

Haliaeetus albicilla (Linnaeus)



White-tailed Eagle, Skye (Skye & Lochalsh), June 2006 © Iain Leach

(Sea Eagle, White-tailed Sea-Eagle, Erne)

Iolaire-mhara

Breeding: 32 pairs

Winter: c. 250

UK Red List

Schedule 1

RBBP A

Main threats: pollution; persecution, especially poisoning.

World range and taxonomy

Palaearctic. Monotypic. Breeding range extends from Greenland and Iceland, across northern Europe, locally through eastern Europe and across northern Asia and Siberia. Although some European populations are resident, a small number of migrants winter south to France. Most of those further east are migratory, wintering in the southern parts of the range south to the Black Sea and Iraq and east to northern India and south-east China (Love 1983).

Habitat

In Scotland occurs in both inland and coastal habitats. In the past probably bred in lowland woods near estuaries, marshes and lochs, but during its decline in the 19th century became more restricted to the coast (Love 1983). Nests were usually on steep cliff ledges although trees were used wherever available. Since its reintroduction to Scotland, many old cliff sites are being reused, but some pairs prefer coastal woodlands or new forest plantations. In winter, adults tend to remain in the vicinity of their breeding territories, while juveniles and immatures range much more widely, often being found around estuaries on the east coast, and occasionally inland in agricultural areas or moorland.

Scottish range, distribution and status

White-tailed Eagle, following a successful reintroduction in the 1970s and 1980s, has consolidated its position, so that there are now over 30 territorial pairs, mostly on the Inner and Outer Hebrides and on the west coast. Non-breeding, sub-adult birds wander over large distances and have been observed well away from the west coast breeding areas all over Scotland. A very small number of continental birds are also seen as passage birds and winter visitors.

Early evidence for the presence of White-tailed Eagle in Scotland include bones found in a Bronze Age burial cairn in North Ronaldsay (Orkney) (Hedges 1984), and the species is beautifully portrayed on various Pictish symbol stones, with the best being from the Knowe of Burrian, Mainland (Orkney) (Love 1983, 2003). It also features in early Celtic art, and particularly in Anglo-Saxon poetry in which eagles are described as scavenging off human corpses after a battle. James Fisher (1966a) considered that the mention of eagles in the 7th century Old English poem 'The Seafarer' referred to the Bass Rock (Lothian). Over the centuries the felling of ancient woodland and the drainage of fens and marshes caused it to disappear from many lowland areas in England. A few pairs persisted in southern Scotland, such as the Mull of Galloway and Cairnmore of Fleet (both Dumfries & Galloway), as recorded by early naturalists (Gladstone 1910a). By the 19th century, it had become largely a bird of the north and west coasts of Scotland and Shetland.

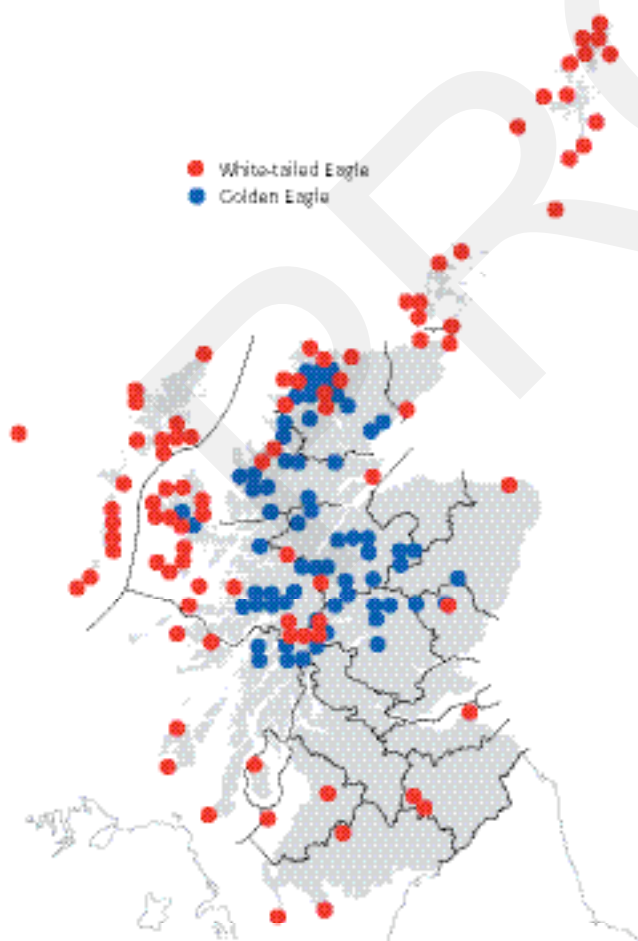
White-tailed Eagles are much more approachable, and more tolerant of human presence, than Golden Eagles, which makes them particularly vulnerable to persecution, by shooting and, given their carrion-feeding habits, especially amongst juveniles, poisoning. Other human factors such as over-fishing inshore, and the clearance of woodland beside streams, with the resultant loss of fertility and fish stocks from freshwater lochs, may also have impacted on White-tailed Eagles. It is significant that two other raptors to disappear from Scotland at the same time

were the Osprey, a species much sought after by egg collectors, and the Red Kite, another carrion-feeder and an easy victim of poisoning. As White-tailed Eagle became rare late in the 19th century, its dull white eggs also began to attract interest. At this time the Highland Clearances forced people from inland habitats to those on the coast. The coastal nests of such conspicuous and noisy birds as White-tailed Eagles were well known. Increasingly they became the target not just for collectors, but also gamekeepers, and shepherds angry at lamb losses. In contrast, Golden Eagle, being a shy bird of the high mountains and glens, found sanctuary long enough to gain a respite from persecution during the two World Wars.

By the beginning of the 20th century White-tailed Eagle was almost extinct (*Historical Atlas*). A few nests persisted, such as on the Shiant Islands (Outer Hebrides), Ardnamurchan Point, Rum (both Lochaber) and the remote headlands of Skye (Skye & Lochalsh), with the last pair breeding at Dunvegan Head, Skye in 1916. In Shetland up to five pairs bred in 1899, but by 1910 only one pair nested on Yell, with the male dying that year (*Birds of Shetland*). The female was shot in 1918, the last native White-tailed Eagle in Britain. When White-tailed Eagles had disappeared, Golden Eagles, which were slowly recovering numbers, were able to occupy former White-tailed Eagle territories, even the very nest ledges, on the coast. Previously, both species had co-existed on larger, mountainous islands like Rum, Skye, Jura, Mull (latter two both Argyll) and Harris (Outer Hebrides), each species with its own specific set of ecological requirements. There may have been a measure of overlap, but they were unlikely to have been in direct competition. White-tailed Eagle is slowly regaining former haunts on the coast where it will always be the better adapted of the two species due to its ability to fish (Love 2003). There have been some detailed studies into the diet of the re-established Scottish birds which indicate that there is some overlap of diet between White-tailed and Golden Eagles, with the former taking more birds and fish, and that some White-tailed Eagles specialise on certain prey (Watson *et al.* 1992a, Madders & Marquiss 2003, Marquiss *et al.* 2003b).

White-tailed Eagle subsequently became a very rare vagrant to Scotland, with just seven records from the 1920s to the 1950s. Most of these were seen on off-shore islands and in coastal areas, with three observed on Fair Isle, two on Shetland, and singles on Canna (Lochaber) and Mull (Yeaman 1932, Waterston 1936, Carrick & Waterston 1939, *Birds of Shetland*). On the mainland the head of an immature was recovered in Kincardineshire (North-east Scotland) in mid-June 1942 (Pennie 1942), and a sub-adult was present well inland at Aviemore (Badenoch & Strathspey) on 23 May 1927 (Gordon 1927b). These vagrants were both immature and adult birds, likely originating from populations in Fennoscandia.

Careful guidelines were developed in the 1970s by conservation bodies to regulate animal reintroductions, for example, the persistence of suitable habitat, the removal of the original extinction factors, and a suitable donor population, which will not suffer as a result. All of this demands a thorough knowledge of the species' past history, biology and current status. *BE&R* began this process and Love (1983, 1988, 2003) provided greater detail. The former



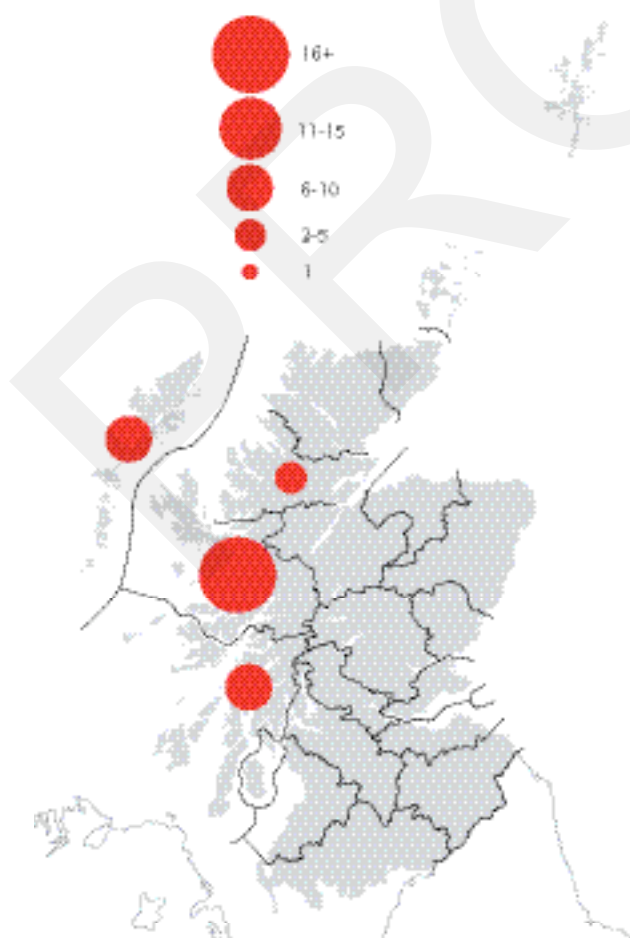
19th century locations of nesting White-tailed (red) and Golden Eagles (blue) in Scotland (after Love 1983)

distribution and demise of White-tailed Eagle in Britain, and in Scotland in particular, was analysed using place names, such as Eme's Heugh, Eme's Brae and Creag na h-iolaire, along with written accounts from sportsmen and early naturalists. In addition, museum collections of eggs and skins were utilised. This research revealed nearly 100 known nest sites in Scotland, and there would have been many others, especially if more information had been available from early lowland areas. It also showed the geographical separation between White-tailed and Golden Eagles.

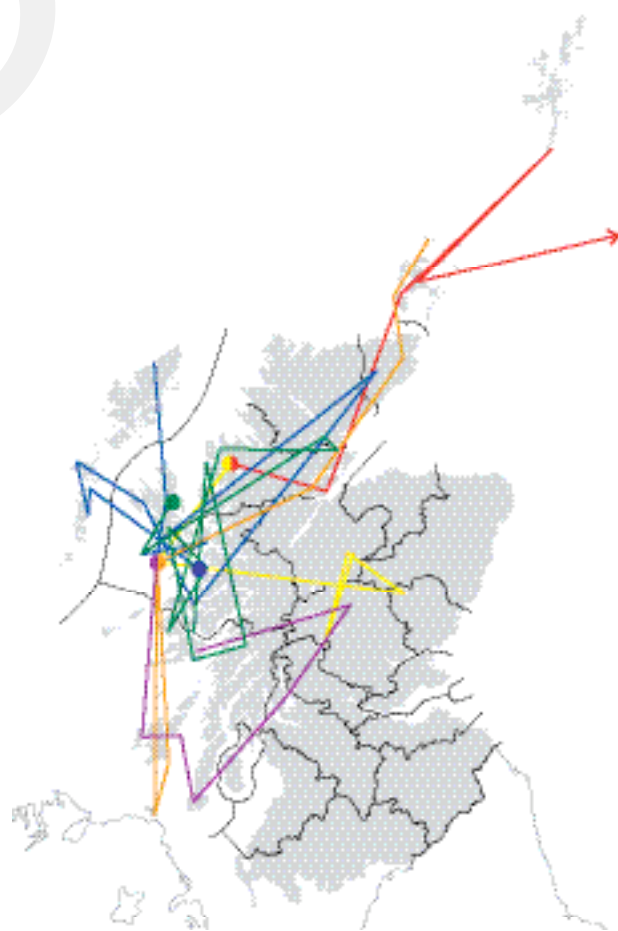
White-tailed Eagle was first reintroduced, unsuccessfully, in 1959 when three birds, including a captive adult, were set free in Glen Etive (Argyll) (Sandeman 1965). Four more birds were released in 1968 on Fair Isle (Dennis 1968, 1969b), but the first sustained effort began on Rum in 1975, and a total of 82 were released by 1985 (Love 1983, 1988). A second phase was operated from Letterewe (Ross & Cromarty), with 58 more birds released between 1993 and 1998 (Evans *et al.* 2003b). All but one of the eagles set free in Scotland were fledglings taken under licence from northern Norway. At least 10% of the released birds have been found dead, mostly while they were immature. Breeding in the wild commenced in 1983, and the first fledgling took wing in 1985. The first Scottish-bred birds nested in 1996, producing young two years later. Up to 2004 a total of 168 young had fledged in the wild and by then comprised nearly 60% of territory-holders (R Evans pers. comm.). By 2004 there were 32 occupied territories, confined to the west coast mainland and the Inner and Outer Hebrides, and the breeding population appeared to be self-sustaining.

The establishment of the reintroduced population was slow at first. No eggs were produced until 1983 when one of two breeding attempts involved a trio (a pair with a second female); both clutches were damaged as a consequence. Such trios have since been observed in the Scottish population several times, and may persist for several years. At the same time, a second pair formed between a three-year-old male and a four-year-old female (nicknamed 'Blondie'), but they soon deserted their single egg. It was this pair that eventually produced, in 1985, the very first eaglet to be reared in Scotland for 70 years.

By 1993, when the total fledged had reached 34, the number of established breeding pairs had stabilised around eight, from which only 2-7 young were being fledged annually, nearly all of them from the same three pairs (Green *et al.* 1996). Many of these young were just beginning to mature when a second phase of releases was initiated in 1993 to provide more recruits. When imports ceased in 1998 some of these second phase releases were already breeding. By 1998, there were 18 pairs on territory, most of them laying eggs, producing nine broods that fledged 13 young. The next few years saw the number of pairs increase slowly, but the number of young reared still remained around 12. However, 2003 proved a bumper year, with no fewer than 26 young flying from 25 clutches from the 31 territorial pairs. In 2004, 19 young fledged from 28 clutches produced by 32 territorial pairs. Such a significant rise in recruitment to the population will no doubt give another substantial boost to the population in a few years time and help assure its future.



Breeding distribution of White-tailed Eagle in Scotland



Movements of selected wing-tagged juvenile White-tailed Eagles in Scotland. 'Red 7' described in the text is red



White-tailed Eagle, Skye (Skye & Lochalsh), June 2006 © Iain Leach

Although at times several birds, including apparent adults, have been seen together in both Orkney and Shetland, it is surprising that none have yet remained there to breed. One immature sighted in Shetland in June 2001 bore Norwegian colour rings (*Birds of Shetland*). Another colour-ringed bird, seen at Loch of Strathbeg (North-east Scotland) in March 2004 was from the continent, probably from Finland. An immature recovered dead in Norfolk in 1984 bore a ring from northern Germany, thus supporting the possibility that European birds may occur in Scotland in the future. The only Scottish bird sighted in England was a blue-tagged bird, fledged in 2002, which was seen in March 2003 in Bowland, Lancashire.

Breeding cycle

The New Year sees adults already re-establishing territories and, in fine weather, indulging in courtship display and nest-building. The earliest recorded eggs in Scotland have appeared on 29 February, but most are laid in late March. Some are not produced until mid-April, by which time the first laid will be hatching. Normal clutch size is two, but three eggs have been recorded at least twice, supporting historic records of clutches of three eggs. Incubation is 38–40 days. Broods may be one or two chicks, and there is one case of triplets which fledged in 1997, though one of them was found dead only a few months later. Unlike Golden Eagles, White-tailed siblings rarely exhibit any aggression in the nest. The fledging period can vary from 10–14 weeks, occasionally longer, presumably depending upon food availability. The latest Scottish fledging date is 29 August 2000, coincidentally from the hundredth chick to be fledged following the reintroduction.

Young birds may remain dependent upon food supplied by adults for several more months, but observations from the reintroduction on Rum showed that some individuals, with access to food dumps, can develop on their own, without any parental example (Love 1983).

Juveniles from Rum have ranged as far afield as Northern Ireland and Shetland, but most were reported within 100 km of the island. A similar pattern was shown by the birds later released at Letterewe. During this second phase, about 300 sightings of young wing-tagged eagles were reported annually, totalling over 2,000 records between 1993 and 2002. Although most White-tailed Eagles are confined to the Inner and Outer Hebrides and the west coast mainland, young birds in their first two or three years may appear anywhere in Scotland. One was even seen over the centre of Glasgow (Clyde) in March 1996!

Tagged bird 'Red 7', set free at Letterewe in the summer of 1993, is a good example of ranging behaviour. It remained near the release site until November, was seen at Munloch Bay (Ross & Cromarty) from 4–9 December, before heading north to be next reported in Orkney on 25–26 April 1994, at Sumburgh Head, Mainland (Shetland) the following day, and then back again on Orkney on 29 April. This bird is unique amongst Scottish White-tailed Eagles, being sighted in Fraena, Norway in October 1994 where it began breeding in the summer of 2001.

White-tailed Eagles normally breed for the first time at about five years, but several Scottish birds have paired a year or two earlier in the absence of competition from existing

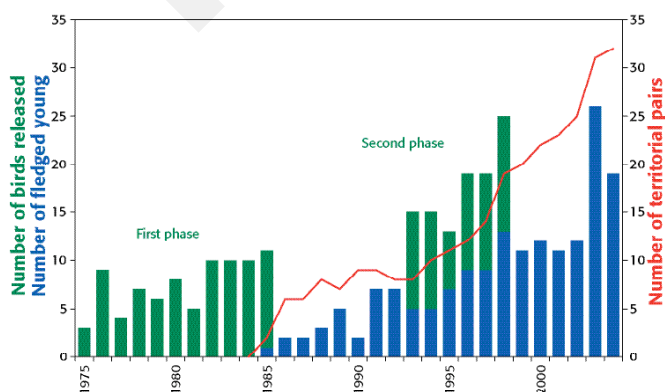
pairs that would be normal in an established population. The youngest Scottish breeding pair was a three-year-old male with a four-year-old female in 2000, which even produced a chick. Sadly, the male was illegally poisoned in 2002, when one of his siblings was successfully fostered into another nest, and the female fell to an identical fate the following year. Once mature, White-tailed Eagles tend to be faithful to the vicinity of their breeding territory where they may then live long and productive lives. 'Blondie' is a case in point: released in Rum in 1979, she moved south to Mull and established one of the first breeding pairs there; and she remained on the island until her death, 21 years later. Her mate disappeared two years later, aged 23 years. Such a lifespan is not unusual; before she finally disappeared in 1918, the last bird in Scotland had a distinctive white plumage and was known to the local Shetland Islanders for some 30 years (Love 1983, *Birds of Shetland*).

Population

Close monitoring of this small reintroduced population, a high proportion of which are individually marked, and of its nesting attempts, allows a better measure of its population size than for many other species in Scotland. In 2004, 32 territorial pairs were known with several others in the process of establishment. It is unlikely that more than one or two existing pairs have been overlooked. Since the minimum recruitment is known from imported birds and breeding success, the total population can be estimated at some 250–300 birds. This allows for a minimum 10% mortality over the years, although unreported deaths will augment this figure. Both current estimates of survival (75% for immatures; 97% for adults) and productivity (0.61 young fledged/territorial pair) in Scotland indicate the population to be as healthy as other populations in similar habitat elsewhere in Europe (Bainbridge *et al.* 2003).

Trends

From a zero population in 1975, the two-phased release of 140 fledglings, together with subsequent breeding success in the wild, has maintained a steady increase, first in the non-breeding population, and then in the number of territorial pairs. Over this 30-year period the average annual increment in birds equates roughly to 10% of the population, and in breeding pairs to 1–2%. The injection of potential recruits has been erratic, and the establishment of new pairs was at first slow. The number of breeding territories trebled in the last decade, however, as more wild-bred birds and extra second phase releases all came of age. Multiple sightings of 5–8 birds, mainly immatures, are



Numbers of birds released, young fledged and territorial pairs in the reintroduced White-tailed Eagle population in Scotland



Norwegian-bred White-tailed Eagle chick with Roy Dennis, RAF Kinloss (Moray & Nairn), 1999 © Chris Gomersall

becoming regular in some areas, which is consistent with the sociability of the species found in Norway and elsewhere. The population might now be expected to increase exponentially as it becomes more self-sustaining; the rate of increase, of course, depends upon threats.

Threats

Eight unhatched eggs that have been analysed have shown significant traces of chemical pollutants, such as PCBs, DDT and mercury (Love 1988, RSPB/CEH data per R Broad). Slight eggshell thinning can be measured, but the pollutant levels do not seem sufficient to cause serious infertility (M Marquiss pers. comm.).

Continued nest security and surveillance is essential. Sympathetic local communities are increasingly involved in this, and two public viewing facilities are currently operating in Skye and Mull. Nonetheless, four clutches have been taken by egg collectors in recent years; and amongst the 25 or so dead birds that were reported up to 2004, at least six were victims of persecution, notably illegal poisoning. It is particularly sad that two thirds of the poisoned birds were adults. To lose established breeders from this small pioneer population is especially damaging to its successful establishment.

Gaps in current knowledge

Given the remoteness of some breeding pairs, considerable effort is required to maintain a comprehensive level of census and monitoring, especially as more and more new pairs become established. The sensitivity of eagles to nest disturbance creates gaps in our knowledge about breeding failure, mortality and hence the population's vulnerability.

Additional references

Ferguson-Lees & Christie (2001), Whitfield *et al.* (2002).

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