IUCN Conservation Outlook Assessment 2014 **(archived)**
Finalised on 23 August 2014

Please note: this is an archived Conservation Outlook Assessment for Laurisilva of Madeira. To access the most up-to-date Conservation Outlook Assessment for this site, please visit https://www.worldheritageoutlook.iucn.org.

Laurisilva of Madeira

SITE INFORMATION

Country:
Portugal
Inscribed in: 1999
Criteria:
(ix) (x)

Site description:
The Laurisilva of Madeira is an outstanding relict of a previously widespread laurel forest type. It is the largest surviving area of laurel forest and is believed to be 90% primary forest. It contains a unique suite of plants and animals, including many endemic species such as the Madeiran long-toed pigeon. © UNESCO

SUMMARY

2014 Conservation Outlook

Good with some concerns

The site’s World Heritage values have so far been preserved and remain stable, although significant uncertainties remain over the likely long-term impact of climate change. However, the site is facing a number of threats with invasive species being one of the most serious ones. Management authority has developed measures to fight these threats, however the implementation of these measures is hindered by lack of resources.

Current state and trend of VALUES

Low Concern
Trend: Stable

Laurisilva of Madeira has so far maintained its natural ecological and biological processes. Several plant and vertebrate species present stable population trends. However there is need to develop specific surveys and scientific studies for bats and invertebrates.

Overall THREATS

Low Threat

The difficult access to the core areas of Laurisilva of Madeira and long history of protection have so far resulted in generally low levels of impact. However, the site is currently facing a number of threats. Special attention should be given to expansion of invasive alien species and forest fires. Construction of new roads or cover with asphalt of the old dirty roads presents a potential threat due to increasing visits in sensible areas and it also facilitates dissemination of invasive alien species.

Overall PROTECTION and MANAGEMENT

Some Concern

The Regional Authority has developed effective management tools and the site has a good management plan, but its full implementation is somewhat hindered by budget constraints and lack of resources. Certain threats, particularly invasive species, require significant additional measures.

FULL ASSESSMENT

Description of values

Values

World Heritage values

► **An outstanding relict of a previously widespread laurel forest type**
Criterion:(ix)

The Laurisilva of Madeira is an outstanding relict of a previously widespread laurel forest type, which covered much of Southern Europe 15-40 million years ago. The forest of the property completely covers a series of very steep, V-shaped valleys leading from the plateau and east-west ridge in the centre of the island to the north coast. The forests of the property and their associated biological and ecological process are largely undisturbed, and play a predominant role in the island´s hydrological balance. The forest is mainly comprised of evergreen trees and bushes, with flat, dark green leaves. The property provides a wealth of ecological niches, complex food webs and examples of co-evolution of species. A range of climax vegetation communities such as the "Til Laurisilva", the "Barbusano Laurisilva" and the "Vinhático Laurisilva", have been identified within the property. Ancient trees in the valley bottoms, waterfalls and cliffs add to the experience of the values of the property (SoOUV, 2010).

► **Rare and endemic plants**
Criterion:(x)

At least 76 vascular plant species endemic to Madeira occur in the site. Endemic trees belonging to the Lauraceae family predominate such as Canary Laurel Apollonias barbujana ssp. barbujana, Laurel Tree Laurus novocanariensis, Madeira Fetid Laurel Til Ocotea foetens and Madeira

Mahogany Persea indica. Of the endemic bushes, particularly interesting are the Pride of Madeira Echium candicans, Honey Spurge Euphorbia mellifera, Madeira Foxglove Isoplexis spectrum and Musschia wollastonii. Bryophythes and lichens are abundant and some species are indicative of high environmental quality and the absence of pollution. Of its large bryophyte flora, 13 liverwort species and 20 moss species are listed as rare or threatened on a European scale (SoOUV, 2010).

► Rare and endemic vertebrates

Criterion:(x)

The vertebrates include a limit number of species and a high rate of endemics, including two rare taxa of bats, Madeira Pipistrelle Pipistrellus maderensis and Leisler’s Bat Nyctalus leisleri verrucosus and several birds, such as Madeira Laurel Pigeon Columba trocaz, Madeiran Firecrest Regulus madeirensis and the Madeiran Chaffinch Fringilla coelebs madeirensis. There is also an endemic species of lizard Madeira Wall Lizard Lacerta dugesii (SoOUV, 2010).

► Rare and endemic invertebrates

Criterion:(x)

The invertebrates are apparently more discreet although much more numerous. There are more than 500 endemic species, ranging from molluscs, to arachnids and insects (SoOUV, 2010; SPNM, 2004). The wolf spider Lycosa blackwalli is endemic to the forest (SoOUV, 2010). About 20% of the nearly 3000 known species of insects are endemic (Laurissilva Madeira Management Plan, 2009).

Other important biodiversity values

► Natura 2000 sites

Laurissilva of Madeira includes 4 Natura 2000 habitats with two of them classified as priority. The habitats are: i) (code 1250) vegetated sea cliffs with endemic flora of the Macaronesian coasts; ii) (code 4050) endemic macaronesian heaths – priority habitat; iii) (code 5330) thermo-mediterranean and pre-desert scrub; iv) (code 9360) macaronesian laurel

forests – priority habitats (ETC/NB, 2010).

Assessment information

Threats

Current Threats

High Threat

The difficult access to the core areas of Laurisilva of Madeira and long history of protection have so far resulted in generally low levels of impact. However, the site is currently facing a number of threats. Laurisilva of Madeira is a very humid forest but the presence of invasive plants at the lowest limit of this natural forest allied with increasing temperatures, presents risk for the occurrence of forest fires. The expansion of invasive alien species inside the property also threatens the indigenous vegetation, destroying natural habitats. The maintenance of certain exotic species may constitute important threat to Laurissilva and can limit the normal development and regeneration of the forest.

▶ **Roads/ Railroads**

Low Threat
Inside site
Outside site

The keeping of the water channels and the renewal of trails is not only a direct cause of tree/shrub cutting but also a way in for invasive plants. Levadas are “highways” for the introduction of different species inside laurel forest. (IUCN Consultation, 2014; R1-R23).

▶ **Fire/ Fire Suppression**

High Threat
Inside site
Outside site

The forest fires that occurred in 2010 burnt part of the Laurissilva forest in

Ribeiro Frio and Fajã da Nogueira. The forest fires in 2012 also burnt a significant area of Laurissilva (40 ha in Terra Chã), and the consequences of this destruction have not been evaluated (Personal communication, 2012). This threat has been increasing over the recent years. Because of the difficult access to areas inside Laurissilva of Madeira and lack of resources (e.g. lack of helicopters) there is low capacity to fight fires when they occur. The expansion of invasive fire-prone species that are now linking the south slope of the island and the forest site areas as well as the expansion of many fire-prone invasive species inside the area itself strongly increase the risk of fire. Climatic changes will also directly and indirectly increase the risk of fire (IUCN Consultation, 2014; R1-R23).

► Invasive Non-Native/ Alien Species

High Threat
Inside site
Outside site

The presence of invasive plants at the lowest limit of this natural forest, in the transition zones and on former agricultural land, endangers its regeneration and expansion, leading to areas of deterioration and of replacement of the indigenous flora, constituting a serious threat to the balance and consequent permanence of this habitat (SoOUV, 2010). Invasive species represent a high threat to the site’s values and authorities have insufficient capacity to fight this threat. The expansion of invasive species limits natural regeneration of accidentally destroyed areas, e.g. fire recovery. In the upper limits the spread of Cytisus scoparius has created a link between formerly isolated areas, i.e. forestry/agricultural on the south and laurissilva on the north (IUCN Consultation, 2014; R1-R23).

► Invasive Non-Native/ Alien Species

Data Deficient
Inside site
Outside site

In some Ribeiras rainbow trout is found, a species introduced in the middle of XX century and one of the 100 most invasive species on the planet. The impacts on freshwater organisms, namely macroinvertebrates are unknown, but probably very serious (IUCN Consultation, 2014).

► Livestock Farming / Grazing

High Threat
Outside site

Although goats had previously been mostly removed cows have been recently re-introduced and cow grazing marks are common (IUCN Consultation, 2014).

► Renewable Energy

Data Deficient
Outside site

The increased presence of wind mills not only disturbs the landscape integrity, but possibly also impacts on the fauna (IUCN Consultation, 2014).

► Roads/ Railroads

High Threat
Inside site
Outside site

Road maintenance includes not only the uncontrolled cutting of edge/border vegetation, but also the planting of exotic invasive species (Agapanthus praecox, Hydrangea sp. etc.) (IUCN Consultation, 2014; R1-R23).

► Avalanches/ Landslides

Low Threat
Inside site

Although some landslides are accidental many can be linked to human activities such as levadas, roads, trails etc. Water transport by water channels sometimes results in accidents with the breakdown of these channels and enormous amounts of water running freely on climax laurissilva forest (R1-R23; IUCN Consultation, 2014). Recent studies have also proven the high risk of landslides in areas covered by invasive species such as Acacia mearnsii and Cytisus scoparius.

► Temperature changes

Low Threat

Inside site
Outside site

Recent studies prove that some temperature changes can already be detected. Temperature changes (increases) lead not only to long term ecosystem shift or disruptions but also to increased fire risk (R1-R23).

Potential Threats

Low Threat

Some concerns have been previously expressed with regard to the construction of Rabaçal cable car (SOC Report, 2009), particularly since its potential impacts on the Outstanding Universal Value of the site were not evaluated during the environmental impact assessment procedures. The construction of new roads or cover with asphalt of the old dirty roads also presents a potential threat due to increasing visits in sensible areas and it also facilitates dissemination of invasive alien species.

► Tourism/ Recreation Areas, Roads/ Railroads

Low Threat
Inside site

The “valorisation of the area of Rabaçal” that is an initiative for conservation and sustainable use, includes a cable car project. The project covers a small area at the outskirts Laurissilva of Madeira and includes three stations, two sections of cable car of 705 and 674m in length requiring four towers and four transport cabins for passengers and cargo. Of the three stations, only one will be located within the boundaries of the property in an area which is a starting point for tourist activities (EcoMind, 2010; SOC report, 2010).

► Tourism/ visitors/ recreation

Low Threat
Inside site

The impact of tourists is already high, recent publications show that the impact of tourists cannot be neglected. In some areas there are several hundreds of visitors a day, possibly a thousand in pick days. Further increase in tourism might lead to serious impacts on the site (R1-R23).

► Roads/ Railroads

Low Threat
Inside site
Outside site

The site used to be bisected by two roads running north-south (IUCN Evaluation, 1999). Despite the construction of the tunnel in São Vicente, the road is still in use.
In 2003 an old dirt road that connects Ribeira da Janela to the plateau Paul da Serra was covered with asphalt. Besides this there is a proposal to cover with asphalt another road that connects São Vicente (Ginjas) to Estanquinhos, also in the plateau Paul da Serra (Personal communication, 2012).

Protection and management

Assessing Protection and Management

► Relationships with local people

Some Concern

The site is uninhabited and uncultivated but approximately 500 people live in the buffer zone (SoOUV, 2010).
The municipalities that comprise in the area have low population density and reveal an elder population. In these municipalities the agriculture and forestry still have particular importance in the economic and social structure of the Madeira Region.
The key stakeholders have been identified and their involvement ensures that the management of protected areas meets the need of all population, allowing different entities with interests in the site, creating synergies in order to increase efficiency in the use of public resources.
There is also a volunteer program involving all stakeholders that aims contributing for the enhancement of site near local population
The main difficulty with local population regarding site management was the problems with shepherds when the government authorities started to remove free grazing goats and with farmers who gets their crops damaged

by Madeira Laurel Pigeon, which led to killing of some pigeons (Laurissilva Madeira Management Plan, 2009).

► Legal framework and enforcement

Some Concern

The legal framework for the site is sufficient and enforcement measures have been developed by forestry police (Regional forestry department) and by wardens from Madeira Natural (Laurissilva Madeira Management Plan, 2009). However, current levels of enforcement could be enhanced (IUCN Consultation, 2014).

► Integration into regional and national planning systems

Highly Effective

The site has strong and effective legal protection under regional, national and European Law. It is under the Habitats Directive and Birds Directive of the European Union (adapted to regional law nº5/2006/M of 2nd March) and since 1992 is also a Biogenetic Reserve of the Council of Europe.
It is a Nature 2000 Network Site, since it is a Special Area of Conservation (SAC) and a Special Protection Area (SPA) (adapted to national law ordinance nº829/2007 of 1st August) (SoOUV, 2011; Laurissilva Madeira Management Plan, 2009).
The property is gazetted under Madeiran law, with around half of the area as a Strict Reserve and the remainder as a Partial Reserve (SoOUV, 2011).

► Management system

Mostly Effective

In 2009 the Regional Government approved the Management Plan for the Laurisilva Forest. This document defines the strategies and objectives for the protection and enhancement of the Laurisilva of Madeira, drawing the main guidelines for its management, conservation and protection (SoOUV, 2010). Before the approval of this management plan, several key stakeholders were invited to give inputs and improve strategic objectives.
There is a monitoring program that aims to ensure regular evaluation of the implementation of measures and actions proposed in the LM management plan, so it can be assessed the degree of achievement of the proposed objectives and performance (environmentally, social and economic) of all

activities and operations developed (Laurisilva of Madeira Management Plan, 2009), however, there is no independent management effectiveness monitoring system in place (IUCN Consultation, 2014).

► Management effectiveness

Some Concern

Conservation functions are devolved to the Autonomous Regional Government of Madeira which has adequate human resources and infrastructures, given the size and protection condition of Laurisilva of Madeira.
The total removal of free grazing goats in 2003 allowed the restoration of habitats and associated species (Laurissilva Madeira Management Plan, 2009). The removal of goats should be followed by other management actions such as the removal of invasive species (IUCN Consultation, 2014).

► Implementation of Committee decisions and recommendations

Mostly Effective

Regarding the construction of the cable car at Rabaçal, the State party provided as requested a detailed report and the environmental impact assessment (EIA).
The State Party also replied to questions regarding Laurisilva Pigeon culling (SOC report, 2010)

► Boundaries

Some Concern

The property includes the areas of primary Laurisilva remaining on Madeira. Its boundaries were defined after an exhaustive field study to identify the most significant areas of remaining vegetation (SoOUV, 2010). The whole site is enclosed within the Madeira Nature Park, which was established around 1990 as a large Category V site. However, the emphasis of management is almost entirely on the Laurisilva, which is managed as Category I and II (IUCN Evaluation, 1999). The integrity of the property is further enhanced by buffer zones that are not part of the inscribed property but protect it from threats originating from outside its boundaries (SoOUV, 2010).
Nevertheless according to Laurissilva Madeira Management Plan (2009) there is a clear need for clarification of the limits of SAC Laurisilva Madeira and

associated description so the management and protection of its natural values can be more effective.

► Sustainable finance

Some Concern

The current funding instruments and measures (regional budget, European funds, etc.) are considered sufficient in view of the current and future needs of preservation and conservation of the site.
However, regional government will need new funds to promote the replacement of exotic vegetation in the transition zones of Laurissilva.
There are some possibilities to obtain additional funding such as European funds; revenue from merchandising; fundraising through thematic campaigns, via donations from visitors or sponsor by companies; payment of fees (Laurissilva Madeira Management Plan, 2009). Eradication of invasive species also requires additional measures, and thus additional resources.

► Staff training and development

Mostly Effective

Current human resources are sufficient to allow for effective surveillance. (Laurissilva Madeira Management Plan, 2009).
Wardens from Madeira Natural Park and forestry police from forestry department have capability and adequate training to develop conservation with support from technical staff as well to develop environmental education with local population.

► Sustainable use

Some Concern

The Laurisilva of Madeira Management Plan (2009) presents several ideas to improve the use of the site by visitors, promoting its sustainable use. This includes the improvement of leisure infrastructure, reception and environmental interpretation center, improvement of footpaths, etc.

► Education and interpretation programs

Some Concern

There is an education programme that enhances the understanding of values

of the site which identify the target audience, the topics to be discussed as well the activities to be developed in order to promote the involvement of local population and visitors on site management.
There is also promotion of the regulations about the adequate use of the site. There is still a need to promote the site on internet with information in several languages (Laurisilva Madeira Management Plan, 2009).

► Tourism and interpretation

Some Concern

There is some promotion of the site's natural values in local and national tourism policies and there exists some tourism infrastructure with information for all visitors.
However it's necessary to develop a medium-term strategy for sustainable tourism. An action plan is required to achieve specific objectives such as monitoring of the impact of tourism on the fauna and flora, promotion of cultural and historic activities, control or reduction of activities that affect the quality of the landscape, water, soil, etc (Laurissilva Madeira Management Plan, 2009).

► Monitoring

Mostly Effective

Some of the natural values of Laurisilva of Madeira are adequately and systematically monitored through the development, since 1986, of several projects, such as monitoring of Madeira Laurel Pigeon, control of invasive alien plants, study of quantitative and qualitative characterization of Madeira Laurisilva, etc. These projects have been developed by regional entities (forestry department and Madeira Natural Park) sometimes associated with academic or research centers. The last management plan approved in 2009 was improved based on these monitoring projects (Laurisilva Madeira Management Plan, 2009). However, certain monitoring gaps exist, e.g. monitoring of the effects of goat removal (IUCN Consultation, 2014).

► Research

Mostly Effective

Various studies have been developed by academic or research centers in collaboration with regional entities namely forestry department and Madeira

Natural Park (Laurisilva Madeira Management Plan, 2009). Extensive scientific research has been conducted by the University of Madeira. However, for some taxa there are still significant knowledge gaps.

Overall assessment of protection and management

Some Concern

The Regional Authority has developed effective management tools and the site has a good management plan, but its full implementation is somewhat hindered by budget constraints and lack of resources. Certain threats, particularly invasive species, require significant additional measures.

► Assessment of the effectiveness of protection and management in addressing threats outside the site

Some Concern

Laurisilva of Madeira Management Plan (2009) includes measures and operational plan to prevent threats from external factors such as forest fires, diseases, alien species and high numbers of daily visitors. However, implementation of these measures is currently insufficient (IUCN Consultation, 2014).

State and trend of values

Assessing the current state and trend of values

World Heritage values

► An outstanding relict of a previously widespread laurel forest type

Low Concern
Trend:Stable

Laurisilva of Madeira has so far maintained its natural ecological and biological processes.
The predictions regarding climate change suggest increased potential productivity of Laurisilva and expansion of its distribution area. In the long-term natural forest will be present in areas of higher elevation. However,

there are many knowledge gaps particularly in the area of physiological ecology, providing enough uncertainty in these predictions (Santos & Aguiar, 2006).

▶ Rare and endemic plants

Low Concern
Trend:Stable

According to the IUCN Red List (2012) some of the plant species listed present in the site are Endangered or Near threatened. However, their population trend is unknown; such is in the case of Thamnobryum fernandesii or Culcita macrocarpa.
Nevertheless, most of the plant species, even plants considered critically endangered, endangered or least concern, present a stable trend or even increasing populations (IUCN Red List, 2012).

▶ Rare and endemic vertebrates

Data Deficient
Trend:Data Deficient

The population trend of the endemic bat Pipistrellus maderensis that is classified as Endangered is in decline. However, there is limited data about other species.

▶ Rare and endemic invertebrates

Data Deficient
Trend:Data Deficient

Leiostyla gibba is classified as Critically Endangered (IUCN Red List (2012) and its population trend is unknown.
In general, all invertebrates groups require exhaustive studies and regular monitoring.

Other important biodiversity values

▶ Natura 2000 sites

Laurissilva of Madeira includes 4 Natura 2000 habitats with two of them classified as priority. The habitats are: i) (code 1250) vegetated sea cliffs with endemic flora of the Macaronesian coasts; ii) (code 4050) endemic

macaronesian heaths – priority habitat; iii) (code 5330) thermo-mediterranean and pre-desert scrub; iv) (code 9360) macaronesian laurel forests – priority habitats (ETC/NB, 2010).

Summary of the Values

▶ **Assessment of the current state and trend of World Heritage values**

Low Concern

Trend: Stable

Laurisilva of Madeira has so far maintained its natural ecological and biological processes. Several plant and vertebrate species present stable population trends. However there is need to develop specific surveys and scientific studies for bats and invertebrates.

▶ **Assessment of the current state and trend of other important biodiversity values**

High Concern

Trend: Data Deficient

The temperature increase might have a negative impact on some of the Natura 2000 habitats, particularly endemic Macaronesian heaths. The projected areas for several invasive species will conflict with native vegetation and many plants seem to have a complex behaviour in face of climatic change (R1-R23).

Additional information

Key conservation issues

▶ **Monitoring and research**

Local

Systematic monitoring needs to be enhanced.

▶ Lack of sustainable tourism strategy

Local

A medium-term strategy for sustainable tourism, identifying specific objectives such as monitoring of the impact of tourism on the fauna and flora and promotion of cultural and historic activities, is needed.

▶ Insufficient financing

National

A new sustainable financing plan needs to be developed and implemented in order to ensure full implementation of the management plan.

Benefits

Understanding Benefits

▶ Is the protected area valued for its nature conservation?

Laurisilva of Madeira is the largest surviving relict of a previously widespread laurel forest that in Tertiary era covered much of Southern Europe.

▶ Does management of the site provide jobs (e.g. for managers or rangers)?

The protection and management of this site by Madeira Natural Park and Forestry department is also important for the creation of jobs such as wardens and forestry police.

▶ Carbon sequestration, Soil stabilisation, Water provision (importance for water quantity and quality)

This forest has hydrophilic characteristics and plays a predominant role in the island´s hydrological balance. In great extent it is responsible for the collection of water from the mists and from vertical precipitation (SoOUV, 2010). This forest occupies 2/3 of Madeira island and it has a major contribution for soil stabilisation (avoiding landslides) and for water quality and quantity. Also plays an important role on climate change mitigation by

providing significant carbon sequestration.

► History and tradition

Laurisilva of Madeira contains an important testimony of human use. The settlers of Madeira constructed water channels, known as levadas, which run through the forest following the contours of the landscape, and clinging to the cliffs and steep-sided valleys. Typically 80-150 cm wide and constructed of stone or more recently concrete, they carry water from the forest to hydropower stations and to the towns of the south, where they provide essential drinking water and irrigation supplies. Along the levadas there are paths typically 1-2m wide, which allow access to the otherwise almost impenetrable forest. None has been built for 70 years, but the present ones are carefully maintained (SoOUV, 2010).

► Outdoor recreation and tourism

The site is very important for nature tourism associated to levadas, birdwatching, sports practice (canyoning) and scientific tourism related to fauna and flora endemism.

Summary of benefits

The Laurisilva of Madeira provides benefits not only to the inhabitants of the island of Madeira but also for global community. The site has a major importance for soil stabilisation and for water quality and quantity. It plays an important role on climate change mitigation by providing significant carbon sequestration. It also provides special conditions for nature recreational and scientific tourism.

Projects

Compilation of active conservation projects

№	Organization/ individuals	Project duration	Brief description of Active Projects

1	Atlas of Breeding Birds in Madeira Archipelago	Identification of bird distribution and estimation species abundance in Madeira archipelago. This data will be a very useful instrument for nature conservation and in socio economic activities such as nature tourism
2	BIOCLIMAC	Evaluation of the effects of climate changes on vegetal diversity of Macaronesian archipelagos (Canaries, Madeira and Azores). Development of an adequate sample model for seed collection aiming at the creation of a seeds bank that guarantees the genetic diversity. Increase of public attention for the need to conserve natural resources and effects of climate changes on them
3	PNM	Monitoring of population trend and implementation of measures that allows the equilibrium between Madeira Laurel Pigeon presence at Laurisilva boundaries and agricultural practice trying to minimize damages made on the crops
4	PNM	Control and eradication of invasive alien plants aiming at recovery of natural ecosystems. This project also aims to raise awareness of managers, nature areas visitors and others stakeholders such as plant producers and sellers of the importance of invasive alien species control.

Compilation of potential site needs

№	Site need title	Brief description of potential site needs	Support needed for following years
1	Ecology and Population Trend of Macaronesian Sparrowhawk	Accipiter nisus granti is a subspecies endemic to Madeira and Canaries present on Annex I of Birds Directive and considered priority. The distribution and population trend is still unknown and there is no information about the species ecology.	

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