Return of the native

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Vilified by some but treasured by others, the Sparrowhawk is one of our most widespread and familiar birds of prey. It is amazing to think that this increasing garden visitor was effectively extinct in many parts of its British range just a few decades ago.

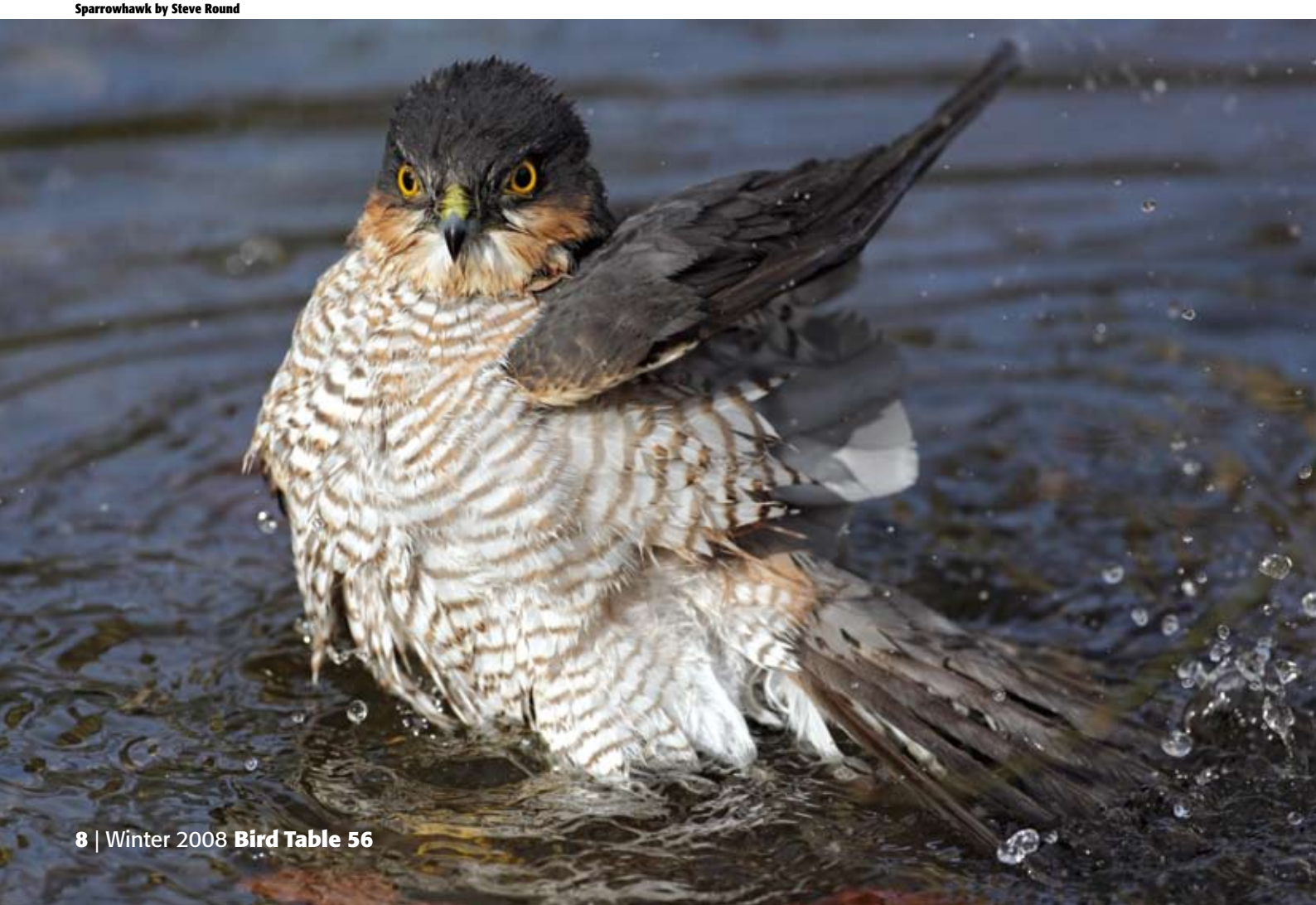
Mention the Sparrowhawk and you can almost guarantee an energetic response; either one of enthusing admiration for this agile hunter or one of complete disgust that such a bird should hawk its trade within the garden environment. The Sparrowhawk is the one species for which passions run high, often to the exclusion of sound reasoning. Yet behind the controversy, what is the truth about this efficient hunter and its interactions with its avian prey?

UPS AND DOWNS

Sparrowhawks have been persecuted throughout much of recent history, a pressure that has to some degree helped to shape the size of its breeding population. Perceived as a threat to game-rearing interests, the Sparrowhawk was much-targeted by gamekeepers, prompting William Borrer (writing in Sussex in 1891) to note that '*all keepers look upon it as their most dangerous enemy*.' The level of persecution was only reduced when many gamekeepers were sent to the front during two world wars.

It was a very different threat that saw the Sparrowhawk nearly exterminated from large parts of its former range, notably across southern and eastern England. This came in the form of organochlorine pesticides, introduced widely to cereal farming after the Second World War. One of the most well-known of these was DDT, first synthesized in 1874, but whose insecticidal properties were not discovered until 1939. DDT found its

Sparrowhawk by Steve Round



way into the food chain, passing from small seed-eating birds up to top predators like the Sparrowhawk, where it had profound effects on productivity. The compound brought about the thinning of Sparrowhawk eggshells (first documented in 1947) and made them more prone to breakage during incubation.

Following on from this came the introduction of two other chemicals – Aldrin and Dieldrin, both of which resulted in increased mortality levels among adult Sparrowhawks. The combination of these two types of chemicals brought about a sudden and pronounced collapse of the Sparrowhawk population, driven by the direct mortality of adults and further exacerbated by a decline in breeding success. The net result was the almost total loss of Sparrowhawks from much of the arable-dominated landscape of lowland Britain. Once the impacts of these chemicals on Sparrowhawks (and indeed much of our other wildlife) was noted, restrictions on their use were introduced. Beginning in 1962, this brought about a slow recovery in the Sparrowhawk population and a gradual recolonisation of formerly occupied areas, something that has been well-documented by BTO surveys over the years. We now have a Sparrowhawk population that has bounced back, to the extent that birds are increasingly being reported from even the most urbanised areas. Sparrowhawks were reported breeding in inner London in 1993 for the first time in nearly four decades.

A WOODLAND LIFE

The Sparrowhawk can be found from Morocco, north to the boreal forests of Norway and east to Japan. Across this vast range it is primarily associated with woodland habitats, specialising in catching small birds and, very occasionally, small mammals, usually by surprise but sometimes by active pursuit. Northern populations are migratory, while more southerly populations (including those found in Britain and Ireland) are sedentary in nature. Evidence from bird ringing shows that some birds from Norway and Denmark pass through eastern England and northeast Scotland during both autumn and spring migration; some even overwinter here.

Pairs tend to form fairly early in the year, often several months before they actually get around to producing any eggs. If you are fortunate, then you may witness the pair indulging in a circling display performed high above the wood or shelterbelt within which they are nesting. The nest itself is often constructed using the foundations of a nest built by some other species, usually Woodpigeon, to which are added various sticks. The nest is placed close to the trunk of a mature tree, with conifers preferred over deciduous trees, usually close to the edge of a ride or clearing to allow easy access for the birds. Nest building is a protracted affair, tending to take place during the morning and often taking a month to complete. Just prior to laying, the nest is lined with bark chips and fine twigs. Even though Sparrowhawks are almost always monogamous during the breeding season, most pairs break up at the end of the year and individuals usually pair with a new mate for the following season. Interestingly, given this change in partner, it is worth noting that pairs tend to establish a new nest very close to one used the previous year (typically within 100m of the previous nest). This means that the birds can be found using traditional sites over time within favoured blocks of woodland. Newly-hatched young are brooded by the female for the first two weeks of their lives, with the male delivering prey to the nest. Thereafter, the female will brood the young only if the weather deteriorates, sheltering them from the rain.

LITTLE AND LARGE

One of the most striking aspects of Sparrowhawk morphology is the difference in size that exists between males and females. Although it is not uncommon for male birds of prey to be smaller than their mate, the scale of the difference between male and female Sparrowhawk really does take this to an extreme. While a male Sparrowhawk will typically weigh between 110 and 196g, his mate is likely to weigh between 185 and 342g, which means that she can easily be double his weight. This pattern is known as reverse size dimorphism.

Such a difference in size between the two sexes stems from different reproductive roles. Female Sparrowhawks need to carry the extra body reserves required for successful reproduction. Males, on the other hand, are responsible for most of the prey provision during the early part of the breeding cycle. Their smaller size makes them supremely agile and efficient hunters, fulfilling the role of provider. The difference in size also means that, while males catch small birds (typically up to 40g in weight), females can exploit larger prey (usually up to 150g), which helps avoid direct competition for food within the pair. The two sexes also show a tendency to forage in different habitats, with females making greater use of open areas and males remaining within woodland.

FACT BOX

Common name:
Sparrowhawk

Scientific name:
Accipiter nisus

Family:
Hawks (Accipitridae)

UK population:
39,000 breeding pairs
winter numbers unknown

Conservation status:
Green listed

Migratory status:
Resident / winter visitor

Breeding:
Clutch size: 4–5 eggs
Incubates: 33 days
Young in nest: 27–31 days
Number of broods: 1
Breeding season: April–Sept
Age at first breeding: 1

Typical lifespan:
3 years

Max. recorded lifespan:
17 years, 1 month

www.bto.org/birdfacts

Caught on camera: Sparrowhawks will exploit small birds wherever they gather together to feed, including at garden feeding stations.

Sparrowhawk by Elizabeth Bigg

Sparrowhawk by Steve Round

THE BIGGER SEX

Female Sparrowhawks are much larger than males, a trait known as 'reverse sexual size dimorphism'. In many organisms the male is the larger sex but in most birds of prey it is the female that is the larger of the two. The degree of size difference increases with the speed and agility of the prey taken; hence, carrion feeders like vultures show little or no difference, while Sparrowhawks, which hunt very agile prey, show the greatest degree of variation.

Sparrowhawks breeding in some of our northern forests show large increases in breeding success following an increase in the availability of favoured prey, like Siskin and Crossbill.

Sparrowhawk nest and Siskin, both by John Harding

PREDATOR AND PREY

The recovery of the Sparrowhawk population has not been universally welcomed and some observers see it as a threat to smaller birds. Some have even gone so far as to suggest that it is the recovery of the Sparrowhawk population that has driven the decline of several small bird populations. However, such suggestions are not supported by the available scientific evidence.

A number of independent, scientifically rigorous studies have looked for potential interactions between Sparrowhawks and their prey. None of these studies has found any evidence that Sparrowhawk predation has had *any* long term effects on the breeding populations of songbirds, either at the national level (work published by Thomson *et al.* in 1998) or at individual sites (work published by Perrins & Geer in 1980 and by Newton *et al.* in 1997). Several studies carried out on tit populations in the non-breeding season, and looking at Sparrowhawk predation, demonstrate a reduction in the size of the post-breeding peak in tit numbers in the presence of Sparrowhawks, together with a change in the pattern of seasonal mortality. However, the size of the breeding population the following year remained unchanged, suggesting that Sparrowhawk predation is compensatory. By this, I mean that if the Sparrowhawks weren't killing a proportion of the population, a similar proportion would have died anyway from other causes, most notably through density-dependent competition for food over the winter resulting in starvation).

Small birds are an important component of Sparrowhawk diet, and recently-fledged songbirds are particularly important – Sparrowhawks time their breeding season to coincide with the peak availability of these inexperienced youngsters. The importance of this crop of young fledglings to Sparrowhawk breeding success can be seen from studies involving the annual monitoring of Sparrowhawk nests. Steve Petty and his colleagues, working in Kielder Forest in northern England, recorded a seven-fold increase in Sparrowhawk productivity in a year when Crossbill and Siskin populations peaked following a heavy cone crop. This makes sense from an ecological viewpoint, with the availability of prey influencing the size of the predator population.

SPARROWHAWKS AND MAN

If the available evidence suggests that Sparrowhawks have not had any long-term effect on their prey populations, why is it that so many people get very animated by the presence of a Sparrowhawk in their garden? Perhaps it says more about our cultural responses to this particular form of 'bird-on-bird' predation. After all, do those who vilify the Sparrowhawk view the Kestrel or Barn Owl (predominantly small mammal predators) in the same manner, and how do they feel about Blackbirds feeding on worms or Song Thrushes smashing open snail shells? All are acts of predation; it is just the predator and prey that differ. Is it the case, then, that our tendency to cast the Sparrowhawk into the role of villain is a reflection of the different values we place on particular groups of organisms, with small birds coming higher up the scale than small mammals, which in turn score higher than invertebrates? Many would argue that we should welcome the Sparrowhawk into our gardens as a sign of a healthy environment. Freed from the persecution of an earlier age, and from the pesticides that did so much damage, the Sparrowhawk population is in recovery. It is a conservation success story and one that owes much to the researchers and campaigners who identified the problem and effected a solution.

It can be difficult, however, to watch nature so 'red in tooth and claw', and it is right that we should question the role of garden feeding in the balance between predator and prey. We know, from research, that small birds balance the risks of predation against the need to feed. One particular study showed that bird feeders close to cover (where the risk of Sparrowhawk predation was reduced) tended to be used by dominant (*i.e.* adult) tits, while young birds were forced to feed at the more exposed feeders where, presumably, the risk of predation was greater. Other studies have shown that birds vary the times at which they feed in response to the availability of food and whether or not the food resource is predictable. Where food supply is predictable (such as is the case at garden feeding stations) birds can take small amounts of food, knowing they can return later for more when needed. In this way, they can maintain their body weight at a lower level and, presumably, remain more agile in flight, making escape from a predator more likely. Where food supply is unpredictable, it makes sense to eat as much as you can because you do not know where the next meal is coming from. Being heavier, this strategy is likely to make you an easier target for a predator. So, in this context, garden feeding has a role to play, by providing small birds with more options.

IDENTIFICATION

Male Sparrowhawk by Steve Round

Sparrowhawk is by far the most common bird of prey to be encountered within the garden environment. The two potential confusion species, Goshawk and Merlin, are virtually never encountered visiting gardens and can usually be discounted on this basis alone.

General appearance: A small, broad-winged raptor, showing a long tail and appearing small-headed. The upperparts are dark (sometimes with white patches present – see below) and the underparts finely barred. When perched, note the long, thin yellow legs.

Adult male: Smaller (wingspan 58-65cm). Has slate-grey upperparts and white/off-white underparts. The underparts show rufous barring, which varies in pattern and extent between individuals. Some individuals are evenly barred while others are almost completely rufous on the cheeks, throat and flanks.

Adult female: Larger (wingspan 68-77cm). Has brownish-grey upperparts, with off-white underparts with barring that is less rufous in tone. The rufous colouration seen in males is usually much-reduced in females. The white supercilium (the line above the eye) is more prominent in females than in males and a white patch is often evident at the back of the crown.

Juveniles: Young birds have dark brown upperparts and the barring on the dirty white underparts is coarser than seen in adults - sometimes appearing more like spots towards the top of the chest.

Eye colour: In Sparrowhawk, the iris colour changes with age. Brownish-black at hatching, the iris becomes pale lemon yellow within a couple of months. As the birds age, the iris goes from yellow to orange and, in some adult males, wine red.

Male Sparrowhawk by Steve Round