

Columba livia (Rock Dove)

Family: Columbidae (Pigeons and Doves)

Order: Columbiformes (Pigeons, Doves and Dodos)

Class: Aves (Birds)



Fig. 1. Rock dove, *Columba livia*.

[http://fieldguide.mt.gov/detail_ABNPB01010.aspx, downloaded 18 September 2012]

TRAITS. Variation in size and shape in *Columba livia* is partly due to geographic location and artificial selective breeding by humans over the years. Male length 30-36 cm and female 29-35 cm (Williams & Corrigan 1994). Male mass averaging 369 g, females 340 g (Johnston 1990). Dark grey bill, bluish black sub-terminal bands on tail, rump white or grey and red feet. Wings grey with two dark bars on greater coverts or inner secondary regimes. Basic colour bluish grey and average bluish black (Johnston 1990).

ECOLOGY. *Columba livia* is an introduced feral species to Trinidad and Tobago and native to Europe, North Africa and South Asia. Presently found worldwide besides the Arctic regions and close surrounding islands and the dry sub Sahara. Found in habitats preferably occupied by humans. Urban areas, ruderal/disturbed and agricultural habitats. Highly dependent on human infrastructure for nesting, loafing and roosting (Williams & Corrigan 1994) as it resembles cliffs, caves and crevices. Human habitats provide a source of spillage food (Johnston 1990). Their diet consists of primarily grains and seeds and will sort on any spilled or improperly stored grains.

SOCIAL ORGANIZATION. Flocks, social, monogamous, diurnal, territorial. Social organization in *Columba livia* is based on peck dominance. *Columba livia* may feed with one flock but roost with another (Murton et al. 1971). They form monogamous pairs to large flocks (conditioning themselves to one mate during a period of time). The mate signals his familiar female from the flock during mating season, the female will only mate with another if her initial mate dies or fails to mate. The pair would have their own nesting area away from the flock. Right to territory plays an important role in dominance order; each pigeon would defend its roosting spaces and nesting area independent of the flock. This is done by pecks between two individuals and is won by pigeon closest to the centre of its territory (Castaro & Ghul, 1958). The pigeons peck each other in turns and whoever retreats least is said to have peak dominance. Nesting territory is defended by pecks on the head of the intruder.

ACTIVITY. Being diurnal, *Columba livia* are most active in the early morning while it feeds, but would feed periodically throughout the day (Williams & Corrigan 1994). Time is spent loafing on high infrastructure securing a good vantage point. At night time they roost.

FORAGING BEHAVIOUR. Feeding is done as a flock in a circular formation of which 10% of the pigeons are feeding (central birds) at a time. 80% would stay at a vantage point (peripheral). The other 10% would frequent the source (i.e. restricted heap or spillage) running back and forth to the flock and no feed (Murton et al. 1971). When there is no interference the central birds approach the spillage and the flock follows. The spillage is not removed but eaten on site. The central birds feed and the outer “average birds” try to approach. The central birds are usually frequent at site and are able to predict spillage. Unpredictable spillage are usually observed by the entire flock and approached when predictability is learned (Murton et al. 1971). In this case the larger and stronger pigeons earn central spots. Each pigeon spends about 10 minutes feeding and flocks spend 6 hours readying to feed. Therefore each pigeon feeds 60 minutes per day. Hence longer vantage point time ensures flock learnt predictable spillage and hence central positions can be rotated. Juveniles are usually seen foraging individually. When a site is known an individual *Columba livia* sees no problem in approaching close to humans to forage for food. They may even eat directly from hands or intentionally placed food.

COMMUNICATION. Vocal communication: Coos, short grunts, screeching and wing flaps under natural conditions (Epstein, Lanza and Skinner 1980). Cooing is done as a courtship communication by males, nesting calls and mate calls coo roo-c'too-coo. A pigeon that feels threatened or startled releases a short grunt as a warning (Epstein, Lanza and Skinner 1980). Wing flapping makes a sound at the end of a successful courtship display. Screeching is made by chicks as a call for attention.

Visual communication: Wing flaps, nodding, enlarged breast, threading feet and tail feather. Nodding in females means that courtship has been accepted and in males it means stay away (Castaro and Ghul 1958). Wing flapping at the end of courtship ritual in males means a successful call. An enlarged breast, threading of the feet and dragging of the tail in males is all part of the courtship display ritual (Castaro and Ghul, 1958).

SEXUAL BEHAVIOUR. Pigeons are unable to distinguish sex among each other by sight. When choosing a mate the old and the juvenile are avoided if possible. *Columba livia* is monogamous. The male builds the nesting material and protects the female and the young. Both

incubate the egg, the male by day and the female by night. This gives the female a chance to find food. Both parents nurse the young with regurgitated pigeon milk. Before the first clutch leaves the nest in 4-6 weeks new eggs are laid.

Males perform courtship displays to females first (Fig. 2). The male paces while fluffing the breast feathers, cooing and drag its tail feathers on the ground while threading its feet on the floor. When the female accepts she nods, to which billing follows. This is done by the male opening his beak and the female inserting hers. The female then elevates her wings, crouches and the male mounts the female and copulation occurs. A pair is now formed (Castaro and Ghul 1958).

JUVENILE BEHAVIOUR. Juvenile and adult pigeons show a niche overlap as juveniles may inhabit the nest even after a new batch of eggs are laid. They screech to intruders by snapping their bills and hissing (Epstein, Lanza and Skinner 1980). They are less frequent in flock foraging so nest longer than usual.

ANTIPREDATOR BEHAVIOUR. Foraging in flocks has benefits as it decreases the chances of predating on any one individual. Simply by association the *Columba livia* lowers its chances of being captured since it is equally attractive as another prey. On the ground the peripheral birds at a vantage point can fly away to alert the central pigeons of incoming danger. The peripheral birds though would have a lower chance to escape due to lower reaction distance compared to the central birds that would immediately fly away when a peripheral bird shows a disturbance. *Columba livia* predators are mostly avian so flying in flocks poses to be beneficial. This technique entails periodically repositioning, themselves during flight. This is done to expose a new peripheral line of flock and exposing new formations to confuse predators.

REFERENCES

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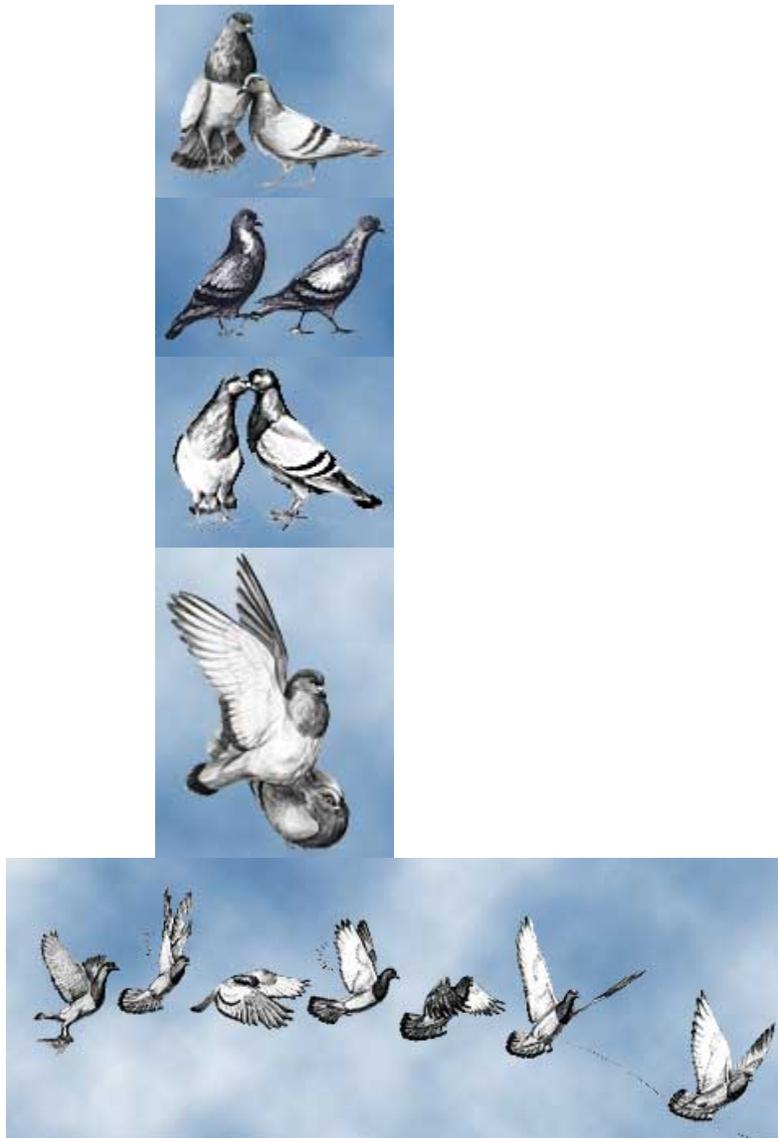


Fig. 2. Displays associated with courtship in *Columba livia*.
[<http://wdfw.wa.gov/living/pigeons.html> downloaded 22 September 2012]



Fig. 3. Foraging *Columba livia* (flock feeding technique).

[<http://www.flickriver.com/photos/stevegreaves/> downloaded 9 November 2012]



Fig. 4. Copulation behaviour in *Columba livia*.

[<http://ibc.lynxeds.com/photo/rock-dove-columba-livia>, downloaded 11 November 2012]

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