Batrachochytrium salamandrivorans (Bsal):

Scientific and technical assistance concerning the risk of survival, establishment and spread Bsal in the EU (Art.31)

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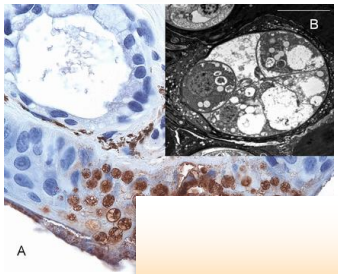
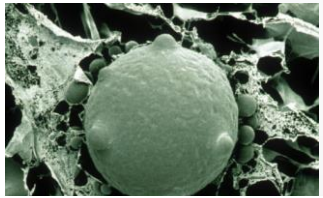
efsa
European Food Safety Authority

BACKGROUND

- High mortality in salamanders in some MSs (e.g. NL, BE)
- A new hazard was isolated and characterised in 2013 from a declining population of fire salamanders (NL)
- Bsal has been identified in wild (NL, BE) and kept (DE, UK) populations of salamanders





Batrachochytrium salamandrivorans
(Bsal)

TERMS OF REFERENCE

In accordance with Article 31 of Regulation (EC) No 178/2002. the Commission asks EFSA to provide scientific and technical assistance concerning:

ToR-1: Assessment of the **potential of Bsal to affect the health of wild and kept salamanders** in the Union;

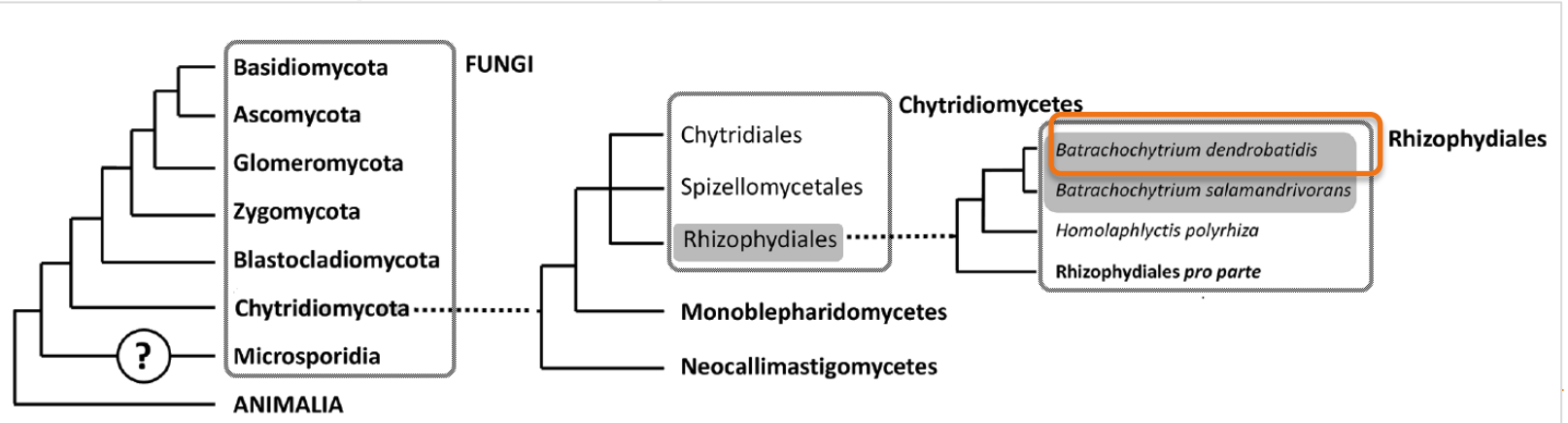
ToR-2: **Effectiveness and feasibility of a movement** (including intra-EU trade and introduction from non-EU countries) **ban** of traded salamanders, including both Asian and non-Asian species;

ToR-3: The **validity, reliability and robustness** of the available **diagnostic methods** for the detection of Bsal;

ToR-4: Possible alternative methods and **feasible risk mitigation measures to ensure safe international and EU trade** of salamanders and their products.

INTRO

- Defining the target population
  - Order Caudata
  - Nine families (3 in the EU), 703 species (reported in 2016)
  - Including newts
- Understanding the pathogen



DATA & METHODOLOGIES TO APPROACH THE MANDATE

- Extensive literature review
- Information from literature for narrative description and assessment of the TORs

ToR-1 (causal relationship Bsal – disease/mortality of salamanders)

- Critical appraisal of 2 studies that allow assessing if a causal relationship exists (to evaluate the risk that results are biased)

ToR-2 (movement bans)

- Analysis of available official data of traded salamanders
- Assessment of main factors affecting feasibility and effectiveness of movement bans (intra-EU and from non-EU) of traded salamanders

TOR-3 (diagnostic tests)

- Assessment of the validation of the duplex real-time qPCR against the stages outlined in the OIE Manual of Diagnostic Tests for Aquatic Animals (2016)

ToR-4 (risk mitigation measures)

- Assessment of relevance and feasibility of available risk mitigation measures to ensure safe international and EU trade of salamanders and by-products

MAIN CONCLUSIONS: TOR-1

Assessment of the potential of Bsal to affect the health of wild and kept salamanders in the Union:

- Based on the currently available evidence, it is likely that **Bsal is a sufficient cause for the death of at least one susceptible species**, *Salamandra salamandra*, both in the laboratory and in the wild.
- Despite small sample sizes, the experimental evidence to date further indicates that **Bsal is associated with disease and death in 12 European and in 3 Asian salamander species**, and is associated with **high mortality rate outbreaks** in kept salamanders.
- Experimental infection by Bsal was successful in **individuals of at least one species pertaining to the families Salamandridae, Plethodontidae, Hynobiidae and Sirenidae**

MAIN CONCLUSIONS: TOR-2

Effectiveness and feasibility of a movement (including intra-EU trade and introduction from non-EU countries) ban of traded salamanders, including both Asian and non-Asian species:

- The **effectiveness** of a movement ban is mainly dependent on the **import volumes, possibility of Bsal to remain viable outside susceptible/tolerant species** (e.g. fomites, travel boxes, etc.) and the **capacity to limit illegal movements**.
- The **feasibility** of a movement ban mainly depends on the **import volumes**.
- Should a movement ban be considered and considering the complexity of the taxonomy as well as the lack of evidence related to all the species, **a movement ban at the level of taxonomic order** is likely to be both more effective and more feasible than a species-specific ban.

MAIN CONCLUSIONS: TOR-3

The validity, reliability and robustness of the available diagnostic methods for the detection of Bsal:

- The validation of the **duplex real-time qPCR has completed the first 2 validation stages, but not the third stage** as foreseen in the OIE guidelines.
- Based on the estimates that current data lead to, it results that: (i) **the test is not suitable for prevalence studies**; (ii) the **test could fail in detecting infected animals**; (iii) the **test could still fit for a freedom from disease framework**, although a safe approach would imply a considerably high sample size. These considerations are based on and due to the statistically **limited sample size used in the validation process and do not necessarily reflect the actual performance of the test**.

MAIN CONCLUSIONS: TOR-4

Possible alternative methods and feasible risk mitigation measures to ensure safe international and EU trade of salamanders and their products:

- **Quarantining** salamanders, (ii) **enacting legislation** that requires testing of the animals to demonstrate freedom from Bsal, before movement can take place, (iii) **restricting salamander movements**, (iv) **tracking all traded species**, (v) **hygienic procedures/biosecurity measures** before and during movements, and (vi) **increasing public awareness**, are relevant and feasible measures for ensuring safe intra-EU and international trade.

- Regarding quarantining salamanders, it is **possible to estimate the sample size needed in order to assess, with a 95% confidence**, if the consignment is free from Bsal, based on the number of animals included in the consignment and on the DSe of the test used. Assuming a worst case scenario with a DSe equal to 0.5, (i) the size of the consignment cannot be smaller than 432, (ii) all animals should be tested and (iii) all test results should be negative. Different parameters and scenarios can be set according to the needs.

- Animal by-products derived from salamanders that have been **heat treated** at 25° C for at least 10 days or **desiccated** are not considered relevant for the spread of Bsal to the salamander populations in the EU.

EFSA'S SCIENTIFIC REPORT ON BSAL - ART. 31

- Approved on the 21st of February 2017/ON-4739
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