

Batrachochytrium salamandrivorans endangers Europe's salamanders

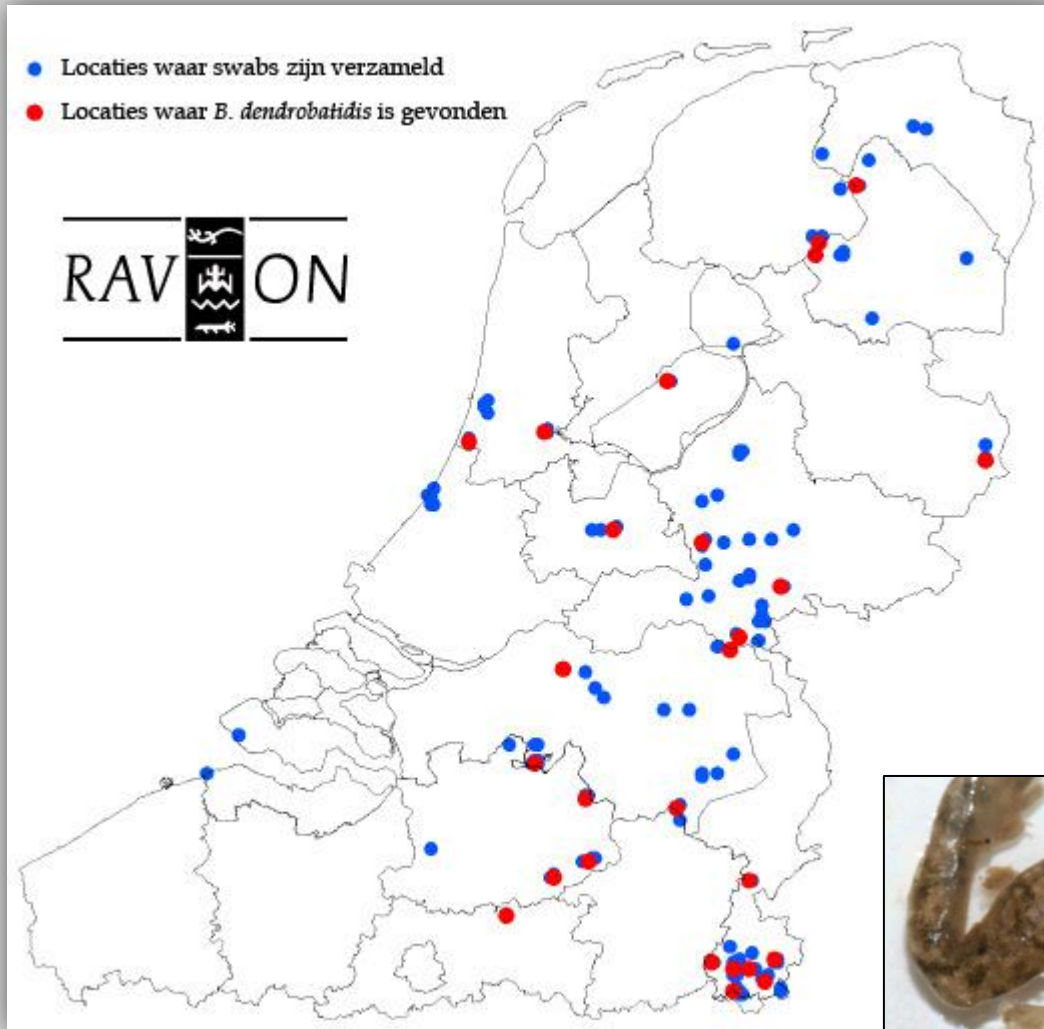


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Chytridiomycosis is an alarming model system for disease-driven extinction of a high proportion of the species richness of a regional fauna, even a significant proportion of an entire class of vertebrates

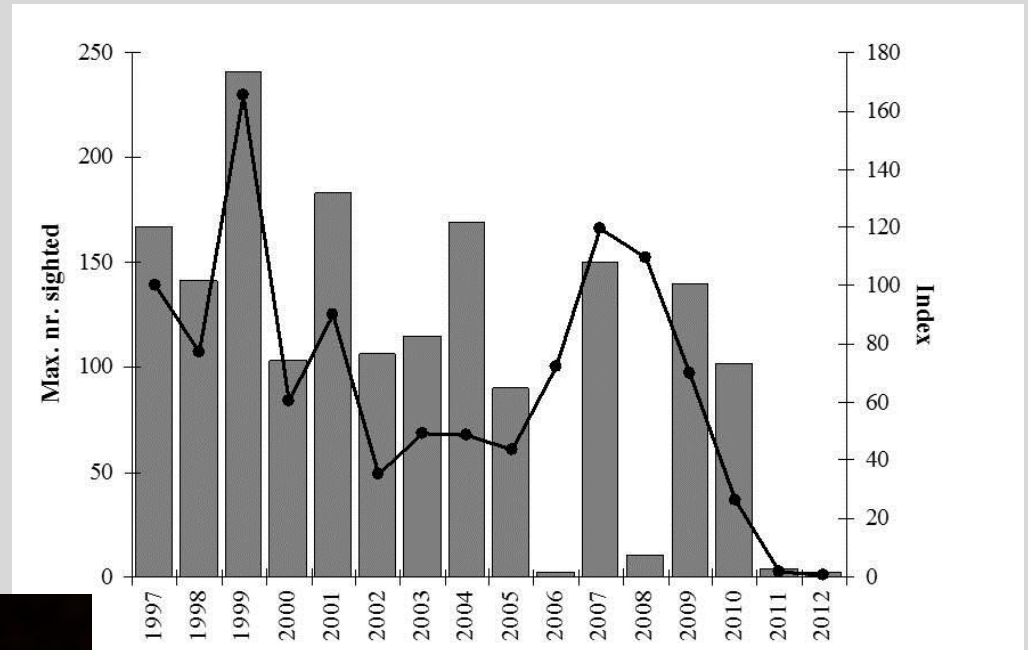


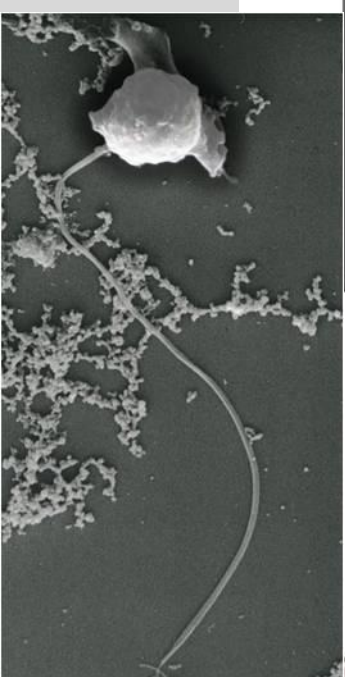
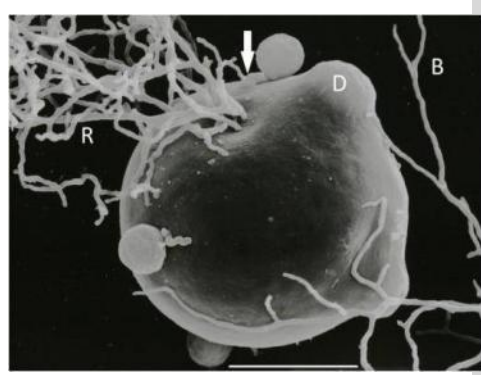
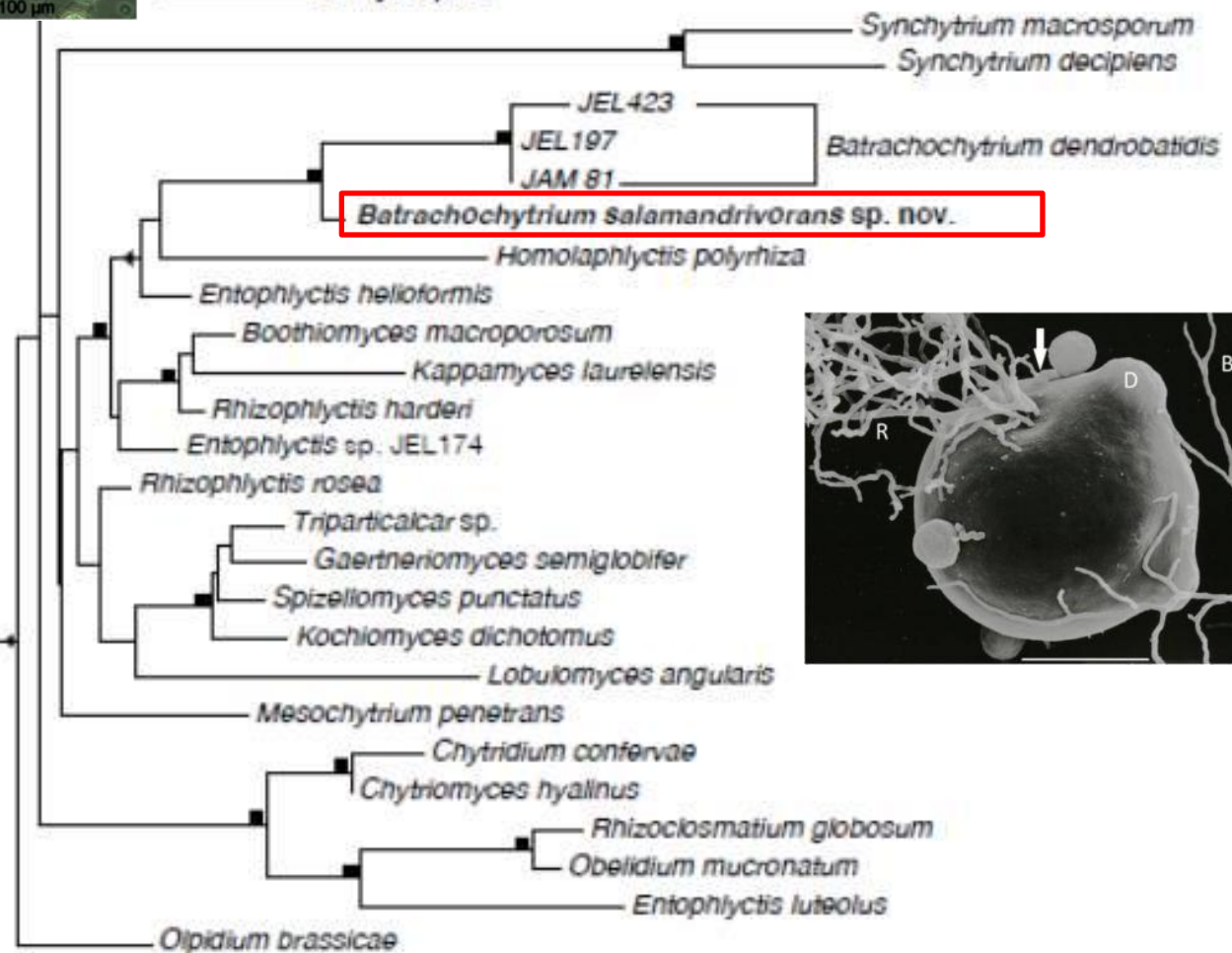
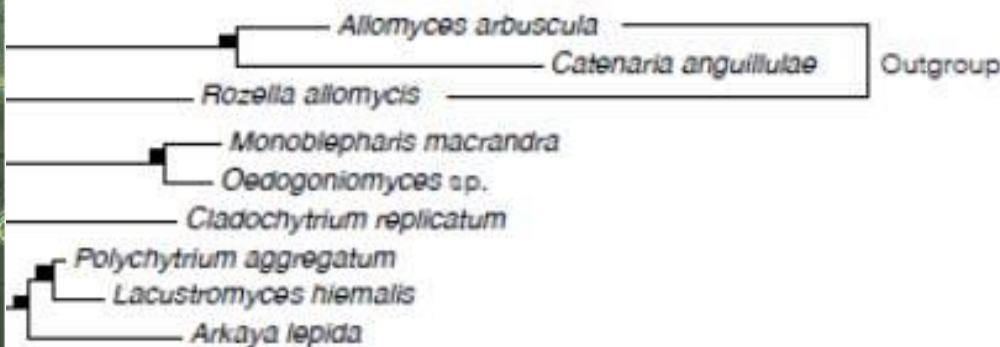


Salamandra decline in the Netherlands



Sharp decline since 2008





0.02

Chytridiomycosis:

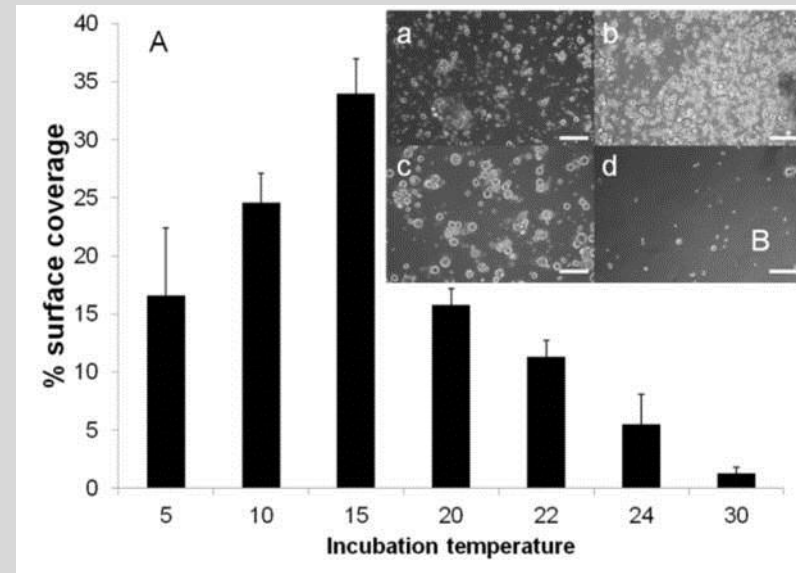
Batrachochytrium dendrobatidis

Batrachochytrium salamandrivorans

Lethal skin disease

Associated with population decline

Different thermal preferences



Host range of *B. salamandrivorans*

Experimental infection:



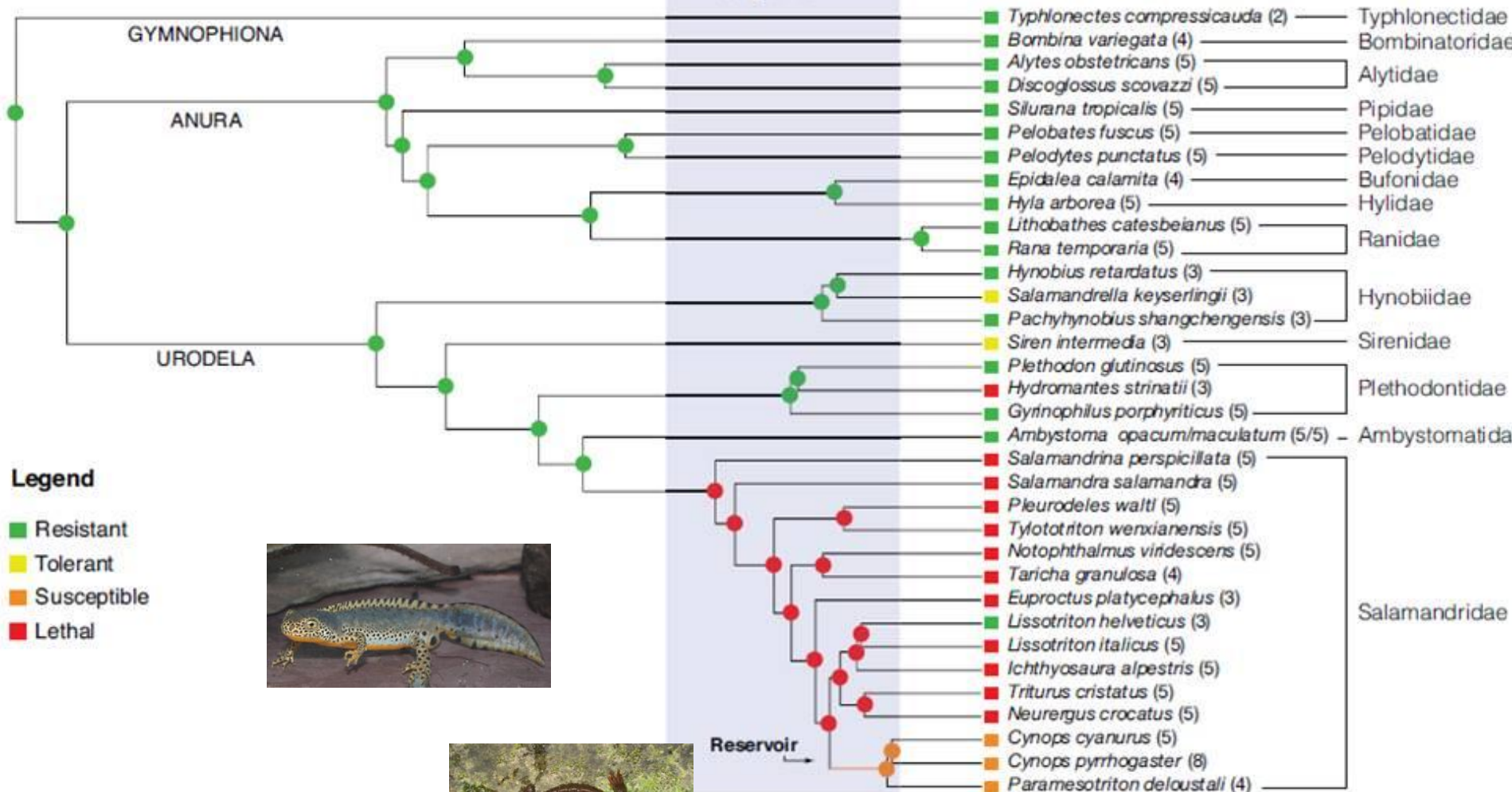
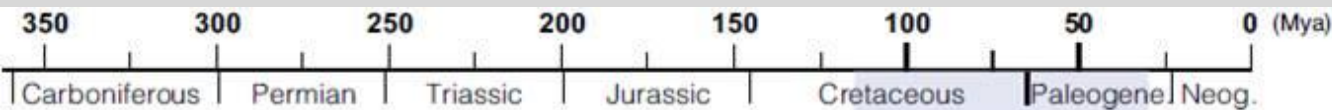
Amphibians exposed for 24 h to 5000 zoospores

10 anurans

24 urodelans

1 caecilian







Origin: Asia



- Asian species: less disease, no association with declines
- 4% of 432 wild Asian urodela positive for *B. salamandrivorans*
- Museum specimen: *Cynops ensicauda* 1861
- Trade in live amphibians (2 positive in 2010)

Globalization and lack of biosecurity:
implications for biodiversity

Chytridiomycosis: clinical signs

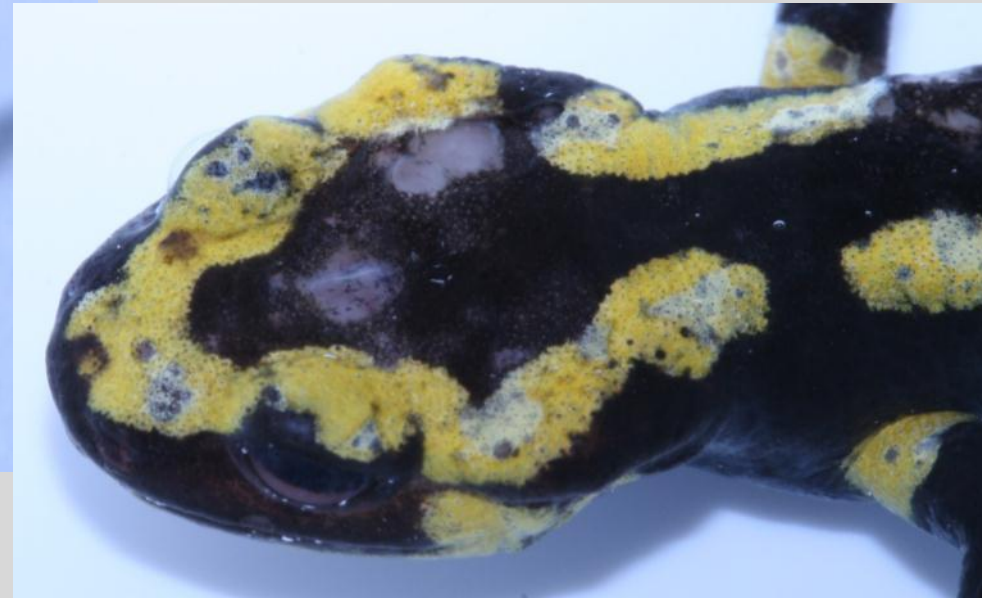
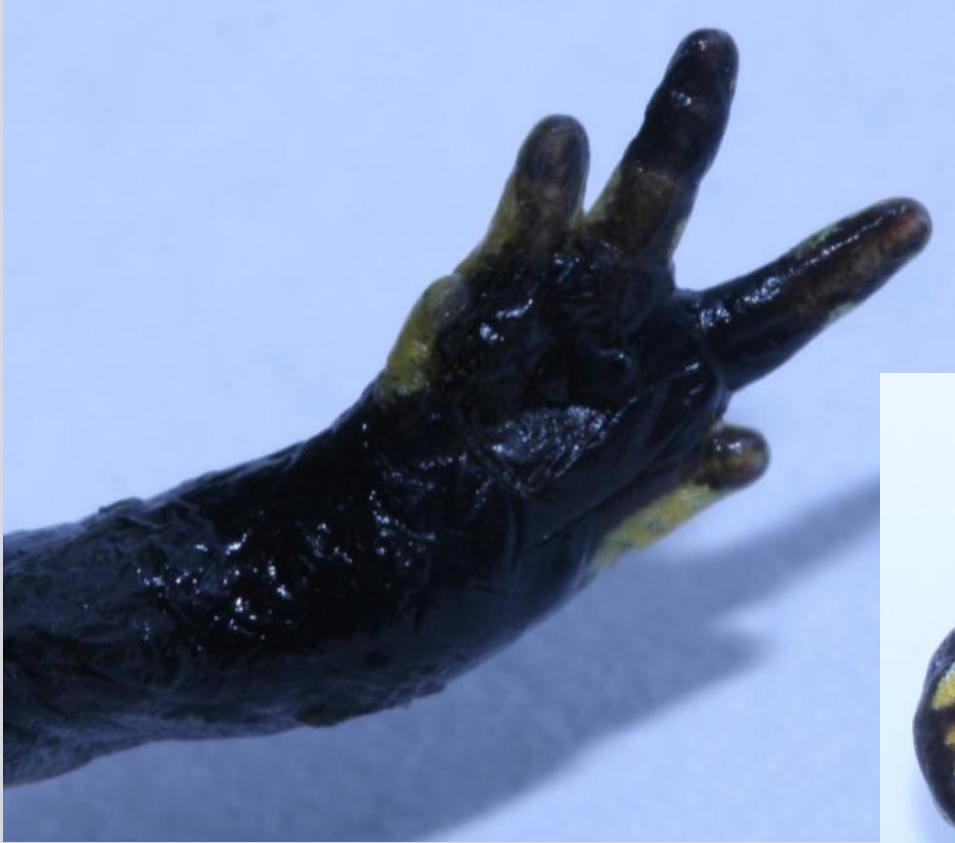
B. salamandrivorans: skin ulcerations



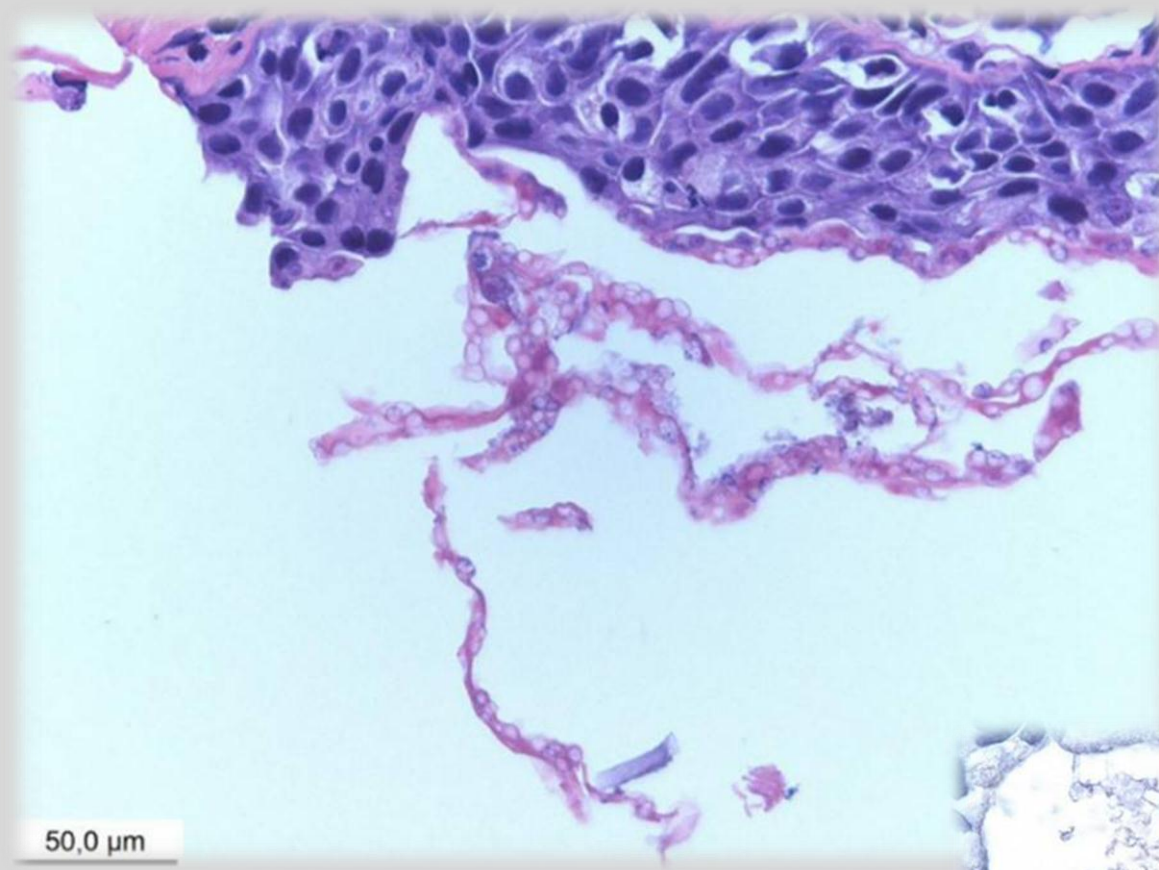
B. dendrobatidis

- Lethargy
- Weakness
- Cutaneous erythema
- increased skin shedding
- Acute death

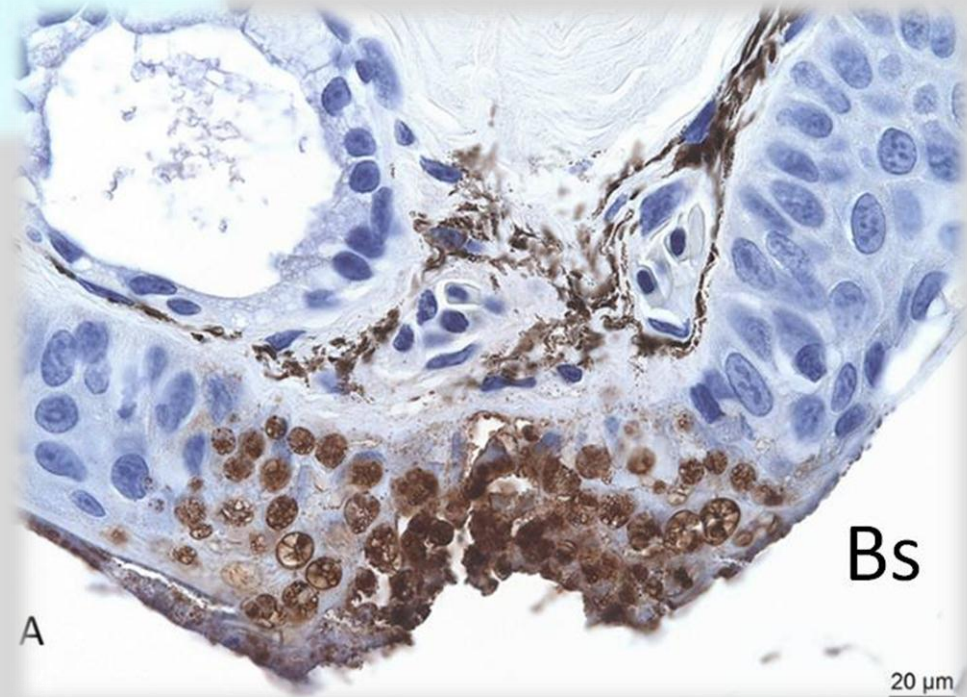
Clinical symptoms



Histopathology



50,0 μm



A

Bs

20 μm

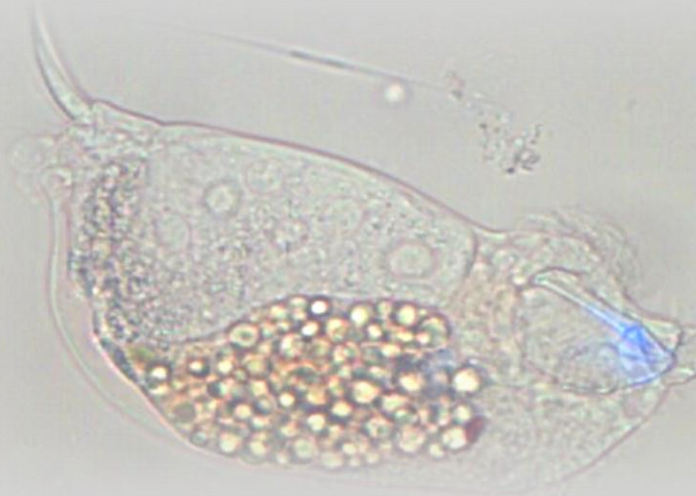
Diagnosis

- Clinical signs
- Histopathology
- qPCR
- Other causes...



Mitigation

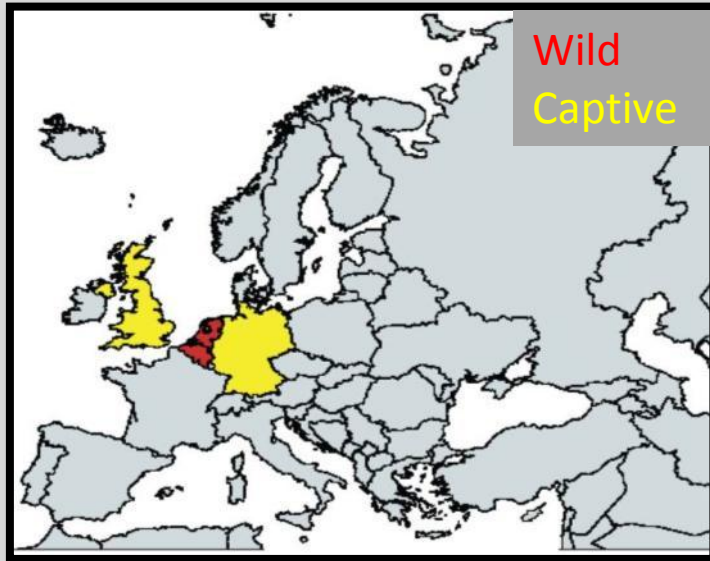
- Captives
 - Easy
 - 10 days at 25°C
 - Voriconazole + polymyxin + 20°C
- Wild
 - ?



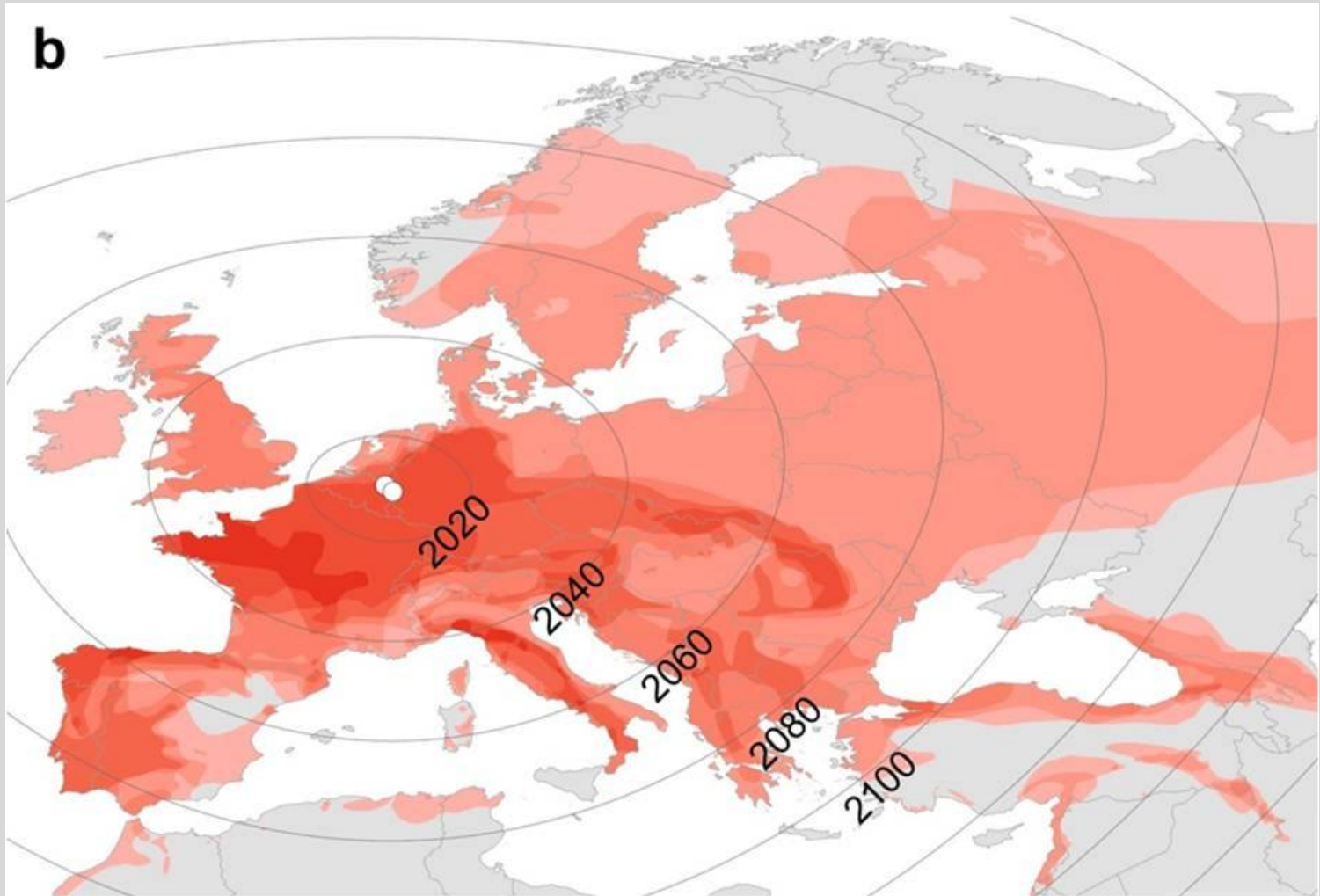
Current situation in the wild



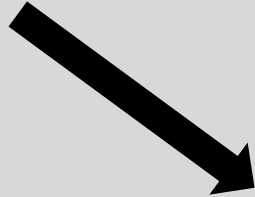
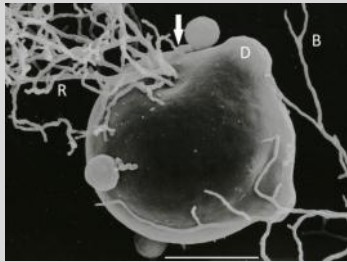
Current situation: Europe



What to expect: worst case

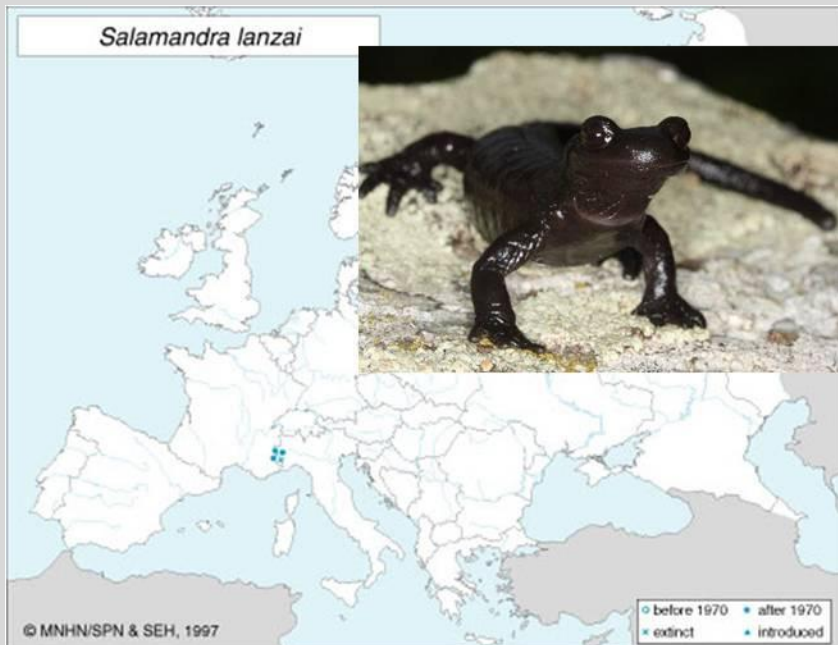


But...



B. salamandrivorans threatens European salamanders

- Develop “action plans” in case of outbreak
- Prevent introduction in *B. salamandrivorans* free regions



Thank you for your attention

