# POLICY FILE

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| van | Natuurpunt & Natagora | aan | |
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## Justification and legal ground for required policy actions against the pathogen fungus Batrachochytrium salamandrivorans

Recently, scientist discovered a pathogenic fungus from Asia that eats the skin of salamanders and newts (aquatic salamanders). They die shortly after they get infected.

The fungus, called *Batrachochytrium salamandrivorans* (Bsal in short), killed 99.9% of the Dutch population of fire salamanders in a short period of time. Bsal-infected salamanders were ever since discovered in three other European countries: Belgium, Germany and the UK. If no measures are taken, our salamanders may be extinct within 25 to 50 years.

Emergency action plans, funding for research, monitoring programs and trade restrictions are urgently needed, especially in high risk areas, such as Belgium.

**This policy file contains the justification and legal grounds for the required policy actions.**

### 1. *Batrachochytrium salamandrivorans*

*Batrachochytrium salamandrivorans* (Bsal) is a pathogen fungus mainly infecting salamanders; not frogs or toads. The fungus causes the chytridiomycosis disease. The disease occurs in the form of lethal skin infections. The skin literally is eaten away. The disease is very contagious and is easily transmittable between different salamander species.

In Belgium one species of salamanders and four species of newts (aquatic salamanders) are found: Alpine newt, Palmate newt, Smooth newt, Great crested newt and fire salamander. Only the Palmate Newt seems to be less sensitive for this disease until now.

The fungus was discovered by the research group of the Ghent University. It was first identified in 2012 in a fire salamander population in the Bunderbos in the Netherlands. The disease caused a 99.9% mortality at that place!

In 2013, the first Belgian victims were found in Eupen. Subsequently, infections were discovered in Robertville (April 2014), Liège (Januari 2014) and Duffel (May 2015). Both in Germany and in England, salamanders in captivity got infected.

The distribution of Bsal in Europe can be followed here. In 2015, a scientific research article about the fungus was published.

Bsal is closely related to the better known pathogen fungus B. dendrobatidis, described for the first time in the late 90's. Bd nowadays infects more than 442 species of amphibians

worldwide in 49 countries on all continents (except for Antarctica, where no amphibians occur). The distribution can be followed on the website www.bd-maps.net.

## 2. Introduction pathways

### 2.1 Import

Bsal has been present in Japan since at least the mid-19th century[1]. Infections in nature have been recorded on the genera *Paramesotriton, Cynops, Tylototriton* (all of them Salamandridae) and *Salamandrella* (Hynobiidae).

Strikingly enough, Bsal has not the same dramatic consequences on Asiatic salamanders: some of them fall ill indeed, but they often do not die and they can live with the fungus for a long time. This could indicate that in Asia, the fungus has evolved along with the local salamanders. It is highly probable that Bsal travelled to Europe on an Asiatic salamander specimen before 2008. We will never find out how the fungus finally reached our indigenous salamanders.

The main pathway for the global spread of Bsal is the international trade in salamanders (Martel et al. 2014). The introduction of Bsal into mainland Europe is linked with the commercial trade of Asian salamanders (Cynops spp.) from East Asia, particularly Thailand, Vietnam, and Japan (Martel et al. 2014). Eggs and gametes are not expected to be pathways. However, salamanders that have been identified as carriers, whether live or dead, are expected to transmit Bsal through their skin, which contains keratin.

There is no information available on trade in Europe, but according to experts the trade is comparable to the trade in the United States, which was recently described by Fish and Wildlife Service (https://www.gpo.gov/fdsys/pkg/FR-2016-01-13/pdf/2016-00452.pdf):

"*Trade in wildlife occurs on a global scale, and amphibians are one of the most commonly traded animals (Smith et al. 2009). More than 52,149,000 documented amphibians were imported into the United States from 2004 to 2014, based on the Service's LEMIS data (USFWS OLE 2015). Salamanders comprised 2,504,590 (4.8 percent) of the total imports of amphibians (USFWS OLE 2015). The 2004 to 2014 LEMIS dataset should be considered as a conservative estimate because many import records identified the animal being imported only as a member of the Class Amphibia (rather than identifying it to species or genus level). In addition, incorrect salamander identifications to genus and species level appear to have commonly occurred in reporting to LEMIS (USFWS OLE 2015). LEMIS data shows that 65 percent of imported salamanders came from captive sources and 35 percent were from wild sources (USFWS OLE 2015). The LEMIS data recorded only 83 percent of declared imports at the species level, whereas 17 percent were recorded to the genus level (USFWS OLE 2015).*

*The four salamander genera most commonly imported into the United States from 2004 to 2014 were Cynops, Paramesotriton, Triturus, and Pachytriton (USFWS OLE 2015). Cynops, Triturus, and Paramesotritonare three genera that can serve as carriers for Bsal (Martel et al. 2014). Of the 20 genera listed by this interim rule, 15 have been traded over the 11 years. Salamanders that can carry Bsal have comprised 95 percent of imported salamanders.*

*The species with the highest number of imports into the United States from 2004 to 2014 was the Oriental fire belly newt; this species comprised 54 percent of the total number of imported salamanders (USFWS OLE 2015). Twelve species of salamanders that are native to the United States were also imported into the United States from other countries from 2004 through 2014 (USFWS OLE 2015)."*

### 2.2 Release of captive salamanders in the wild

Many amphibians and reptiles first kept as pets are released by their owners into the wild either intentionally or accidentally (Kraus 2009, Krysko et al. 2011). But the disease can also

[1] Martel, A., M. Blooi, C. Adriaensen, P. Van Rooij, W. Beukema, M. C. Fisher, R. A. Farrer, B. R.Schmidt, U. Tobler, K. Goka, K. R. Lips, C. Muletz, K. R. Zamudio, J. Bosch, S. Lotters, E. Wombwell, T. W. J. Garner, A. A. Cunningham, A. Spitzen-van der Sluijs, S. Salvidio, R. Ducatelle, K. Nishikawa, T. T. Nguyen, J. E. Kolby, I. Van Bocxlaer, F. Bossuyt & F. Pasmans. Recent introduction of a chytrid fungus endangers Western Palearctic salamanders. Science, 2014; 346 (6209): 630 DOI: 10.1126/science.1258268.

spread by other pathways such as through the release of infected water from an infected tank into the wild.

The presence of Bsal in European populations in captivity has been proven by three positive specimen samples in captivity (*Tylototriton vietnamensis*). Two of these specimens were imported from Asia in 2010. Infected salamanders in captivity have been found in Germany and the UK.

As no structurally organized testing procedures exist, we don't know how many specimens in captivity have been infected. By way of illustration: if out of more than 2 million specimens of *Cynops orientalis* imported into the United States over the past 10 years, only one single Bsal infected specimen was set out in a garden pond, this is sufficient to start an infection breakout.

### 2.3 Between populations

A third introduction pathway are activities near infected populations. This includes a wide range of potential activities: recreation, forestry, scientists,... The fungus is probably spread by moving materials (boots, ) that have been in contact with the fungus, by spreading infected mud or water, or by moving infected amphibians.

## 3. Distribution in Western Europe

Bsal was discovered in 2012 in a fire salamander population in the Bunderbos in the Netherlands. There, the disease caused a 99.9% mortality[2].

In 2013, the first Belgian victims occurred in Eupen. Subsequently, infections were discovered in Robertville (April 2014), Liège (April 2015) and Duffel (May 2015). Both in Germany and in England, the disease occurred in salamanders in captivity[3] [4].

Picture 1 shows the distribution of the fungus. Updates on distribution can be followed through:
http://www.ravon.nl/Diensten/Onderzoek/Ziekteendoodsoorzaak/Bsal/tabid/3819/Default.aspx#2.

[2] Spitzen – van der Sluijs et al., 2013. Rapid enigmatic decline drives the fire salamander (*Salamandra salamandra*) to the edge of extinction in the Netherlands. Amphibia Reptilia 34: 233-239.
[3] Bletz et al. 2015. First detection of the emerging fungal pathogen *Batrachochytrium salamandrivorans* in Germany. Amphibia-Reptilia (Impact Factor: 0.89). 10/2015; DOI: 10.1163/15685381-00003008.
[4] Andrew A. Cunningham et al. Surveillance: Emerging disease in UK amphibians. 176 Veterinary Record 18, 468 (2015).


Picture 1: Current distribution of Bsal in Europe. From: http://www.ravon.nl/Diensten/Onderzoek/Ziekteendoodsoorzaak/Bsal/tabid/3819/Default.aspx#2.

## 4. Legal grounds in European nature legislation

The European Union is due to take all necessary measures to preserve its indigenous salamander species.

The main goal of the **EU Biodiversity Strategy 2020** is halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss.

Following salamander and newt species are protected by the **Habitats Directive**:

**Annex II**

Salamandridae

- Chioglossa lusitanica
- Mertensiella luschani
- *Salamandra salamandra aurorae
- Salamandrina terdigitata
- Triturus cristatus

Proteidae

- Proteus anguinus

Plethodontidae

- Speleomantes ambrosii
- Speleomantes flavus
- Speleomantes genei

Speleomantes imperialis

Speleomantes supramontes

**Annexe IV**

CAUDATA

Salamandridae

Chioglossa lusitanica

Euproctus asper

Euproctus montanus

Euproctus platycephalus

Salamandra atra

Salamandra aurorae

Salamandra lanzai

Salamandra luschani

Salamandrina terdigitata

Triturus carnifex

Triturus cristatus

Triturus italicus

Triturus karelinii

Triturus marmoratus

Proteidae

Proteus anguinus

Plethodontidae

Speleomantes ambrosii

Speleomantes flavus

Speleomantes genei

Speleomantes imperialis

Speleomantes italicus

Speleomantes supramontes

## 5. Call for action from the Bern Convention committee

The standing committee of the Bern Convention was the first official body to acknowledge the importance and possible threat of Bsal. In december 2015 this permanent committee of the Council of Europe approved a recommendation[5] on Bsal thereby urging the contracting parties to take action.

5 https://wcd.coe.int/ViewDoc.jsp?id=2332303&Site=&BackColorInternet=B9BDEE&BackColorIntranet=FFCD4F&BackColorLogged=FFC679

The contracting parties are strongly recommended to develop emergency action plans, to invest in research in biology and mitigation of the disease, to set up monitoring programs, and to impose trade restrictions and pre-import screenings as a preventive measure. Especially in areas of high risks such as regions with endemic populations or near disease outbreaks the committee urges to set op monitoring programs and trade restrictions.

The next actions should be carried out immediately:

- At EU level, Bsal should be listed as a relevant disease in the EU animal health law. Furthermore, emergency action plans should be set up and more investments in research are necessary.
- At national level in Belgium, an import ban has to be issued immediately for all Asiatic salamander and newt species; this as a temporary key preventive measure, based on art. 5 of the Belgian Nature Conservation law.
- At regional level in Belgium, surveillance has the highest priority.

## Special focus on Animal health legislation

On June the 1st 2015, the European Parliament and the Council reached an agreement on the Commission's proposal[6] under the common legislative procedure for the animal health legislation. The text is now to pass the further procedure.

Part 1 of this legislation lists the animal diseases for which the legislation applies. It includes among other items:

- prioritization and categorization of EU-relevant animal diseases;
- obligations for the fast detection, notification, monitoring, removal, and for achieving a disease-free status;
- public awareness and control;
- registration and approval of key actors and tracing introduction routes;
- emergency action plans

The presence of a disease in the EU is not a legal ground to exclude this disease from the regulation.

**We ask to include Bsal in the animal health legislation as a disease of Union concern.**

## Special focus on trade restrictions

The animal health legislation is being reviewed at this time. Once approved, relevant diseases for Europe must be listed within 5 years (art. 253 of the proposal).

**As a preventive measure, an import ban for Asian salamanders and newt species should be established.**

The **legal basis** for this prohibition in Belgium is article 5 of the Belgian Nature Preservation Law: (courtesy translation)

"*Without prejudice to the stipulations of the hunting legislation, veterinary police and plant preservation laws, or to the obligations resulting from international treaties, the King can take measures in order to:*

*1° regulate, suspend or prohibit the import, export and transit of exotic plant species and of exotic animal species or their carrions;*

[6] http://ec.europa.eu/food/animals/docs/ah-law-proposal_en.pdf

*2° impose conditions for the import, export or transit of exotic plant species and exotic animal species or their carrions, in terms of prior approvals, authorizations, registrations or notifications, and to establish the conditions for granting, suspending or withdrawing authorizations or registrations;*

*3° regulate the setting free of exotic animal species, or their hosting in wildlife parks."*

Taking the European Free Market Principle into account, such a measure can only be justified if it can be proven that the measure is appropriate, necessary and proportionate and that there are no alternatives available.

This is underpinned in the following paragraphs.

See also https://www.gpo.gov/fdsys/pkg/FR-2016-01-13/pdf/2016-00452.pdf for an extensive argumentation of the recently established import ban in the United States.

The purpose of the measure is to prevent Bsal from infecting Belgian salamander populations. Three introduction ways of Bsal are known: (1) import of Asiatic salamanders, (2) spill overs from private collections and (3) spreading among wild populations.

The proposed measure, an import prohibition, is meant to eliminate the first introduction way. This introduction way is scientifically proven by Martel et al.2014 and by Bletz et al. 2015 and is especially necessary as temporary preventive measure.

This measure plays a major role pending a European approach under the animal health legislation. On very short term (25-50 years), a lack of actions could lead to halving, or even to the extinction of all salamander populations in the Benelux, and by extension in the rest of Europe. History and research shows that these infections can spread very quickly. The remaining populations (e.g. the fire salamander in Flanders) are small and vulnerable. One single infected salamander is enough to make a whole population extinct.
Salamanders furthermore play a key role in biodiversity.[7] The salamander species in Belgium are protected by European and regional legislations.

An import prohibition has an economic impact on the sector of animal commerce. It was not possible at this time to estimate the financial impact. But see above for estimates based on trade in the US.

In the long term, an import ban is expected to benefit the economy. Efforts to control or eradicate invasive species, and manage the costs they incur to society, once they have become established are generally recognized as being less effective and more expensive than efforts to prevent potentially invasive species from establishing in the first place (Leung et al.2002, Finnoff et al. 2007).

[7] Robert D. Davic & Hartwell H. Welsh Jr. On the ecological roles of salamanders. Annual Review of Ecology, Evolution, and Systematics 405-434 (2004).

## 6. Contact

**Natuurpunt** is a large scale volunteers' association protecting vulnerable and threatened nature areas in Flanders. The association counts over 6,000 volunteers organized in about 160 local divisions and takes care of over 21,000 hectares of Flemish nature in 500 different wildlife areas. The volunteers have a steering role. They take the initiative for the purchase and the management of wildlife areas, and for the public access to them. In order to give all Flemish people the opportunity to find rest and to experience natural beauty, the Natuurpunt volunteers organize thousands of activities: laying tracks, organizing guided family hikes, courses, excursions, film evenings etc. Thanks to the work of over 120 research groups and the web portal 'waarnemingen.be', the volunteers also monitor the health of the Flemish wildlife and they contribute to the scientific basis of the Flemish authority's nature preservation policy. The work of the volunteers is supported by 95,000 members of Natuurpunt.

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**Natagora** has the objective to preserve nature, more in particular in Wallonia and in Brussels. Its main goal is to stop the decay of biodiversity and to restore nature's good general condition, in balance with human activity.

By developing monitoring programs for species and by restoring rare habitats, Natagora already protected over 4,300 hectares of exceptional wildlife sites... They also organize discovery hikes and visits, child animations etc... and develop partnerships for projects of collective interest (climate change...).

Natagora is also a professional team, supported by hundreds of volunteering collaborators, passionate nature lovers, and thousands of sympathizers supporting the association.

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