

Brief reports • Tiedonantoja

Early sexual maturation of autumn-born Feral Pigeons *Columba livia domestica* in southern Finland

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Most birds breed for the first time when a year old, and thus they attain sexual maturity when little less than twelve months old (e.g. Lack 1968). Most species are not able to breed successfully during a period longer than two or three months. Hence, it would be impossible for young hatched in one season to breed before the next spring.

In urban habitats the Feral Pigeon *Columba livia domestica* has an exceptionally long breeding season. In Great Britain some of the Feral Pigeons breed throughout the year (Murton et al. 1972, 1973). In Tampere, southern Finland (61°30'N, 23°50'E) the species is able to breed during about ten months, with a fairly short refractory period in September–November (Häkkinen et al. 1973, Häkkinen 1983, Tast 1983). Winter reproduction seems to be a regular phenomenon. Thus, Feral Pigeons may obtain sexual maturity at an earlier age than most other birds.

Observations of early sexual maturation

In 1972 about 500 Feral Pigeons were colour-ringed at two factory lofts in Tammela, an eastern suburb of Tampere. On 17 February 1973, about half a dozen of the ringed Pigeons were found among shot birds on a roof, close to the lofts where the birds had been ringed. Among the birds, there was a male which had been ringed as a nestling on 15 August 1972. It was born in early August, and was about six months old when found dead. The bird was dissected and examined. It was in full breeding condition with enlarged testes. The total weight of the bird was 420 g, which exceeds the mean of Feral Pigeon males in Tampere (358 g, range 275–440, n=63).

In November 1986, a nestling was found in a street of Tampere. It belonged to a solitarily breeding Feral Pigeon pair. Because the nest was placed so that the young could not be returned to its nest, we took care of this bird and did not release it until late May 1987. The pigeon was kept indoors in a more or less

constant temperature (19°±1°C), but under natural light conditions.

In the beginning of March, the pigeon began to show sexual activity; its courtship behaviour indicated that it was a male. It tried to copulate 1–2 times a day from late April onwards, for example, with a human hand or heel, or with a window frame. When its sperm was studied microscopically, numerous active spermatozoa were seen. The bird had reached sexual maturity when about six months old (born probably on 3 November).

Breeding season

In the colonies studied, the breeding season in 1972 ended by the end of August, and began again in the last days of November (Häkkinen et al. 1973). In recent years, it has been established that winter reproduction is a regular phenomenon among Feral Pigeons in Tampere (own observations).

Our records of early winter in 1986 showed that breeding took place in an exceptional period. The above-mentioned young belonged to a clutch which had been laid in October. According to earlier observations, no breeding should take place at this time. Further, another fledgling was found in late December. This pigeon had hatched during the first days of December. Several factors may have affected the breeding of Feral Pigeons in late autumn 1986, for example, the fact that late autumn in 1986 was unusually warm and the early autumn was unusually cold. The fledglings found belonged to pairs breeding solitarily. It is not excluded that breeding habits are different among birds nesting in colonies and those nesting alone.

Discussion

In general, young birds in high latitudes attain sexual maturity in their first spring, at the earliest. Although

conditions are suitable for successful breeding for longer periods near the equator, only few cases of sexual maturation of birds at an age less than one year are known. The observations include some African and Australian finches and a parrot (Frith & Tilt 1959, Eisner 1960, Immelmann 1962, 1963, Lack 1968). In addition, there are observations of several pigeon species attaining sexual maturity at the age of only a few months (Johnston 1962, Lack 1968). The few existing records concern mostly species that are presumably seed-eaters, which have food available for a greatly extended period each year.

We do not know of any observations of early sexual maturation in any bird species from latitudes as high as those of our records. In most species the potential breeding season is too short to allow breeding at an age less than one year.

Saarela et al. (1986) studied seasonal changes in six plasma hormones in different environments. The hormones studied were lutropin (LH), follitropin (FSH), prolactin (PRL), thyroxine (T₄), triiodothyronine (T₃) and corticosterone (B). Outdoor pigeons, and those maintained inside under natural light conditions, showed similar circannual rhythms in the hormone concentrations. Rintamäki et al. (1986) also studied seasonal variations in the mean daily levels of plasma hormones. Although diurnal variations were more evident in outdoor pigeons than in those reared indoors, the effect of ambient temperatures was little. Thus, the young male apparently attained sexual maturity as he would have in outdoor conditions.

There may be Feral Pigeons of different breeding strategies, as in Great Britain. In Manchester, some Feral Pigeons breed throughout the year without any refractory period, while others have a short period when they are sexually inactive (Murton et al. 1973). The colours of the Feral Pigeons which had a refractory period were of a "wild-type", while those breeding the whole year round without any interruption were of other colour types. Of the pigeons recorded by us, the one which reached sexual maturity in April 1987 was of the "urbane colour-type", having light red brown plumage. The colours of other Pigeons were not determined.

Selostus: Kesykyhyky sukukypsä jo puolen vuoden ikäisenä

Kesykyhykyllä on poikkeavan pitkä lisääntymiskausi. Mm. Tampereella tehtyjen havaintojen mukaan laji voi lisääntyä lähes kautta vuoden lukuun ottamatta syys-marraskuuhun sijoit-

tuvaa taukoa. Yleensä linnut saavuttavat sukukypsyyden aikaisintaan vajaan vuoden ikäisinä ja pesivät syntymäänsä seuraavana keväänä. Tampereelta on kuitenkin kaksi havaintoa, jotka osoittavat kesykyhykyyn voivan olla lisääntymiskunnossa jo puolivuotiaana.

Elokuussa 1972 rengastettu pulun poikanen löydettiin kuolleena kuusi kuukautta myöhemmin. Tällä koiraspoikasella havaittiin laajentuneet sukurauhaset ja se oli siis ilmeisesti täydessä pesimisvalmiudessa. Marraskuussa 1986 elätiksi otettu pulunpoikanen alkoi esittää soidnmenoja maaliskuussa 1987 ja huhtikuun lopusta lähtien se paritelti erilaisten esineiden ja mm. ihmisen käden ja kantapään kanssa. Siemennestenäytteessä oli runsaasti liikkuvia siittiöitä. Tämäkin koiraspoikanen oli sukukypsä puolivuotiaana ja se syntyi myös aikana, jolloin yhdyskuntapuluilla on aiempien tietojen mukaan pesintätauko. Samana syksynä havaittiin myös toinen pesintä normaalin pesimätauon aikana tapahtunut pesintä. Tähän voi olla syynä yksittäispesinnän rytmikän poikkeavuus yhdyskuntapesinnän rytmikasta tai vuoden 1986 loka-marraskuun lämpimyyden verrattuna kylmään elo-syyskuuhun.

Englannissa on todettu eroja pulun värityyppien välillä pesinnän ajoittumisessa. Villityypin pulut (siniharmaat) pitävät pesinnässään tauon, mutta kulttuurityypin puluilla ei ole pesinnässä taukoa. Ainakin vuonna 1986 puolivuotiaana sukukypsä koiras oli värityypiltään vaalean punaruskea "kulttuuripulu".

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Marked population increase in the Arctic Skua *Stercorarius parasiticus* in the Finnish Quark from 1957 to 1987

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The Arctic Skua *Stercorarius parasiticus* is a scarce breeder along the Finnish coast. The breeding population was estimated at 225 pairs around 1970 (Hildén 1971); since then the population has somewhat increased, especially in the late 1970s, and the Skuas have succeeded in recolonizing some archipelago areas from which they disappeared decades ago (Stjernberg 1983, see also Forstén & Tuominen 1984). Recently, the whole Finnish population was estimated at about 400 pairs (Hildén 1988).

Besides the Archipelago Sea in SW Finland, the densest Skua population is found in the archipelagoes of the Quark, the narrowest portion of the Gulf of Bothnia. The latter area was censused in detail by OH in 1957–60 and some parts of it again in 1974. In 1984–87, JU & HH thoroughly reexamined the same area (cf. Hästbacka 1985). In the following, we present data on the population increase and productivity of the Arctic Skua in the Finnish Quark.

Study area and methods

This study includes the archipelago from Sideby/Siipy to Oravais/Oravainen. The area censused by OH comprises the northern part of this area (mainly from Korsnäs to Valsörarna/Valassaaret; Table 1). The same area was also surveyed intensively by JU & HH; from other parts of the study area, we include data received from other ornithologists.

Table 1. Numbers of pairs of the Arctic Skua breeding in the Quark in 1957–60 and 1987. Place names refer to communes or distinct archipelago areas. Dashes indicate areas that were not censused by OH in 1957–60.

	1957–60	1987
Kristinestad/Kristiinankaupunki +		
Kaskö/Kaskinen	–	5
Närpes/Närpiö	–	5
Korsnäs	–	4
Molpegrunden	2	5
Bergö + Bergö Gaddarna	3	12
Malax/Maalahu inshore archipelago	1	2
Rönnskären	9	14
Norrskär	1	5
Valsörarna/Valassaaret	1	4
Björkö + Replot/Raippaluoto	2	5
Vasa Gloppet (Utgrynnan, Malax-		
kallan, Gåsgrund, Ensten, Skötgrund)	2	5
Replot Gloppet	1	5
Mickelsörarna/Mikkelinsaaret	0	3
Oravais/Oravainen	1	2
Total (pairs)	23	76

As the Arctic Skua is conspicuous and therefore easy to census, the results obtained are probably very close to the actual numbers present. Breeding success was also investigated by searching carefully for the young in 1984–87 (the most thoroughly in 1987).