Pelophylax saharicus, North African Green Frog

Assessment by: IUCN SSC Amphibian Specialist Group


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Taxonomy

<table>
<thead>
<tr>
<th>Kingdom</th>
<th>Phylum</th>
<th>Class</th>
<th>Order</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animalia</td>
<td>Chordata</td>
<td>Amphibia</td>
<td>Anura</td>
<td>Ranidae</td>
</tr>
</tbody>
</table>

**Scientific Name:** *Pelophylax saharicus* (Boulenger in Hartert, 1913)

**Synonym(s):**
- *Rana esculenta* var. *saharica* Boulenger in Hartert, 1913

**Regional Assessments:**
- Europe

**Common Name(s):**
- English: North African Green Frog, Sahara Frog
- French: Grenouille Verte d’Afrique du Nord, Grenouille d’Afrique du Nord, Grenouille saharienne
- Spanish; Castilian: Rana Verde Norteafricana
- Arabic: عذب رخأ، عذب رخأ، عذب رخأ

**Taxonomic Source(s):**

**Taxonomic Notes:**
Prior to Uzzell (1982) (who provisionally resurrected the name), this species was considered to be a synonym of *Pelophylax perezi*, or, following Pasteur and Bons (1959), a synonym of *P. ridibundus*. Although northwest African members of the "*P. esculentus*" complex are here tentatively regarded as *P. saharicus*, Hemmer, Konrad and Bachmann (1980), suggested that two species were hybridizing in North Africa. Steinwarz and Schneider (1991), considered it probable that *P. saharicus* is a junior synonym of *P. perezi*.

Cryptic diversity possibly exists in the Libyan subpopulation (Ibrahim 2013). Nicolas et al. (2014) found their sampled populations from Morocco and Algeria to be genetically distinct, suggesting divergence along the Moulouya River valley dating back approximately 2.6 Mya. Some mitochondrial differentiation has been found between northern and southern populations in Morocco (Lansari et al. 2015). Arano et al. (1998) previously found an east-west pattern of allozyme divergence between the subspecies *P. s. saharicus* and *P. s. rioderoi*.

**Assessment Information**

**Red List Category & Criteria:** Least Concern ver 3.1

**Year Published:** 2021

**Date Assessed:** November 6, 2020
Justification:
Listed as Least Concern in view of its wide distribution, and its presumed large and stable population.

Previously Published Red List Assessments
2009 – Least Concern (LC)
https://dx.doi.org/10.2305/IUCN.UK.2009.RLTS.T58707A11826925.en

2004 – Least Concern (LC)

Geographic Range

Range Description:
This species is widely distributed (but with fragmented subpopulations in some areas, including Tunisia [Amor et al. 2010], due to patchy available habitat) from northwestern Western Sahara, through Morocco, Ceuta and Melilla (Spain), Algeria (south to the Hoggar Massif), Tunisia, northern Libyan Arab Jamahiriya and northwestern Egypt (Siwa Oasis only). It was introduced in Gran Canaria, Spain, in the early 1990s, but has been extinct here since at least 2012 (Mateo 2015). The species has an altitudinal range of sea level to 2,670 m asl.

Country Occurrence:
Native, Extant (resident): Algeria; Egypt; Libya; Morocco; Spain (Spanish North African Territories); Tunisia; Western Sahara

Extinct & Introduced: Spain (Canary Is.)
Distribution Map

Legend
- **EXTANT (RESIDENT)**
- **EXTINCT & INTRODUCED**

Compiled by:
IUCN (International Union for Conservation of Nature). 2020

https://dx.doi.org/10.2305/IUCN.UK.2021-3.RLTS.T58707A89704628.en
Population
It is abundant where suitable wetland habitat exists, and is described by Mateo et al. (2013) as the most common and widely-distributed amphibian in North Africa. It is localized and uncommon in Egypt (S. Baha El Din pers. comm.). In Algeria (where up to 42% of the global population occurs - Mateo et al. 2013), subpopulations are abundant in the north but those in the Sahara (below 32 °N) are isolated and some are highly threatened. Surveys in the Mouloya River Basin in Morocco between 2013 and 2017 concluded that the species had been heavily impacted by habitat degradation and destruction resulting primarily from urban expansion, and associated pollution and water extraction (Mabrouki 2019). It is considered abundant and ubiquitous in suitable habitat in Tunisia and exhibits low genetic variability across the country despite the fragmentary distribution of breeding habitat (Ben Hassine and Nouira 2012, Farjallah et al. 2012), although Amor et al. (2013) report that the species is in decline in this country resulting from varied local threats. Its overall population is considered to be stable.

Current Population Trend: Stable

Habitat and Ecology (see Appendix for additional information)

This frog has broad habitat requirements and is common in a range of Mediterranean, dry and arid habitats as long as water is present (P-A. Crochet pers. comm. 2020). It is largely aquatic, being found in and around both natural and artificial waterbodies including streams, oasis pools, ponds, irrigation canals and lakes (Amor et al. 2010, Bellakhal et al. 2014a, Ben Hassine et al. 2011, Mabrouki 2019). It exhibits high ecological plasticity and diet flexibility (Ben Hassine and Nouira 2009, Sicilia et al. 2009, Ortega et al. 2016). Eggs are deposited in water. The thermal range for tadpole survival found in one North African study was 22-30 °C, with the optimal temperature for growth at 26 °C and 50% mortality recorded at 28 °C (Bellakhal et al. 2014b). The species can be found in cold montane areas, and so this is unlikely to be the true lower limit for the temperature tolerance of larvae (P.-A. Crochet pers. comm. 2020). Differences in climatic conditions are likely to have significant impacts on this species, based on different sizes and age distributions recorded between subpopulations in the semiarid Tiaret region and those elsewhere (Oromi et al. 2011).

Systems: Terrestrial, Freshwater (=Inland waters)

Use and Trade

The species is traded to be used as model animal in the educational system in Tunisia (Amor et al. 2013). It has been found in a pet market in the Czech Republic destined for export to other European Union states for ornamental ponds, where this adaptable species may represent a threat to the native Pelophylax perezi (Kopecký et al. 2016).

Threats (see Appendix for additional information)

The species is presumed to be subject to no major threats across the range as a whole, although human impacts are increasingly affecting some subpopulations (Z. Ortega Diago pers. comm. 2020) such as the Molouya River Basin in Morocco (Mabrouki 2019). These are under pressure from the over-exploitation of water resources, water pollution (both agricultural and industrial - Mabrouki 2019), fragmentation of subpopulations, urban expansion and climate change (Samraoui et al. 2012, Amor et al. 2013, Bellakhal et al. 2014b). High rates of morphological abnormalities (more than 35% of new metamorphs and young

https://dx.doi.org/10.2305/IUCN.UK.2021-3.RLTS.T58707A89704628.en
juveniles) have been recorded in waterbodies in areas subject to intensive agriculture (Ben Hassine et al. 2011). It is likely that these malformations result in elevated mortality in affected subpopulations, and may represent a major threat in some areas (Ben Hassine et al. 2011). There has been some loss of habitat around Ceuta and Melilla. Subpopulations in the southern part of the distribution are most threatened by water scarcity resulting from drainage (including that of a major wetland complex in northern Algeria important for regional amphibian conservation - Samraoui et al. 2012) and habitat alteration, and reduction in habitat suitability (including the impacts of increased temperature on larval development) and an increase in the incidence of fire resulting from climate change (Samraoui et al. 2012. Mateo et al. 2013, Bellakhal et al. 2014b). Water cisterns in arid areas represent population sinks, where animals breed but the young cannot escape (L. García-Cardenete pers. comm. 2020). The species has been found to co-exist with invasive fish (Samraoui et al. 2012), and in desert oases the frogs have been observed to feed on exotic mosquitofish (García-Cardenete et al. 2011). *Batrachochytrium dendrobatidis* (*Bd*) has been found in Morocco, and this species is believed to be susceptible to the disease chytridiomycosis (El Cadi et al. 2019). This species may itself be a threat when locally introduced to ponds in Europe, through both competitive exclusion and hybridization, should these exotic populations become established in the wild (Kopecký et al. 2016).

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

**Conservation Actions In-Place**
This species occurs in several protected areas. It is listed on Appendix III of the Bern Convention. It is not included in Algerian protected species legislation (Executive Decree 12-235) (I. Bouam pers. comm. 2020)

**Conservation Actions Needed**
Artificial ponds have been found to be an effective way to preserve subpopulations of this species in Tunisia (Bellakhal et al. 2014a), and protection is recommended for localized subpopulations in this country (Amor et al. 2010).

**Research Needed**
There is a need for taxonomic research on the Libyan subpopulations to determine whether another species exists under this current concept.

**Credits**

**Assessor(s):** IUCN SSC Amphibian Specialist Group

**Reviewer(s):** Luedtke, J.


**Facilitator(s) and Compiler(s):** Hobin, L. & Bowles, P.

**Authority/Authorities:** IUCN SSC Amphibian Specialist Group
Bibliography


### Citation


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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)

<table>
<thead>
<tr>
<th>Habitat</th>
<th>Season</th>
<th>Suitability</th>
<th>Major Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Wetlands (inland) - Permanent Rivers/Streams/Creeks (includes waterfalls)</td>
<td>Resident</td>
<td>Suitable</td>
<td>-</td>
</tr>
<tr>
<td>5. Wetlands (inland) - Permanent Freshwater Lakes (over 8ha)</td>
<td>Resident</td>
<td>Suitable</td>
<td>-</td>
</tr>
<tr>
<td>14. Artificial/Terrestrial - Arable Land</td>
<td>Resident</td>
<td>Suitable</td>
<td>-</td>
</tr>
<tr>
<td>15. Artificial/Aquatic - Ponds (below 8ha)</td>
<td>Resident</td>
<td>Suitable</td>
<td>-</td>
</tr>
<tr>
<td>15. Artificial/Aquatic - Irrigated Land (includes irrigation channels)</td>
<td>Resident</td>
<td>Suitable</td>
<td>-</td>
</tr>
</tbody>
</table>

Use and Trade
(http://www.iucnredlist.org/technical-documents/classification-schemes)

<table>
<thead>
<tr>
<th>End Use</th>
<th>Local</th>
<th>National</th>
<th>International</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Pets/display animals, horticulture</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>14. Research</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Threat</th>
<th>Timing</th>
<th>Scope</th>
<th>Severity</th>
<th>Impact Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Residential &amp; commercial development - Housing &amp; urban areas</td>
<td>Ongoing</td>
<td>Minority (50%)</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>Stresses: 1. Ecosystem stresses - 1.2. Ecosystem degradation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Natural system modifications - Fire &amp; fire suppression - Increase in fire frequency/intensity</td>
<td>Ongoing</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>Stresses: 1. Ecosystem stresses - 1.2. Ecosystem degradation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Natural system modifications - Dams &amp; water management/use - Abstraction of surface water (domestic use)</td>
<td>Ongoing</td>
<td>-</td>
<td>Low impact: 3</td>
<td></td>
</tr>
<tr>
<td>Stresses: 1. Ecosystem stresses - 1.2. Ecosystem degradation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Natural system modifications - Dams &amp; water management/use - Abstraction of surface water (agricultural use)</td>
<td>Ongoing</td>
<td>-</td>
<td>Low impact: 3</td>
<td></td>
</tr>
<tr>
<td>Stresses: 1. Ecosystem stresses - 1.2. Ecosystem degradation</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Status</th>
<th>Species Stresses</th>
<th>Ecosystem Stresses</th>
<th>Species Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ongoing</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

Stresses:
- 2. Species Stresses -> 2.1. Species mortality

9. Pollution -> 9.2. Industrial & military effluents -> 9.2.3. Type Unknown/Unrecorded

<table>
<thead>
<tr>
<th>Status</th>
<th>Ecosystem Stresses</th>
<th>Species Stresses</th>
<th>Species Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ongoing</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

Stresses:
- 1. Ecosystem stresses -> 1.2. Ecosystem degradation
- 2. Species Stresses -> 2.1. Species mortality

9. Pollution -> 9.3. Agricultural & forestry effluents -> 9.3.4. Type Unknown/Unrecorded

<table>
<thead>
<tr>
<th>Status</th>
<th>Ecosystem Stresses</th>
<th>Species Stresses</th>
<th>Species Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ongoing</td>
<td>Minority (50%)</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

Stresses:
- 1. Ecosystem stresses -> 1.2. Ecosystem degradation
- 2. Species Stresses -> 2.1. Species mortality

11. Climate change & severe weather -> 11.2. Droughts

<table>
<thead>
<tr>
<th>Status</th>
<th>Ecosystem Stresses</th>
<th>Species Stresses</th>
<th>Species Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Future</td>
<td>Minority (50%)</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

Stresses:
- 1. Ecosystem stresses -> 1.2. Ecosystem degradation

11. Climate change & severe weather -> 11.3. Temperature extremes

<table>
<thead>
<tr>
<th>Status</th>
<th>Ecosystem Stresses</th>
<th>Species Stresses</th>
<th>Species Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ongoing</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

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 Action in Place**

In-place land/water protection

- Occurs in at least one protected area: Yes

**Conservation Actions Needed**

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

**Conservation Action Needed**

1. Land/water protection -> 1.1. Site/area protection
2. Land/water management -> 2.3. Habitat & natural process restoration

**Research Needed**

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

**Research Needed**

1. Research -> 1.1. Taxonomy

**Additional Data Fields**
<table>
<thead>
<tr>
<th><strong>Distribution</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower elevation limit (m): 0</td>
</tr>
<tr>
<td>Upper elevation limit (m): 2,670</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Population</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population severely fragmented: No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Habitats and Ecology</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Movement patterns: Not a Migrant</td>
</tr>
</tbody>
</table>
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