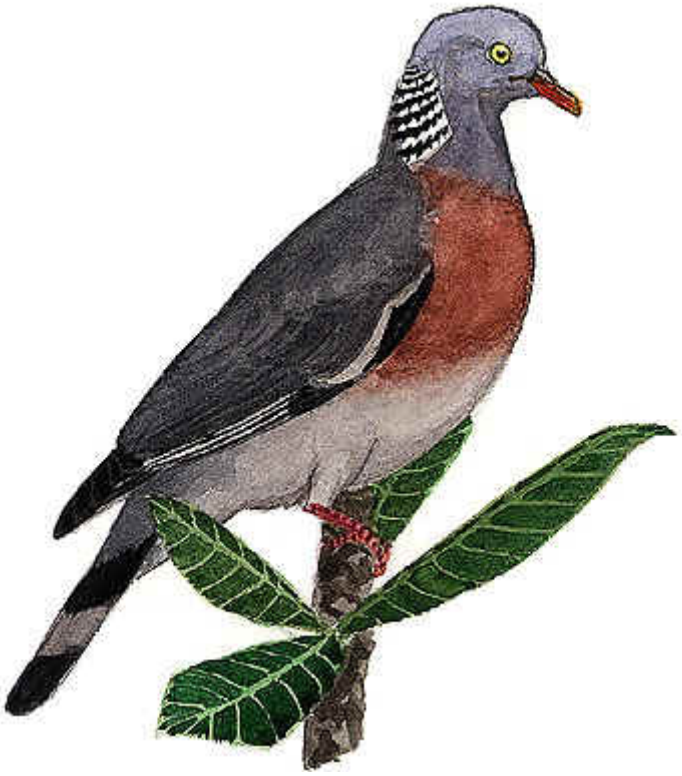
ACTION PLAN FOR THE MADEIRA LAUREL PIGEON
(*Columba trocaz*)



Compiled by:

PAULO OLIVEIRA (Parque Natural da Madeira) and
BORJA HEREDIA (BirdLife International, U.K.)

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Timetable
Workshop: November 1992 - Funchal, Madeira
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Reviews
This document should be reviewed and updated by BirdLife International every five years. An emergency review will be undertaken if sudden major environmental changes occur within the species' range, liable to affect the population.

Geographical scope
The island of Madeira (Portugal)

CONTENTS

SUMMARY

Background
The Madeira Laurel Pigeon *Columba trocaz* is an endemic bird of the island of Madeira and is under strict national and international protection.

In the earlier days of man's colonisation of the island it was a very abundant bird but due to very heavy persecution and dramatic loss of its habitat (85%) it has become a threatened species. The remaining 15% of the Laurel forest (an area of about 12,000 ha) is now under the jurisdiction of the Parque Natural da Madeira (Madeira Natural Park). Thanks to the very intense management carried out by the Natural Park, the population of the Madeira Laurel Pigeon is now increasing, and has reached numbers that give great optimism for its future if, and only if, the management, protection and research are continued.

Threats and limiting factors

* **Illegal poisoning and shooting - medium**
* **Unpopularity - medium**
* **Livestock grazing - medium**
* **Forest fires - low**
* **Habitat loss - low, historically high**
* **Predation - unknown**

Conservation priorities

* **Establish a management plan for the Natural Park of Madeira - high**
* **Seek funds from relevant international organisations, especially the EU - high**
* **Prevent the illegal killing of Madeira Laurel Pigeons - high**
* **Promote the use of bird scarers to reduce agricultural damage - high**
* **Prevent further habitat loss through livestock grazing or fires - high**
* **Identify and protect new areas of Laurel forest - high**
* **Continue research, especially annual monitoring of the population - high**
* **Undertake an education campaign to overcome the species unpopularity - high**

INTRODUCTION

The Madeira Laurel Pigeon or Long-toed Pigeon *Columba trocaz* is endemic to the island of Madeira. It is listed as Rare in the African Red Data Book (Collar & Stuart 1985) and in the *IUCN Red List of Threatened Animals* (Groombridge 1993) and is classified as Conservation Dependent in *Birds to Watch 2* (Collar *et al.* 1994). It is also included in Annex I of the EU Wild Birds Directive and in Annex III of the Bern Convention. In the Portuguese Red Data Book it is listed as Vulnerable (Cabral *et al.* 1990).

The Madeira Laurel Pigeon formerly occurred also on the neighbouring island of Porto Santo (Pieper 1985), the reduction of its range there and on Madeira being associated with the cutting of Laurel forest for wood, agriculture, grazing and human settlements. The species used also to be very heavily hunted both for sport and because of the damage it causes to crops.

The establishment of the Natural Park of Madeira has afforded legal protection to almost all of the Laurel forest which is a priority habitat listed in Annex I of the EU Habitats Directive (45.61 to 45.63 Macaronesian Laurel Forests). The inclusion of the Madeira Laurel Pigeon in Annex I of the EU Wild Birds Directive in 1986 has assured and reinforced the ban on hunting that was established in 1989 through the Decreto-Lei 75/91 which adapts the Directive to Portuguese law. The future of the species is secure now and the main tasks ahead are to monitor population trends and to promote expansion of its range through the regeneration of Laurel forest.

PART 1. BACKGROUND INFORMATION

Distribution and population

The Madeira Laurel Pigeon is restricted to areas of native forest on the mountainous northern slopes and a few isolated pockets in the south of Madeira. It was probably exceptionally plentiful before the first settlement of the island but the loss of Laurel forest and perhaps also over-hunting have led to a severe decrease. Population size has been estimated as 3,500-4,900 individuals and is increasing (Oliveira & Jones in press).

Life history

* **Breeding**

  Madeira Laurel Pigeons build their nest with dry twigs in a forest tree, and occasionally on the ground or in cavities in cliffs (Zino 1969). Normally one egg is laid, occasionally two, though no nest with two chicks has ever been found (P. Oliveira *in litt* 1994). Incubation takes 19-20 days and the fledging period is up to 28 days (Zino 1969). Captive breeding has been achieved (Zino & Zino 1986).

* **Feeding**

Food consists mainly of the fruits of *Laurus azorica* and *Ocotea foetens*, but also flowers and leaves of *Sonchus* spp., *Apium nodiflorum*, *Nastasium officinale*, and a wide variety of other plants (Zino & Zino 1986, Jones 1988). The crop contents and state of the gonads of 25 pigeons were examined in 1985 and compared to a sample of 29 birds in 1988. In 1985 only agricultural food remains were found in the pigeons and the gonads were inactive; in 1988 only berries from Laurel forest trees were found and, of the 25 birds, 19 were sexually active, three were juveniles and three had undeveloped gonads (Zino & Biscoito 1993).

* **Habitat requirements**

There is strong evidence that the pigeons move from valley to valley all year round, and that they look for different areas at different times of the year (Oliveira 1992, Oliveira & Jones in press). Habitat selection has been studied in summer when the pigeons show a strong preference for Laurel forest at low altitudes, especially forest with a good height of canopy on steep slopes (Jones 1988). In places not altered by housing and agriculture pigeons may occur very near the coast (Zino & Zino 1986, Jones 1990). The biotopes that are preferred are those dominated by *Ocotea foetens*, although those with exotic vegetation are in relatively high demand all year round if compared with some of the Laurel forest habitats. Pigeons occur within the whole altitudinal range of the Laurel forest but they show a much higher preference for forest under 850 m (Oliveira 1992, Oliveira & Jones in press).

Threats and limiting factors

* **Illegal hunting**

Hunting was prohibited in 1989 but still occurs illegally in a few well defined areas especially when pigeons leave the forest to feed on agricultural land. These movements out of the forest may be associated with a lack of natural foods (Zino & Zino 1986) or with the existence of predictable food sources in close proximity to the pigeon's natural habitat (Oliveira & Jones in press). In 1985, because of damage caused to crops by the pigeons, a special legal shooting period was established, covering five consecutive Sundays in January and February: over 300 birds were shot, with the possibility of a further 150-200 having been killed by poison; one party of four guns at Chão da Ribeira shot 64 birds in four days and over 140 were shot in this valley during the five Sundays (Zino & Zino 1986).
Importance: medium

* **Poisoning**

Poisoning is illegal but occurs nevertheless in a few well defined areas. In 1985 it was estimated that 150-200 birds were killed by poison (Zino & Zino 1986) and now that shooting is illegal there is an increased threat from the use of poison.
Importance: medium

* **Unpopularity**
  Apart from having a great effect on the extent to which the birds are shot, people's attitude towards the species can have a negative influence on the enforcement of conservation and management actions undertaken by the Natural Park in the field.
  Importance: medium

* **Livestock grazing**
  In some particular areas overgrazing is a threat to Laurel forest because it does not allow regeneration.
  Importance: medium

* **Forest fires**
  Regenerating areas, or areas above the treeline, may be affected but fire is not a significant threat to mature Laurel forest.
  Importance: low

* **Habitat loss**
  Madeira was largely covered by Laurel forest when discovered in 1419. Since then, much of it has been cleared for its valuable timber and this was the most important factor for the decline of the species in the past. Laurel forest now covers only 15% of the island but is recovering well in several areas through natural regeneration made possible by the legal protection afforded to these areas.
  Importance: low, historically high

* **Predation by rats**
  Rats (*Rattus rattus* and *Rattus norvegicus*) are likely to be a significant limiting factor since they have an impact on breeding success (Zino & Zino 1986). In the forest, competition for food with rats can also be significant, but only at local level (P. Oliveira 1993 *in litt.*).
  Importance: unknown

Conservation status and recent conservation measures

In Portugal, the Madeira Laurel Pigeon is a protected species under Decreto-Lei 75/91, which adapts the EU Wild Birds Directive to Portuguese law. At present there are seven Important Bird Areas in the island of Madeira (Grimmett & Jones 1989) and five of these include Madeira Laurel Pigeon. All 5 have been designated as Special Protection Areas under article 4 of the EU Wild Birds Directive. Hunting of this species is now illegal following its inclusion in 1986 in Annex I of the Directive.

Almost the entire pigeon population is included within areas controlled by the Natural Park of Madeira, which is part of the Secretaria de Agricultura, Florestas e Pescas do Governo Regional da Madeira. The Natural Park includes practically all the Laurel forest and was fully established in May 1993. There are currently eight different types of protected areas: 1) Reserva Natural Integral (Strict Nature Reserve); 2) Reserva Natural Parcial (Partial Nature Reserve); 3) Paisagem Protegida (Protected Landscape); 4) Reserva de Recreio e Montanha (Leisure and Mountain Reserve); 5) Zona de Repouso e Silêncio (Silence and Rest Zone); 6) Zona de Caça (Hunting Zone); 7) Zonas de Pastagem (Pasture Zone); 8) Reserva Geológica e de Vegetaçao de Altitude (Geological and High Altitude Vegetation Reserve).

The areas of Laurel forest within the Natural Park have been designated as a Biogenetic Reserve by the Council of Europe.

In 1988 a survey of the distribution, density and habitat preferences of the Madeira Laurel Pigeon was undertaken by ICBP (Jones 1988), and a monitoring scheme is currently being implemented by the Natural Park.

Some experiments have been carried out to identify ways of scaring pigeons from crops. In 1989 a bird scarer was placed in a property near Faial, where c. 650 walnut trees had been planted. The pigeons were eating the newly formed walnuts and young shoots, and were breaking the small branches on which they settled. The scarecrow, a bright red and white doll which was inflated at regular intervals and produced a piercing sound audible at a distance of about 200 m away, was placed in the middle of the walnut plantation. The effects of the scarer were immediate and no pigeons were seen in the field after it started operating (Biscoito & Zino 1989).

In 1993 the Natural Park used five other scarers in agricultural fields with different characteristics. In open fields with fruit trees the success was 100%; in open fields with cabbages the success was acceptable; in fields which are not very open the success was not acceptable (compared with the cost). Sound scarers have proved most effective and reasonably cheap. At the moment, a new and inexpensive method is being tried, consisting of nylon strands laid across the fields above the cabbages (Oliveira 1993). The Direçao Regional da Agricultura is carrying out a rat control programme in agricultural areas surrounding Laurel forest, with the aim of reducing crop damage from rats and also for public health purposes.

There is also a LIFE-funded project running from October 1994 to December 1996: *Conservação e Recuperação de Espécis e Habitats na Madeira* covering a range of complementary conservation activities in the National Park.

PART 2. AIMS AND OBJECTIVES

AIMS

In the short term, to maintain the population of Madeira Laurel Pigeon at no fewer than 3,500 individuals. In the medium term, to ensure its continued increase towards occupying all suitable habitats in Madeira. In the long term, to enable the recolonisation of areas of its former range through habitat restoration.

OBJECTIVES

1. POLICY AND LEGISLATIVE

1.1. To ensure an adequate legal and financial framework for the conservation of Laurel forests and the Madeira Laurel Pigeon

1.1.1. *Establish the management plan for the Natural Park of Madeira*
A comprehensive management plan should be developed for approval by the regional authorities, and an adequate budget allocated for species and habitat conservation. Ideally, the Madeira Laurel Pigeon Action Plan would become part of this management plan as would the Action Plan for the Zino's Petrel.
Priority: high
Time-scale: short

1.1.2. *Attract funding from relevant international organisations, especially the EU*
To ensure that the Park has a budget commensurate with its size and global importance a general application for the conservation and management of the Natural Park of Madeira should be submitted to the EU under LIFE regulation. This would benefit the 2 endemic bird species as well as the Laurel forest, a priority habitat in the EU and other endemic flora.
Priority: high
Time-scale: ongoing

1.1.3. *Incorporate Species Recovery Plans into regional and national legislation*
Recovery Plans are included as legal measures in other countries. Consideration should be given to incorporating the Action Plan for the Madeira Laurel Pigeon into appropriate legislation.
Priority: low
Time-scale: long

1.1.4. *Recognise the global importance of the Natural Park of Madeira*
The designation of the Natural Park of Madeira as a World Heritage Site under UNESCO should be pursued.
Priority: medium
Time-scale: ongoing

1.1.5. *To upgrade the protection status of the Madeira Laurel Pigeon under the Bern Convention*
The species is currently listed as protected under Appendix III. The Portuguese Government is encouraged to pursue its upgrading to Appendix II as a strictly protected species, which implies the adoption of appropriate and necessary legislative and administrative measures to ensure the conservation of its habitat. Both species of Laurel Pigeon in the Canary Islands are included in Appendix II of the Bern Convention.
Priority: low
Time-scale: long

1.1.6. *Promote the regeneration of Laurel forest through abandonment in key areas*
Laurel forest is now recovering well in a number of areas through natural regeneration. This applies particularly to the more recently degraded areas dominated by tree heath and non-native forest. The abandonment of agriculture contributes in a very significant way to the regeneration of the Laurel forest, and should be encouraged through the appropriate policy mechanisms in key areas around existing forest.
Priority: medium
Time-scale: ongoing

2. SPECIES AND HABITAT PROTECTION

2.1. To reduce human predation

2.1.1. *Prevent hunting and poisoning within the Laurel forest and on agricultural land*
The killing of Madeira Laurel Pigeons should not be allowed under any circumstances. This prohibition should be enforced by the Natural Park authorities, and the existing penalty applied to punish violators. The number of wardens in areas where killing is a problem should be increased.

Those hunters who specialise in shooting pigeons (usually when the birds gather in large berry-laden trees) should be identified and their movements observed by the wardens of the Natural Park and those of the Direcção Regional das Florestas.
Priority: high
Time-scale: short

2.1.2. *Promote the use of bird-scaring devices*
A variety of devices should be available from the Natural Park to be loaned on request to farmers suffering crop damage from pigeons. A variety of methods should be used in order to prevent familiarisation by the pigeons. The work that the Natural Park is doing with scarers is important in preventing illegal shooting because it persuades farmers that there is an alternative to killing the birds and it increases the presence of the Park's staff in the problem areas.
Priority: high
Time-scale: ongoing

2.1.3. *Provide support for farmers affected by the pigeons*
An evaluation of the cost of crop damage should be undertaken yearly, and a compensation plan prepared for emergency cases, based on a system of rapid notification and verification. Compensation should take the from of payments in kind (e.g. seed for the next season) rather than cash, and should be accompanied by free advice on measures to minimise pigeon damage.
Priority: medium
Time-scale: long

2.2. To enforce current habitat protection through the implementation of the Natural Park regulations

2.2.1. *Preserve the existing Laurel forest*

A great majority of the Laurel forest in Madeira is included within the Natural Park, the regulations of which should be fully implemented. All dense, high-canopy Laurel forest below 950 m should receive the maximum status of protection; this includes Ribeira de Janela, Ribeira Grande, Ribeira do Inferno, Faja da Nogueira and the forest between Ribeiro Frio and Lamaceiros.
Priority: high
Time-scale: ongoing

2.2.2. *Identify and protect new Laurel forest areas*
A detailed inventory of Laurel forest in Madeira was started by the Natural Park in 1992 and will take at least three years to complete. Any new areas of Laurel forest identified outside the boundaries of the Natural Park should be protected either by extending the Park boundaries or designating new protected areas.
Priority: high
Time-scale: ongoing

2.3. To improve breeding success

2.3.1. *Prevent predation by rats*
There is evidence to suggest that rats can pose a threat to pigeons during the breeding season. The magnitude of this threat has to be assessed and, if necessary, action undertaken to reduce it. The Natural Park authorities should promote a "take your litter home" policy and provide waste receptacles in tourist areas in such a way that garbage is not accessible to rats. There has to be a close cooperation with the Secretaría Regional da Educaçao of the Regional Government of Madeira to provide advice on and guidelines for adequate waste management.
Priority: medium
Time-scale: medium

2.3.2. *Prevent disturbance from tourism*
Madeira is increasingly popular as a tourist resort and the presence of large numbers of tourists in the Laurel forest could result in some disturbance to the birds. It is important that the Natural Park authorities keep records of the number of visitors and their preferred areas, and that visitor numbers are restricted if necessary. The first steps to monitor visitor numbers have already been taken.
Priority: medium
Time-scale: ongoing

2.4. To encourage the spread of the Madeira Laurel Pigeon into suitable habitat

2.4.1. *Prevention of livestock grazing*
Livestock grazing mainly affects areas that are regenerating or areas above the treeline. Areas of tree heath and non-native forest are those which might most easily return to native forest. The feasibility of gradually eliminating sheep and goats from these areas should be assessed, and if possible a suitable programme implemented.
Priority: high
Time-scale: short

2.4.3. *Prevent fire damage to regenerating Laurel forest*

Forest fires do not occur very often in Madeira, and Laurel forest does not burn easily. However, under certain weather conditions fire can cause very serious damage, particularly in areas where the vegetation is regenerating through natural succession. Fires are generally started intentionally by shepherds, and this should be prevented. Instructions should also be provided to tourists and campers to avoid casual fires. The Natural Park should have the appropriate means to extinguish fires.
Priority: high
Time-scale: short

3. MONITORING AND RESEARCH

3.1. To obtain regular information on the size, range and trends of the Madeira Laurel Pigeon population

3.1.1. *Continue to monitor population numbers*
A monitoring scheme, following the methodology in Jones (1990), but improved with estimates of distance between bird and observer, was conducted during 1992 and 1993 with very good results. Surveys were carried out on a monthly basis but the method has been refined and from 1994 they will be done every three months. The Natural Park is encouraged to continue with this effort, which allows for a much better understanding of the pigeon's numbers and the way in which they fluctuate.
Priority: high
Time-scale: ongoing

3.1.2. *Monitor reproductive parameters*
Efforts should concentrate on breeding success, but other aspects to be monitored are chronology, seasonality and number of broods per year. The effects of rat predation on breeding success needs to be clarified and the existing data analysed. Information should be exchanged on a regular basis with those carrying out work on Laurel Pigeons in the Canaries.
Priority: high
Time-scale: short

3.1.3. *Identify habitat preferences and habitat selection*
Habitat preference has been studied previously (Jones 1988, 1990, Oliveira 1992, Oliveira & Jones in press) but further research is needed to identify habitat selection on a finer scale.
Priority: high
Time-scale: ongoing

3.2. To promote better knowledge of the effect of rats on the general ecology of Laurel forest.

3.2.1. *Study interactions between rats and Laurel forest*

A study should be undertaken to establish rat densities and population cycles in Laurel forest, stressing the potential role of the rat as a disrupting agent in the process of co-evolution between frugivorous birds and berries. It should include practical recommendations to prevent the increase of the rat population in the future.

Priority: medium/high
Time-scale: long

3.2.2. *Monitor the current control programme*

Ensure that the rat control programme undertaken by the Direcçao Regional da Agricultura takes into account the effect of rats on the overall ecosystem and that it is carried out under strict scientific control and the results monitored.

Priority: medium
Time-scale: short

4. PUBLIC AWARENESS AND TRAINING

4.1. To increase public awareness of the Madeira Laurel Pigeon and its habitat

4.1.1. *Provide information about the species and the Laurel forest to visitors of Madeira and the local population*

An interpretation centre is necessary to explain to local people and visitors the different biotopes of the Natural Park, stressing the importance and special value of the Madeira Laurel Pigeon and its habitat. Information materials should be prepared and distributed in schools (especially in the north of the island), government buildings, tourist centres, etc., as part of a broader education campaign.

Priority: high
Time-scale: ongoing

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