

Feeding habits of the Great Grey Shrike in winter

By Horst Mester

STOKOE (1961) and Harrison (1961) described Great Grey Shrikes *Lanius excubitor* persistently chasing small birds and the latter suggested that hunting flight might be more usual than the surprise swoop from a perch which *The Handbook of British Birds* infers is the regular method of capture. In fact, such chases are not uncommon, but Steinfatt (1941) was more correct when he stated that the Great Grey Shrike hardly ever actually catches small birds except by surprising them. The same comment was made by Fellenberg (1958) who watched unsuccessful pursuits of a Meadow Pipit *Anthus pratensis* and a tit *Parus sp.* The following experiences of my own near Fröndenberg, Germany, also illustrate this.

On 22nd March 1955, for example, I saw a Great Grey Shrike pursue a House Sparrow *Passer domesticus* a long way over grassland until the latter escaped around the corner of a building. Again, on the afternoon of 19th December 1959, I watched a Great Grey Shrike following a Bullfinch *Pyrrhula pyrrhula* for more than a quarter of an hour. The Bullfinch, calling anxiously all the time, was circling round a small shrubbery of willows and a row of poplars on the banks of the frozen Ruhr. It soon seemed exhausted and repeatedly tried to reach the bare branches of the trees, but the shrike succeeded in preventing this. Nevertheless, the Bullfinch was always able to avoid the swoops of the shrike and in the end the latter gave up the chase, and returned to the top of a high tree. Then a little later I saw the shrike not far away trying unsuccessfully to catch a Wren *Troglodytes troglodytes* which was flying along a narrow strip of broken-down sedge on the opposite bank of the river. Soon afterwards, however, it flew past with a House Sparrow in its bill and some time later I observed it carrying a vole or mouse in its claws. There was a thick cover of snow on the ground at that time and more was falling, while the temperature had been well below freezing for several days; I shall show later that food shortage in hard weather may cause this persistent chasing of small birds.

On the other hand, even fast-flying birds are sometimes caught by Great Grey Shrikes, though not necessarily in flight. In May 1956 I found the remains of a male Swallow *Hirundo rustica* beneath a shrike's nest in the Fröndenberg area, and both Buxton (1945) and Ryser (1948) recorded the taking of this species. Bäsecke (1941, 1956) also listed the Swallow among passerines brought to the nest for the young shrikes, as well as Skylark *Alauda arvensis*, Woodlark *Lullula arborea*,

Meadow Pipit and Yellowhammer *Emberiza citrinella*, and a treecreeper *Certhia sp.* which had been carried to the breeding place from a distance of at least one kilometre. A list of prey published by Chessex (1962) included not only Swallow but also House Martin *Delichon urbica* and Sand Martin *Riparia riparia*, as well as Skylark, Water Pipit *Anthus spinoletta*, Wren, Robin *Erithacus rubecula*, Whitethroat *Sylvia communis*, Firecrest or Goldcrest *Regulus ignicapillus* or *regulus* and a variety of tits, buntings and finches. Meadow and Water Pipits are both common victims in winter in my part of Westphalia owing to their terrestrial habits, particularly in boggy areas where the shrikes catch them by hovering or by a surprise swoop from a perch; Long-tailed Tits *Aegithalos caudatus* have also been taken by these shrikes in this area on a number of occasions. I have not attempted a comprehensive list of the birds recorded as prey because that would be almost endless, but the above and other records mentioned later will give an indication of the normal range of bird victims; in effect, almost any small passerine is likely to be taken and Chessex even recorded fruitless attacks on a Hoopoe *Upupa epops* and a Little Egret *Egretta garzetta*!

Bannerman (1953) wrote that he had never seen 'a shrike attack and kill a bird' nor had he 'read any account of *how* this feat is managed. It seems incredible that it can kill birds as large as a blackbird or fieldfare, unless sickly individuals fall prey to its cruel beak.' The 1905 edition of Naumann's classic work on the birds of Germany commented that the Great Grey Shrike mostly surprises small birds when they are settled, but that it also catches them in flight when it can drive them away from shrubs. This account went on to say that it usually takes them in its bill and feet together; that when swooping on another bird it always grips it from one side just like a hawk; and that it does not lack the courage to attack birds as big as Fieldfares *Turdus pilaris*, or even Partridges *Perdix perdix* which have got caught in deep snow. Carl Hennicke, the editor of the 1905 edition of Naumann's work, added records of one catching and killing a flying Song Thrush *Turdus philomelos* and a Blackbird *T. merula*.

Perhaps the fullest study of the Great Grey Shrike's hunting behaviour is that of Cade (1962) who, incidentally, concluded that 'aerial capture is exceptional and that birds are usually taken by surprise while perched on the ground or in bushes and trees'. He noted that special movements of the wings and tail—drooping the primaries, then momentarily sweeping forward the whole wing to flash the white patches and at the same time spreading the tail to display the white edges—are used as part of the hunting tactics. For example, 'when the prey has taken a stand in dense cover . . . the wing and tail movements produce a startling effect that sometimes flushes the prey into flight or into moving sufficiently to make itself more vulnerable to capture'. He also observed that the shrike catches birds with its feet

in the same way as an *Accipiter* does and that it kills them by biting into the neck like a falcon. On the other hand, it does not usually grab rodents in its feet because it is likely to be bitten if it does so; instead it dances about on the ground, reaching in to deliver quick bites at the neck. He found that small rodents of up to 25 grams are killed in a few seconds, but that larger ones weighing 50 grams or more may take several minutes and many bites; with rodents of 80 to 100 grams, the largest the shrike can kill, the wing flashing is again brought into play.

Niethammer (1937) stated that small animals (birds, mammals, frogs, lizards, insects) are killed by blows with the beak and raking with the claws. In flight, too, as shown by my own observations described earlier, the Great Grey Shrike carries its prey either in its bill or in its feet. Bent (1950) found that it was carried nearly twice as often in the bill as in the claws. On 24th December 1958 I watched one crossing a pond with a vole or large mouse in its beak. Its flight was heavy and swinging until it hovered and quickly transferred the prey to its talons. It may be added that another group of passerines which occasionally seize animal prey in the feet is the crow family. There are records of this for the Carrion/Hooded Crow *Corvus corone* as well as for the Common Crow *C. brachyrhynchos* of America (Bauer 1961, Hulse and Atkeson 1953, Mester 1959, Tönnies 1960).

Both Naumann (1905) and Brehm (1913) said that small passerines were not apparently hostile towards the Great Grey Shrike. Other 'amateur' birds of prey are often not mobbed by small birds and I have watched a Jay *Garrulus glandarius* and a flock of Yellowhammers perching together in the bare branches of a tree in the winter sunshine. Thielcke (1956), describing the Great Grey Shrike's tactics in hunting voles and mice, mentioned that its small and apparently harmless appearance presumably greatly increases its chances of surprising these small rodents. On the other hand, Berck (1951) noted that fledgling Wheatears *Oenanthe oenanthe* flee all birds of prey except the Buzzard *Buteo buteo* and are especially startled by the sight of a Great Grey Shrike. A similar opinion was expressed by Bent (1950) who stated: 'Small birds easily recognize the difference between a shrike and some other harmless bird, and immediately "freeze" in their tracks, or seek shelter in the nearest dense cover.'

But do all small passerines know this enemy instinctively? There have been few systematic enquiries to find out what species are (innately?) agonistic towards shrikes, apart from the experiments of Dancker (1956) who investigated the reactions of a pair of Yellowhammers to dummy Red-backed Shrikes *Lanius collurio*. The fact that some birds react to shrikes as enemies, while others do not seem to be worried by them, could perhaps be explained by differences in individual experience. In other words, it seems likely that such

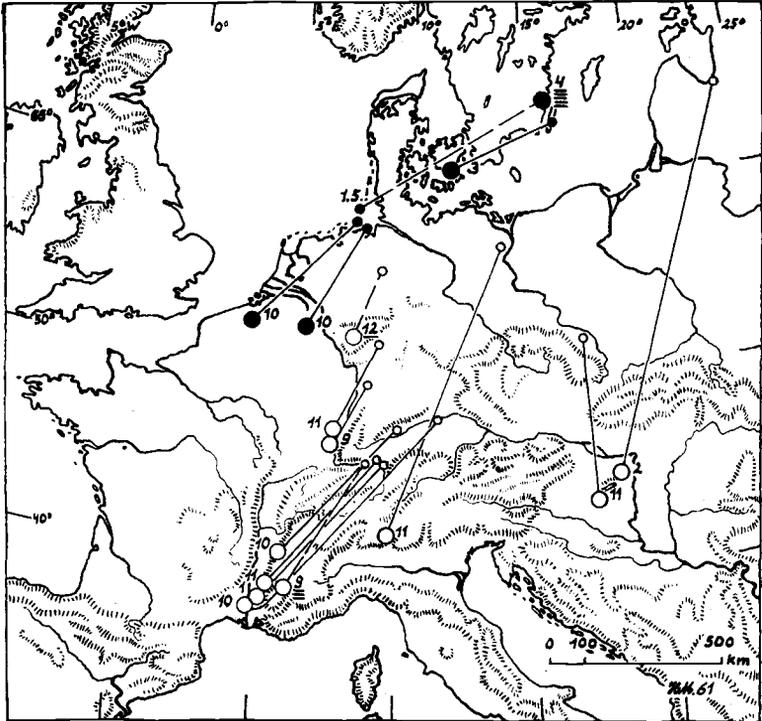


FIG. 1. Map showing migration movements of the Great Grey Shrike *Lanius excubitor* in central Europe (after Schüz 1957). The small and large open circles respectively show the ringing and recovery positions of birds marked as young in the nest; filled circles similarly illustrate birds ringed on migration and recovered in winter. The numbers show the months of recovery and in one case the date of ringing (1st May); this latter record was different in that the bird was ringed on spring migration and recovered over 600 kilometres to the north-east in a subsequent April, whereas the other three migrants were ringed in October and recovered to the south-west in winter. All recoveries were within a year of ringing except those underlined which were respectively one, three and five years later

behaviour is conditioned by learning in most cases and that only a few species possess an innate mechanism which causes them to flee from or attack a shrike. In this connection, the observations of Lind (1962) seem to show that House Martins *Delichon urbica* have a permanent (innate?) hostile reaction to the shape and coloration of the Great Grey Shrike.

Some authors, such as Bannerman (1953), have commented on local fluctuations in the numbers of Great Grey Shrikes. Heyder (1952) noted that the Great Grey Shrike's distribution in Saxony in the winter seemed to be affected by the population cycles of voles and mice. The

Great Grey Shrikes of central Europe, which belong to the northern race *L. e. excubitor*, provide a good example of partial migration, the directions they take being mostly south to south-south-west (see fig. 1); as one might expect, more young than adults seem to migrate. In this connection, Schüz (1957) raised the question whether the Great Grey Shrikes of Europe and Siberia are eruptive, even to a small extent, as are the North American races *L. e. borealis* and *L. e. invecus* to a marked degree according to the density of lemmings *Dicrostonyx spp.* and other small rodents. However, this does not seem to be the case, or at least not to the same extent, as in America. This can probably be explained by differences in food, but little is known about these.

There have been few quantitative studies of the food of the Great Grey Shrike. However, Bayer (1950) analysed 139 pellets which he found below the perches of one of these birds in southern Germany between autumn and the end of January. These showed that even quite late in the year a large number of invertebrates are taken, for they contained the remains of 124 insects (61.4% of all individual items), especially beetles and earwigs as well as grasshoppers, wasps and a hornet; there was also a spider. The vertebrate prey consisted of 76 voles *Microtus* (37.6% of all individual items) and one small bird of unknown species. This sample thus illustrates what I feel sure is normal—that voles form the bulk of the food of the Great Grey Shrike. However, Medicott (1945) recorded that one in Yorkshire in February and March fed largely on beetles and other insects and a tin of castings he collected consisted almost exclusively of the remains of the large beetle *Ceratophyus typhaeus*. Incidentally, this particular shrike was seen to pursue a Blue Tit *Parus caeruleus* for a hundred yards, even passing through a hay shed, and this chase was evidently successful for the warm body of the Blue Tit was later found spiked on a thorn bush.

Since many small birds are taken at times, there arises the question whether this is the result of individual specialisation (as is well known for some species of birds of prey). On the other hand, of course, all individuals are forced to turn to birds and other alternatives in cold weather when small rodents become scarce. A thin cover of snow may make it easier for the shrikes to catch small mammals, especially *Microtus agrestis* as Leivo (1942) found near Helsinki in Finland, but when these remain hidden by deep snow the shrikes must turn to small birds as their main prey. In such periods of food shortage they can be seen hunting round human habitations, presumably attracted by the birds concentrated around barns and other feeding places. On the edge of Fröndenbergl I once saw a shrike capture two Great Tits *Parus major* on a bird table within half an hour. Even so, protracted hard weather evidently causes considerable losses among Great Grey Shrikes (Schüz 1957).

Goethe (1948) drew attention to the strikingly retentive memory for places which is very characteristic of the Great Grey Shrike. Four instances of ringed individuals recovered in the same locality one or two winters later were noted by Schütz (1957), while Tucker (1942) and Boyd (1957) recorded the same individuals occupying territories in Hertfordshire and Cheshire in three and four successive winters respectively. The territorial behaviour of this species even during the cold season and its adherence to fixed winter quarters were demonstrated by the 'removal experiments' of Radtke (1956) who caught an adult female in the same territory at Wilhelmshaven, Germany, on six occasions and released it at distances of 2.5, 6.8, 5.6, 18.2, 15.2 and 37.2 kilometres; only on the last occasion did it fail to return. On the other hand, Bergstrom (1957) had only one rather slow homing success (eight weeks' absence) with five immatures and an adult released at distances of five to eight miles in Connecticut. In the area of Fröndenberg up to three Great Grey Shrikes appear every winter. There, in the pastures and marshy ground beside the river Ruhr the size of the territories they inhabit from October or November to March varies from about 100 to 150 acres (see fig. 2); each is a long strip along the banks of the river and across it and their boundaries are always plainly marked by regular perches. These territories were thus larger than those of 50 to 75 acres which Blume (1957) found in summer and winter in the mountain districts of Hesse.

The Great Grey Shrikes in territories B and C in fig. 2 were probably males as I heard them singing quite often when there was sunny weather in October or early spring. All three territories shown in fig. 2 were occupied for several winters before the four on which the sketch is based, but it seems hard to believe that the same individuals could have been involved throughout. On 14th March 1955, in fact, the feathers of a Great Grey Shrike were found in territory B—the remains of a meal of a Sparrowhawk *Accipiter nisus*.

Only once since 1948 has a pair of Great Grey Shrikes nested in these territories. The earliest autumn records I have are of two birds on 29th September 1958, one flying along the ditches south of the river and the other resting in the north of territory B, but these were both migrants and not winter visitors. In 1953 and again in 1955 a winter visitor arrived in territory B on 1st October. During 1957-62, when I made observations in greater detail, I recorded the following dates for the occupation of territory B:

- ? November 1957 to 1st March 1958
- 11th October 1958 to 27th February 1959
- 13th October 1959 to 14th February 1960
- 23rd October 1960 to 4th March 1961
- 15th October 1961 to 8th March 1962

According to skulls I found in the pellets of Barn Owls *Tyto alba*,

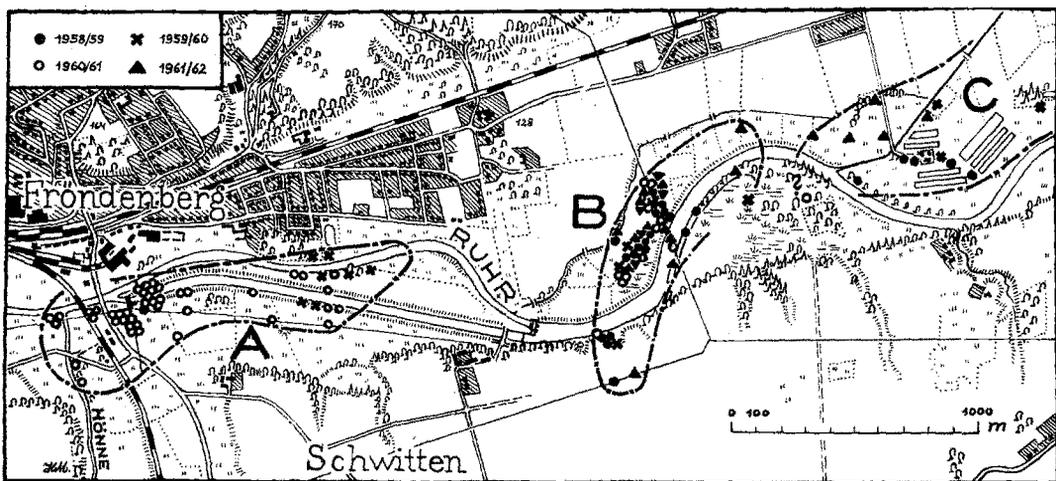


FIG. 2. Territories occupied by Great Grey Shrikes *Lanius excubitor* near Fröndenberg, Germany, in four successive winters. It is believed that during these four winters the same individuals were involved. Territory A consisted chiefly of pastures and the grass-covered embankment of a ditch, with only small shrubberies. Territory B was a swampy meadow with, in the part preferred by the shrike, a long hedge of hawthorn, some oaks and a high ash; at the western border of this territory, on the southern bank of the river, is the only place where the species has bred in this area since 1948 (this was in May 1956, but the hunting grounds of the breeding pair were not the same as those of the wintering birds). Territory C consists of water storage areas, as occupied in two other places a few miles along the valley of the Ruhr during recent winters

Little Owls *Athene noctua* and Tawny Owls *Strix aluco* during the winter of 1961/62, the commonest small mammals in the area of the three territories in fig. 2 seem to have been the Common Vole *Microtus arvalis*, the Field Vole *M. agrestis* and the Common Shrew *Sorex araneus* in a ratio of about 5:1:1, followed by the Yellow-necked Field Mouse *Apodemus flavicollis*, the House Mouse *Mus musculus*, the White-toothed Shrew *Crocidura russula* and the Harvest Mouse *Micromys minutus*.

The tendency for birds of prey and owls to prey particularly on abnormal and unfit animals has been discussed by Curry-Lindahl (1961), Eutermoser (1961) and Rudebeck (1950-51) among others. My own observations show that the Great Grey Shrike exerts a similar selective influence by reacting to prey which is slow to escape.

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