Reintroducing the white-tailed laurel pigeon to Gran Canaria island

The end of a long flight

LAYMAN’S REPORT

LIFE12 NAT/ES/354 LIFE+ RABICHE

“Reintroduction of endemic pigeon Columba junoniae, white-tailed laurel pigeon, on the island of Gran Canaria”
Reintroduction of endemic pigeon *Columba junoniae*, white-tailed laurel pigeon, on the island of Gran Canaria

- Creating a viable population of white-tailed laurel pigeon in the natural environment of Gran Canaria island.
- Restoring, expanding and improving laurel forest habitat on Gran Canaria island.
- Promoting the project’s environmental values among locals de su flora y su fauna.

LIFE12NAT/ES/354 LIFE+ RABICHE.
“Reintroduction of endemic pigeon *Columba junoniae*, white-tailed laurel pigeon, on the island of Gran Canaria”.

This project has been implemented throughout 4 years, between September 2013 and December 2017. It has counted with a total budget of 1,401,870 euros, funded by the European Union LIFE programme with 50% and the rest contributed by other project partners: the Cabildo Insular de Gran Canaria (Gran Canaria Island Council) with 45.29%, the public undertaking GESPLAN with 3.57%, and Heredad de Aguas de Arucas y Firgas with 1.14%.

A long flight

1996-2000

The scientific and technical foundations for the recovery and conservation of the Canarian endemic pigeons where established within the framework of the LIFE Project “Increase in the size population of *Columba bollii* and *Columba junoniae*”. This project included a study on the factors affecting the reintroduction of the laurel pigeons (*Columba bollii* and *Columba junoniae*) to Gran Canaria island, and represented the starting point to further analyse the specific needs, proper locations and guidelines to successfully achieve our goals.

2000

University of La Laguna.
The scientific endorsement

Its Animal Biology Department, headed by Dr. Aurelio Martín Hidalgo, a specialist in endemic pigeons, has guided all the process. Initial studies and projects, intense field work, invaluable guidelines and working protocols for the breeding centre are just a few signs of their solid knowledge and expertise. Without their contribution, this project wouldn’t have been possible.

2005

The Cabildo Insular de La Palma contribution

The Cabildo Insular de Gran Canaria (Gran Canaria Island Council) promotes the document “Reintroduction of white-tailed laurel pigeon (*Columba junoniae*) and Bolle’s pigeon (*Columba bollii*), on the island of Gran Canaria”. This means the start of the process to make the reintroduction of white-tailed laurel pigeon a successful reality.

2006

The Cabildo Insular de Gran Canaria promotes the document “Reintroduction of white-tailed laurel pigeon (*Columba junoniae*) and Bolle’s pigeon (*Columba bollii*), on the island of Gran Canaria”. This project has been implemented throughout 4 years, between September 2013 and December 2017. It has counted with a total budget of 1,401,870 euros, funded by the European Union LIFE programme with 50% and the rest contributed by other project partners: the Cabildo Insular de Gran Canaria (Gran Canaria Island Council) with 45.29%, the public undertaking GESPLAN with 3.57%, and Heredad de Aguas de Arucas y Firgas with 1.14%.
Two pigeon species endemic to the Canary Islands
White-tailed laurel pigeons and Bolle’s pigeons both share common areas of their habitat. While the Bolle’s pigeon lives in the monteverde and nests on trees, the white-tailed laurel pigeon prefers the thermophilous forest and the drier margins of the monteverde forest, and they commonly nest in fissures, holes or small ledges found in ravines, and even on the ground.

The Bolle’s pigeon is bluish grey, with a white band by the middle of its tail. The white-tailed laurel pigeon has a dark pink abdomen, with greenish gloss on its upper neck becoming pink on its base. It has a white terminal band on its tail.

La Palma island has been the source of both reproductive pigeons and eggs obtained from their habitat in the wild. Its breeding centre in Puntallana has been a pioneer in white-tailed laurel pigeon captive breeding. Their methods have been imported to the centre in Gran Canaria and their contribution has been essential to the success of this process.

What is Natura 2000 network?
Natura 2000 is an ecological network of nature protection areas in the territory of the European Union. Its main purpose is to ensure the long-term survival of species and habitats in Europe, contributing to stop the loss of biodiversity. It is the main nature protection tool in the European Union.

It is made up of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) for Birds designated respectively under the Habitats Directive and Birds Directive.

The designation of these protected areas aims at regulating human activities by implementing management plans to allow a sustainable use of resources and compatible economic activities, while preserving their natural values.

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>2010</td>
<td>The construction of the breeding centre is started, to house the laurel pigeon species endemic to the Canaries in the publicly owned property Finca de Osorio.</td>
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<tr>
<td>2012</td>
<td>The first captive breeding tasks are carried out in Finca de Osorio. The first two white-tailed laurel pigeons are released on Gran Canaria island.</td>
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<td>2013</td>
<td>The reproduction in the wild of two couples is verified, watched with their juveniles. The actions under the LIFE+ Rabiche Project are started. In December, the first white-tailed laurel pigeons bred under this project are released.</td>
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<tr>
<td>2017</td>
<td>The LIFE+ Rabiche Project comes to its end, after reintroducing a total of 261 white-tailed laurel pigeons. Over 30 specimens born in the wild have been reported.</td>
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<td>2018 – 2022</td>
<td>After-LIFE Plan. This plan sets out the guidelines to continue working on the LIFE+ Rabiche Project’s main activities: captive breeding, environmental restoration and awareness-raising and educational campaigns.</td>
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The forest on Gran Canaria
A living process

We are in the late nineteenth century and, after centuries providing the necessary raw materials and energy for the development of the island’s population, forests on Gran Canaria are now largely diminished. In the northern area, they have almost disappeared, transformed into rich agricultural lands which no longer provide a viable habitat for many species.

At the beginning of the 1980s reforestation actions, which had been mainly focussed on the recovery of pine forests, take important steps towards the restoration of laurel forests and monteverde, the island’s wet forests. This widening of actions has been fostered by the acquisition of the Finca de Osorio by the Cabildo Insular de Gran Canaria (Gran Canaria Island Council).

There is limited availability of land for reforestation in these northern areas. This is mainly due to the good quality of the soil, their current agricultural use and, in many cases, the fragmentation of the land in small plots. To tackle these issues, a strong educational and awareness-raising campaign is required to favour the community involvement in the recovery of the island’s forests.

As reforestation of public lands increases, natural regeneration also takes place, especially in ravines and areas where agricultural activities have been reduced.

First decade of the 21st century. The combination of artificial reforestation and natural regeneration and their positive results have led to the conclusion that there might already exist a minimum habitat to sustain a laurel pigeon population again. Specific studies are then carried out to assess this possibility and their results have configured the roadmap for this project.
What areas have we acted upon?

The actions under this project have been mainly carried out in different spots in SACs 39_GC “Barranco de la Virgen”, 52_GC “Barranco Oscuro” and 54_GC “Azuaje”. They have been targeted at recovering the white-tailed laurel pigeon potential habitats and its reintroduction.

SAC 39_GC “Barranco de la Virgen”, with a surface area of 559.50 ha features a considerable extension and varied altitude, enabling the occurrence of pine forests, monteverde and thermophilous forests. At present, its maturity stage is considered adequate to sustain a viable population of white-tailed laurel pigeon.

SAC 52_GC “Barranco Oscuro”, with a surface area of 33.40 ha is home to the best and most complete surviving area of laurel forest on Gran Canaria. The preservation of this almost extinct ecosystem has drawn the interest of this project. And this has been the purpose of its designation as Integrated Nature Reserve by the Canary Islands Regional Government.

SAC 54_GC “Azuaje” is made up of two areas totalling 456.90 ha. Within its limits, there are natural regeneration areas of dry monteverde and thermophilous forests concurring with the Azuaje ravine and its permanent watercourse, together with the largest restored monteverde on the island, in Finca de Osorio, owned by the Cabildo Insular de Gran Canaria (Gran Canaria Island Council).

There are two habitats of community interest in these areas:

- Endemic Macaronesian dry heaths (4050).
  - Canary Island fayal-brezel and heaths dominated by Erica arborea or Erica scoparia subsp. platycodon.
- Macaronesian laurel forests (Laurus, Ocotea) (9363).
  - Evergreen subtropical humid forests dominated by trees with lauroid leaves (leathery and glossy) characteristic of the Canary Islands.

A habitat is a place providing the necessary conditions for the development of life

An endemic species is exclusive to a particular place

The contribution from Heredad de Aguas de Arucas y Firgas, one of the project’s partners and owner of over 50% of SAC 39_GC, has been crucial for its reforestation.
Creating a viable population of white-tailed laurel pigeon

Captive breeding

The Finca de Osorio breeding centre, in Gran Canaria, houses a breeding core of 8 couples, which are regularly changed to increase the genetic diversity from a total of 32 specimens. They have been brought from the largest existing population, the one found on La Palma island, from where eggs are also obtained from areas posing high risk of predation from cats and rats.

The Puntallana breeding centre on La Palma island counts with two couples. They also breed specimens which are eventually taken to Gran Canaria and released there.

Throughout the project duration, 253 specimens were obtained, 219 of which were released in the wild. Eight of them were assigned to the breeding centre, and three were taken to the large lofts located in the Osorio interpretive trail. The rest died for different reasons inherent to captive breeding.

Including the preliminary stage, a total of 261 specimens have been released. The sex ratio has been 1:1.23 (male:female).

In sync with “wet nurses”

Considering that captive white-tail laurel pigeons don’t usually take care of their eggs, turtledoves were used as wet nurses. Their own eggs were substituted, keeping this process in sync with incubation periods in order to have the “pigeon’s milk” available on time. Similar to mammals’ milk, this is a secretion from pigeons’ crop which they regurgitate and feed to their young, providing the best of nutrients during their first days of life. After twelve days on this nourishing diet, the chicks start to feed on mixed grains.
in the natural environment of Gran Canaria island

Releasing

The release process for the 261 animals has been carried out paying careful attention both to their transport and their progressive acclimatisation to life in the wild.

These are the steps towards their final release:

• After their emancipation from their parents, the selected specimens are taken to the flight chamber in the Osorio breeding centre, where they strengthen their muscles and feed on the same elements found in their natural environment.

• At approximately three months of age, they are ringed to be identified. Then, they are taken to the acclimatisation chamber, furnished with the necessary water and food.

• Two weeks later, the chamber doors are opened and will be kept opened for seven more days, providing a temporary water and food spot as well as shelter. This will allow them to get adapted to their natural environment in a progressive way. There are two additional feeders in the surroundings for the same purpose.

Specimens born in the wild

Over 30 non-ringed juveniles born in the wild have been identified, which proves the reproductive success of the released animals.

...and there appeared the Bolle's pigeon. Monitoring the white-tailed laurel pigeon, a few specimens have been observed within the limits of the project's SACs. This encouraging fact allows us to state that the forest recovery in the north of Gran Canaria is making good progress. It hadn't been reported on the island since the late 19th century.
**Monitoring**

Released populations are monitored using technics based on sightings, as well as tracking pigeons with radio transmitters. The collected data have allowed us to know their use of the environment, their mobility patterns or their new settlements.

Released from the acclimatisation chamber located in the Barranco de la Virgen, pigeons have been detected in the spots shown on the map, which proves a wide mobility. Each square represents a surface area of 500x500 metres.
Restoring, expanding and improving laurel forest habitat on Gran Canaria island

Selected species and forest restoration

There is already a well-established laurel tree community in the current monteverde, being the only tree within the project field of action showing clear spontaneous evolution dynamics. In fact, this tree is naturally adapted to live in harsh conditions.

The environmental restoration carried out under this project could be classified in three groups according to the species planted, totalling 174,300 specimens.

Surviving rate has been slightly above 70%.

Forest restoration has required intense scrub clearing tasks, mainly focussed on ferns and brambles, allowing restored species to settle and develop properly. After the initial clearance of scrub, regular maintenance work has been carried out to avoid restored plants, with a slower growing pace, getting covered again.

Wet laurel forest

Wet laurel forest species have been divided into two categories: species with a reduced presence and companion shrub species. Regarding the first group, we have planted viñátigo, accounting for over 15% of the project planted species, together with other particularly fragile species: til, hija, sanguino or saúco.

Within the companion species group, worthy of note are the species endemic to Gran Canaria like cresta de gallo, salvia amarilla or fistulera.

Dry laurel forest

Dry laurel forest species accounted for 40% of the restoration actions. Barbuzano, acebiño, palo blanco, follao and mocán.

Fayal-brezal, madroño

Fayal-brezal species, together with madroño, have represented a little more than a third the planted species.
The whole is greater than the sum of its parts

The monteverde habitat has been improved with the environmental restoration of the land areas contributed by the project partners, covering a total of 320 ha. Some of these lands have served as links of unconnected areas, others have simply enlarged existing ones, which has led to improve the habitat quality and continuity.

In total 174,300 plants have been used in forest restoration actions, covering a surface area of 220 ha. This represents 800 plants/ha.

It should be noted that after clearing the scrub, many small natural seedlings appeared in large areas, mostly laurels, awaiting their “moment of light”. These circumstances have been found in approximately 100 ha, where we have had the chance to contribute to natural regeneration processes. Reforestation actions initially planned for these areas were moved to other locations.

The inclusion of private lands into the project has also been of vital importance for the monteverde restoration on Gran Canaria. Together, these lands total 200 ha, with surface areas from 1 to 50 ha and, being a part of the project, they have been the target of restoration actions. This private contribution has been possible thanks to the invaluable work of the project staff, to the multiplying effect of awareness-raising campaigns and to the emphasis put on the social and environmental value of the actions carried out.

Only part of these private lands has been restored under this project. The work on the rest is pending for the coming years.

The forest plants

The nurseries of the Cabildo Insular de Gran Canaria (Gran Canaria Island Council) have increased their production to meet the project’s demands. In addition to the determination of the nurseries’ staff, the project’s team has collected the necessary seeds, slightly above 546 kg. Thanks to these combined efforts, more than 174,000 plants have been obtained for the different reforestation actions taken under the LIFE+Rabiche Project.
Potential monteverde area
Remains of original monteverde
SAC
39_GC Barranco de La Virgen (ES7010038)
52_GC Barranco Oscuro (ES0710002)
54_GC Azuaje (ES7010004)
Project performance lands
Private
LIFE+ Rabiche partners
Trees which had almost disappeared in Gran Canaria island

We have given a boost to the recovery of seriously threatened species on the island.

This is the case of saúcos. Having only trees reproduced by cuttings (clones) taken from two well-known natural specimens, we have worked hard to keep this species away from extinction. We have found two other fertile saúco specimens during this project, which has allowed us to plant 582 specimens with greater genetic quality.

As far as the sanguino is concerned, due to the limited size of its population and the lack of viable seeds, a specific reintroduction plan was drawn up to allow the importation of seeds from the neighbouring island of Tenerife. In 2017, the Canary Islands Regional Government approved the transfer of seeds and the first specimens are already growing in the nursery of Finca de Osorio.

Regarding hija and til, 670 and 696 specimens were planted respectively.

Control of predators

Traps were installed around the pigeons realising area and 39 cats were capture and sent to the public animal shelter. These traps were also used to capture rats (around 100) which were then removed from the natural environment. High security bait boxes were also used to control this rodent. These devices are checked daily.
Promoting the project’s environmental values among locals

Building relationships with locals

We have implemented three ways to get direct contact with the local population:

- Dissemination and educational talks and workshops to describe the situation of the monteverde forest on Gran Canaria and its effects on endemic laurel pigeons. The actions under the LIFE+ Rabiche project and its objectives are also explained.
- Information stand at different public events.
- Reforestation and volunteer actions.

The project’s educational team arranged informative/dissemination talks in all the school centres in the municipalities making up Doramas Rural Park, direct area of influence of the project. The same talk was adapted to the interests of different social actors: municipal councils, residents’ or hunters’ associations, this latter group being quite abundant in the area.

As regard reforestation, 61 educational centres on the island have taken part in environmental restoration activities in Finca de Osorio, planting different project’s priority species. In this sense, volunteer actions have also been remarkable.

Offering an educational experience in Osorio

With this idea in mind, a range of activities are carried out in Finca de Osorio aimed at offering a complete educational/interpretive visit.

Its interpretation centre, distributed in two rooms in the Osorio Manor House, includes information panels describing the laurel forest and its endemic pigeons, and a scale model of Doramas Rural Park.

This offer is rounded off by the Doramas interpretive trail. It stretches over almost 4 ha, where visitors can watch white-tailed laurel pigeons in a flight chamber without disturbing the work in the breeding centre. Plant species are presented in the form of “vegetation islands” along the track, including different monteverde species, described with information panels.

There is also a fountain with a sculpture of Doramas, an indigenous warrior after whom the monteverde forests were named: Doramas’ Forest. A small artificial water course flows alongside part of the path, providing a natural and charming atmosphere.
Other media to communicate the project’s actions, meet up announcements and results

Within the digital category, we have created a website which is frequently updated with news. It also covers more technical aspects, such as reports and photos. It has had 31,229 visits as of December 2017.

We also created and still maintain a Facebook page, where the progress of the project is regularly announced. It has 1,736 “Likes”.

As for the physical media, different materials have been produced:

- Information leaflets (10,000 copies)
- Polo shirts, T-shirts and caps (2,000 units)
- Three-page leaflets (10,000 copies)
- Documentary and DVDs (1,500 copies)

Finally, the “International Congress on conservation and management of threatened island birds and habitat management” was held in April 2017. Among its objectives was the spreading of the processes implemented under the LIFE+ Rabiche project and, of course, building relationships with teams of other similar projects to favour the exchange of experiences. It has had a dual nature as a meeting place especially for experts, but also for any interested persons.

Scientific names of the species mentioned in this document

- Acebiño (*Ilex canariensis*)
- Aderno (*Heberdenia excelsa*)
- Aguacatero (*Persea americana*)
- Barbuzano (*Apollonias barbujana*)
- Bencomia (*Bencomia caudata*)
- Brezo (*Erica arborea*)
- Cresta de gallo (*Isoplexis chalcantha*)
- Estrelladera (*Gesnouinia arborea*)
- Faya (*Morella faya*)
- Follao (*Viburnum rigidum*)
- Fistulera (*Scrophularia calliantha*)
- Guindero (*Prunus avium*)
- Hija (*Prunus lusitanica*)
- Laurel (*Laurus novocanariensis*)
- Madroño (*Arbutus canariensis*)
- Marmulán (*Sideroxylon canariensis*)
- Mocán (*Visnea mocanera*)
- Nisperero (*Eriobotrya japonica*)
- Palo blanco (*Picconia excelsa*)
- Paloma rabiche (*Columba junoniae*)
- Paloma turqué (*Columba bollii*)
- Peralillo (*Maytenus canariensis*)
- Rejalgadera (*Solanum vespertilio ssp.doramae*)
- Salvia amarilla (*Sideritis discolor*)
- Sanguino (*Rhamnus glandulosa*)
- Sáuco (*Sambucus palmensis*)
- Tajinaste azul (*Echium callithursum*)
- Til (*Ocotea foetens*)
- Viñatigo (*Persea indica*)