



Montseny brook newt (*Calotriton arnoldi*) Carranza and Amat, 2005)

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Photo: Felix Amat during species monitoring

Introduction

► Taxonomy: *Calotriton arnoldi* Carranza and Amat, 2005

Class: Amphibia

Order: Caudata

Family: Salamandridae

Genus: Calotriton

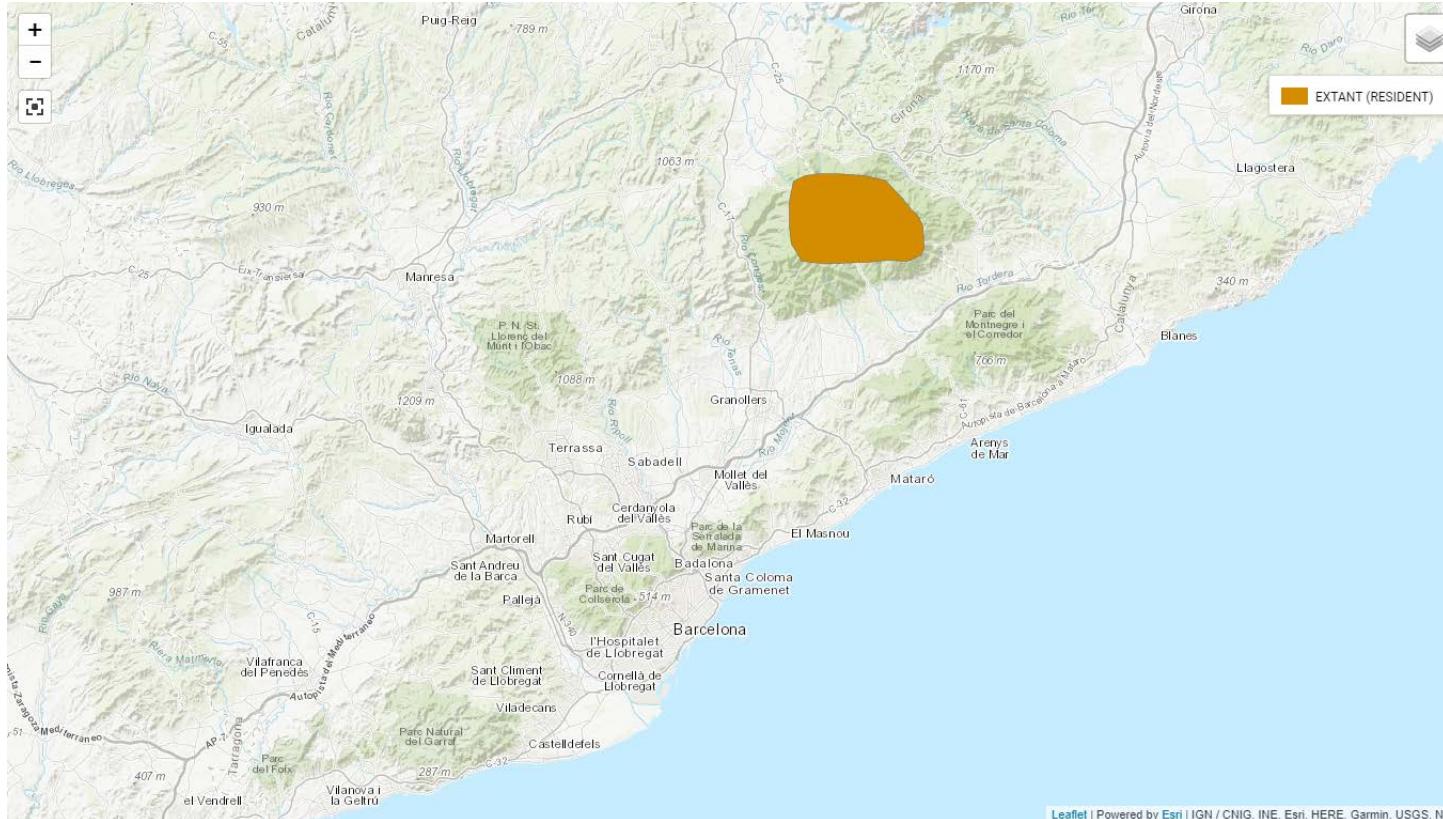
► Description:

- **Medium size (< 12 cm)** – Average: 9,61cm males / 10 cm females (Carranza and Amat, 2005)
- **Flattened head, elongated body, and tail compressed laterally** (shorter and wider in males)
- **Rough skin** (Less than *Calotriton asper* (Dugès, 1852))
- **Color:** Brown in dorsal side, cream color translucent in the ventral area

Distribution

► Montseny massif, Montseny Natural Park – 10km²

- 2 separated “populations” without genetical flow between them



IUCN (International Union for Conservation of Nature), Conservation International & NatureServe. . Calotriton arnoldi. The IUCN Red List of Threatened Species. IUCN 2009

Habitat

► Habitat:

- Water streams [none individual has been seen in land yet (Montori and Campeny, 1991; Carranza and Amat, 2005)]. Strong flow of water (oxygenated) and low temperature (below 15 °C).
- Altitude range: 600 – 1200m
- Vegetation: Preference Beech forest (*Fagus sylvatica* L.), also in oak forest (*Quercus ilex* L.), or shores with salows (*Salix atrocinerea* Brot.) or alders (*Alnus glutinosa* (L.)Gaertn.), moss and ferns.



Photo: Felix Amat during species monitoring

Ecology

► **Ecology:** not much information about it due to its recent separation as a species

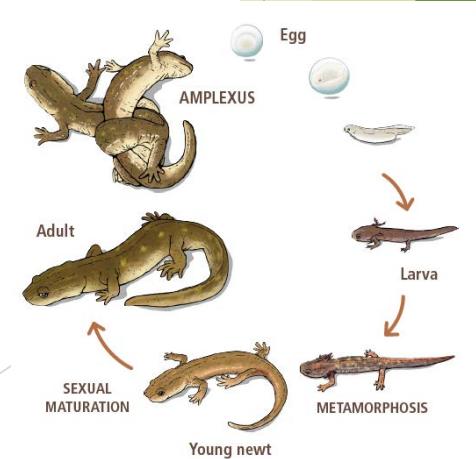
- Elusive species: Nocturnal and fissuring habits
- No data of predators
- Diet: Almost unknown. Predation on salamander larvae and it has been looking for invertebrates between the rocks.
- Anti-predatory strategies: segregates a sticky and smelly mucous substance in the dorsal area
- Reproductive behaviour: still to be studied, amplexus similar to *C. asper*. Breeding season in spring and autumn. Females lay eggs one by one in fissures.
- Phases: egg (months) → larvae (months) → young (3-4 years) → adult.
- 9 years estimated longevity.



Amplexus of the Montseny brook newt.
Photo: Felix Amat



Montseny brook newt feeding. Photo: Felix Amat



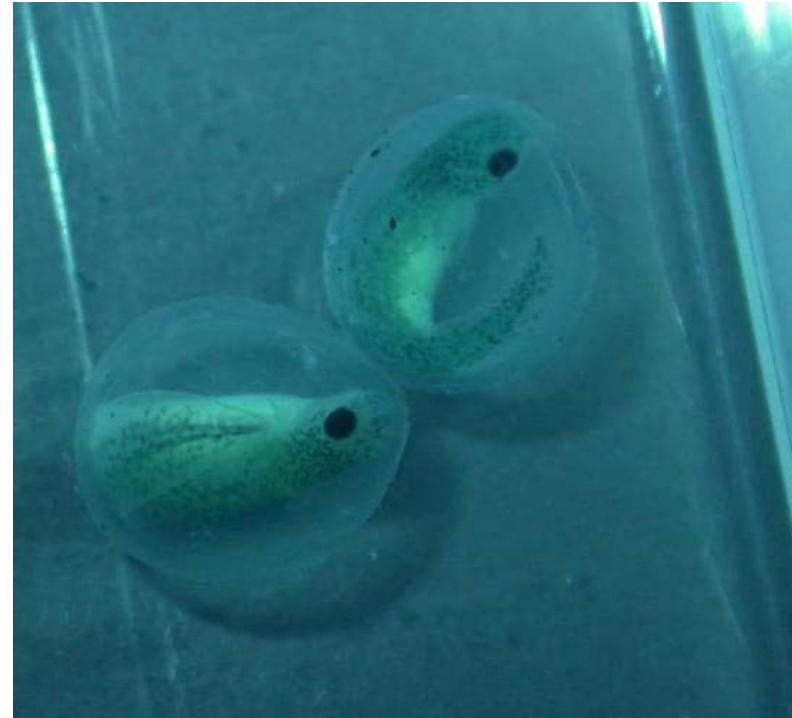
Life Tritó Montseny brochure

Value

- ▶ **Bioindicator:** It needs oxygenated and not contaminated water.
- ▶ **Umbrella species:** For protecting other species that inhabit Montseny Natural Park.



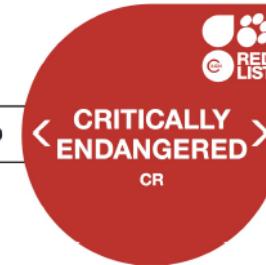
Typical torrent that the species inhabits. Photo: Felix Amat



Montseny newt eggs. Photo: Felix Amat

Status review

NOT EVALUATED	DATA DEFICIENT	LEAST CONCERN	NEAR THREATENED	VULNERABLE	ENDANGERED	CRITICALLY ENDANGERED	EXTINCT IN THE WILD	EXTINCT
NE	DD	LC	NT	VU	EN	CR	EW	EX



- ▶ 2008 – Critically Endangered (CR)
 - ▶ **2009 - Critically Endangered B2ab(iii,iv)**
 - ▶ **Population trend** ↓ inferred 15% since 1995
 - ▶ **Justification:** its Area of Occupancy is probably less than 10km², all individuals are in a single location, and the quality of its habitat and the number of mature individuals are probably declining.
 - ▶ **Current population:** 1000-1500 adult individuals (Amat 2004, Carranza and Amat 2005).
7 known torrents with populations in 2 separated areas.
- Most endangered amphibian of Occidental Europe!**

Threat analysis

► Habitat loss

➤ Hydrology:

- Contamination
- Water extraction for commercial use
- Climate change ➔ 1 century ↑ 1'5 °C in Montseny,
Danger of Drought. Beech forest regression, substituted
by oak forest (Peñuelas and Boada, 2003).



[https://elpais.com/diario/2008/04/12/
/catalunya/1207962443_850215.html](https://elpais.com/diario/2008/04/12/catalunya/1207962443_850215.html)

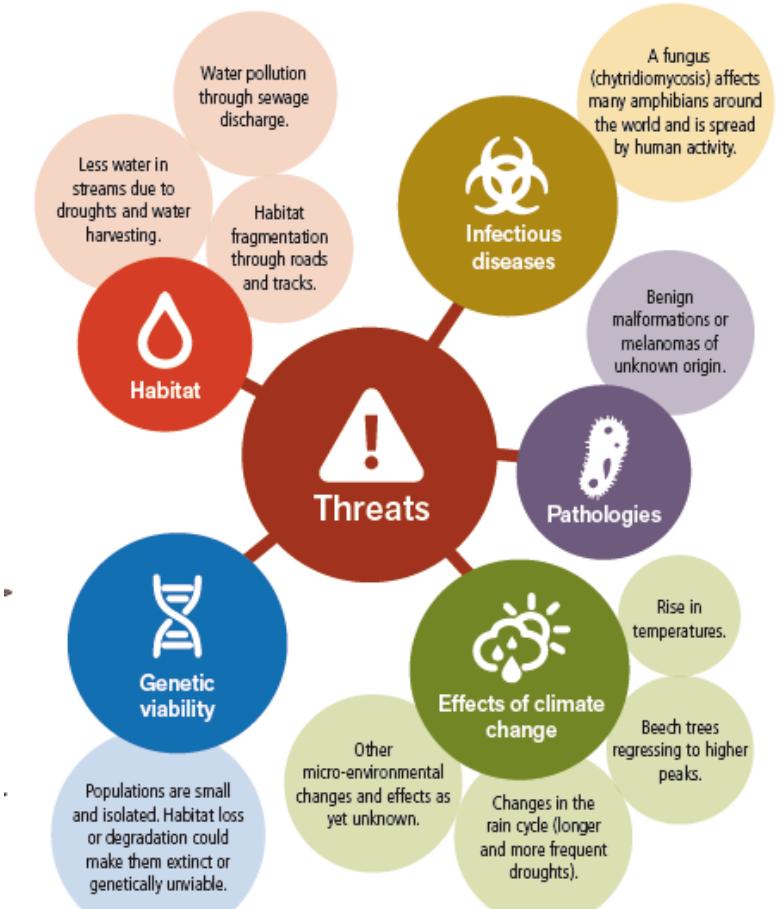
► Deforestation

- Loss of arboreal coverage ➔ NO cold water in summer period

► Diseases

- Pigmented tumours correlated positively with the size
(Martinez-Silvestre et al. 2011)

➤ Low populations and restricted area make it very susceptible to extinction.



Conservation strategies (IUCN RedList 2009)

► Conservation Actions in Place

- In-Place Land/Water Protection and Management
 - Occur in at least one PA: Yes
- In-Place Species Management
 - Subject to ex-situ conservation: Yes
- In-Place Education
 - Included in international legislation: Yes

► Conservation Actions Needed

- 2. Land/water management -> 2.1. Site/area management
- 2. Land/water management -> 2.3. Habitat and natural process restoration
- 3. Species management -> 3.4. Ex-situ conservation -> 3.4.1. Captive breeding/artificial propagation

Conservation strategies (IUCN RedList 2009)

► Research Needed

- 1. Research -> 1.3. Life history and ecology
- 1. Research -> 1.5. Threats
- 2. Conservation Planning -> 2.1. Species Action/Recovery Plan
- 3. Monitoring -> 3.1. Population trends



Photo: Felix Amat

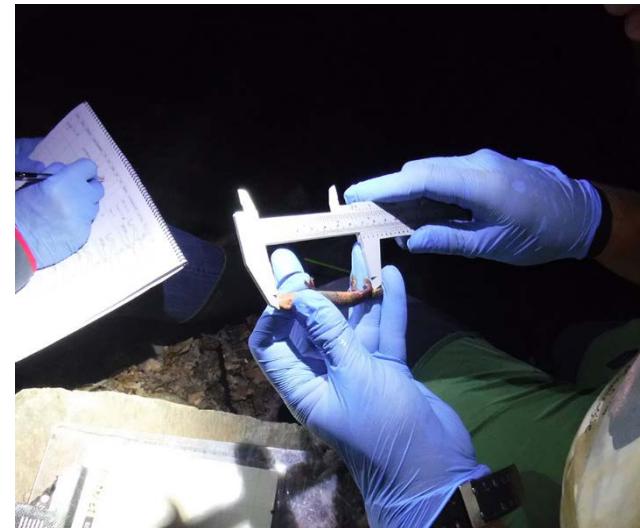


Photo: Daniel Fernandez Guiberteau, in the current investigation and monitoring of the species.

Conservation strategies: Life Tritó Montseny

► **Life Tritó Montseny** (LIFE15 NATO/SE/000757) was initiated in 2016 carried out at a site of Community interest, Natura 2000 Network (cod. SE5110001), 2016-2020.

► Objetives:

1. Establish greater legal coverage of the Montseny newt.
2. Ensure the viability of wild populations of the species and expand their range.
3. Improve the quality and quantity of water in the streams, preserve the riverside forest and improve ecological connectivity.
4. Increase knowledge of the biology of the Montseny newt and reveal its ecological requirements and threats.
5. Involve the agents of the territory and society in general in the conservation of the riverside habitat and its biodiversity.

► Actions to achieve the objectives:

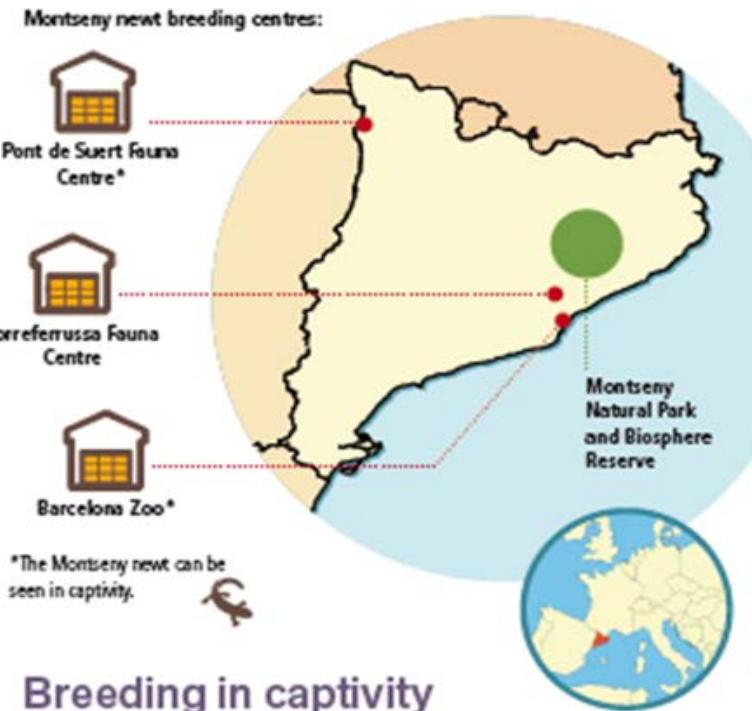
1. Include the Montseny newt in the European Habitats Directive.
2. Promote preventive management and increase captive breeding to repopulate this amphibian.
3. Restore the native riparian forest, reduce water extracted from streams.
4. Promote collaboration between scientists and managers of the natural environment. Monitor the Montseny newt and the actions carried out during the project.
5. Promote communication and awareness of the project at the local level.

Conservation strategies: Life Tritó Montseny

- ▶ **3 breeding centres:** Fauna Centres Torreferrussa, Pont de Suert and Barcelona Zoo (and Chester Zoo since 2017)



Photo: Daniel Fernandez Guiberteau, in the current investigation and monitoring of the species.



Breeding in captivity

The Life Tritó Montseny project is committed to breeding the species in captivity to boost natural populations. Breeding centres will guarantee the genetic reserve of the Montseny newt outside its natural habitat. This will increase the number of specimens that can be released into the wild and expand the geographical distribution of the species. By studying the Montseny newt in captivity, we can also learn more about its biology and ecological needs.

Conservation strategies: Life Tritó Montseny

► Problems in *ex-situ* breeding programmes:

- Low sperm quality on males
- Osteological problems

In research



Malformation in Montseny newt.
Photo: Felix Amat

► Expected Results

- Consolidation of the breeding centres: 90% of the genetic variability. 4x larvae production. 2x streams with Montseny brook newt, creating 6 new populations. Consolidated survival of existing wild populations.
- Improvement or elimination of 90% of surface water catchment systems. Reduction of water extraction. Improvement of wastewater treatment in 75% and installation of collection and reuse of rainwater and grey water in 50% of the houses.
- Increase river connectivity in 90% of intersections between roads. Increase area of native riparian forest by 50%.
- Draft and approve the Montseny brook newt conservation plan and its action programme. Complete all legal and bureaucratic procedures to give legal recognition to the species at national and European level.
- Annual monitoring of the state of conservation and threat level. Expand knowledge of the species' biology and ecological requirements. Strengthen ecological monitoring stations (LTER) with a robust methodology. Obtain regular indicators. Transfer 100% of data and reports from Life to the PN-RB Montseny information system and to GBIF (Global Biodiversity Information Facility).
- Publications, lectures and presentations.

<https://www.youtube.com/channel/UCNeR6L7JnNLD4WA07nRqWdw>

<http://lifetritomontseny.eu/en/evolucio/-/cercador/cerca#resultats-cercador>

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Thank you for your
attention