Olm in captivity in a cave in Moulis France

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The cave- Lab in Moulis: More than 70 years old

- Created in **1948** by the French government (National Center for Scientific Research)
- **A lab in a cave** to breed cave species

↳ To get more individuals

↳ Observe all stages of development

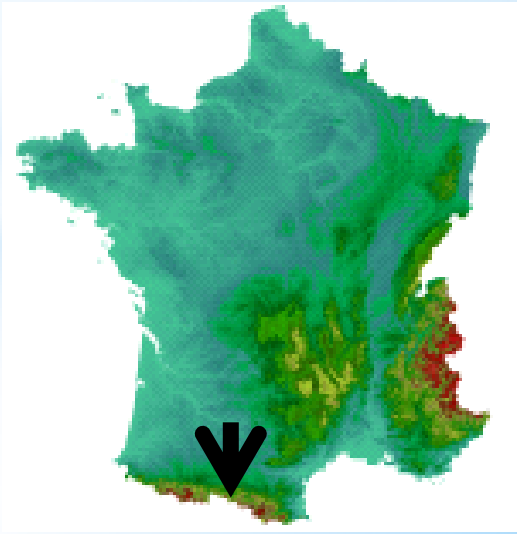
↳ Make experimentation

- In the Pyrenees, a hot spot of cave biodiversity

Why choosing *P. anguinus* ?

<u>World</u>: ~ 7000 cave species

~ 100 cave Fish all in tropics (sub-tropics)
8 cave amphibians
↳ 8 newts
↳ 7 in America, 1 in Europe (*P. anguinus*)

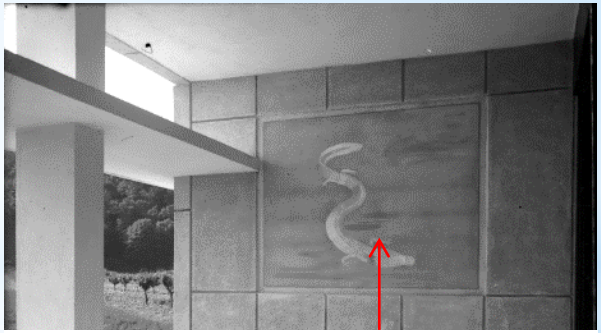


How and when ?

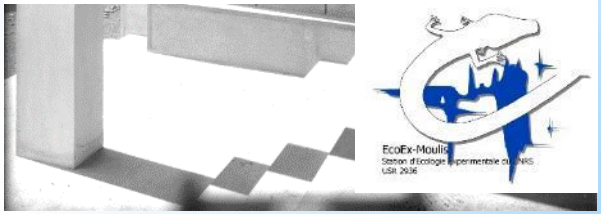
- Native from the Karst system boarding Adriatic sea

- Founders of the Moulis breeding from successive imports from the Piuka cave river in Slovenia from 1952

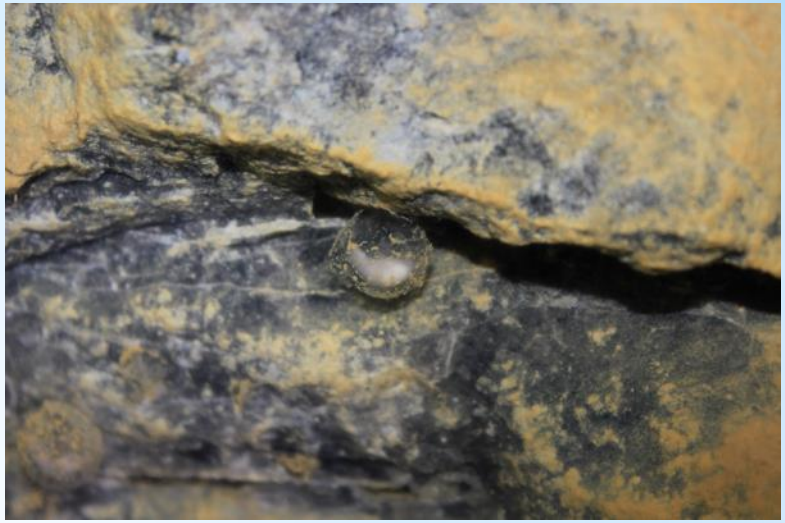
- settled in the cave of Moulis in cement ponds full by water pumped in a subterranean river



Become the lab symbol for 60 years

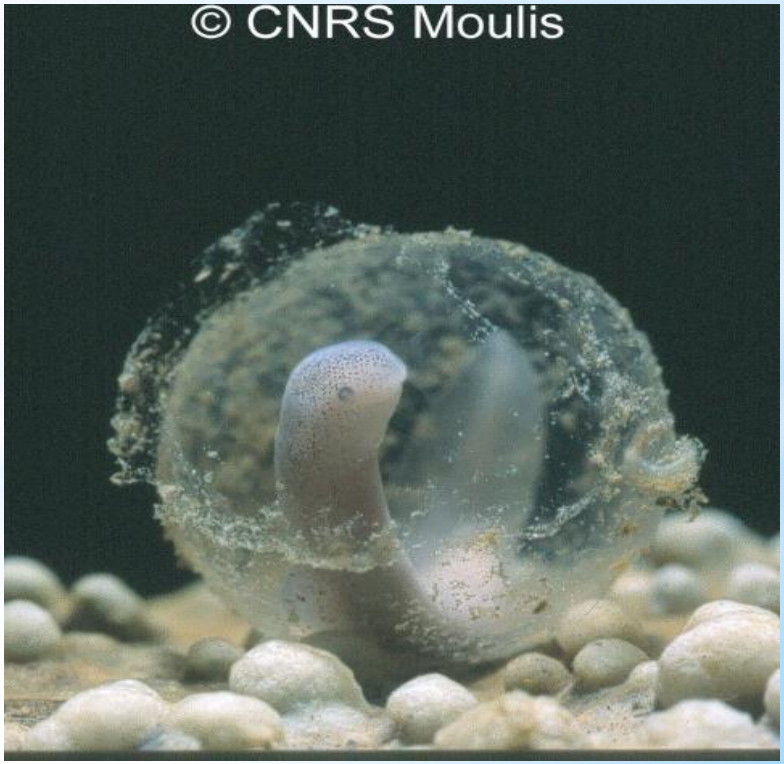


A successful attempt



- ✓ First eggs in 1954
- ✓ First hatchings in 1959
- ✓ Since, more than 150 eggs-layings being more than 4500 eggs

☞ reproduction has still never been observed in nature

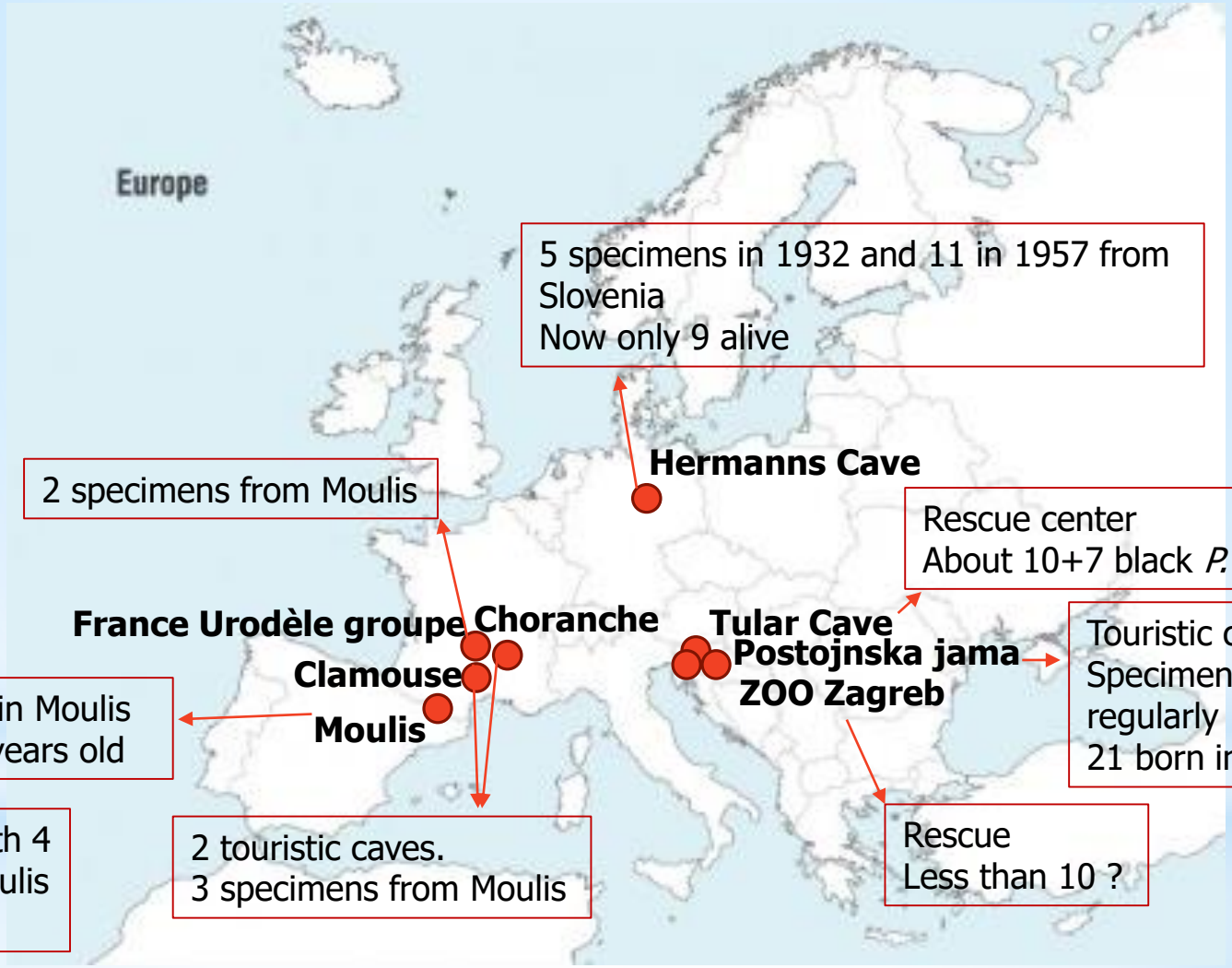


Elsewhere in Europe ?

☞ In captivity, the reproduction outside the Moulis cave is still rare

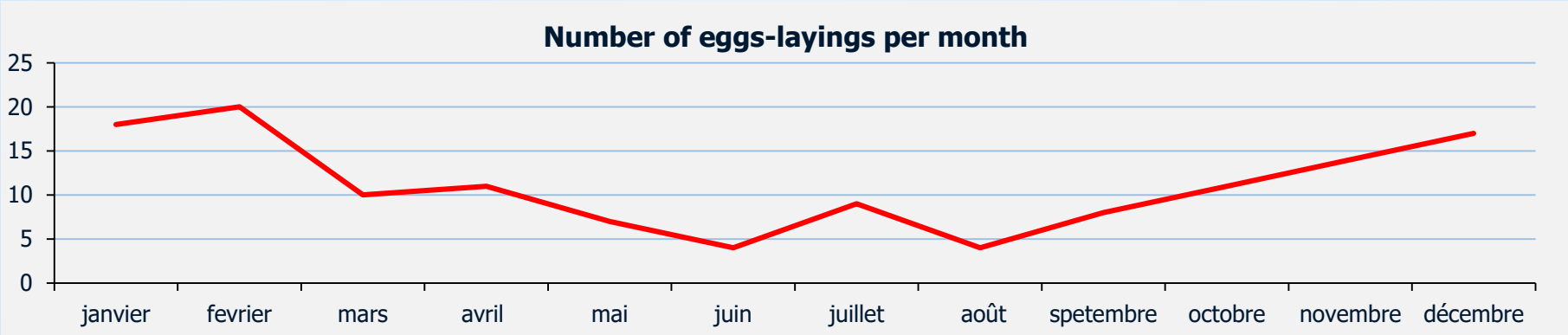
- ➢ once in 1998 in the Tular cave
- ➢ once in 2016 in the Postojnska jama

both in Slovenia


Europe
5 specimens in 1932 and 11 in 1957 from Slovenia
Now only 9 alive
Hermanns Cave
2 specimens from Moulis
Rescue center
About 10+7 black P. anguinus?
France Urodèle groupe
Choranche
Clamouse
Moulis
Tular Cave
Postojnska jama
ZOO Zagreb
Touristic cave
Specimens changed regularly
21 born in 2016
Currently 100 born in Moulis
Between 2 and 51 years old
Attempt in 2018 with 4 specimens from Moulis
All dead now?
2 touristic caves.
3 specimens from Moulis
Rescue
Less than 10 ?
Poema del Mar
Gran Canaria

Some knwonledge about olm's biology through the breeding

- Neotenic



- Reproduction unpredictable, not at the least seasonal

- Sexual maturity from 15-year-old in females, perhaps 11-year-old in males

- Only once reproduction per female per 12 years

- Up to 40 eggs per reproduction

- Only 35 % of eggs hatched, certainly because many are not fecundated

- Rate of survival of larvae and young very weak (50%)

- Higher in adults (0.98) except when epizootic episodes
  ☞In 1971, 25 % dead in the pool ☞ a second cave opened to reduce the risk

- Mean lifespan is estimated to 68 years and maximal 100 years.

- *Proteus* males and females indistinguishable by external morphological criteria when they are not sexually active

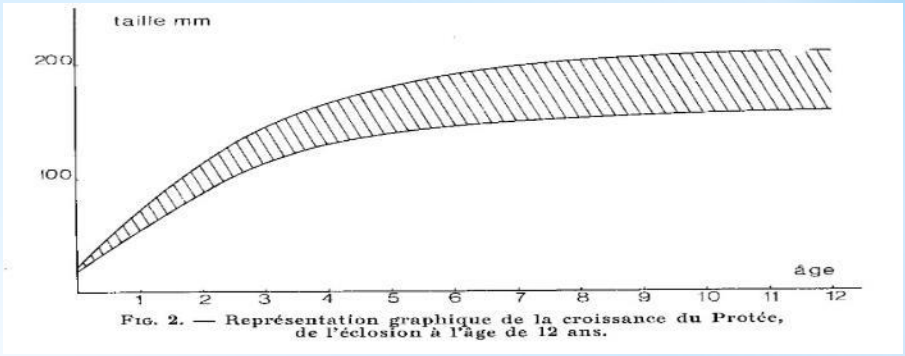


Fig. 2. — Représentation graphique de la croissance du Protée, de l'éclosion à l'âge de 12 ans.

- Slow growth, 20 cm in adults (20 years) up to 35 cm
- Few activity
- No rhythm of activity
- Slow metabolism
- Can survive several months (up to 4 years?) without been fed

Rather social but territorial when reproduces:

- Males become aggressive
- Females stay near their eggs until these hatch

Chase small various preys not only cave ones, well dectected by odors and movments

With little eyes when hatchs

Totaly blind when adult

Hates the light but can be observed under infra red

White in darkness , but pigmented under the light

ISSUE FOR THE FUTURE

☞**Managing the reproduction in captivity**

1. determine the sex of mature specimens maintained in captivity in European organizations

2. found a method to stimulate the reproduction (hormonal treatment ?)

3. plan the first genitors exchanges to equilibrate the sex ratio and the genetic within the pools widespread in Europe

4. develop a non-invasive technic to sex individuals earlier (e.g. molecular genetic) for long-range planning

THANK YOU FOR YOUR ATTENTION