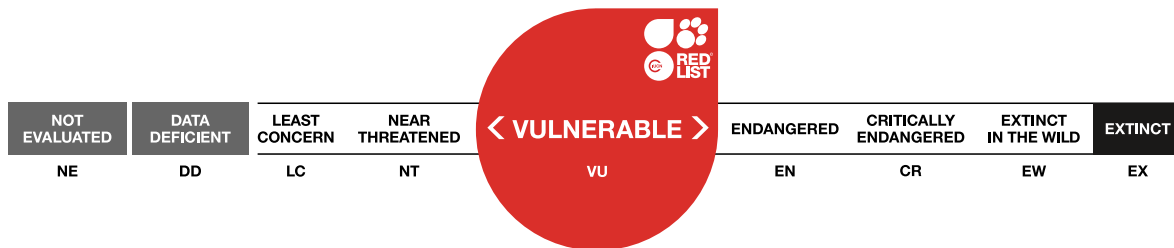


Thymus saturejoides, Zîitra

Assessment by: Rankou, H., M'Sou, S., Ait Babahmad, R.A. & Diarra, A.



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Citation: Rankou, H., M'Sou, S., Ait Babahmad, R.A. & Diarra, A. 2020. *Thymus saturejoides*. The IUCN Red List of Threatened Species 2020: e.T139600868A139601223.

<https://dx.doi.org/10.2305/IUCN.UK.2020-1.RLTS.T139600868A139601223.en>

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Taxonomy

Kingdom	Phylum	Class	Order	Family
Plantae	Tracheophyta	Magnoliopsida	Lamiales	Lamiaceae

Scientific Name: *Thymus saturejoides* Coss.

Synonym(s):

- *Origanum saturejoides* (Coss.) Kuntze
- *Thymus saturejoides* Coss. subsp. *commutatus* Batt.
- *Thymus commutatus* (Batt.) Batt.
- *Thymus pseudomastichina* (Ball) Murb.
- *Thymus saturejoides* Coss. subsp. *saturejoides*

Common Name(s):

- Arabic: Zïitra
- French: Thym saturéoïde, Thym à feuilles de sarriette
- Berber (Other): Tazoukennit, Azukenni

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,v) [ver 3.1](#)

Year Published: 2020

Date Assessed: May 10, 2018

Justification:

Thymus saturejoides is an endemic species to Morocco and Algeria with a restricted distribution to the Atlas mountains, Saharan Atlas regions and Middle Atlantic of Morocco and to the Aurès region in Algeria. *Thymus saturejoides* is a local species with a varied abundance from very rare to occasional and abundant in some locations. The population trend of *Thymus saturejoides* is decreasing, the number of mature individuals and the population density are significantly reduced during the last decades and the species occurs often in small isolated 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, *Thymus saturejoides* is assessed globally as Vulnerable (VU B2ab(ii,iii,v)).

Geographic Range

Range Description:

Thymus saturejoides is an endemic species to North Africa with a restricted distribution to Morocco and Algeria (Dobignard 2004, Fennane and Ibn Tattou 2005, Fennane *et al.* 2007, Dobignard and Chatelain 2010, IPNI 2018, Euro+Med 2018, WCSP 2018, H. Rankou *et al.* pers. comm. 2018). *Thymus saturejoides* can be found up to 2,200 m of altitude (Chafai *et al.* 2014). The estimated area of occupancy (AOO) is less than 500 km².

In Morocco, *Thymus saturejoides* occurs in a few major floristic divisions, including; Saharan Atlas (Grouz), Anti-Atlas (Kest), High Atlas (Ait M'hamed, Valley Ait Mezan, Amazmiz, Seksaoua, Matouga, Tezah), Middle Atlas and Middle Atlantic of Morocco (Abda, Souss, Titeki) (Dobignard 2004, Fennane and Ibn Tattou 2005, Fennane *et al.* 2007, Dobignard and Chatelain 2010, H. Rankou *et al.* pers. comm. 2018). *Thymus saturejoides* has been also collected from different localities in Morocco including; Ait Bazza and Serghina in Boulmane province (Naji 2012), Taroudant province (Sbayou *et al.* 2016), Asni and Moulay Brahim (Elhabazi *et al.* 2008), Idni (Kasrati *et al.* 2017), Midelt (Belmalha *et al.* 2015), Ijoukak (Ou-Yahya *et al.* 2017) Azilal (Belmalha *et al.* 2015) and Amsittene Forest (Mehdioui *et al.* 2009).

In Algeria, *Thymus saturejoides* occurs mainly in the Aurès in the Ain zaa-tout, Djemoura and M'chounech (Quezel and Santa 1962, Jahandiez and Maire 1932, Adouane 2016, H. Rankou *et al.* pers. comm. 2018).

Country Occurrence:

Native, Extant (resident): Algeria; Morocco

Distribution Map

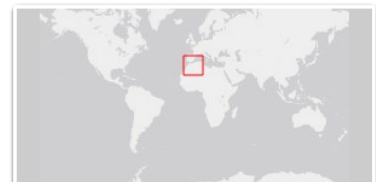


Legend

■ 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

Thymus saturejoides is a local species with a varied abundance from very rare to occasional and abundant in some locations. *Thymus saturejoides* is relatively abundant in Amsittene forest but suspected to be threatened by overexploitation (Mehdioui *et al.* 2009, H. Rankou *et al.* pers. comm. 2018).

In Algeria, *Thymus saturejoides* is very local and rare with very small population size. The overall trend of the population size and the number of mature individuals are decreasing due to the numerous threats affecting the species.

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

Thymus saturejoides typical habitats including forest clearings, scrub, arid pastures and limestone matorrals of low and medium mountains. (Jahandiez and Maire 1932, Fennane *et al.* 2007, Aafi 2013, Chafai *et al.* 2014). *Thymus saturejoides* prefers siliceous limestone substrates and rocky or earthy but well-drained soils (Jahandiez and Maire 1932, Aafi 2013, Chafai *et al.* 2014, H. Rankou *et al.* pers. comm. 2018). *Thymus saturejoides* prefers arid, semi-arid and subhumid bioclimates, in the sub-Mediterranean, thermo-Mediterranean and meso-Mediterranean vegetation stages (Aafi 2013, Chafai *et al.* 2014). *Thymus saturejoides* flowers in May-June and requires full sun, well-drained acidic (Jahandiez and Maire 1934, Naj 2012, Aafi, 2013, Chafai *et al.* 2014, H. Rankou *et al.* pers. comm. 2018).

Systems: Terrestrial

Use and Trade

Thymus saturejoides is used for herbs, essential oils, aromatic flavouring, food industry and for cosmetics (Chaouki 2007, Anon 2008, Aicha *et al.* 2013, Kettani 2015). *Thymus saturejoides* is used as a traditional medicine in the form of infusion and decoction against gastrointestinal infections and diseases, liver diseases, colic, coughs, bronchitis, rheumatism, oral diseases, general antiseptic (Bellakhdar 1997, Ismaili *et al.* 2004, Bellakhdar 2006, Mehdioui *et al.* 2009, El Hafian *et al.* 2014, Adouane 2016, El Alami *et al.* 2016). The essential oil of *Thymus saturejoides* is considered a broad-spectrum antibiotic, a regulator of the immune system, an antioxidant, an anti-parasite, an anti-hyperglobulinemia and a general physical, mental and sexual tonic (Chafai *et al.* 2014, Sbayou *et al.* 2016, Alaoui Jamali *et al.* 2012).

Thymus saturejoides is commonly traded nationally and widely exported as herbs or essential oil (Anon 2008, Aicha *et al.* 2013). The annual volume exported increased from 1,051 tones in 2002 to 2,777 tones in 2014 and the export price increased from 12.38 Dhs/Kg in 2002 to 25 Dhs/Kg in 2014 (Kettani 2015). The chemical composition of the essential oil of *Thymus saturejoides* identified the following components: borneol, carvacrol, thymol and linalool (Bellakhdar 1997, Belmalha *et al.* 2015, Sbayou *et al.* 2016).

Threats (see Appendix for additional information)

Thymus saturejoides population size decreasing and the habitats quality declining due to numerous

medium to high impact threats, including, overharvesting for domestic uses (medicinal, wildcrafting and food) and for trade (nationally and internationally), unsustainable harvesting (wildcrafting and cutting begin before the flowering time), collection practices (successive cuts and cutting the entire plant including the roots), overgrazing, deforestation and erosion (Benabid 2002, Anon 2008, Mehdioui *et al.* 2009, Taleb and Fennane 2011, Aicha *et al.* 2013, El Hafian *et al.* 2014, H. Rankou *et al.* pers. comm. 2018).

Thymus saturejoides 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.* comm. 2018).

Thymus saturejoides 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)

Thymus saturejoides is included in the USAID funded National Development Strategy for the Aromatic and Medicinal Plants sector in Morocco which is trying to enable the sector to shift from supplying wild/raw materials to a sustainable industrial sector (Anon 2008).

Thymus saturejoides conservation measures should be designed in a participative approach with the local population for a sustainable use of the resource (Aafi 2013). Although the species is cultivated successfully in plant nurseries as an *ex situ* conservation measure but more conservations actions are recommended to protect *Thymus saturejoides* 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.
- Enforcement of the legal protection measures (Law on the protection and the enhancement of the environment, Law on the studies of impact).
- 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.
- Pastoral, silvo-pastoral improvement and organization of pastoralists through establishment of a rotation system for pasture.

Credits

Assessor(s): Rankou, H., M'Sou, S., Ait Babahmad, R.A. & Diarra, A.

Reviewer(s): Ouhammou, A., Jury, S., Perez Graber, A. & Véla, E.

Contributor(s): Martínez Richart, A.I.

Partner(s) and Institution(s): Royal Botanic Gardens, Kew

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Citation

Rankou, H., M'Sou, S., Ait Babahmad, R.A. & Diarra, A. 2020. *Thymus saturejoides*. *The IUCN Red List of Threatened Species* 2020: e.T139600868A139601223. <https://dx.doi.org/10.2305/IUCN.UK.2020-1.RLTS.T139600868A139601223.en>

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External Resources

For [Supplementary Material](#), and 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	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
F. Forb or Herb

Use and Trade

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

End Use	Local	National	International
Pets/display animals, horticulture	Yes	No	No
Handicrafts, jewellery, etc.	Yes	No	Yes
Food - animal	No	Yes	Yes
Food - human	No	No	No
Medicine - human & veterinary	No	No	No

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	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		

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	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		
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 -> 6.1. Recreational 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		
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%)	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 -> 11.2. Droughts	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

Conservation Actions in Place

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

Conservation Action in Place
In-place research and monitoring
Action Recovery Plan: No
Systematic monitoring scheme: No
In-place land/water protection
Conservation sites identified: Yes, over part of range
Percentage of population protected by PAs: 11-20
Occurs in at least one protected area: Yes
In-place species management
Harvest management plan: No

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 -> 2.1. Site/area management
2. Land/water management -> 2.3. Habitat & natural process restoration
3. Species management -> 3.1. Species management -> 3.1.1. Harvest management
3. Species management -> 3.1. Species management -> 3.1.2. Trade management
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
4. Education & awareness -> 4.3. Awareness & communications
5. Law & policy -> 5.1. Legislation -> 5.1.1. International level
5. Law & policy -> 5.1. Legislation -> 5.1.2. National level
6. Livelihood, economic & other incentives -> 6.1. Linked enterprises & livelihood alternatives

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
3. Monitoring -> 3.4. Habitat trends

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km ²): 88
Continuing decline in area of occupancy (AOO): Yes
Estimated extent of occurrence (EOO) (km ²): 117000
Continuing decline in extent of occurrence (EOO): Yes
Number of Locations: 10
Lower elevation limit (m): 350
Upper elevation limit (m): 2,200
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

The IUCN Red List Partnership



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