

British population is likely to be in the low hundreds, and expanding.

Acknowledgments

The authors would like to thank the Forestry Commission and private landowners and their agents, without whose assistance these studies would not be possible. Some fieldworkers who provided essential data wish to remain anonymous. Thanks are also due for invaluable assistance with fieldwork and sharing of information to Rob Clements, Mike Coleman, Malcolm Cowland, Tony Cross, Brian Etheridge, Phil Everitt, Roy Frost, Gerry Hinchon, Richard Jacobs, David Jardine, Andy Page, Wayne Percy, John Roberts, Nick Rossiter, Andy Rowlands, Cliff Smote, Mike Thornley, Reg Thorpe, Dave Walker, Iolo Williams.

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Pair-hunting by large falcons

The note by Lars Svensson on pair-hunting among large falcons *Falco* (*Brit. Birds* 94: 289-290) prompted a number of responses. David Christie very kindly agreed to collate these for *BB*, and a selection is published below.

Lanner Falcon

Pair-hunting is a well-known behaviour of the Lanner Falcon *F. biarmicus*, having been recorded decades ago in Sicily (Mebs 1959) and in Morocco (Brosset 1961), and subsequently mentioned by, for example, Glutz von Blotzheim *et al.* (1971), Cramp & Simmons (1980) and del Hoyo *et al.* (1994). An accurate description of pair-hunting by this falcon, each partner flying in turn to flush birds from cliff walls, is given in Glutz von Blotzheim *et al.* (1971, p. 833).

In early January 1983, at Niamey, Niger, I observed two pairs of the local Lanner Falcon subspecies *F. b. abyssinicus* regularly pair-hunting over flocks of Garganeys *Anas querquedula* and Ruffs *Philomachus pugnax* which were resting or feeding on flooded banks of the River Niger (see *Malimbus* 10: 36). More recently, Leonardi (1999) gave another account of this behaviour (see also Bonora & Chiavetta 1975).

Svensson suggested that the somewhat less pronounced sexual size dimorphism of the

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largest falcons, the Gyr *F. rusticolus* and Saker Falcons *F. cherrug*, could favour pair-hunting, but differences in flight performance between, for example, the Lanner Falcon and the Peregrine Falcon *F. peregrinus* seem to me a more important explanation (see Jenkins 1995).

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I found the content of Lars Svensson's note very interesting, but his statement regarding the lack of mention of this behaviour in the literature is incorrect. Pair-hunting by Lanner Falcons *F. biarmicus*, for example, is mentioned in *BWP* (Vol. 2). My own observations on this species, published in 1991 (*Journal of Raptor Research* 25: 77-81), include the report that, in late December, males and females were seen to hunt co-operatively on 11 occasions. The male mainly flushed and chased the prey, usually in the direction of the female; the prey, upon detecting the female, would either turn back towards the male or continue flying into the

flight path of the female. Pair-members were seen to hunt together again after their young had fledged, when parents were also observed to teach the young co-operative hunting by incorporating them in their foraging expeditions. I found that co-operative hunting between mates enhanced hunting success and was practised most frequently prior to the breeding season. Females had significantly greater hunting success than males when co-operatively hunting with young.

A most interesting paper on the subject of co-operative hunting was published by D. P. Hector in 1986 (*Ethology* 73: 247-257).

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Peregrine Falcon

In May 1997, in Bedwas Caerphilly, Mid Glamorgan, I noticed a pair of Peregrine Falcons *F. peregrinus* about 800 m away. The male remained circling at a height of some 60 m, but I lost sight of the female. In front of me, a flock of racing pigeons *Columba livia* flew in fairly close proximity to the house where their loft was. A few minutes later, the female Peregrine, appearing as if from nowhere, flew down the drive below roof height and then climbed into the flock of pigeons, which scattered in every direction; two or three headed towards the male Peregrine, now much closer, which stooped at one of the birds, turned on its back and hit the

victim from beneath, the now-dead pigeon being caught by the female Peregrine.

In June 1998, again in Mid Glamorgan, a small group of us watched as a pair of Peregrines flew over a wood alongside the Mawddach estuary, the male flying lower than the female. A Coal Tit *Parus ater*, flushed intentionally or otherwise by the male, emerged from the wood and headed out across the estuary. It had covered 100 m or so when the female Peregrine stooped and caught it. Although this seemed to be co-operative hunting by a pair of Peregrine Falcons, it may have been a simple matter of chance.

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In North America, I have seen pair-hunting by adult Peregrine Falcons *F. peregrinus* frequently enough, in both the breeding and the non-breeding seasons, to have assumed that it was a well-known phenomenon. An interesting example occurred on 30th January 2001, at Bolinas Lagoon, Marin County, California, USA, when Keith Hansen, Annika Forsten, Antero Lindholm and I watched a pair of adult Peregrines successfully hunt a Sanderling *Calidris alba*. The chase started with the male Peregrine persistently pursuing the wader, with several close misses in near-horizontal flight chases and shallow stoops. After almost a minute of chasing, as the male pulled up from an unsuccessful dive when the Sanderling was forced to crash-land in the lagoon, the female Peregrine

made a stoop at the swimming wader, and for the next 30 seconds or more the two falcons alternated stoops and pull-ups over the Sanderling, which managed to fly for about 200 m before landing again in the water. This time, the female Peregrine simply flew in low, hovered while seeming to run on the water's surface, and deftly snatched the wader. Both falcons then flew to a nearby sandbar, where the female proceeded to eat the prey while the male stood about 3-4 m away, watching.

The sexual size dimorphism of Peregrines is more marked than that of Gyr *F. rusticolus* and Saker Falcons *F. cherrug*, suggesting that successful pair-hunting may not be overly compromised by pronounced size differences between the sexes.

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I have monitored the coastal breeding population of Peregrine Falcons *F. peregrinus* in Dorset from 1985 to date, with observations made principally between late May, by which time most pairs have young of at least ten days old, and late July, when most broods have been on the wing for at least three weeks.

During this time, I have witnessed several hundred hunting flights. Solitary hunting often occurs on breezy days, when one of the pair circles high over the breeding cliff, often for long periods, waiting for prey to fly into range (normally over the sea). On occasion, both adults hunt together in the same fashion, the male normally at greater altitude than the female, and both frequently chasing the same prey when it is sighted. On warm days, with little or no wind, the vast majority of hunts, probably at least 80%, are initiated from a perch: the Peregrines fly out from the cliff to intercept prey over the sea. I would estimate that well over 50%, and possibly as many as 75% of these hunts, involve both adults of the pair. If the observer is reasonably close to the cliff, it is usually possible to see both falcons flying out together. In my experience, it is normally the male that leads the chase, and which tends to fly higher, also appearing to be faster flying than the female (although this might be because of the male's smaller size and slightly 'whippier' wing action). Interception of the

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Lars Svensson's observations prompted me to refer to notes which I made in 1982 in the Aveyron valley, in the Massif Central, France, where I watched two pairs of Peregrine Falcons *F. peregrinus* at their nest sites over a ten-week period. On 24th May, the male of one pair stooped from a great height and struck a Wood Pigeon *Columba palumbus*; as the pigeon fell,

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At a site in southeast England, local observers have watched Peregrine Falcons *F. peregrinus* hunting in tandem on a regular basis since the species recolonised the area in the late 1980s. Typically, the two Peregrines are noted flying in the same direction (into the wind), one behind and above the other and the two separated by a distance of 50-100 m. In all cases, the 'leading'

prey often occurs well out to sea, the male usually making the first attack. If, as generally happens, this fails, then both falcons attack the prey more or less in turn, making a series of short stoops and attempted grabs. These hunts often develop into a furious chase, as the targeted prey flies as fast as it can towards land with both falcons in hot pursuit, all three often very low over the sea; if the initial attempted interception occurred well out to sea, it is not unusual for each adult to make five or six stoops at the prey before it makes landfall, where the hunt is often abandoned.

Pigeons *Columba*, at least, are remarkably adept at dodging at the very last moment, and of the very large number of joint hunts which I have witnessed, fewer than 20% resulted in prey being caught. On certain days, over ten instances of pair-hunting have been observed, all of which failed, while on other days, capture has been made with apparent ease in the first stoop of the first hunt. It is possible that, as other observers have noted, Peregrines hunt with less intensity on some days than they do on others.

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the female suddenly appeared, caught it in flight and carried it away.

Looking further through my notes, I find that one of the females was twice seen to be carrying a Eurasian Jackdaw *Corvus monedula*. On the only other occasion when I saw a male try for a Wood Pigeon, it was unsuccessful.

falcon attacks first, by stooping at a bird that is below it, the 'following' falcon then stooping at the intended prey. For both sexes, the impetus of the first stoop frequently leads into an upward attack, with a series of stoops and upward movements ensuing. In short, the two Peregrines are hunting together, and we have observed a number of kills under these circum-

stances. This behaviour has often been noted in windy, overcast conditions during the early spring, less frequently at other times, and without exception it has involved an adult male and an adult female, which we have assumed to be the ones breeding at the site. We have

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Aplomado Falcon

On 29th August 1995, near Oruro, in southern Bolivia, I observed a pair of Aplomado Falcons *F. femoralis* hunting co-operatively. The two took turns in actively chasing a Spot-billed Ground-tyrant *Muscisaxicola maculirostris*, presumably in an attempt to tire it out and eventually capture it, which they did. The sexes of this medium-large falcon, incidentally, differ clearly in size, the female being significantly bigger than the male.

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Merlin

During observations over the last 30 years, mainly in the Peak District National Park, in Derbyshire, I have witnessed pair-hunting by Merlins *F. columbarius* on three occasions, always close to nest sites. In the most recent incident, on 14th July 2001, John Atkin and I watched as a male began to pursue a Meadow Pipit *Anthus pratensis* in level flight over the open moorland at a height of about 20 m, while the female, in very active flight, rapidly rose to about 200 m

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Various falcons and other raptors

Co-operative hunting is more widespread among diurnal raptors than may be inferred from Lars Svensson's note, contrary to which I have little difficulty in finding easily available references to the behaviour. It is noted for the Peregrine Falcon *F. peregrinus* by, for example, Treleven (1977) and Ratcliffe (1993), the latter author stating that Peregrines hunt in pairs 'often... during courtship and when the young have fledged'. In his monograph on Eleonora's Falcon *F. eleonora*, Walter (1979) wrote that several solitary species of raptor hunt in pairs,

watched two different pairs exhibit this behaviour, and both passerines and pigeons *Columba* have been attacked. In addition, a single adult Peregrine is sometimes seen to pursue prey in level flight, with another adult circling overhead and, finally, stooping at the prey.

The monograph by Ferguson-Lees & Christie (2001), published after this observation was originally submitted, states of the Aplomado Falcon that 'More than most falcons, pair may work in tandem (in one study, two-thirds of all bird-hunts, with success rate of 45%, compared with only 21% when one falcon alone).'

Ferguson-Lees, J. & Christie, D.A. 2001. *Raptors of the World*. London.

above the pipit. As the female reached the peak of her climb, the male ceased chasing the pipit; the passerine then appeared to 'relax', whereupon the female stooped steeply at high speed towards it. We were unable to see the outcome, as both raptor and pipit disappeared into the next valley. On each of the previous occasions, the prey was also a Meadow Pipit; one hunt was successful, and the other not so. On all three occasions the method of hunting was similar.

citing the Golden Eagle *Aquila chrysaetos* and the Lanner *F. biarmicus*, Saker *F. cherrug* and Sooty Falcons *F. concolor* as examples. In addition, Chapman (1999) mentioned co-operative hunting by the Hobby *F. subbuteo*, Peregrine, Merlin *F. columbarius*, Eleonora's Falcon and Eurasian Sparrowhawk *Accipiter nisus* (see also Newton 1986).

Given the above references, Svensson's suggestion that pair-hunting may be linked to 'a somewhat less pronounced sexual size dimorphism' seems unlikely to be correct.

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EDITORIAL COMMENT Ferguson-Lees & Christie (2001, *Raptors of the World*) mention co-operative hunting as a strategy employed to various degrees by many diurnal birds of prey. For Lanner Falcon, for instance, they state that 'Pair-members not uncommonly hunt co-operatively', while Laggart Falcon *F. jugger* pair-members have been said to hunt usually in co-ordination, taking turns to chase and harry the prey. Co-operative hunting is a widespread phenomenon among falcons, although it seems not to have been particularly well documented for many species, especially the largest ones. Furthermore, the degree of sexual size dimorphism appears not to influence the extent to which pair-hunting is practised. We intend not to publish further contributions on this subject unless they add significantly to current knowledge of this behaviour.

Lars Svensson has responded as follows: 'Although I am overwhelmed by the massive response to my note, which helps to give a better-balanced and more complete picture of how pair-hunting is practised among raptors, the main point of my original note was to bring readers' attention to a regular habit which was, I thought, inadequately noted or described. It now emerges that the Peregrine Falcon, too, practises pair-hunting, in particular in association with breeding, and so the sexual size dimorphism seems less likely to be linked to this behaviour. I regret that I overlooked the mention in the literature of pair-hunting by Lanner Falcons, but for the other species I maintain that the habit was previously inadequately covered.'

Moorhen interspecific brood parasitism

The Moorhen *Gallinula chloropus* is an adaptable species which displays a diverse range of social and reproductive strategies, including intraspecific brood parasitism. This usually involves a female Moorhen laying between one and six eggs in a conspecific's nest (usually in a neighbouring territory) as well as in their own nest. In 1999, at the Wildfowl and Wetlands Trust Centre in Llanelli, South Wales, I observed what I believe to be the first documented case of Moorhen interspecific (between species) parasitism.

The site is populated by some 180 territory-holding Moorhens. One experienced pair has occupied one particular pond each year since 1999. During early spring 1999, there was substantial disturbance owing to construction of a new visitor building and enlargement of the pond. This caused the Moorhens and the only other residents of the pond, a pair of Common Coots *Fulica atra*, to abandon their breeding attempts. Eventually, after about ten weeks, the birds began to acclimatise to the disturbance and began courting and mating. The Common Coots constructed a nest in a stand of Yellow Iris *Iris pseudacorus* and often vigorously defended their area from the Moorhens, which

also showed signs of nesting in the same area. I visited the Coot nest daily, and four eggs were laid on successive nights. On the morning of Day 5, I found a complete clutch of five Common Coot eggs plus a single Moorhen egg which was also being incubated. On Day 7, the nest had been partially predated by Brown Rats *Rattus norvegicus*, and on Day 8 all the eggs had disappeared.

Subsequently, I found the Moorhen's nest within 3 m of the original Common Coot nest, containing six eggs. Using both egg measurements (width, length and mass) and details of colour patterns, I was able to confirm that the female Moorhen was the same as the parasite female which had laid in the Common Coot nest.

It is likely that this interspecific parasitism was atypical. It is possible that the female Moorhen may have been attempting to mitigate delayed breeding by laying an additional egg in the Common Coot nest. Whether the Coot was selected as a host by the Moorhen female because of mistaken identity, or whether it simply utilised a convenient potential host nest requires further investigation. It is, however, interesting to note that both these rail species