

DEER & DEER PARKS OF LINCOLNSHIRE

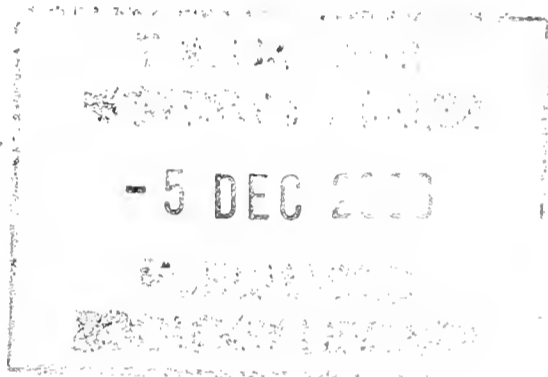
CHRIS J MANNING



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DEER & DEER PARKS OF LINCOLNSHIRE

CHRIS J MANNING BSc hons AMIEEM



LINCOLNSHIRE NATURALISTS' UNION

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ACCN: 391362-2001

Illustrations

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INTRODUCTION

Deer are our largest land mammals and, thanks to the Norman's love of hunting and creation of forests, part of our childhood history lessons. Many of us enjoy watching deer as they are amongst the most graceful of our wild animals but sightings can be infrequent as deer tend to be active at dawn and dusk, and blend easily into the landscape.

Man's recent impact on the environment is well known. Increasing agricultural, industrial and urban development presents new challenges to our wildlife. Red deer in Scotland make the national news because some 300,000 of them allegedly impede the regeneration of the Caledonian forests, a fault seldom attributed to the millions of sheep on the hills. Conversely, the status of Lincolnshire's deer is rarely a matter of comment, yet as recently as 1912 wild deer were not listed amongst the county's wild animals; even today their status is not apparent to the casual observer, apart from the increasing presence of wildlife warning signs depicting deer seen on our highways.

Today Britain's deer population exceeds 1,000,000 compared with a population of perhaps 2,000,000 during the Neolithic period. However, their environment has changed even more dramatically. In Lincolnshire, under 4% of the county is now woodland and this includes coniferous plantations, yet during the early Neolithic period woodland was probably the dominant habitat across most of the county. The survival of so many deer shows their resilience, but masks centuries of decline. Lincolnshire's deer population may be higher now than for a thousand years, the 20th century having witnessed a remarkable renaissance in their fortunes.

Conservation usually documents decline and threats, but here is a story of deer thriving in our modern countryside.

WHAT ARE DEER?

Deer are mammals, animals that have dominated the world since dinosaurs declined approximately 65 million years ago. Many large mammals are now extinct, yet deer are thriving as modern man develops his technology and changes the countryside. What evolutionary adaptations have enabled deer to be so successful?

The first true deer evolved during the Miocene period about 23 million years ago. Evolution within the deer family reaches its most advanced level within the deer of Eurasia (Europe and Asia) and America, groups that have evolved separately for many millennia. Today most American deer are classified in a separate sub-family from our Eurasian deer.

Deer are cloven-hoofed mammals with two even horny casings to their feet, like giraffes, cattle, antelope and sheep. They all belong to the order Artiodactyla, the even-toed ungulates. This order is divided into sub-orders; deer belong to the sub-order Ruminanta (Ruminants).

Ruminants are mammals with four chambered stomachs, the first of which is the rumen. The rumen has two functions; it can receive food that has had minimal chewing, enabling animals to eat quickly, and it can pre-digest food, a task undertaken by a large number of micro-organisms. These micro-organisms are able to digest cellulose, the material from which plant cell walls are made, which is very stable and hard to break down mechanically. Later when the deer is usually lying down in a safe location, the food is regurgitated for thorough chewing prior to its passage through the other chambers. This process is called cudging, the deer's jaw moving sideways to grind the food thoroughly. A number of the rumen's micro-organisms will be swallowed during this process, adding protein made from cellulose to the animal's diet.

This sub-order of ruminant Artiodactyla is divided into two infra orders; the Tragulina and Pecora. The Tragulina (Chevrotains or mouse deer) are only found in Asia, and not considered true deer. The Pecora group has four family divisions, Antilocapridae (pronghorn), Bovidae (cattle and sheep), Cervidae (deer), Giraffidae (giraffes) and Moschidae (musk deer).

The Cervidae family is divided into sub-family groups; Cervinae (Eurasian deer), Hydropotinae (Water Deer), Muntiacinae (Muntjac) and Odocoileinae (American deer). These families have different evolutionary origins; the New World deer (Hydropotinae and Odocoileinae) have the telemetacarpal foot structure while the Old World deer (Cervinae and Muntiacinae) have

the plesiometacarpal structure, these differences are based on the distal or proximal persistence of the second and fifth metacarpals.

The sub families are divided into smaller groups called genera. Animals within a genus e.g., *Cervus* will closely resemble each other, and the genus is divided into species, e.g. *Cervus elaphus* (red deer) and *Cervus nippon* (sika). Species within a genus may on occasion interbreed producing fertile young, this has happened with red and sika deer.

Within a species, animals may be separated from their peers by the seas or mountain ranges and start to evolve different characteristics, these are called sub-species. In red deer, sub-species described include; *Cervus elaphus scoticus*, (Scottish red deer), *C. e. corsicanus* (Corsican red deer), *C. e. hanglu* (Hangul or Kashmir deer of India), *C .e. maral*, etc (Maral deer of Asia). The status of some sub-species is often disputed but given time, these sub-species could evolve into separate species. Today DNA analysis is enabling an evaluation of these sub-species, some of which exist in very small numbers.

(The full scientific name for an animal will include its genus, species and usually its sub-species name e.g., A Scottish red deer is - *Cervus elaphus scoticus*).

THE DEER FAMILIES

Musk deer

The musk deer (Moschidae) are primitive deer from eastern Asia. The stomach has a poorly developed rumen and they are the only deer with gall-bladders. Musk deer never grow antlers, having instead well developed canine teeth for fighting. Secretions from the males' preputial scent gland (musk) is used in the perfumery trade. Musk deer used to be classified as a subfamily of the Cervidae, today they are considered a separate family from the Cervidae or true deer. They are the only deer family not represented by wild populations within the United Kingdom.

Old World (Eurasian) Deer

Eurasian deer have the plesiometacarpalian foot structure (the second and fifth metapodia metacarpal are proximal splinters) and includes the Cervinae and Muntiacinae sub-families.

The Cervinae include red (including the elk/wapiti of America), sika and fallow deer. These large deer cast antlers in the spring, the new antlers growing through almost immediately. Young males develop pedicles as yearlings and clean their first antlers at 15-18 months of age.

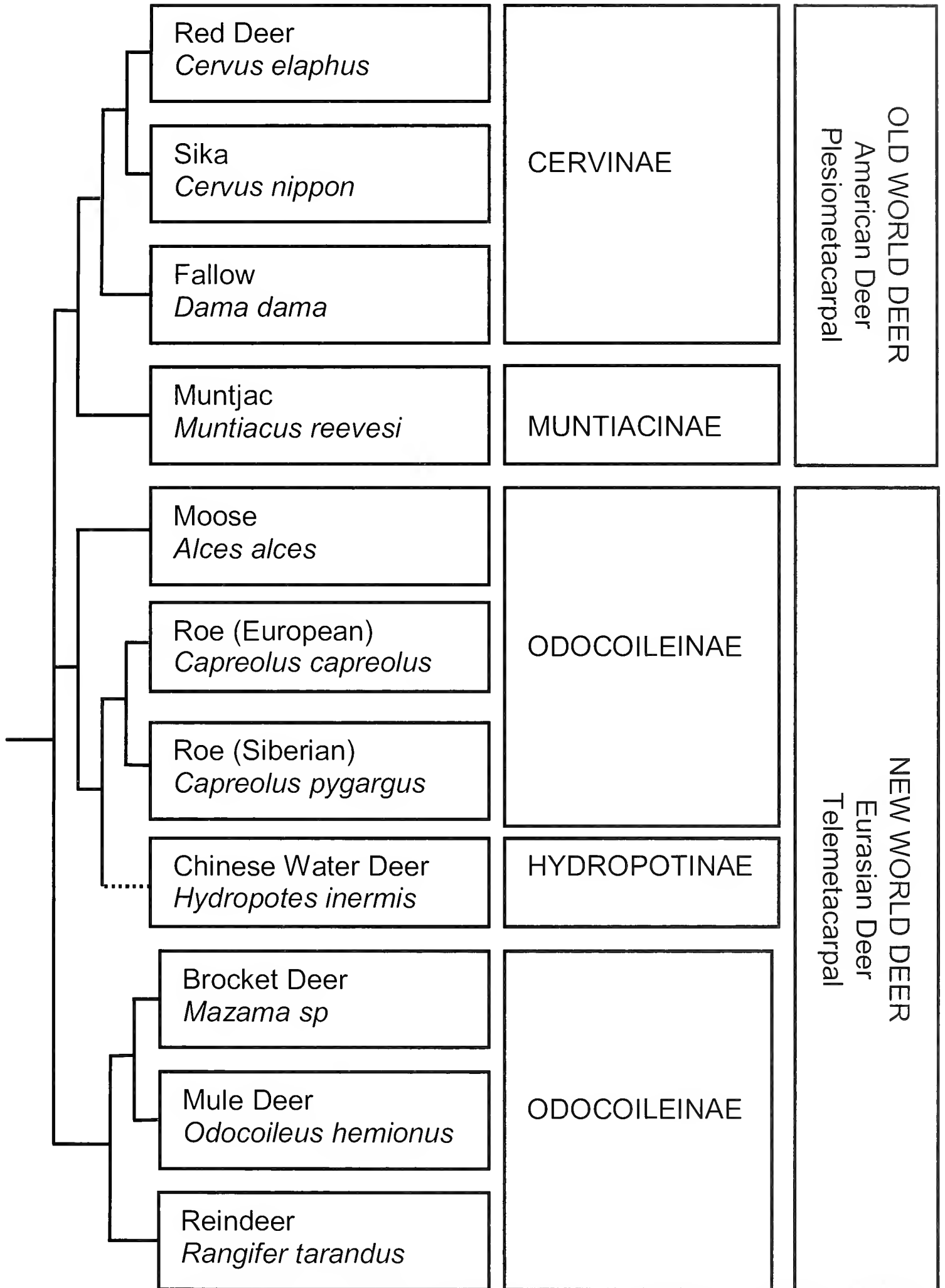
The Muntiacinae are smaller Eurasian deer, the males grow antlers, albeit in a simple form on extremely long pedicles. However, muntjac retain the well developed canine teeth as found in the Moschidae and Hydropotinae sub-families.

New World (American) Deer

American deer have the telemetacarpalian foot structure (the second and fifth metapodia are distal splinters). The American family includes the numerous South American deer, the only continent where native deer occur in the southern hemisphere: white-tailed and mule deer, moose, reindeer and roe deer¹. These deer cast their antlers in the autumn and in many species the new antlers do not grow through until the spring. Young males may start to develop pedicles within a few months of birth and may clean their first antlers before their first birthday.

¹ The roe deer is an ancient species that doesn't occur in America, but is closely related to the ancestors of the American deer.

THE CERVIDAE FAMILY



Taxonomic Relationship of the Deer Families based on DNA analysis (Randi *et al.* 1998)

Water deer

Like the musk deer, the Water Deer (*Hydropotinae*) family have well developed canine teeth instead of antlers. It was considered that Water Deer are primitive because they lack antlers and retain large canine teeth however others have suggested that the loss of antlers may be a secondary evolutionary characteristic, a hypothesis that is now supported by analyses of DNA sequences (Randi *et al* 1998). These DNA sequences strongly suggest that Water Deer are nested within the American (*Odocoileinae*) family and a close relative of the roe deer (Randi *et al.* 1998). Water Deer, like the other deer families, do not have gall-bladders or “musk” glands. The females have four teats, perhaps of most importance in this family as multiple births are common. Chinese water deer have been introduced into the UK, with occasional reports from Lincolnshire.

The Eurasian and American deer families are generally larger animals with well developed rumens. The antlers grow from short pedicles, and the canine teeth are absent, or present only in a rudimentary form. Moose and reindeer, members of the *Odocoileinae* family, occur in Europe while the elk/wapiti is a Eurasian species.

FORM AND FUNCTION

Deer have many similarities with the ungulates in the Pecora infra-order, however they are the only group with deciduous antlers that are re-grown each year; other members of the Pecora have horns that grow slowly throughout the animal's life. In form, deer differ from the Bovidae (cattle and sheep) by having a smaller rumen, so they require more nutritious food and the smaller species tend to browse rather than graze on bulkier vegetation. In profile deer are slender, they appear more like antelope, with similar agility and this has made them desirable quarry for hunting and so influenced man's management of deer and the countryside.

Although having all five senses, deer have only partial colour vision and probably cannot resolve detail as man can; this limitation may allow us to closely observe deer without causing disturbance at times, provided they don't get our scent.

A deer's hearing is amplified by large mobile ears, which are used to detect potential danger. All deer when disturbed can bark to raise the alarm. Roe and muntjac frequently bark for long periods, whereas other species rarely bark for any length of time. In addition, fallow have a unique alarm run (pronking), moving in a seesaw fashion with the front and hind legs kept stiff, this drums the ground creating an alarm sound. Deer make other soft sounds, most noticeably between the female and her young, but only the bark and loud noises associated with the rut are commonly heard by humans.

A deer's sense of smell is very important for communication, and deer have several scent glands. Between the cleaves of the feet are the interdigital glands, these are more active in the hind feet. Below each hock is the metatarsal gland and a suborbital gland is found below each eye. Male deer make scrapes and fray vegetation to clean their antlers and for scent marking during their breeding activities.

Deer lack upper incisor teeth, instead a hard pad is present in the upper jaw. Initially deer have only milk teeth, the permanent teeth erupting as the animal grows, with the jaw lengthening during this period giving the animal an adult appearance.

ANTLERS AND DEER

The popular image of large antlers (weighing as much as half the skeleton) on a deer's head perhaps arises through man's own desire for adornment. Other horned animals such as cattle, sheep and antelope, have horns that comprise an inner core of bone and an outer sheath of keratin which are retained throughout the animal's life (the American pronghorn casts the outer sheath of its horn each year); deer antlers are made of bone and are cast and regrown annually, over a period of 3-4 months.

The evolution of antlers is thought to originate from horned animals living close to ice fields; frostbite killed the horns each winter, starting an annual cycle of casting and regrowth. Their natural function is mainly for achieving dominance in the mating season, usually during a threat display but occasionally in actual fights. British deer are seasonal breeders, the annual changes in their hormone (testosterone) levels are well documented and these changes control antler growth. Muntjac are the exception, fertile all year, they still manage a seasonal cycle of antler casting and growth.

Antlers grow from a permanent bony structure called the pedicle that is grown in the first or second year of a deer's life. During growth antlers are abundantly supplied with blood vessels and nerves and it is at this time that deer learn their size, a necessary attribute in negotiating heavy vegetation. At this time antlers are covered with a hairy skin called velvet. However, when growth is completed, deer remove the now dead velvet by fraying their antlers against small trees and shrubs, possibly causing damage to the vegetation. The clean antlers are white bone that eventually develop colour through contamination from resins from the trees and shrubs that they fray.

The Chinese consider the velvet to have magical properties and used it in their traditional medicines, with farmed deer kept for velvet production in some countries. However, harvesting velvet causes the deer considerable physiological stress, so this practice was banned in the UK in the early 1980s.

Antlers can be sawn off deer to prevent injury to themselves and their handlers. This usually occurs in collections with semi-domesticated deer, the mature antlers are sawn off and a small stump remains until the animal next casts.

ANTLER FORM

Muntjac deer



Roe deer

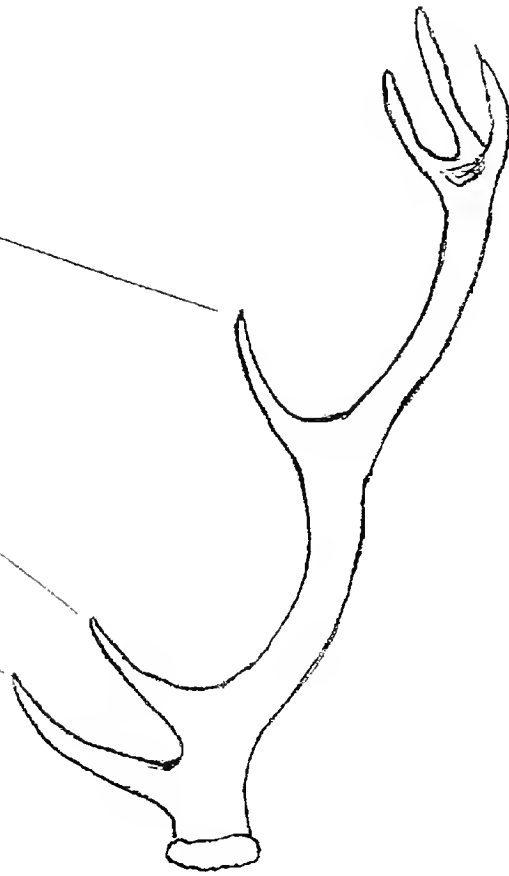


Trez/Tray

Bez/Bay

Brow

Crown

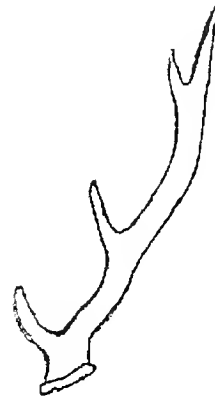


Red deer

Fallow deer



Sika deer



Fallow, wide angle between the brow tine and the main beam.

Sika, narrow angle between brow tine and the main beam.

MAN AND DEER

For millions of years climate change and the evolution of plant and animal communities has shaped our countryside. Our climate has ranged from full glacial conditions to the tropical. The initial post-glacial tundra habitat following the melting of the Devensian Glaciation ice-sheet about 10,000 years ago was subject to the process of succession as the climate warmed and plant and animal communities colonised the country eventually culminating in oak/lime woodlands in Lincolnshire. Deer were an important resource for Stone Age man, who had already started domesticating animals for their hides, meat and antlers which were used as tools.

The ancient woodlands and deer coexisted subject mainly to environmental influence, with only minor influence from man until the Neolithic period (c4500 BC) which marked the emergence of farming and the clearing of the woodlands, a task in which man was probably assisted by the inadvertent release of elm disease. The decline of the ancient woodlands marked man's first major change to the countryside, thereafter it has been subject to many of man's activities.

FORESTS

The term "Forest" was first used in the 7th century charters of the Merovingian monks of north-east France. In the British Isles throughout the Middle Ages, it meant an area of land on which the king or some other magnate had the right to keep deer, not necessarily a place of trees. Today our use of the word has changed and we associate the word "forest" with trees, for example, the Forestry Commission is our largest timber grower. Consequently in our perception of the past we falsely assume that we have lost most of the woodlands that were present in Norman times. In fact, Lincolnshire has a similar area of woodland now (including coniferous plantation), as when the Domesday Book was produced in 1086 by which time the Normans had already created 25 Forests.

Between 1086 and the 1215 (the year of the signing of the Magna Carta, which ended forest creation), their numbers continued to rise and Forest Law eventually applied to 143 Forests in England, over a 100 forests in Wales and 180 in Scotland (Rackham, 1986).. Forest creation was unpopular as it allowed the monarchy to assume rights to land it did not own and the hostility to it was influential in the signing of the Magna Carta (Rackham, 1986).

About a third of the Royal Forests were on moorland, with Dartmoor Forest extending to 50,000 acres. Only five Fenland Forests were created; Kesteven (Lincolnshire), Hatfield Chase (South West Yorkshire/Lincolnshire), Galtres (North West of York), Malvern Chase (Worcestershire) and Huntington (Rackham, 1986).

Oliver Rackham's work (1986) has shown Forest Law extended to a far larger area than the physical forest, e.g. in Waltham Forest, Essex, the Legal Forest of 60,000 acres included the present wooded Epping Forest of 6,000 acres, which has never been much bigger, Sherwood Forest extended to 65,000 acres, but only 22,500 acres was woodland. The protection of the deer therefore extended to large areas of ordinary countryside. The deer in the Forest were the property of the King, who used some in the Royal household and made gifts of venison and live animals to the nobility. This tradition survived into the 1990s when the Royal Venison Warrant was finally abandoned. In later years the deer came from the Royal Parks of London and were gifted usually within the government.

Infringement of the ancient Forest Laws carried harsh penalties. Elected magistrates called Verderers held the lower Forest Courts, usually

imposing fines. The Grand Assize met every twenty years to try all infringements over the previous period including inquests on all dead deer and offences against the vert (green material) and was responsible for delivering those penalties. In practice, most of the offenders had moved on or passed away before the Grand Assize hearing. The King, taking so few deer from the Forests, had little reason to suppress poaching; the main use of the law was a revenue-generating measure.

Forests gradually declined after Henry III until the Enclosure Acts (18th and 19th centuries) when most of the remainder were lost. Modern forestry (the management of plantations) dates from 1600, with the surviving Forests mainly managed by the Forestry Commission since its creation in 1923.

LINCOLNSHIRE'S FORESTS

Hatfield Chase

Hatfield is just over the county boundary in West Yorkshire. The name comes from the Anglo-Saxon, *Hoep + feld*; *hoep* = heath, *feld* = open space.

A Chase is a forest not owned by the King. Hatfield Chase belonged to the “*de Warenne*” family of Conisbrough Castle from shortly after the Norman Conquest² until 1347³. It then passed to the Crown, but did not become subject to Forest Law until the accession of Edward IV in 1461⁴. Henry VIII added the monastic estates of Roche Abbey at Armthorpe and Selby Abbey at Crowle Manor to the Chase in 1541. Charles I freed the Chase from Forest law in 1629 after Cornelius Vermuyden had began the substantial drainage works that mark the modern era.

The boundaries of the Chase are described in medieval perambulations undertaken in the reigns of Henry VIII, Elizabeth and James 1, these encircled some 28,327 hectares (70,000 acres), however, the deer were able to “*go free scope and leape*” over a larger area (Tomlinson, 1882). The eastern boundary of Hatfield Chase appears to lie near the Lincolnshire - South Yorkshire border. Keepers of the Game were stationed at Lindholme (Lyndholme), Crowle (Crule), Eastoft (Eltoft), Sandtoft, Belton (Beltone), Sampsons Lodge and Haxey Carr, indicating that the range of deer and the influence of the Chase extended over a considerable area.

² It is not mentioned in the 1086 Domesday Survey.

³ The dates given are; 1347 Melvyn Jones, 1996, 1374 Vernon Cory, 1985. I suspect the figures have been transposed by one of these authors or their sources

⁴ In his narrative, Vernon Cory gives the accession of Edward IV as 1460.

John Leland (1506-1552) in his Itinerary through England and Wales gives a description of the chase; "*The quarters about Heatfeld be forest ground, and though wood be scars there yet there is great plentie of Red deere, that haunt the fennes and great mores thereabout as to Axholme warde and Thurne village*". By 1607 the deer numbered 1,000 animals (Johnson, 1982).

Henry, Prince of Wales, then the older brother of Charles I is reputed to have hunted deer in the chase in 1609, when he was only 15. The usual account of this hunt is derived from the writings of Reverend Abraham de la Pryme (1671-1704), who had to rely on the account of other people. The French Ambassador, Marrillac, hunting at Hatfield on 17th and 18th August 1541 reporting to the King of France, "*some 200 deer were killed from boats and by crossbowmen, and another two miles away on the following day.... in the Kings presence were taken in the water a great quantity of young swans, two boats full off river birds and as much great pikes and other fish.*" Colin Howes of Doncaster Museum considers that the de la Pryme account of the 1609 hunt may in fact be based on the earlier hunt of 1541.

Kesteven

The name Kesteven comes from the Anglo-Saxon term for wood *coit*, anglicized as *chet* + *stefna*, a meeting place. Like Hatfield, Kesteven is not mentioned in the Domesday Book, so dates from after 1086. Books on ancient Forests usually omit Kesteven, or merely include it in a list of the county's Forests, little is known of its history.

Kesteven has been described as a fenland Forest, certainly some marsh (*maresc*) is recorded in the Domesday book, as are plough lands and woods, represented by both underwood (*silva minuta*) and woods used for pasture (*silva pastilis*). Very little meadow (*pratum* and *pastura*) is shown for the areas around Bourne, where the Forest appears to have been located.

Kesteven is of importance because of its red deer, "*The herd in Grimsthorpe Park near Bourne is said to be descended from the wild deer which in former days roamed over the Forest of Kesteven. More evidence on this point would be very interesting*" (Blaythwayt, 1912).

A licence to empark Grimsthorpe dates from 1536, about the same time that the Cistercian Abbey and its grounds were incorporated into the estate. It is unlikely that a licence have been needed if a Cistercian park was in existence at this time. However, we know that Grimsthorpe had separate

Parks for the red and fallow deer, so possibly a single park was already extant, but which species did it keep? Where did the deer for these Parks come from? The heiress to the estate was married to the Duke of Suffolk, who in 1539 purchased the park at Tattershall, while red deer from Sherwood Forest might have been a Royal gift. The red deer in Sherwood may have been of native stock until Charles I introduced continental stock in the early 17th century. Perhaps our red deer really are of pure native stock, though of different origins to what is commonly believed. However, Whitehead (1950) reports that red deer have been introduced into the parks at later dates, one such introduction being for the early 20th century, so the precise origins of these Lincolnshire red deer cannot be confirmed.

We know that nationally Forests started to decline from the 13th century. In Kesteven assarts (land formed out of part of a wood, common or Forest) date from 1190 for Holywell, with Careby in 1199 and Aunby in 1219. The rights to assart were probably sold and it was at this period that the Crown started a park at Holywell in 1291. Wild deer were often caught for both the initial stock and later restocking, in this aspect of their use, parks act as a trap and storage area for wild venison.

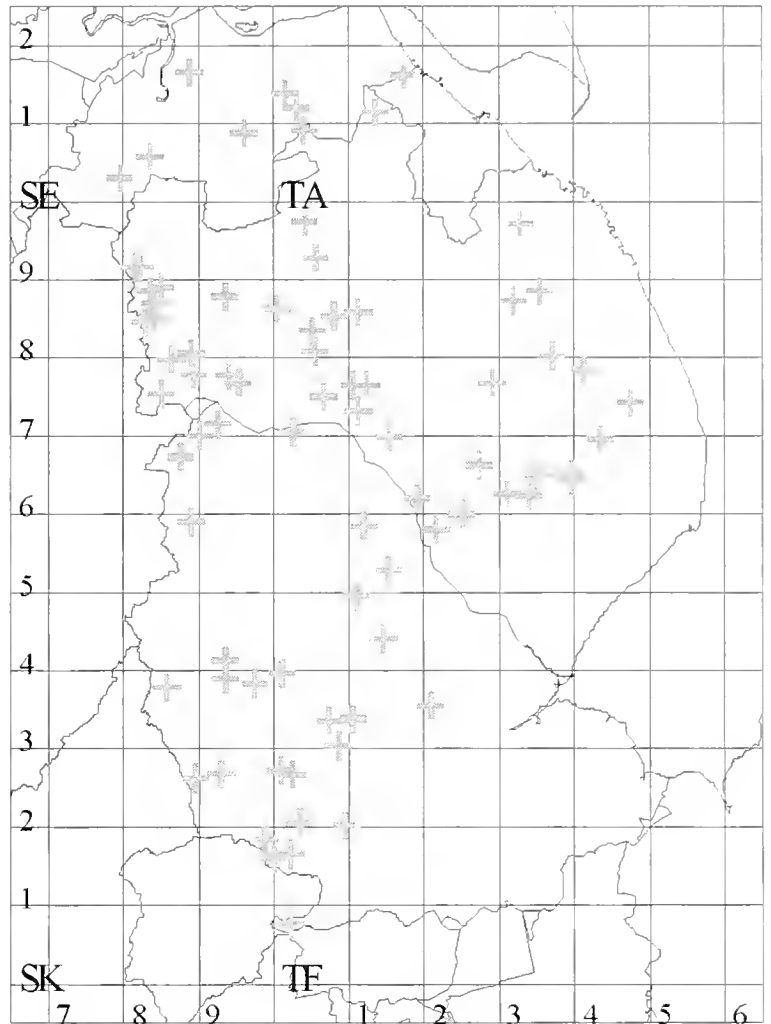
Thonock Chase

This area, northeast of Gainsborough, has been described as a chase but no details are available.

THE HISTORY OF PARKS

Today we call the amenity area in our towns and cities parks, together with the landscaped grounds surrounding stately houses, modern industrial developments and the places where we leave our cars. However, the original purpose of parks was to contain wild animals including deer, their use as such was recorded in Gaul by Columella in the first century AD. The Romans probably had similar parks in this country.

The first record of a park in this country is at Ongar in Essex, which was established in 1045. The Domesday Book of 1086 recorded 36 parks, mostly of Norman origin, or like Ongar, pre-dating their invasion.



Parks in Lincolnshire

The number of parks eventually created is unknown. Leonard Cantor's research has established documentary evidence for 1900 parks during the medieval period (1086-1485) but probably many more parks existed.

Parks were private places for keeping deer and usually owned by the Lord of the Manor. The park would be enclosed by fencing called a pale comprising an earth bank topped with a fence, made of cleft oak stakes and an inside ditch. In some cases stonewalls, or even a substantial hedge, were used to enclose the deer. Typically a park was 40-80 hectares (98-198 acres) and composed of areas of woodland managed as wood pasture and usually located on the edge of the manor. The main purpose of the park was for the owner to keep his deer and produce venison, as wild deer belonged to the King. Fallow deer were usually kept for this purpose but some parks had red deer and occasionally roe. The intensity with which parks were managed varied. In the nineteenth century reports from Grimsthorpe and Irnham describe deer as being stall fed and the meat distributed to all parts of the country and even abroad. Other products from the park included wood, grazing and perhaps fish if a stewpond was

available. In 1536 it became a statutory requirement to keep two breeding mares in parks, this was increased to four if the park was over two miles in circumference. This obligation lasted until at least 1560, probably as part of the Government's preparations for war.

The traditional parks were mostly established by 1350 but subsequent plagues, the civil war and agricultural prosperity caused their decline. In the later Middle Ages during periods of agricultural decline, some larger parks were created; Eagle Park in Lincolnshire at 1,862 hectares (4,600 acres) was perhaps only exceeded in size by the Royal Woodstock Park in Oxfordshire, which extended to some 4,040 hectares (10,000 acres). Created in 1446/9, it is doubtful if Eagle was enclosed by a conventional pale and it does not appear on the maps of 1576.

Deer for stocking of a park may have been given by the King or perhaps acquired from another park. Wild deer could be caught and one method of capture was to use a deer leap, a type of one way fence. However, this practise caused difficulties in and around Forests, as it was a method of acquiring the King's deer!

Many deer leaps are still in use today as ha-ha's. Fencing was considered intrusive by the landscape gardeners of the 17th and 18th century so they used a ha-ha, constructed with ditches and hidden walls to allow uninterrupted views from the house. This enclosed the deer, and allowed escaped and wild deer to easily re-enter the park. The name ha-ha comes from your chuckle if a companion does not spot the hidden wall and falls. These later parks were constructed more for their amenity value and situated closer to the Manor House. Their landscaping heralded the change in the definition of park and current usage does not refer to deer.

EXTINCT LINCOLNSHIRE DEER

Mammals evolved during the Jurassic period over 136 million years ago when dinosaurs roamed the earth. The ancestors of our current deer date from the Miocene period, when large pedicles were a characteristic of antlered animals. In our current postglacial period the retreating ice field gave us a short period of tundra type vegetation, then the rising sea levels broke our land connection to the Continental land mass, forming the English Channel. Since then our climate has been warmed by the Gulf Stream. Three notable extinctions have occurred since the last ice age.

GIANT or IRISH ELK

Megaloceros giganteus

The largest of the deer, adults stood over 1.8 metres at the shoulder, with huge palmated antlers; a set in Chillingham Castle, Northumberland have a 4.5 metres spread. Their worldwide extinction was some 7,000 years ago as Neolithic man colonized our country at a period of climate change.

Their distribution extended from Ireland to Siberia, northwards to southern Perthshire and as far south as the Caucasus Mountains by the Black Sea. Skeletons from the United Kingdom are chiefly found in Irish bogs hence the name Irish elk is occasionally used. Locations of English skeletons include Lincolnshire, Nottinghamshire and Yorkshire.

REINDEER

Rangifer tarandus

The reindeer, or caribou in the Americas, have a circumpolar distribution on the world's tundra. The harsh arctic seasonal pattern of snow cover necessitates an annual cycle of migration over vast distances, a cycle more typical of antelope than deer. The reindeer's tundra habitat is adjacent to the polar ice fields. The ebb and flow of these ice fields during the glacial epoch, gave Lincolnshire periods of tundra habitat with native reindeer. Their antlers have been found throughout the country although their colonisation was only for a brief period after the last glaciation retreated. Their extinction was probably due to climatic change.

Reindeer are unique amongst the world's deer as both sexes have antlers, perhaps an adaptation to the migratory cycle, which necessitates life in mixed sex herds. Reindeer antlers extend well forward over the nose with a palmated brow palm, which is used during feeding for moving snow, an advantage confined to the cows who retain their antlers during the winter.

The bulls' antlers are cast in the autumn and do not regrow until spring, so the cows easily dominate the herd during the critical winter period.

Reindeer eat large quantities of lichen, particularly Icelandic moss, *Centraria islandica*. The current British distribution of this lichen is mainly in north west Scotland, with a small remnant at Linwood Warren in central Lincolnshire indicative of a past period tundra type habitat.

Reindeer were introduced in 1952 at Glenmore in Scotland where a herd of some 100 feral animals are maintained.

ELK

Alces alces

Elk have a worldwide sub-tundra distribution in the northern woodlands between latitudes 45° and 70°, a zone that encompasses Great Britain. The elk, or moose in America, is the world's largest deer standing over 1.8 metres at the shoulder with exceptional specimens in Alaska weighing up to 800 kilograms.

Only the males have antlers, which are palmated and project laterally from the head. The antlers are cast in autumn but, as with reindeer, they don't regrow until the spring. Bull elk have a tassel of skin and hair under the chin properly called a bell.

Elk rarely congregate in groups, leading a relatively solitary life style more typical of the smaller deer species, with which elk share a browsing feeding style. They have long legs which allow the animal to move easily through deep snow, and they take readily to water, being able to close their nostrils when feeding on submerged aquatic vegetation.

In both Europe and America, elk numbers are increasing following increased controls to prevent over-hunting. Elk were extinct in Lincolnshire by the Neolithic period (c.4,500 - 2,000 BC), probably due to man's influence.

CURRENT LINCOLNSHIRE DEER

RED DEER

Cervus elaphus

Red deer are Britain's largest land mammals and usually associated with images of Scotland. Red deer occur throughout Europe with their range extending into Tibet/Afghanistan. Although taxonomists have described numerous sub-species, many differences within the species can be attributed to nutritional factors. In the United Kingdom a red deer stag in Scotland may weigh 68 kilograms, yet in other parts of Great Britain a similar deer can exceed 225 kilograms. Many recently established deer farms have used Scottish deer as their source stock, body weights rapidly increasing with the improved nutrition.

The British red deer are of the Atlantic type found throughout much of Western Europe. They have been classified as a separate sub-species *Cervus elaphus scoticus*, but having been subject to a considerable number of translocations may actually be comprised of hybrid stock. Even today, deer farmers search the world for improved genetic material, with red deer from eastern Europe widely advertised, animals that are themselves considered separate sub-species of *Cervus elaphus*.

Appearance

Standing up to 1.2 metres high at the shoulder, red deer are an impressive sight at close quarters. The summer coat is a rich dark red with a creamy caudal patch; in winter the coat takes on a grey/brown colour, with the stags developing a prominent mane. The tail is about 150 mm long with no white marking unlike our other large deer.

Antlers

A stag's first head may only be simple spikes, the number of points and volume increasing in subsequent heads and as the animal grows to maturity it will develop large branching antlers typically with up to 12 or 14 points (tines). An animal with 12 tines is called a Royal; each antler having Brow, Bez and Trez tines finishing in an elegant cup of three tines. In favourable feeding conditions a 12-tine head might occur in a younger animal with the stag developing over 20 tines in his prime.

The Red Deer's Year

The stags live in small bachelor groups during the summer, and return to traditional rutting areas in September. Their necks swell during this period and the stags wallow in muddy pools, anointing themselves with moist mud contaminated with their urine. The stags compete with each other in forming harems, roaring frequently as the rut reaches its climax in late October. Fights may occur between opposing stags who expend considerable energy keeping the hinds together. Younger stags rarely challenge the master stag but keep a watching brief for any stray hinds.

The rut will be over by late November and the sexes then separate, the stags returning to their bachelor groups and the hinds forming small groups (parcels), accompanied by calves of the year and some younger stags. A successful rutting period seriously depletes the stags' body condition and they may not last the winter.

The oldest stags start casting their antlers in March, with younger animals carrying their antlers until April.

May/June sees the hinds giving birth. After birth the youngsters or calves lay quietly, with the hinds returning to feed them several times a day. By now the winter coat will have been shed.

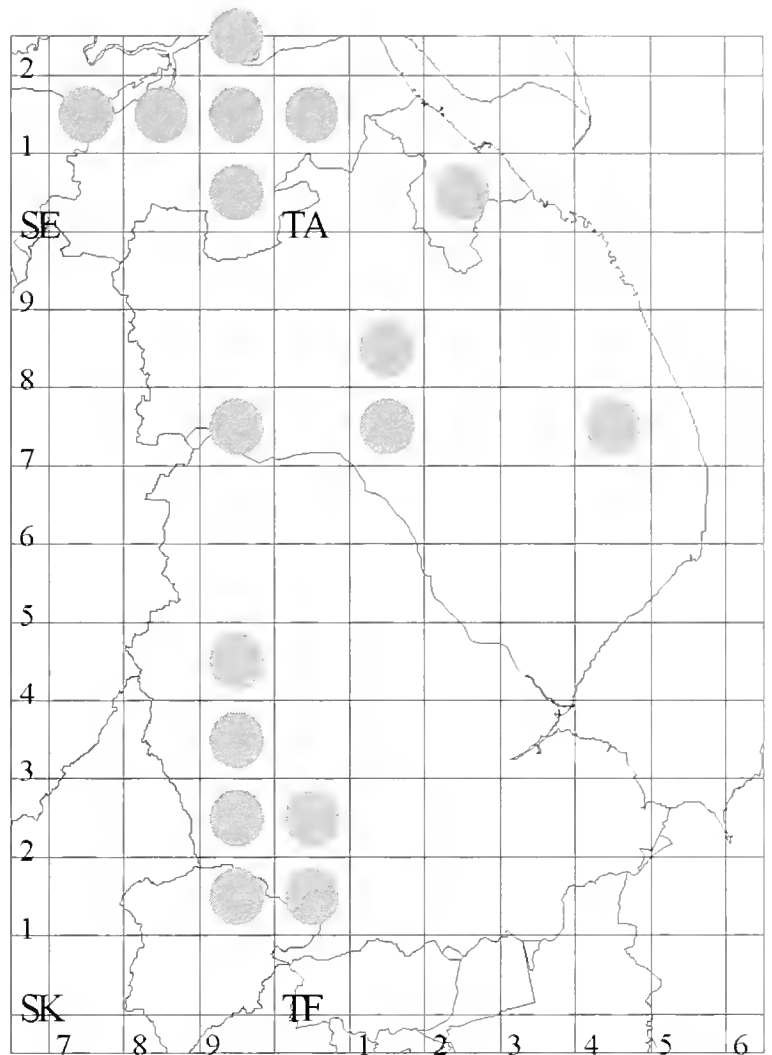
In August the stags start fraying their newly grown antlers, but younger animals may still have their antlers in velvet in October.

In the favourable condition of southern England a hind may have her first calf at two-years old and continue breeding yearly for the remainder of her life. In Scotland few hinds breed every year and these temporarily barren animals are called yeld hinds. Stags without antlers are called hummels but, they will grow antlers if the pedicle area is stimulated by a small wound. Hummels are probably born late in the year and, being too weak to grow pedicles in their first winter, they are physiologically unable to grow pedicles later, unless the pedicle area is wounded, thereafter they grow antlers normally. In the southwest of England hummels are called notts.

Current Distribution

The deer parks at Grimsthorpe were established in 1536, separate parks being kept for red and fallow deer. The Red Deer Park contained about 60 deer in the middle of the 19th century, with numbers peaking at 260 before World War Two. A large number escaped in 1941 when the park was used for military training. Most were culled and it is thought only one hind survived. Perhaps more survived, or she was pregnant with a stag calf, as this was the start of the present feral population.

By 1973 the Grimsthorpe red deer were considered to be in poor condition, perhaps due to in-breeding. Three Scottish stags from Drummond Castle, the Trust's Perthshire estate, which then was outside the range of red/sika hybrids in Scotland, were released to improve the population. In 1987 Grimsthorpe Park established a deer farming enterprise using animals from their Scottish estate and in 1998, two stag and two hind calves were released from the farm to enhance the wild population. Grimsthorpe Estate's 1998 count totalled 23 animals:



	Stags		
	1 x 19 points	14 Hinds	(Via, Mr T. P. Clarke,
Managing	1 x 8 points		Agent, Grimsthorpe and
	1 x 6 points	5 calves	Drummond, Castle Trust
	1x spiker		Limited)

In the northwest of the county on Thorne and Hatfield Moors, sporadic sightings of red deer have been made for 30 years. Breeding within this population was first reported in 1996 and the small number of deer present includes some with ear tags. Established deer farms in this area are the likely source of these deer although their genetic origins are unknown.

Since the early 1990's, red deer have been reported east of the river Ancholme in the Worlaby Carrs area of Lincolnshire. The origins of these

deer are unknown. However, a stag killed in 1997 was identified by his ear tag as of Hungarian origin, definitely a farm escapee! By late 1998 a count of the feral herd totalled 21 animals:

Stags		
1 x Mature	11 Hinds	(Via, Robert Young, Elsham Hall Country and Wildlife Park)
4 x Immature	5 calves	

Escapees from parks and farms may occur elsewhere within the county and, as red deer can range over a large area, occasional reports might not necessarily represent a breeding population.

The Future

The small population of the Grimsthorpe red deer make the population vulnerable. Currently they are a genetically isolated population apart from possible deer farm escapees. The Grimsthorpe estate is actively managing this population, but until their parentage is established and we know if they are pure *Cervus elaphus scoticus*, further releases, however well intended, may be misguided.

Lincolnshire's red deer population in the Isle of Axholme is of mixed parentage, but is re-establishing itself in one of its traditional areas. The establishment of the Humberhead Peatlands National Nature Reserve (NNR) (incorporating Thorne, Goole, Crowle and Hatfield Moors) will result in future management of this area having many similarities with the ancient Hatfield Chase. Conservation management of the reserve has in recent years focused on the removal of scrub and the use of grazing to prevent regeneration. The establishing red and roe deer populations will control the scrub although their effect is not as easy to control as sheep grazing. However, the costs are considerably lower and the need for miles of intrusive fencing avoided. The reserve is likely to comprise the core area of this deer population and it remains to be seen how many deer can be accommodated before animals raiding crops outside the NNR are subject to crop protection measures.

Reports elsewhere of red deer are, like the "Isle" deer, probably of mixed parentage. Perhaps we should welcome the unplanned return of red deer to Lincolnshire even though any planned reinstatement of deer populations would have been carefully sourced from foundation stock, the currently establishing populations are risking the genetic integrity of our native red deer - if this sub species still exists.

FALLOW DEER

Dama dama dama

Fallow deer have been resident in Lincolnshire for over nine hundred years, with densities of over 40 per square kilometre reported for areas in the southwest of the county. For many years they have been Lincolnshire's most common wild deer, a status soon to be eclipsed by muntjac or perhaps roe.

Archaeological remains of fallow deer species in Europe date from the Cromerian interglacial (450,000 years ago). Clacton fallow *Dama dama clactoniana* was a larger animal with a slightly different antler form were a common large mammal during the Hoxnian interglacial (200,000 years ago). A larger form of our present fallow deer *Dama dama dama* was present during the Ipswichian interglacial (100,000 years ago). Fossils of *Dama dama* from these interglacial periods have been found in Great Britain.

In postglacial times, fallow deer only survived in Asia minor (Turkey). Fossil records from southern Europe may not indicate native fallow, as the Phoenicians (Eastern Mediterranean) were trading in fallow during this period. Fallow deer are not found in Mesolithic or Neolithic sites in Britain, except for an old report from Skendleby in Lincolnshire; unfortunately the fossil can no longer be traced for verification.

The Romans were certainly familiar with fallow deer, keeping them in a park in Gaul (France, Belgium and parts of Netherlands, Switzerland and Germany) in the first century AD. They may also have kept fallow deer in England during this period but there are no Anglo-Saxon names for these deer, so they are unlikely to have outlasted the Roman Empire within the British Isles.

The trade in fallow deer continued under the Normans, who introduced them, together with the concept of forests and popularised parks in the late 11th century. Lincolnshire's fallow populations are all associated with current or derelict parks, except for the remarkable introduction to Read's Island, a seemingly inhospitable habitat in the Humber Estuary.

Appearance

The large palmated antlers are an impressive sight on a mature fallow buck, which together with a conspicuous brush, long tail and a prominent Adam's apple are unique features among British deer. Fallow are smaller than red deer with a height at the shoulder of about 90 cm. The coat is often spotted, but long periods of captive breeding have enabled man to selectively breed for colour.

The common coloured animals are perhaps the original animals; the coat in summer is a fawn colour with numerous white spots on the flanks and a black dorsal line. The tail is black on top and white underneath, the caudal patch is white surrounded by a black line. In winter this coat is a dull brown with the spots scarcely visible.

The Menil coloured deer are a paler variation, lacking the black marking of the common coloured deer, its white spots are retained in the winter coat. The fallow in Revesby Park are all Menil coloured animals.

Black Fallow is a name used to describe the dark coloured animals. The coat is dark chocolate colour without any white markings. These deer have been called the "forest type", hinting at ancient origins. It is commonly believed that James I imported this colouration from his father-in-law, the King of Denmark in 1612. In fact, black fallow were already resident in this country, records from Windsor Park date from 1465 and Leland reported black fallow in a park in Lincolnshire in 1535. Scrivelsby has kept fallow since the Medieval period, today they are all of the black variety, possibly related to the animals mentioned by Leland.

White fallow are usually born with a sandy-ginger coat, which gradually becomes white as the animals mature. These animals are very conspicuous in the wild, so they are often culled to make the herds less visible to poachers. Houghton Park, in Norfolk exclusively keeps this colour type.

Antlers

The pedicles start to grow in a young buck's first winter, and in the following summer he will grow his first antlers, which will usually be simple spikes. In later years the antlers will grow additional tines, the distinctive palmation may first appear in the second, third or fourth head, with the antlers increasing in size until the buck is middle-aged.

The Fallow Deer's year

The bucks, having lived in small bachelor herds, return to the rutting area in late summer with the rut taking place in October/November. Fallow deer are usually reported to rut on a stand that is frequently used for many years. Rutting areas are typically marked with scrapes, often with a tree as its focal point that is anointed and thrashed, and the bucks groan frequently and defend the area from other bucks. Rutting stands may be widely separated or contiguous with adjacent small stands surrounded entirely by the stands of other bucks forming leks, similar to those formed by birds such as the black grouse. Does in season seek out the stands and mate with the resident buck. Some populations are reported to rut in harems like red deer, these different forms of rutting behaviour may be due to different densities of bucks and does or the type of habitat.

Rutting activity subsides in late November and the sexes separate, mature bucks may have lost 25% of their body weight during the rut and they often live in a home range some distance from the does.

During the autumn period the slightly duller winter coat grows through, with the common coloured animals losing their spots.

The does will form herds, accompanied by young bucks who may remain with the does until they are nearly two years old. Typically six to twelve will be seen together, but the grouping can increase in late winter, with herds of over 100 observed in south-west Lincolnshire.

In April the bucks start casting their antlers. The oldest bucks are usually the first to cast with the open wound soon healing as the new antler grows. Fallow can look very untidy during this period as the moult results in clumps of the winter coat falling out. The does will still be accompanied by their fawns but group size will be declining, as they are now heavily pregnant.

May/June sees the does giving birth. Like other deer, the newborn fawns lay quietly, with the does returning to feed them several times a day. The fawns start to accompany their dams after a few weeks and can be seen playing in groups as the summer progresses.

In August the bucks start to fray their antlers, which appear white at this period but soon discolour. The period of fraying is short lived as the purpose is solely to remove the velvet from the antlers. The does will be accompanied by their fawns and herd size starts to increase.

Current Distribution

It is possible that we had no wild fallow in the early 20th century and by the 1930's only a few deer had been observed in the southwest. The park at Grimsthorpe was disbanded during World War Two and is probably the source of many of these deer. Escapees from Belton Park, together with those from Burghley, have probably reinforced this population. Today this population is perhaps the densest in the country.

In the Lincolnshire Wolds, Scrivelsby Park has kept fallow since medieval times and Revesby Park for over a century. The deer in Revesby were driven by road

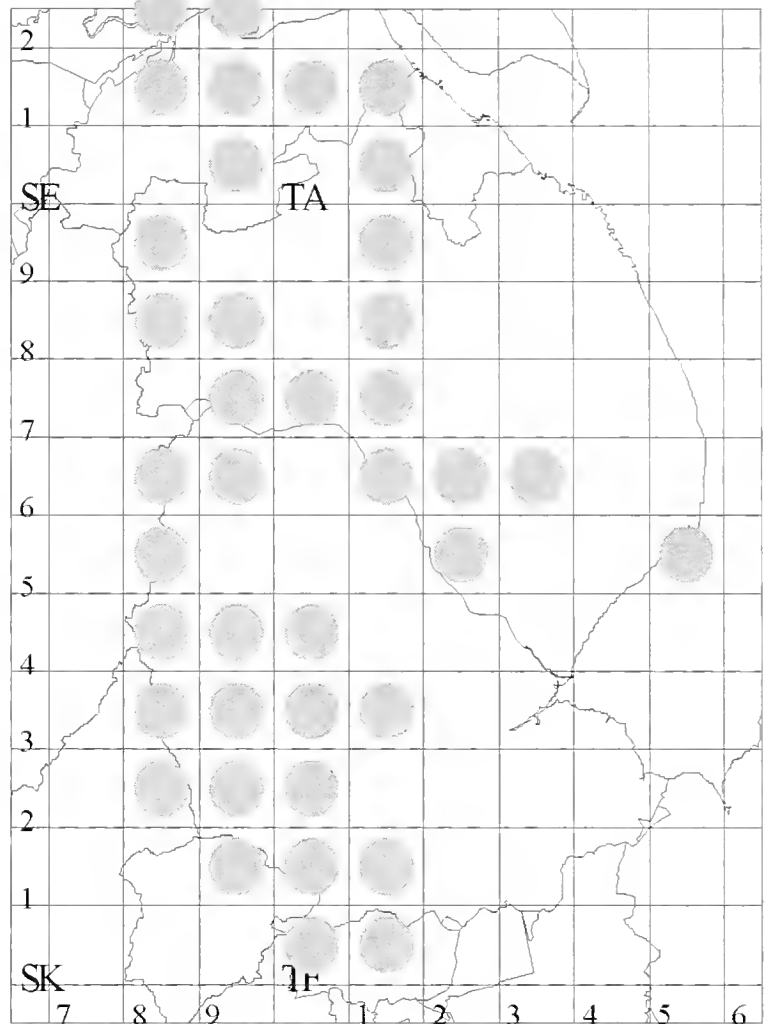
from Syston Park when it was disbanded. This must have been quite a sight, though an impractical method of moving deer today. The small wild population adjacent to these parks number perhaps 60 animals.

Brocklesby Park kept fallow until World War Two when it was used as a battle training school. The deer in the area are mainly descendants from this source. This population of some 150 animals keeps mainly to the Brocklesby estate, with occasional reports in Willingham woods.

Normanby Park keeps both red and fallow deer, some of whom have escaped. Fallow deer have been reported in the Trent Valley from Swinderby northwards; these reports probably relate to transient animals from Normanby, Lincolnshire's south-western population or animals from Nottinghamshire. Are we witnessing the establishment of a new fallow population in Lincolnshire?

Read's Island

Read's Island is an estuarine island in the River Humber shaped by erosion and accretion of the surrounding river channels. Artificial embankments first established in the 1840's facilitated the development of an island that may have amounted to 500ha, before the current cycle of erosion that has reduced the island to 60ha.



The island was purchased by the late Sir Joseph Nickerson in the 1960s and kept mainly as a wildfowl sanctuary. Sheep and cattle had been used for grassland management, but the problems of shipping them to the mainland led to their replacement by fallow in the 1970's. The deer multiplied, despite regular culling and numbered about 180 by the late 1980's. It was decided to remove all the deer and numerous efforts were made to live-capture them, these failed and most were culled, only 3 remained (D Mouncey, 2005).

Today, the Royal Society for the Protection of Birds manages the island. In 1998, embankments were strengthened and a series of automatic sluices installed so that 17ha of the island could be artificially flooded to form three saline lagoons that support a nationally important population of breeding avocet. The small breeding population of fallow deer numbered 14 (Short, 2003), they cause problems by damaging the lagoon banks and trampling the avocet's nests, but also stop scrub establishing which is essential for the island's functioning. Read's Island is closed to visitors and access is very difficult so the deer population is naturally regulated, however, on several occasions deer have swum between the island and the mainland.

The Future

The county's feral fallow are based on past escapees from captive populations. The two world wars resulted in considerable thinning of woodland, with the regenerating scrub providing optimum habitat for deer. Consequently the escapees were able to establish breeding populations. The population thus established in southwest Lincolnshire has proved resilient to heavy but un-coordinated shooting pressure and now exist at a level that threaten sustainable woodland management. The Kesteven Deer Society was formed in 1975 to coordinate the management but this society folded in the early 1990's.

The Grimsthorpe Estate's census for 1998 reported 325 Fallow on 52.61 km² (13,000 acres), a density of per 6.17/km² (16 fallow per square mile). Fallow are known to be present in large numbers in south-west Lincolnshire; the distribution map shows fallow in 14 x 10km squares. The area around Stamford comprising parts of SK90, 91, TF00, 01 and 10 amounting to 3x10km² is outside the county boundary. I believe that the records for TF11 and 13 do not relate to resident populations of fallow, with only a few deer in SK 82, SK94 and TF04, this leaves an area of 6 x 10km² as the core area of this population. The Grimsthorpe Estate's density figure of 6.17/km² extended to this area of the county gives a probable population of 3,700 fallow deer. Density is probably not uniform through the area, but the estates census may be more representative of a large area than the

previously quoted 40km².

In other locations within Lincolnshire, fallow have established and are sustaining populations, yet they show a reluctance to colonise adjacent ground. Suitable habitat is available in many areas for fallow such that an increase in their numbers is possible, but experience elsewhere suggests that new populations need man's assistance. The remaining habitat is rapidly being colonised by roe and muntjac which, while not directly antagonistic to fallow, may decrease the likelihood of their further expansion. Fallow are rarely the first choice in deer farming so it is unlikely that this industry will influence expansion of their range.

SIKA DEER

Cervus nippon

Sika deer⁵ were introduced to Great Britain in 1860 from the Far East. In Lincolnshire the only report of a wild sika was at Gibraltar Point in April 1993. Where did it come from? Sika are not currently kept in parks or collections in Lincolnshire, no releases are recorded and the nearest known population is in Northamptonshire. Perhaps this report is the result of an identification mistake.

Appearance

Sika are similar in size to fallow deer, but with a more rounded appearance and a stockier build. The summer coat is chestnut coloured with white spots (some fallow have spotted coats in summer), in winter the coat is nearly black. Sika have a light coloured U-shaped band on their fore-head running from over the eyes to a point between them, a white metatarsal gland above each hock and a white caudal patch edged with black. The fallow deer's conspicuous brush and Adam's apple (mature males only) are absent in sika. The tail is shorter than fallow deer's.

Sika antlers normally develop to a maximum of 8 points (10 - 11 are occasionally recorded) when mature, in contrast to the fallows large palmated antlers. In younger fallow the antlers comprise a number of tines without palmation and so can be confused with sika. The angle between, the brow tine and main beam is a reliable identification feature, being narrow (about 60°) in sika and wide (about 120°) in fallow.

The Japanese species *Cervus nippon nippon* are slightly smaller than the mainland species. These island types are thought to be the source for populations at Dawyck near Pebbles in the Scottish Borders and in the New Forest, where they live alongside red deer.

The Asian mainland types include; Manchuria and Formosa types, *Cervus nippon manchuricus*, *C nippon taiouanus* and numerous other sub-species described by taxonomists. The range of these mainland types is coterminous with the Asian range of red deer *Cervus elaphus sp* and wapiti *Cervus canadensis sp* with whom they will breed. Cross breeding is unlikely to occur in the wild, a first cross probably occurs in captivity, perhaps initiated by an unbalanced herd structure, or close confinement in parks or collections. The first crosses then breed readily with either of their

⁵ Sika is the Japanese name for deer.

natal species. The many mainland types of sika are probably types of these hybrid animals and unfortunately they have been the source of most of the British population.

The mainland races are typically 75-100mm taller at the shoulder than the island species, the velvet having a pinkish colour compared to the black velvet of the latter. Numerous other subtle differences between different sika types have been reported, but until the taxonomy of sika is understood, assigning these apparent differences should be treated as speculative.

The Sika's Deer's Year

The Sika's yearly cycle is similar to the red deer's but the most noticeable difference is that stags whistle rather than roar during the rut. In some populations stags hold harems during the rut, in others a rutting territory. Feeding habitats have been described as browsing or grazing varying with different populations.

Sika - Red Deer, cross-breeding?

Exaggerated accounts about the expanding red deer population in Scotland do not include the increased numbers of sika-red deer hybrids that may threaten the existence of "pure" Scottish red deer. Sika - red hybrids dominate the red deer population in south-west Scotland, perhaps a third of the Scottish red deer range is comprised of these hybrids. Sika appear to thrive in dense coniferous plantations where management may be very difficult, perhaps only on Scottish islands will pure red deer survive. The spread of sika must be resisted on farms and parks in Lincolnshire whilst native red deer are present. The only known attempt to keep sika in Lincolnshire was at Normanby Park where a pair was kept in the 1970s where they proved aggressive towards visitors and were soon removed.

Wild sika occur in Northamptonshire, a herd of some 70 animals is established near Oundle. These sika are only some 20 miles from our southern red deer so reports of sika in south Lincolnshire are consequently credible.

ROE DEER

Capreolus capreolus

Roe are perhaps the most graceful of our wild mammals, a delight to see yet with an aggressive bark should they be inadvertently disturbed. As woodland animals they have a territorial nature and shun life in herds. Their requirement for woodland habitat delayed the colonization of our country as the last ice age retreated and they didn't reach Ireland before the Atlantic severed the land link between our countries. However, like red deer, roe deer are an indigenous species.

Man's early reverence for deer is demonstrated by Stone Age cave paintings, although apart from a single doubtful exception, these omit roe. In Saxon times roe were not considered beasts of the venery, worthy of hunting, like the hart, hind, hare, boar and wolf. The lack of special protection was addressed by the Normans under whose forest law, roe were included with red and fallow deer as beasts of the chase. This protection lasted some 250 years when the Court of Kings Bench in 1338 decided that roe were beasts of the Warren, on the grounds that they drove away other deer.

Roe declined during the Middle Ages, a period that was perhaps the heyday of coppice woodland management. They were scarce in the Midlands by 1586 and probably extinct in England by the 17th century, when Charles 1st tried unsuccessfully to introduce roe to Wimbledon in 1633. The reason for their decline is not documented. Roe being small and with a solitary life style must have been extremely difficult to exclude from coppices, whilst their territorial behaviour regularly using the same paths made them easy to trap.

Native roe are known to have persisted only in the Scotland. The roe's southerly spread was assisted with translocations, woodland clearance and regrowth following two world wars and, since the 1920's, the Forestry Commission's plantings. The new plantations proved an ideal nursery ground for the present population. A release in 1913 of Austrian roe deer in the Lake District may have compromised the genetic integrity of the northern roe population.

Inevitably man assisted by the introduction of roe deer; for example, Lord Dorchester introduced roe to Milton Abbas, Dorset between 1780-1800. The deer came from the menagerie of Mr Brookes, possibly from Penrith or perhaps France and so of continental origin. At Petworth, Sussex, roe are alleged to have survived for 600 years within the park, however, Lord

Egremont released some c1805.

The introduction of German roe at Elveden in 1884 inaugurated the present East Anglian population, as the simultaneous release of roe from Dorset in Epping Forest did not thrive and the Essex deer were extinct by 1922.

Research work on roe skull measurements by Lowe and Gardiner (1983) has confirmed a distinct identity for these populations; Alice Holt - Surrey, Petworth - Sussex and Kielder - Northumberland. Eventually these populations will meet and genetic intermingling will diffuse variations of colouration and antler growth currently apparent.

The range expansion and southerly spread of the native Scottish roe is well documented. The first report in Lincolnshire is from Laughton Forest in 1969, after they had crossed the river Trent. Roe had reached the central Wragby - Bardney Lime Woods by 1978. Displaced bucks are usually noted in a pioneer phase long before the establishment of a breeding population. Roe are still spreading throughout the county, which is about the southern limit of our northern population and still isolated from their "southern" and East Anglian relatives.

Appearance

Gazelle-like and about the height of a Labrador, roe are the most graceful of our deer. The summer coat is a foxy red/chestnut colour but the thick winter coat is grey/brown giving a comparatively heavy appearance. A distinct white rump patch (target) is visible with the winter coat, varying in form, kidney-shaped on bucks and heart-shaped on does, with some roe having white throat (gorget) patches on the throat. Roe have no visible tail. The moult into summer coat is usually in April, starting at the neck.

Antlers

The antlers are grown during the winter, a feature unique to roe deer in this country. Old antlers are cast in November/December, with the velvet frayed in April. Roe have thicker velvet than other deer, so the growing antlers look unusually large.

A typical mature head will have 3 points on each side. Younger animals may only have simple spikes, and then in subsequent heads additional points develop until the mature head of 6-points. The growing of antlers during the winter, a period of food shortage, in conjunction with the increased likelihood of damage whilst in velvet, ensures considerable yearly variation in antler shape.



Extinct, Giant or Irish Elk. Photo, G K Whitehead.



Reindeer/Caribou. Photo, Dean Biggins, United States Fish & Wildlife Service.



Bull Moose. Photo, Ralph Towns United States Fish & Wildlife Service.



Red stag. Studley Royal, Yorkshire, October 1998.



Red deer hind. Woburn Abbey, Bedfordshire, Sep 2005.



Red deer rut; the stag is roaring and holding a harem of hinds. Bradgate Park, Leicestershire, October 1998.



Red deer hinds and calves. Woburn Abbey, Bedfordshire, Sep 2005.



Red stags, both have ear tags and they have probably escaped from a farm/park. Aby, August 1996. Photo, Oliver Burkitt.



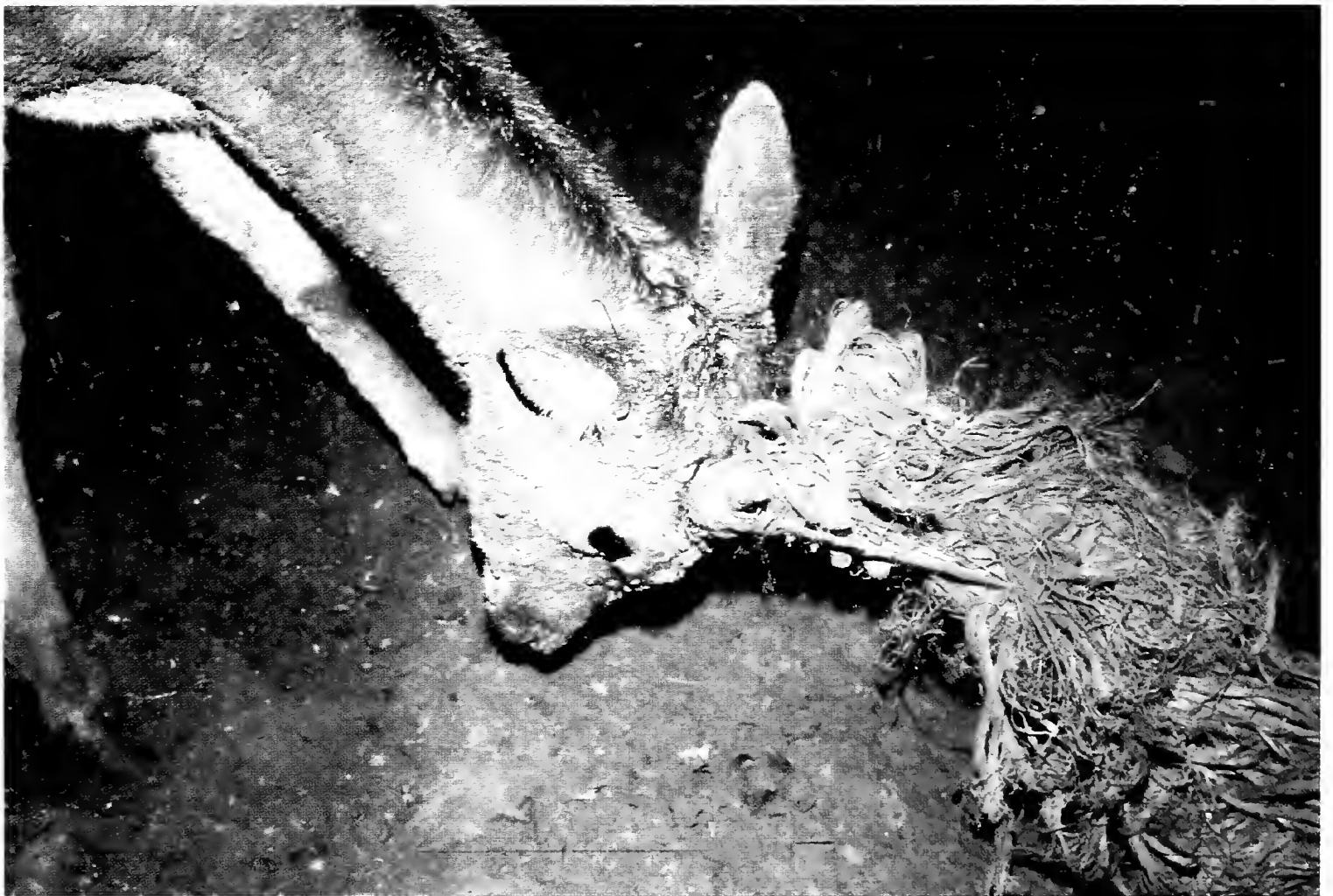
Fallow pricket (1st set of antlers) with one antler cast. Revesby Park, April 1995.



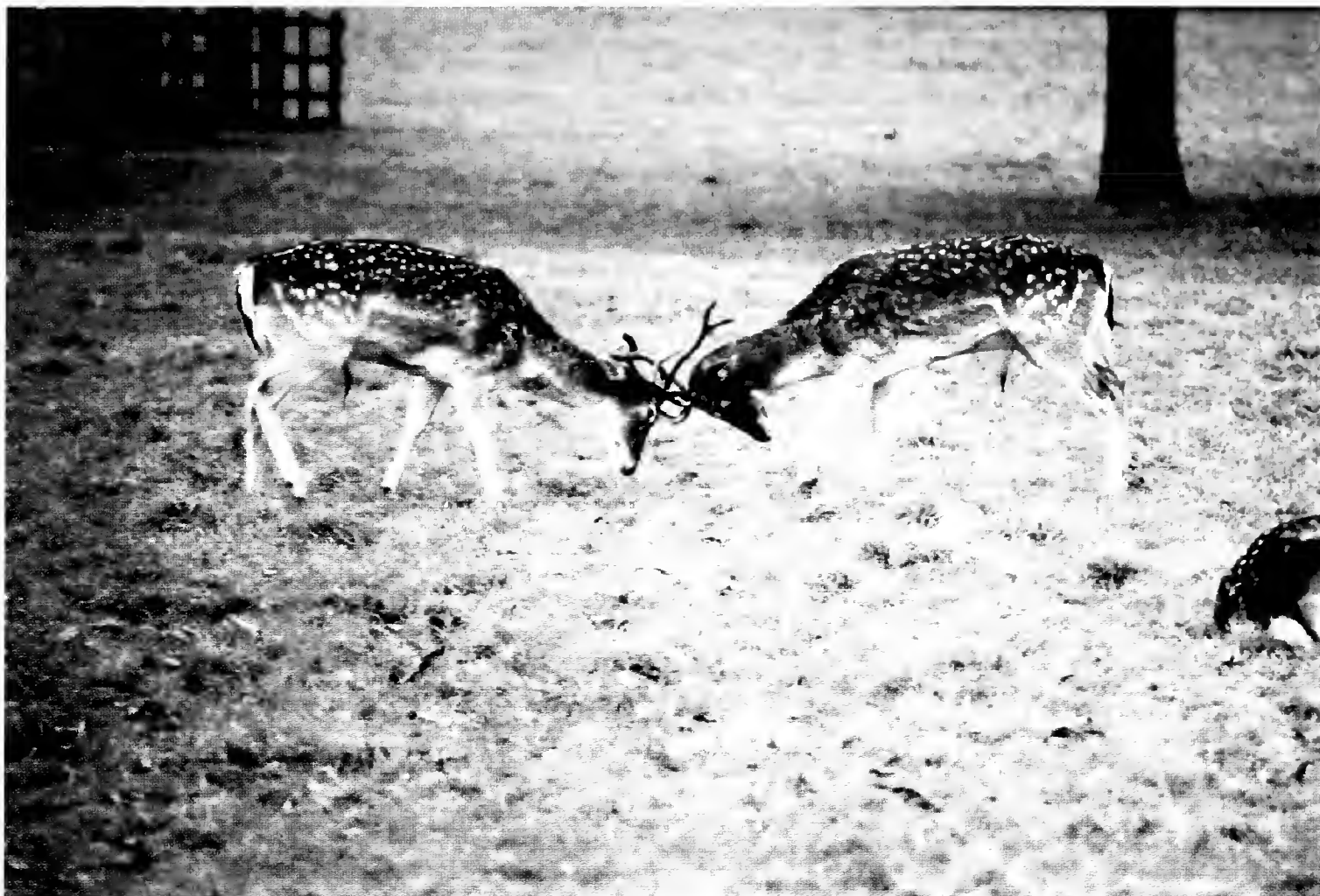
Fallow bucks with antlers in velvet; black and common coloured animals. Belton Park, June 1998.



Fallow buck with newly cleaned white antlers. Normanby Park, 1989.



Fallow pricket (1st set of antlers) tangled in baler twine, Grimsthorpe. Photo, Philip Grimes.



Fallow prickets practising fighting. Wollaton Park, January 1998.



Fallow buck; showing identifying features of palmated antlers, prominent Adam's apple and "brush". Normanby Park, September 1998.



Fallow deer, the four colours, Bradgate Park, Leicestershire, October 1998.



Fallow rut; buck groaning. Bradgate Park, Leicestershire, October 1998.

Damage to the testicles during this period of antler growth interferes with hormone production causing continuous growth of the antlers. This gives a Presque head, a condition rarely found in other deer.

The Roe Deer's Year

The roe's year starts in April, the buck fraying his newly grown antlers while establishing a territory. Fraying continues until late August for territory marking purposes, often accompanied by scrapes at the base of the frayed stem. The purpose is then to anoint the territory with secretions from scent glands found below the eye, at the base of the antler and between the cleaves of the feet.

Does will probably be accompanied by last year's kids, but the association is in decline, with the doe usually unaccompanied prior to giving birth in May/June. The newly independent kids must establish their own niche, doe kids often stay close to their natal area and their range may overlap with their dam's range. Buck kids live a perilous existence while securing a territory, perhaps living as non-territorial animals near their birthplace, or moving large distances in search of a territory.

May/June sees the birth of the kids, which lay up for the first few days and the doe only returns to feed them. The kids are spotted at birth and allegedly have no scent during this phase of their life, to prevent predators detecting them. Typically two kids are born and their forays, accompanying their dam, increase in frequency as summer progresses. The alarm call of a kid, a series of rapid squeaks usually brings the doe back.

The rut is in late July/August, the bucks become increasingly bold as the does come into season. The doe will only come into season once and is pursued by the buck in long chases, perhaps around a small tree. This activity is more apparent in warm weather but is not continuous and bucks and does will feed and rest at times, so the buck's weight loss during this period is minimal.

After the rut is over, territorial behaviour breaks down and after a quiet period in late August/September, the bucks increasingly accompany the does and kids in small groups.

A period of rut-like activity may occur in October - the false rut. This is considered by some to be frolicking by adolescence bucks, however up to 48% of Roe kids may conceive, though few will establish a viable pregnancy. Kids' breeding at 5 months old during the false rut seems more plausible than at 2 months of age during the main rut.

In November the older bucks start to cast their antlers, followed by the younger bucks. The buck kids will start to develop pedicles during the winter while their peers grow new antlers. The winter coat's target provides the easiest way of sexing roe during this period, when small mixed sex groups are frequently seen. The lack of vegetation during the winter makes roe more apparent and, if disturbed, they will bound away, often barking frequently.

Roe are unique amongst deer in having delayed implantation, like badgers and grey seals and in January the embryos are implanted. The precise evolution of this trait which is possibly an adoption to cooler climates is unknown. However, it may account for the absence of late births following the false rut.

Roe are less active as winter progresses and their dawn and dusk pattern of feeding coincides with man's activities during the short days. Mortality in roe deer can be as high as 50% in the first year. Life expectancy thereafter is approximately 10 years.

Parasites are frequently found, ticks and keds are easily observed and very apparent in sick deer. Lungworm and liver fluke may cause heavy mortality amongst younger animals.

Current Distribution

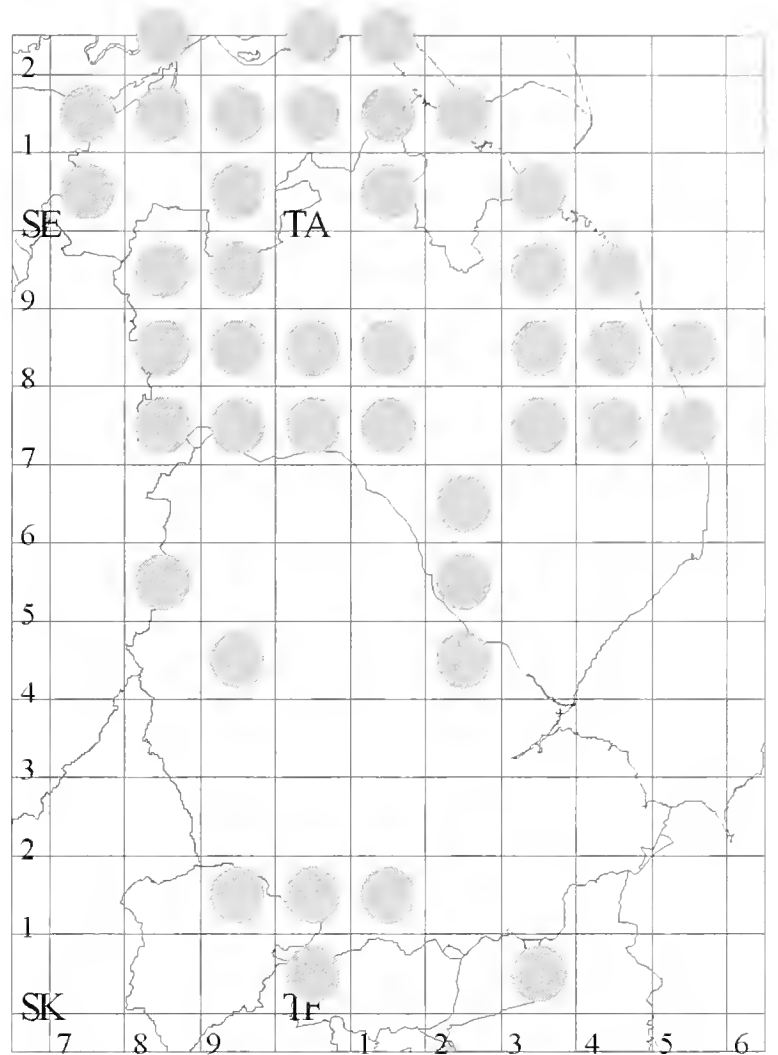
Roe being both small and solitary can easily pass unnoticed in woodland, their numbers perhaps only becoming apparent when they fray saplings alongside a path or browse new coppice. Census work on roe has proved very unreliable but a recent county survey reported a density in woodland of 15.2 km² in the county. Lincolnshire has some 22,500 hectare of woodland so may eventually support an established roe population of 3,400 animals.

The county's current roe population is in a colonisation stage. Whilst the first records are from 1969, these probably relate to displaced bucks which can travel long distances. A breeding population may not have become established until the mid 1970s. Research work has shown that British roe populations can increase by 15-25% per year. A breeding group of say ten animals will take between 27 and 44 years to establish a population of 3,400 animals. This increase is likely to be accelerated by immigration but emigration will probably be a factor in the population dynamics of our roe

until counties to the south and west support established populations. The current lack of damage attributed to roe must be related to their reproductive ability, our established population of 3,400 may only have numbered a few hundred animals a decade previously.

The Future

The return of our “native” roe to Lincolnshire is threatened by the spread of our southern roe population and the inevitable pooling of genes. The southern roe are of Continental stock, so ironically after an absence of centuries the return of “native” Roe to Lincolnshire may only last a few decades, before a hybrid population becomes established. The county’s roe population is still expanding and increasingly reports of woodland damage are being made, with many estates just beginning to manage roe deer.



MUNTJAC DEER

Muntiacus reevesi

Muntjac were once indigenous to our continent, their fossil remains being found in Miocene deposits in France and Germany, dating from twenty million years ago. In modern times they are confined to south-east Asia, with three species contributing to feral populations in this country: Indian muntjac *Muntiacus muntjac*, Reeves/Chinese muntjac *Muntiacus reevesi reevesi* and Taiwan muntjac *Muntiacus reevesi micrurus*. Little is known about muntjac in Asia, several new species such as the Leaf deer *Muntiacus putaoensis* and Truong Son *Muntiacus truongsoneensis* have recently been reported bringing the total number of known muntjac species to ten.

Indian muntjac *Muntiacus muntjac* were first kept at London Zoo from 1829, the zoo being one of the sources for a collection kept at Woburn Abbey (Duke of Bedford) from 1893 until the 1930's. The Duke first released Indian muntjac at Woburn in 1902. How long they survived is not known, but there are no records of feral Indian muntjac since the First World War. Indian muntjac do not appear to thrive in our climate. A collection introduced to Whipsnade Zoo in 1929 did not prosper. However, later records confuse them with Reeves muntjac so how long they survived is not known. For many years it was reported that our feral muntjac were a hybrid between Indian and Reeves muntjac. While these deer will breed together, their offspring are sterile so Indian muntjac have not contributed to our present feral population.

Reeves muntjac *Muntiacus reevesi* were first kept at London Zoo from 1838. Other imports followed, including some from Taiwan *Muntiacus reevesi micrurus*, which may be a sub-species of Reeves muntjac. The animals interbred at the Zoo, which traded muntjac with numerous dealers. Recent work questions if the muntjac from Taiwan should be classed as a sub-species, but until this is confirmed the precise genetic origins of our muntjac will remain questionable.

Muntjac were also kept at Tring Park in Hertfordshire (Lionel Walter Rothschild) from 1879 until at least 1910, with a feral muntjac from the estate being presented to the British Museum in 1930. Tring may be the source of some of our wild muntjac, as could Whipsnade Zoo which kept Reeves muntjac from 1928. Both these estates are in Bedfordshire, close to Woburn Abbey.

Reeves muntjac were introduced to Woburn Abbey in 1884. Their breeding

success in the enclosures was poor, but far better than for the Indian muntjac. The first release to woods on the estate was in 1901, when 11 were released, but numbers remained low until after World War Two, since when muntjac seem to have spread at about 1km per year.

Our muntjac are occasionally called “barking deer” or “rib-faced deer”, as, when alarmed, muntjac will usually bark, often for prolonged periods. Both of these names are very descriptive, but ideally avoided.

The term “Chinese muntjac” is also used, but as at least four species of muntjac occur in China, it is probably better to refer simply to our British animals as muntjac.

Releases

The Duke of Bedford probably released muntjac in Northamptonshire and Warwickshire in the 1930s. During the period 1947-52 the Duke released at least five breeding groups made up of 5 males and 4 females aged 2/3 years old to locations in Oxfordshire (2 sites), Norfolk/Suffolk (Elveden), Northamptonshire (Corby) and Kent. The intention was to establish free-living colonies; the release in Kent was the only failure.

In Lincolnshire, muntjac have been reported from the 1960s, in Bourne and Willingham Woods. It is almost certain that these populations are the result of deliberate releases. A small number were kept captive in East Barkwith and may have established the Chambers Wood population. Muntjac distribution within the county suggests that other releases may have occurred, perhaps near Woodhall Spa or along the coast. Records of these would be appreciated.

Since the early 1990s muntjac have been included in Schedule 9 of the Wildlife and Countryside Act prohibiting their release. Recent work on DNA genotypes shows that at least eight maternal groups founded our British population, and indicates that the Duke of Bedford’s releases during 1947-52 were not exclusively animals from his collection at Woburn.

Appearance

Muntjac disappearing into the undergrowth can easily be confused with a fox, as they are only 490 mm (20”) tall. The summer coat is a glossy foxy-red and the winter coat is a dull brown. The underside of the tail is always white and when alarmed it is carried upright so the white becomes clearly visible.

The name “rib-faced deer” refers to the long pedicles on the male, which

start by the eyes and extend rearwards inline with the front of the head, the effect increased by a black V on the forehead. Females have a broad wedge shaped dark area on the forehead.

Scent glands are very visible on the head. The frontal glands are on the forehead, appearing as nearly parallel-lines of hairless skin. Beneath each eye is a sub-orbital gland that is considerably larger and muntjac can often be seen licking this gland.

Antlers and Tusks

Muntjac bucks have substantial tusks (canine teeth), which project up to 38mm from the lips. The tusks grow slowly throughout life and are used for fraying and fighting. Many older animals have broken tusks.

The antlers are rarely more than a simple backward curved spike, which grow on exceptionally long pedicles. Rudimentary brow tines may be seen on older animals. The antlers are shed and regrown annually in May/July, regardless of the animal's age.

The Muntjac Deer's Year

Muntjac do not follow a seasonal breeding cycle like other deer. They moult into summer coat in April-June when the animals can look scruffy. In September the winter coat grows through slowly, resulting in a gradual change in the animal's colour. Harsh weather and limited food availability have an effect on their lives, with heavy mortality (70%) recorded in past hard winters 1942, 1947 and 1962/3.

The Does' Cycle

Muntjac does establish a home range when sexually mature and generally keep to this area throughout their life. Does' ranges often overlap with younger females establishing a home range adjacent to, or overlapping, their dams. Young does reach puberty at about 7 months of age, and then start breeding regardless of the time of year. Pregnancy lasts for 210 days before a single kid is born. The doe will mate again 2-3 days after giving birth, so once mature are capable of giving birth every 7-8 months. Does can live into their teens with one doe producing 19 viable kids by the time she was 14 years old.

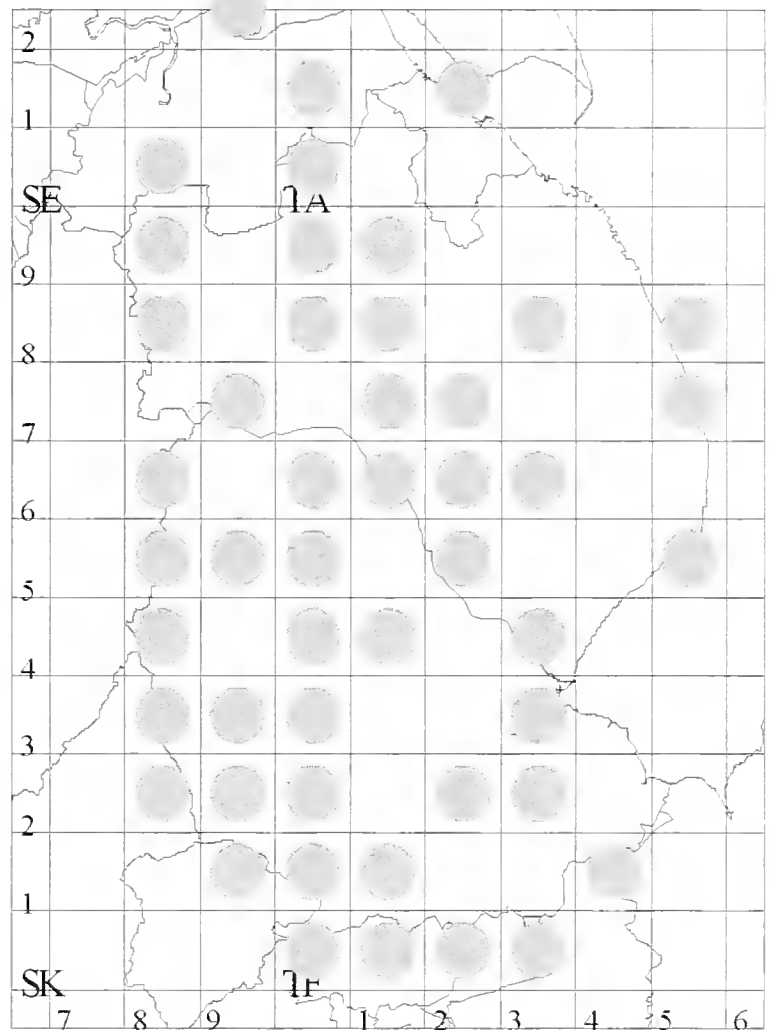
The Bucks' Cycle

Young bucks start to grow their pedicles at 5-6 months old, with their first antlers growing from the age of 8-11 months. The first antlers are cast in May-June regardless of the animals' age, so the age of casting their first antlers varies from 60-112 weeks old, thereafter casting is a strictly

seasonal event. Puberty is reached at about 9 months of age, when the bucks try and establish a territory, some bucks travelling considerable distances during this period of their lives. Muntjac use their tusks in fighting and many bucks have numerous scars visible on the very thick skin on the neck. The bucks hold a territory until their tusks break, which usually marks the end of their breeding life. Bucks are fertile all year, regardless of the state of growth of their antlers.

Current Distribution

The recent increase in the number of muntjac is a largely unreported phenomenon; their small size and secretive behaviour frequently leads to underestimating the size of the population. Their biology is a new field of study, although early reports suggest that muntjac have only a minimal impact on the environment, damage to coppice regeneration is now being widely reported. Less noticeable but perhaps of more significance is their effect on the herb layer within our woodlands. Plants indicative of ancient woodland because of their poor powers of dispersal such as dog's mercury *Mercurialis perennis*, common spotted orchid *Dactylorhiza fuchsii*, primrose, *Primula vulgaris* and bluebells *Hyacinthoides non-scripta*, are all grazed by muntjac. In one study 98% of bluebells and 90% of common spotted orchid were lost between the bud and setting seed-stage. The long-term effect of such heavy grazing is unknown, but it could easily pose a threat to the survival of these plants.



The recent changes in the law may slow the spread of muntjac, but will have little effect on the existing distribution where populations are likely to increase. Effective muntjac management is difficult as mature does are always lactating or pregnant which leads to a reluctance to cull them, while bucks are sought as trophies. This conflict creates an unbalanced culling programme.

Muntjac do not occur in Europe so research is limited to British work where

the study of muntjac is comparatively recent. Populations of one per hectare have already been recorded for small woods with a recent county survey reported a density in woodland of 16.1 km² in the county. Lincolnshire has some 22,500 hectares of woodland so may eventually support an established muntjac population of 3,600 animals.

CHINESE WATER DEER

Hydropotes inermis

The Chinese water deer is our rarest wild deer, with a national population of perhaps less than 2,000 animals, including those kept in wild parks and collections. They are native to eastern China from where animals were imported to start collections at both Woburn Abbey and Whipsnade in Bedfordshire. Both collections were established by World War Two.

Chinese water deer have been kept in numerous collections, with escapees forming feral populations, many of which were short-lived. The largest numbers are found in the Norfolk Broads (approximately 300 animals) and at Wood Walton Fen in Cambridgeshire (approximately 100 animals). Occasional animals are spotted in south Lincolnshire, the origins of these animals are unknown, but at only 25 miles from established populations they could perhaps be the result of natural spread. In 2004 a Chinese water deer was seen regularly at Gibraltar Point, perhaps originating from a rumoured release in the Lincolnshire Wolds.

The Chinese water deer in this country are *Hydropotes inermis inermis*, another subspecies *Hydropotes inermis argyropus* is found in Korea.

Appearance

Chinese water deer are small and graceful deer being intermediate in size between muntjac and roe deer, with which they can be confused. The Chinese water deer's muscular hind legs are longer than the front legs, giving the deer a characteristic sloping profile. They have a short tail (roe don't have a tail) without any white or a caudal patch. The head carriage is very upright, the ears are rounded and hairy/fluffy with prominent tusks visible in mature males. The colour of the coat varies with the season from a sleek reddish summer coat to a pale fawn/peppery grey in winter.

Chinese water deer bark when alarmed, they also make a clicking noise when bucks are chasing each other. The does squeak during rutting activity.

Tusks

Chinese water deer together with musk deer are the only species that do not possess antlers. Males have substantial tusks (canine teeth) which grow up to 72mm long. The tusks are used for fighting, but are loose in the gum so that they can be held back when feeding.

The Chinese Water Deer's Year

The rut is in December; Chinese water deer are territorial animals and the bucks fight with their tusks, defending territories on which they will mate.

The period of highest mortality occurs in January – April when food reserves are sparse and the animals' fat reserves depleted.

The moult into the summer coat begins in spring and some chasing is reported amongst the does. The does give birth in May/June; multiple births are normal with up to 6 fetuses recorded in China. The does leave the fawns hidden, returning frequently to feed them.

The Future

Chinese water deer are grazing animals, feeding predominantly on grasses, sedges and rushes. Woody vegetation may also be eaten but is a minor part of their diet. In China they are usually found in river valleys, similar to the habitat in which the main populations are found in this country.

Initiatives to create fenland habitats in Lincolnshire and the development of reedbeds for bitterns are creating suitable habitat for Chinese water deer. Limited protection from excessive shooting pressure could easily assist the establishment of a breeding population. The country's current population is currently living on this type of habitat, with no reports of problems. Major damage is unlikely but local rare plants may need individual protection. Internationally, Chinese water deer are an endangered species and with England having perhaps 50% of the world's population we probably need to at least maintain this introduced species.

FOLLIES AND SUCCESSES

The natural world has been changed beyond recognition by agricultural and industrial revolutions, events that, as part of man's development, might be considered part of the natural-order. Man loves to meddle and deer have been the subject of these attentions with extinctions, introductions and breeding "improvements" resulting. In addition to fallow, sika and muntjac deer, other captive species have formed feral population in the United Kingdom.

Pere David Deer

Elaphurus davidianus

The buddleia/butterfly bush *Buddleia davidii* is a popular garden shrub. Originating from China, it was introduced to Europe by Pere David, after whom this species of deer is named. These deer may have been extinct in the wild for 1,000 years, and were kept only in an Imperial Hunting Park with the herd later destroyed. Fortunately some had been exported to European collections and between 1894 and 1901 the Duke of Bedford gathered 18 deer from these collections to start a herd at Woburn Abbey, this small herd forming the base for the entire world population. The deer have thrived and some exported to China have reinstated this species in the wild, showing the value of captive breeding.

Pere David deer are larger than red deer, with a long tail and antlers that divide into forward and backward facing beams, each with a number of tines. Like roe, the antlers are grown in the winter and covered with thick velvet. This seasonal pattern is only recently established in the British population as earlier last century Pere David deer grew two sets of antlers per year.

Pere David deer have been kept in other collections, escapes occur and feral deer occur in Northamptonshire adjacent to a captive population.

American Elk, Wapiti

Cervus canadensis

The American elk was probably so named by the early European settlers who knew of the Scandinavian elk and assumed this was the same species. Wapiti is their Native American name. They also occur throughout southern Asia.

Wapiti are similar to red deer but considerably larger, standing up to 1.5 metres high at the shoulder and can weigh over 450 kilograms. Their impressive antlers can add up to another 1.5 metres in height. The antlers have numerous tines which are all aligned in the same plane, so wapiti

antlers do not form a crown like red deer. The life cycle is similar to red deer, except that the bulls (stags) whistle instead of roaring during the rut.

The impressive antler growth has led to numerous introductions in Scotland in the mistaken belief that wapiti would improve Scottish red deer. Releases have occurred in the Highlands, with the change in antler formation noticeable in subsequent generations. The increase in deer farming and a search for profit may make such a cross commercially attractive but sporadic escapees could pose a threat to the genetic integrity of our native deer.

Siberian Roe

Capreolus capreolus pygargus

Siberian roe are slightly larger, have longer spreading antlers and paler coat than European roe. Their range is from eastern Russia to the Sea of Japan. In China their range abuts that of Chinese/Manchurian roe *Capreolus capreolus bedfordi*, sometimes referred to as the "Duke of Bedford's deer". The "Bedford" connection with this species inevitably resulted in a release at Woburn Abbey in Bedfordshire c1910. The deer persisted until at least 1938 at Ampthill in Bedfordshire, and Hazelborough and Yardley in Northamptonshire, with reports continuing until the 1950s. Their extinction is likely, in an area now being colonised by our southern roe.

Persian/Mesopotamian Fallow

Dama dama mesopotamica

Larger than common fallow deer, there is debate about whether the Persian fallow is a subspecies of the European fallow deer or different enough to be considered a separate species. Hybrids with common fallow are used for deer farming in New Zealand, with some kept in a herd in Norfolk. The translocation and/or escape of these hybrids are a potential threat to our native fallow.

The wild population was endangered, numbering perhaps 30 in the late 1970s, and subsequent events in this area probably caused their extinction in the wild. A small captive population was established in Israel, and some have been re-established in the wild, another instance when the maintenance of captive populations has been essential for a species survival. Their use in deer farming is very questionable and the danger of escapees in this country must be addressed.

Numerous other species of deer are kept in zoos and wildlife parks with a potential threat of escapees, in the past both Virginian white-tailed deer

Odocoileus virginianus, and musk deer *Moschus moschiferus* have been reported living wild in Bedfordshire (Woburn again). The value of these collections for education, conservation and enjoyment is real and the potential problems not difficult to avoid, however escapees need quick and perhaps terminal action.

GAZETTEER OF LINCOLNSHIRE'S PARKS

Any account of parks in Lincolnshire must refer to previously published work, the most influential of which is *English Deer Parks* by Evelyn Shirley (1867). Shirley gives a county-by-county account of current parks and using the *Itinerary of John Leland* (c1506-1552), (Smith, 1907)) and the maps of Christopher Saxton (1576) and John Speed (1610), provided details of 16th and early 17th century parks.

Shirley's work probably inspired Joseph Whitaker to produce *The Deer Parks of England and Paddocks of England* (1892). Whitaker expands greatly on the details of the existing parks including over 50 parks omitted by Shirley (Whitaker, missed Revesby) without adding any historical records. Kenneth Whitebeard's *Deer and Their Management* (1950) and *The Deer of Great Britain and Ireland* (1964) and Frederick Hingston's *Deer Parks and Deer of Great Britain* (1988) are the most recent published accounts of our parks. Unfortunately this later book has many gaps, fear of poaching causing many park owners to ask for confidentially!

Leonard Cantor's *The Medieval Parks of England* (1983) provides a listing for parks documented in the medieval period (1086-1485), using data from "the medieval royal household and administration, the Pipe Rolls, Charter and Patent Rolls and Inquisitional Post Mortem mostly from the public records office and many local county record offices". In Lincolnshire 33 parks are listed by Cantor for this period, with two other parks listed as possibilities. Continuing research is extending our knowledge with Washingborough now known to have been created 50 years earlier than previous sources suggest.

In addition to documentary evidence, parks may leave archaeological evidence. Everson, Taylor and Dunn's *Change and Continuity, Rural Settlement in North-West Lincolnshire* (1991) identifies some of these sites, alas only covering part of the county.

Field names may indicate past parks, two examples from the Enclosure Awards are included, neither of which has any corroborative evidence for its existence.

In trying to interpret the historical sources, their limitations become apparent. Leland's *Itinerary* only provides limited coverage of Lincolnshire. Christopher Saxton's maps are remarkable documents, his survey of Lincolnshire was undertaken in only one month! In Saxton's recording of parks he omits Burghley that is adjacent to the county boundary in

Cambridgeshire yet his work was commissioned by Lord Burghley in his capacity as Lord Treasurer and who had all proof copies of the maps sent to him. Why Burghley Park is missing from Saxton's maps is unclear and possibly other parks (Scrivelsby for example) are missing. John Speed's map of 1610 and Herman Moll's of 1724 largely duplicate Saxton's work in documenting parks.

When Leonard Cantor's "*Medieval Parks*" are not shown on Saxton's map, I have listed "<1576?" as the date by which they may have been deparked.

Ref: LC=Cantor, ETD = Everson, Taylor and Dunn,
ES=Shirley, JW=Whitaker, KW=Whitehead.

Park	Owner	Grid Ref	Emparked	Deparked	Ref
Aby	Robert de Malberthorp				
Moderwode Park		TF 412784	1323	573>	LC

Owners: Sir Christopher Danby before 1569, Richard Bertie (Lord of Belleau) 1569 onwards. The exchange of the estate includes lands "*within and without the new railles of the park*" (2ANC1/61/4, Lincolnshire Archives). This indicates that the Park was still in existence at this time, the letter dates from 1573. Saxton's survey for his map of Lincolnshire was undertaken in 1576, was Aby emparked at this time or is Aby missing from his map? Is this the same Richard Bertie from Kent who married into the Grimsthorpe Estate? The Richard Bertie who married into the family that owned the Grimsthorpe Estate was from Kent.

Aslackby		TF 085304	<1576?	<1867	ES
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This Park is clearly shown on maps from 1576-1724. Today farms called Low Park Farm and High Park Farm are established south west of the village beside Temple Wood.

Barlings		TF 066750	Medieval	<1576?	ETD
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This Park is not shown on Saxton's 1576 map. The current wood called Barlings Park may be on the site of the former Park.

Barwell	William de Hastings		1210	???	LC
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Could this be Burwell? Leonard Cantor has been unable to locate this Park.

Belchford

TF 290767 ?

<1801?

The only evidence is an area of 59 acres called The Park indicated on the 1801 enclosure map and now called Park Hill on the Ordnance Survey maps (Russell & Russell, 1985). If Belchford Park existed, was it during the medieval period or if later was it overlooked by the 16/17th century mapmakers?

Belton

National Trust

SK 935390 <1656

Current

ES

Belton House was built in 1685-88 for Sir John Brownlow, only Shirley indicates that the Park predates the house by a substantial period. Belton House and Park are not shown on Moll's map of 1724.

"The former is an extensive park, said to have been enlarged in 1656, and again in 1824, and which at present contains a herd of 800 Fallow-deer" (ES).

Belton Park, Earl Brownlow, 800 acres, Walled, Natural water, 3 fish ponds, 300 Fallow (JW).

The deer are excluded from the eastern side of the park by a road and fence. I suspect that as Whitaker and Hingston provide similar sizes for the current Park, this eastern area may be one of the enlargements mentioned by Shirley, the deer subsequently excluded from this area by 1892. The National Trust's records confirm this supposition (Bowen, *pers com*).

Belton Park remains very much as Whitaker described it in 1892 except for a golf course to which the deer have access.

Bigby

The Tyrwhitt family TA 040090 c1482?

c1724

ES

"In them also, (Ancient Surveys, Saxton and Speed) to the east of Glanford-bridge, a park is also noticed at Kettleby" (ES).

The Tyrwhitt family were at Kettleby from the late 14th early 15th centuries. Sir Robert (1482-1548) was a Dissolution Commissioner and Henry VIII stayed at Kettleby in 1541, it is said that Sir Robert "*hung the trees on the roadside from Kettleby to Brigg with sheep and oxen to show his ability to feast to all comers*" (ETD). Sir Robert was the grantee of a large amount of monastic land on which cadet branches of the family were established at Corringham and Stainfield (ETD). The house was built to entertain James 1st (1603-1625) when he hunted in Bigby Park, the family sold the estate in

1648 and the house was demolished in 1696 (ETD).

This Park is also shown on Herman Moll's map of 1724 called Kettleby. It has apparently been named after the family's residence, like many medieval parks it was away from the house on the edge of the manor. Today the site is called Park Wood. The decline of the house and the Tyrwhitt family suggests that the Park was abandoned at about this time.

Birthorpe Roger de Birthorpe TF 104338 1312 <1576? LC

Bolingbroke Henry de Lacy, Earl of Lincoln
TF 350650 1311 <1576? LC

Bourne Countess of Kent TF 095202 1443 <1576? LC

An Arrouaisian congregation Abbey was founded by the Lord of the Manor, Baldwin Fitzgilbert, c1138, manorial records state "*Baldwin also gave...deer hides killed in hunting and wool to make garments for the canons*" (Needle, 2006). It is not known if these deer were from Kesteven forest or perhaps from a park. There is a Park Wood some 2 miles south of Bourne at Thurlby that has remnants of a bank around its perimeter, was this wood connected with the past Bourne Park?

Brocklesby Earl of Yarborough TA 135114 c1740> c1945

Brocklesby Park, Earl of Yarborough, 1,000 acres, Wooden palings, sunken fence and iron, Natural Water, 350 Fallow, Bucks 112 lbs Does 70lbs (JW).

"Brocklesby Hall was built in 1740 and Capability Brown carried out extensive work here in circa. 1740 so the deer park must have been developed at some time after that" (Yarborough, pers com).

It is unfortunate that Whitaker's description is the only one available. The estate started the planting of some 3,000 acres of woodland in 1750. This woodland is now the core area for the wild fallow deer population that has become established in the area since the break-up of Brocklesby Park in World War Two.

Broughton Ralph Paynel SE 960087 1359 <1576? LC

Bullington Simon de Kyme c1148

TF 106764 <1148 1533> ETD

Indications of a hunting or keeper's lodge exist for the early medieval period, part of the Park was endowed to the Gilbertine priory founded by Simon de Kyme in 1148-54; the Park was again referred to in 1175 (ETD). The estate passed to the Tailbois family with a James Hollingworthe described as their keeper (deer?) in 1533 (ETD). This Park is not shown on Saxton's 1576 map, (Saxton, 1992).

Burghley Burghley House Preservation Trust

TF 045006 c1561 Current

Burghley House and the current Park are in the county of Cambridgeshire, however the northern boundary of the Park is adjacent to the B1443 along which the county boundary runs and from which the deer can often be viewed.

In a letter of 1561 to his master Sir William Cecil, Peter Kemp, the steward at Burghley, refers to the planting of hedges of holly and thorn to retain the deer. In 1562 he writes further "*We have ii days past brought some LI dear fair and sound with great toil, the wind and rain being very great and troublesome yet I thank God we have made very little spoil, not to the number of iii dear*" (Culverhouse, *pers com*).

Burghley Park was extended in 1576-8 when Cecil obtained land that belonged to Peterborough Abbey and Capability Brown was employed 1756-79 (Smith, 1994).

"In the 18th century Brownlow, the 9th Earl left detailed notes as to who was to receive venison after the cull when he travelled abroad for a year. The Burghley herd grazed the upper park for a great many years until the 6th Marquess decided to return them to the Lower Park in 1964. This relocation brought them into an area of the park where they formed another attraction to the visiting public" (Culverhouse, 1998).

This information indicates a continuous presence of deer at Burghley since c1561. The herd is increasing in size, in 1988 FH reported 270 fallow deer on 254 acres, 350 deer are present today.

Burreth

TF 153698 1323 <1576? LC

Leonard Cantor's map shows this Park near Waddington with the

ownership stated as “*Deserted village, “Old” and “New” Parks*”. A deserted village of Burreth is shown on the Ordnance Survey map north of Tupholme and south of New Park Wood.

Burwell TF 370802 <1724? 20th
Barwell?

Burwell Park is shown on Herman Moll’s map of 1724. An item by Thomas Espin, Burwell Park, engraved by B Howlett in 1805, is listed in Lincolnshire’s Library database, unfortunately the copy is lost. Perhaps this Park existed from 1210 (Barwell) until the 20th century?

The estate was purchased in 1641 by the Royal Physician, Sir Matthew Lister with the Hall built by Matthew Lister in 1760, and finally demolished in 1958 (Harris, 1998). A picture of the derelict Hall in the 1950s when it was used as a barn shows mounted Fallow antlers on the staircase, presumably deer from the former Park (Harris, 1998)

The last of the parkland was ploughed in the 1970’s (Hurst, 1999).

Buslingthorpe TF 080852 Medieval <1576? ETD

A field called *Parke Close* on the 1841 Ordnance Survey map is the only evidence for a Park in this location, or “*more probably a group of paddocks and orchards*” (ETD, 1991).

Canesby as Normanby? SE 888165 <1576? <1804 ES

Writing about Normanby, Shirley reports; “*This Park appears to be nearly identical with one which is laid down in the ancient surveys at Canesby*” (ES).

Both Saxton and Speed refer to this site as Canesby; the name had changed to Normanby by 1724 when Herman Moll produced his map of Lincolnshire. Presumably this Park was abandoned before the Sheffield family established the Park on the same site in 1800, or perhaps it was continuously parked throughout this period.

Careby Thomas Hatcher TF 022165 <1688 1688>

A locksmith’s bill, endorsed by Samuel Reynardson “*This paper serves as evidence that Careby Park used to be locked up*” (H109/11, Lincolnshire Archives). This bill is the only reference to the Park.

Castle Bytham Roger de Colevill

SK 988184 1284 <1576? LC

The licence was to empark 160 acres (65 hectares) (LC).

Corringham Earl of Oxford

Southpark

SK 850890 1385 <1576? LC

A Park “*Somerby in Corringham*” is reported in the 16/17th century when a cadet branches of the Tyrwhitt family were established at Corringham on monastic land granted to Sir Robert Tyrwhitt following the dissolution of the monasteries (ETD). Is this the same park?

Doddington? Sir Thomas Hussey

SK 901700 c1714? c1714? ES

“*in 1714 the seat of Sir Thomas Hussey, Bart, and where there was a deer park at that period.*” (Kip’s View of Seats via ES).

“*there is an indication in this (Kip’s engraving of 1707) of an extensive deer park to the west, together with an enormous avenue. We have no evidence either way about the deer park, but it is completely clear from evidence on the ground (hedges, ditches, etc.) that the avenue never existed.I seriously doubt whether the deer park ever existed. What you can see in the Kip engraving is I believe a purely stylised landscape, in an area that at time had fairly large fields and was probably post Enclosure*” (Jarvis, *pers com*).

The “*avenue*” was finally planted c1984, part of the “*stylised landscape*” finally being created.

Donington Earl of Kent, c1352TF 208355 1327 <1576? LC**Eagle** Prior of Hospital of St John of Jerusalem

SK 876673 1449 <1576? LC

The licence was to empark 4600 acres (1,862 hectares) (LC). The Black Death (c1348/9) reduced the population and many existing parks were abandoned, conversely the lower population released land for larger parks, it is thought that Eagle Park was primarily created for its amenity value and it was not enclosed by a pale (Hatherly, 1979).

Easton-1 Payn de Typetot 1309 <1576? LC

Easton-2 Sir Montagu Cholmeley Bart
SK 930268 c1840 <1892 ES

"Here is a small park enclosed within the last twenty-five years by Sir Montagu Cholmeley Bart, containing about 100 Fallow-deer" (ES). Easton is not shown on Saxton's map, while the second Park was not noted by Whitaker (1892). These two parks may refer to the same site, or to different parks within the parish.

Elsham Hall Country and Wildlife Park
Capt Elwes TA 030120 1993 c2003

The Wildlife Park was established in 1970, a 3 acre deer enclosure was provided in 1993 and red deer from the nearby deer farm at Habrough introduced (Young, *pers com*). The herd numbered about 12 animals which are maintained largely with supplementary feeding (Young, 1999). The main concern is the attraction of these deer to the adjacent feral herd, the stags attempting to fight through the fence, to date the fence has withstood these assaults and the deer didn't escape (Young, *pers com*). Elsham no longer keeps deer, the remaining were animals sold c2003.

Eresby Lord Wylloughby TF 395651 <1543 <1769?
Heresby

"The Lord Wylloughby had a House at Heresby (Eresby), and a parke of blak Dere a 2 miles from Spilsby, wher, as I heere say, he entendithe to build sumptuously" (Leland). Spilsby was largely the property of Lord Willoughby d'Eresby, whose ancestor built a fine house in the hamlet of Eresby in the first half of 16th century, the house burnt down in 1769 (Gurnham, 1984).

The second British report of black fallow is found in Leland's description of this site, probably these deer are connected with the black fallow at Scrivelsby. The Willoughby family, are also associated with Wollaton Hall in Nottingham, Middleton in Warwickshire and Grimsthorpe and Toynton parks in Lincolnshire. Eresby is not shown on Saxton's 1576 map (Saxton, 1992).

Farlesthorpe Abbot of Louth TF 474742 1337 <1576? LC

The licence was to empark 30 acres (12 hectares) (LC).

Folkingham Countess of Arundel

TF 073335 1373 <1576? LC

Fulstow

Abbot of Louth

TF 328972 1337 <1576? LC

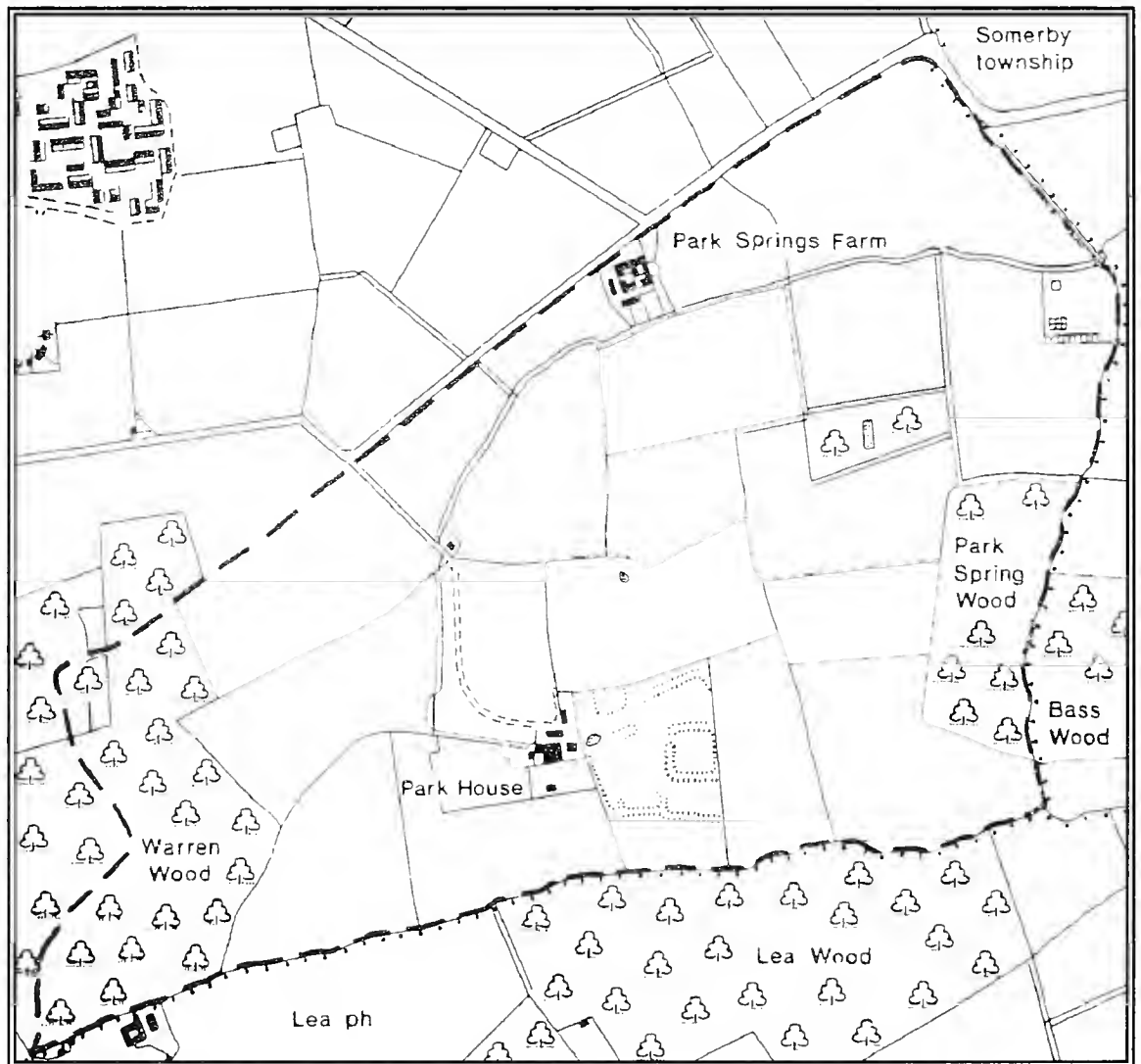
The licence was to empark 140 acres (57 hectares) (LC). See also Louth.

Gainsborough

SK 835885 <1299 1724> LC

“Longging to the Lord Borrow” Leland.

A grant of free warren in the 13th century may indicate the Park's establishment, it was deparked by 1601 (ETD). Gainsborough Park is clearly shown on maps from 1576-1724, (Beresiner, 1983), (Saxton, 1992) and (Speed, 1988). A moated park-keeper's lodge may have been located at SK 836881 (ETD).



Gainsborough Park
(Everson, Taylor & Dunn, 1991)

The Park was about 144 hectares (355 acres) (ETD). The continued mapping of the park after it was deparked in 1601 may be because it was kept as a landscape park, it was restocked with deer at a later date or inaccurate records. Note the previous comments regarding Saxton's map and Burghley.

Glentworth

SK 935878 Medieval <1576?

ETD

A medieval moated site may have been a keeper's lodge. A park is reported in the 16th or 17th century (ETD). Glentworth Park does not appear on the 16/17th century maps.

Goltho

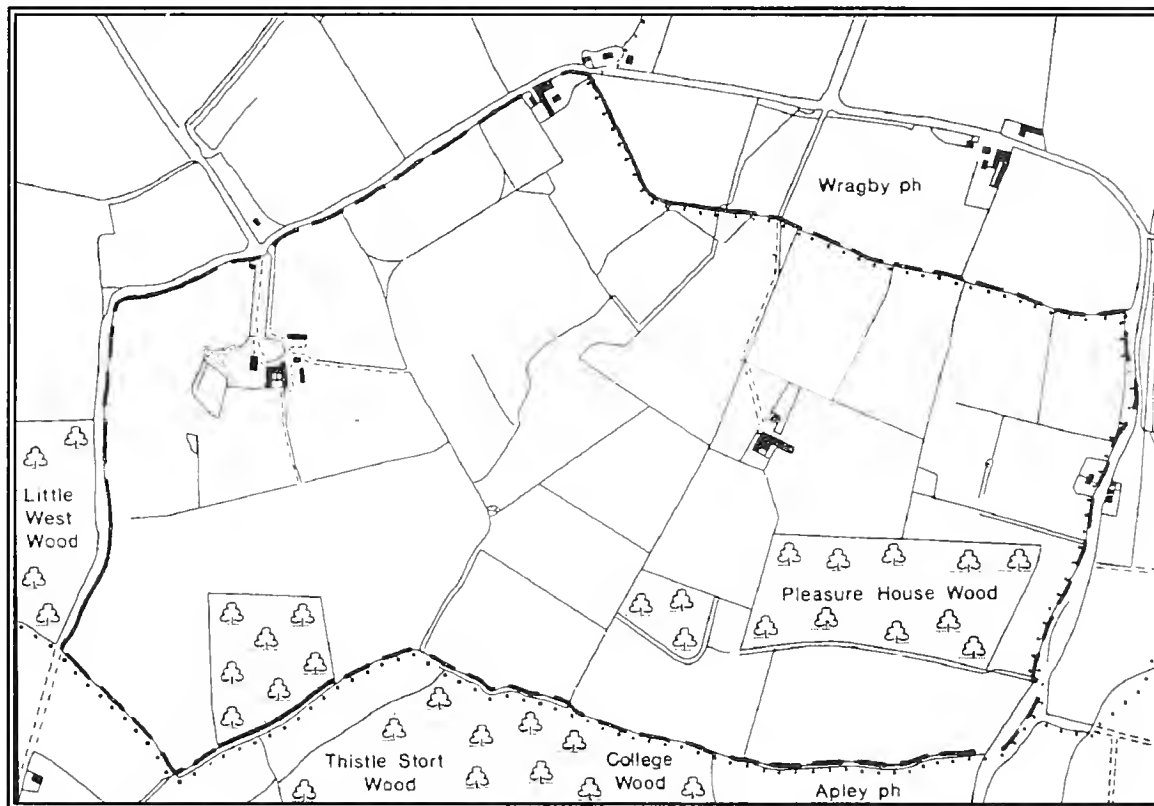
Gilbert de Umfraville

TF 123765 <1381 1630>

ETD

Described as a wood with herbage "*Les Laundes*" indicating its existence in 1381 (ETD).

Sir Thomas Grantham's probate inventory of 1630 refers to "*livestock - sheep, cattle and horses...in parke hill and park*" (ETD).



Goltho Park
(Everson, Taylor & Dunn, 1991)

Goltho Park was in the south eastern part of the parish, surrounded by a pale comprising a substantial bank up to 1.5 m high and with an overall width of 10 m complete with flanking ditches (ETD). Henry Bruntlett (1999) reports that the entire pale was visible as a raised bank in the 1930s, today only a short sections exists in ridge and furrow pasture against Shepherds Farm and alongside the road west of the entrance to Goltho Hall. The present Hall dates from 1900 and incorporates fragment of earlier building drawn by Nattes away from the village, this was demolished by 1812 but was set within a 417 acre medieval park (Leach & Pacey, 1992).

This is another park missing from 16/17th century maps.

The Parks would appear to date from after 1536, when the proposal to make a park is documented (2ANC2/3/10, Lincolnshire Archives). The grid reference given is of the parkland against the castle, Saxton's map shows separate parks for the red and fallow deer.

“At present the whole extent of Grimsthorpe Park is 1992 acres. The deer, which still comprehend both Red and Fallow, are confined to 1190 acres. There were formerly about 1,800 of the latter, but the number is now reduced, and the deer greatly increased in size and weight. There are about 60 Red deer at Grimsthorpe. The timber in this park is very fine, oaks, horse-chestnuts, and thorns growing to a great size, and many of them of a very great age” (ES).

Grimsthorpe Park, Lord Willoughby d' Eresby, 800 acres, Wooden pales, Stream, 400 Fallow, Bucks 85lbs Does 46lbs, 46 Red, Oak, Hornbeams and old Hawthorns (JW).

“Grimsthorpe Castle is near the northern end of a magnificent park of about 2,000 acres, four miles in length and about 2miles in breath. The park, which is said to be 16 miles in circuit, has a beautifully diverse surface of hill and dale, woodland and lawn. There are some grand old oaks and hawthorns and a splendid avenue of chestnut trees. The south-end embraces a deer park of about 1,200 acres. The large herd of red deer are the original race which in ancient times roamed through the forests of Britain. A lake adds to the charm of the scenery. An interesting memento of the Cistercian monks is the fish ponds, snugly hidden in a remoter nook of the park” (Davies, 1909).

Davis (1909) describes a 1,200 acres park within which was a Cistercian Abbey called Vaudey (Vallis Dei, or the Valley of God), located on a tributary valley of the river Glen (Robinson, 1998). Vaudey was founded in 1149 on land provided by Geoffrey de Brachecourt, in 1535 the abbey's income was assessed at £124 and it was suppressed in the following year (Robinson, 1998).

The first use of the suffix “de Eresby” was by Christopher Willoughby, who started using it when he inherited the estate of his mother, Cicely Willoughby, Christopher's son was William Willoughby de Eresby (Cassandra, 1958). Henry VIII granted William the Grimsthorpe Estate in 1516, when he married Marie de Salvis, maid of honour to Catherine of Aragon (Cassandra, 1958). The Estate formerly belonged to the Beaumont

and Oxford families (2ANC1/62/1, Lincolnshire Archives).

William Willoughby de Eresby had one daughter Catherine, she married Charles Brandon, Duke of Suffolk in 1533/4 (Cassandra, 1958). Following the dissolution of the monasteries in 1536 "*the site of the Abbey (Vaudey) and its property were given to the Duke of Suffolk and incorporated into the Grimsthorpe Estate*" (Swift, undated). Catherine was widowed in 1545 and married Richard Bertie in 1553; their son Peregrin was created Lord Willoughby de Eresby in 1580 (Cassandra, 1958).

Haverholme Priory Countess Dowager of Winchilsea

TF 109495 1765/90 1926 ES

"A modern and still existing park is at Haverholme Priory, on the borders of the Fen Country, near Sleaford. It contains about 220 acres, and was enclosed between the years 1780 and 1790. There is a herd of 200 Fallow-deer" (ES).

Haverholme Priory Park, Earl of Winchilsea and Nottingham, 400 acres, Oak palings and iron, River, 250 Fallow, Bucks 100 lbs Does 60 lbs, Oak, Elm, Thorn, Horse chestnut and Ash, Enclosed 1765. Salix alba @ 26ft dbh largest in world (JW).

The Park appears on the 1906 Ordnance survey maps, it was deparked in 1926 when the estate was sold (Whitehead, 1950).

Hexington Henry de Hara TF 145440 1366 <1576? LC
Heckington?

The licence was to empark 240 acres (97 hectares) (LC).

Heydour TF 010396 1343 <1576? LC

Leonard Cantor considers this a possible park, the reference to "le park" dating from 1343.

Holywell Crown TF 000160 1291 <1576? LC

This Park is not shown on Saxton's 1576 map.

Houlton's Covert ConocoPhilips

TA 173162 1988 Current

The Park of nearly 40 acres is established in secondary woodland that is "landlocked" by the Humber Bank industry (Hopkins, *pers com*). Red deer were introduced in 1989 and fallow in 1992, the intention is to manage the herd at 15 red and 10 fallow deer (Hopkins, *pers com*). The fallow deer include black, white, menil and common coloured animals. The deer are fed sugar beet in the winter and salt licks (hardly used) together with a proprietary deer feed. Damage to the trees is minimal, only a wind blown sycamore being extensively bark striped.

Houlton's Covert has won several environmental awards. An on-site classroom caters for numerous school groups during the summer period. Two areas are fenced off where trees have been planted, the fencing will be retained until the trees are well established. This park is one of the few areas in Lincolnshire being managed as wood pasture, yet during the Domesday survey perhaps 50% of our woodland was managed in this way.

Ingleby Daubney family SK 893778 <1454 1650> ETD

"This park is bounded by a bank or pale that runs north along the modern road and then turns east and south to encompass a field of 4.69 ha before returning along the north side of the long pond....A close called the park" is recorded in 1454, in 1569-70 "the deer parke", and in 1649-50 a close of 9 acres (3.75) called "The Park or the Deer Park" are also referred to (ETD).

Another Lincolnshire park missed on Saxton's and Speed's maps. The ha-ha still exists against Ingleby Hall.

Irnham-1 Andrew Lutherell TF 008272 1246 1914/18 LC

The Lutherells were at Irnham from 1204-1422, Robert Luterel died (2nd July) in the 25th year Edward 1st. Inquisition of the lands and tenements by 12 jurors *"Also is there a certain external wood and a certain park of which the profit in underwood and pasture is worth £3.20s"* (Abbott, 1927).

"...once the inheritance of the Conquest, Arundell and Clifford families." Owned by Mr Woodhouse c1867. Noted on Saxton's map of 1576 (ES)

Miss Isabel Hervey Wolrige-Gordon, 223 acres, Wooden fence, Natural water, 70 Fallow Bucks 120 lbs Does 75lbs (JW).

A hunting scene from the Luttrell Psalter of 1345 is from this park or Sir Goffrey Luttrell's other park, Hooton Pagnell in Yorkshire (Camille, 1998). Interestingly Leland mentions people associated with Irnham but not the Park, although his travels took him past it, I suspect that he only reported matters that he found interesting.

“Miss Wolrige-Gordon was the daughter and heiress of Mr Woodhouse. The existing park fences fell down during the First World War, the park was then on the south side of the Irnham/Corby Glen road, against the House. Luttrell is the usual spelling for Lutherell” (Benton Jones, *pers com*).

Medieval parks were often on poor land on the edge of the parish. I suspect that the original Park may have been associated with Far Old Park and Old Park Woods, if so was the Park relocated closer to the house at a later date? The woods may have been used as wood pasture for centuries and are likely to have a different flora than other ancient woods, managed as coppice with standards. Between the earliest record in 1246 and the First World War, the park may have been maintained continuously for nearly 700 years, if so it would be the longest continuously parked site in Lincolnshire.

Irnham- 2 Sir Simon Benton Jones

TF 024267 1979 1990

“ 36 Fallow on 18 acres restarted in 1979” (Hingston, 1988).

The 1979 Park was abandoned in 1990 because of incessant poaching (Benton Jones, *pers com*).

Kettlethorpe Katherine Swynford

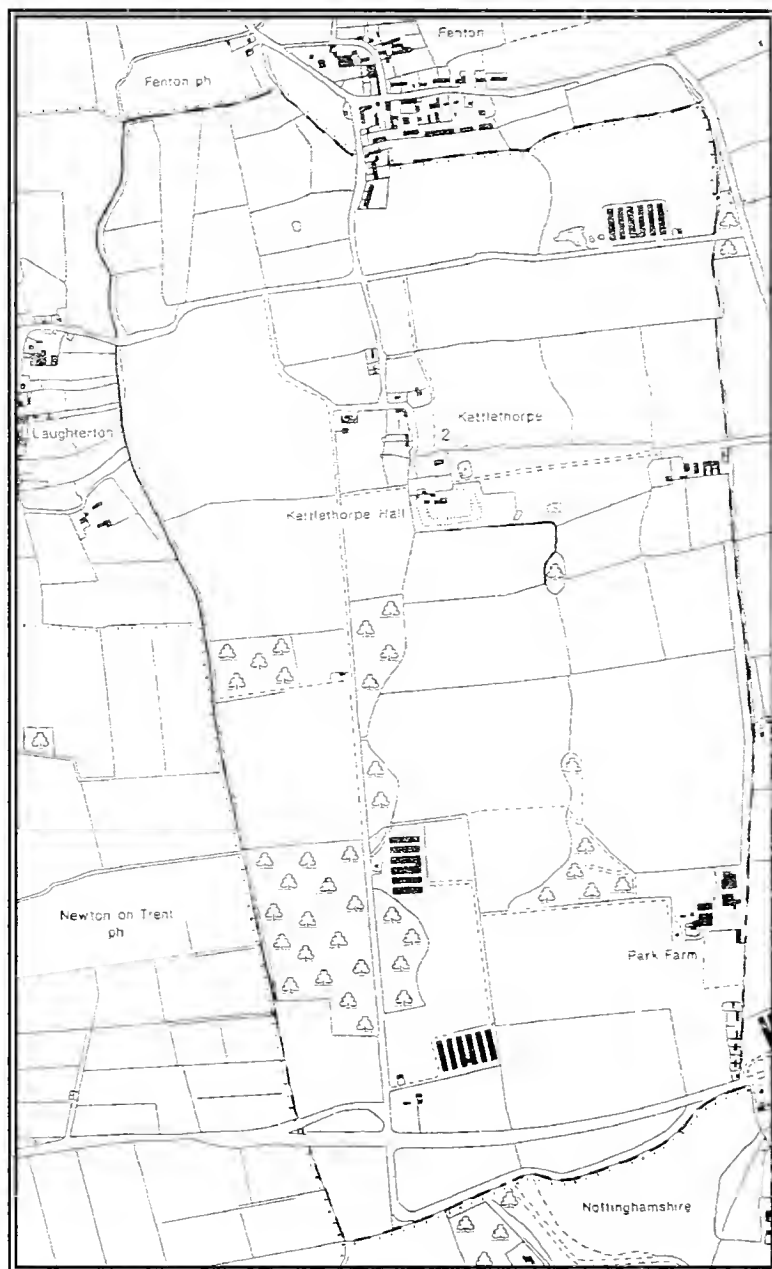
SK 850753 <1383? c1811? ETD

Sir Thomas Swynford first held the manor of Kettlethorpe in 1356, the estate passed to his son Hugh in 1361 (Cole, 1911). Sir Hugh died in 1371 with the estate passing to his widow Katherine, who became the mistress and later wife of John of Gaunt (Cole, 1911). The estate remained with the Swynford family until the death of Thomas in 1498 (Cole, 1911). Katherine Swynford was licensed to enclose a Park of 300 acres in 1383, this may have been an enlargement of an existing park (ETD). The eventual size of the Park was 340 hectares (840 acres) (ETD). A 40 hectare (100 acre) park may have existed until the early 19th century (ETD).

Remains of the pale remain, notably the Sallie Bank along the edge of

Newton on Trent parish, comprising a ditch or stream on either side of a bank up to 10 m across and 3 m high and extends for some 1.7 km (ETD). A stretch of approximately 500 m survives on the Park's north-west corner and parts of the eastern boundary probably parallel to the bank of a stream called Border Drain (ETD). A length of bank perhaps part of an earlier park pale, up to 10 m wide and 1 m high with an external ditch, runs east and south from Kettlethorpe Hall, it marks the limit here of a small park which in the early 19th century, covered less than 40ha (ETD).

Sir Charles Wharton died in 1807 and Kettlethorpe was inherited by Elizabeth Lady Ingilby who assumed the name (Lady Ingilby-Amcotts), the House was let from 1811 and the deer park was broken up (Leach & Pacey, 1992).



Kettlethorpe Park
(Everson, Taylor & Dunn, 1991)

Kingerby John Dyre TF 053927 1293 <1576? LC

This may be the same park as Osgodby (LC).

Kirby TF 338623 <1576? <1867 ES

“But two other old Lincolnshire Parks are given in Saxton’s Survey, ...the other at Kirby near Bolingbroke Castle, on the borders of the eastern fen country” (ES).

This Park is also shown on Herman Moll’s map of 1724.

Kirkstead Abbot of Kirkstead TF 190620 1299 <1576? LC

The Abbot of Kirkstead was licensed to empark Bellesholme Wood in 1299 (LC).

See also Swinthorpe.

Knaith - 1 John Darcy SK 839851 1330 1356? LC
Knathe - Knaythe

“was imparked by John Darcy, with the Royal license, in the fourth year of Edward III” (ES).

Between 1356-7 on the minority of the Darcy heir the estate was held by the crown, and *“could not be let because it is ruinous and the land sandy”* (ETD). Did this Park remain after 1356, possibly until the Willoughby’s ownership in 1553, see Knaith – 2.

Knaith - 2 Lord Willoughby of Parham
SK 828845 1553> 1826? ETD

The estate remained in the hands of the Darcy family until 1553, when it passed to William 1st Lord Willoughby of Parham (ETD). At the end of the 17th century Knaith passed by marriage to the Berties, Earls of Abingdon, it was sold to Richard Dalton in 1761 and then in 1826 to the Huttons and became part of the Gate Burton estate (ETD).

Parts of the pale are marked on the ground by massive north-south banks lying on either side of the present parkland, ridge-and-furrow within this pale demonstrates that the emparked area had formerly lain in open-field arable (ETD).

This Park, shown on maps from 1576-1724 south of Knaith Hall was probably made by the Willoughby’s and encompassed part of an earlier settlement, the Park probably remained until the sales of 1761-1826 (ETD).

Knaith Park SK 846853 ETD

This area is associated with the Cistercian nunnery of Heynings (1135-1539) (ETD). Following dissolution in 1539 the site was granted to Sir Thomas Heneage, the estate passed by marriage to Lord Willoughby of Parham in 1553 along with the manor of Knaith (ETD). Secular activity appears to have continued until 1553 under the name Knaith Park (ETD).

The use of the suffix Park in this area may be because of the common ownership of the manors, the continuation of secular activity under a false name or a homely name for a new settlement housing people displaced by the newly created park against the hall.

Lea Roger de Trehampton
SK 840870 1154/89? <1585? ETD

Roger de Trehampton was granted “free warren” of Lea in the reign of Henry II, the Park may have originated at this time (ETD). A block of land “*perhaps in origin a park, associated with the moat, is described in a indenture of 1585*” (ETD).

The “block of land” appears to be the current Lea Wood which adjoins the past Gainsborough Park. The sale particulars of 1913 describe the park; “*85 acres of parklands with carriage drives from the direction of Gainsborough and Lincoln each 150 yards long....Pleasure grounds, Wych elm, Beech & Sycamore, Larch, Wellingtonia Deodars and large Tulip Tree – 200 yard Wych Elm avenue*” (Leach & Pacey, 1992).

Linwood TF 112858 Medieval <1576? ETD

Louth Bishop of Lincoln TF 354885 1330 1543> LC

Louth (Lude)Abbot ‘de Parco Ludi
TF 354885 1338 ES

“*The former was doubtless attached to the Abbey of Louth, and appears to have been imparked in the eleventh of Edward III, when Abbot ‘de Parco Ludi, obtained license to impark 140 acres of pasture in the waste of Foulstowe, and 30 acres of marsh in that of Foulsthorp in this county*” (ES). Part of Leland’s text is in Latin, I am using Shirley’s translation. If the licences were obtained in 1330 and 1338 their might have been two parks in this area?

Melwood SE 795030 <1576? 1724>

Apparently noticed in both Saxton’s and Speed’s surveys (ES).

The presence of Melwood Park is not very clear on the copy of Saxton’s map that I have used, however it is clearly shown on Speed’s and Moll’s maps.

Normanby-1 Sir Richard/Robert George Sheffield bart
SE 888165 1800/4 1918

"Between Flixborough and Burton is the modern park of Normanby, belonging to Sir Robert Sheffield, and enclosed about the year 1804. It is park of 300 acres, with a herd of 200 Fallow deer. This park appears to be nearly identical with one which is laid down in the ancient surveys at Canesby" (ES).

Normanby Park, Sir Berkley Digby George Sheffield bart, 320 acres, Stone wall

Spring and Pond, 130 Fallow Bucks 80lbs, Enclosed 1800 (JW).

If Shirley is right that the records for Canesby refer to this site, presumably Canesby was deparked by 1800/4. Shirley gives Sheffield's Christian name as Robert in his narrative and Richard at the end of his chapter on Lincolnshire.

Normanby-2 Sir Reginald Sheffield Bt, DL
SE 888165 1964 Current

"...as far as I know the herd of 1800 remained until around 1918 when the deer were shot. Normanby Hall Country Park is still owned by the Sheffield family. It was leased to Scunthorpe Borough Council in 1964 and is now managed and funded by North Lincolnshire Council. The Council introduced herds of Red and Fallow deer in 1964 and the deer park is 51 acres. The deer park is fenced entirely with 6" rylock deer fencing. There is a fishing lake within the deer park and a spring. The herds are managed at 25 Red and 25 Fallow; the number of young born each year is matched by the number culled" (Watt, pers com).

A pair of Sika deer were introduced to Normanby c1975 (Johnson, 1982), apparently they were aggressive to visitors and so quickly culled. North Lincolnshire Council has no records of these deer, Mr Reg Talbot of Lincoln has a photograph of the stag.

North Carlton SK 941777 Medieval <1576? ETD

North Kyme TF 152528 <1543 <1610?

"a goodly House and Park" (Leland) (ES).

This Park is shown on Saxton's map of 1576, but is absent from Speed's

and Moll's maps (1610/1724).

Norton Disney SK 890590 <1576? <1867

"...where according to Saxton, there was a deer park in the Elizabethan period" (ES).

This Park is also shown on John Speed's map of 1610 and Herman Moll's map of 1724.

Osgodby Medieval <1576? ETD

This may well be the same Park as Kingeryby. Note that an Osgodby Manor Farm is situated north of Irnham in South Kesteven district.

Revesby G J R Wiggins-Davis
TF 310625 c1864 Current

"The deer in the latter park (Revesby) were brought about a century ago (c1864), from Syston Park near Grantham, and with the aid of dogs and horses, were driven along the roads. One can imagine that such an undertaking would inevitably have been accompanied by a few deer getting out of control and escaping into the surrounding country" (KW).

Revesby Hall was built in 1845 and the current Park was started shortly afterwards. The Park is of nearly 300 acres and the herd is maintained at about 85 fallow, all of which are Menil coloured. The herd used to contain some darker animals but these have been selectively culled for over 20 years (Wiggins Davis, *pers com*).

Saxby TF 005862 Medieval <1576? ETD

The grid reference refers to the village, ETD did not located this Park.

Scrivelsby Lt Colonel F L Dymoke
TF 272662 Medieval? Current

Francis Scaman Dymoke Esquire, 300 acres, Iron fence, Natural water, 60 Fallow (JW).

The Dymoke family believe Scrivelsby Park to be of medieval origins (Dymoke, 1999). William the Conqueror gave the Manor of Scrivelsby to his Kings Champion, a member of the Marmion family. The Marmion line



Fallow fawn, with a spotted coat hiding in vegetation. Castle Donington, May 2004.



Sika stag. Studley Royal Yorkshire, October 1998.



Sika hinds; the tail is shorter and the body stockier than a Fallow deer. Studley Royal Yorkshire, October 1998.



Roe buck, Frisky at 13 the oldest buck ever recorded. Mablethorpe Animal Gardens, June 1998.



Roe doe. Thetford, Norfolk, April 1989.



Roe buck; captured for research, Thetford, Norfolk, March 1986.



Roe doe being weighed, tagged and a radio tracking collar being fitted.
Thetford, Norfolk, March 1986.



Roe buck. Nocton Fen, 2006. Photo, Dean Eades.



Muntjac buck; the antlers are still growing, and covered in velvet. Ickworth, Suffolk, June 1998.



Muntjac doe. Great Witchingham, Norfolk, June 1998.



Chinese Water Deer; the tusks on this buck can just be seen. Woburn Abbey, Bedfordshire, June 2005.



Pere David Deer. Woburn Abbey, Bedfordshire, June 2005.



Bull Elk/Wapiti. Photo, United States Fish & Wildlife Service.



Fallow deer; bark stripping.
Chadacre Suffolk, 1985.



Roe buck, fraying to remove velvet.
Thetford, April 1995.



Muntjac bark stripping.
Thetford, Norfolk, March, 2006.



Fallow browsing – a “protected tree”.
Bourne Wood, May, 1998.



Fallow doe after treatment for a road traffic accident, usually humane dispatch is the only option. Chadacre Suffolk, 1984.

died out in the 1300s and the estate and hereditary title passed to the Dymokes.

The estate and title have been in the hands of the family for over 900 years, given the family's noble status it is likely that they started a Park in the 12th or 13th centuries.

Scrivelsby Court was a moated Tudor house situated within the current Park, many of the family's records were destroyed in fires, with the house finally being demolished in 1955 (Dymoke, *pers com*).

Scrivelsby was not visited by Leland or reported on by Shirley. Whitaker, in his record did not mention the colour of the fallow deer, but he gathered most his information by post. Would the owners have reported coloration that to them is normal? The first British report of black fallow is at Windsor in 1465 (a royal residence from the days of William the Conqueror). As the Dymokes (as King's Champions) attend all Coronations, it is very likely that Scrivelsby's black fallow share a similar origin to the Windsor deer, but which herd was established first? The similar deer at Eresby were probably connected, but all of this is a matter of conjecture.

The Park is 246 acres and all but part of the southern area is available to the deer (Dymoke, *pers com*). The herd is usually maintained at between 70-90, animals, it is very rare for other than black fawns to be born but twins are not unusual (Dymoke, *pers com*). Occasionally a wild buck enters the Park but the resident bucks soon evict him. Some new animals may have been introduced early in the 20th century (Dymoke, *pers com*).

Whitaker described black fallow, as "*The palmation in the horns of the black variety are not so broad as the spotted kind.*" The antlers of mature Scrivelsby bucks have narrow palms with very well developed spellars (back points), fitting Whitaker's description.

Sedgebrook Earl of Cornwall

SK 857378 1300 <1576? LC

Skellingthorpe Baldwin Wake

SK 925715 1282 <1576? LC

Skendleby

TF 434695 1309 <1576? LC

A possible Park, a pasture is called "Wellepark" (LC).

Skillington SK 895262 ? <1794

Like Belchford the only evidence for this Park is "Parks" indicated on the 1794 enclosure map (Russell & Russell, 1987).

Snarford Sir Thomas St. Paul
TF 051834 <1576? <1724?

"But two other old Lincolnshire Parks are given in Saxton's Survey, ...one in the part of Lindsey near Snarford, unnoticed by Speed" (ES).

The St. Paul (also called St Pol and Sampoole) family acquired the manor of Snarford c1400 (Kightly, 1990). George St. Paul was legal advisor to the Duke of Suffolk (Grimsthorpe Estate) (Kightly, 1990). Sir Thomas was the owner at the time of Saxton's map and his son, Sir George, built Snarford Hall in 1606, the estate passed out of the family when his wife died in 1634 (Kightly, 1990). I suspect that though unnoticed by Speed, the Park would have persisted when the family were building the house, it is missing on Moll's map of 1724.

South Carlton SK 953767 Medieval <1576? ETD

South Kelsey TF 041973 ETD

A Park is reported in the 16/17th century (ETD).

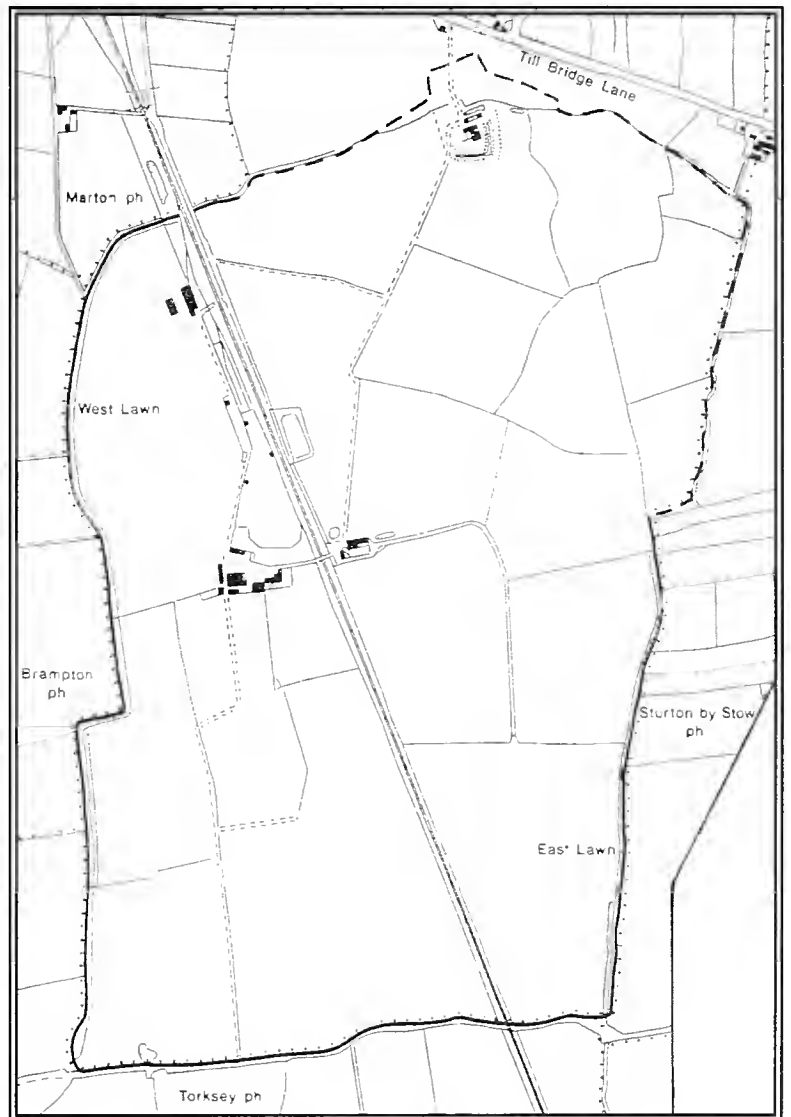
Stainfield TF 112731 Medieval <1576? ETD

It is said that in the early 18th century it was said that Sir John Tyrwhitt "*keeps up the tower*" of the former Barlings Abbey, as a ready-made landscape feature in the distant view of his Park at Stainfield Hall (ETD). The Park at Stainfield was missed by Saxton and may have been only a landscaped park during the 18th century, perhaps based on the former Deer Park (ETD).

Noticed by Saxton in his 16th century map (ES).

“Henry II dealt generously with Fallow deer of Sherwood.... The Bishop of Lincoln received 12 Sherwood does and three bucks in 1231 towards stocking his park at Stow” (Cox, 1905).

The Park was 275 hectares (680 acres) and first documented at the end of the 12th century and regularly until the 18th century (ETD). The east and west boundaries survive as large tree-covered banks following the parish boundary, these are up to 1 m high and 8 m across with water-filled dykes on either side giving an overall dimension of about 15 m (ETD). The southern boundary also coincides with the parish boundary, and the modern road following it is markedly raised, perhaps from lying on a former Park bank (ETD). On the north-east and north the details of the circuit are less clear but it is most likely that it followed the parish boundary to the point in the north-east where the stream that feeds the moat springs westwards (ETD).



Stow Park
(Everson, Taylor & Dunn, 1991)

A Park in this approximate location is shown on Moll's map of 1724. Both the east and west pales are largely intact, as the base of a hawthorn hedge.

Sturton By Stow Robert Darcy SK 890805 1314

<1576?

LC

See Knaith for another Darcy Park.

Swinthorp Brian de Harby TF 055808 1272 <1576? LC
Swinthorpe

Land from the parish was granted to the Kirkstead Abbey in the mid 12th century and a grange (an outlying farm owned by an Abbey) was established in the late 12th century, Barlings Abbey also held land within the parish (ETD).

Perhaps a deer Park was maintained in Swinthorpe by one of the Abbeys until their dissolution in c1534. Kirkstead Abbey established a Park in 1299, did the Abbey also maintain a Park at Swinthorpe or was this Park associated with Barlings Abbey? The archaeological remains do not indicate a pale, perhaps this Park was never established or it was relocated to Kirkstead in 1299.

Syston Sir John Thorold Bart
SK 935413 1610> c1864

"Syston Park contains 546 acres. The deer (120 Fallow and 20 Red deer) are confined to 270 acres" (ES).

The deer were transferred to Revesby (c1864) (Whitehead, 1964).

Like Belton, this Park is not shown on maps between 1576-1724. I consider Moll's map the least accurate, so I suspect that Syston Park originates no earlier than when Speed drew his map of 1610.

Tattershall TF 215580 1472 1539> LC

A transfer dated 10th March 1539 from Edward, Lord Clinton to Chas, Duke of Suffolk contains, *"The little park or conygre on the north side of Tattershall castle,"* the value was £100 (2ANC3/B/13, Lincolnshire Archives).

The Duke of Suffolk was married to the heiress of the Grimsthorpe Estate at this time, so this Park could be the source of some of the Grimsthorpe deer.

Thonock SK 815916 1272/1307 ?<1543 ETD
Gainsborough Castle SK 822916

The castle and the royal manor of Kirton-in-Lindsey were held by William de Roumare, Earl of Lincoln in c1140 (ETD), the association with the "royal

manor” may account for reports of a past Thonock Chase. The castle’s use as a main residence was by the Lancaster’s during late 12/13th centuries and it is perhaps in this period when the deer Parks were established (ETD). The castle was abandoned by the time of Leland’s visit in 1543 (ETD).

Thorpe Hall Mr and Mrs R Mitchell

TF 319872 1985 Current

The 16th century Hall was once the centre of a large estate, today it is a private residence, the grounds amount to 20 acres. The deer were introduced in 1985 as an alternative to mowing the grass and confined to 16 acres, today they total 21 fallow deer (Mitchell, *pers com*). The original deer came from a park in the New Forest and the herd has always been Menil coloured (Mitchell, *pers com*). They are fed potatoes or carrots in the winter with mineral blocks, a daily feed of bread by the owners attracts the deer, but the herd is not tame.

A ha-ha was constructed against the Hall’s gardens topped with an iron fence, sections of the fence can be removed allowing escaped animals to re-enter the Park, to date all escaped deer have been recovered (Mitchell, *pers com*). The herd is self-contained with no introductions since its establishment (Mitchell, *pers com*).

Timberland TF 120584 1422 <1576? LC

Toynton John de Willoughby
TF 395643 1372 <1576? LC

Is this the first record of the Willoughby family keeping deer?

Tumby 14th century Abbot of Revesby
TF 250600 1210 <1576? LC

Washingborough Earl of Richmond
TF 035700 1182 <1527

Newly available records date this Park from 1182 “*Indeed it is still possible to see the record of a payment of 36/- for the repair of a house in the village and also 40/- for enclosure round the park, the document in question being dated 1182*” (East, 2001). The location is suggested as “*It is impossible to give the exact location of the “park” but since the high land which lies between Heighington and the Washingborough Fen Road is still known as*

the “park” and as there are still High Park and Low Park Lanes, it is legitimate to suppose that this was the land Earl Conan paid 40/- to have enclosed.” (East, pers com).

In 1318 The Calendar of Patent Rolls records that “John of Brittany, Earl of Richmond, granted to Humphrey the son of Roger le Clerk of Qwassingburgh that he and his heirs should be free and quit of all exactions of villeinage and servitude. To Humphrey also was granted 5 messuages and 20 curtilages and 6½ bovates of arable land in Qwassingburgh and Hightington, of which 10 acres and a moiety of a perch lay in a field called “le Park” (East, 2001).

The “*Registrum Honoris de Richmond*” of 1335 records that “The pasture in the Park was then arable, which was worth 10/- annually” (East, 2001). Did the Park hold deer at this time? Rackham (1976) includes land uses such as “pasture, sometimes even arable” within medieval parks, so perhaps the deer were present at this time.

Brenda Webster of Heighington has researched the parish history accessing documents back to 1527 and found no reference to the Park so it must have been abandoned before this date.

Welby William de Welby SK 974383 1317 <1576? LC

West Butterwick SE 835058 <1576 <1610

“This last appears to have been deparked by 1610, as it is not mentioned in Speed’s survey of that date. It was the seat of the ancient family of Sheffield” (ES).

Worlaby TA 015138 Existing c1975/8

Noticed as keeping fallow deer (Johnson, 1982), no other information is available.

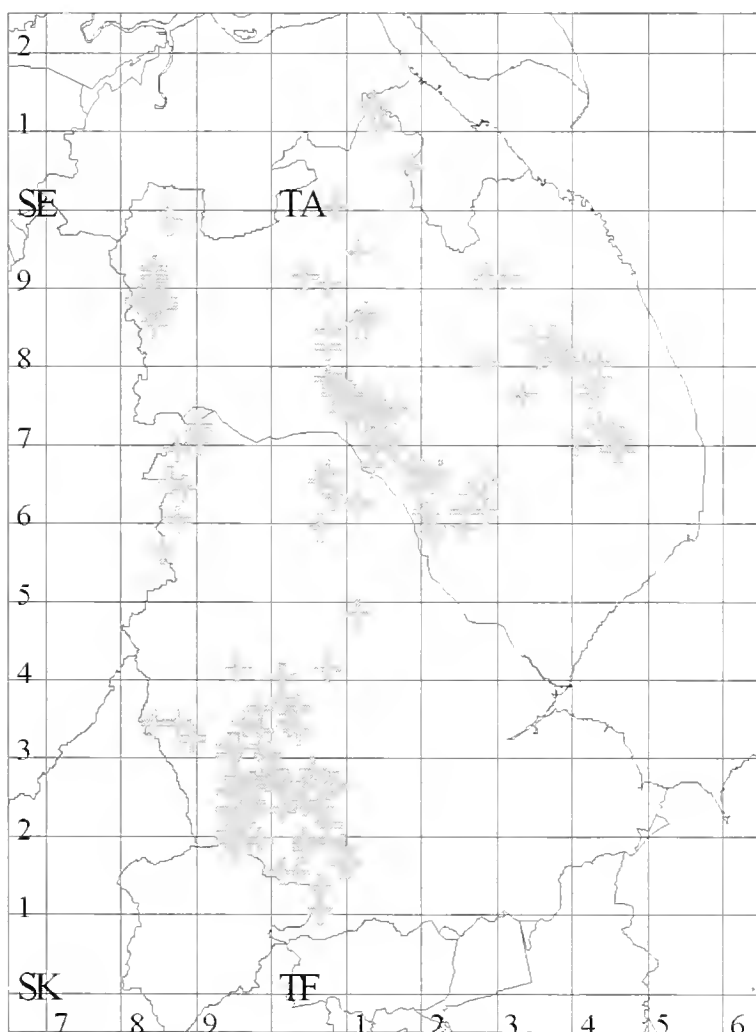
The list of parks above is probably incomplete. Lincolnshire Archives hold information on parks in Nottingham, Leicestershire, Rutland and Windsor together with Knaresborough Forest in Yorkshire. It is very likely that other county archives hold information on Lincolnshire’s parks, and of course many parks may have left no documentary evidence.

PARKS - POSSIBLE SITES

The Gazetteer provides information on Parks for which documentary evidence exists. Probably many more Parks existed but without documentary evidence how can we locate them? Economically the creation of Parks was an expensive undertaking, often associated with large estates that could spare land for the production of a luxury meat or sport. The location of Parks in Lincolnshire may reflect the pattern of landownership in medieval England that had been controlled by Royal patronage since the Norman Conquest, with woods an important resource adding to the desirability of the estates.

Physical features of past Parks such as remnants of the pale are still in evidence at Goltho, Kettlethorpe and Stow. Possibly other, seemingly obsolete, banks in the countryside may actually be the pales of former Parks?

Medieval Parks were sited predominately on the edge of the parish and would have encompassed areas of woodland and wood pasture that may persist to the present day. Today, we call woods that have existed



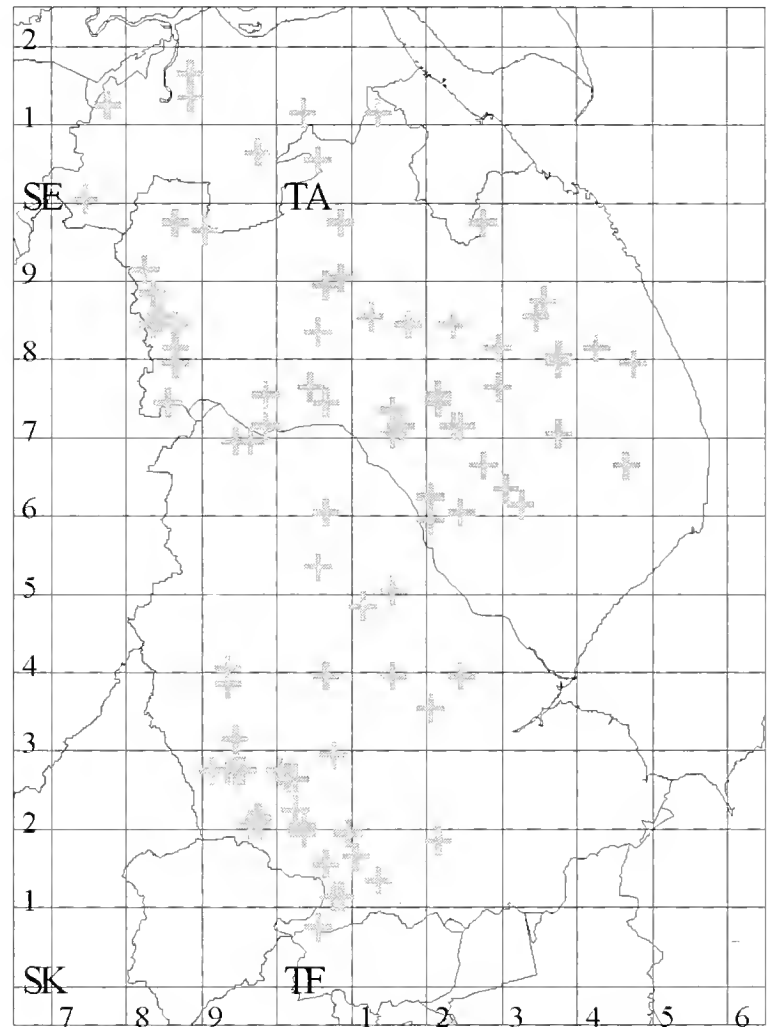
Ancient Woodland in Lincolnshire

continuously since 1600 Ancient Woodland. An inventory of Lincolnshire's Ancient Woodland was first produced by the Nature Conservancy Council in 1988 (Hughes), and a statistical examination between Parks and these Ancient Woods using tetrad data gives a Pearson correlation of 0.390 (P-Value of 0.005) (Manning, 2002), showing a strong correlation between Parks and Ancient Woodland in Lincolnshire. The flora in these former Parks, perhaps managed for generations as wood pasture would have differed from woods managed as coppice with standards, are the past differences in the composition of the flora apparent today?

Place names may indicate a former Park, or like Knaith Park (2) another relationship such as a displaced village, common ownership of the manors, or perhaps just a sentimental name that has no relationship to a former Park.

In the following analysis, 'Park' is used when referring to a site known to be associated with deer; 'park' is used for other sites listed in "A Naturalist's Directory of Lincolnshire" (Key & Houghton, 1994). The analysis between Park and park was undertaken, using the same methodology as the Ancient Woodland analysis, and including only Parks established before 1600.

The Pearson correlation association between Park and park of 0.45 (P-Value 0.0004) in Lincolnshire is statically stronger than that between Parks and Ancient Woodland 0.390 (P-Value 0.005), with our former Parks influencing place names through to the 21st century.



Sites with "Park" in their name

Place names may only indicate a former Park, and it would be extremely ambitious to claim evidence of a Park solely from a place name however sites such as "Park House" (TF 051834) at Snarford do indicate the ancient Snarford Park.

DEER INFLUENCE ON HABITAT

Deer are herbivores that feed by grazing and browsing on vegetation, perhaps the same vegetation that we cherish within our woodlands or exploit commercially by agricultural or forestry practices. Large mammals such as deer were an essential component of the wildwood, however, the precise structure of this past woodland is a topical debate. Structurally, were the wildwoods a closed-canopy with numerous mature trees? If so regeneration might only occur when gaps were created by death, destruction or windthrow. Alternatively, did large herbivores influence the landscape, creating a continual succession of parkland, scrub, grove and break-up phases, over a long cycle as proposed by Frans Vera (2000)? We don't know which scenario applied to Lincolnshire, but both would have supported deer, whose husbandry has had a lasting influence on our landscape, particularly since the creation of forests and parks in the Medieval period.

Deer, by browsing and grazing, directly removing leaves, shoots and even bark and cause structural changes in woods by:

- Browsing seedlings which inhibits regeneration;
- Browsing leading shoots which limits height;
- Browsing on side shoots and climbers which reduces foliage density.

Preferential browsing by deer can also change the species composition of woodland with oak *Quercus* sp, willow *Salix* sp, hornbeam *Carpinus betula* and rowan *Sorbus aucuparia* declining, while Scots pine *Pinus sylvestris*, field maple *Acer campestre*, and beech *Fagus sylvatica* increase (Gill and Beardall, 2001). Deer also browse the shrub layer, favouring bramble *Rubus fruticosus*, ivy *Hedera helix* and hawthorn *Crataegus monogyna* and avoiding honeysuckle *Lonicera periclymenum* (Gill and Beardall, 2001).

The ground flora of a wood is also influenced as deer eat ancient woodland indicator plants such as dog's mercury, common spotted orchid, primrose and bluebells. However, these species decline under a canopy of bramble. Light grazing by deer in removing the bramble will allow the ancient woodland indicator species to flourish. At Monks' Wood in Cambridgeshire, research has demonstrated rapid changes in species composition when deer have been excluded from the woodland.

Deer, in changing woodland structure, then influence other fauna:

Small mammals	The removal of the shrub layer may influence woodlands' suitability for small mammals such as the dormice that used to occur in South Kesteven.
Birds	Reduced numbers of small mammals may increase predation pressure on small birds such as tits and nightingale
Bats	Species of bats such as brown long eared <i>Plecotus auritus</i> and Natterers bats <i>Myotis nattereri</i> that glean prey from shrub leaves will be affected by the reduction in the shrub layer (Nick Tribe, <i>pers com</i>).
Lepidoptera	Over three quarters of British butterflies breed in habitats that are maintained largely by vertebrate herbivores (Feber, <i>et al</i> 2001).
Other invertebrates	Deer affect invertebrates by removing vegetation, changing the physical structure of the habitat and providing resources for species associated with deer dung, hosting sheep tick <i>Ixodes ricinus</i> and a food resource for carrion-feeding invertebrates, such as sexton beetles <i>Silphidae</i> and rove beetles <i>Staphylinidae</i> and flies <i>Calliphoridae</i> , <i>Sarcophagidae</i> and <i>Sphaeroceridae</i> (Stewart, 2001).

Physically deer can also disperse seeds on their coats and in their dung and also via their dung, move nutrients.

Additionally, male deer fray smaller stems to remove their velvet often removing all the bark. While this can be a localised problem roe and muntjac will subsequently scent mark these stems and prolong the damage. Fallow will often thrash stems adjacent to their rutting stand while sika will bole score trees.

Population Control

Deer are prolific-breeders and if left to themselves their numbers will increase until the holding capacity of the habitat is reached. Natural regulatory mechanisms (primarily mortality and reduced reproduction) will then control the population. These regulatory mechanisms which are primarily influenced by nutrition include the following.

Age/Weight.

Roe kids in some populations rarely conceive, in others up to 48% conceive. Delayed puberty can occur in all deer species and adults if under-weight may not breed. This commonly happens in Scottish red deer living on the open hill, yet in other areas breeding annually is the rule (Ratcliffe and Mayle, 1992).

Rate of Ovulation. (Multiple birth species only)

The range of conception in yearling roe deer varies in different populations.

Don't Conceive	0 -	14%
Singles	4 -	86%
Twins	52 -	92%
Triplets	0 -	9%

(Ratcliffe and Mayle, 1992)

Early Embryonic Death.

Assuming a successful mating the embryo can still die in the early stages of pregnancy and typically this will happen in between 20-68% of all pregnancies (Ratcliffe and Mayle, 1992).

Neonatal Mortality.

Figures of between 25-75% have been recorded for different roe populations. While many die within the first few weeks after birth, others may live well into the winter (Ratcliffe and Mayle, 1992).

Mortality.

The younger deer are the most vulnerable to food shortage as their food intake is used for growth, rather than the storing of fat reserves to tide them over the winter. The first year of life is critical; once established, deer will live as long as their teeth last, then impaired food intake starts the process of decline. Late winter is usually the time of highest mortality, food supplies are declining and the deer will have been gradually used up their fat reserves.

DEER MANAGEMENT

Population Density

A deer population has the ability to regulate its reproductive performance so does man need to interfere? Deer live in an environment modified by man where their natural predators have been exterminated. Deer compete with man's other needs for the countryside; agriculture, forestry etc. Even nature reserves may need regulated grazing to ensure survival of their flora. A balance between deer numbers and the damage they cause to their environment is the ideal, this may require some culling of surplus animals.

Methods of control

Hunting with dogs is an ancient practice. Dogs are descended from wolves, natural predators to which deer have adapted after millions of years of evolutionary development. The role of hunting in shaping our countryside via the forest system persists in our landscape to this day. Long established packs of hounds hunted red deer in the West Country until this practice was banned in February 2005, but the hunts persist exploring all the exemptions in the new law that many believe will be repealed in the future.

The hounds hunt by scent and cover a huge area in a day's hunting. The hunt itself acts as a deer management group coordinating management over its area. The concept of communal deer management via deer management groups has yet to be widely adopted outside the hunting area but is probably necessary as the larger deer species can range over large areas. Hunting was often seen as cruel, usually because it is assumed that the hounds kill the deer. In fact the deer is bayed by the hounds and then shot. Scientists have recently measured changes in the blood chemistry of hunted deer, a consensus view on the interpretation of their results has yet to be released.

Motor cars are nationally responsible for the deaths of up to 40,000 deer. As a control method it is indiscriminate, cruel (numerous deer are wounded) wasteful (as the venison is generally unfit for human consumption), expensive and above all dangerous to humans.

The relocation of surplus deer is often advocated. The catching of wild deer is licensed and usually done using nets or purpose built catching pens. The most common use for surplus wild deer is in establishing deer farms.

Population control by fertility treatment is being tried in America but the practicalities of applying such treatment to large unmarked populations is a matter for conjecture. The physiology of such treatment which disrupts natural cycles may impose its own welfare problems. Fertility treatment, if applied to wild animals, will replace natural selection with breeding programmes managed by man. Such a change, which interferes with natural genetic processes, may in the long term change the inherited structure of our wild deer.

Shooting is the preferred method of culling surplus deer. A rifle bullet travels faster than the speed of sound and can be delivered with precision. The deer can be humanely killed with minimal carcass damage and the venison used for human consumption. The deerstalker seeks to maintain a healthy deer population that can thrive in perpetuity with their environment. The tradition of stalking deer with a rifle was well established during the 19th century in Scotland. As deer increased in England and Wales, all manner of methods were used to control them, with snaring practised by the Forestry Commission until the 1960's. The Europeans have a long tradition of managing woodland deer with a rifle, which British service men observed in the post-World War Two years. Returning servicemen introduced the now widespread practice of managing woodland deer with a rifle.

Law

The ending of the protection offered to deer by forest law reached its nadir with the 1851 Deer Removal Act, the purpose of which was to remove all the deer in the New Forest. Fortunately, its objectives were not achieved. Later in the 19th century the Game Laws made the possession of a game licence a requirement for killing deer in some circumstances. The Deer Act of 1963 established close seasons for most deer species, and went a long way to outlawing the use of shotguns on deer. Changes and additions to the 1963 Act were made. The 1991 Deer Act is a consolidation Bill which incorporates the 1963 Act and all the subsequent changes.

The Act makes deer poaching an offence and defines the close seasons for the different deer species.

Statutory Close Seasons - England and Wales, all dates inclusive.

	Males - Stag/Buck	Females - Hind/Doe
Red]	
Fallow Deer] 1 st May - 31 st July	1 st March* - 31 st October
Sika]	
Roe Deer	1 st November – 31 st March	1 st March* - 31 st October

The 1991 Deer Act outlaws the use of traps and nets for taking deer except under licence, limits the use of shotguns, other than for use as a slaughtering instrument or for mercy killing. Rifles below 6.096mm (0.240")* calibre or 2,305 joules (1,700ft/lbs)* muzzle energy are prohibited⁶.

The Deer Initiative/Deer Control Societies

Launched in 1995, The Deer Initiative seeks to "*promote informed responsible management and to explain the need for management and methods used to all people with an interest in deer*".

"The Deer Initiative recommends that deer management is based on careful study of deer numbers, their habitats and their impact. It should be carried out in a planned way over long periods and not simply in response to specific problems.

The management of deer should be carried out, wherever possible, by considering whole populations. As these generally cover several land ownerships, land managers should co-ordinate their activities through Deer Management Groups.

Where deer numbers must be reduced, shooting by rifle is the most humane method currently available. Shooting should be carried out by skilled and trained stalkers, with human safety and the humane treatment of the deer as the overriding priorities".

Lincolnshire's Deer Management Groups

Kesteven Deer Society

Based on the Grimsthorpe Estate, the Society was formed in 1974 and operated in an area bounded by the A17, A15, A16 and A1. Its activities declined when Philip Grimes left the Grimsthorpe Estate with the Group finally folding in the early 1990's.

Lincolnshire Deer Group

C/o Forestry Commission, Willingham Road, Market Rasen, Lincolnshire, LN8 3RQ. Formed in 1997, the group originally operated in central Lincolnshire and has since expanded to encompass the whole county.

⁶ "The sustainable management of wild deer populations in England: An action plan" published by Defra and the Forestry Commission in December 2004 includes proposals to: delay the start of the close season for female deer to 15th March and allow .22 centre fire calibres for the smaller deer species - muntjac and Chinese water deer.

CONSERVATION

Lincolnshire may have more deer now than at any time since clearing of the ancient woodland in the Neolithic period and their conservation is a new challenge for land managers. Close seasons for British deer are prescribed by law to protect the females when they are suckling their youngsters. Male deer are protected whilst their antlers are growing, so that assessment of the antlers and selective management is encouraged. The lack of a close season for both muntjac and Chinese water deer reflects their recent release and establishment. Equally important for muntjac is the absence of a seasonal pattern in their breeding behaviour, on which to base a close season.

Male deer have a comparatively longer season and carrying antlers can be a more popular quarry for some deer managers. The sex ratio of a herd should probably be equal for the small deer with a territorial life style (roe, muntjac and Chinese water deer), the herd forming deer (red and fallow) usually have more females than males.

Deer management is the control of populations. When a species is in decline, protective management will be necessary such as recently happened with the Grimsthorpe red deer population. A management plan should ideally start with a census of the deer, which will probably underestimate the number of deer in an area but at least it allows an assessment of trends in the population. Any culling programme should place equal importance on the numbers of male and female deer. In practice, the culling of females (which is undertaken during the short days of the winter months) is hardest to achieve, but most important as the females control the herd's reproductive potential.

Elaborate culling plans are sometimes produced based on a Hoffman pyramid, i.e. culling certain numbers of each age class of deer to maintain the demographic structure of a herd. How the deer are to be aged in the field is not explained. A "natural" age structure is based on high neonatal mortality, thereafter the deer living until health problems initiate decline and increased predation. We can replicate this by taking the majority of the cull from the younger age groups, culling all animals in poor condition and of course, sick and injured animals.

Reproductive Capacity

The exact number of deer in Lincolnshire is unknown, my estimate of our south/west fallow is 3,700 animals plus the population on the western side of the Wolds (210) and Brocklesby (150). Roe and muntjac numbers are still increasing and there are anecdotal reports that they occupy a very similar niche thereby competing with each other, if so the final population estimates may need reducing.

Species	Population	Increase @		Carcase Weigh Kg	Venison Tonnes	
		15%	25%			
Fallow	4,060	609	1,015	25	15	- 25
Roe	3,400	510	850	12	6	- 10
Muntjac	3,600	540	900	9	5	- 8
					26	- 43

Venison prices are comparatively low and decline as the doe season progresses. Usually roe venison attracts a premium while muntjac is harder to sell. At an average price of £1.00 per kg for a fresh carcass with the skin on may, in future, produce £26,000 - £43,000 worth of venison annually. The harvest of this natural meat requires the annual culling of between 1,600 and 2,700 deer producing a sustainable harvest of wild venison, a lean, natural meat, rich in omega 3 polyunsaturated fatty acids that are important for good health. .

Fencing

Temporary fencing may be needed to protect woods, particularly when resuming coppice management. Electric fencing has been tried, but a deer's coat has hollow hairs which provide some insulation.

Dead hedging has been tried in Bourne Wood. A barrier 1.5m high by 1m wide excluded fallow deer for over a year and allowed the coppice to regenerate, trial areas adjacent to this coupe failed completely without fencing. The barrier uses waste material from coppicing which rots away naturally after a few years so does not need removing. They are thus perhaps the cheapest type of deer fence to use with volunteer labour although unlikely to exclude roe and muntjac.

Wire deer netting is a more expensive option, but should keep out all deer. This type of fencing can be reused, which may keep the costs down. Chestnut paling has been tried as an alternative to netting but the current design does not keep out muntjac although it may exclude roe. The paling

is more expensive than netting but supported by the trees is probably easier to erect and relocate than netting. A change in design may alleviate these problems and its ease of use and removal may encourage temporary use.

The prompt removal of temporary deer fencing is needed. Deer fences require regular maintenance, if not gaps soon let in the deer in while impeding human access. The prospect of removing a fence entangled in brambles is daunting, yet it would be unfortunate if our woods became filled with a series of derelict fences. Deer need access to woodland for shelter and if by fencing, they are concentrated in neighbouring woods, damage there will be multiplied. Frequently woodland managers lament deer browsing of ancient woodland plants, then after fencing compartments to exclude deer they find that brambles flourish, and soon develop a canopy that is equally detrimental to these plants.

Coppice management is usually advocated for ancient woodland sites. The Domesday Book records that a considerable number of our woods were managed as wood pasture with the trees pollarded. Woods may have been managed as wood pasture for centuries and are perhaps only recorded by the presence of parks. This management technique is seldom advocated today.

Short Rotation Coppice - Project Arbre

Coppice may be a traditional management technique for our woodland, yet it is now being developed as fuel crop under the Government's Non Fossil Fuels Obligation (NFFO). The first power station to be built under the NFFO was at Eggborough near Selby in Yorkshire and it cost £28 million pounds.

The Forestry Commissions Woodland Grant Scheme and the Locational Supplement provided grants of £1,000 per hectare for the establishment of Short Rotation Coppice to fuel this power station. The eligible area extends to 40 miles from the power station, taking in all of Lincolnshire north-west of Newark-Lincoln-Grimsby. Willow and poplar species were be planted at 10,000 stems per hectare for harvest on a 3-4 year cycle. The possibilities for this crop as a deer habitat are clearly evident, which may be the most significant change in our county's woodlands since the Forestry Commission's establishment. The Arbre plant failed in late 2002, recently the adjacent Drax Power has investigated co-firing biomass materials with coal and this will hopefully provide a market for the coppice materials.

NEW TRENDS - PROBLEMS

Farming

The production of venison from park deer was a luxury product throughout the Middle Ages and as wild venison was not traded, the only source available was from a park. Venison was, and still is, produced from parks. However the main purpose of keeping deer in modern parks is their amenity value, with some live sales to the emerging deer farming industry.

The Hill Farming Research Organisation researched deer farming in the early 1970's and their work culminated in the current industry. In 2000, 300 deer farms were established in Great Britain keeping 36,000 deer. By comparison the New Zealand deer farmers in the same period have developed an industry of 4,500 deer farms keeping 2 million deer. Red deer, because of their heavier carcass, are kept in 77% of our current deer farms. In parks, fallow were traditionally kept as the venison is considered of better quality and 23% of English deer farms keep this species.

Deer farms need perimeter fencing at least 1.8 metres (6ft) high; the capital cost of this fencing and the high price of land ensures the farm is only profitable at high stocking densities. The pressure to maximise production has led to the import of red deer from Germany and Eastern Europe and various wapiti to increase the growth rate of the deer. The increasing stocking rate usually requires the prophylactic use of worming materials, perhaps conflicting with the "natural" image of venison.

Farmed venison produced under intensive conditions can be produced organically, an attribute that does not apply to wild deer that range naturally over our countryside and may have eaten crops on which fertiliser and pesticides are used. The economics are variable; the supply of breeding stock to aspiring deer farmers increases profitability but only whilst the industry is growing. On-farm processing and retail sales can increase profit if production is sufficient to warrant the necessary processing plant.

British farmed venison has to compete on price with wild and imported venison. The New Zealand industry with its favourable climate has been able to supply venison at similar prices to the production costs of home-farmed deer. Nationally, our largest source of wild venison has been from Scotland, from where the majority is exported.

Current Deer Farms include; Grimsthorpe, Habrough, Horbling Fen, Rainsbutt Moor (Crowle), Riseholme and Walesby.

Diseases

Wild deer are usually healthy, two diseases are currently topical that may impact on human health.

Tuberculosis

Tuberculosis (TB) was first recorded in farmed deer in 1985, the animals had been imported from Hungary for deer farming. TB has since been confirmed in wild deer, the infection rate appears similar to that recorded for cattle. Deer are particularly vulnerable to avian TB, an infection that normally causes minor localised infections in other mammals.

There are implications for public health with TB infections. The Tuberculosis (Deer) Order 1989 requires the notification of suspected TB cases. The Act gives the authorities powers to control the outbreak and requires the marking and keeping of movement registers for farmed deer. People culling wild deer are being trained in post-mortem inspections, particularly in inspection of the lymph nodes and since this has been implemented occasional cases of TB have been reported. Ironically whilst opposing hunting with hounds, welfare groups created sanctuaries that used artificial feeding that promoted exceptionally high deer densities and numerous cases of TB occurred.

Lyme Disease

Amongst the parasites on deer, the blood sucking sheep tick *Ixodes ricinus* is very noticeable, an engorged female may be over a quarter of an inch long. These blood sucking creatures can and do feed on man and it is then that infection with the bacterium *Borrelia burgdorferi* may occur. The abundance of ticks varies and not all ticks carry the infection. Wearing long trousers and socks will reduce the incidence of tick bites while prompt removal of ticks should prevent infection. Ticks should be removed with tweezers, grasping then close to the skin and twisting as gentle pressure is applied.

The disease is named after the town of Lyme in the USA, where it was first recorded in the 1970s when an outbreak of child arthritis attracted attention. One of the first symptoms is a reddish pink rash called *erythema migrans* described in British medical literature from the early 20th century. Lyme disease is easily treated in the early stages of infection. Symptoms can include a reddish pink rash and flu-like symptoms. Later in the infection meningitis and/or arthritis-like symptoms occur by which time blood tests for the antibodies are effective in diagnosing the infection.

Domestic pets may also become infected.

WATCHING DEER

A fleeting glimpse of a wild deer is a common introduction to deer watching. Initially satisfactory, soon you will seek prolonged observations and hopefully reduce the disturbances to the deer. Deer tend to be active at dawn and dusk, so on summer mornings rising early should increase your chances of success. Walking quietly through the woods is important, but you must consider the deer's sense of smell, always plan your route so you are walking into the wind when looking for deer.

Wild fallow are abundant in the south west of the county and can be seen in Forestry Commission woods at Bourne, Morkery and Twyford. The Lincolnshire Wildlife Trust's Tortoiseshell and Lawn woods also offer opportunities to see fallow. The smaller roe and muntjac deer are common throughout the central Lincolnshire Lime Woods near Bardney, many of which are managed by the Forestry Commission and open to the public. The Woodland Trust's Skellingthorpe Wood near Lincoln contains both muntjac and roe deer. In the north-west of the county, roe are abundant on the Lincolnshire Wildlife Trust's Crowle Moor reserve, part of the Humberhead Peatlands National Nature Reserve, which is also home to red deer.

Parks for Viewing Deer

Some of Lincolnshire's parks have no public access, while others welcome the public, and the deer accustomed to humans are far easier to view than wild deer. Parks with public access are:

Belton Park, Grantham	The house is open in the spring and summer, access to the park is available all year from the Lion Lodge gates, fallow deer.
Burghley, Stamford	The house is open in the spring and summer, fallow deer.
Grimsthorpe Castle	Open in the spring and summer, opportunities to feed tame red deer.
Houlton's Covert	Visits by arrangement only, red and fallow deer.
Normanby Hall Country Park	Open all year, red and fallow deer.

Bradgate Park, near Newtown Linford in Leicestershire keeps red and fallow deer. The park is over 900 years old and retains a medieval landscape, this is the premier park in the East Midlands for viewing and photographing deer in a near-natural landscape.

Sika deer can be seen in the National Trust's Studley Royal Park near Ripon in Yorkshire, the park also contains red and fallow deer.

Woburn Abbey in Bedfordshire keeps ten species of deer in the park, these include: red, sika, fallow, muntjac and Chinese water deer together with Pere David deer that were saved from extinction by the eleventh Duke.

Equipment

Clothing should be quiet, many of the waterproof garments available make considerable noise when you are moving. Camouflage clothing is fashionable but some American hunters have to wear fluorescent jackets (so they don't shoot each other!) and still hunt successfully. The white human face is our most prominent feature but can be easily shaded by a wide rimmed hat.

Binoculars are essential. Magnifications of 7-10x are adequate but more important is their light gathering power, indicated by the diameter of the objective lens. A pair of 8x24 binoculars (magnification and diameter of the objective lens) is inferior to 8x50 binoculars for watching deer; it is not until you are standing in a sunlit ride trying to see a deer in the deep shadows of a wood that this becomes very apparent.

Photographing deer is a challenging hobby; compact cameras with built-in flash (the flash will spook the deer) require the deer to be very close. The 35mm SLR cameras with interchangeable lens, are a better choice, 300-500mm lenses give magnifications of 6-10x and a realistic chance of composing an acceptable picture, given enough light. The light-gathering power of a camera lens is measured by the aperture (f/stop). Unfortunately large apertures increase the cost of the lens dramatically. The use of a fast film (indicated by a high ASA number) will overcome the limitations of a small aperture, however, images may appear grainy.

The technology for digital photography is rapidly eclipsing the use of film. Digital cameras replace film with a charge-coupled device to capture the image and capture up to 70% of the incident light compared with about 2% for photographic film. Contemporary digital cameras typically have both optical and digital zooms, while digiscoping (when a photograph is taken through a telescope) can provide magnification of 75x or more, this technique has proven popular with bird photographers. Digital photographic techniques are very similar to those used in conventional photography and the digital images can be stored and edited on a home computer.

All cameras benefit from support, I find tripods clumsy in the field and use two walking sticks as a bipod, which I find steadier and more flexible.

Postscript

In fifteenth century hunting feasts, the liver, kidneys and entrails of deer, collectively known as numbles, were made into a pie and served at the hunt feast to the lower classes whilst the nobility dined on haunch and saddle. The word numbles has evolved through umbles and humbles, and survives today with the metaphorical eating of humble pie.

This work no doubt includes some errors, please ensure that any constructive criticism is published, as this is the most certain way to pass knowledge down to succeeding generations.

About the Author

The author is project manager for the Humber Management Scheme, and chose the Humber Estuary's formation and function for his Presidential address to the LNU in 2005. His interest in deer began on a schoolboy trip to London zoo, when on the return journey he saw his first wild deer on the Brecklands of East Anglian. Since then he has studied deer, particularly their impact on the landscape, completing a BSc in landscape ecology with a dissertation on "*Deer Parks in Lincolnshire their Association and Influence on the County's Habitats, particularly woodland and wood pasture*".

Since moving to Lincolnshire in 1986, he has studied the county's deer and to date has given over 30 talks. He serves on the steering group of the Lincolnshire Deer Group that promotes a co-ordinated approach to the sustainable management of the county's wild deer. The author's interest in deer includes field sports and he is an instructor stalker with the St Hubert Club of Great Britain.

DEER NAMES

Species	Male	Female	Infant
Red	Stag	Hind	Calf
	<i>Other Names</i>	<i>Antler Description</i>	
	Imperial	14 points	
	Royal	12 points	
	Murderer	no tines on antlers	
	Hummel	Hummel	
Sika	Stag	Hind	Calf
Fallow	Buck	Doe	Fawn
	<i>Other Names</i>	<i>Age</i>	
	Great Buck*	over 6 years	
	Barebuck*	5 years	
	Sore*	4th year	
	Sorel*	3rd year	
	Pricket	2nd year	
*Note the use of these terms is declining			
Roe)		
Muntjac) Buck	Doe	Kid
Chinese Water Deer)		

USEFUL ORGANISATIONS

British Deer Society, Fordingbridge, Hampshire, SP6 1EF. Tel: 01425 655434, www.bds.org.uk

Lincolnshire Wildlife Trust, Banovallum House, Manor House Street, Horncastle, Lincolnshire, LN9 5HF. Tel: 01507 526667, www.lincstrust.org.uk

The Woodland Trust, Autumn Park, Dysart Road, Grantham, Lincolnshire, NG31 6LL. Tel: 01476 581111 www.woodland-trust.org.uk

Lincolnshire Parks regularly open to the public

Belton Park, Grantham, Lincolnshire, NG32 2LS. Tel: 01476 566116 www.nationaltrust.org.uk

Burghley House, Stamford, Lincolnshire, PE9 3JY. Tel: 01780 752451 www.burghley.co.uk

Grimsthorpe Castle, The Estate Office, Grimsthorpe, Bourne, PE10 0LY. Tel: 01778 591205, www.grimsthorpe.co.uk

Normanby Hall Country Park, Normanby, Scunthorpe, North Lincolnshire, DN15 9HU. Tel: 01724 720588, www.northlincs.gov.uk

Other Parks regularly open to the public

Bradgate Park Trust, Estate Office, Bradgate Park, Newtown Linford, Leicester LE6 0H. Tel: 0116 2341850

Fountains Abbey and Studley Royal, Ripon, Yorkshire, DL8 4SY. Tel: 01765 698888, www.nationaltrust.org.uk

Woburn Abbey, Woburn, Bedfordshire, MK17 9WA. Tel: 01525 290333, www.woburnabbey.co.uk

Deer Management Groups

Lincolnshire Deer Group, c/o Forestry Commission, Willingham Road, Market Rasen, LN8 3RQ. Tel: 01673 843461, www.lincolnshiredeergrout.co.uk

Forestry Commission www.forestry.gov.uk

South Lincolnshire, Northants Forest District, Top Lodge, Fineshade, Nr Corby, Northants, NN17 3BB. Tel: 01780 444394

North Lincolnshire, Sherwood & Lincs Forest District, Edwinstowe, Mansfield, Notts, NG21 9JL. Tel: 01623 822447

GLOSSARY

Antler	A deciduous bony outgrowth on the skull of a deer.
Assart	A medieval term when woodland is cleared for agriculture use.
Barebuck	Male Fallow deer over 5 years old.
Beam	The stem of an antler.
Bez/Bay tine	The second tine of an antler.
Brow tine	The first tine of an antler.
Brush	The tuft of hairs at the end of the penis sheath.
Buck	A male Fallow, Roe, Muntjac or Chinese Water Deer.
Burr	The edge of the cornet of the antler.
Calf	A young Red or Sika deer.
Caudal	The area beneath the base of the tail.
Chase	Traditional name for land other than a royal forest with hunting rights.
Clean	Antlers free of velvet.
Cleave	One of the two hooves on a deer's foot.
Coppice	Woodland management, the tree is repeatedly cut on a 7-15 year cycle to produce woodland products, such as hurdles.
Cornet	The base of an antler.
Coupe	A coppice plot cut on a regular basis, also called a panel.
Crotties	Ancient term for heaps of deer faeces.
Crown/Cup	The top tines on a Red deer's antlers.
Doe	A female Fallow, Roe, Muntjac or Chinese Water Deer.
Fawn	A young Fallow deer.
Fewmets	Ancient term for deer faeces.
Fraying	Rubbing antlers against a tree to remove the velvet.
Gorget	The white throat patch on some Roe deer.
Great Buck	Male Fallow deer over 6 years old.
Groan	The sound made by a male Fallow deer in the rut.
Harem	A group of females kept together by one male.
Hart	Ancient term for an old (7 years) Red deer stag.
Haviers	Ancient term for castrated male deer, used to supply venison during the rut.
Hind	A female Red or Sika deer.
Hoffman	A pyramid showing the demographic structure of a herd.
Hummel	Scottish name for a male deer that does not produce antlers.
Imperial	Male Red deer with 14 points on his antlers.
Incisiform	Canine teeth of similar shape to incisor.
Jurassic	Geological period 135-195 million years ago.

Kid	A young Roe, Muntjac or Chinese water deer.
Menil	A pale coloured Fallow deer, without black markings.
Miocene	Geological period 23 million years ago.
Murderer	Male Red deer with no tines on antlers.
Murrain	An ancient term for diseases.
Neolithic	Late stone age.
Notts	West country name for a male deer that does not produce antlers.
Pale	The perimeter barrier of a park, usually an earth bank with an inside ditch, the bank topped with a fence, of cleft oak stakes.
Palm	The flat portion of a Fallows' antler.
Pedicle	The bone column on the skull from which the antler grows.
Peep/pheep	The sound made by young deer.
Perruque	An antler that keeps growing and retains its velvet, usually due to testicular damage.
Points	The tines on an antler.
Pricket	Male Fallow deer in his 2 nd year with simple spiked antlers.
Pronking	A stiff legged jump with all four feet, used when Fallow are alarmed.
Royal	Male Red deer with 12 points on his antlers.
Rut	The time of year when deer mate
Scoring	The grooves made on a tree by antlers.
Sore/Soar	Male Fallow deer in its 4 th year.
Sorrel	Male Fallow deer in its 3 rd year.
Spellars	The back point on the palm of Fallow antlers
Stag	A male Red deer or Sika.
Target	Another name for the caudal patch
Thrashing	Territorial rutting behaviour when trees and scrub are thrashed with the antlers.
Tine	The individual points on the antlers.
Trez/Tray	The third tine on an antler.
Velvet	The hairy skin that covers growing antlers.

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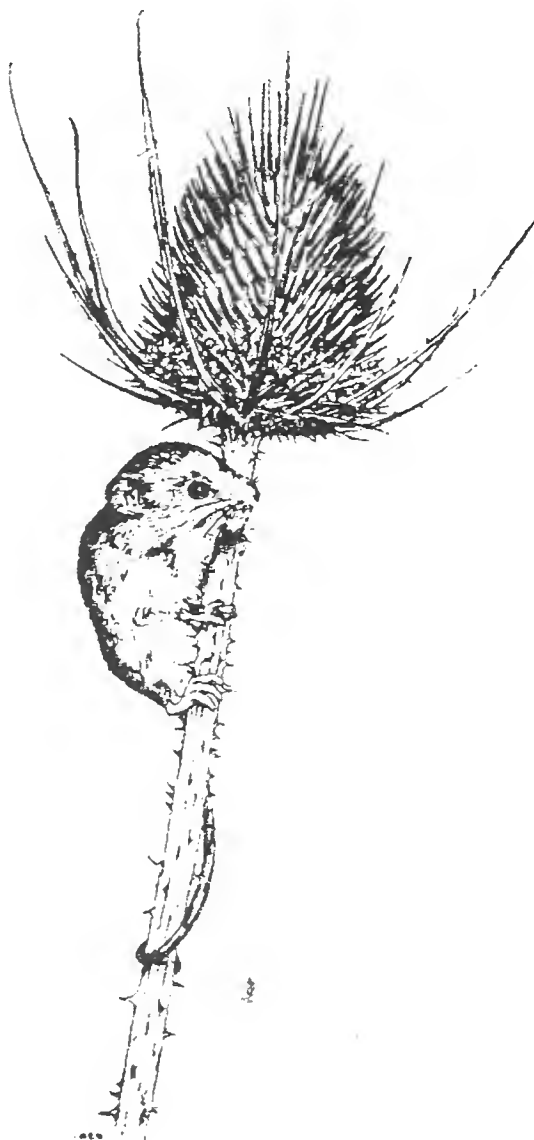
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LINCOLNSHIRE NATURALISTS UNION

The Lincolnshire Naturalists' Union was founded in 1893 and is the only amateur Natural History Society covering the whole of Lincolnshire. Members study, record, hold meetings, supply information, publish books, exhibit, discuss and learn about all aspects of Lincolnshire's wildlife and geology.



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