# Wild Mammals of Lundy

Ian Linn

As is normally the case with small islands, Lundy has an impoverished natural fauna of terrestrial mammals. Perhaps, when the sea engulfed the land bridge from Hartland Point to Lundy, at about the same time as the English Channel finally broke through to isolate Britain from continental Europe, most of the mammals which were at that time still migrating northwards into land becoming habitable once again after the last Ice Age simply had not got as far as the peninsula which was to become Lundy. Or perhaps some at least got there, only to become extinct later. Even the smallest of mammals is big compared with, say, a small insect such as an aphid. Consequently, in the case of mammals, the population density in terms of individuals per unit area tends to be small, so that on a small island where total numbers of any mammal species will be relatively small, a natural catastrophe which might only cause local extinction in a large land mass, can wipe out the entire population; so perhaps it is no accident that the only indigenous Lundy mammal is the smallest British mammal, and one of the smallest mammals known - the pygmy shrew *Sorex minutus* (Plate 13). The idea that these tiny mammals may have held on while larger species perished is supported by the fact that pygmy shrews are the only shrews, sometimes the only small mammals, present on a number of the small offshore islands scattered up the west side of mainland Britain (Arnold 1978).

Or possibly the pygmy shrew is just a fast mover, better able despite its small size to withstand the rigours of a sub-arctic climate. Thus, by pursuing the retreating ice more closely that some other species, it may have got to some outlying regions before other, less hardy species, and before rising sea levels cut off the areas of land on which they found themselves. It has been suggested that the rapid spread of the pygmy shrew was facilitated by the presence on the land bridges to Lundy and other islands which existed briefly some 8000 years ago, when sea levels were at their lowest, of the kind of wet, peaty moorland which particularly suits this little mammal (Yalden 1981, 1982). Such a scenario would be a possible explanation for the presence of pygmy shrews on the mainland of Ireland, an island large enough to support populations of larger mammals, which yet lacks any other shrew species. Natural populations of some other mammals found on mainland Britain, such as the bank vole and the brown hare, are also absent from Ireland.

So, for some thousands of years this tiny beast seems to have reigned alone on Lundy, the sole representative of the mammals apart from bats which could fly over the intervening sea and seals which frequented the beaches and sea caves. In recent times the very

small pipistrelle *Pipistrellus pipistrellus* and the remarkable brown (common) long-eared bat *Plecotus auritus* have been observed fairly frequently (Anon. 1992; and several earlier records in Lundy Field Society Annual Reports). The large noctule bat *Nyctalus noctula* has also been seen (Dymond 1973), and a bat seen in 1995 may possibly have been a Daubenton's bat *Myotis daubentoni* (Anon. 1995). Grey seals *Halichoerus grypus* can often be seen today in the water or hauled out on the rocks of the east side. Beaches here are used for breeding, and pups are also born in Seal's Hole and other caves, perhaps as many as 25 in any one year (Clark 1977). Natural mortality among pups is high, however, and not all are able to survive.

During the time that the pygmy shrew was probably the only terrestrial mammal on Lundy, climatic changes must periodically have caused considerable modifications to the vegetation and microfauna of the island, but the tiny shrew has always been able to find good shelter and an adequate supply of the small invertebrates which provide its food. Today it is still common, particularly in Millcombe and on the terraces of the east side where, sheltered from the prevailing west wind, the vegetation is more luxuriant than elsewhere on the island. In due course our own species joined the fauna of Lundy; and it is *Homo sapiens* which has so dramatically enriched Lundy's wild mammal fauna.

Although human settlements on Lundy are of great antiquity (see Thackray, this volume), no written records remain of the animals which prehistoric man might have brought to the island. We cannot be certain, but it is very likely that the first new mammal to be introduced by man to Lundy was the common house mouse *Mus domesticus*. This rodent, an originally Asiatic species which has been a human commensal for a very long time, has been recorded from pre-Roman Iron Age deposits in Dorset and the Peak District (Yalden 1977), so it is entirely possible that it could have reached Lundy with the prehistoric human inhabitants. This must, however, remain speculation. What is certain is that house mice have been quite a problem on Lundy in recent times. Loyd (1925) reports "common" mice as numerous (he also thought that there were one, or even perhaps two, kinds of vole on the island, but this has never been confirmed by any other observer). More recently Gade (1978), who managed Lundy as agent for the owners from 1926 to 1971, records an extermination campaign against a heavy infestation of house mice around the farm, the hotel and the island stores. Although this campaign was temporarily successful, permanent extermination of mice is very difficult to achieve, and in any case can be quickly nullified by reinfestation. Mice have travelled all over the globe as unwilling passengers in material freighted by human carriers, and Gade saw them from time to time emerging from consignments of the thatching straw which was imported to Lundy from the mainland up to 1939. To this day mouse droppings

are occasionally found in buildings on the island (G. Key and others, *in litt.*).

Felix Gade was an excellent naturalist, well able to distinguish between the commensal house mouse and the wild wood mouse *Apodemus sylvaticus*, and in addition to seeing house mice emerging from imported straw, he noticed on two occasions wood mice, and also recorded a wood mouse having been electrocuted in the compressor motor of a refrigerator (Gade 1974, 1978). Add to this the fact that the flea *Typhlocerus poppei poppei* collected from a common rat *Rattus norvegicus* on Lundy normally requires a wood mouse as a host in order to complete its life cycle (Couatarmanac'h & Linn 1988), and an intriguing possibility presents itself. Although extensive trapping campaigns by several different groups of biologists have never discovered any wood mice living wild on the island, is it possible that one or more transient populations of this rodent have existed on Lundy in the past? Speculation again!

The earliest recorded exotic mammal to arrive on Lundy was the rabbit *Oryctolagus cuniculus*. There is a record from Kent of rabbits in the last interglacial, about 250 000 BC (Stuart 1974), but it was long absent from Britain until reintroduced in more recent times. Although the Romans considered rabbit foetuses *(laurices)* a great delicacy, and it would not have been unlikely for them to have brought rabbits to Britain, there is no direct evidence that they ever did. Marcus Terrentius Varro reports in his *Rerum Rusticarum* that rabbits had been brought from Spain to Britain during the first century BC (Lever 1977), but if they did, the rabbits had died out by the time of the Norman Conquest, as there are no records of rabbit warrens in the Domesday Book. One of the earliest written records mentioning rabbits in Britain states that between 1183 and 1219 the tenant of Lundy was entitled to take 50 rabbits a year "from certain *chovis* (coves?) on the island" (Exeter City Archives, Misc. Deeds D.614). Earlier Latin translations of the Forest Laws of King Canute appear to refer to the taking of rabbits, but this is probably an error resulting from a poor grasp of mammal taxonomy by mediaeval scribes, who confused rabbits with the indigenous brown hare *Lepus europaeus*.

When rabbits were first brought to Britain they were highly esteemed as a source of fur and meat. Consequently they were kept closely guarded in enclosures – 'warrens' or 'coneygarths'. Many of these were situated in the south-west of England, particularly on Dartmoor where the wild country made their protection easier. The common Devon surname Coneybeare (Coneybeer, Conabeare, Conabeer, Conbeer, Conibear, Conibeer, Conibere, Connabeer) comes down to us from those times. Offshore islands were also greatly favoured as sites for warrens, being even easier to defend than a Dartmoor combe, which explains the early establishment of rabbits on Lundy.

Before too long, however, the rabbits escaped from their enclosures, and established what we think of

today as warrens, namely groups of burrows which form the nucleus of a group territory, in the surrounding countryside. On Lundy the rabbit warrens are today mostly around the fringes of the flat plateau which forms the top of the island, but in earlier times they also lived in the dense thickets of gorse which covered much of the plateau. Ponies, which were introduced to the island in 1928, and bush fires greatly reduced the gorse over a period of years, but the rabbits remained plentiful. Many thousands were killed each year by the professional trapper employed in an attempt to control rabbit numbers, nearly 11,000 being taken in 1929 (Gade 1978). On the whole they have done very well on Lundy, but the fact that they compete with the ponies, domestic stock and wild ungulates for the available herbage means that they are regarded as a serious pest on the island, as they are on the mainland. Although the flea-borne disease myxomatosis was introduced to mainland Britain in the early 1950s, it was not until the early 1980s that it first appeared on Lundy (Parsons 1983).

The Harman family, who owned Lundy from 1925 to 1969, and ran it as a private estate, were keen to 'enrich' the island's fauna by introducing various new animals. Now that we know the regrettable results of some animal introductions to small islands, such actions are rather frowned on, but this was not always so - after all, the Zoological Society of London was first formed as an Acclimatisation Society to bring 'useful' new species to Britain. So, despite the pest status of the rabbit, various attempts were made to 'improve' the stock. Wild buck rabbits from the mainland were released, and individuals of domestic strains were introduced from time to time. On observing that some of the trapped wild rabbits had remarkably shaggy coats, Martin Coles Harman introduced Angora and Chinchilla rabbits, with no noticeable effect. His son Albion Harman later released some Rex rabbits which did not last long as they were very tame, and were soon shot, but which may have had some effect on the indigenous population, as a local increase in the proportion of dark-coloured individuals was observed (Gade 1978).

The rabbit was brought to Britain as a prized domestic animal, but a less welcome visitor from Asia arriving at about the same time, or perhaps even earlier, was the black or ship rat *Rattus rattus* (Plate 14). The name 'black rat' is something of a misnomer, since some 'black' rats are quite brown, so the alternative 'ship rat' is to be preferred. The precise date of this rodent's arrival in Britain is a bit vague, to some extent because, as with the rabbit and many other animals, naming of species was imprecise in the Middle Ages, and the exact distinction between rats and mice far from clear. As a result, contemporary written records are unreliable on this matter. Legend has it that ship rats reached Britain with returning Crusaders, some time in the eleventh or twelfth centuries, but they may have arrived as early as Roman times (Lever 1977; Armitage *et al.* 1984). Today the ship rat has a very

limited distribution in Britain, having been almost totally superseded by the common or 'brown' rat *Rattus norvegicus* (which can sometimes be quite black! Plate 15).

The common rat is, like the ship rat, of Asiatic origin, and a widespread commensal of man. The date of its arrival in Britain is better documented, and was probably around 1720 (Twigg 1975). Although, like the rabbit, the spread of the common rat into the remoter parts of northern Scotland was slow, over most of Britain it quickly became the dominant species, reducing the population of the ship rat to relict status (Matheson 1962).

On mainland Britain common rats are now ubiquitous, while the ship rat clings on precariously in a few, mainly dockside, locations, with the common rat being largely blamed for its decline; yet on Lundy populations of both kinds of rat coexist, the two species apparently having carved up the territory in a more or less amicable manner. This is a situation of considerable biological interest, which has been the subject of several studies (Anon. 1950; Pearson *et al.* 1962; Perrin & Gurnell 1971; Smith 1985; Smith *et al.* 1991).

It appears that the rats are found only in the southern regions of the island; the common rat concentrated near, but by no means limited to, the hotel, the farm and the rubbish tip, while the ship rat is found mainly in the walled gardens in the lower reaches of Millcombe, and among the boulders above high water mark on the sea shore. But the range of the common rat extends down Millcombe as far as the Landing Beach, so that there is considerable territorial overlap. Nevertheless it seems that the ship rats, though fewer in numbers, are well able to persist in their preferred habitats, and reports of their recent decline in numbers may be exaggerated. The rats, like rats everywhere, are not the best-loved of creatures, and tend to become convenient scapegoats when a cause is sought for the decline of some of the more attractive denizens of the island, particularly the sea birds. But such accusations are usually founded on quite flimsy evidence, and seldom stand up to careful scrutiny.

Exactly when these rats, ship and common, reached Lundy is by no means clear. As on mainland Britain, the ship rats got there first. In 1775, by which time the common rat was well established on the mainland, Lundy was reported to have no common rats, although ship rats had been present since 1630 at least. By 1877, however, common rats were numerous, and the ship rat very much in decline (Willcox 1988; Loyd 1925). The rats could have travelled, like the mice, in man's baggage, or possibly have deserted the sinking ship in the time-honoured manner, ie. scrambled ashore from some of the many ships which have been wrecked on the rocks of Lundy's coast over the years.

A mammal which poses a much more serious potential threat to the smaller wildlife of Lundy is the common domestic cat *Felis catus*. Cats can easily become feral and cause serious problems on islands

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where nesting birds provide easy prey (Lever 1985). Gade (1978) tells of problems on Lundy in the 1920s with feral cats menacing ground-nesting birds. A more recent report of a lactating female feral cat on Lundy (Parsons 1984) is therefore a serious cause for concern.

So far only the smaller mammals have been considered, but what of the larger species? Ponies have been mentioned, but these are domestic stock, not wild mammals. At present three species of wild ungulates live on Lundy; goats *Capra hircus*, Soay sheep *Ovis aries* and sika deer *Cervus nippon*. Of these three, the first two are what is known technically as 'feral'; that is to say, they are descendants of animals which were once kept by man in captivity, or as domestic stock, but have escaped and reverted to a truly wild existence.

Goats have never been native to Britain, but have been kept as domestic animals since Neolithic times, and many herds of feral animals, so-called 'wild goats', are to be found in the less accessible regions and offshore islands of Scotland, Wales and Ireland. Although these herds enjoy no legal protection, they are of considerable biological interest, as the animals are small, shaggy and well equipped with horns, much resembling the ancient domestic breeds descended from the bezoar goat *Capra aegagrus*, a wild species from eastern Europe and Asia (Lever 1977). It is reasonable to assume that Lundy's earliest human inhabitants kept goats, and that some of these escaped and lived wild on the island. Loyd (1925) reported wild goats on Lundy in 1752, but by 1802 they had disappeared (unpublished report by Britton quoted by Bathe *et al.* 1984). Escaped individuals from stocks of domesticated goats brought to the island by farmers, lighthousekeepers and quarrymen during the 19th century formed the nucleus of a new feral herd which was augmented by Martin Coles Harman in 1926 and subsequently (Gade 1977; Bathe *et al.* 1984). Although these more modern introductions were large, short-haired, 'improved' dairy goats, the Lundy goats of today show few obvious signs of their domesticated origin (e.g. hornlessness, throat tassels), and are typical wild goats in appearance (Plate 16). This may be thought surprising, but as Lever (1977) points out, "when goats escape from domestication they revert to this wild form within a few generations, and sometimes within ten years." The present-day feral goats of Lundy are small, agile, well adapted to their habitat, and well worth preservation, if only for the gene for hardiness which they undoubtedly carry. Despite considerable culling, they have maintained for many years an active and healthy herd of around 40 to 50 head. Today, however, their numbers are much reduced, a fact which is a cause for concern. They are not secretive, and can be observed demonstrating the traditional sure-footedness of the species on the cliffs and sidings of the island.

Soay sheep are of an ancient, primitive domestic stock which was brought to Britain about 5000 years

ago, and persisted to mediaeval times. These sheep closely resemble their wild ancestors, probably *Ovis orientalis*, the Asiatic mouflon, and survived on the islands of St Kilda, in the Atlantic Ocean off northwest Scotland, because of the extreme isolation of the archipelago. In recent times they were limited to the island of Soay, where they lived ferally, but in 1932 they were introduced to Hirta, the largest island in the group, and some were later brought to mainland Britain. Several herds of these interesting animals exist in parks in Britain and elsewhere, but the Lundy herd is the largest outside St Kilda, and the only one living wild in a situation similar to the original Hebridean location. It is therefore of particular biological importance. The sheep were introduced to Lundy in 1942, with a further addition in 1944, and have found the island very much to their liking, the herd building up to over 100 head, despite culling. In appearance the Soay sheep are small, brown and agile, quite unlike the domestic sheep of today (Plate 17). The rams carry large curved horns. Like the feral goats, they are very much at home on the cliffs and steep sidings of Lundy, where they can readily be seen, although they do not like to be approached too closely (Bathe *et al.* 1984; Jewell & Bullock 1991).

Sika deer *Cervus nippon* are handsome animals, the summer coat a bright chestnut colour with light spots (Plate 18). The stags carry branched antlers similar to those of the red deer *Cervus elaphus*. Originally from Japan, Taiwan and the eastern Asiatic mainland, sika deer have been widely introduced to many countries including Britain, where they were brought to Regent's Park in 1860. Seven sika deer were introduced to Lundy in 1927. Sika deer hybridise freely with red deer, and apparently have done so on Taiwan and the Chinese mainland for a very long time. Only the two Japanese island races of sika deer are uncontaminated by red deer genes, and the fact that the Lundy deer are from one of these races, *Cervus nippon nippon*, and appear not to have interbred with the red deer with which they shared Lundy from 1927 to 1962, makes them of considerable biological importance. Unlike the feral goats and Soay sheep, the sika deer can only be seen in the early morning or the evening when they are out feeding. During the day they shelter in the dense rhododendron thickets of the east side. When caught in the open they express alarm by moving off with the stiff-legged, bouncing gait known as 'stotting' or 'pronking', erecting the hairs on the white rump patch ('flaring') and giving short, sharp whistling calls. Like red deer, sika deer are more grazers than browsers, although in the hard times of winter their tastes become perforce more catholic, eating poor quality foods such as the coarse rush *Juncus effusus*, and digging for bluebell bulbs and bracken rhizomes. The last food item is particularly interesting because all parts of the bracken plant are very toxic, and bracken is generally avoided by herbivorous mammals. The influence of the sika deer on plant diversity and soil erosion on Lundy

has been studied by Eaton & Boddington (1987).

The Lundy sika started off well, the herd building up to about 90 head in 1961 despite frequent culling. Since then they have done less well, showing poor condition and high mortality in the 1970s, and by the 1980s the numbers had dropped to single figures. Today the deer numbers are slightly higher, but the persistent low population level is a cause for concern about the future of this species on the island (Bathe & Scriven 1974; Bathe *et al.* 1984; Ratcliffe 1991).

Two other species of deer were introduced to Lundy by Martin Coles Harman - fallow deer *Dama dama* and red deer. Fallow deer existed in Britain during the last interglacial, about 250 000 to 100 000 BC, but became extinct during the last glaciation until reintroduced (Chapman & Putman 1991). This may have been done by the Romans, but as with the rabbit, the possibility rests upon hearsay evidence. Jennison (1937) quotes a list in the *Augustan History* which states that in about 238 AD the Emperor Gordian I exhibited in Rome 200 stags of *cervi palmati* (referring to the distinctive palmate antlers of the fallow deer), some from Britain. Be that as it may, the Domesday Book records 31 parks in Southern England holding 'bucks', so it seems that fallow deer had arrived by the Middle Ages, and they are now widespread in Britain both in parks and in the wild. The first record on Lundy is of 16 deer in 1752, but in 1882 they were not doing all that well, being down to 12 animals, one of which when killed provided 'very thin meat'. It appears that the Lundy herd became extinct until 30 animals were reintroduced in 1927. At first they did well, peaking at 50 head in 1939, but during World War II they were over-culled, as the island tried to be self-sufficient in meat, and the fallow were the easiest deer to shoot. The herd never recovered from this over-exploitation, and became extinct in 1954 (Bathe & Scriven 1975).

The red deer is a species indigenous to the British Isles. Neither it nor the other indigenous British deer, the roe deer *Capreolus capreolus*, has ever occurred naturally on Lundy as far as is known. Fifteen red deer were introduced in 1927, three of which were hybrids with the North American wapiti *Cervus canadensis*. These cross-bred imdividuals had been hand-reared, and were very aggressive and unafraid of human beings, to the extent that several attacks on visitors took place, and the two most dangerous stags had to be destroyed. Like the fallow deer, the red deer did very well at first, building up by 1949 to a herd of 33 animals. By 1953 severe over-culling had reduced the herd to 11 animals, from which the red deer never recovered, becoming extinct in 1962 (Bathe & Scriven 1975; Gade 1978).

The history of ungulates on Lundy makes depressing reading. Only the Soay sheep are doing well. All the others, despite their intrinsic biological interest, have either been allowed to become extinct, or are hanging on at dangerously low levels. It is to be hoped that a comprehensive management plan which will assess objectively the food resources available, and the

requirements of both domestic stock and wild undulates, will be initiated to address this problem and ensure a secure future for the sika deer and wild goat herds.

Finally, a brief mention must be made of the introduced mammals whose sojourn on Lundy was relatively short and ill-fated, as reported by Gade (1978). Two early attempts by Martin Coles Harman to introduce brown hares were unsuccessful, although one male lived for some years in a rhododendron thicket, and grew to an enormous size. A later attempt by Albion Harman in about 1960 was temporarily successful. Gade (1978) quotes a report of five hares having been seen 'recently' in the Lighthouse Field. These mammals do not feature in any recent reports of mammals seen on Lundy, however. Two 'rock' wallabies, probably red-necked wallabies *Macropus rufogriseus*, a species which has established one or two small colonies in Britain, were released into a poultry pen in St John's Valley in 1928, but unfortunately were drowned in St John's Well, one immediately, the other a couple of weeks later. Several attempts were made to introduce red squirrels *Sciurus vulgaris*, all ending in failure until the last, in 1935 or 1936. This colony of ten animals survived largely due to the devoted efforts of Felix Gade, who hand-fed them early each morning. The squirrels never bred, however, and the last one disappeared in the winter of 1943.

In conclusion, it must be emphasised that, although all but one of the terrestrial mammals of Lundy, and certainly all the obvious ones, have been introduced to the island by our own species, this does not mean that they are devoid of interest and importance, and that their conservation can be ignored. If it is accepted that the larger mammals are worthy of conservation, this is no easy task. The inherent instability of limited populations of these species on small islands means that enlightened and careful management is essential if they are to have any prospect of long-term survival. In the case of Lundy, the indiscriminate harvesting of the past should be replaced by a culling programme based on a sound scientific assessment of resources and requirements. The fact that Lundy's ungulates have survived so well in spite of their tribulations suggests that they are well suited to life on the island, and with enlightened management would have an excellent prospect of survival.

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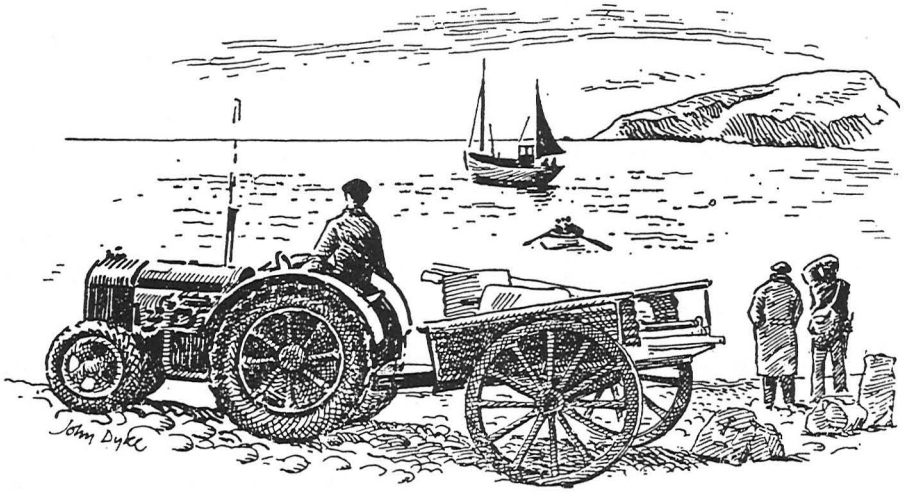

Plate 13 Pigmy shrew *Sorex minutus*

**WILD MAMMALS OF LUNDY — IAN LINN**

Plate 14 Black rat *Rattus rattus*

**WILD MAMMALS OF LUNDY — IAN LINN**

Plate 15 Brown rat *Rattus norvegicus*

**WILD MAMMALS OF LUNDY — IAN LINN**

Plate 16 Feral goats *Capra hircus*

**WILD MAMMALS OF LUNDY — IAN LINN**

Plate 17 Soay sheep *Ovis Orientalis*

**WILD MAMMALS OF LUNDY — IAN LINN**

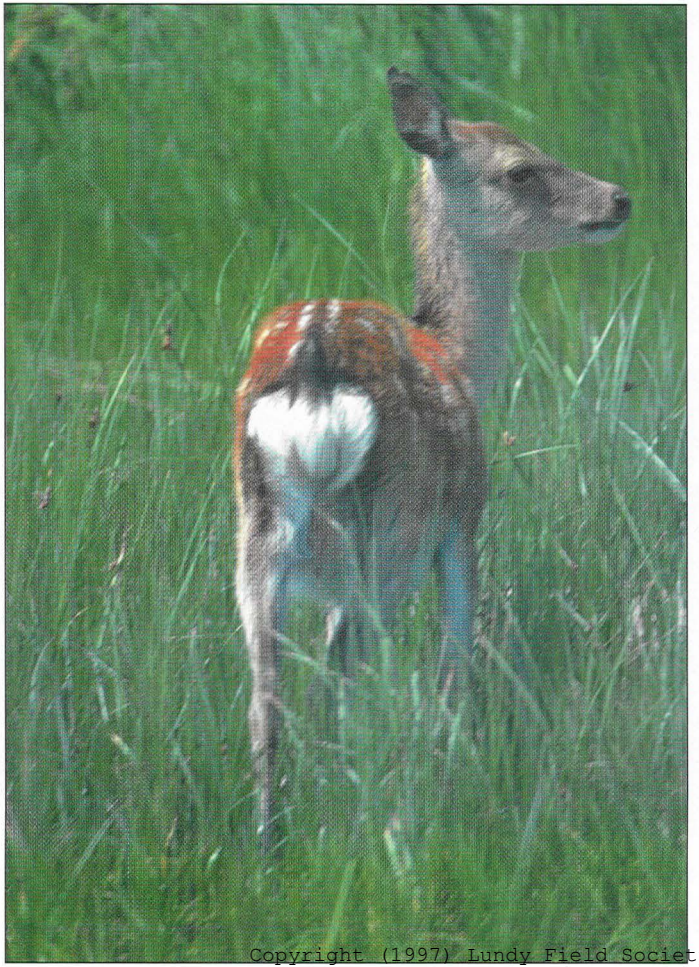

Plate 18
Sika deer *Cervus nippon*

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