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CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE
AND NATURAL HABITATS

Standing Committee

41st meeting
Strasbourg, 29 November - 3 December 2021

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REPLIES TO THE QUESTIONNAIRE FOR THE REPORTING BY PARTIES ON THE IMPLEMENTATION AT NATIONAL LEVEL OF RECOMMENDATION NO. 176 (2015) ON THE PREVENTION AND CONTROL OF THE *BATRACHOCHYTRIUM SALAMANDRIVORANS* CHYTRID FUNGUS

-COMPILATION OF NATIONAL REPORTS-

Document prepared by
the Directorate of Democratic Participation

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BELGIUM

QUESTIONNAIRE FOR THE REPORTING BY PARTIES ON THE IMPLEMENTATION AT NATIONAL LEVEL OF RECOMMENDATION NO. 176 (2015) ON THE PREVENTION AND CONTROL OF THE *BATRACHOCHYTRIUM SALAMANDRIVORANS* CHYTRID FUNGUS

Respondent Country

Belgium

1. Please report on the distribution of amphibian pathogens in your country and their prevalence within host populations.

Batrachochytrium salamandrivorans (Bsal) was first discovered in 2013 on indigenous dead Salamanders in the Eastern part of Belgium (Walloon Region), closed to the Netherlands and Germany. Further discovery of contamination of dead salamanders occurred respectively in the same region in 2014 and 2015. In April 2016 four Bsal positively tested salamanders were found dead in Dinant (70 km from the originally contaminated area). **At the end of 2019, Bsal was discovered in Olne, in the eastern part of Wallonia, close to the area where it was first discovered in 2013. Tens of animals were found dead and positively tested. In 2021, a suspect case was reported nearby but no dead salamander were found to test. In 2020, one suspect case was reported (picture of a dead salamander) but not tested, near La-Roche-en-Ardenne (around 40 kilometers south of the previous mentioned area).** In Flanders, two newts were found dead in 2015 in a pond near Antwerp. Both were Bsal infected. No other case has been found in Flanders. In Brussels, no case had been found up until 2017.

2. Did your country apply any new biosafety rule to field-work in breeding sites of fire salamander and newts, against known or emerging pathogens that may be introduced – inter alia – through animal trade, and against the *Batrachochytrium salamandrivorans* since your last report in 2017?

No new rule was developed or applied since 2017. The biosafety rules mentioned in our report from 2017 are still applied to all people that proceed to the temporary capture of amphibians.

3. Since the last reporting in 2017, has your country developed biosafety protocols for the treatment of amphibians affected by the *Batrachochytrium salamandrivorans*? If yes, please describe those and how these are communicated to other Contracting Parties to the Convention.

No

4. What science-based pre-import risk screening for infectious diseases of live animals in animal trade is carried out in your country? Please describe the risk screening system, reporting only changes/updates since your last report in 2017.

No new screening system since 2017.

5. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, please describe these, reporting only changes/updates since your last report in 2017.

Concerning commercial movements of salamanders, commission implementing decision (EU) 2021/361 of 22 February 2021 laying down emergency measures for movements between Member States and the entry into the Union of consignments of salamanders in relation to infection with *Batrachochytrium salamandrivorans* applies at Belgian level (till December 2022).

6. Are there any monitoring programmes put in place to control the possible further spread of the disease in your country and with a view to developing an early warning system for pan-Europe? Please describe those programmes, reporting only changes/updates since your last report in 2017. Please also specify if your country makes use of Amphibian Disease Laboratories for disease investigation.

The passive monitoring system is still in place in the Walloon Region. When a dead salamander is reported to the authorities, it is collected by the authority (when found) and sent to an official laboratory of University Ghent to test the presence of the pathogen.

7. If your country is in an area of high risk for salamander and newt populations (e.g. areas near disease outbreaks; areas with endemic species such as the Alps, the Pyrenees and islands in the Mediterranean), what are the specificities of the monitoring programmes put in place since 2017 and how is human induced spreading being restricted?

No new access restrictions were put in place since 2017.

8. Since your last report in 2017, has your country developed emergency action plans that will allow prompt responses should *Batrachochytrium salamandrivorans* approach high risk populations of salamander and newt species (e.g. endemic species in the Alps, the Pyrenees and islands in the Mediterranean)?

The national action plan adopted in 2017-is still applicable in Belgium (till 2022). It has been updated in 2020 with new information on i.a.:

-EU trade restrictions;

-a notification obligation to OIE;

-a new protocol on rapid response after notification of suspected Bsal cases on the Belgian territory.

9. How is research in the biology, epidemiology, and mitigation of *Batrachochytrium salamandrivorans* supported in your country? How is the conservation biology (demography and population dynamics) of European salamander and newt supported in your country? Please report only relevant updates since the last reporting of 2017.

No update on that subject since 2017.

10. Since 2017, what measures has your country taken to improve public awareness on the issue of amphibians' diseases and their impacts, as well as on means for prevention, biosafety and surveillance?

The websites mentioned in our last report in 2017 are still accessible to all citizens.

11. Since 2017, has your country implemented or initiated any research on the impact of climate change on amphibian and reptile species? If yes, please describe the research and inform on available results.

No

By completing this questionnaire, you are consenting to sharing your replies in a compilation working document publicly accessible on the Bern Convention website.

☒ *I agree*

☐ *I disagree*

CROATIA

QUESTIONNAIRE FOR THE REPORTING BY PARTIES ON THE IMPLEMENTATION AT NATIONAL LEVEL OF RECOMMENDATION NO. 176 (2015) ON THE PREVENTION AND CONTROL OF THE *BATRACHOCHYTRIUM SALAMANDRIVORANS* CHYTRID FUNGUS

Respondent Country

Croatia

2. Please report on the distribution of amphibian pathogens in your country and their prevalence within host populations.

As of yet, there have been no reported instances of amphibian pathogen detections. However, this is based on a small number of tests and a sporadic testing effort (The Faculty of Veterinary Medicine, University of Zagreb).

2. Did your country apply any new biosafety rule to field-work in breeding sites of fire salamander and newts, against known or emerging pathogens that may be introduced – inter alia – through animal trade, and against the *Batrachochytrium salamandrivorans* since your last report in 2017?

Rules laid down in the relevant EU legislation (COMMISSION IMPLEMENTING DECISION (EU) 2021/361 of 22 February 2021 laying down emergency measures for movements between Member States and the entry into the Union of consignments of salamanders in relation to infection with *Batrachochytrium salamandrivorans*) apply for trade; currently there are no information on entry/import of salamanders.

3. Since the last reporting in 2017, has your country developed biosafety protocols for the treatment of amphibians affected by the *Batrachochytrium salamandrivorans*? If yes, please describe those and how these are communicated to other Contracting Parties to the Convention.

4. What science-based pre-import risk screening for infectious diseases of live animals in animal trade is carried out in your country? Please describe the risk screening system, reporting only changes/updates since your last report in 2017.

Rules laid down in the relevant EU legislation (above) apply for trade.

5. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, please describe these, reporting only changes/updates since your last report in 2017.

Rules laid down in the relevant EU legislation (above) apply for trade.

6. Are there any monitoring programmes put in place to control the possible further spread of the disease in your country and with a view to developing an early warning system for pan-Europe? Please describe those programmes, reporting only changes/updates since your last report in 2017. Please also specify if your country makes use of Amphibian Disease Laboratories for disease investigation.

No monitoring programmes are currently being implemented.

7. If your country is in an area of high risk for salamander and newt populations (e.g. areas near disease outbreaks; areas with endemic species such as the Alps, the Pyrenees and islands in the Mediterranean), what are the specificities of the monitoring programmes put in place since 2017 and how is human induced spreading being restricted?

No monitoring programmes are currently being implemented.

8. Since your last report in 2017, has your country developed emergency action plans that will allow prompt responses should *Batrachochytrium salamandrivorans* approach high risk populations of salamander and newt species (e.g. endemic species in the Alps, the Pyrenees and islands in the Mediterranean)?

There is a general contingency plan under the authority of the directorate competent for the veterinary affairs of the ministry competent for agriculture, that can be adjusted allowing prompt response if needed.

9. How is research in the biology, epidemiology, and mitigation of *Batrachochytrium salamandrivorans* supported in your country? How is the conservation biology (demography and population dynamics) of European salamander and newt supported in your country? Please report only relevant updates since the last reporting of 2017.

The Faculty of Veterinary Medicine (University of Zagreb) is part of EU Network of Diagnostic Centres for performing tests for ranaviruses, Batrachochytrium dendrobatidis and B. salamandrivorans (http://bsaleurope.com/laboratories/). About 100 samples have been tested so far, taken mostly from wild *Proteus anguinus* and several *Salamandra* sp. – all were negative. Research into these diseases is not regularly financed – everything is project-based.

10. Since 2017, what measures has your country taken to improve public awareness on the issue of amphibians' diseases and their impacts, as well as on means for prevention, biosafety and surveillance?

Awareness is raised through lectures to students of the Faculty of Veterinary Medicine (University of Zagreb) and through student work. When issuing permits for research, catching and handling of amphibians, the ministry competent for nature protection prescribes the following requirement: - all equipment must be disinfected before and after use, taking into account all available examples of good practice, to prevent the transmission of diseases of amphibians, but also other organisms related to the aquatic environment.

11. Since 2017, has your country implemented or initiated any research on the impact of climate change on amphibian and reptile species? If yes, please describe the research and inform on available results.

No specific research has been initiated or implemented within the relevant period.

By completing this questionnaire, you are consenting to sharing your replies in a compilation working document publicly accessible on the Bern Convention website.

☒ *I agree*

☐ *I disagree*

CZECH REPUBLIC

QUESTIONNAIRE FOR THE REPORTING BY PARTIES ON THE IMPLEMENTATION AT NATIONAL LEVEL OF RECOMMENDATION NO. 176 (2015) ON THE PREVENTION AND CONTROL OF THE *BATRACHOCHYTRIUM SALAMANDRIVORANS* CHYTRID FUNGUS

Respondent Country

Czech Republic

3. Please report on the distribution of amphibian pathogens in your country and their prevalence within host populations.

The fungus *Batrachochytrium dendrobatidis* is broadly distributed, and was detected in most of the present amphibian species. The prevalence varies in host, time and geography. The main host species are frogs of genus *Pelophylax* (aprox. 20-30%) and toads of genus *Bombina* (10-20%). Chytridiomycosis does not cause mass mortalities and was not recognized as factor of population declines in Czechia. Despite ongoing surveys of several fire salamander populations and captive amphibians, *B. salamandrivorans* was not yet detected in the country, neither in captive nor wild amphibians. Ranavirus strains infecting amphibians were not yet detected in Czechia and no mortalities with ranavirosis symptoms were observed yet. The sampling and analyses targeted on ranavirus are however only opportunistic. Common frog *Rana temporaria* and agile frog *Rana dalmatina* with symptoms indicative of amphibian herpesvirus were observed on several occasions, the pathogen was however not yet confirmed by laboratory analyses.

2. Did your country apply any new biosafety rule to field-work in breeding sites of fire salamander and newts, against known or emerging pathogens that may be introduced – inter alia – through animal trade, and against the *Batrachochytrium salamandrivorans* since your last report in 2017?

None specific obligatory biosafety rules were applied, except those laid down by the Commission Implementing Decision (EU) 2018/320 and Commission Implementing Decision (EU) 2021/361. Any manipulation with individuals and habitat of *Salamandra salamandra*, or any other amphibian species, requires issued licence by the regional authority.

3. Since the last reporting in 2017, has your country developed biosafety protocols for the treatment of amphibians affected by the *Batrachochytrium salamandrivorans*? If yes, please describe those and how these are communicated to other Contracting Parties to the Convention.

Protocols for amphibian biosafety, pathogen surveillance and disease mitigation are being prepared as part of ongoing project "Conservation of amphibian biodiversity when emerging infectious diseases spread" SS01010233 funded by Czech Technological Agency by team of researchers from Czech University of Life Sciences (CULS), Prague, Veterinary University Brno (VETUNI) and State Veterinary Institute in Prague (SVI). The project finalisation is in Dec. 2022, but partial outputs are due in 2021. Stated goals are as follows: Complex guidelines on prevention and mitigation of invasive pathogens as part of amphibian biodiversity conservation according to the recommendations and obligations based on the EU legislative. It is aimed on appropriate state authorities (especially MeE, SVA, NCA CR) and parts for wildlife centres, zoos and amphibian breeders. Optimization of presently used detection methods (lab-based PCR, qPCR) and development and testing of methods (field-based pathogen detection, use of eDNA), that will allow fast and effective testing of

samples. Recommended methodology of sampling and pathogen detection aimed at wide range of potential end users (SVA, SVI, NCA CR, vets, retailers, zoos and other amphibian breeders).

4. What science-based pre-import risk screening for infectious diseases of live animals in animal trade is carried out in your country? Please describe the risk screening system, reporting only changes/updates since your last report in 2017.

The animal trade is minimal because of the covid-19 pandemic and because the measures introduced by the Commission Implementing Decision (EU) 2018/320 are difficult to follow by small scale breeders and importers (e.g. treatment of salamanders according to published protocols is not possible due to limited availability and cost of recommended medication).

5. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, please describe these, reporting only changes/updates since your last report in 2017.

Restrictions put in place by the following legislation:

Commission Implementing Decision (EU) 2021/361 of 22 February 2021 laying down emergency measures for movements between Member States and the entry into the Union of consignments of salamanders in relation to infection with Batrachochytrium salamandrivorans

Commission Implementing Decision (EU) 2018/320 of 28 February 2018 on certain animal health protection measures for intra-Union trade in salamanders and the introduction into the Union of such animals in relation to the fungus Batrachochytrium salamandrivorans (applicable until 20 April 2021), amended by Commission Implementing Decision (EU) 2019/1998

In general, also Regulation (EU) 2016/429 of the European Parliament and of the Council of 9 March 2016 on transmissible animal diseases and amending and repealing certain acts in the area of animal health ('Animal Health Law')

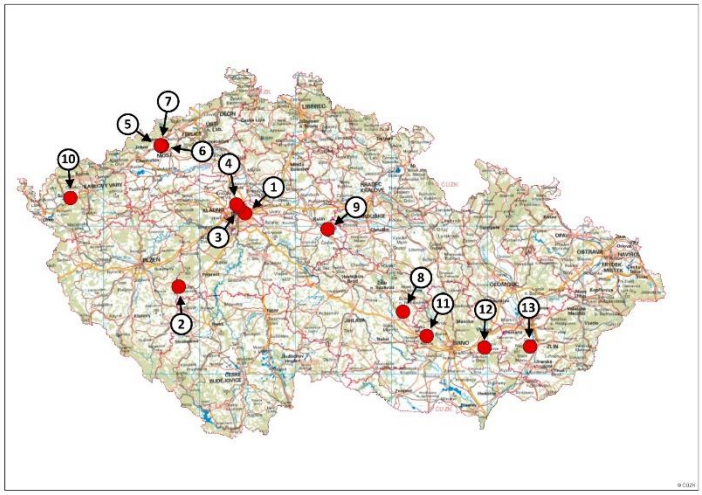
6. Are there any monitoring programmes put in place to control the possible further spread of the disease in your country and with a view to developing an early warning system for pan-Europe? Please describe those programmes, reporting only changes/updates since your last report in 2017. Please also specify if your country makes use of Amphibian Disease Laboratories for disease investigation.

Amphibian diseases are surveyed mostly as part of research and conservation projects at University of Life Sciences, Prague, Veterinary University Brno and State Veterinary Institute in Prague.

One private company (NaturaServis Ltd.) uses Bd specific LAMP diagnostic for screening amphibian in translocation projects.

7. If your country is in an area of high risk for salamander and newt populations (e.g. areas near disease outbreaks; areas with endemic species such as the Alps, the Pyrenees and islands in the Mediterranean), what are the specificities of the monitoring programmes put in place since 2017 and how is human induced spreading being restricted?

Set of continuously monitored sites is being established as part of the before mentioned national project. The sites were selected either because of other ongoing amphibian population research, or as sites with susceptible populations in vicinity to cities, where risk of pathogen introduction from pet trade is expected to be highest.



8. Since your last report in 2017, has your country developed emergency action plans that will allow prompt responses should *Batrachochytrium salamandrivorans* approach high risk populations of salamander and newt species (e.g. endemic species in the Alps, the Pyrenees and islands in the Mediterranean)?

Emergency action plan is being prepared as part of the above mentioned project SS01010233.

9. How is research in the biology, epidemiology, and mitigation of *Batrachochytrium salamandrivorans* supported in your country? How is the conservation biology (demography and population dynamics) of European salamander and newt supported in your country? Please report only relevant updates since the last reporting of 2017.

The fungus was not yet detected in the country, neither in wild or captive amphibians. Research on *B. salamandrivorans* is mostly dependent on research activities of universities.

Nature Conservation Agency of the Czech Republic (NCA CR) governs Information System of Nature Conservation for mapping and monitoring of distribution and population of species. Data on *B. salamandrivorans* can be uploaded to the system. Data on found mortalities of salamanders and newts are present in the information system and such cases are being explored as part of the project SS01010233 and other research activities.

10. Since 2017, what measures has your country taken to improve public awareness on the issue of amphibians' diseases and their impacts, as well as on means for prevention, biosafety and surveillance?

Website on amphibian diseases in Czechia https://amphidis.fzp.czu.cz/cs, as one of the outputs of the project SS01010233.

Article on status of amphibian diseases is due to be published in September issue of popular-science magazine Vesmír (authors M. Jirků and V. Baláž). National radio broadcast (Český Rozhlas Plus) has occasionally covered the issue of amphibian chytridiomycosis.

Presentations on amphibian diseases are part of annual meetings of field workers involved in amphibian monitoring and mapping at the Nature Conservation Agency of the Czech Republic.

General information on the issue and relevant EU legislation is provided on the website of State Veterinary Administration.

11. Since 2017, has your country implemented or initiated any research on the impact of climate change on amphibian and reptile species? If yes, please describe the research and inform on available results.

Annual activity trends of *Salamandra salamandra* are studied at CULS. Research team of Lumír Gvoždík at the Institute of Vertebrate Biology Czech Academy of Sciences studies thermal physiology of amphibians in relation to climate change.

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☒ *I agree*

☐ *I disagree*

ESTONIA

QUESTIONNAIRE FOR THE REPORTING BY PARTIES ON THE IMPLEMENTATION AT NATIONAL LEVEL OF RECOMMENDATION NO. 176 (2015) ON THE PREVENTION AND CONTROL OF THE *BATRACHOCHYTRIUM SALAMANDRIVORANS* CHYTRID FUNGUS

Respondent Country

Republic of Estonia

4. Please report on the distribution of amphibian pathogens in your country and their prevalence within host populations.

In Estonia *Batrachochytrium dendrobatidis* is wide spread within the amphibian populations, and has been found on all of the anuran species present in the wild, with prevalence being between 3,1 to 12,5%. The fungus has so far been found on the mainland only but this could be due to relatively low testing rates on the islands. *Batrachochytrium salamandrivorans* has not been found in Estonia up to date. Additional data: Surveying for Batrachochytrium dendrobatidis and B. salamandrivorans in wild and captive amphibian populations in Estonia and Latvia; Diseases of Aquatic Organisms; Saare, L et *al*; https://doi.org/10.3354/dao03599

2. Did your country apply any new biosafety rule to field-work in breeding sites of fire salamander and newts, against known or emerging pathogens that may be introduced – inter alia – through animal trade, and against the *Batrachochytrium salamandrivorans* since your last report in 2017?

Estonian herpetologists have implemented biosafety rules while doing fieldwork. Fieldwork equipment (dipnets, rubber boots etc) is disinfected when moving between different locations, or previously treated and dried gear is used in every new location. In same cases dedicated fieldwork equipment is used only on specific sites, to limit the likelihood of introducing pathogens to these sensitive areas.

3. Since the last reporting in 2017, has your country developed biosafety protocols for the treatment of amphibians affected by the *Batrachochytrium salamandrivorans*? If yes, please describe those and how these are communicated to other Contracting Parties to the Convention.

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4. What science-based pre-import risk screening for infectious diseases of live animals in animal trade is carried out in your country? Please describe the risk screening system, reporting only changes/updates since your last report in 2017.

only general veterinary screening is done

5. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, please describe these, reporting only changes/updates since your last report in 2017.

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6. Are there any monitoring programmes put in place to control the possible further spread of the disease in your country and with a view to developing an early warning system for pan-Europe?

Please describe those programmes, reporting only changes/updates since your last report in 2017. Please also specify if your country makes use of Amphibian Disease Laboratories for disease investigation.

No regular monitoring is carried out, there have been project based testing carried out.

7. If your country is in an area of high risk for salamander and newt populations (e.g. areas near disease outbreaks; areas with endemic species such as the Alps, the Pyrenees and islands in the Mediterranean), what are the specificities of the monitoring programmes put in place since 2017 and how is human induced spreading being restricted?

Estonia is not considered high risk to *Batrachochytrium salamandrivorans* (although *Triturus cristatus* and *Lissotriton vulgaris* can be susceptible to this disease).

8. Since your last report in 2017, has your country developed emergency action plans that will allow prompt responses should *Batrachochytrium salamandrivorans* approach high risk populations of salamander and newt species (e.g. endemic species in the Alps, the Pyrenees and islands in the Mediterranean)?

Estonia is not considered high risk to *Batrachochytrium salamandrivorans* (although *Triturus cristatus* and *Lissotriton vulgaris* can be susceptible to this disease).

9. How is research in the biology, epidemiology, and mitigation of *Batrachochytrium salamandrivorans* supported in your country? How is the conservation biology (demography and population dynamics) of European salamander and newt supported in your country? Please report only relevant updates since the last reporting of 2017.

No updates. All newt species are legally protected, finances for applied research can be applied for from Environmental Investment Centre in competition with other similar applications.

10. Since 2017, what measures has your country taken to improve public awareness on the issue of amphibians' diseases and their impacts, as well as on means for prevention, biosafety and surveillance?

When in general doing pre-releases and articles on invasive alien species (IAS) and what a person can do against IAS, chytrid fungus is generally one of the examples of invisible IAS, what might be imported unknowingly. Also topic has been raised in the main Estonian exotic pet's forums and Facebook groups. No dedicated targeted campaigns have been carried out. In cooperation with our veterinary service pet owers have possibility to test for chytrid fungus on their pets (paid service).

11. Since 2017, has your country implemented or initiated any research on the impact of climate change on amphibian and reptile species? If yes, please describe the research and inform on available results.

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By completing this questionnaire, you are consenting to sharing your replies in a compilation working document publicly accessible on the Bern Convention website.

☒ *I agree*

☐ *I disagree*

FRANCE

QUESTIONNAIRE FOR THE REPORTING BY PARTIES ON THE IMPLEMENTATION AT NATIONAL LEVEL OF RECOMMENDATION NO. 176 (2015) ON THE PREVENTION AND CONTROL OF THE *BATRACHOCHYTRIUM SALAMANDRIVORANS* CHYTRID FUNGUS

Respondent Country

France

5. Please report on the distribution of amphibian pathogens in your country and their prevalence within host populations.

Bsal: no case in the 30 populations of Salamandra salamander sampled (N=844, 11 to 39 individuals per populations. No case in the 7 populations of other species sampled (N=119, *Spelerpes strinatii, Salamandra corsica, Euproctus montanus, Salamandra lanzai, Calotriton asper*). No case in the dead amphibians screened (77 amphibians from 32 locations were reported via the hotline alerte-amphien.fr)

2. Did your country apply any new biosafety rule to field-work in breeding sites of fire salamander and newts, against known or emerging pathogens that may be introduced – inter alia – through animal trade, and against the *Batrachochytrium salamandrivorans* since your last report in 2017?

No new biosafety rule but the continuation of the information effort to systematically implement the hygiene protocol when working in the field.

3. Since the last reporting in 2017, has your country developed biosafety protocols for the treatment of amphibians affected by the *Batrachochytrium salamandrivorans*? If yes, please describe those and how these are communicated to other Contracting Parties to the Convention.

No biosafety protocols for the treatment of amphibians developed in the country. In case of Bsal discovery, the use of the recommendation explained in: Thomas, V., Wang, Y., Van Rooij, P., Verbrugghe, E., Baláz, V., Bosch, J., Cunningham, A.A., Fischer, M.C., Garner, T.W.J., Gilbert, M.J., Grasselli, E., Kinet, T., Laudelout, A., Lötters, S., Loyau, A., Miaud, C., Salvidio, S., Schmeller, D.S., Schmidt, B.R., Spitzenvan der Sluijs, A., Steinfartz, S., Veith, M., Vences, M., Wagner, N., Canessa, S., Martel, A., Pasmans, F. (2019) Mitigating *Batrachochytrium salamandrivorans* in Europe. Amphibia-Reptilia. DOI:10.1163/15685381-20191157

4. What science-based pre-import risk screening for infectious diseases of live animals in animal trade is carried out in your country? Please describe the risk screening system, reporting only changes/updates since your last report in 2017.

Importation of amphibians as food only freeze Importation of amphibiens in the pet trade or for scientific purpose

5. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, please describe these, reporting only changes/updates since your last report in 2017.

Importation of live urodele is prohibited.

6. Are there any monitoring programmes put in place to control the possible further spread of the disease in your country and with a view to developing an early warning system for pan-Europe? Please describe those programmes, reporting only changes/updates since your last report in 2017. Please also specify if your country makes use of Amphibian Disease Laboratories for disease investigation.

Following the European programme (Mitigating a new infectious disease in salamanders to counteract the loss of European biodiversity, Tender ENV.B.3/SER/2016/0028, 2016-2020), 12 populations of *Salamandra Salamandra* are monitored with a specific methodology to follow the population trend. Moreover, the participants to this programme (which did the swabbing of individuals) are encouraged to check the population each year in order to detect eventual mortality events.

The Amphibian Disease Laboratories for disease investigation in France are:

- ENSAT (Ecole Nationale Supérieure d'Agronomie de Toulouse
- CEFE (Centre d'Ecologie Fonctionnelle et Evolutive de Montpellier.

7. If your country is in an area of high risk for salamander and newt populations (e.g. areas near disease outbreaks; areas with endemic species such as the Alps, the Pyrenees and islands in the Mediterranean), what are the specificities of the monitoring programmes put in place since 2017 and how is human induced spreading being restricted?

Salamandra and newt population near disease outbreaks (Belgium and Germany Border): surveillance of several populations (annual checking of the presence of individuals and eventual mortality events)

Endemic species; *Salamandra lanzai* in the Alps: surveillance of the main population at Ruisseau du Faïto (annual checking of the presence of individuals and eventual mortality events and monitoring programme for the trend of the population)

Endemic species in Corsica: annual checking of the presence of individuals and eventual mortality events in several populations of *Salamandra corsica* and *Euproctus montanus*.

8. Since your last report in 2017, has your country developed emergency action plans that will allow prompt responses should *Batrachochytrium salamandrivorans* approach high risk populations of salamander and newt species (e.g. endemic species in the Alps, the Pyrenees and islands in the Mediterranean)?

The first draft of an emergency action plan will be proposed in July-Nov 2021 by T. Durand (FPN), C. Miaud (CEFE), D. Schmeller (ENSAT), and L. Palumbo (ENSAT).

9. How is research in the biology, epidemiology, and mitigation of *Batrachochytrium salamandrivorans* supported in your country? How is the conservation biology (demography and population dynamics) of European salamander and newt supported in your country? Please report only relevant updates since the last reporting of 2017.

The cost for the identification of pathogens are covered by (when possible) conservation agencies (e.g. National Parks, reserves, etc.)

The European programme (Mitigating a new infectious disease in salamanders to counteract the loss of European biodiversity, Tender ENV.B.3/SER/2016/0028, 2016-2020) has been very important to fund the screening of the pathogen in France

The conservation biology (demography and population dynamics) of salamander and newt are supported in France thanks to funding by the Environment Ministry (implementation and animation

of the programme POPamphibien by the French Herpetological Society) based on the involvement of many stakeholders (National Parks, reserves, Regional parks, Environmental NGOs, etc.)

10. Since 2017, what measures has your country taken to improve public awareness on the issue of amphibians' diseases and their impacts, as well as on means for prevention, biosafety and surveillance?

Mainly information about jobs that involve field work

11. Since 2017, has your country implemented or initiated any research on the impact of climate change on amphibian and reptile species? If yes, please describe the research and inform on available results.

Programme "Climat sentinels" (https://www.sentinelles-climat.org/) implemented in the Aquitaine Region.

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☒ *I agree*

☐ *I disagree*

GERMANY

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Respondent Country

Germany

6. Please report on the distribution of amphibian pathogens in your country and their prevalence within host populations.

No general national monitoring for amphibian pathogens exists in Germany, cases of Batrachochytrium dendrobatidis and other fungal infections, bacterial infections and Ranavirusses, sometimes associated with increased mortality in populations exist but are only reported incidentally. As for B. salamandrivorans a nationally financed research project was issued to confirm the spread of the disease (See Answers to 6). It was found to be occurring in three federals states of Germany so far. Western Germany: Federal states of North Rhine-Westphalia and Rhineland-Palatinate: Eifel region, Ruhr District, which are distant by ca 50 km; Federal state of Bavaria: Steigerwald and Allgovia, i.e. two separated regions in N and S Bavaria, respectively (distance ca 250 km). Fire Salamander (Salamandra salamandra) were affected in all regions. The pathogen could also be detected in common (Lissotriton vulgaris) and alpine newts (Ichtyosaura alpestris) as well as western crested newts (Triturus cristatus). (For further details consult the publications as mentioned below --> Answers to 10.)

2. Did your country apply any new biosafety rule to field-work in breeding sites of fire salamander and newts, against known or emerging pathogens that may be introduced – inter alia – through animal trade, and against the *Batrachochytrium salamandrivorans* since your last report in 2017?

No amphibian specific biosafety scheme is applied. However, the researchers working with Bsal in newts and fire salamanders have developed a biosafety protocol for fieldwork as developed together with the federal state of north Rhine Wesphalia were the first Bsal cases in Germany occurred. (see: https://www.lanuv.nrw.de/natur/artenschutz/amphibienkrankheiten/). The application of this protocol is highly recommended for all research and monitoring conducted in wetlands and particularly sites were the spread of Bsal is likely.

3. Since the last reporting in 2017, has your country developed biosafety protocols for the treatment of amphibians affected by the *Batrachochytrium salamandrivorans*? If yes, please describe those and how these are communicated to other Contracting Parties to the Convention.

No new treatment protocols have been developed or applied since 2017. However, for captive collections of salamanders and newts the existing treatment measures (heat treatment and antifungal medication) are considered sufficient. The existing screening and treatment protocol would also be sufficient for any ex-situ captive breeding initiative.

4. What science-based pre-import risk screening for infectious diseases of live animals in animal trade is carried out in your country? Please describe the risk screening system, reporting only changes/updates since your last report in 2017.

Pre-import disease screenings exists mostly for mammals and birds imported as life-stock or pets. Yet, no systematic screening and reporting of diseases exists for reptiles and amphibians in trade.

5. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, please describe these, reporting only changes/updates since your last report in 2017.

No specific trade restrictions exist on national level (other than EU act 2018/320). The Act 2018/320 has likely resulted in a decrease of trade in live newts and salamanders. Nonetheless the impact of the measure is unclear. However, Urodelans have so far been banned from most large reptile and amphibian pet fares in response to the EU regulation.

6. Are there any monitoring programmes put in place to control the possible further spread of the disease in your country and with a view to developing an early warning system for pan-Europe? Please describe those programmes, reporting only changes/updates since your last report in 2017. Please also specify if your country makes use of Amphibian Disease Laboratories for disease investigation.

The German Federal Agency for Nature Conservation (Bundesamt für Naturschutz) initiated the project 'Monitoring und Entwicklung von Vorsorgemaßnahmen zum Schutz vor der Ausbreitung des Chytridpilzes Batrachochytrium salamandrivorans ("Bsal") im Freiland' (Monitoring and development of prevention and mitigation measures against the spread of the chytrid fungus *Batrachochytrium salamandrivorans* ("*Bsa*l") in the wild), 2018-2021 through financial means issued by the German Ministry for the environment, nature conservation and nuclear safety (BMU).

In this project, four partners (Trier University, Braunschweig University (replaced by Leipzig University in 2019), Biostation StädteRegion Aachen and Biostation Düren):

(a) determine fire salamander larval abundances annually; (b) test caudate amphibians from risk areas for Bsal using molecular genetics (qPCR), i.e. mainly from Eifel region but also from elsewhere in Germany (suspect cases); (c) create dispersion and risk models; (d) act nationwide as a contact for the Bsal problem; (e) establish a nation-wide Bsal database; (f) act as an interface to other Bsal research activities within Europe; and formulate recommendations for action for (g) actors in nature conservation and (h) in the veterinary sector, as well as (i) for private owners of caudate amphibians

7. If your country is in an area of high risk for salamander and newt populations (e.g. areas near disease outbreaks; areas with endemic species such as the Alps, the Pyrenees and islands in the Mediterranean), what are the specificities of the monitoring programmes put in place since 2017 and how is human induced spreading being restricted?

There are no Amphibian species endemic to Germany. However, the fire salamander is a species of national concern for Germany as significant proportions of the European population are present in Germany. Concerning details on the *Bsal* monitoring and mitigation project see answer above. Conservation and monitoring programmes for specific populations of Amphibians in Germany are the responsibility of the German States ("Länder"), not the federal level

8. Since your last report in 2017, has your country developed emergency action plans that will allow prompt responses should *Batrachochytrium salamandrivorans* approach high risk populations of salamander and newt species (e.g. endemic species in the Alps, the Pyrenees and islands in the Mediterranean)?

An action plan to mitigate the spread of Bsal is currently being under development. Its completion however was set back due to the COVID pandemic and results are to be expected by the end of 2021.

9. How is research in the biology, epidemiology, and mitigation of *Batrachochytrium salamandrivorans* supported in your country? How is the conservation biology (demography and

population dynamics) of European salamander and newt supported in your country? Please report only relevant updates since the last reporting of 2017.

Bsal research and mitigation of the *Bsal* problem is supported though particular research and monitoring programs within the respective federal states. In Germany the federal states are responsible for species specific conservation.

10. Since 2017, what measures has your country taken to improve public awareness on the issue of amphibians' diseases and their impacts, as well as on means for prevention, biosafety and surveillance?

Since 2017 the federal agency for nature conservation has communicated its activities in respect to *Bsal* on its website (https://www.bfn.de/themen/artenschutz/gefaehrdung-bewertung-management/gefaehrdungsursachen/spezifische-gefaehrdungsursachen/bsal.html) and several times in its public and social media outreach https://www.bfn.de/themen/biologische-vielfalt/nationale-strategie/projekt-des-monats/die-ausbreitung-und-folgen-der-salamanderpest-in-deutschland.html . Similarly the institutions involved with the research on *Bsal* have communicated on the matter and possible mitigation measures through local and national media. Further, one result of the above mentioned (see 6.) BfN financed project will be a specific outreach activity to inform conservation authorities and conservation stakeholders of the issue and discuss potential avoidance and mitigation measures. A respective workshop is planned for the End of 2021/early 2022.

Many preliminary outcomes of this project were communicated to the herpetological community in 2020 in a special issue of the Salamandra magazine 22 Volume 56 Issue 3. Open source Link and Press article see https://dght.de/news/sonderausgabe-der-salamandra-zur-salamanderpest-erschienen

Local initiatives on other Amphibian diseases (such as Bd) also exists however we have no information on those on a national scale.

11. Since 2017, has your country implemented or initiated any research on the impact of climate change on amphibian and reptile species? If yes, please describe the research and inform on available results.

No specific research on the influence of climate change on amphibians and reptiles has been conducted on national level recently. An analysis already published in 2010 contains a fairly well researched picture of the potential influence of climate change on reptiles and amphibians: Rabitsch et al. (2010) "Auswirkung des rezenten Klimawandels auf die Fauna in Deutschland". Naturschutz und Biologische Vielfalt 98

By completing this questionnaire, you are consenting to sharing your replies in a compilation working document publicly accessible on the Bern Convention website.

☒ *I agree*

☐ *I disagree*

LIECHTENSTEIN

QUESTIONNAIRE FOR THE REPORTING BY PARTIES ON THE IMPLEMENTATION AT NATIONAL LEVEL OF RECOMMENDATION NO. 176 (2015) ON THE PREVENTION AND CONTROL OF THE *BATRACHOCHYTRIUM SALAMANDRIVORANS* CHYTRID FUNGUS

Respondent Country

Liechtenstein

1. Please report on the distribution of amphibian pathogens in your country and their prevalence within host populations.

So far amphibian pathogens have not been reported in Liechtenstein. Certain amphibian migration routes (esp. *Bufo bufo* and *Rana temporaria*) are monitored individually annually and also no evidence of pathogens have been reported. Generally there is no prevalence of amphibian pathogens in the Alpine Rhine Valley so the risk of contamination is currently evaluated as low. If amphibian pathogens in the Alpine Rhine Valley are reported Liechtenstein will follow the general recommendations of the karch Switzerland including e.g. samplings or biosafety rules.

2. Did your country apply any new biosafety rule to field-work in breeding sites of fire salamander and newts, against known or emerging pathogens that may be introduced – inter alia – through animal trade, and against the *Batrachochytrium salamandrivorans* since your last report in 2017?

Biosafety rules in according to the recommendations of karch Switzerland will be implemented if the risk prevalence in the Alpine Rhine Valley will rise.

3. Since the last reporting in 2017, has your country developed biosafety protocols for the treatment of amphibians affected by the *Batrachochytrium salamandrivorans*? If yes, please describe those and how these are communicated to other Contracting Parties to the Convention.

Currently there are no biosafety protocols for the treatment of amphibians affected by *Batrachochytrium salamandrivorans* implemented in Liechtenstein.

4. What science-based pre-import risk screening for infectious diseases of live animals in animal trade is carried out in your country? Please describe the risk screening system, reporting only changes/updates since your last report in 2017.

Because of the customs treaty with Switzerland the responsible authority for animal trade is the Federal Food Safety and Veterinary Office (www.blv.admin.ch). In Liechtenstein there is no specific risk screening for infectious diseases of live animals in animal trade.

5. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, please describe these, reporting only changes/updates since your last report in 2017.

Because of the customs treaty with Switzerland the responsible authority for animal trade is the Federal Food Safety and Veterinary Office (www.blv.admin.ch). Depending on the case different preventive measures (e.g. screening when imported from third countries) are mandatory. For more information:

Export: https://www.llv.li/inhalt/1657/amtsstellen/ausfuhr-von-tieren-und-produkten-tierischer-herkunft Import: https://www.llv.li/inhalt/12543/amtsstellen/einfuhr-von-tieren-und-produkten-tierischer-herkunft

6. Are there any monitoring programmes put in place to control the possible further spread of the disease in your country and with a view to developing an early warning system for pan-Europe? Please describe those programmes, reporting only changes/updates since your last report in 2017. Please also specify if your country makes use of Amphibian Disease Laboratories for disease investigation.

Currently there are no monitoring programmes active.

7. If your country is in an area of high risk for salamander and newt populations (e.g. areas near disease outbreaks; areas with endemic species such as the Alps, the Pyrenees and islands in the Mediterranean), what are the specificities of the monitoring programmes put in place since 2017 and how is human induced spreading being restricted?

Liechtenstein is currently not an area of high risk for amphibian diseases.

8. Since your last report in 2017, has your country developed emergency action plans that will allow prompt responses should *Batrachochytrium salamandrivorans* approach high risk populations of salamander and newt species (e.g. endemic species in the Alps, the Pyrenees and islands in the Mediterranean)?

No.

9. How is research in the biology, epidemiology, and mitigation of *Batrachochytrium salamandrivorans* supported in your country? How is the conservation biology (demography and population dynamics) of European salamander and newt supported in your country? Please report only relevant updates since the last reporting of 2017.

Research concerning *Batrachochytrium salamandrivorans* is currently not supported in Liechtenstein. All amphibians and reptilians fall under the category "specifically protected species" in accordance with the *Bern Convention*. Also, several types of habitat and/or nature protection sites are protected by law.

10. Since 2017, what measures has your country taken to improve public awareness on the issue of amphibians' diseases and their impacts, as well as on means for prevention, biosafety and surveillance?

Since there is no high risk of amphibians' diseases it has not been necessary to improve public awareness.

11. Since 2017, has your country implemented or initiated any research on the impact of climate change on amphibian and reptile species? If yes, please describe the research and inform on available results.

Since approximately 30 years amphibian and reptilian species are monitored periodically (certain amphibian migration routes annually) and accordingly to the IUCN recommendations. A biodiversity concept was adopted by the government in Liechtenstein in 2021, which now regularly examines

indicator species, rare species and species for which Liechtenstein has an international responsibility. Amphibians are also included in the concept as indicator and rare species.

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☒ *I agree*

☐ *I disagree*

MOLDOVA

QUESTIONNAIRE FOR THE REPORTING BY PARTIES ON THE IMPLEMENTATION AT NATIONAL LEVEL OF RECOMMENDATION NO. 176 (2015) ON THE PREVENTION AND CONTROL OF THE *BATRACHOCHYTRIUM SALAMANDRIVORANS* CHYTRID FUNGUS

Respondent Country

Republic of Moldova

2. Please report on the distribution of amphibian pathogens in your country and their prevalence within host populations.

The pathogen *Batrachochytrium salamandrivorans* was not recorded in the amphibian populations.

2. Did your country apply any new biosafety rule to field-work in breeding sites of fire salamander and newts, against known or emerging pathogens that may be introduced – inter alia – through animal trade, and against the *Batrachochytrium salamandrivorans* since your last report in 2017?

No

3. Since the last reporting in 2017, has your country developed biosafety protocols for the treatment of amphibians affected by the *Batrachochytrium salamandrivorans*? If yes, please describe those and how these are communicated to other Contracting Parties to the Convention.

No

4. What science-based pre-import risk screening for infectious diseases of live animals in animal trade is carried out in your country? Please describe the risk screening system, reporting only changes/updates since your last report in 2017.

5. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, please describe these, reporting only changes/updates since your last report in 2017.

No

6. Are there any monitoring programmes put in place to control the possible further spread of the disease in your country and with a view to developing an early warning system for pan-Europe? Please describe those programmes, reporting only changes/updates since your last report in 2017. Please also specify if your country makes use of Amphibian Disease Laboratories for disease investigation.

No

7. If your country is in an area of high risk for salamander and newt populations (e.g. areas near disease outbreaks; areas with endemic species such as the Alps, the Pyrenees and islands in the Mediterranean), what are the specificities of the monitoring programmes put in place since 2017 and how is human induced spreading being restricted?

No

8. Since your last report in 2017, has your country developed emergency action plans that will allow prompt responses should *Batrachochytrium salamandrivorans* approach high risk populations of salamander and newt species (e.g. endemic species in the Alps, the Pyrenees and islands in the Mediterranean)?

No

9. How is research in the biology, epidemiology, and mitigation of *Batrachochytrium salamandrivorans* supported in your country? How is the conservation biology (demography and population dynamics) of European salamander and newt supported in your country? Please report only relevant updates since the last reporting of 2017.

There is no such research

10. Since 2017, what measures has your country taken to improve public awareness on the issue of amphibians' diseases and their impacts, as well as on means for prevention, biosafety and surveillance?

No measures

11. Since 2017, has your country implemented or initiated any research on the impact of climate change on amphibian and reptile species? If yes, please describe the research and inform on available results.

Yes, one of the research topic of the Institute of Zoology is the impact of climatic and anthropic changes upon vertebrate animal populations, including the amphibian species. As result of the multiannual study of the spread of amphibian species and the trend of local areas, the species were divided into several categories: - the species *Triturus cristatus, Lissotriton vulgaris, Bufo bufo, Rana dalmatina, R. temporaria, R. arvalis, Bombina variegata* have the tendency to reduce their spreading area; - the species *Pelobates fuscus* and *Bufo viridis* are expanding their spreading area in heavily anthropized environment (urban, rural, farms); - while the species *Bombina bombina, Pelophylax ridibundus, P. lessonae, P. esculentus, Hyla orientalis* have stable trends. In 2020 – year with severe drought the suitable wet habitats for the reproduction of *Triturus cristatus, Lissotriton vulgaris, Bombina bombina, Hyla orientalis, Rana dalmatina, Pelophylax esculentus, Bufo viridis, B.bufo* have dried up and their breeding success decreased drastically.

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☒ *I agree*

☐ *I disagree*

MONACO

QUESTIONNAIRE FOR THE REPORTING BY PARTIES ON THE IMPLEMENTATION AT NATIONAL LEVEL OF RECOMMENDATION NO. 176 (2015) ON THE PREVENTION AND CONTROL OF THE *BATRACHOCHYTRIUM SALAMANDRIVORANS* CHYTRID FUNGUS

Respondent Country

Monaco

3. Please report on the distribution of amphibian pathogens in your country and their prevalence within host populations.

No observation of pathogens concerning the populations of amphibians.

2. Did your country apply any new biosafety rule to field-work in breeding sites of fire salamander and newts, against known or emerging pathogens that may be introduced – inter alia – through animal trade, and against the *Batrachochytrium salamandrivorans* since your last report in 2017?

Not concerned.

3. Since the last reporting in 2017, has your country developed biosafety protocols for the treatment of amphibians affected by the *Batrachochytrium salamandrivorans*? If yes, please describe those and how these are communicated to other Contracting Parties to the Convention.

Not concerned.

4. What science-based pre-import risk screening for infectious diseases of live animals in animal trade is carried out in your country? Please describe the risk screening system, reporting only changes/updates since your last report in 2017.

5. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, please describe these, reporting only changes/updates since your last report in 2017.

None

6. Are there any monitoring programmes put in place to control the possible further spread of the disease in your country and with a view to developing an early warning system for pan-Europe? Please describe those programmes, reporting only changes/updates since your last report in 2017. Please also specify if your country makes use of Amphibian Disease Laboratories for disease investigation.

None

7. If your country is in an area of high risk for salamander and newt populations (e.g. areas near disease outbreaks; areas with endemic species such as the Alps, the Pyrenees and islands in the Mediterranean), what are the specificities of the monitoring programmes put in place since 2017 and how is human induced spreading being restricted?

8. Since your last report in 2017, has your country developed emergency action plans that will allow prompt responses should *Batrachochytrium salamandrivorans* approach high risk populations of salamander and newt species (e.g. endemic species in the Alps, the Pyrenees and islands in the Mediterranean)?

No

9. How is research in the biology, epidemiology, and mitigation of *Batrachochytrium salamandrivorans* supported in your country? How is the conservation biology (demography and population dynamics) of European salamander and newt supported in your country? Please report only relevant updates since the last reporting of 2017.

10. Since 2017, what measures has your country taken to improve public awareness on the issue of amphibians' diseases and their impacts, as well as on means for prevention, biosafety and surveillance?

11. Since 2017, has your country implemented or initiated any research on the impact of climate change on amphibian and reptile species? If yes, please describe the research and inform on available results.

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☒ I agree

☐ I disagree

THE NETHERLANDS

QUESTIONNAIRE FOR THE REPORTING BY PARTIES ON THE IMPLEMENTATION AT NATIONAL LEVEL OF RECOMMENDATION NO. 176 (2015) ON THE PREVENTION AND CONTROL OF THE *BATRACHOCHYTRIUM SALAMANDRIVORANS* CHYTRID FUNGUS

Respondent Country

The Netherlands

7. Please report on the distribution of amphibian pathogens in your country and their prevalence within host populations.

In the Netherlands there are several amphibian pathogens, also OIE-listed ones, that infect wild and captive amphibian populations. It is only from *B. salamandrivorans* that we have data on prevalence and infection intensity.

Occurring pathogens are a.o. *B. dendrobatidis*, ranaviruses (several strains), *Saprolegnia* infections, *Amphibiothecum* infections, ranid and bufonid herpesviruses.

Current **distribution** of Bsal in the Netherlands: Province Limburg (Bunderbos and Kerkrade) and Province Gelderland

Affected **species**: fire salamander (*Salamandra salamandra*), crested newt (*Triturus cristatus*), smooth newt (*Lissotriton vulgaris*) and alpine newt (*Ichthyosaura alpestris*).

The fire salamander population in the index site in the south of the Netherlands is currently not monitored for Bsal prevalence and infection intensity. In 2020 a total of 65 skin swabs from fire salamanders and 34 swabs from alpine newts could be collected and all returned negative for Bsal. However, sampling for Bsal DNA using eDNA (environmentalDNA) resulted in positive outcome. This indicates that Bsal is still present in that area, but the impact on the amphibian population is unknown. The population fire salamander does not show a sign of recovery, it is still only 0.1% of its original size.

In Kerkrade Bsal was detected in 2020. Here spillover from wild newts to captive salamanders induced a mortality event. It is yet unknown if Bsal was newly introduced, or if it had been around longer but remained unnoticed until 2020.

In the province Gelderland amphibian host populations (smooth newt and crested newt) that are infected with the Bsal chytride fungus are currently monitored. Bsal prevalence in crested newts was 50% in 2020 and 68% in 2021 (more data is collected). Bsal prevalence in smooth newts is 8% in 2020 and 8% in 2021 (more data is collected).

The chytrid fungus *B. dendrobatidis* likely impacts on *Bombina variegata* and *Alytes obstetricans*. Frequent deaths of these species are reported. When animals are collected and analysed, Bd is found.

2. Did your country apply any new biosafety rule to field-work in breeding sites of fire salamander and newts, against known or emerging pathogens that may be introduced – inter alia – through animal trade, and against the *Batrachochytrium salamandrivorans* since your last report in 2017?

No. Since the first discovery the non-profit organisation RAVON, that coordinates the monitoring, has made leaflets to inform people to be aware of the spread of pathogens and the importance of disinfection. The relevant nature conservation organisations request volunteers and professionals to disinfect their gear, but there is no enforcement. There is no enforcement on a national level.

3. Since the last reporting in 2017, has your country developed biosafety protocols for the treatment of amphibians affected by the *Batrachochytrium salamandrivorans*? If yes, please describe those and how these are communicated to other Contracting Parties to the Convention.

We follow the latest developments published by Ghent University (Blooi et al., Scientific Reports 2015). We recommend the heat treatment for Salamandra species. There is no specific communication trajectory in which this treatment is communicated to other Parties of the Convention

4. What science-based pre-import risk screening for infectious diseases of live animals in animal trade is carried out in your country? Please describe the risk screening system, reporting only changes/updates since your last report in 2017.

Unfortunately it is legally impossible to screen amphibians at customs at for instance the airport. Ravon offered free screening of all salamanders and newts in captive collections that seemingly have Bsal-initiated symptoms until 2020. This was communicated via RAVON and the salamander association.

5. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, please describe these, reporting only changes/updates since your last report in 2017.

There are currently no official trade restrictions. However the trade in newts and salamanders has decreased to near zero because of the voluntary moratorium initiated by OFI.

6. Are there any monitoring programmes put in place to control the possible further spread of the disease in your country and with a view to developing an early warning system for pan-Europe? Please describe those programmes, reporting only changes/updates since your last report in 2017. Please also specify if your country makes use of Amphibian Disease Laboratories for disease investigation.

At the request of the Ministry of Agriculture, Nature an Food Quality Ravon has intensively monitored the presence of the disease both in the focal outbreak sites and in the close vicinity by sampling newts and salamanders until 2020. Simultaneously Ravon has actively encouraged the public to send in their findings of dead and/or sick newts and salamanders (wild animals) so they can be analysed for Bsal (period 2018 – 2020) Each spring information to the public was spread at a level as local as possible to inform them on Bsal so they know to be alert on sick amphibians. Also people with captive salamander collections were asked to be alert and to report sick/dead animals.

Since 2020 the provinces have the responsibility for this monitoring. Coming September the provinces will have discussion on how to proceed forward.

We use Ghent University as our reference lab (www.bsaleurope.com).

7. If your country is in an area of high risk for salamander and newt populations (e.g. areas near disease outbreaks; areas with endemic species such as the Alps, the Pyrenees and islands in the Mediterranean), what are the specificities of the monitoring programmes put in place since 2017 and how is human induced spreading being restricted?

The regular counts of the newts are performed by newt specialists that are fully aware of the risk of spreading the decease. The largest landowner Staatsbosbeheer (state forestry management) of the original outbreak site in the NL generally prohibits all activities that involve leaving the tracks in the forest. However a butterfly survey and in the autumn a mushroom survey are planned at the condition they should avoid the newt areas. part of the area is private property.

However even though people are not allowed to leave the tracks, they may still transmit Bsal via the mud on the tracks. Especially during the covid pandemic, forests were visited very frequently and people strolled everywhere (also off the indicated tracks). Moreover, Bsal has been present at several other sites than the Bunderbos (now for instance in Kerkrade), but there's no rapid response, which means that the pathogen can still be spread by footwear, amphibians etc.

8. Since your last report in 2017, has your country developed emergency action plans that will allow prompt responses should *Batrachochytrium salamandrivorans* approach high risk populations of salamander and newt species (e.g. endemic species in the Alps, the Pyrenees and islands in the Mediterranean)?

We maintain a captive collection fire salamanders (*Salamandra salamandra*) and we're initiating a captive breeding collection to safeguard the species for the future. There are no endemic newt species in the NL. The province of Limburg is presently working on a plan.

9. How is research in the biology, epidemiology, and mitigation of *Batrachochytrium salamandrivorans* supported in your country? How is the conservation biology (demography and population dynamics) of European salamander and newt supported in your country? Please report only relevant updates since the last reporting of 2017.

The Ministry has financially supported the captive collection and the research on the presence and spread of Bsal in the NL until 2020. There will be discussions on how to proceed forward as the responsibility was transferred to the provinces.

10. Since 2017, what measures has your country taken to improve public awareness on the issue of amphibians' diseases and their impacts, as well as on means for prevention, biosafety and surveillance?

See 1,3,4

11. Since 2017, has your country implemented or initiated any research on the impact of climate change on amphibian and reptile species? If yes, please describe the research and inform on available results.

No, this has not been done.. RAVON and the Vlinderstichting (Butterfly Society) have studied how to manage heathland in a climate-proof way. Currently RAVON tries to initiate studies on the impact of draught on herpetofauna (for instance on *Rana arvalis* and *Triturus cristatus*) as well as the climate induced threats for species like *Zootoca vivipara* and *Vipera berus*.

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☒ *I agree*

☐ *I disagree*

POLAND

QUESTIONNAIRE FOR THE REPORTING BY PARTIES ON THE IMPLEMENTATION AT NATIONAL LEVEL OF RECOMMENDATION NO. 176 (2015) ON THE PREVENTION AND CONTROL OF THE *BATRACHOCHYTRIUM SALAMANDRIVORANS* CHYTRID FUNGUS

Respondent Country

Poland

1. Please report on the distribution of amphibian pathogens in your country and their prevalence within host populations.

Batrachochytrium salamandrivorans hasn't been detected yet in Poland.

2. Did your country apply any new biosafety rule to field-work in breeding sites of fire salamander and newts, against known or emerging pathogens that may be introduced – inter alia – through animal trade, and against the *Batrachochytrium salamandrivorans* since your last report in 2017?

Permits on prohibited actions realting protected animal species in aquatic ecosystems etc. set out special condition (drying or desinfection of gear) in order to prevent spread of pathogens, including *Batrachochytrium salamandrivorans*.

3. Since the last reporting in 2017, has your country developed biosafety protocols for the treatment of amphibians affected by the *Batrachochytrium salamandrivorans*? If yes, please describe those and how these are communicated to other Contracting Parties to the Convention.

No changes since the last report sent in 2016

4. What science-based pre-import risk screening for infectious diseases of live animals in animal trade is carried out in your country? Please describe the risk screening system, reporting only changes/updates since your last report in 2017.

No changes since the last report sent in 2016

5. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, please describe these, reporting only changes/updates since your last report in 2017.

No changes since the last report sent in 2016

6. Are there any monitoring programmes put in place to control the possible further spread of the disease in your country and with a view to developing an early warning system for pan-Europe? Please describe those programmes, reporting only changes/updates since your last report in 2017. Please also specify if your country makes use of Amphibian Disease Laboratories for disease investigation.

No changes since the last report sent in 2016

7. If your country is in an area of high risk for salamander and newt populations (e.g. areas near disease outbreaks; areas with endemic species such as the Alps, the Pyrenees and islands in the Mediterranean), what are the specificities of the monitoring programmes put in place since 2017 and how is human induced spreading being restricted?

PL is not in an area of high risk

8. Since your last report in 2017, has your country developed emergency action plans that will allow prompt responses should *Batrachochytrium salamandrivorans* approach high risk populations of salamander and newt species (e.g. endemic species in the Alps, the Pyrenees and islands in the Mediterranean)?

No changes since the last report sent in 2016

9. How is research in the biology, epidemiology, and mitigation of *Batrachochytrium salamandrivorans* supported in your country? How is the conservation biology (demography and population dynamics) of European salamander and newt supported in your country? Please report only relevant updates since the last reporting of 2017.

No changes since the last report sent in 2016

10. Since 2017, what measures has your country taken to improve public awareness on the issue of amphibians' diseases and their impacts, as well as on means for prevention, biosafety and surveillance?

A letter was sent by General Directorate for Environmental Protection in 2018 to national parks, zoos, universities, ngos, Polish Terrarium Association and other related institutions. GDEP informed on *B. salamandrivorans* and other pathogens, appealing to undertake research, take safety precautions and to report on new disease outbreaks. This information is also available on GDEP webpage.

11. Since 2017, has your country implemented or initiated any research on the impact of climate change on amphibian and reptile species? If yes, please describe the research and inform on available results.

GDEP doesn't gather data on carried out research projects

By completing this questionnaire, you are consenting to sharing your replies in a compilation working document publicly accessible on the Bern Convention website.

☒ *I agree*

☐ *I disagree*

SERBIA

QUESTIONNAIRE FOR THE REPORTING BY PARTIES ON THE IMPLEMENTATION AT NATIONAL LEVEL OF RECOMMENDATION NO. 176 (2015) ON THE PREVENTION AND CONTROL OF THE *BATRACHOCHYTRIUM SALAMANDRIVORANS* CHYTRID FUNGUS

Respondent Country

Republic of Serbia,
Ministry of Environmental Protection of the Republic of Serbia in cooperation with the Institute for Nature Conservation of Serbia and the Institute for Nature Conservation of Vojvodina Province

2. Please report on the distribution of amphibian pathogens in your country and their prevalence within host populations.

Batrachochytrium dendrobatidis: Four localities had amphibians that tested positive for *Bd*: Kupusina, Apatin, Karavukovo and Jarkovci. Seven individuals among three species within the genus *Pelophylax* tested positive. The zoospore equivalents showed infection rates that ranged between 100 and 1,000 zoospores based on the standard curve generated. Overall, the intensity of infection was considered medium to low, based on the "10,000 zoospore rule" (Mali I, Villamizar-Gomez A, Krizmanić I, Ajtić R, Forstner MRJ. Evidence of Batrachochytrium dendrobatidis Infection in Amphibians from Serbian Lowlands. J Wildl Dis. 2017 Jul;53(3):686-689).

Since 2017. there have been no reported cases of infected amhibians with *chytrid fungus Batrachochytrium salamandrivorans.*

2. Did your country apply any new biosafety rule to field-work in breeding sites of fire salamander and newts, against known or emerging pathogens that may be introduced – inter alia – through animal trade, and against the *Batrachochytrium salamandrivorans* since your last report in 2017?

Since last report in 2017. Serbia did not apply any new biosafety rule to field-work in breeding sites of fire salamander and newts, against known or emerging pathogens, and against the *Batrachochytrium salamandrivorans.*

3. Since the last reporting in 2017, has your country developed biosafety protocols for the treatment of amphibians affected by the *Batrachochytrium salamandrivorans*? If yes, please describe those and how these are communicated to other Contracting Parties to the Convention.

Serbia has not developed biosafety protocols for the treatment of amphibians affected by the *Batrachochytrium salamandrivorans.*

4. What science-based pre-import risk screening for infectious diseases of live animals in animal trade is carried out in your country? Please describe the risk screening system, reporting only changes/updates since your last report in 2017.

We have no data related to a given issue.

5. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, please describe these, reporting only changes/updates since your last report in 2017.

Since 2017. there have been no changes/updated of trade restrictions as a preventive measure against the introduction of *Batrachochytrium salamandrivorans.*

Since 2016. the Institute for nature conservation of Vojvodina province issues negative opinions for all import of tailed amphibians from Asia.

6. Are there any monitoring programmes put in place to control the possible further spread of the disease in your country and with a view to developing an early warning system for pan-Europe? Please describe those programmes, reporting only changes/updates since your last report in 2017. Please also specify if your country makes use of Amphibian Disease Laboratories for disease investigation.

Since 2017. there have been few requests annually for the import of tailed amphibians such as *Cynops orientalis* that can be carriers of fungal infection disease. Since 2016. the Institute for nature conservation of Vojvodina province issues negative opinions for all import of tailed amphibians from Asia.

In 2018. Faculty of Biology, University of Belgrade in cooperation with Texas State University, Department of Biology, Eastern New Mexico University, Department of Biology and University of Priština-Kosovska Mitrovica, Department of Biology, started research on the presence of pathogenic chytrid fungus from genus Batrachochytrium (Bd and Bs) for which the Institute for Nature Conservation of Serbia and the Institute for Nature Conservation of Vojvodina Province have issued a positive opinions in 2018, 2019 and 2020.

7. If your country is in an area of high risk for salamander and newt populations (e.g. areas near disease outbreaks; areas with endemic species such as the Alps, the Pyrenees and islands in the Mediterranean), what are the specificities of the monitoring programmes put in place since 2017 and how is human induced spreading being restricted?

We have no data related to a given issue.

8. Since your last report in 2017, has your country developed emergency action plans that will allow prompt responses should *Batrachochytrium salamandrivorans* approach high risk populations of salamander and newt species (e.g. endemic species in the Alps, the Pyrenees and islands in the Mediterranean)?

Serbia has not developed emergency action plans that will allow prompt responses should *Batrachochytrium salamandrivorans* approach high risk populations of salamander and newt species.

9. How is research in the biology, epidemiology, and mitigation of *Batrachochytrium salamandrivorans* supported in your country? How is the conservation biology (demography and population dynamics) of European salamander and newt supported in your country? Please report only relevant updates since the last reporting of 2017.

We have no data related to a given issue.

10. Since 2017, what measures has your country taken to improve public awareness on the issue of amphibians' diseases and their impacts, as well as on means for prevention, biosafety and surveillance?

We have no data related to a given issue.

11. Since 2017, has your country implemented or initiated any research on the impact of climate change on amphibian and reptile species? If yes, please describe the research and inform on available results.

Since 2017. Serbia has not initiated any research on the impact of climate change on amphibians and reptiles species.

The Nature Conservation Programme of the Republic of Serbia with Action Plan for period 2021. To 2023. was established ("Official Gazette", No 53/21).

Within the Action Plan of this Programme some objectives and measures have been defined in this context as following:

Specific objective: Reduced negative effects on biodiversity;

Measure: Monitoring of the impact of climate change on biodiversity and impact of biodiversity on mitigating effects of climate change;

Activity: Defining methodologies and indicators, the number of species, habitats and ecosystems in which the impact of climate change on biodiversity is monitored.

By completing this questionnaire, you are consenting to sharing your replies in a compilation working document publicly accessible on the Bern Convention website.

☒ *I agree*

☐ *I disagree*