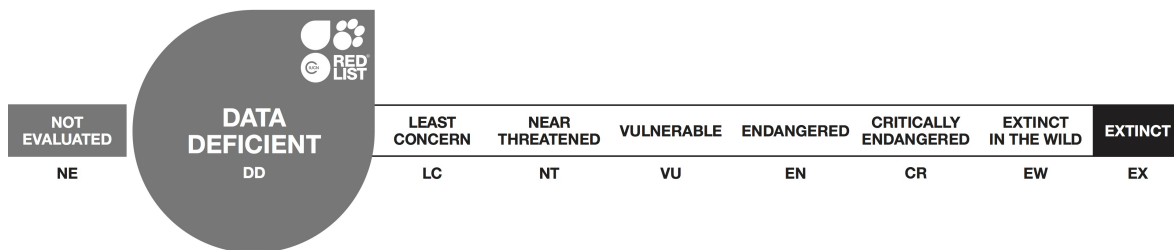


Viola pachyrrhiza

Assessment by: Youssef, S. & Véla, E.



View on www.iucnredlist.org

Citation: Youssef, S. & Véla, E. 2019. *Viola pachyrrhiza*. The IUCN Red List of Threatened Species 2019: e.T135527906A135527918. <http://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T135527906A135527918.en>

Copyright: © 2019 International Union for Conservation of Nature and Natural Resources

Reproduction of this publication for educational or other non-commercial purposes is authorized without prior written permission from the copyright holder provided the source is fully acknowledged.

Reproduction of this publication for resale, reposting or other commercial purposes is prohibited without prior written permission from the copyright holder. For further details see [Terms of Use](#).

The IUCN Red List of Threatened Species™ is produced and managed by the [IUCN Global Species Programme](#), the [IUCN Species Survival Commission \(SSC\)](#) and [The IUCN Red List Partnership](#). The IUCN Red List Partners are: [Arizona State University](#); [BirdLife International](#); [Botanic Gardens Conservation International](#); [Conservation International](#); [NatureServe](#); [Royal Botanic Gardens, Kew](#); [Sapienza University of Rome](#); [Texas A&M University](#); and [Zoological Society of London](#).

If you see any errors or have any questions or suggestions on what is shown in this document, please provide us with [feedback](#) so that we can correct or extend the information provided.

Taxonomy

Kingdom	Phylum	Class	Order	Family
Plantae	Tracheophyta	Magnoliopsida	Violales	Violaceae

Taxon Name: *Viola pachyrrhiza* Boiss. & Hohen.

Synonym(s):

- *Viola bolivari* Pau

Taxonomic Source(s):

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

Taxonomic Notes:

The type specimen was collected in 1841 from rocky limestone on a north-exposure cliff, near the summit of the Gara Mountain (Kurdistan Region, northern Iraq). A few decades later, others localities were discovered in the Persian Zagros (at Kuh-Safid / Alton Karon in 1899 by F. Martinez de la Escalera, at Vafs Mountain near Hamadan in 1905 by Bornmüller) and described as "*V. bolivari*" by Pau and Vicioso (1918), considered later as synonym by Rechner (1989).

Assessment Information

Red List Category & Criteria: Data Deficient [ver 3.1](#)

Year Published: 2019

Date Assessed: October 3, 2018

Justification:

The species is naturally fragmented in cliff habitats considered as stable, straddling two countries, through the Iraqi and Persian Zagros Mountains, from 1,500 to 3,500 m asl. No threats are currently known in these kinds of habitats, although there are potential future threats. The rarity of the historical and currently known localities suggests it could be a "very restricted" species (AOO = 20 km², number of locations = 5), although the overlooking of the species is very probable because of the very low botanical prospecting level in these geographical areas in general and particularly in this kind of habitat. In the case that the number of locations and/or AOO would be considered larger in the future, the species could at least be considered as Near Threatened (NT). Nevertheless, even if we retain the more pessimistic data, we cannot use the Vulnerable category (VU D2) because of a recent IUCN guidance (IUCN Standards and Petitions Subcommittee 2017) that recommends to not use this case if there is not "a plausible future threat that could drive the taxon to CR or EX in a very short time". Nevertheless, we do not know anything about the population level, and it is not possible to affirm that there are more than 1,000 mature individuals, nor that there are fewer than 1,000 or than 250. Thus, depending on the D1 criteria, the species might be considered as either EN, VU or LC. Hence we assess the species as Data Deficient (DD), pending future distribution and population estimates from fieldwork.

Geographic Range

Range Description:

This species is endemic to the Iraqi-Persian Zagros Mountains. It has a relatively wide extent of occurrence (about 93,000 km²) through the Zagros Mountain range. The totality of its geographical range is found in the Irano-Anatolian hotspot. However, its five known localities are distributed through five naturally fragmented mountainous regions. According to the historical (herbarium and Flora information) records as well as recent floristic investigation (i.e. Mehrvarz *et al.* 2014), the species is known to occur in two distant areas:

1) Gara Mountain, northwestern Zagros (northeastern Iraq) where the typus specimen (Tu. Kotschy 342, G-BOISS.) had been collected by Kotschy in 1841.

2) On the other hand, further localities, a few years later, had been discovered in Persian Zagros (at Kuh-Safid / Alton Karon in 1899 by F. Martinez de la Escalera, at Vafs Mountain near Hamadan in 1905 by Bornmüller) and described as "*V. bolivari*" by Pau and Vicioso (1918), later considered as a synonym by Rechinger (1989). Recently, this violet species was collected from Lorestan on the Aligurdaz road to Shoolabad, 2,400 m, by Mehrvarz *et al.* (2014).

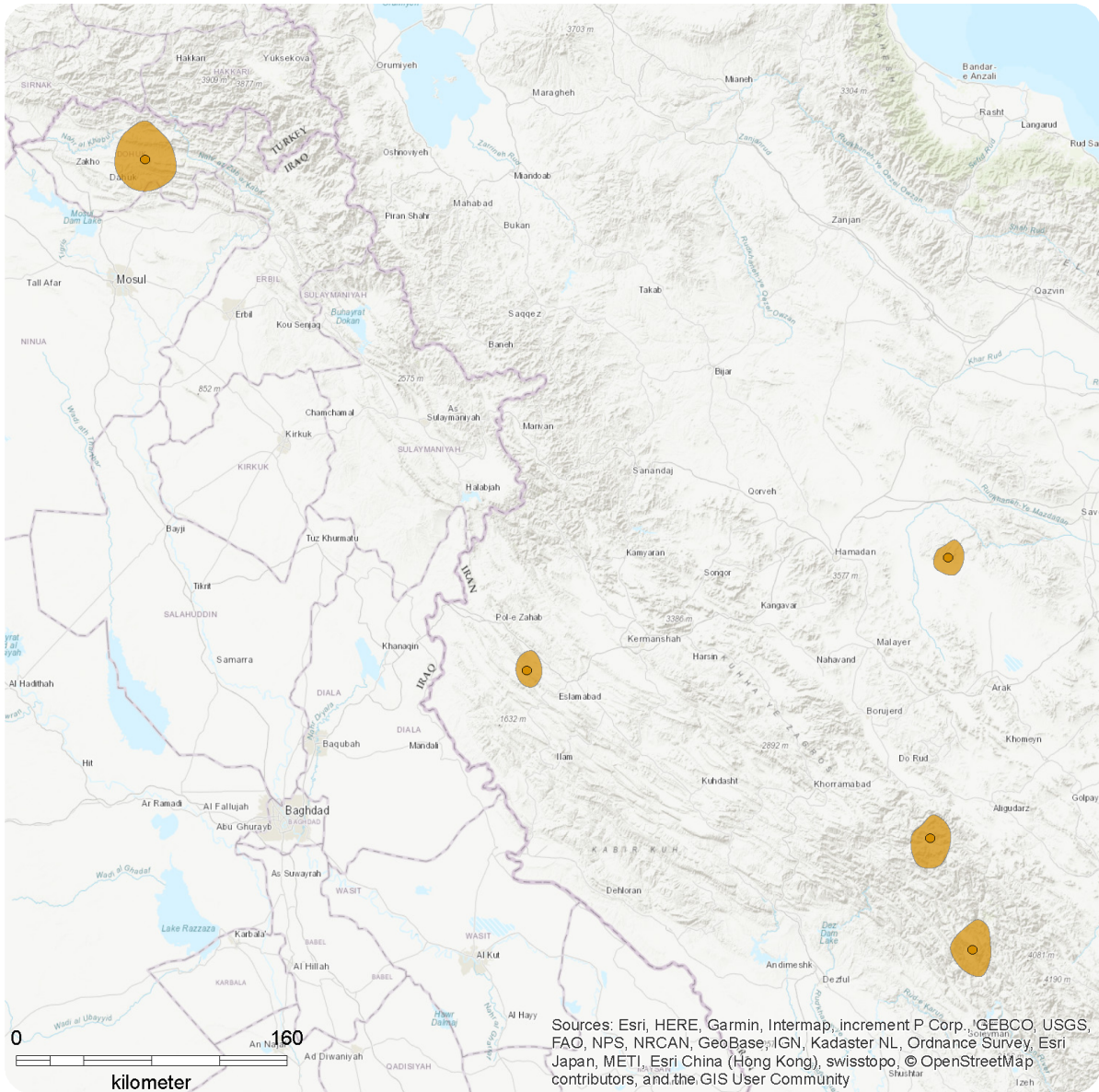
Due to these two distant areas of distribution, it is possible to hypothesise that (i) *V. pachyrrhiza* perhaps has a continuous distribution area (but not yet discovered) from northwestern Zagros (northern Iraq) to southeastern Zagros (southwestern Iran). It is likely that other undiscovered localities exist, **but**, more botanical field surveys are required to confirm this continuous geographical distribution range. The underestimated geographical distribution of this violet, like other plant species, is principally due to complex multiple factors (i.e. poor recent floristic inventories on the field and the outdated and incomplete Flora of Iraq and Flora Iranica, the chronic instability of the geopolitical situation, and parts of the Zagros mountainous area is still mined and/or inaccessible) (Youssef *et al.* 2018). (ii) It is probable that we have two taxa (species, subspecies, variety?) as proposed in the past by Pau and Vicioso (1918). In this latter case, comparative systematic studies are needed to resolve the taxonomical status.

Country Occurrence:

Native: Iran, Islamic Republic of; Iraq

Distribution Map

Viola pachyrrhiza



Range

- Extant (resident)
- Extant (resident)

Compiled by:

SSC Mediterranean Plant Specialist Group



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



Population

There is no accurate information about its population (size, reproductive success, growth, viability, dynamic, etc.), and nor do the historical data (herbarium sheet and Flora documentation) give valuable information about its population. Currently, only five localities are known but the actual numbers are probably higher due to the quasi-nonexistence of the recent botanical investigations on the field! Moreover, the current situation of the historical localities is totally unknown. The current population trend is assumed to be stable given the absence of present threats.

According to the current information on its geographical range, it could conceivably be hypothesized that there are four subpopulations: one in the Iraqi northwestern Zagros Mountain area (Gara Mountain, Kurdistan Region of Iraq), one in Kermanshah (western Iranian Zagros), one in the Persian central Zagros Mountain area (Lorestan / Bakhtiari), and the last one isolated on the Vafs Mountain (Hamadan).

Current Population Trend: Stable

Habitat and Ecology (see Appendix for additional information)

Viola pachyrrhiza was collected by Kotschy in 1841 from rocky limestone, north exposure cliff, of Gara Mountain (Kurdistan Region, northeastern Iraq) “*in cacumine m. Gara (Kurdistan) fissurisrupium calcarearum septentrionem versus sitarum infixa*”; and it was described four years later by Bois & Haines. It grows in crevices and fissures of cliffs, in vertical shady rocky places, near the summits of the Zagros Mountain range such as Gara (northeastern Iraq) and Vafs (western Iran) mountains. The more accurate observations of this violet by Rawi (1964) and Mehravas *et al.* (2014) correspond to the natural rocky habitat in the limestone cliffs of Zagros Mountain range. Moreover, it is a perennial polycarpic woody plant species. Nevertheless, there is inadequate information on its life history strategy known neither in cultivation nor in the field.

Concerning the reproductive success, it can be hypothesised that *V. pachyrrhiza*, as with many perennial violet species and others small chamaephytes, its seed need at least several years to become a reproductive adult, and that an individual could live several decades.

About the pollination system, the major part of *Viola* taxa is self-pollinated by pollen-gathering visitors-insects e.g. *Hymenoptera*, and *Diptera* (Beattie, 1971; 1972). On other hand, regarding the seed dispersal strategy, as with many violets, the seeds, produced in capsules, are unlikely to disperse over long distances: the two dispersal mechanism known for this genus are ballistic (when the dry capsule splits into three valves, the seed can disperse up to 2-10 m) and/or myrmecochorous as a secondary seed dispersal strategy (seeds have elaisomes that attract ants and facilitate the dispersal for a short distance) (Culver and Beattie 1978). In the case of extremely isolated populations, as with *V. pachyrrhiza*, the subpopulations distant from each other by hundreds of km, the probability of the existing gene connection between them is very low.

Systems: Terrestrial

Use and Trade

It has been suggested that *V. pachyrrhiza*, like its congeneric violets, e.g. *V. odorata*, is an attractive little

ornamental plant thanks to its attractive flowers, which would appear to be worth bringing into cultivation for rock gardens (Meikle 1980). However, its rarity, restricted distribution and the inaccessibility of its habitats (cliffs, crevices, fissures...) in addition to the instability of the geopolitical situation of the Iraqi-Persian Zagros region all together do not support a regional/local trade and uses of this violet.

Threats (see Appendix for additional information)

At this stage, the threats are not clearly known. Nevertheless, two possible threats can be considered:

i) The violet plant species, in general, have the attractive flowers and thus they are subject to horticulture/ornamental uses. In the case of *Viola pachyrrhiza*, Meikle (1980) had noted that it is possible to cultivate it in rocky gardens. However, its rarity and the inaccessibility of its habitats (cliffs, crevices, fissures...) do not support a regional/local trade and use of this violet.

ii) The incessantly increasing of the recreation activities in Zagros Mountains, particularly the vertical activities (e.g. climbing, etc.) on the cliffs could constitute as a future threat to its habitats destruction.

At this stage again, climate warming cannot be considered as a potential future threat, because the species is not associated to a strait altitudinal nor thermic niche as it can grow from 1,500 to 3,500 m asl.

Conservation Actions (see Appendix for additional information)

Currently, there is no documentation of the conservation actions suggested/required. In this, circumstance, it is recommended that further field investigations and research should be undertaken into the ecology, biology and conservation areas e.g. population viability and dynamic, conservation actions and strategies, etc. Confirmation of the taxonomic identity of the sub-populations is required.

Credits

Assessor(s): Youssef, S. & Véla, E.

Reviewer(s): Allen, D.J.

Bibliography

- Beattie, A.J. 1971. Pollination mechanisms in *Viola*. *New Phytologist* 70: 343-360.
- Beattie, A.J. 1972. The pollination ecology of *Viola*. 2, Pollen loads of insect-visitors. *Watsonia* 9(1): 13-25.
- Bornmüller, J. 1910. Collectiones Straussianaev novae, weitere Beiträge zur Kenntnis der Flora West-Persiens. *Beihefte zum Botanischen Centralblatt* 27(2): 288-347.
- Culver, D.C. and Beattie, A.J. 1978. Myrmecochory in *Viola*: dynamics of seed-ant interactions in some West Virginia species. *The Journal of Ecology* 66(1): 53-72.
- IUCN. 2019. The IUCN Red List of Threatened Species. Version 2019-3. Available at: www.iucnredlist.org. (Accessed: 10 December 2019).
- IUCN Standards and Petitions Subcommittee. 2017. Guidelines for Using the IUCN Red List Categories and Criteria. Version 13. March 2017. Prepared by the Standards and Petitions Subcommittee. Available at: http://nc.iucnredlist.org/redlist/content/attachment_files/RedListGuidelines.pdf.
- Mehrvarz, S.S., Yousefi, N., Mohammadi, M. and Marcussen, T. 2014. Pollen studies in the genus *Viola* (Violaceae) from Iran. *Acta Botanica Croatica* 73(1): 90-103.
- Meikle, R.D. 1980. Violaceae. In: Townsend, C. and Guest, E. (eds), *Flora of Iraq. Cornaceae to Rubiaceae*, pp. 172-181. Ministry of Agriculture and Agrarian Reform, Republic of Iraq, Baghdad.
- Pau, C. and Vicioso, C. 1918. Plantas de Persia y de Mesopotamia recogidas por D. Fernando Martínez de la Escalera. In: Serie Botánica, num. 14 (ed.), Trabajos del Museo Nacional de Ciencias Naturales. Madrid.
- Rechinger, K.H. 1989. Revision of Pau's types of plants collected by Martínez de la Escalera in Iran (1899). *Anales del Jardín Botánico de Madrid* 47(2): 361-375.
- Schmidt, A. 1992. Violaceae. In: K.H. Rechinger (ed.), *Flora Iranica*, pp. 1-29. Akademische Druck- und Verlagsanstalt, Austria.
- Youssef, S., Mahmood, A. and Vela, E. 2017. On the genus *Sternbergia* (Amaryllidaceae) in Iraq. *Anales del Jardín Botánico de Madrid* 74(1): 1-6.
- Youssef, S., Mahmood, A., Cartereau, M. and Vela, E. 2018. New cytological, morphological and chorological data on *Prospero seisumsianum* (Rukšans & Zetterl.) Yıldırım (Asparagaceae) from the Zagros area. *Turkish Journal of Botany* 42(5): 581-590.

Citation

Youssef, S. & Vela, E. 2019. *Viola pachyrrhiza*. The IUCN Red List of Threatened Species 2019: e.T135527906A135527918. <http://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T135527906A135527918.en>

Disclaimer

To make use of this information, please check the [Terms of Use](#).

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?
0. Root -> 6. Rocky areas (eg. inland cliffs, mountain peaks)	Resident	Suitable	Yes

Plant Growth Forms

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

Plant Growth Forms
Shrub - small

Threats

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

Threat	Timing	Scope	Severity	Impact Score
5. Biological resource use -> 5.2. Gathering terrestrial plants -> 5.2.1. Intentional use (species is the target)	Future	Minority (50%)	Negligible declines	No/negligible impact: 2
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
6. Human intrusions & disturbance -> 6.1. Recreational activities	Future	Minority (50%)	Negligible declines	No/negligible impact: 2
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality		

Conservation Actions in Place

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

Conservation Actions in Place
In-Place Research, Monitoring and Planning
Action Recovery plan: No
Systematic monitoring scheme: No
In-Place Land/Water Protection and Management
Conservation sites identified: No
Occur in at least one PA: Unknown
Invasive species control or prevention: No
In-Place Species Management

Conservation Actions in Place
Harvest management plan: No
Successfully reintroduced or introduced benignly: No
Subject to ex-situ conservation: No
In-Place Education
Subject to recent education and awareness programmes: No
Included in international legislation: No
Subject to any international management/trade controls: No

Conservation Actions Needed

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

Conservation Actions Needed
2. Land/water management -> 2.1. Site/area management
4. Education & awareness -> 4.3. Awareness & communications
5. Law & policy -> 5.2. Policies and regulations

Research Needed

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

Research Needed
1. Research -> 1.1. Taxonomy
1. Research -> 1.2. Population size, distribution & trends
1. Research -> 1.3. Life history & ecology
1. Research -> 1.5. Threats

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km ²): 20
Continuing decline in area of occupancy (AOO): Unknown
Extreme fluctuations in area of occupancy (AOO): No
Estimated extent of occurrence (EOO) (km ²): 93096
Continuing decline in extent of occurrence (EOO): Unknown
Extreme fluctuations in extent of occurrence (EOO): No

Distribution
Number of Locations: 5
Continuing decline in number of locations: Unknown
Extreme fluctuations in the number of locations: No
Lower elevation limit (m): 1500
Upper elevation limit (m): 3500
Population
Continuing decline of mature individuals: Unknown
Extreme fluctuations: No
Population severely fragmented: No
No. of subpopulations: 4
Continuing decline in subpopulations: No
Extreme fluctuations in subpopulations: No
All individuals in one subpopulation: No
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: No

The IUCN Red List Partnership



The IUCN Red List of Threatened Species™ is produced and managed by the [IUCN Global Species Programme](#), the [IUCN Species Survival Commission \(SSC\)](#) and [The IUCN Red List Partnership](#).

The IUCN Red List Partners are: [Arizona State University](#); [BirdLife International](#); [Botanic Gardens Conservation International](#); [Conservation International](#); [NatureServe](#); [Royal Botanic Gardens, Kew](#); [Sapienza University of Rome](#); [Texas A&M University](#); and [Zoological Society of London](#).