winter data from a semi-rural location on the edge of Thetford, Norfolk (near BTO's Nunnery HQ), where the landscape included gardens, woodland and farmland.

▼ The Sparrowhawk in this study after it had been fitted with a backpack GPS tag. The tag was later removed.

**Find out more**

Newton 1973. *British Birds* 66: 271–278.

SPARROWHAWK WITH PREY: SARAH KELIMAN/BTO, SPARROWHAWK IN FLIGHT: PHILIP CROFT/BTO, SPARROWHAWK WITH GPS TAG: HAZEL MCCAMBRIDGE/BTO