

## *Nothofagus glauca*, Hualo

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## Taxonomy

Kingdom	Phylum	Class	Order	Family
Plantae	Tracheophyta	Magnoliopsida	Fagales	Nothofagaceae

**Taxon Name:** *Nothofagus glauca* (Phil.) Krasser

**Synonym(s):**

- *Fagus glauca* Phil.
- *Lophozonia glauca* (Phil.) Heenan & Smissen

**Common Name(s):**

- Spanish: Hualo, Roble Blanco, Roble Colorado, Roble Maulino

## Assessment Information

**Red List Category & Criteria:** Vulnerable A2c [ver 3.1](#)

**Year Published:** 2017

**Date Assessed:** March 2, 2017

**Justification:**

*Nothofagus glauca* is a large tree species. It is endemic to south-central Chile and is dominant over much of its native range. Due to the use of the species as timber and deforestation of the species native habitat, population is estimated to have declined by at least 30% over the last three generations. Decline has recently slowed as fewer non-native species plantations are being established within the *N. glauca* range so deforestation has become a reduced threat. The population is also fragmented and threatened by increased risk of anthropogenic forest fires. The species is globally assessed as Vulnerable. The species is found in *ex situ* collections and protected areas.

**Previously Published Red List Assessments**

1998 – Vulnerable (VU)

<http://dx.doi.org/10.2305/IUCN.UK.1998.RLTS.T32034A9676285.en>

1998 – Vulnerable (V)

## Geographic Range

**Range Description:**

This tree species is endemic to Central Chile where it has a discontinuous distribution in both the Coastal and Andean Cordilleras from Province Cachapoal, 33°52'S to Province Biobío, 37°27'S. In the Coastal Cordillera it has an altitudinal range of between 100 and 800 m asl and in the Andes it occurs between 400 and 1,100 m asl. The species has an estimated extent of occurrence (EOO) of 25,842 km<sup>2</sup>.

**Country Occurrence:**

**Native:** Chile

## Population

This species is considered the dominant tree across its native range however over the last three generation population has declined by at least 30% due to the use of the species as a timber and due to deforestation. Deforestation is a consequence of the establishment of plantations of non-native species, however, fewer of these plantations are now being established. Hence, population decline has begun to slow over the the last 10 years but population is decreasing (C. Echeverría pers. comm. 2017). Also, in some parts of its range population is fragmented. For example in the Maulino reserve 2–5 ha plots are separated by over 50 m and the forests itself is severely fragmented (Burgos *et al.* 2008). Fajardo and Alaback (2005) found that between two plots (0.12–0.14 ha) seedling density varied from 17.9 to 48.9%.

**Current Population Trend:** Decreasing

## Habitat and Ecology (see Appendix for additional information)

This large tree species can grow to over 25 m in height (Fajardo and Alaback 2005). This species occurs within the Mediterranean zone of Chile, which has a mild winter, dry summer and a temperature range from 3.8°C to 28.4°C (Fajardo and Alaback 2005). The species can be found at variable gradients in both the Andes and Coastal Cordillera; on steep sunny slopes to very steep, rocky generally north, west and east slopes where it is well adapted to prolonged periods of drought. In the lower slopes of the Andes or in the Coastal Cordillera it forms an ecotone with sclerophyllous vegetation. In wetter valleys it is associated with *Nothofagus obliqua*, the hybrid *N. leonii* and on the tops of hills it is associated with *Quillaja saponaria* and *Lithrea caustica*. In the Andes it frequently grows with *N. obliqua* at high altitudes and occasionally with *N. dombeyi* and *N. nervosa* in valleys, while on the dryer hills it grows in purer stands and occasionally with *Quillaja saponaria*, *Gaultheria phillyreifolia*, *Sophora cassiodes* (syn. *S. macrocarpa*) and *Azara petiolaris*. This species promotes the development of complex ecosystems and understory vegetation (Fajardo and Alaback 2005). The species is shade intolerant so forms forests with an open patchy canopy (Burgos *et al.* 2008). It also shows a preference to volcanic soils. Regeneration is generally promoted by disturbance hence the species is able to form secondary forests (Fajardo and Alaback 2005). The species is wind pollinated and seed germination occurs from July to September (Burgos *et al.* 2008). Overall, species habitat is in decline in quality, extent and area due to the establishment of plantations of non-native species, though this is currently occurring at a slower rate than a decade ago.

**Systems:** Terrestrial

## Use and Trade

This species is a hardwood valued for its timber. The species can also be used as fuel and firewood.

## Threats (see Appendix for additional information)

This species is threatened by deforestation and habitat loss. The establishment of plantations of *Pinus radiata* (Fajardo and Alaback 2005) and *Eucalyptus globulus* (Litton and Santelices 2003) caused a reduction in the range of the species and has left *N. glauca* population fragmented, despite the fact that the threat from this forest use has declined in the last 10 years. The greater occurrence of dry *Pinus* plantations (Litton and Santelices 2003) has led to the increased threat from fire. The species is also at risk from stand degradation (Fajardo and Alaback 2005). There is also growing concern of pre-dispersal

seed predation from microlepidoptera larva (*Perzelia* spp.) which can cause a loss of 57% of seed and post dispersal predation from small mammals (Burgos *et al.* 2008). These threats reduce the regeneration capacity of the species. Although not reported, logging of this species for use within the timber trade is likely to be a threat to this species.

## **Conservation Actions (see Appendix for additional information)**

This species is reported from 21 *ex situ* collections (BGCI Plant Search 2017). In the Andes this species is protected in within Reserva Nacional Radal Siete Tazas and in Reserva Nacional Altos de Lircay. In Coastal Cordillera, it is protected within Reserva Nacional Los Ruiles y Reserva Nacional Los Queules. It was previously listed as Vulnerable by Beloit (1989), Walter and Gillet (1998) and Oldfield *et al.* (1998) and within Chile the species has recently been downgraded from Vulnerable to not threatened (C. Echeverría pers. comm. 2017). The remaining species habitat requires protection and efforts should be made to reduce the fragmentation of the population.

## **Credits**

**Assessor(s):** Barstow, M., Rivers, M.C. & Baldwin, H.

**Reviewer(s):** Echeverría, C.

**Facilitators(s) and  
Compiler(s):** Rivers, M.C.

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## External Resources

For [Images and External Links to Additional Information](#), please see the Red List website.

# Appendix

## Habitats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Habitat	Season	Suitability	Major Importance?
1. Forest -> 1.4. Forest - Temperate	-	Suitable	Yes

## Threats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Threat	Timing	Scope	Severity	Impact Score
1. Residential & commercial development -> 1.1. Housing & urban areas	Ongoing	Unknown	Rapid declines	Unknown
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
11. Climate change & severe weather -> 11.3. Temperature extremes	Future	Unknown	Unknown	Unknown
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.2. Small-holder farming	Ongoing	Unknown	Rapid declines	Unknown
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.3. Agro-industry farming	Ongoing	Unknown	Rapid declines	Unknown
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.2. Wood & pulp plantations -> 2.2.2. Agro-industry plantations	Ongoing	Unknown	Rapid declines	Unknown
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.2. Small-holder grazing, ranching or farming	Ongoing	Unknown	Rapid declines	Unknown
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.1. Intentional use: (subsistence/small scale) [harvest]	Ongoing	Unknown	Rapid declines	Unknown
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.3. Logging & wood harvesting -> 5.3.5. Motivation Unknown/Unrecorded	Ongoing	Unknown	Rapid declines	Unknown
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
7. Natural system modifications -> 7.1. Fire & fire suppression -> 7.1.3. Trend Unknown/Unrecorded	Ongoing	Unknown	Unknown	Unknown

	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
8. Invasive and other problematic species, genes & diseases -> 8.2. Problematic native species/diseases -> 8.2.1. Unspecified species	Ongoing	Minority (50%)	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.2. Species disturbance		

## Conservation Actions in Place

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

<b>Conservation Actions in Place</b>
In-Place Land/Water Protection and Management
Occur in at least one PA: Yes
In-Place Species Management
Subject to ex-situ conservation: Yes

## Conservation Actions Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

<b>Conservation Actions Needed</b>
1. Land/water protection -> 1.1. Site/area protection
1. Land/water protection -> 1.2. Resource & habitat protection
2. Land/water management -> 2.1. Site/area management
3. Species management -> 3.2. Species recovery
3. Species management -> 3.4. Ex-situ conservation -> 3.4.2. Genome resource bank
4. Education & awareness -> 4.3. Awareness & communications

## Research Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

<b>Research Needed</b>
1. Research -> 1.2. Population size, distribution & trends
3. Monitoring -> 3.1. Population trends

## Additional Data Fields

<b>Distribution</b>
Estimated extent of occurrence (EOO) (km <sup>2</sup> ): 25842
Lower elevation limit (m): 100



<b>Distribution</b>
Upper elevation limit (m): 1100
<b>Population</b>
Continuing decline of mature individuals: Yes
Population severely fragmented: Yes
<b>Habitats and Ecology</b>
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 50-600

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