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Language: English

Lavandula maroccana, Khzama

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Taxonomy

Kingdom	Phylum	Class	Order	Family
Plantae	Tracheophyta	Magnoliopsida	Lamiales	Lamiaceae

Scientific Name: *Lavandula maroccana* Murb.

Synonym(s):

- *Lavandula abrotanoides* var. *attenuata* Ball

Common Name(s):

- Arabic: Khzama
- English: Lavender
- French: Lavande
- Berber (Other): Gerz ghyal

Taxonomic Source(s):

Board of Trustees, RBG Kew. 2018. Plants of the World Online Portal. Richmond, UK Available at: <http://www.plantsoftheworldonline.org>.

Assessment Information

Red List Category & Criteria: Vulnerable B2ab(ii,iii,iv) [ver 3.1](#)

Year Published: 2020

Date Assessed: June 14, 2018

Justification:

Lavandula maroccana is a western Mediterranean native species, endemic to the High Atlas of Morocco and its western extension with a restricted distribution to three floristic divisions across the country; High Atlas, Anti Atlas and Middle Atlantic Morocco. *Lavandula maroccana* is a very local species with a varied abundance from very rare occurrences to occasional in some locations but most of the subpopulations are isolated. The population trend of *Lavandula maroccana* is decreasing, the number of mature individuals and the population density is significantly reduced during the last decades and the species occurs often in small subpopulations. The estimated area of occupancy is less than 500 km² and the species is under numerous medium to high impact threats, especially; overharvesting for domestic uses and for trade, unsustainable harvesting, collection practices, overgrazing, deforestation, erosion and drought, with an estimated continuing decline in the population size and the habitats quality on all the locations. Therefore, *Lavandula maroccana* is assessed globally as Vulnerable (VU B2ab(ii,iii,v)).

Geographic Range

Range Description:

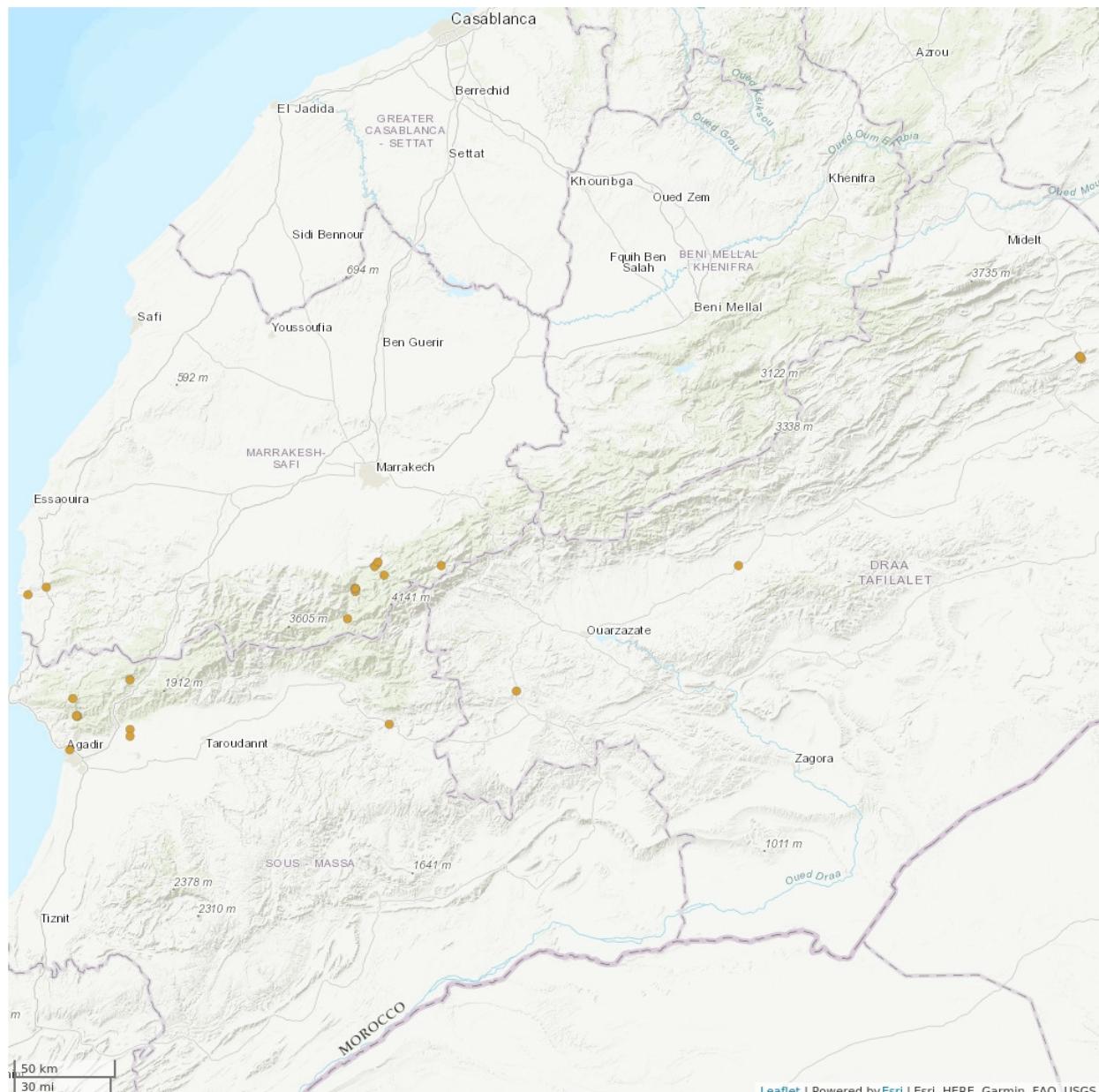
Lavandula maroccana is endemic to the High Atlas of Morocco and its western extension. The species is found in three floristic divisions across the country; High Atlas, Anti Atlas and Middle Atlantic Morocco within a range of up to 1,700 m asl (Murbeck 1923, Nègre 1962, Upson and Jury 2002, Dobignard 2004,

Upson and Susyn 2004, Fennane and Ibn Tattou 2005, Fennane *et al.* 2007, Dobignard and Chatelain 2010, Rankou *et al.* 2013, IPNI 2018, Euro+Med 2018, WCSP 2018). In the High Atlas, *Lavandula maroccana* extends on the North and South slopes to the Ziz valley (Jahandiez and Maire 1934, Emberger and Maire 1941), it is also found in Jebel Tirardine, inter Amez Miz, Tagadirt N'Bourd, Oucheffine and Asni (Murbeck 1923, Upson and Jury 2002, Upson and Susyn 2004). Collections of *L. maroccana* have been recorded also in Douar Akhrij and in Amassine valley in the Ourika watershed (Bachiri *et al.* 2015) and Imin Ifri (Aubin 1991). In the Middle Atlantic Morocco, *Lavandula maroccana* is recorded in many regions, mainly; Abda and Sous (Fennane and Ibn Tattou 2005, Fennane *et al.* 2007). It was also recorded in Jbel Hadid, Jbel Amsitten, Cap Ghir, Oued Issen in Taroudant and Agadir (Murbeck 1923, Jahandiez and Maire 1934, Upson and Jury 2002). In the Anti-Atlas, *Lavandula maroccana* is found in Tizi-n-Bachkoum (Tazenakht-Ouarzazate) (Jahandiez and Maire 1934, Upson and Jury 2002), Ida-ou-Gnidif and in the massif of Kist (Emberger and Maire 1941). The estimated area of occupancy (AOO) of *Lavandula maroccana* is around 500 km².

Country Occurrence:

Native, Extant (resident): Morocco

Distribution Map



[Leaflet](#) | Powered by Esri | Esri, HERE, Garmin, FAO, USGS

Legend

■ EXTANT (RESIDENT)

Compiled by:

IUCN 2019



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.



Population

Lavandula maroccana is a very local species with a varied abundance from very rare occurrences to occasional in some locations but most of the subpopulations are isolated (Lamnouer 2002, Upson and Jury 2002, H. Rankou *et al.* pers. comm. 2018). The overall trend of the population size and the number of mature individuals are decreasing due to the numerous threats affecting the species. The surface area of *L. maroccana* extends over a large area but the localities are discontinuous and scattered throughout the western High Atlas to the Anti Atlas (Upson and Jury 2002, Upson and Susyn 2004, H. Rankou *et al.* pers. comm. 2018).

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

Lavandula maroccana typical habitats include rocky slopes, screes of limestone, schist and clearings of dry forests of low mountains (Jahandiez and Maire 1934, Upson and Jury 2002, Upson and Susyn 2004, Fennane *et al.* 2007, H. Rankou *et al.* pers. comm. 2018). The species prefers open and sunny habitats mostly associated with open scrub succulent plants in Agadir city and *Argania spinosa* woodland (Upson and Susyn 2004). *Lavandula maroccana* is found on calcareous and clay-loam soil (Bachiri *et al.* 2015, Raynaud 1981) and grows in arid and semi-arid Mediterranean climates (Jahandiez and Maire 1934, Emberger and Maire 1941, Fennane *et al.* 2007, Upson and Susyn 2004). *Lavandula maroccana* flowers from February to March at low altitudes and April to July at higher altitudes (Upson and Susyn 2004).

Systems: Terrestrial

Use and Trade

Lavandula maroccana is used to treat general pain, stomach ache, and menstrual cramps by adding it to tea or an infusion with other plants like Azoukni (*Thymus* sp.) and Timija (*Mentha suaveolens*); it is also used in infusion, decoction or powder to treat digestions, diarrhea, and fever (Bellakhder 1997, Upson and Susyn 2004, Bellakhdar 2006, Mehdioui *et al.* 2007, Sijelmassi 2011, Bachiri *et al.* 2015).

Lavandula maroccana is commonly used as flavouring plant for tea and coffee. The plant is collected during summer in dry places and conserved dry during winter. The chemical analysis of *Lavandula maroccana* essential oil shows no indication of toxicity and identify the following components: carvacrol, β-bisabolène, camphre, eucalyptol and α-pinène (Belakhder 1997).

Threats (see Appendix for additional information)

Lavandula maroccana population size decreasing and the habitats quality declining due to numerous medium to high impact threats, including, overharvesting for domestic uses (medicinal and food) and for trade (nationally), unsustainable harvesting (cutting begin before the flowering time), collection practices (successive cuts and cutting the entire plant including the roots), overgrazing, deforestation and erosion (Benabid 2002, Lamnouer 2002, Mehdioui *et al.* 2007, Anon 2008, Mehdioui *et al.* 2009, Taleb and Fennane 2011, H. Rankou *et al.* pers. comm. 2018).

Lavandula maroccana is more generally threatened by the direct and indirect impact of human activities such as leisure activities, tourism, infrastructure development, land clearing and management activities

(Barbero *et al.* 1990, Blondel and Medail 2009, H. Rankou *et al.* pers. comm. 2018).

Lavandula maroccana is also threatened by long periods of drought. In a study carried out on a selection of different Mediterranean plant species, including one Lavender species, on how warmer climate could affect nectar production on these plants (Takkis *et al.* 2018), it was found that there was a significant effect of temperature on nectar secretion, with a negative effect of very high temperatures in all species. Takkis *et al.* (2018) conclude that climate warming will likely have a distinctive effect on both plant and pollinator populations and their interactions across different seasons, either by direct effects or by the consequent shifts in the plant phenology.

Conservation Actions (see Appendix for additional information)

Although the species is cultivated successfully in a few plant nurseries as an *ex situ* conservation measure, more conservation actions are recommended to protect *Lavandula maroccana* and its native habitats;

- Rational, sustainable use and exploitation of the resource.
- Protection of the species sites from habitat loss, fragmentation, random cutting, deforestation and overgrazing.
- The creation of protected areas to ensure complete regeneration of the species, ecosystems and to restore the quality of wild environments.
- Improve local practices of cutting and the time of collecting the species.
- Fencing the vulnerable sites to protect the species from tourism, trampling and ruthless collection.
- Protection of living individuals of the species through legislation and legal protection.
- Rising of public awareness.
- *Ex situ* conservation: artificial propagation, re-introduction, seed collections.
- Monitoring and surveillance of the existing populations and sites.
- Estimation of population sizes and study of their dynamics, trends, biology and ecology.

Credits

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External Resources

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Appendix

Habitats

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

Habitat	Season	Suitability	Major Importance?
1. Forest -> 1.4. Forest - Temperate	Resident	Suitable	Yes
3. Shrubland -> 3.4. Shrubland - Temperate	Resident	Suitable	Yes
3. Shrubland -> 3.8. Shrubland - Mediterranean-type Shrubby Vegetation	Resident	Suitable	Yes
4. Grassland -> 4.4. Grassland - Temperate	Resident	Suitable	Yes

Plant Growth Forms

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

Plant Growth Form
SS. Shrub - small

Use and Trade

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

End Use	Local	National	International
Medicine - human & veterinary	No	No	Yes
Food - animal	No	No	Yes
Handicrafts, jewellery, etc.	Yes	No	Yes
Food - human	No	No	Yes

Threats

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

Threat	Timing	Scope	Severity	Impact Score
1. Residential & commercial development -> 1.3. Tourism & recreation areas	Ongoing	Majority (50-90%)	Very rapid declines	High impact: 8
	Stresses:		1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance	
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.2. Small-holder farming	Ongoing	Majority (50-90%)	Very rapid declines	High impact: 8

	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.1. Nomadic grazing	Ongoing	Majority (50-90%)	Very rapid declines	High impact: 8
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
5. Biological resource use -> 5.2. Gathering terrestrial plants -> 5.2.1. Intentional use (species is the target)	Ongoing	Whole (>90%)	Very rapid declines	High impact: 9
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
6. Human intrusions & disturbance -> 6.3. Work & other activities	Ongoing	Minority (50%)	Very rapid declines	Medium impact: 7
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
11. Climate change & severe weather -> 11.1. Habitat shifting & alteration	Ongoing	Majority (50-90%)	Very rapid declines	High impact: 8
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
11. Climate change & severe weather -> 11.2. Droughts	Ongoing	Whole (>90%)	Very rapid declines	High impact: 9
	Stresses:	1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance		
11. Climate change & severe weather -> 11.3. Temperature extremes	Future	Whole (>90%)	-	Low impact: 4

Conservation Actions Needed

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

Conservation Action Needed
1. Land/water protection -> 1.1. Site/area protection
1. Land/water protection -> 1.2. Resource & habitat protection
2. Land/water management -> 2.3. Habitat & natural process restoration
3. Species management -> 3.1. Species management -> 3.1.1. Harvest management

Conservation Action Needed
3. Species management -> 3.2. Species recovery
3. Species management -> 3.3. Species re-introduction -> 3.3.1. Reintroduction
3. Species management -> 3.4. Ex-situ conservation -> 3.4.1. Captive breeding/artificial propagation
3. Species management -> 3.4. Ex-situ conservation -> 3.4.2. Genome resource bank
5. Law & policy -> 5.1. Legislation -> 5.1.2. National level

Research Needed

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

Research Needed
1. Research -> 1.2. Population size, distribution & trends
1. Research -> 1.6. Actions
3. Monitoring -> 3.1. Population trends
3. Monitoring -> 3.3. Trade trends

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km ²): 100
Continuing decline in area of occupancy (AOO): Yes
Estimated extent of occurrence (EOO) (km ²): 37000
Continuing decline in extent of occurrence (EOO): Yes
Number of Locations: 9
Lower elevation limit (m): 0
Upper elevation limit (m): 1,700
Population
Continuing decline of mature individuals: Yes
Population severely fragmented: Yes
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes

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