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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 Governance

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ANDORRA / ANDORRE

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

1. What biosafety rules is your country applying 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*?

Field works have to be authorized by the Andorran Government.

Systematic disinfection of all material with Virkon 1% is requested.

2. 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 registered cases for the moment.

3. 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.

Importations have to be authorized by the Andorran Government.

No Importations of amfibians have been registered at this time

4. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, describe these.

See point 3.

5. Are there any monitoring programmes to control the possible further spread of the disease in your country, put in place with the view of developing an early warning system for pan-Europe? Please describe those programmes.

An annual survey of main populations is carried out by our technicians by the way of visual observations.

6. 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 and how is human induced spreading being restricted?

Yes, we are in the area “Pyrenees”.

Existing restrictions are: Importations controls, field study controls.

7. 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)?

None

8. How is research into 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?

There is no research about this. Population estimates are quite complicated with this species. Populations are registered only qualitatively by visual survey.

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

None

10. 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.

Andorra is member of a POCTEFA project: Ectopyr, initiated in 2016.

There are no available results for the moment.

ARMENIA / ARMÉNIE

IMPLEMENTATION OF RECOMMENDATION NO. 176 (2015) OF THE STANDING COMMITTEE, ADOPTED 4TH DECEMBER, 2015 ON THE PREVENTION AND CONTROL OF THE BATRACHOCHYTRIUM SALAMANDRIVORANS CHYTRID FUNGUS

The Batrachochytrium salamandrivorans have not been identified in the territory of Armenia yet /Herbarium materials of the Yerevan State University/.

On the small territory of the country (about 30 thousand km2) there are about 3800 species of vascular plants, 428 species of soil and water algae, 399 species of mosses, **4207 species of fungi.**

In the Red Book of Plants of Armenia 452 species of vascular plants (11,89 % of the flora of Armenia) and 40 species of fungi (1,05% of the biota of Armenia) are registered.

6 species of fungi were assessed as Critically Endangered (CR) according to IUCN criteria and they need urgent protection.

Fungi	Number of species	Number of endemics
Microfungi	2987	
Macrofungi	1220	2
Total		**4207/2**

The updated Red Book of Plants of Armenia includes also Macrofungies (40 species), which were not included in the previous edition. They belong to the following categories:

- Extinct (EX) – 1 species
- Critically Endangered (CR) - 6 species
- Endangered (EN) - 15 species
- Vulnerable (VU) - 12 species
- Near threatened (NT) – 2 species
- Data deficient են (DD) – 4 species

Five of the mentioned fungi are included in the European Red List of Fungi. In addition, the maps of 10 fungi species identified in Armenia are presented on the map of threatened fungi of Europe. The studies on lichens diversity have also been implemented. In the result at present 462 taxa of lichens and 2 species of lichenicolous fungi are known to be distributed in Armenia.

Over the last years for the first time in Armenia the mycobiota of pathogenic fungi parasitising on 96 species of fodder plants belonging to 12 genera of Fabaceae and Poaceae families has been subject to the target study. It has been identified that the mycobiota includes 160 species of microscopic fungi belonging to 51 genera, 18 orders, 7 classes and 3 phylums. For the first time in the mycobiota of Armenia 13 species of fungi parasitizing on fodder plants have been identified.

122 species of macrofungi growing in Armenia also have pharmacological properties. The most rich composition of medicinal mushroom species has the subclass Agaricomycetidae (belonging to blewits) with its 14 families, of which the following families have relatively high species diversity: Tricholomataceae (10 genera, 17 species), Russulaceae (2 genera, 15 species), Boletaceae (2 genera, 8 species) and Amanitaceae (2 genera, 7 species). Out of identified species 12 are included in the Red Book of Armenia (*Agaricus xanthodermus, Amanita muscaria, A. phalloides, Astraeus hygrometricus, Boletus edulis, B. satanas, Hericium erinaceus, Mutinus caninus, Phallus impudicus, Pleurotus eryngii, Podaxis pistillaris, Suillus grevillei*).

The medicines produced from several mushroom species with pharmacological properties (*Inonotus obliquus – chaga mushroom*, *Ganoderma lucidum* – Reishi mushroom) are sold in pharmacies and a number of mushroom species having demand among consumers (*Agaricus campestris, A. bisporus* - champignons, *Pleurotus ostreatus* - oyster mushroom) are grown in greenhouses.

BELGIUM / BELGIQUE

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

1. What biosafety rules is your country applying 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*?

Belgium adopted an action plan concerning *Batrachochytrium salamandrivorans* (see https://www.health.belgium.be/fr/plan-daction-salamandres-version-finale).

This includes biosafety rules that were already implemented before the adoption of the action plan.

All the people that proceed to the temporary capture of amphibians (mainly for scientific purpose, for species protection purpose or for educational purpose) need an authorization. This one specifies that they have to disinfect material and boots with a biocide which is not dangerous for environment (Virkon S or an alternative). Another possibility is to use specific materials and boots for each visited site. In Wallonia the long time drying of the boots is also accepted when the people don't visit several sites successively.

It is also recommended to correctly disinfect his hands or to use non re-usable gloves to handle amphibians.

Besides in amphibians habitats around the places where infected dead salamanders are discovered the authorization of capture of protected animals are only delivered for the purpose of biodiversity monitoring or scientific research.

2. 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 but some research conducted by a Belgian research team showed that it is possible to treat and cure affected amphibians by an exposure to temperature of 25 degrees during at least ten days (see Blooi, M. et al. Treatment of urodelans based on temperature dependent infection dynamics of *Batrachochytrium salamandrivorans*. Sci. Rep. 5, 8037; DOI:10.1038/srep08037 (2015).

3. 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.

In the EU, the pre-import risk screening for infectious diseases of live animals in animal trade is carried out by the European Commission. If relevant risks are identified, appropriate import and trade conditions are introduced, based on the OIE standards and in agreement with the EU Member States.

4. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, describe these.

There are no trade restrictions in place in Belgium for the time being as such measure is currently prepared at EU level within the Animal Health legislation.

5. Are there any monitoring programmes to control the possible further spread of the disease in your country, put in place with the view of developing an early warning system for pan-Europe? Please describe those programmes.

Yes. There is an active monitoring program in Flanders, Brussels region and in Wallonia which consists to test living salamanders captured in populations located all around the country (25 populations in Wallonia and all the known populations in Flanders and in Brussels region).

There is also a passive monitoring program in Flanders, Brussels region and in Wallonia which are based on the citizen collaboration. All the people who discover dead salamanders are invited to collect it and to call the authorities. These dead salamanders are sent to an official laboratory of University Ghent to test the presence of the pathogen.

6. 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 and how is human induced spreading being restricted?

The monitoring program concerns a representative sample of the known salamanders populations.

In the case of the discovering of infected salamanders or newt some access restriction apply, for example in Wallonia big meetings of walkers, cyclists, horse riders or other kinds of tourists won't be allowed in the surrounding (1 km) of the places were infected animals were discovered.

Besides the authorizations of capture will be restricted to the scientists responsible for the survey of biodiversity.

7. 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)?

Belgium developed an action plan. This proposes several measures to detect the infected specimens and to try to prevent the spread of the pathogen to new sites. This includes information and recommendations at the entry of the sites. Nevertheless considering his high capacity of spreading through different supports (soil, water, animals ...) it seems impossible to identify and implement measures that are totally efficient to prevent the spread of the pathogen.

8. How is research into 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?

Several researches focused on *Batrachochytrium salamandrivorans* are carried out in the laboratory of the university of Gent (Belgium) by scientists An Martel and Frank Pasmans. One of those researches is financed by the Flemish Government (Nature and forestry Agency)..

These researches are not supported by the authorities responsible for nature conservation.

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

We provided a lot of information concerning the pathogen and his spreading, the infected sites and concerning the means of prevention by the way of internet web sites (http://biodiversite.wallonie.be/fr/la-salamandre-tachetee-en-peril-appel-a-la-collaboration-de-tous.html?IDD=5442&IDC=790 ; https://www.natuurenbos.be/amfibie%C3%ABnziektes) press releases, articles in periodic, ... By this way we also encourage citizen to mention the observation of dead or living salamander.

10. 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.

CZECH REPUBLIC / RÉPUBLIQUE TCHÈQUE

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

1. What biosafety rules is your country applying 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*?

The Czech Republic plans to develop biosafety guidelines for owners of caudates. However, at present, no official biosafety rules are in place.

2. 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 such biosafety protocols were developed.

3. 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.

Since September 2016, controls on imports of salamanders and newts from countries outside the EU are conducted by the State Veterinary Administration. Collaboration with scientists involved in screening and monitoring programmes is being established, in particular concerning the training of inspectors responsible for controlling the imported animals. Moreover, all importers of amphibians known to the State Veterinary Administration were notified about the measures that need to be taken in order to prevent the infection (such as strict isolation of newly imported animals).

4. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, describe these.

No trade restrictions are put in place as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*.

5. Are there any monitoring programmes to control the possible further spread of the disease in your country, put in place with the view of developing an early warning system for pan-Europe? Please describe those programmes.

Performing continual systematic surveillance of *Bsal* in the Czech Republic in wild and captive populations of amphibians (especially of rare and endangered species in zoos, private collections, etc.) that will be linked with detection of other emerging pathogens, if their presence is suspected., is one of the goals of the action plan for *Bsal* prevention and control.

In total, more than 500 swab samples were collected and tested for both *Batrachochytrium dendrobatidis* (*Bd*) and *Bsal* presence and prevalence in 2015–2017, both from wild populations (fire salamanders, smooth newts and alpine newts) and captive collections, including private breeders and Prague's zoological garden. In 2017, surveillance activities continue and follow-up monitoring

programmes are being developed. Monitoring of wild populations of salamanders at 5-10 sites throughout the country is planned for autumn 2017. So far, none of the analysed samples indicated the presence of *Bsal*.

Development of an early warning system for pan-Europe might be facilitated by on-going international cooperation of Czech institution involved in *Bsal* monitoring with partners from Belgium (Ghent University), Poland (University of Wrocław), Latvia, Belarus or Spain (FAPAS).

6. 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 and how is human induced spreading being restricted?

The Czech Republic is a country with relatively high species diversity of Caudate amphibians, lying in the proximity of previously proven *Bsal* occurrence in Germany. Furthermore, the country, and especially the capital city, Prague, hosts a lively and numerous community of exotic pet keepers or pet shops and large exotic pet fairs take place on regular basis. Surroundings of such large cities could represent areas with high risk of disease spill-over from captive exotic amphibians to wild populations of native amphibians. Therefore, Prague was selected as the first focal area for *Bsal* surveillance efforts in wild population of Caudate amphibians. The monitoring started in September 2015. Swab samples of wild adults of *Salamandra salamandra* were collected from about 10 localities within the Prague's urban area (with negative results) and samples of *Lissotriton vulgaris* from one locality situated in the city centre of Prague. Furthermore, about 200 individuals of at least 20 species across the Czech Republic from different types of captive collections (zoos, pet trades, and private breeders) were sampled. The analysis of samples showed negative results for the presence of *Bsal* in all cases.

7. 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 plans have not yet been developed. Two of the goals of the action plan for *Bsal* prevention and control in the Czech Republic address the cases of pathogen emergence:

1) Setting up of a mobile lab for fast pathogen detection in field conditions to be used in cases of observed unexpected mortalities in both wild populations and captive collections (linking several methods of disease detection including specialised autopsies, histological examination and molecular based analyses). This shall also include the development, testing and implementation of fast and reliable detection methods.

Current state: The quality of *Bsal* analysis performed by the lab of the Faculty of Veterinary Hygiene and Ecology, University of Veterinary and Pharmaceutical Sciences Brno, was examined in cooperation with the *Bsal* reference laboratory at Ghent University. The laboratory in Brno will be listed as one of the recommended laboratories on the following website: https://bsalinfoeurope.wixsite.com/eubsalmitigation2017.

The laboratory at the Faculty of Environmental Sciences, Czech University of Life Sciences in Prague is the second lab in the Czech Republic to perform qPCR analysis for detection of the pathogen. The same institution has at its disposition a mobile device GENIE II, enabling the detection of the pathogen in the field.

2) Development of procedures to deal with critical situations caused by pathogen emergence and mass mortality events in wild populations. Such procedures will involve preparation of facilities and staff training for ex-situ temporary keeping of animals from affected population allowing proper quarantine and veterinary treatment as well as studying the disease. Such ex-situ populations will provide source of animals for future re-introduction efforts in case of local extinction. In addition, it will include guidelines for the treatment of sick animals in captivity.

Current state: There are two facilities where larger number of infected animals could be treated, should the disease outbreak.

8. How is research into the biology, epidemiology, and mitigation of *Batrachochytrium salamandrivorans* supported in your country? How is the conservation biology (demofgraphy and population dynamics) of European salamander and newt supported in your country?

Research activities are facilitated by active collaboration of the Ministry of the Environment of the Czech Republic with research institutions that provide necessary know-how and technical facilities, particularly the Faculty of Environmental Sciences, Czech University of Life Sciences in Prague (Dr. Jiří Vojar and Dr. Milič Solský) and the Faculty of Veterinary Hygiene and Ecology, University of Veterinary and Pharmaceutical Sciences Brno (Dr. Vojtech Baláž).

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

Establishing information sharing and awareness raising mechanisms is one of the goals of the action plan concerning *Bsal* prevention and control in the Czech Republic. They will target state nature conservation bodies (mainly the Ministry of the Environment, Nature Conservation Agency of the Czech Republic), public administration offices (regional and municipal authorities), customs, Czech Environmental Inspectorate (CEI), research organisations, amphibian keepers and breeders (zoos, animal rescue centres, private owners, pet shops and other vendors, etc.) as well as professionals and general public.

Current state:

Pet keepers and breeders

Main breeders of amphibians in the country were contacted and mutual cooperation was established, including checking the health status of kept amphibians, especially of newly imported animals. A workshop was organised to provide the breeders with information on the disease. Special attention is paid to the urgent need to prevent any spill-over of the pathogen from captive amphibian collections to wild populations. An information leaflet was prepared, including basic information on the disease, its recognition and pathogen detection or treatment and on preventive measures to limit the risk of pathogen spill-over.

Experts in the field of nature conservation

The topic of amphibian diseases was presented during the annual meeting of experts involved in mapping and population surveillance of amphibians and reptiles, organised by the Nature Conservation Agency of the Czech Republic. The presentation focused on the need of using various options of disinfection and quarantine procedures in order to minimise the risk of spread of pathogens on sites visited during fieldwork.

Professionals and general public

The case and present situation concerning the *Bsal* surveillance was presented on local scientific conferences, as part of classes on both universities involved, during special meetings, etc. It is previewed that various public media will be involved with the aim of increasing awareness about the disease, including publishing an article in local popular science magazine.

State Veterinary Administration

In December 2016, a workshop was organised for inspectors responsible for controlling imported animals. The aim of the workshop was to raise their awareness on how to recognise the disease.

10. 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.

The impact of climate change on amphibian species is a subject of research at the Institute of Vertebrate Biology of the Czech Academy of Sciences. It focuses primarily on studying:

(i) the behavioural and physiological mechanisms of how amphibians cope with climate change, and (ii) the impact of climate change on life history and species interaction traits (predator-prey, competition). Newts are studied as model organisms (namely the alpine newt and the smooth newt).

For more information, please see the following publications:

Gvoždík L., Kristín P.: Economic thermoregulatory response explains mismatch between thermal physiology and behaviour in newts, Journal of Experimental Biology 220 (2017) (2017) 1106-1111.

Kristín P., Gvoždík L.: Individual variation in amphibian metabolic rates during overwintering: implications for a warming world, Journal of Zoology 294 (2014) 99-103.

Smolinský R., Gvoždík L.: Effect of temperature extremes on the spatial dynamics of predator–prey interactions: a case study with dragonfly nymphs and newt larvae, Journal of Thermal Biology 39 (2014) 12-16.

Gvoždík L.: Plasticity of preferred body temperatures as means of coping with climate change?, Biology Letters 8 (2012) 262-265.

FRANCE / 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

1. What biosafety rules is your country applying 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*?

No legal biosafety rules are applied in France. However, thanks to the European program RACE (2009-2012) and the effort of several research laboratories, a large communication was carried out so as to implement hygiene protocol during fieldwork. This protocol – developed against *Batrachochytrium dendrobatidis* and *Ranavirus*, fully applies to *Batrachochytrium salamandrivorans.* The protocol is available online at www.alerte-amphibien.fr.

We consider that the large majority of French professional fieldworkers are aware of the amphibian disease problem and implement the hygiene protocol. Note that the main national organisms (Universities, Agence Française pour la Biodiversité, Office National des Forêts, Réserves Naturelles de France, Fédération des Parcs Nationaux, etc.) recommand the use of this protocol.

2. 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?

There are no biosafety protocols for the treatment of amphibians affected by the *Batrachochytrium salamandrivorans* currently developed in France.

3. 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.

The importation of live animals is ruled by the *Arrêté du 19 juillet 2002 fixant les conditions sanitaires pour l'importation et le transit, sur le territoire métropolitain et dans les départements d'outre-mer, des animaux vivants et de certains de leurs produits visés à l'article L. 236-1 du code rura*l (see: https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=LEGITEXT000005633224). The Annex 23 regards amphibians but does not provide details on the examinations performed by the Official Vet.

In practice, the inspection of imported animals is carried out by a national service of the Ministry in charge of Agriculture, the Veterinary and Phytosanitary Inspection Service (SIVEP), which has 28 border inspection posts (22 in mainland France) to inspect live animals and animal products as far as veterinary issues are concerned.

The conformity of the animals is checked. This control may result in either quarantine if it is possible to regularise the non-conformity or a risk analysis if is not. This risk analysis is carried out taking into account the specific data of each import (third country of origin, health status of this country, guarantees in terms of animal health, quality of monitoring and infrastructure in the destination facility). There are then several possibilities: either compliance in the destination facility under a single protocol (with analyzes at different times to check the health of animals introduced into the EU), either a re-shipment to the third country or, as a last resort, euthanasia by a veterinary practitioner.

4. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, describe these.

Currently, there is no preventive measure against the introduction of *Batrachochytrium salamandrivorans via the* animal (amphibian) trade.

5. Are there any monitoring programmes to control the possible further spread of the disease in your country, put in place with the view of developing an early warning system for pan-Europe? Please describe those programmes.

France has developed a monitoring system with declaration of ill or dead amphibians via the Website: www.alerte-amphibien.fr. In case of mass mortality observation, samples are collected and analysed by the laboratories: UMR 5175 CEFE in Montpellier (molecular diagnostics), Laboratoire départemental d'analyses du Jura (cell cultures and virus diagnostics) in Poligny, and ONIRIS (histopathology analysis) in Nantes.

France is now partner of the European program SALAMANDERS (https://bsalinfoeurope.wixsite.com/eubsalmitigation2017/partners).

6. 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 and how is human induced spreading being restricted?

France is certainly a country of high risk for salamander and newt populations as the known disease outbreaks (Belgium) are close to its border. In addition, France hosts several endemic species in the Alps, the Pyrenees and Corsica in the Mediterranean.

Monitoring program will be implemented (thanks to the SALAMANDERS program), mostly based on occupancy models (similar to the French standardized amphibian monitoring programme called POPAMPHIBIANS) on e.g. 20 populations of *Salamandra salamandra*, several populations of *Calotriton asper*, 2-3 populations of *Salamandra Corsica*, 2-3 populations of *Euproctus montanus* and 1 population of *Salamandra lanzai*. The newt populations (5 species) are monitored via the POPAMPHIBIAN monitoring program.

How is human induced spreading being restricted? Through the communication on the implementation of hygiene protocol (see point 1 above).

7. 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)?

Currently there are no emergency action plans proposed or implemented in France. The French ministry in charge of Environment plans to design one in the following months.

8. How is research into 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?

Research into the biology, epidemiology, and mitigation of *Batrachochytrium salamandrivorans* supported in France.

The laboratory UMR 5175 CEFE in Montpellier is organizing the research in amphibian disease epidemiology in France, thanks to a large web of collaborations with professionals and NGOs working in the field (conservation). The laboratory intends to identify the disease, and develop hygiene protocols for professionals. This laboratory is the partner of the SALAMANDERS program. So far no action has been carried out for the mitigation of *Batrachochytrium salamandrivorans (*not observed yet in France).

How is the conservation biology (demography and population dynamics) of European salamander and newt supported in your country:

Up to now, a consortium made of Réserves naturelles de France, Office National des Forêts, Fédération des Centres Permanents d'Initiatives pour l'Environnement, la Société Herpétologique de France and the research lab UMR 5175 CEFE in Montpellier, implements standardized protocols to infer the trends of many amphibian populations and communities in France. A citizen science program most of participants of which are environmental professionals is carried out. For the period 2017-2018, the French ministry in charge of environment supports (10 month salary) the animation and valorisation (publication of available data) of this work on population dynamics.

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

Information on the issue of amphibians' diseases and their impact, as well as on means for prevention, biosafety and surveillance are available in the web (www.alerte-amphibien.fr). There is no specific effort aiming at improving public awareness.

10. 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.

The information on research on this topic is available at the UMR 5175 CEFE in Montpellier, based on the analysis of large data bases (e.g. at the scale of France) along temporal series. The laboratory UMR 7372 CEBC Chizé develops research in ecophysiology of amphibians and reptiles, connected with climate change.

HUNGARY / HONGRIE

HUNAGARIAN POSITION AND RECENT SITUATION OF THE CHYTRID FUNGUS BATRACHOCHYTRIUM SALAMANDRIVORANS.

Received by e-mail on 9th October 2017

According to studies so far, the chytrid fungus *Batrachochytrium salamandrivorans* is not present in natural water bodies in Hungary. Infection or deaths of Hungarian salamanders have not been registered so far. However, the infection can be present in the species of the order Urodela sold in ornamental pet shops and we plan the early detection of its presence. In the near future, we intend to study the amphibian stock of bigger pet shops, along with the disinfection of the stocks if needed. We also plan to carry out a comprehensive sampling in 2018 under the Amphibian Protocol of the National Biodiversity Monitoring System. The chytrid fungus related monitoring of salamanders in Hungary is going to be integrated into this protocol. Accordingly, we plan to start the monitoring of *Batrachochytrium salamandrivorans* at 6-8 points of Hungary.

THE NETHERLANDS / PAYS-BAS

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

1. What biosafety rules is your country applying 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*?

Currently, no national biosafety rules are obligatory. A disinfection protocol and guidelines for field-work have been published by RAVON (http://www.sossalamander.nl/how-can-i-help/report-infected-salamanders/hygiene). Repeated campaigns have been released to motivate the implementation of these preventive steps, but so far this has only been marginally effective. When amphibians have to be translocated from a construction site in the framework of the national law, the application of the disinfection protocol is not mandatory.

2. 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 herein 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.

3. 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.

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

4. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, describe these.

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. Recently there is more demand for salamanders and newts and smaller traders have started importing animals. We cannot provide concrete numbers.

5. Are there any monitoring programmes to control the possible further spread of the disease in your country, put in place with the view of developing an early warning system for pan-Europe? Please describe those programmes.

We intensively monitor the presence of the disease both in the focal outbreak sites and in the close vicinity by sampling newts and salamanders. Simultaneously we actively encourage the public to send in their findings of dead and/or sick newts and salamanders (wild animals) so they can be analysed for Bsal. Each spring we send out information to the public at a level as local as possible to inform them

on Bsal so they know to be alert on sick amphibians. We also actively approach people with captive salamander collections to be alert and to report sick/dead animals.

6. 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 and how is human induced spreading being restricted?

The largest landowner (state forestry) of the original outbreak site in the NL prohibits all activities that involve leaving the tracks in the forest. A lot of land is private property.

7. 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.

8. How is research into 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?

The Ministry financially supports the captive collection and the research on the presence and spread of Bsal in the NL.

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

See 1,3,5

10. 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

SLOVAK REPUBLIC / RÉPUBLIQUE SLOVAQUE

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

1. What biosafety rules is your country applying 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*?

Actually no specific biosafety rules for field-work in breeding sites of amphibians in the Slovak Republic.

2. 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?

So far no biosafety protocols developed for treatment of amphibians affected by *Bs* in the Slovak Republic.

3. 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.

State Nature Conservancy of the Slovak Republic is not aware of pre-import risk screening system at the national level.

4. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, describe these.

State Nature Conservancy of the Slovak Republic is not aware of trade restrictions for exotic amphibian species regarding *Bs* introduction in the Slovak Republic.

5. Are there any monitoring programmes to control the possible further spread of the disease in your country, put in place with the view of developing an early warning system for pan-Europe? Please describe those programmes.

State Nature Conservancy of the Slovak Republic is not aware of monitoring programmes for *Bs* in the Slovak Republic.

6. 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 and how is human induced spreading being restricted?

Slovak Republic is not in an area of actual high risk of disease outbreak.

7. 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)?

Slovak Republic has not identified need to develop an emergency action plan for prompt response to *Bs* discovery or disease outbreak.,

8. How is research into the biology, epidemiology, and mitigation of *Batrachochytrium salamandrivorans* supported in your country? How is the conservation biology (demofgraphy and population dynamics) of European salamander and newt supported in your country?

Research activity for amphibian and reptile parasites sampling, including *Bs*, is being carried out this year (cooperative research between Slovak Academy of Sciences and Commenius University representatives).

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

The Ministry of Agriculture and Rural Development of the Slovak Republic published on its web-site translation of the abstract of EFSA article "Scientific and technical assistance concerning the survival, establishment and spread of *Batrachochytrium salamandrivorans* (Bsal) in the EU", which gives basic informations about *Bs* for the public http://www.mpsr.sk/index.php?navID=79&id=11273

10. 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.

Currently there is no research on the impact of climate change on amphibians or reptiles implemented or initiated by the Slovak republic. Monitoring of some amphibian and reptile species is done by the State Nature Conservancy or contracted external experts.

SLOVENIA / SLOVÉNIE

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

1. What biosafety rules is your country applying 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*?

Biosafety rules according to the implementation of the CBD Cartagena Protocol are regulated in the Decree on criteria for classifying contained uses of genetically modified organisms according to safety classes and on containment and other safety measures for a particular safety class (Off. Gaz., 71/2011), but applied for GMO use in laboratories, only. So those rules are not applicable for out-door use.

2. 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.

3. 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.

The pre-import risk screening system is currently under development.

The diagnostic centre for Bsal (and other amphibian pathogens), as a crucial prerequisite for establishment of screening system, is in process of establishment at the Department of biology, Biotechnical Faculty, University of Ljubljana. The centre already comprise molecular, microbiological, and zoological expertise on the amphibian diseases and is currently under final evaluation stage to become full member in the “EU network of Bsal diagnostic centres” established by the European Commission and coordinated by the Ghent University.

4. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, describe these.

Trade regulation in Slovenia is harmonised with EU legislation, no additional restrictions are in place. We are actively participating in the preparation of the Commission implementing decision on certain animal health protection measures in relation to the fungus *Batrachochytrium salamandrivorans* (Bsal). But, nevertheless we are planning to test for Bsal amphibian populations at certain breeders and labs.

5. Are there any monitoring programmes to control the possible further spread of the disease in your country, put in place with the view of developing an early warning system for pan-Europe? Please describe those programmes.

As already mentioned, we are establishing the national diagnostic centre for Bsal at the University of Ljubljana, which is currently under evaluation to become a part of the developing pan-European network of diagnostic centres coordinated by the Ghent University.

Monitoring programmes on national scale are not established yet. There are two projects (described in answer under question 8) funded by national agencies, which include pilot sampling and testing for Bsal of underground amphibian *Proteus anguinus* and selected autochthonous amphibian species from other environments.

6. 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 and how is human induced spreading being restricted?

The Slovenia can be considered as an area of high risk of Bsal due to isolated populations of alpine salamander (*Salamandra atra*) and especially the endemic blind cave salamander (*Proteus anguinus*). Although monitoring programmes and restrictions of human spreading of the disease have not been established in Slovenia, the scientific background required for the monitoring of Bsal and other pathogens in underground waters will be obtained within the project entitled "Emerging microbial threats to endemic troglobiotic amphibian *Proteus anguinus*", which started in May 2017 at Department of Biology, Biotechnical Faculty, University of Ljubljana.

The restrictions of human spreading of the disease are under consideration.

7. 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)?

Action plans are not yet developed, but there is a provisional 3-stage approach foreseen:

Stage 1 – potential threat, aggressive form of Bsal not detected in Slovenia or in close neighbourhood;

Stage 2 - aggressive form of Bsal detected in close neighbourhood of Slovenia or sporadic in closed systems in Slovenia;

Stage 3 – aggressive form of Bsal detected in natural environment in Slovenia

At the moment we consider the situation in Slovenia as Stage 1. This is an important fact finding and preparatory phase. With co-operation with experts and specialised NGO's we plan to prepare action plans and protocols for some target groups (e. g. cavers, fishermen, amphibian breeders…), as well as raise public awareness on that issue (see answer 8).

8. How is research into 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?

The largest research related to Bsal in Slovenia is project entitled "Emerging microbial threats to endemic troglobiotic amphibian *Proteus anguinus*", which started in May 2017 at Department of biology, Biotechnical Faculty, University of Ljubljana. The project is funded by Slovenian research agency and focus on microbial threats to endemic underground amphibian, *Proteus anguinus*. As these include chytrid fungi, the project will directly contribute to Bsal research by establishment of Bsal diagnostics on University of Ljubljana (as already mentioned above). The research will also provide the scientific background for sustainable monitoring of the underground waters for the presence of microbial threats to *Proteus* and development of action plans for efficient response in the

case of recognized infection. Besides testing to Bsal the project partners at University of Ljubljana are developing diagnostics of other amphibian pathogens including other fungi, bacteria, viruses and provide the expertise in amphibian biology and pathology.

The pilot sampling of selected amphibian species and their testing for Bsal is foreseen also in another, much smaller project entitled “Invasive species does not rest” (http://invazivke.weebly.com/), funded by Slovenian Ministry of environment and spatial planning. The samples of the project are being currently processed in already mentioned diagnostic facility at University of Ljubljana.

The research on conservation biology is not directly supported by national agencies or ministries.

9. What measures has your country taken to improve public’s awareness on the issue of amphibians’ diseases and their impacts, as well as on means for prevention, biosafety and surveillance?

The problem with Bsal has recently (August 2017) been presented to general public via interviews, newspaper articles and several web pages. That publicity raised awareness even in the Parliament.

10. 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.

Not directly.

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Ljubljana, 29. 9. 2017

UKRAINE / UKRAINE

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

1. What biosafety rules is your country applying 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*?

Ukraine has no adopted legal biosafety rules to be applied in breeding sites of fire salamander and newts. Despite that, Ukrainian Herpetological Society develops the Recommendations for researchers concerning *Batrachochytrium dendrobatidis*, *Ranavirus*, and *Batrachochytrium salamandrivorans*, field-work and animal trade risks. The Recommendations will be available online in a few weeks. Relevant Ministries, Universities, Nature Protection Organisations will be informed about risks and its prevention.

2. 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?

Unfortunately, Ukraine has no biosafety protocols for the treatment of amphibians affected by the *Batrachochytrium salamandrivorans*.

3. 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.

The import of live animals is governed by the Law of Ukraine “On Veterinary Medicine” with Amendments (2002, 2005, 2007). The Article 18 of the Law is “State veterinary and sanitary control and supervision at the state border of Ukraine and transport”. The Law has only general statutory provisions and does not describe the procedures, which developed by the State Veterinary and Phytosanitary Service of Ukraine. The Service use information from the World Organization for Animal Health (OiE), which has no any references on *Batrachochytrium salamandrivorans* (http://www.oie.int/en/animal-health-in-the-world/oie-listed-diseases-2017/). It should be corrected.
The available documents have no details on the examinations of amphibians performed by a veterinary inspector at the entry point. On the other hand, the control of usual agricultural and domestic animals are well developed. The conformity check, quarantine measures and risk estimation are applied.

The Ukraine–European Union Association Agreement (Association Agreement between the European Union and the European Atomic Energy Community and their member states, of the one part, and Ukraine, of the other part, 2014) includes the Chapter 4: Sanitary and phytosanitary measures.
On 24th February 2016 Cabinet of Ministers of Ukraine adopted the Comprehensive Strategy of the Implementation of Chapter IV (Sanitary and Phytosanitary Measures), Section IV "Trade and Trade-Related Issues" of the Association Agreements between Ukraine on the one part and the European Union, the European Atomic Energy Community and their Member States on the other part.
The Comprehensive Strategy has *No* 37 “Measures that apply to amphibians”. It is based on the Council Regulation (EC) No 338/97 of 9 December 1996 on the protection of species of wild fauna and flora by regulating trade therein. These measures should be developed in 2017 and implemented in 2018.

4. Are there any trade restrictions in place in your country as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*? If yes, describe these.

Presently, there are no trade restrictions in place in Ukraine as a preventive measure against the introduction of *Batrachochytrium salamandrivorans*.

5. Are there any monitoring programmes to control the possible further spread of the disease in your country, put in place with the view of developing an early warning system for pan-Europe? Please describe those programmes.

Ukraine has no any monitoring programmes to control the amphibian disease. Ukrainian Herpetological Society prepares the instruction on alerting of case of mass amphibian mortality observation. Unfortunately, Ukraine has no specific laboratories for *Batrachochytrium salamandrivorans* diagnostics. Therefore, collaboration with the European project „Mitigating *Batrachochytrium salamandrivorans* in Europe“ is extremely important (https://bsalinfoeurope.wixsite.com/eubsalmitigation2017).

6. 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 and how is human induced spreading being restricted?

Ukraine is not considered as a country of high risk for salamander and newt populations. There is only one confirmed infection of *Batrachochytrium salamandrivorans* in two individuals of *Salamandra salamandra* from the Carpathian Mountains (Joana Sabino-Pinto et al., 2015). However, that case is a real signal of the probable disease outbreak in future that needs additional research and control measures development.

7. 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)?

In Ukraine, there are no emergency action plans on *Batrachochytrium salamandrivorans* proposed or implemented at a moment. It should be developed.

8. How is research into 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?

Research into the biology, epidemiology, and mitigation of *Batrachochytrium salamandrivorans* is not currently supported in Ukraine. There are not specific laboratories for *B. salamandrivorans* diagnostics as well as other amphibian disease epidemiology. The main reason is the lack of information on the presence and potential threat of *B. salamandrivorans* in Ukraine.

The conservation biology (demography and population dynamics) of European salamander and newt is supported in Ukraine without special preferences. It means that general animal research in Nature Reservations should include demography and population dynamics of amphibians. Professional batrachologists usually do that simultaneously with their current research project.

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

Information on amphibians' diseases and their impact, as well as on means for prevention, biosafety and surveillance will be available in the web site of Ukrainian Herpetological Society in a few weeks. Professional herpetologists will be involved in dissemination of that information through social networks (Facebook, Twitter, etc.) and mass media.

10. 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.

Currently, there is not specific implemented research on the impact of climate change on amphibian and reptile species in Ukraine. There are some prognostic simulations only, e.g. bioclimatic modeling and home range changes in the dice snake *Natrix tessellata* (Nekrasova, Tytar, 2014). The research on the impact of climate change on amphibians and reptiles is initiated by the Department of Zoology and Ecology at Oles Honchar Dnipro National University (Dnipro, Ukraine) as a part of big project of animal response to climate change in Steppe zone of Ukraine. The project should start in 2018.