

LIFE15 NAT/ES/000757

Life
Tritó
Montseny



LAYMAN'S REPORT

Conservation of the Montseny brook newt and its riparian habitat



Life Tritó Montseny project area
 Montseny Natural Park
 Natura 2000 protected areas network

INDEX

Introduction	3
Who is the Montseny brook newt?	3
Where does the Montseny brook newt live?	3
Why is it in endangered?	3
What can we do to improve the conservation status of the Montseny brook newt?	3
<hr/>	
What has the objective been?	4
<hr/>	
What have we done and what are the results?	5
1. Protection	5
2. Conservation	6
3. Habitat management	7
4. Research	8
5. Dissemination and education	9
<hr/>	
What have we learned?	11
<hr/>	
Repercussions and future scenarios. What are the next steps?	14
<hr/>	
How can I contribute towards the Montseny brook newt's conservation?	15
<hr/>	



Title: *Conservation of the Montseny brook newt and its riparian habitat.* LIFE TRITÓ MONTSENY - LIFE15 NAT/ES/000757

Coordinator: Diputació de Barcelona

Partners: Diputació de Girona, Zoo de Barcelona, Forestal Catalana and Generalitat de Catalunya

Duration: 2016-2022

Budget: 2.971.276 €

EU contribution: 1.782.764 €

Project website: www.lifetritomontseny.eu

Authors: Daniel Guinart, Jordina Grau, Sònia Solórzano and Joana Barber

Photographs: Iñaki Relanzón and XPN Archive

Design: Lucas Wainer

Pictograms: Lucas Wainer, Cori Comajoncosa and Mar Guinart



Lives in a few hidden and well-preserved streams, ones with large stones and fissures

INTRODUCTION

Who is the Montseny brook newt?

In 2005, after several years of ecological, genetic and morphological studies, the Montseny brook newt (*Calotriton arnoldi*) was identified in the realms of science as a new species of amphibian, one that exclusively lives in Montseny. It is critically endangered and the **most threatened amphibian in Europe**.

It is an exclusively aquatic amphibian and feeds on aquatic invertebrates and salamander larvae. It lives in very few streams that have well-preserved aquatic and forest habitats, with large stones and fissures that allow it to take refuge throughout the driest months. They are streams of clean, cold and well-oxygenated waters, with autochthonous riparian vegetation that maintains environmental humidity, surrounded by well-structured beech and holm oak forests.

Where does the Montseny brook newt survive?

It is only found in the **Montseny Natural Park and Biosphere Reserve** and, therefore, is endemic to this massif, where it is distributed in few of its streams. The Montseny massif is a natural area of special interest to the European Community (the so-called SCI, Sites of Community Importance), within the Natura 2000 Network.

It is located in the Mediterranean region, just 20 km from the sea and 60 km from Barcelona. It includes eighteen municipalities, with a population of approximately 51,000 inhabitants. Its highest peaks exceed 1,700 m. It is home to characteristic Mediterranean, Central European and subalpine habitats. Its **Conservation Plan** identifies more than 8,400 fauna and flora species, and 167 different habitats. It highlights the need to restore riparian habitats and to work, particularly, towards the conservation of species of greatest conservation need, such as the Montseny newt.

Why is it endangered?

The Montseny newt faces multiple threats. Some are due to **factors intrinsic to its biology**: specialization in increasingly scarce streams and emerging infectious diseases often due to the introduction of exotic species. Other **threats are global**, such as rising temperatures and the reduction of hydrological flow as a result of climate change. There are other, additional threats that are caused by **human activity**, such as the exploitation of natural resources (water, wood) forest plantations that reduce the basin's hydrological levels, paths and road networks that damage ecological connectivity as well as human frequentation, which deteriorates very fragile environments.

What can we do to improve the conservation status of the Montseny brook newt?

In 2015, ten years had passed since the discovery of the species and we had acquired knowledge and enough experience to present a project for the Montseny within the LIFE program. This European Union instrument finances environmental, nature protection, and climate actions projects. With the European co-financing and the human and economic resources of the Diputació de Barcelona, the Diputació de Girona, the Zoo de Barcelona, Forestal Catalana and the Generalitat de Catalunya, at the end of 2016 the **LIFE Tritó Montseny project (LIFE15 NAT/ES/000757)** began, with the aim of working to reduce the issues that affected the populations of the species and improve the information available so as to apply it in the future environmental management for the conservation of the species and its habitat.





To preserve the Montseny newt and improve the riparian habitat

WHAT HAS THE OBJECTIVE BEEN?

The purpose of LIFE Tritó Montseny has been to ensure the conservation of the Montseny brook newt and improve its riparian habitat, establishing five operational objectives to achieve it.

Operational objectives



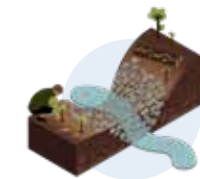
1. Protection:

To achieve greater legal coverage of the species. To develop a Recovery Plan. To involve owners in order to establish custody agreements.



2. Conservation:

To ensure the genetic conservation of the species and expand its distribution. To promote preventive management by increasing captive breeding and reintroduction so as to ensure the viability of Montseny brook newt populations in their natural habitat.



3. Habitat management:

To reduce the number of water catchments and encourage rainwater collection. To improve wastewater treatment, restore the riparian habitat and recover the streams' ecological connectivity.



4. Research:

To increase the collaboration between natural environment scientists and managers in order to improve the understanding of the species' biology and disclose its ecological requirements and threats.



5. Dissemination and education:

To raise awareness, get the involvement and commitment of agents within the area and society in general with regard to the conservation of the riparian habitat and its biodiversity.

WHAT HAVE WE DONE AND WHAT ARE THE RESULTS?







We involved the local population in the conservation of the riparian habitat and improved the legal protection of the Montseny newt

1. PROTECTION

- » It has been possible to apply **protection measures** to 23% of the surface area of private estates through:
 - the involvement of forest owners, with the signing of three **land stewardship agreements** (65 ha) to apply good environmental practices and protect the riparian habitat;
 - the **purchase** of two estates (90 ha) of high ecological value for the protection of the Montseny newt;
 - the establishment of **supervised management areas** (65 ha) along river courses and whose purpose is to preserve the riparian habitat.

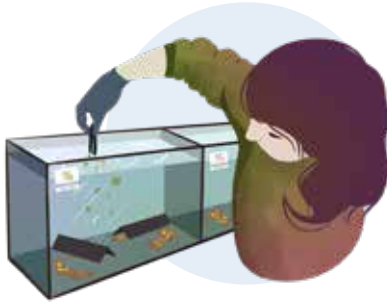


-  Park purchased estate
-  Private estates with stewardship agreement
-  Supervised management area in a private estates
-  Critical management areas

- » Creation of **critical management areas** throughout the distribution range of the Montseny brook newt, where extractive activities should be limited.
- » Implementation of **biosecurity** measures to prevent the introduction and spread of infectious diseases throughout the Montseny Natural Park and Biosphere Reserve.
- » Elaboration of protocols to apply **good environmental practices** in the management of riparian forests.
- » The involvement of local people and institutions within the territory in the project. .
- » Elaboration of the **Montseny Newt Recovery plan**, which must be approved by the Generalitat de Catalunya.



WHAT HAVE WE DONE AND WHAT ARE THE RESULTS?



We have contributed to the improvement of breeding centers and the increase in the number of newts bred

2. CONSERVATION

- » Expansion and modernization of the **three breeding centres**: Torreferrussa, Pont de Suert and Barcelona Zoo.
- » Addition of **two new breeding centres**: Chester Zoo and the Calafell Centre for Environmental Research and Education (CREAC).
- » Expansion of **personnel specialized** in the management of captive breeding facilities.
- » Elaboration of a **Breeding protocol** for the Montseny newt to standardise its management.
- » An increase in the capacity of the five breeding centres, which can currently **have up to 1,723 specimens** for their potential release.
- » Maintaining a **viable genetic reserve**, as recommended by the IUCN for critically endangered species.
- » Addition of the Montseny brook newt in the European Endangered Species Program (EEP), once it became open to international participation in the captive breeding program.



The project has expanded the Montseny newt's distribution area

- » Development of an agreed strategy, with technicians and scientists, for the release and creation of new newt populations in Montseny.
- » Elaboration and implementation of the Program for the creation of **new populations**.
- » **Selection of optimal streams** to accommodate new populations of captive-bred newts, with the involvement of a multidisciplinary team of experts.
- » **Sanitary control and marking** of all animals before being released.
- » Creation and reinforcement of **five new** towns with Montseny brook newt.
- » **Release of more than 2,000** specimens of Montseny brook newt into optimal streams and annual monitoring of their evolution.

WHAT HAVE WE DONE AND WHAT ARE THE RESULTS?



The project has promoted sustainable use of stream water and improved fluvial connectivity

3. HABITAT MANAGEMENT

- » Elimination of seven **water catchments** from streams.
- » Installation of one water distribution box at the stream's bypass point, with the aim of ensuring there is **an ecological flow**.
- » Adaptation of four water accumulation tanks with **self-closing systems** when the tank is full.
- » Development of **rainwater** collection and **storage systems** in three farms.
- » Conversion of **sprinkler** irrigation to **drip irrigation** in a nursery.
- » Installation of a lagoon system for **wastewater treatment**.



We promoted the riparian habitat by introducing good forestry practices and improving ecological connectivity

- » **Reduction of erosion** and sediment contribution to streams with the construction of more than 1,000 m of terraces and palisades by implementing bioengineering techniques.
- » **Elimination of nine exotic tree plantations** in order to increase water contribution to the streams.
- » **Restoration** of streams' **tree cover** with native species such as alder, ash, hazelnut and elderberry.
- » Removal of drainage pipes to **restore the original channel** from streams and ecological connectivity.
- » **Elimination** of eleven **extraction tracks** to restore the natural watercourse.
- » **Construction** of different types of **bridges** (five made of filter stone, three made of vaulted stone, six platform bridges and one wood one), based on the stream and the frequency of vehicles.



FILTER

VAULTED

PLATFORM

WOOD

NATURAL WATERCOURSE



WHAT HAVE WE DONE AND WHAT ARE THE RESULTS?



We have improved knowledge of the biology and the ecology of the Montseny brook newt



4. RESEARCH

» Involvement of more than 60 researchers and more than 30 research centres in the promotion of a large number of projects:

- Study of the **newt's** diet by using the DNA in newt faeces. *"Montseny newts are not selective and eat the most abundant prey."*
- New estimate of the **newt's distribution** area by using environmental DNA techniques.
- Study of the newt's preferences and **adaptation** to **temperature** changes.
- Analysis of **fertility** and **development** of animals in captivity. *"Live food and low animal density in aquariums favour newt breeding."*
- Evaluation of the effect of **emerging diseases**. *"It has been proven that infection by the fungus Bsal is lethal to the newt."*
- Study of a newt population, **demography** and **mobility** of adults. *"The removal of drainage pipes allows the movement of newts through the streams."*
- Spatial modelling to find suitable **areas** for **reintroduction**.
- Geological study of streams. *"The composition of the soil and rocks are key elements for the presence of the newt."*
- Study of **human impact** on the newt's habitat throughout history.
- Creation of **three scientific committees** with regard to the newt's biology, breeding centres, new populations and the hydrological dynamics of the Montseny massif.
- **Hydrological monitoring** network: installation of nine stations to measure water flow and integration of five meteorological stations. *"The average water flows of the streams are very low (between 4l/s and 1l/s)."*
- Analysis of the chemical composition of water in 30 streams in Montseny.
- **Monitoring of newt populations** in nature, with more than 70 field campaigns and almost 700 observations. *"The Montseny newt is still critically endangered."*
- Control of emerging diseases, with analysis of 426 samples from newts and other amphibians. *"The Montseny's newt populations are healthy for now."*
- **Integration** of all the **information** in a Geographic Information System for it to be used.



WHAT HAVE WE DONE AND WHAT ARE THE RESULTS?



The project has disseminated the importance of preserving a unique amphibian in the world.



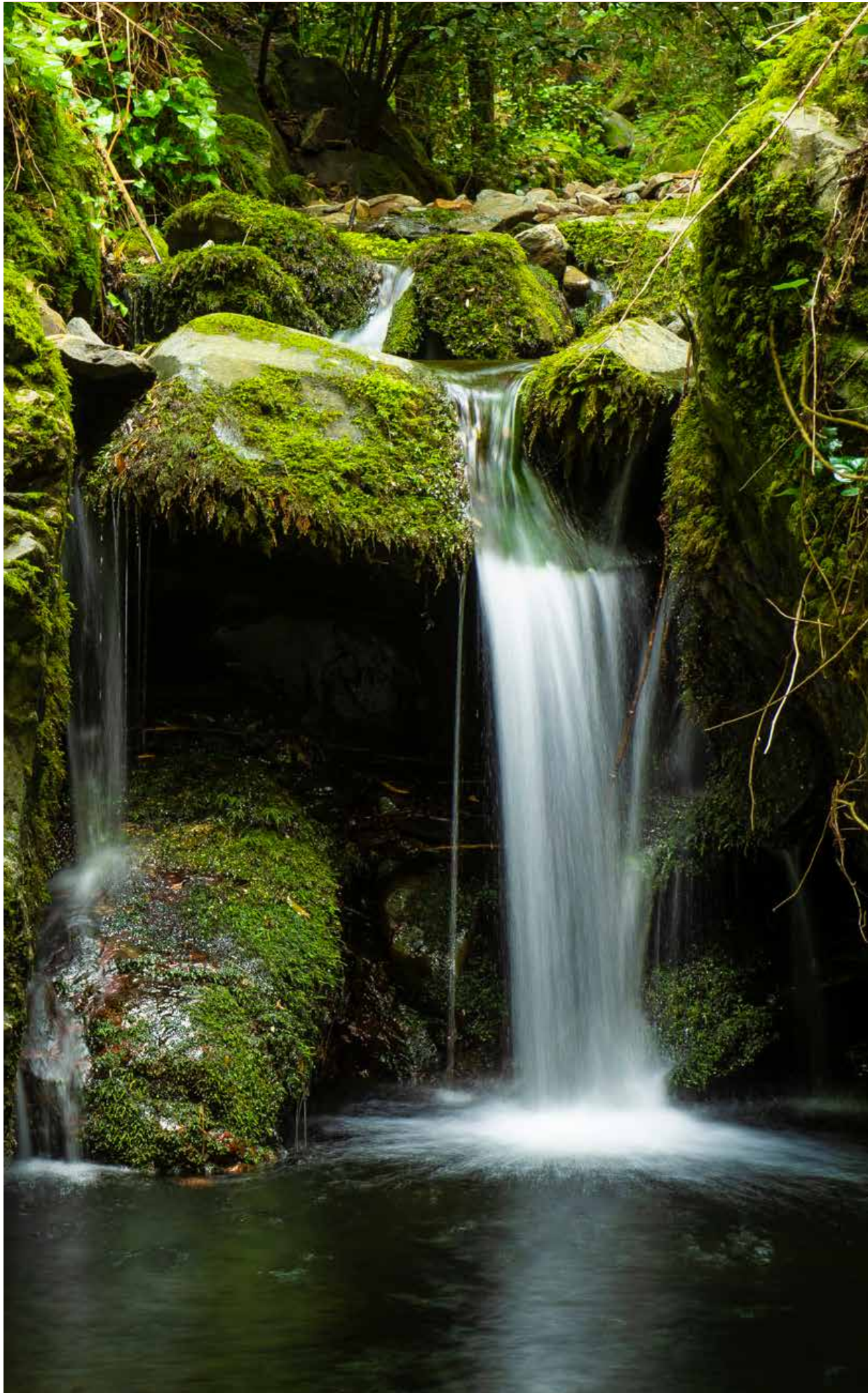
5. DISSEMINATION AND EDUCATION

- »» Elaboration of a **communication strategy** to agree on the informative content of the project.
- »» Creation and updating of the project **website**. Digital dissemination on social networks.
- »» Carrying out workshops and elaboration of various **dissemination materials**: the informative leaflet, a photographic exhibition, information panels, videos of the Montseny newt and a children's story, among others.
- »» **The exhibition** "My name is *Calotriton* and I only live in Montseny" has been in 42 municipalities and has been visited by over 21,000 people since the beginning of the project.
- »» Dissemination of the project in 54 **workshops** that have reached a total of 5,446 attendees.
- »» The 8 **audiovisual capsules** produced to disseminate the project's actions have received very good feedback and almost 30,000 views.
- »» Throughout the project, various **articles** of an **informative**, technical and scientific nature have been published.



The project has shown that the Montseny newt is critically endangered and its riparian habitat has been damaged

- »» Creation of a new **educational facility** at the Barcelona Zoo that has received almost 500,000 visitors since its inception. 13,800 schoolchildren have been able to participate in the educational activities related to the Montseny newt.
- »» The program "**El Montseny a l'escola**" has disseminated the Montseny newt to 2795 schoolchildren.
- »» **Publication of the handbook** "Infectious diseases in amphibians. Handbook of best practices in educational discovery activities"
- »» Carrying out **workshops** to make **gypsum newts**, where 613 people have taken part.
- »» **Exchange of experiences** with 10 international projects that shared similar objectives.





We achieved most of the objectives of LIFE Tritó Montseny thanks to the involvement of a large number of people and institutions

WHAT HAVE WE LEARNED?



OVERALL REFLECTIONS

- ↳ The **EU LIFE Program** is a very valuable **instrument** for the **conservation** of critically endangered species. It has provided the necessary economic means to achieve the established objectives, while guaranteeing technical, scientific and administrative rigor.
- ↳ The involvement of **public institutions**, specifically those linked to the research and management of natural resources, is **essential** for the protection of the species and its habitat.
- ↳ The commitment of a large **multidisciplinary** team is the key to successfully achieve the established objectives and create good work dynamics. Institutions, research and education centres, private entities and individuals provide resources and expertise to resolve unforeseen events and improve the results obtained.
- ↳ Even if there is good planning, it is always necessary to have a **Contingency Plan** to respond to unforeseen events and find moments to reflect on and analyse things in order to redirect possible deviations.



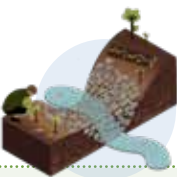
PROTECTION

- ↳ **Environmental policies** must be promoted to facilitate the recovery of endangered species or habitats, such as custody agreements with individuals or the establishment of protection areas.
- ↳ **Additional synergies** must be sought to apply good environmental practices in land management. A consensus among different interest groups is essential: individuals, local groups, the administration as well as society in general.
- ↳ The Montseny newt **recovery plan** is an essential planning tool to guarantee the future of this endemism.



CONSERVATION

- The Montseny newt **breeding centres** are **essential** to:
 - Have a genetic reserve of the species.
 - Expand the distribution area with newts bred in captivity.
 - Research on the biology and adaptability of the species.
 - Carry out research, dissemination and environmental education tasks.
- **Guarantee the existence of a population** stock so as to ensure the species' survival in the event of a catastrophic decline in wild populations or breeding centers.
- **The strategy for the creation and monitoring of new populations** in their natural habitat is the tool that will allow us to improve the conservation status of the Montseny newt, with the involvement of breeding centres, competent administrations, experts and agents of the territory.



HABITAT MANAGEMENT

- The Montseny newt depends entirely on the good state of conservation of mountain streams and, therefore, **it is essential to preserve** or restore **the riparian habitat** and particularly, to ensure the presence of water in the stream throughout the year.
- **Water and wood** are two historically exploited natural resources, but their extraction can seriously damage riparian habitat. **It is necessary to reach a consensus on a sustainable management** of natural resources that allows us to:
 - **Reduce water catchments** from streams. It is necessary to improve the efficiency of water consumption and make use of rainwater in the face of the effects of climate change.
 - **Ensure the ecological flow** in streams. Catalonia's Management Plan for river basins requires an ecological flow to be left in the streams and systems must be implemented to ensure this.
 - **Encourage the purification of wastewater** through lagoon, systems, due to their proven efficiency and their positive impact on biodiversity.
 - **Preserve** and recover **the native riparian forest** and its cover on the river course, essential for the dynamics of the ecosystem and its biodiversity.
 - **Eliminate plantations of exotic trees** which reduce the streams' waterflows impoverish the soil and facilitate erosion processes.
 - **Improve the ecological connectivity** of streams by minimizing the number of forest tracks that cross them. When necessary, restoring the tracks by means of overpasses that respect the stream's natural channel.



RESEARCH

- ↳ **Knowledge** of the species and its habitat is **essential** for **adaptive** management, which is modified and improved on depending on the results obtained.
- ↳ **Research and monitoring are essential** to have truthful and objective information on the ecological requirements of the species, the problems suffered by the riparian habitat and how the environment evolves after our interventions.
- ↳ **It is necessary to provide financial support and human effort** in maintaining the research areas related to the conservation of the Montseny newt and that have been promoted by the LIFE Tritó Montseny project.



DISSEMINATION AND EDUCATION

- ↳ The **dissemination** of the project **has been essential** to convey environmental information to society and the transparency with regard to the use and investment of public resources as well as to encourage environmental policies and promote public investment in the conservation of our natural heritage.
- ↳ The **educational programs** carried out within the framework of the project have possibly been the **best investment** in terms of effort and means to achieve the future **involvement of society** in the conservation of our natural heritage.
- ↳ **Breeding centres** are exclusive facilities where you can get to know the species without altering its natural habitat.



REPERCUSSIONS AND FUTURE SCENARIOS

WHAT ARE THE NEXT STEPS?

The LIFE Tritó Montseny project provides a new vision of the natural heritage, according to the European biodiversity strategy:

- ↳ Putting natural “heritage” ahead of the natural “resource”.
- ↳ Promoting the adaptation to climate change and the resilience of natural habitats.
- ↳ Encouraging a “sustainable” exploitation of natural resources.
- ↳ Involving the people in the area and looking for synergies to preserve the natural heritage.

The objectives achieved in the LIFE Tritó Montseny have established a successful work dynamic, which is to be replicated within the Montseny. The objective is to improve the conservation status of natural habitats and apply good environmental practices.

The administrations involved in the project have shown their commitment to continue working to improve *C. arnoldi's* conservation status, the amphibian endemic to Montseny that is still in a critical state of conservation. The following actions will be implemented:

Protection

- The execution of the Recovery Plan.
- Increasing the number of collaboration agreements with private property.
- Defining protection zones.
- Application of biosafety protocols in projects and visits to aquatic environments.

Conservation

- The maintenance of breeding centres.
- Continue breeding newts to release them in streams of Montseny.
- Expansion of the distribution area within the massif.

Habitat management

- The restoration of the riparian habitat and its ecological connectivity.
- The modification of water catchments to ensure an ecological flow in the streams.
- Promoting the use of rainwater.
- Encouraging the application of good forestry practices.

Research

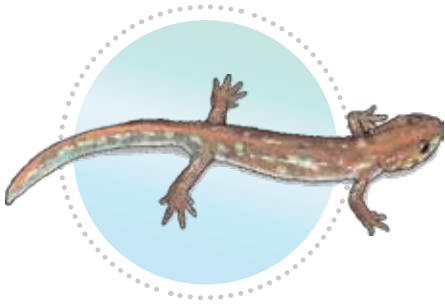
- Maintaining the monitoring of natural and introduced populations.
- Promoting the hydrological monitoring of the Montseny massif.
- Encouraging biological and environmental research in the riparian habitat.
- Promoting research projects with multidisciplinary teams.

Dissemination and Education

- Maintaining the LIFE Tritó Montseny website as a source of public information.
- Continue touring with the travelling project exhibition.
- Maintaining the educational classroom and school workshops in breeding centres and Natural Park.
- Participating in scientific conferences and dissemination conferences related to conservation.



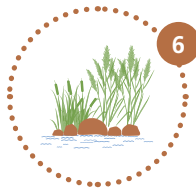
The LIFE Tritó Montseny project has contributed to the conservation of the natural heritage of Montseny, but everyone can do their bit!



HOW CAN I CONTRIBUTE TOWARDS THE MONTSENY BROOK NEWT'S CONSERVATION?



1 Using water rationally, reducing its consumption at home as much as possible.



6 Respecting the native riverbank vegetation.



2 Consuming tap water rather than bottled.



7 Visiting the breeding centres, where the newt can be observed. It is a species that is very difficult to find in nature and a very fragile organism. Like other amphibians, we cannot alter their habitat.



3 Using rainwater or reusable water to irrigate the garden, garden, etc.



8 Not releasing animals from home, or move wild animals from some ponds or streams to others.



4 Keeping streams and ponds free of waste.



9 Driving at a low speed on Montseny's tracks and roads as well as when cycling and watching out for animals that can be run over, especially when it rains.



5 Avoiding getting into streams.



10 Taking care of nature when we make us of natural resources such as wood or water.



The Montseny newt, as species that is unique in the world and which is of greatest conservation need, can become a trademark for Montseny's Natural Park and Biosphere Reserve



**Diputació
Barcelona**



Diputació de Girona



**Generalitat
de Catalunya**



**Generalitat de Catalunya
Forestal Catalana, SA**



Information:

Montseny Natural Park Office. Masia Mariona
Ctra. BV-5119, km 2.5 (Mosqueroles)
08479 Fogars de Montclús
Tel. 938 475 102

www.lifetritomontseny.eu
#LifeTritóMontseny

