
Feral Rock Doves breeding on the coast of Norway

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The history of the Rock Dove in Norway is somewhat uncertain. *Columba livia* var. *domestica* (feral Rock Dove) breed in populated areas throughout the country, whereas *C. livia livia* (wild Rock Dove) is believed to have vanished through persecution and probably also through genetic intrusion of feral birds in the late nineteenth century. This paper presents a new colony of feral Rock Doves in coastal cliff habitat and further the possible genetic dilution of Norwegian wild Rock Doves through introgressive hybridization with ferals is discussed.

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INTRODUCTION

Feral Rock Dove *Columba livia* var. *domestica* is found throughout Norway in densely populated areas (Ree 1994). It nests in all sorts of man-made constructions (e.g. buildings and bridges), but ferals are also known to breed in rocks (Carlsson *et al.* 1988). The last colony of birds believed to be wild Rock Dove *C. livia livia* in Norway was found on the island Rennesøy in Rogaland county (Collett 1921, Haftorn 1971, see also Suul 1985 for discussion of old accounts of possible wild Rock Doves). The doves persisted there up to late nineteenth century. On the same island, Rock Doves (*C. l. livia* or *C. l. var. domestica*) bred in large caves up to about the 1940's (Lilledal 1992, Ree 1994). These birds were found in at least two colour morphs, one resembling wild Rock Doves and the other with darker spots on wings (the latter morph often called «light checker» and is commonly found in urban habitats) indicating feral ancestry of at least some of the birds. Occasional observations of possible wild Rock Doves have since been made on the Norwe-

gian west coast (see Håland 1985, Jacobsen 1985, Folkestad 1987), but unfortunately, none of these birds were collected and preserved. Wild Rock Dove has pale to mid-grey plumage with two prominent black bars on secondaries and greater coverts, whereas ferals may occur in many different plumages (Gibbs *et al.* 2001). Some ferals can be indistinguishable from wild Rock Doves (Murton & Clarke 1968, Johnston 1988, Jonsson 1994, Gibbs *et al.* 2001). Ferals tend to have a larger cere than wild Rock Doves (Petersen & Williamson 1949, Murton & Clarke 1968, Johnston 1988, see also Folkestad 1987) and also the bill in wild Rock Doves tend to be slender compared to birds of feral ancestry (Johnston 1988, 1990). In autumn 1999 several Rock Doves were discovered in the village Ervik, Sogn og Fjordane County on the west coast of Norway. At least when observed in the field, most of them resembled wild Rock Doves. Local residents in the village were interviewed and their statements were conclusive to that the doves had arrived in the village in the mid 1990's, back then numbering less than 15 individuals. Search of nesting place, counts

and behavioural studies were carried out in the summer of 2000. To be able to study characters less obvious in field, but important when trying to determine the possible range of parental variants, doves were trapped, measured, described and photographed the following year.

STUDY AREA

Ervik, in Selje municipality, County of Sogn og Fjordane, is a small waterfront village on the west coast of Norway (62°10'N - 05°06'E), surrounded by relatively steep mountains, some diving straight into the sea (coastal cliff habitat). The area is exposed to powerful wind much of the year and thus the mountains are covered by heather and wind flattened juniper, lacking trees and large bushes. About 10 active farms produce meat from sheep and meat and milk from cattle in home fields of ca. 1.300 hectares.

RESULTS

A search in a cave, created by the powerful waves pounding at the steep cliffs, revealed several nests (one with unhatched eggs), and also newly fledged young, still retaining juvenile down, sitting in the gap outside. Wings of one depredated juvenile were found between rocks inside the cave. Chewing marks on flight feathers indicating mammalian predator, probably American Mink *Mustela vison* or Stoat *Mustela erminea* (both present in the area). Also two doves (age not known) were found plucked, one on a ledge outside the cave and one on a turf nearby. Both probably depredated by Peregrine *Falco peregrinus*, which together with White-Tailed Eagle *Haliaeetus albicilla* constitute the only all-year resident birds of prey in the area. The doves were counted several times by the authors in 1999-2001 and counts varied between 21 individuals (spring) and 35 individuals (autumn). Later counts (2002) resulted in single flocks of more than 30 birds foraging in the village.

In March and April 2001 all together 11 birds (almost half the spring population) were trapped, measured, described and ringed upon release. One of

these birds had large areas of black on wing (a typical «light checker») concealing its wing bars. The remaining 10 had the following deviations from wild traits (some with more than one discrepancy); one bird had small dark spots on back and coverts, but still with prominent wing bars. Three individuals had dark median coverts, consequently a third wing bar, and four birds had reduced wing bars on outer greater coverts (GC). Two birds had incomplete (broken) bars on GC and finally three birds had no spots and two black wing bars, similar to wild Rock Dove. All birds had a large white patch across the lower back and upper rump and white under wing coverts. Ceres in all birds were large, much larger than photographed wild Rock Doves studied by the authors (compare birds in figures 1 and 2, the latter believed to be «more or less» wild Rock Dove, see Petersen and Williamson 1949). In addition Richard F. Johnston (in litt.) included white-feathered eye ring and thicker bill to the list of traits not expected in wild Rock Doves. We also failed to find any reference to complete or partial white-feathered eye ring in wild Rock Dove in literature. Finally, one ringed (homing pigeon ring) bird with plumage characters approaching wild Rock Dove accompanied the other birds at the trap location, but was unfortunately not caught.

We found no reference in the literature to bill measures of wild Rock Doves to account for possible differences in bill size in the two variants. Still, measurements of bill width and depth (at end of nostril - highest point of bill) of the Ervik birds were taken and compared to birds trapped in the feral enclave of Ålesund (sample taken in April to minimize the risk of measuring young birds). The samples from the two populations overlap in width and depth (all measures in mm, Ervik N=11; width: var. 5.7-5.1, median 5.2 - depth: var. 6.4-5.7, median 6.2 and Ålesund N=11; width: var. 6.0-4.8, median 5.2 - depth: 6.1-5.1, median 5.5).

DISCUSSION

From data collected in our study we cannot make any certain conclusions about the origin of the birds in Ervik, other than that most, and probably all, are



Figure 1. One of the 11 doves trapped in Ervik spring 2001. Note large cere and eye ring. Otherwise, the bird had traits approximating wild Rock dove (no extra spots or wing bars). Photo: Tore Chr. Michaelsen.



Figure 2. Rock Dove (2Y+) trapped and ringed by Jens-Kjeld Jensen at Nolsoy, the Faroe Islands April 19.2001. The bird lacks white in eye ring and has considerable smaller cere compared to the Ervik birds. See Peterson and Williamson (1949) for discussion of genotype in Nolsoy birds. Photo: Jens-Kjeld Jensen.

feral of some kind, and further that at least some of the birds present are stray homing pigeons (from mid 1990's or newly arrivals). Although many of the unringed birds show plumage traits similar to wild birds, the variation in plumage, bill measurements and characters of soft parts certainly indicate feral ancestry of these birds as well. The one dove with plumage traits as a wild bird and a plastic band attached to its left foot (probably non-Norwegian homer as birds here almost exclusively are banded on the right foot) make homer pigeon ancestry more feasible also for birds more or less similar to wild Rock Dove. Since we were unable to find a reference of bill measurements in wild Rock Dove, we are uncertain of the scientific value of the bill measurements compared to the feral population in Ålesund. Still, one should expect to find more slender bills in the Ervik birds if these should stem from a wild rather than a feral population. But of course, as Murton & Clarke (1968) point out, feral urban populations are not just chance collections of birds recently escaped from captivity, but composed of those birds best fit to occupy the urban niche (see also Gilbert 1989, Murton *et al.* 1972).

We do not know the composition of colour morphs when the birds first arrived in Ervik, but it is possible that odd and conspicuous birds (vulnerability in such individuals, see Curio 1976, Allan & Pitcher 1986, Wolf 1985) have been selected against. Doves constitute a significant proportion of the Peregrine diet throughout the year (Ratcliffe 1980, Dickson 1997, Jenkins & Avery 1999, Jenkins 2000). Peregrine predation could therefore result in noticeable changes in composition of morphs even in a short time perspective (four to six years from arrival to the start of our study). In addition to risk of predation, mongrel forms may of course also have other disadvantages, e.g. related to feeding (extremely large ceres), ability to compete for mates etc (see Petersen & Williamson 1949, Murton & Clarke 1968). Such disadvantages may not be cardinal when breeders manage a group in captivity.

In searching for museum specimens of both wild and feral Rock Doves we came across an interesting specimen (Figure 3). One bird from the Rennesøy population was preserved (stuffed) in Zoological Museum Oslo (ZMO Journal nr. L4511) col-



Figure 3. The Rennesøy specimen collected in 1866 shows an unmistakable third wing bar on coverts, a trait common in racing pigeons and in ferals in populated areas. Photo: Christian Kierulff/Aas/ZMO.

lected by I. Benneche in 1866 (note: foot label does not contain correct data - Christian K. Aas, pers. comm.). Some characters, like size of cere and colouration of feathers and soft parts, have been affected by time (not examined by us). However, one character, a distinct third wing bar across the base of the median coverts also exists in the ZMO specimen, as it does in some of the birds in Ervik, in feral populations in cities (e.g. in the nearest city Ålesund) and in enclaves of homing pigeons. The occurrence of a third wing bar (by most authors not believed to exist in wild Rock Dove, e.g. not mentioned by Gibbs *et al.* 2001) raises the question if the population at Rennesøy in the second half of the nineteenth century had mixed with ferals.

Pigeons were kept back to Roman times for breeding of ornamental strains, yet keeping pigeons as a food source was a much more important reason then and up to recent times (Goodwin 1954, 1960). During Middle Ages every manorial estate kept pigeons in lofts as food source (and manure). In addition to randomly stray pigeons of different breeds, many of the dovecote birds, fairly closely resembling wild Rock Dove, were released in late nineteenth century due to improvements in agricultural efficiency rendering this method of producing protein obsolete. In this regard, the nearby monastery of the Augustinian order at Utstein monastery could have been a source of strays to the colony at Rennesøy. We have no explicit evidence that the Augustinian monks there kept pigeons, but Knowles (1948) says that «all kinds of birds – capons, chickens and pigeons – were not considered as flesh meat» by the order, and further (in a foot note) that the kind of birds mentioned above featured in the suppers of a monastery in Tewkesbury, England in 1378. The Augustinian order nearby Rennesøy phased out due to the Reformation (the monks already residing there were allowed to stay out their lifetime), and it is not inconceivable that released or escaped birds from the monastery, if a dovecote existed, mixed with wild Rock Doves long before the specimen at ZMO was collected. Also keep in mind the capability of pigeons to cover great distances, thus making it possible for birds from the continent or British Isles to reach Norway. Haftorn (1971) mention one bird from Rennesøy (collected in 1884) preserved at

Zoological Museum Bergen. This bird (ZMB reg. nr. 1980) was listed missing from the collections back in 1922 (destiny unknown, Ingvar Byrkjedal/ZMB pers. comm.).

Petersen & Williamson (1949) studied the Nolsoy population in the Faeroe Islands more than 50 years ago. In this population they found abnormal birds and they concluded that it was quite possible that arrivals from racing pigeons or dovecotes had mixed with the wild Rock Dove population (e.g. domestics from Torshavn, UK or elsewhere). In rigorous winters abnormal birds became rare, suggesting that these birds were less fit to Faeroe conditions. Their study illustrates the difficulty of separating the two variants without genetic analyses, even when several birds are available for examination. We believe that reports of wild Rock Doves cannot be acknowledged by «circumstantial evidence», as we believe is the case with the late nineteenth century Rennesøy population. The birds in our study (as well as the birds at Oгна and possibly the «1940's Rennesøy population») show that feral Rock Doves can establish lasting populations, approximating traits of wild Rock Dove in Norway (common elsewhere in Europe, several authors). As in the case of the Nolsoy population, we can see no evidence that the nineteenth century Rennesøy population was unaffected by introduced genes from domestic escapees through the years, possibly leading to genotype extinction of *C. livia livia* before the birds vanished from the island.

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SAMMENDRAG

Høsten 1999 ble det oppdaget flere duer som i felt lignet klippeduer *Columba livia livia* i Ervik, en liten jordbruksbygd ved Stad i Sogn og Fjordane. Noen av fuglene ble fanget inn for nærmere undersøkelser. Disse hadde karakterer i fjærdrakt og på myke kroppsdeler som man ikke forventer å finne hos klippeduer, men som er vanlig hos byduer/brevduer *C. livia* var. *domestica*. Det konkluderes derfor med at duene ved Ervik med all sannsynlighet tilhører den sistnevnte varianten.

I forbindelse med søk etter preparerte klippeduer i museale samlinger ble det funnet ett individ fra Rennesøy (Rogaland), skutt i 1866 (ZMO J. nr. L4511). Også denne fuglen hadde et tredje vingebånd, slik som enkelte av duene i Ervika. Karakteren er dessuten vanlig hos byduer/brevduer, men er ikke oppgitt i litteraturen som forekommende hos klippeduer. Det er derfor rimelig å spørre seg om duene på Rennesøy på 1800-tallet virkelig var klippeduer.

REFERENCES

Allan, J.R. & Pitcher, T.J. 1986. Species segregation during predator evasion in cyprinid fish shoals. - *Freshwater Biol.* 16: 653-659.

Carlsson, O., Efteland, S., Hauge, K.O., Paulsen, B.E., Roaldkvam, R. & Storstein, B. 1988. Fugleatlas for Rogaland. - *Falco suppl.* 2. (In Norwegian).

Collett, R. 1921. *Norges Fugle*. - 3 bind. H. Aschehoug & Co., Kristiania. (In Norwegian).

Curio, E. 1976. *The ethology of predation*. - Springer-Verlag, Berlin.

Dickson, R.C. 1997. Prey species attacked by Peregrine Falcons outside breeding season. - *British Birds* 90: 359-360.

Folkestad, A.O. 1987. Kan det framleis finnast bergduer i Norge? - *Vår Fuglefauna* 10: 220-221. (In Norwegian).

Gibbs, D., Barnes, E. & Cox, J. 2001. *Pigeons and Doves. A guide to the Pigeons and Doves of the World*. - Pica Press.

Gilbert, O.L. 1989. *The ecology of urban habitats*. - Chapman and Hall, London.

Goodwin, D. 1954. Notes on feral pigeons. - *Avicult. Mag.* 60: 190-230.

Goodwin, D. 1960. Comparative ecology of pigeons in inner London. - *British Birds* 55: 201-212.

Haftorn, S. 1971. *Norges fugler*. Universitetsforlaget, Oslo. (In Norwegian).

Håland, A. 1985. Klippedue *Columba l. livia* på Bergenskysten? - *Vår Fuglefauna* 8: 38. (In Norwegian).

Jacobsen, O.W. 1985. Klippedue *Columba l. livia* observert på Bømlo? - *Vår Fuglefauna* 8: 147. (In Norwegian).

Jenkins, A.R. & Avery, G. M. 1999. Diets of breeding Peregrine and Lanner Falcons in South Africa. - *Raptor Res.* 33: 190-206.

Jenkins, A.R. 2000. Hunting mode and success of African Peregrines *Falco peregrinus minor*: does nesting habitat quality affect foraging efficiency? - *Ibis* 142: 235-246.

Johnston, R.F. 1988. European populations of the Rock Dove *Columba livia* and genotypic extinction. - *The Am. Midl. Nat.* 120: 1-10.

Johnston, R.F. 1990. Variations of size and shape in pigeons, *Columba livia*. - *Wilson Bull.* 102: 213-225.

Jonsson, L. 1994. *Fugler. Europa, Nord-Afrika, Midtøsten*. - J. W. Cappelens forlag a.s. (In Norwegian).

Knowles, D. 1948. *The Religious Orders in England*. - Cambridge University Press.

Lilledal, I. 1992. Klippeduen på Rennesøy. - *Stavanger Aftenblad* (årg. 100) 29.08.1992: 21. (In Norwegian).

Murton, R.K., & Clarke, S.P. 1968. Breeding biology of Rock Doves. - *British Birds* 61: 429-448.

Murton, R.K., Thearle, R.J.P. & Thompson, J. 1972. Ecological studies of the feral pigeon *Columba livia* var. 1. Population, breeding biology and methods of control. - *J. Appl. Ecol.* 9: 835-874.

Petersen, N.F. & Williamson, K. 1949. Polymorphism and breeding of the Rock Dove in the Faeroe Islands. - *Ibis* 91: 17-23.

Ratcliffe, D. 1980. *The Peregrine Falcon*. - T. & A. D. Poyser, London.

Ree, V. 1994. Bydue *Columba livia* var. *domestica*. - P. 260-261 in: Gjershaug, J.O., Thingstad, P.G., Eldøy, S. & Byrkjeland, S. (eds.). *Norsk fugleatlas*. Norsk Ornitologisk Forening, Klæbu. (In Norwegian).

Suul, J. 1985. Noen glemte fugleobservasjoner fra 1700-tallet. - *Vår Fuglefauna* 8: 33-38. (In Norwegian with English summary).

Wolf, N.G. 1985. Odd fish abandon mixed-species groups when threatened. - *Behav. Ecol. Sociobiol.* 17: 47-52.