



**Plate 182.** Muirburn. Periodic burning of the heather, to encourage growth of new heather on which the grouse feed is often done to excess, leaving an unattractive, unproductive landscape that contributes to rapid run-off, erosion and flooding. Lammermuir, October 2015. © Ian Poxton

## Where have all the Merlins gone? A lament for the Lammermuir

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Back in the 1980s, the Lammermuir Hills of Berwickshire and East Lothian were very different from today. No giant pylons loped across the landscape, rutted estate tracks were few and far between, and wind farms as yet unimagined. Clumps of old Scots Pine and weather-beaten storage huts - often recycled railway wagons - dotted an undulating moorland covered in banks of deep heather, revealing here and there bare patches burnt either by shepherds or gamekeepers. Sheep-rearing and game-shooting rubbed along together as they had for generations.

Compared with now, winters were longer and colder, summers warmer and drier. When spring arrived, Skylarks and Lapwings, Curlews and Cuckoos, Redshanks, Dippers and Meadow Pipits were present in force, and even the casual visitor might come across a Ring Ouzel, Merlin or Short-eared Owl. Although the habitat looked tailor-made for them, Hen Harriers were rare, and the now ubiquitous Buzzard was unknown. Peregrines were also scarce, for the land formation offered

few obvious nesting sites. Undeterred, we created artificial ledges along steep-sided burns, hoping to tempt the odd pair to settle. Which they did. On one occasion, after two chicks had fallen into the water, the survivor was rescued by a gamekeeper and returned to the nest. Nowadays, such an action would be unimaginable.



**Plate 183.** The authors processing a brood of Merlins (Ian Poxton, sitting, Alan Heavisides, behind and Andrew Barker, right), Lammermuir, June 2003. © Mark Holling

This was the upland world three fresh-faced Lothian birders (Plate 183) first explored in 1984, when they launched their study of breeding Merlins, full details of which have now been published (Heavisides *et al.* 2017). It would last for 30 seasons, until an altercation with gamekeepers in 2014 led to its unexpected ending. By this time, we were well into our sixties and had grown reliant upon vehicular access to get about in the hills. When early in 2015 the usual permission to drive some of the moorland tracks was suddenly rescinded, we decided to call time on our work. By then, however, it was not just the attitude of once friendly gamekeepers that had changed. Above all, the look of the Lammermuirs themselves had altered almost beyond recognition. Wherever we watched there were now roads, wind turbines and power lines (Plates 184–185), and with the intensification of the heather management regime - the 'muirburn' - the hills had been transformed into a bizarrely striped patchwork of thin heather and charred earth (Plate 182).

Also gone by 2014, along with much of the deep heather, were the moorland shelter belts where old Carrion Crow nests could be reutilised by tree-nesting Merlins. These shabby woods soon proved attractive to Buzzards as they began their rapid spread across eastern Scotland. In 1984, we discovered a pioneer's nest in a mature plantation beside the Whiteadder Reservoir, but before very long this wood, home to Redstarts as well as Buzzards, had been felled, and the ground then reverted to heather. A decade later all these shelter belts had been chopped down - ostensibly they impeded the ease with which the moor could be driven by the beaters - and today, nobody would guess they had once formed an integral part of the Lammermuir landscape. Gone too by 2014, like most of the sheep whose needs they serviced, were the dilapidated goods trucks that offered safe nesting for Swallows, Pied Wagtails and sometimes even Barn Owls (Plate 186).



**Plate 184.** Pylons and hill tracks. During the study period a line of pylons was erected through the middle of the study area, and numerous hill tracks bulldozed. Lammermuirs, August 2016. © Ian Poxton



**Plate 185.** Wind turbines. During the latter part of the study period over 140 turbines were erected in two main clusters within the study area, Lammermuirs, August 2016. © Ian Poxton





**Plate 186.** Old railway truck. Throughout the study area there were several of these, together with derelict buildings and sheds, which were used for storage of hay bales. They provided ideal nesting sites for several species of birds. Most have now been removed. Lammermuir, August 2016. © Ian Poxton



**Plate 187.** Rail traps. In the early years of the study none of these were found in the Lammermuir, however in recent years there has been a massive proliferation with resultant by-catches of unintended victims, including numerous Dippers and at least two fledgling Ring Ouzels (pictured). Lammermuir, June 2013. © Ian Poxton

Formerly bird-rich watercourses are nowadays straddled by rail traps, sometimes set no more than 50 m apart. Their purpose is to eradicate Stoats and Rats but since their inception about a dozen years ago they have also killed amber-listed Dippers and red-listed Ring Ouzels (Anon 2014) (Plate 187). Conservationists are justifiably concerned about the proliferation of these traps, whose legality is often unclear. In 2014, we discovered a desiccated young Ring Ouzel in the same trap that had killed another juvenile Ring Ouzel the year previously. When we confronted the gamekeepers shortly afterwards an argument flared, eventually triggering the termination of our Merlin study. Recently, far away from the hills, one of us fell into conversation with a Lammermuir gamekeeper. Asked why the estates had decided to withdraw their cooperation after many decades of apparently amicable cooperation, he did not mince his words; the knowledge we were accruing about the way the moors are now managed was reckoned by many of his colleagues to constitute a threat to their job security. We had to go.

Today, Red Grouse are pampered as never before in the Lammermuir, but in the shooting industry's battle to protect them from any possible exposure to 'vermin', the hills have become a much poorer place for other native wildlife. Presumed to carry ticks which spread the louping ill virus, lethal to Red Grouse,

Mountain Hares have become an increasingly important target for gamekeepers. In the spring of 2014 alone, upwards of 1,500 Mountain Hares were 'controlled' in the Lammermuir, leading to widespread indignation when the extent of the cull was revealed in a Sunday newspaper. The landowners did not dispute the extent of the slaughter, while a spokeswoman for the Duke of Northumberland claimed in mitigation that all the carcasses from his estate had been sold to the local game dealer (Edwards 2014). However, there is a strong



**Plate 188.** Stink Pit. Not seen in the early years, these consist of piles of decaying remains of animals and are surrounded by snares, which are set to trap foxes that are lured in by the smell. The stink pit featured included numerous mountain hares, foxes, a roe deer, and fish heads in the plastic container. Lammermuir, April 2014. © Ian Poxton

chance some others will have ended up in the 'stink-pits' warmly advocated by the Game & Wildlife Conservation Trust in its 'Middens factsheet' (GWCT 2015), and increasingly used as another form of 'vermin' control in the Lammermuirs. Carcasses of Foxes, Stoats, Mountain Hares, Roe Deer, Pheasants, corvids, even fish heads, are bundled into a trench and left there to rot. Snares are then set up around the pit, to lure Foxes attracted by the stench from the midden (Plate 188).

Because today's intensified rearing regime makes Red Grouse very prone to disease, ever more extreme measures are now taken to preserve their fragile health. During the hours of winter darkness, they are dazzled by powerful lamps before receiving medication. In addition, numerous trays of medicated grit are now laid out across the hillside for the grouse to ingest at leisure. What effect such uncontrolled dosing may have on the health of the humans who eventually consume these birds is yet to be examined. The shooting fraternity's refusal to abandon the use of toxic lead shot adds a further

layer of potential poison to a grouse supper. Did the Scottish Moorland Group bear this in mind when it launched the publicity campaign extolling the 'Gift of Grouse' (SMG 2015a)?

The changes we saw unfolding during our long study in these hills were not exceptional, but typical of a process repeated across upland Britain wherever Red Grouse are intensively managed for recreational shooting. Whether they even remain truly wild birds is debatable. What is unarguable, however, is that the intensification of land management in the Lammermuirs, coinciding with major shifts in weather patterns and the industrialisation of the landscape in connection with power generation, has coincided also with a significant slump in the fortunes of nearly all wild birds living there with the exception of Red Grouse.

By the time our study ended, it was evident that Merlins in the Lammermuirs were having a hard time of it, even though there was thankfully no evidence of their illegal persecution. On the contrary, many keepers and landowners showed

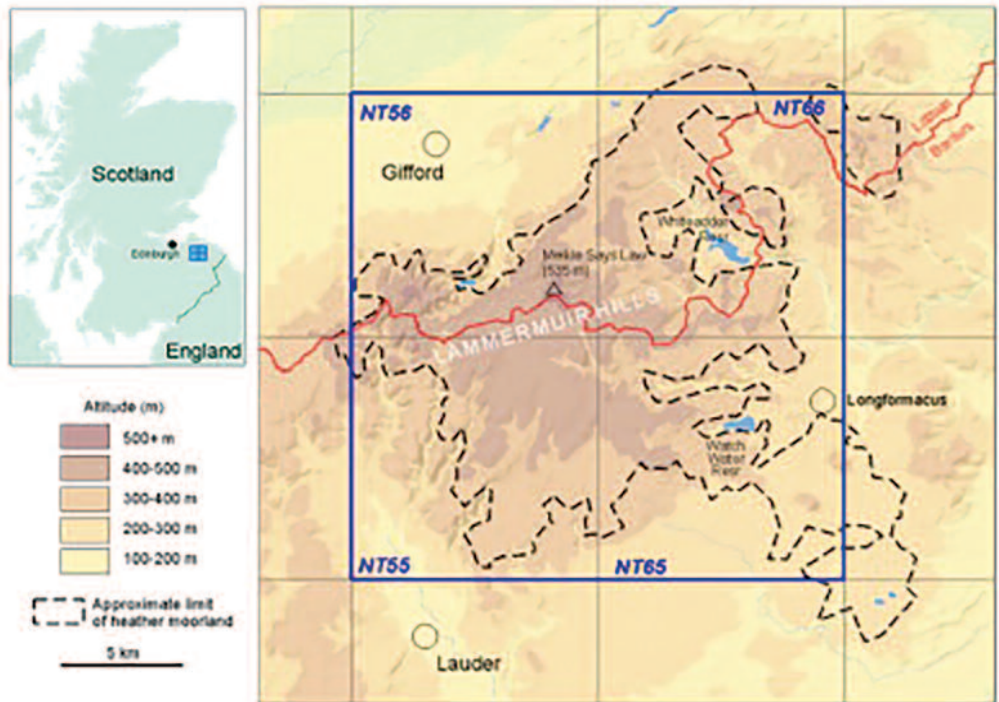


Figure 1. Map showing location of the Lammermuir Hills, Lothian/Borders.

an enlightened attitude towards the species, which they consider no threat to Red Grouse, and seemed happy to support our endeavours. Before the start of the breeding season we would write to several landowners informing them of our work, and at the end of every year we submitted ringing data to the British Trust for Ornithology. Summaries of our study went to recorders and were published in local bird reports; we also published annual summaries in the reports of the Lothian and Borders Raptor Study Group. After 2004, summaries were also sent to the Scottish Raptor Monitoring Scheme and subsequently published in its reports.

The study area comprised an area of about 350 km<sup>2</sup>, with the fieldwork taking place between the end of March and late June/early July (Figure 1). Armed with the necessary licenses and permits, we began the annual cycle by establishing roughly where Merlins were holding territory. This could be a long, wearisome process, and as the population declined, it was not unknown for weeks to elapse without us catching sight of a Merlin. Having eventually determined their territory, we would then carefully watch as the birds returned to the nest. Once the eggs had hatched, we waited until the chicks were almost ready to fledge before ringing them. Prior to this we weighed and measured the birds to establish their sex, since males and females require differing ring sizes.



**Plate 189.** A brood of five nestling Merlins at the ideal age for ringing, Lammermuirs, July 2009. © Ian Poxton

Over the years, we eventually established 38 potential breeding territories, although the largest number of nests found in a single year never exceeded the 13 located in 1989. Our lowest tally was the three nests found in 2012. The lack of human disturbance in these undramatic hills, coupled with the intensively managed nature of the terrain itself, which reduced the threat from land predators like Foxes and Stoats, meant that the breeding success of Merlins was consistently high even as the breeding population went into steep decline. The reasons for the fall in the Merlin population, which conceivably could lead to local extinction, are complex. They may be linked to conditions on the breeding grounds and to problems with winter food supplies once the Merlins have departed from the Lammermuirs at the end of the summer (Heavisides *et al.* 2017).

Recoveries from the 732 (mostly nestling) Merlins (Plate 189) we ringed over the course of our study showed that most wintered in lowland areas of the UK, where the numbers of the farmland birds they depend upon for food have dropped steeply in recent years. As a result, fewer Merlins may be returning to the Lammermuirs to take up territory in spring, and those that do come back may not be in optimum breeding condition. On arrival, they now find fewer areas of suitably deep Heather for them to breed in than before, while large areas of sterile burnt ground no longer provide either the nesting habitat or the potential food source for the Meadow Pipits which Merlins in turn rely upon as their chief source of prey (Heavisides *et al.* 1995). It may be no coincidence that when the conservation status of Merlin changed from 'amber' to 'red' in December 2015, that of the once omnipresent Meadow Pipit itself turned from 'green' to 'amber' (Eaton *et al.* 2015).

Colder, wetter springs affect not only Grouse and Merlins but all other birds in the Lammermuirs. Throughout our study, during which we repeatedly checked the same places at roughly the same time, we made a point of ringing all the wader chicks we were able to catch. In effect, the parts of the Lammermuirs we visited gradually became akin to what ringers



term a 'constant effort site'. When we reviewed our data after the conclusion of the study, it was palpable that the decline in wader numbers was as significant as the drop in the Merlin population. For many years, we would ring roughly 100 wader chicks annually - predominantly Lapwing, Curlew, and Oystercatcher - but by the end of the study that number barely crept into double figures (Heavisides *et al.* 2017). Curlew numbers in particular had plummeted, pointing perhaps to the well-attested impact upon them of large-scale wind-turbine developments (Brown *et al.* 2015). However, as with Merlins, the factors behind the collapse of the breeding wader populations are complex and not fully understood. The grouse industry insists that its management practices encourage excellent breeding conditions for waders (The Moorland Association 2014), but this does not appear to be the case in the scorched, degraded heather monoculture which constitutes the Lammermuir Hills today.

Over the three decades of our study, the Lammermuirs became increasingly devoid of what were once regularly occurring species. By 2014, Grey Partridges and breeding Short-eared Owls were a thing of the past, while the sound of the Cuckoo had grown ever rarer. Burns which had previously held good numbers of Dippers and Common Sandpipers now seemed to us to hold fewer than before. Whether this is partially attributable to the indiscriminate use of rail traps or to the accumulated effect of muirburn upon the water quality and its invertebrate life is hard to say (Brown *et al.* 2014). It could, of course, be neither. Almost certainly, however, breeding opportunities for Ring Ouzels have been reduced by the incineration of the heather along steep-sided cleuchs, contrary to the Scottish Government's code of practice for muirburn (The Scottish Government 2011). A more surprising development is the fatal attraction which rail traps seem to hold for young Ring Ouzels.

The parlous state of the Hen Harrier on driven grouse moors being the subject of intense scrutiny and increasingly acrimonious public debate, readers of this journal may well ask how these birds fared in the Lammermuirs, whose habitat seems eminently suitable for them. Our

records reveal we discovered just three Hen Harrier nests over the entire period, the last one being found in 1994. Their very absence from these hills of course constitutes ground for suspicion in itself, and we have little doubt that they remain unwelcome in the Lammermuirs. Hen Harriers being such easily observed birds, their whereabouts can never remain secret for long. Nevertheless, when from time to time we did come across them, our hopes were always raised, and never more so than when watching a pair sky dancing. On one occasion, quite early in our study, we decided to inform the gamekeeper of their presence. We gambled that if he knew that we knew harriers were on his patch - he was bound to discover them anyway - then he might just feel constrained to leave them alone. Unsurprisingly, that was the last we saw of them, but a lesson had been learned.

Latterly, as we observed the steady decline in the breeding bird populations of the Lammermuirs (apart from Red Grouse and the introduced Red-legged Partridge) the more we questioned how, and in whose interests, this publicly subsidised land is managed. Inevitably, given the nature of the evidence, we concluded that just one thing really matters for the majority of those who own and manage the land today: its capacity to produce higher numbers of Red Grouse for recreational shooting than are naturally sustainable. The interests of everything else appear subsidiary. However, growing public disquiet at their behaviour is putting pressure upon landowners at least to appear more environmentally responsible, and this can lead to oddly contradictory behaviour. In the Lammermuirs, as one estate grubbs out the last remnants of semi-natural birch scrub, another plants native hardwoods, perhaps to encourage the revival of the vanishing Black Grouse. A further estate advertises its efforts to conserve Juniper scrub and to restore moorland peat by blocking drainage channels, but still burns acres of ground every year (SMG 2015b).

As we took our leave of these hills and their birds, we wrote to the landowners and their gamekeepers, thanking them for their cooperation in what had become one of the longest-running studies of its kind in Britain. We expressed gratitude especially to those who had

remained willing to grant us continued vehicle access to their estates. To others we suggested that by thwarting our ability to collect important scientific data they might risk reputational damage at a time when the activities of sporting estates are under increasing and frequently hostile scrutiny from several angles. We received just two replies; one of which, from the Lammermuirs Moorland Group, promised a more detailed response which has never materialised. That our presence on these moors ended in such an abrupt manner remains for us a matter of frustration and regret. Although we cannot pretend to have provided the answers to why so many bird species are faring poorly in upland areas like the Lammermuirs, we know that the future absence of the data we consistently provided over such an extended period will do nothing to help remedy an increasingly disturbing situation.

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