

= Trocaz pigeon =

The trocaz pigeon , Madeira laurel pigeon or long @-@ toed pigeon (*Columba trocaz*) is a pigeon which is endemic to the island of Madeira . It is a mainly grey bird with a pinkish breast ; its silvery neck patch and lack of white wing markings distinguish it from its close relative and probable ancestor , the common wood pigeon . Its call is a characteristic six @-@ note cooing , weaker and lower @-@ pitched than that of the wood pigeon . Despite its bulky , long @-@ tailed appearance , this pigeon has a fast , direct flight .

A scarce resident breeder in laurisilva forests , the trocaz pigeon lays one white egg in a flimsy twig nest . Its numbers fell sharply after human colonisation of the Madeira archipelago , and it vanished altogether from Porto Santo Island . The major cause of its population decline was habitat loss from forest clearance , but hunting and nest predation by introduced rats were also contributory factors . Protection of the laurel forests and a ban on hunting have enabled numbers to increase , so that the species is no longer endangered .

= = Description = =

The trocaz pigeon is a rather plain , dark grey bird 40 ? 45 cm (15 @.@ 7 ? 17 @.@ 7 in) long with a 68 ? 74 cm (26 @.@ 8 ? 29 @.@ 1 in) wingspan . The upper back has a violet sheen , becoming green on the back of the neck , and the neck sides are patterned with silver @-@ white . The tail is blackish with a wide , pale grey band , and the flight feathers are mainly black . The upper breast is pinkish , the eye is yellow , the bill has a yellow tip and a reddish @-@ purple base , and the legs are red . The sexes are similar in appearance , but the juvenile has generally browner plumage , with limited or no development of the silvery neck patch . Its closed wings have a scaly appearance due to pale buff feather edges . The trocaz pigeon 's voice is weaker and deeper than that of common wood pigeon , typically consisting of six syllables with the middle pair of notes extended and stressed : uh @-@ uh hrooh @-@ hrooh ho @-@ ho . When flying , it appears heavy and large @-@ tailed , although its flight is rapid and direct .

The common wood pigeon had a poorly defined Madeiran subspecies , *Columba palumbus maderensis* . This was paler than the trocaz pigeon and had white wing patches and a more extensive green iridescence on the nape , but it became extinct before 1924 . Bolle 's pigeon is more similar in appearance to the trocaz pigeon , although it lacks the whitish neck patch and has a more extensively pink breast . However , that species is endemic to the Canary Islands , so there is no range overlap . The only other pigeon currently present on Madeira is the feral pigeon ; this is slimmer , has more pointed wings and a much smaller tail . It often has dark wing markings , and a lighter flight .

= = Taxonomy = =

The genus *Columba* is the largest within the pigeon family , and has the widest distribution . Its members are typically pale grey or brown , often with white head or neck markings or iridescent green or purple patches on the neck and breast . The neck feathers may be stiffened and aligned to form grooves . One of several subgroups within *Columba* consists of the widespread Eurasian common wood pigeon , Bolle 's pigeon , the trocaz pigeon , and the African Afep pigeon . The two Macaronesian endemic pigeons , Bolle 's and trocaz , are thought to be derived from isolated island populations of *C. palumbus* .

The Atlantic archipelagos of the Canaries , Azores , and Madeira have a volcanic origin and they have never been part of a continent . The formation of Madeira started in the Miocene and the island was substantially complete by 700 @,@ 000 years ago . At various times in the past , the major islands of these archipelagos were all colonised by ancestral wood pigeons , which evolved on their respective islands in isolation from the mainland populations . Mitochondrial and nuclear DNA sequences suggest that the ancestor of Bolle 's pigeon may have arrived in the Canaries about 5 mya , but an older lineage that gave rise to another Canarian endemic , the laurel pigeon , *C.*

junoniae , may date from 20 mya . The most recent wood pigeon arrival on Madeira was that which gave rise to the subspecies *C. palumbus maderensis* .

The trocaz pigeon was formally described in 1829 by Karl Heineken , a German medical doctor and ornithologist who was living on Madeira at the time . He recognised it as different from the now @-@ extinct local form of the common wood pigeon , which he called the " *Palumbus* " , and noted that the two pigeons never interbred or habitually associated together . He suggested designating the new species by its local name , " trocaz " . Trocaz is a variant of Portuguese torcaz , the common wood pigeon ; both words are ultimately derived from the Latin torquis , a collar , and refer to the bird 's coloured neck patches . This is a monotypic species , although in the past Bolle 's pigeon was sometimes regarded as a subspecies of the trocaz pigeon .

= = Distribution and habitat = =

The trocaz pigeon is endemic to the mountainous subtropical Atlantic main island of Madeira , although it formerly also bred on the neighbouring Porto Santo Island . It mainly occurs on the northern slopes of the mountains , but smaller numbers are found in the south where suitable patches of laurel forest remain .

The natural habitat is tall laurisilva forest or dense tree heaths which are cloud @-@ covered for much of the year . The forests consist mainly of Azores Laurel , *Oreodaphne foetens* , Til , Madeira Mahogany , Canary Laurel , Faya , Lily of the Valley Tree and the *Picconia* . The trocaz pigeon prefers primary forests , but secondary growth is used for feeding , and agricultural land is also visited , especially at times of fruit shortage . Most of the pigeons are found below 1 @, @ 000 m (3 @, @ 300 ft) , and their prime environment appears to be steep ravine @-@ indented slopes along artificial watercourses , with the occasional large dead laurel tree and much tree heath . This species is highly mobile between different areas at different times of year .

= = Behaviour = =

= = = Breeding = = =

Pigeons can breed from their first year , and nesting occurs throughout the year , although mainly from February to June . The displays are similar to those of the common wood pigeon ; the male climbs quickly in flight , gives a loud wing @-@ clap , and then glides down with his wings and tail spread . The display may be repeated two or three times before the bird returns to a perch . On the ground the male performs a bowing display with his neck inflated to show off the iridescent neck patches ; meanwhile , the tail is raised , fanned , then closed again . This display is usually accompanied by calling . The nest is a typical pigeon construction , a flimsy structure of twigs and grasses usually placed high in a tree in thick forest . One , rarely two , smooth white eggs are laid , although no nest with two chicks has ever been found . The eggs , 3 @. @ 0 ? 5 @. @ 0 cm (1 @. @ 2 ? 2 @. @ 0 in) in size , are incubated for 19 ? 20 days ; the young are able to fly in 28 days , and are independent within eight weeks .

= = = Feeding = = =

The trocaz pigeon is exclusively herbivorous . Nearly 60 % of its diet is fruit , with most of the rest being leaves , and just 1 % is flowers . The fruits of Til , Azores Laurel and *Persea indica* , and the fruits and leaves of Small @-@ leaved Holly are the most frequently detected food items . Most seeds pass through the digestive system intact , apart from those of Azores Laurel , which are usually damaged . Fruit is the main component of the diet when it is readily available in autumn and winter , and leaves are consumed in spring and summer when fruits are scarce . In one study , 27 % of the leaves consumed came from native trees , especially Small @-@ leaved Holly , 61 % from herbs and shrubs , and nearly 10 % from introduced trees , mainly apples and peaches . This

pigeon will feed in agricultural areas , where cabbage is the most commonly taken crop plant . Pigeon faeces from agricultural areas contain few native plants , and samples from forests have few crop species , so some individual birds may concentrate on crops . Feeding in cultivated land is commonest in winter , when fruit is readily available , so it appears not to be a shortage of natural foods that causes them to leave the forest , but is mostly opportunistic , resulting from the birds ' movements through nearby forest . However , when the fruit crop of Til and Azores Laurel is poor , large numbers of pigeons may leave the forest to feed on cabbage , flowering cherries and vine shoots . Competition for food with rats can be significant in parts of the island .

= = Status = =

The trocáz pigeon formerly bred on both the main island of Madeira and nearby Porto Santo Island . It was very abundant when the islands were first colonised by humans , but was extirpated on Porto Santo , and by 1986 had declined to about 2 @, @ 700 birds . Hunting was banned in that year , and there are now between 7 @, @ 500 and 10 @, @ 000 individuals in approximately 160 square kilometres (62 sq mi) of suitable habitat . The losses on the two islands , the only inhabited ones in the archipelago , were largely the result of deforestation for wood and to create agricultural and grazing land .

The exclusion of livestock from the native forest allows the forest to regenerate and create more suitable habitat . Some illegal hunting and poisoning continues because of the damage this pigeon can do to crops , and the government allowed a cull in 2004 . Perhaps the main limiting factor on the rate at which the pigeon increases its numbers is predation by introduced black rats on its eggs and young . The Parque Natural da Madeira national park has a management plan for the trocáz pigeon , and it is hoped that an education campaign and the promotion of bird scarers may reduce persecution . Its increasing population means that it is now classed as Least Concern on the IUCN Red List , an improvement on its Threatened status in 1988 . This species is protected under the European Union Birds Directive , and the laurel forests under the Habitats Directive .