

The bird bone

Catherine Smith and A S Clarke

Introduction

The bird bones from the first season of excavation, 1975–76, were identified by Dr A S Clarke of the former Royal Scottish Museum, Edinburgh. Those from the subsequent season (1977) were identified by C Smith who also made anatomical measurements after the scheme of von den Driesch (1976) on the bird bones from both seasons and supplied the text of this report. Reference was made to the comparative skeletal collections of the National Museums Scotland, Edinburgh; Perth Museum and Art Gallery and Dundee Art Galleries and Museums.

Species present

The bird assemblage was dominated by the bones of domestic fowl (*Gallus gallus*) (Illus 37). Geese were present to a much lesser extent, although it was not possible to determine their true status, whether domesticated or wild greylag (*Anser anser*), their bones being impossible to distinguish morphologically. A few bones of pinkfooted goose (*Anser brachyrhynchus*) were, however, found. Ducks were not numerous, rather surprisingly, given the proximity of the site to the River Tay. Mallard/domestic duck (*Anas platyrhynchos*), wigeon (*Anas penelope*), shoveler (*Anas clypeata*), goosander (*Mergus merganser*) and probable eider (*Somateria mollissima*) were found in small numbers. Whooper swan (*Cygnus cygnus*) also occurred, while other water birds were heron (*Ardea cinerea*), crane (*Grus grus*) and red-throated diver (*Gavia stellata*). Other edible wild species were black grouse (*Lyrurus tetrix*) and ptarmigan (*Lagopus mutus*). One bone of peafowl (*Pavo cristatus*) must have come

from a domesticated bird. Finally, species which may have been scavengers around the burgh middens were buzzard (*Buteo buteo*), raven (*Corvus corax*) and carrion crow/rook (*Corvus corone/frugilegus*). A few bones of eagles, both golden (*Aquila chrysaetos*) and white-tailed sea eagle (*Haliaeetus albicilla*) also occurred.

The number of bones recorded from each species is shown in Table 26.

Species accounts

Domestic fowl and peafowl

By far the most numerous avian species at the site appeared to be the domestic fowl (*Gallus gallus*), although care had to be taken in identification in order to avoid confusion with related wild galliform species such as red grouse and pheasant (see Table 27). Anatomical measurements of the bones revealed that at least some of the birds must have approached the size of modern farmyard breeds, while at the bottom of the size range were individuals most closely resembling bantams. However the sex of the birds, rather than their breed, may have been responsible for this wide size range, males presumably having been larger than females of the same breed. The situation is further complicated by the possible occurrence of capons. A true capon is a castrated male in which the gonads have been inactivated either by surgical removal or burning with a hot iron, a somewhat barbaric procedure which has been carried out in past centuries, often with fatal results (West 1982, 255) or as in more recent times by means of a hormone implant in the bird's neck, a process made illegal in Britain in the late 20th century (Twinch 1985, 8). In either case, the reasoning behind the procedure would have been to produce a bird with a meat distribution more characteristic of the female than the male, with, in particular, plumper breast meat.

Simply removing the external indicator of maleness, the bony spur which is found projecting from the bone of the lower leg (that is, on the tarso-metatarsus) also seems to have been believed to produce capons, and although this would not render a cock bird sterile, it may have had the result of making it less likely to fight.

In order to try to separate the bird remains by sex, frequency histograms were plotted for the femur and tarso-metatarsus, plotting greatest length (GL) of each bone against the numbers of bones present (juvenile bones were omitted; Illus 38). Results for



Illus 37 Domestic fowl furculae (chicken wishbones).

Table 26 Total numbers of bird bones identified.

common name	species	number of bones
red-throated diver	<i>Gavia stellata</i>	2
grey heron	<i>Ardea cinerea</i>	10
stork (?white)	<i>Ciconia ciconia</i>	1
whooper swan	<i>Cygnus cygnus</i>	1
pinkfooted goose	<i>Anser brachyrhynchus</i>	14
greylag/domestic goose	<i>A. anser</i>	337
wigeon	<i>Anas penelope</i>	1
mallard/domestic duck	<i>A. platyrhynchos</i>	19
shoveler	<i>A. clypeata</i>	1
eider	<i>Somateria mollissima</i>	1
goosander	<i>Mergus merganser</i>	1
small duck sp		1
buzzard	<i>Buteo buteo</i>	2
golden eagle	<i>Aquila chrysaetos</i>	3
white-tailed sea eagle	<i>Haliaeetus albicilla</i>	2
eagle sp		1
domestic fowl	<i>Gallus gallus</i>	798
black grouse	<i>Lyrurus tetrix</i>	6
ptarmigan	<i>Lagopus mutus</i>	2
peafowl	<i>Pavo cristatus</i>	1
crane	<i>Grus grus</i>	2
crow/rook	<i>Corvus corone/frugilegus</i>	7
raven	<i>C. corax</i>	80
indeterminate species		3
total		1295

the femora seem to indicate a bimodal distribution, two peaks being present. The peak in total numbers at a greatest length of between about 69–71mm is most likely to represent females. Those which peak at approximately 10mm longer are probably from males, although it is possible that capons may also have been present. Similarly, in the frequency distribution for the tarso-metatarsus, two groupings seem to occur, hens appearing on the left of Illus 38, while cocks and capons are on the right. The presence or absence of bony spurs on the tarso-metatarsi was also noted. However although it is normally the male birds which

bear these outgrowths, West (1982) has shown that capons (in this case meaning male birds from which the gonads have been removed in order to improve their rate of meat production), as well as hens with defective ovaries, are capable of producing impressive spurs. In the case of the Perth High Street tarso-metatarsi, all those bones which bore spurs tended to occur to the right of the distribution diagram, indicating that they were indeed males or capons.

Certainly all three sexes are mentioned in documents relating to the Cistercian Abbey of Coupar Angus, dating from the middle of the 16th century (*Coupar*

Table 27 *Total number of domestic fowl bones identified.*

	number of domestic fowl bones
skull	7
mandible	1
furcula	9
coracoid	57
scapula	8
sternum	41
humerus	133
radius	28
ulna	67
carpo-metacarpus	5
innominate	55
femur	143
tibio-tarsus	155
tarso-metatarsus	85
lumbar vertebrae	3
rib (cf fowl)	1
total	798

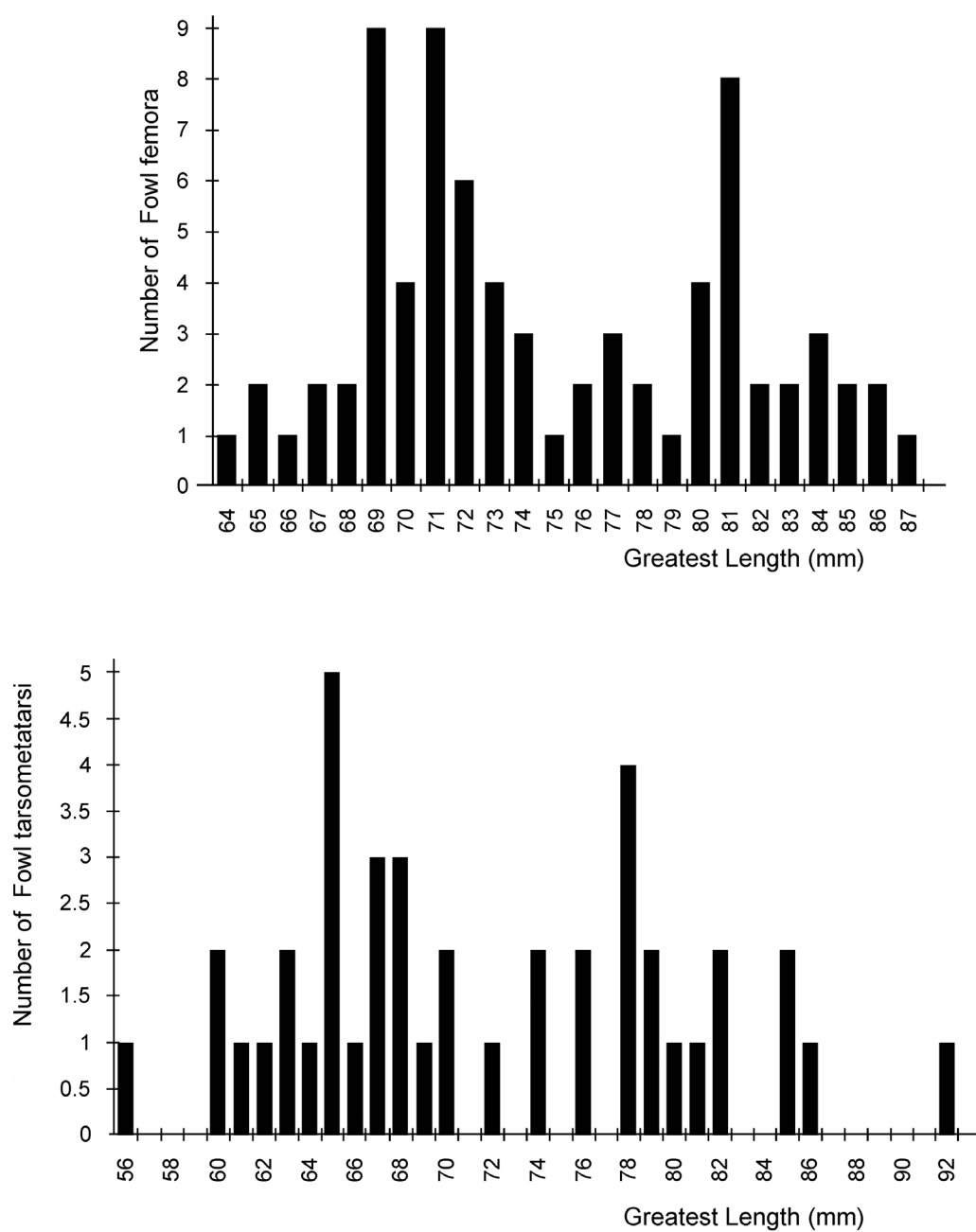
Table 28 *Numbers of adult and immature domestic fowl bones identified.*

	number of bones		
bone	adult	immature	total
coracoid	38	6	44
scapula	7		7
humerus	113	20	133
radius	24	3	27
ulna	57	9	66
carpo-metacarpus	4	1	5
femur	119	13	142
tibio-tarsus	149	3	152
tarso-metatarsus	62	20	82
total	573	75	648
%	88.4%	11.6%	100%

Angus Rental). Rentals due to the abbey included for example ‘ane dusane [dozen] of pultre and ane dusane of capones’ or ‘sax [six] pultre cok and hen’ where the term ‘pultre’ (poultry) seems to have meant either female birds only, or any bird other than a ‘capone’. Whether these were truly castrated birds or merely those with the spurs removed remains obscure.

One tarso-metatarsus from the site bore a large spur which appeared to have been sawn, at least 7.5mm of its length still remaining (C2770, Phase Vdd; Illus 39, 40). This modification would not have occurred as a result of normal butchery and may have resulted from a deliberate attempt to caponise the bird by the external method of removal of the spurs, although as noted above this would have had no effect on its growth. West (1982, 258, Plate 2) illustrates a strikingly similar example from a late 18th- or early 19th-century context at Greyfriars, Oxford, which she believes to have come from a fighting cock. The spurs of such birds were sawn off and replaced with much more lethal steel attachments and it is likely that this was the reason for spur removal at the High Street.

Another tarso-metatarsal, in which there may have been interference with the spur, showed evidence of swelling and pitting of the shaft of the bone as well as the production of a small osteophyte (or bony outgrowth) just proximal to the spur. These changes may have been caused by reaction to an infection introduced into the bone via a failed attempt to remove the spur either for the purposes of caponisation or cock fighting (C3738, Phase Ie). Assessment of the ages at which the birds died or were killed revealed that most of the domestic fowl (88.4%) had passed the age of six months, this being the age by which the epiphyses of the long bones have ossified (Silver 1969, 300) (see Table 28). The presence of so many older birds implies that egg production was of greater importance than the provision of young, tender meat, although it is very possible that porous, fragile bones of younger birds did not survive so well as those of older ones. Egg shell fragments were indeed found at the site, as well as three remarkably well preserved complete eggs which were thought to be from domestic fowl (further investigation would have resulted in damage to the specimens and so was not attempted).



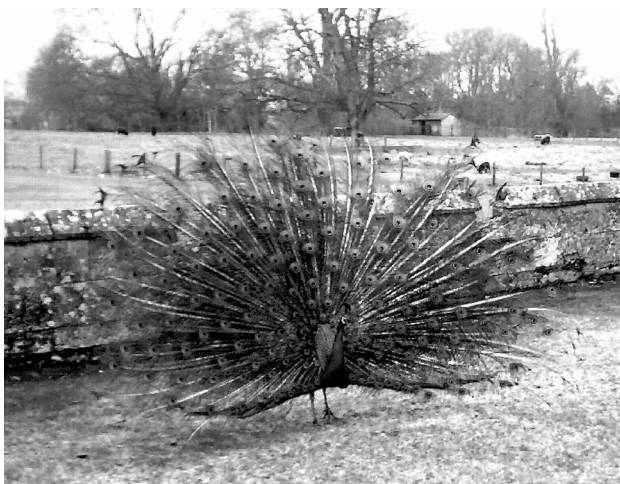
*Illus 38 (above) Greatest length of domestic fowl femora versus frequency.
(below) Greatest length of domestic fowl tarsometatarsi versus frequency.*



Illus 39 Three domestic fowl tarsometatarsi, medial and posterior views.



Illus 40 Domestic fowl tarsometatarsi, anterior view.



Illus 41 Peacock (Scone Palace, Perthshire).

Since only a single bone of peafowl (*Pavo cristatus*), a sternum or breastbone, was found, this species cannot be said to have been eaten every day. Its place has probably always been on the banqueting table where it was served only on special occasions; for example, at the wedding feast of Henry IV of England, 'pokokkys' were consumed during a vast second course, which also included cranes and bitterns (Pullar 1972, 92). Peacock was typically served roasted, then replaced inside its own skin, resplendent with ornate tail feathers, before serving (Illus 41). For this reason, the male bird was preferred since the female's plumage is unremarkable; in the book of accounts of the Percy family, the Northumberland Household Book, it is stipulated that only 'pacokes' and not 'payhennys' are to be bought on the occasion of principal feastdays such as Christmas (Percy 1905).

Geese

Greylag/domestic goose

Determining whether the geese from the site were true wild greylags or their domesticated descendants was, in all but a few cases, impossible. The bones were morphologically indistinguishable from greylag (*Anser anser*), and in many cases were identical in size to the wild type, only a very few reaching the size of a modern domestic goose used for comparison. The surrounding environment of medieval Perth would have provided ample opportunity for wildfowling, particularly on the flat (and in the medieval period, undrained and boggy) Carse lands. In winter time, wild grey geese can still be seen grazing at the present day, although probably not in the density of former times. Baxter and Rintoul (1953, 365), the great authorities on the status of birds in Scotland, have noted that 'draining the marshes undoubtedly made wild geese less plentiful than they were in the old days; there are notes to this effect in a good many of the old writings', although they also observe that the species referred to has not been differentiated in early documents. Wild geese are listed in the rentals of Coupar Angus Abbey in 1541 and 1547 as one of the types of bird to be caught by the 'craft of fowlarie' by the appointed fowler, John Sowter of Mylnhorn, the price to be paid by the cellarer for 'ilk wild guiss, tuay schillingis' (*Coupar Angus Rental*, ii, 13). Elsewhere, wild geese are referred to as 'geis siluistres' and are always distinguished from the domesticated variety which are described as 'tame', 'fatted' or 'fed' (ibid, xix).

That many of the geese from the site must have been of the 'tame' kind is suggested by the numbers of their bones, which although by no means so numerous as those of domestic fowl, are still far more plentiful than those of other edible wild birds such as ducks (see Table 29). Analysis of age at death revealed that the majority of the geese (96.0%) were mature when killed, as Table 30 shows. The value of the older birds must have lain in their capability to produce eggs, feathers (quills for

Table 29 Total number of domestic goose/greylag bones identified.

bone	number identified
skull	1
mandible	1
quadrate	1
furcula	8
coracoid	23
scapula	4
sternum	19
humerus	55
radius	56
ulna	31
carpo-metacarpus	49
innominate	11
femur	17
tibio-tarsus	31
tarso-metatarsus	28
phalange (wing)	2
total	337

arrows and pens), goose grease for lubrication and medicinal purposes and substantial amounts of meat as opposed to the lower meat yield and downier feathers of younger birds.

Other goose species

Although no definite evidence of the bean goose (*Anser fabalis*) was found at the site, it is possible that some of the smaller specimens identified as its close relative, the greylag, could have come from this species. At the present time, the bean goose is described as a 'less than annual visitor' to the area and as a rarity even in the first half of the twentieth century (Burnett 1993, 12; Harvie-Brown 1906, 223). However it is believed to have been much more abundant on Tayside in the past and may have been overlooked in the assemblage.

Another goose species which was however found at the site was the pinkfooted goose (*A brachyrhynchus*) although its positive identification proved difficult due to similarities to wild greylag. Although an abundant and increasing winter visitor at the present day (Thom 1986, 96–8) the very few bones recovered from the excavation may indicate that it was not always so numerous.

Table 30 Numbers of adult and immature goose bones identified.

bone	number of bones		
	adult	immature	total
coracoid	23		23
scapula	4		4
humerus	40	4	44
radius	53	2	55
ulna	28	1	29
carpo-metacarpus	48	1	49
femur	16	1	17
tibio-tarsus	25		25
tarso-metatarsus	24	2	26
total	261	11	272
%	96.0%	4.0%	100.0%

Ducks

As with the difficulty in separating the greylag from the domestic goose, so with the mallard (*Anas platyrhynchos*) and its descendant the domestic duck. Only a small number of duck bones was recovered from the site in any case and these were referable to true mallard, none of them approaching the large size of the modern domestic variety. It would seem that domestic ducks came very late to Scotland, or that they remained very similar to the wild progenitor for a considerable period of time.

Currently the River Tay at Perth abounds with mallard, which breed in close proximity to the town and could easily have been netted or snared, thus it is somewhat surprising that there was so little evidence for their exploitation. Perhaps they may have been considered too troublesome to catch when there were numerous domestic fowl available, within the town itself. Indeed the price paid to the fowler of Coupar Angus was only fourpence for each 'duik', rather less than that allowed for larger birds (*Coupar Angus Rental*, ii, 13).

Duck species other than mallard were poorly represented at the site, but in view of their smaller

size, it is not surprising that bones of species such as wigeon (*A. penelope*) and shoveler (*A. clypeata*) were found only rarely. Goosander (*Mergus merganser*), which can still be seen regularly on the Tay at Perth, was represented by only one bone. Eider (*Somateria mollissima*) overwinter in great rafts at the mouth of the Tay, and have in recent years been noted in numbers as great as 20,000 birds. Breeding in Tayside at the present day has however been restricted to Montrose Basin (Burnett 1993). Since sea ducks are trapped most easily during the breeding season, when they are forced on to dry land, it is probable that the Perth specimen was caught some distance away from the town on coastal mudflats or dunes at the river mouth.

Swans

Only one bone of whooper swan (*Cygnus cygnus*) was found. Surprisingly, mute swan (*C. olor*) was absent, although today it is common on the Tay all year round, while the whooper swan visits only in winter. There is little doubt as to the edibility of swans, although we are recommended that to enjoy this bird to the full, 'the young cygnet is best' (Smith nd, 194). The price to be paid to the fowler of Coupar Angus Abbey for one swan was five shillings, not surprising, given the amount of meat it could yield, whereas a goose was only worth two shillings (*Coupar Angus Rental*, ii, 13).

Other edible species

Other birds which could have been eaten, and probably were, included red-throated diver (*Gavia stellata*), grey heron (*Ardea cinerea*), stork (*Ciconia ciconia*) and crane (*Grus grus*) as well as the relations of the domestic fowl, the black grouse (*Lyrurus tetrix*) and ptarmigan (*Lagopus mutus*). There is no doubt as to the edibility of grouse, both the red and black species, although as regards the former, younger birds are preferred for the table than older ones, being less tough, while the black grouse (also known as black game) is not considered such good eating as the red, tending to be hard, dry and flavourless if not well hung (Smith nd 39, 105).

Reference is made to the crane in the Rental Book of Coupar Angus Abbey, bringing in the same price as a swan, five shillings (*Coupar Angus Rental*, ii, 13). However it may always have been something of a speciality dish; for example, 'cranys' feature in the Northumberland Household Book (Percy 1905) as a bird to be bought in only for Christmas and other principal feasts. This status may have been conferred on the bird by its comparative rarity as much as its large size. At the present day it occurs in Scotland only as a vagrant and has not bred in Britain since about 1600 (Thom 1986, 166). Crane bones, including a few from juveniles, have also been recovered from medieval archaeological sites in Aberdeen, implying that the bird did once breed in the north-east of Scotland (Hamilton-Dyer 1993 and 1994; Hamilton-Dyer et al

2001, 279–80). But the meat of the crane did not appeal to all tastes. A 16th-century document described this bird as being 'hard of digestion, and maketh yll juice, but beyng hanged up longe in the ayre, he is the lesse unwholesome' (Elyot's *Castel of helth*, quoted in Simon 1983, 548).

The status of the heron, however, is less doubtful. This species breeds locally and is still common along the banks of the Tay and, although it is not mentioned specifically by the compiler of the Coupar Angus Rentals, it is likely that it was not differentiated from the 'cran' to which it bears a superficial resemblance. The name 'crane' was, in many areas, transferred to the heron after the former bird became less widely distributed (Lockwood 1984, 48). Herons (preferably young birds) were also among the fowls served to the Earls of Northumberland at holiday times (Percy 1905). Care is recommended in handling and cooking this species, however, since if the bones are broken, it is best to discard the bird since, 'it will only prove a disappointment, due to the fishy fluid escaping from the broken bones tainting the meat' (Smith nd, 123). The 16th-century writers all advised the drinking of plenty of good strong wine with such 'weather-sore' birds as the heron, presumably to disguise the taste (Simon 1983, 572).

The red-throated diver, although breeding only in small numbers in modern-day Perthshire (Thom 1986, 68) was probably more widely distributed in the past. Its presence at the site is probably an indicator of the type of undrained land which would contain the small moorland lochans which are this species' preferred breeding grounds.

Birds of prey and scavengers

A few bones of golden eagle (*Aquila chrysaetos*) and probable white-tailed sea eagle (*Haliaeetus albicilla*) were found at the site. The latter species, also known as the earne, occurred commonly in Scotland in the past, and could be found in Perthshire until the early part of the 20th century (Love 1983, 116) when driven to extinction by gamekeepers and shepherds intent on preserving wild game and lambs. Golden eagles were also considered to be vermin and persecuted in the same way, as were buzzards, which were named as 'foullys of reif' in an act of James II of 1457 (Baxter and Rintoul 1953, 301), 'reif' having the meaning of robbery or spoliation. Bones of buzzards have also been found elsewhere in medieval Perth, at Meal Vennel and Canal Street (Smith 1996a and 1996b).

Raven (*Corvus corax*) bones were relatively numerous, indicating rich pickings from the open middens of the burgh, which presumably also attracted carrion crows and buzzards as well as mammalian scavengers such as dogs. Raven bones have also been retrieved at King Edward Street, Perth (Smith 1995a, 989) and medieval Aberdeen (Hamilton-Dyer et al 2001, 279). Corvids were probably persecuted since they are believed to peck the eyes of sickly lambs.

The gardener engaged by the Abbey of Coupar Angus was enjoined to promise that he would 'nocht let ane craw big within the bundis, eftir his power' (that is, build within the grounds), presumably meaning that any nests would be destroyed in order to protect valuable livestock (*Coupar Angus Rental*, ii, 208).

Distribution of bird bones over the site

Details of the numbers of bird bones from each species found in context groups such as middens, buildings, pits and paths are shown in Appendix 2. A study of the distribution of bird bones found in middens shows that some of the birds which scavenged on the rubbish of the town also became part of the middens when they died. In midden M14b(b), Phase Ie, for example, 31 raven bones from a minimum number of four individuals were recovered from Context 3622. This midden also contained bones of eagle and buzzard, and taken together with the unusually high number of raven bones may be interpreted as deliberate pest control.

Midden M1.4d (Phase IVb,IVc) contained 46 fowl bones, representing at least five different birds, most of which were found in Pit 2566. A pit in midden M3e (Pit 2111, Phase Vdd>) contained 37 fowl bones, including a skull, representing at least four individuals, as well as an intact egg. These pit fills may indicate deliberate disposal of whole birds, perhaps as a result of disease.

Discussion

The avian assemblage from the site has provided a large data bank of measurements of domestic fowl and goose, unmatched by any subsequent excavation within the burgh and thus of great value for comparison with future urban sites in Scotland. Domestic fowl were considered to vary in size from birds as small as bantams to those which approached the size of larger modern breeds. This finding compared remarkably well with data from contemporary sites in Britain and Europe (Brothwell and West pers comm). Similarly, due to the large size of the sample, a greater number of wild bird species was seen to be exploited at the High Street than has proved to be the case at other sites in Perth.

However notable similarities have also been found with more recently excavated sites within the burgh. For example, the proportion of domestic fowl to goose has consistently been found to be very similar to that at the High Street. The observation that wild bird species are always in the minority in the assemblage, compared to the domestic species, has also been made for sites throughout the burgh as well as elsewhere in medieval Scotland, for example, in Aberdeen, and in England, at 16–22 Coppergate, York (O'Connor 1989, 193).

The wild species found at the site are an indicator of the changing environment of Perth from the medieval period to the present day. Cranes are no longer to be found along the waterways of the Tay, the boggy ground and wet meadows which are the birds' preferred breeding habitat having long been drained and reclaimed for agriculture. Similarly, the breeding habitat of the red-throated diver has presumably also decreased because of drainage and change of land use, and although this species can still be found in winter in the outer Tay Estuary its breeding success within the Perthshire area has been limited to sites such as Loch Rannoch, at some distance from the town of Perth itself (Perthshire Bird Report 1976–8, 13).

Buzzards and ravens have ceased to circle the once open middens of the burgh, their niche in the modern townscape having been taken by herring gulls, wheeling over the municipal coups of Scotland. Crows, however are still common, despite the local persecution by farmers and gamekeepers which has until very recently greatly reduced the modern buzzard population.

The study of the bird bones has in a small way given a tantalising glimpse of life in the medieval burgh, ranging from the evidence of everyday diet provided by the numerous fowl and goose bones, to the food of special occasions and holidays when peacocks, cranes and herons would have been enjoyed. Wildfowling on the banks of the Tay, probably with nets and snares, would have been engaged in, although possibly by professional wildfowlers such as those employed by Coupar Angus Abbey. The pastimes, too, of the people of the town, as well as their day to day existence, have been revealed; that spectacles such as cockfights were barbarous and often fatal to the participating birds is indisputable; that they took place in late medieval Perth, only slightly less so.