PETITION

To: KEN SALAZAR, SECRETARY, U.S. DEPARTMENT OF THE INTERIOR

Petition: To List All Live Amphibians in Trade as Injurious Unless Free of *Batrachochytrium dendrobatidis*

Submitted by: Defenders of Wildlife, 1130 17th Street NW, Washington, DC 20036

Date: September 9, 2009

Executive Summary and Text of Proposed Amendment:

Robust measures to conserve Earth's amphibians are urgently needed. The absence of Federal protective measures applied to the import, interstate commerce and export of live amphibians has led to excessive risk that the globally devastating *Batrachochytrium dendrobatidis* ("*Bd*") pathogen, which causes the deadly disease chytridiomycosis, will continue to enter, spread within and be shipped out of the United States.

This shockingly unregulated trade - primarily for pet use and as live animals for consumption as frog legs - continues to threaten the survival of multiple amphibians, including, but not limited to, U.S. and foreign species listed by the U.S. Fish and Wildlife Service (FWS) under the Endangered Species Act (ESA), candidate species and other species as well. All Federal agencies have affirmative duties to protect these species. However, the only Federal regulation on the amphibian trade, 50 CFR §16.14, now allows "all species" of amphibians to be "imported, transported and possessed" without restriction. This FWS regulation is far too liberal and should be amended to require health certification and handling based on a consensus international standard, adopted by the World Organization for Animal Health (OIE), which the United States voted to support at the May 2008 annual meeting of the parties..

The U.S. vote in support of the OIE standard came from the U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services (USDA VS) which also can play a key regulatory role. Implementing the OIE standard in both FWS and VS regulations would block *Bd*-infected imports and exports and prevent further *Bd* spread via interstate commerce. Due to the role of the two departments, **Defenders is filing two separate petitions simultaneously: this petition to Secretary Salazar, and a parallel petition to Secretary of Agriculture Tom Vilsack.**

This petition to Secretary of the Interior Salazar proposes the following amendment to the FWS regulation 50 CFR §16.14, (deletions shown by ~~strikeout~~, additions by *redline italics*):

> Importation of live amphibians or their eggs. *All live amphibians and their eggs are prohibited entry into the United States, or to be exported from the United States, or transported in interstate commerce, for any purposes, except in compliance with this section.* Upon the filing of a written declaration with the District Director of Customs at the port of entry as

> required under Sec. 14.61, ~~all~~ species of live amphibians or their eggs may be imported, transported, and possessed in captivity, ~~without a permit, for scientific, medical, education, exhibition, or propagating purposes, but n~~ *only if the shipment complies with a certification and handling system that meets or exceeds recommendations of the World Organization for Animal Health in its Aquatic Animal Health Code on Batrachochytrium dendrobatidis. N*o such live amphibians or any progeny or eggs thereof may be released into the wild except by the State wildlife conservation agency having jurisdiction over the release from such agency. *All live amphibians and their eggs are prohibited from interstate commerce in the United States and from export out of the United States unless in a shipment accompanied by a written declaration, in such form as the Director of the Fish and Wildlife Service shall provide, which indicates the shipment meets or exceeds the recommendations of the World Organization for Animal Health in its Aquatic Animal Health Code on Batrachochytrium dendrobatidis.*

Secretary Salazar is requested to first coordinate with Secretary Vilsack regarding the parallel petition, consult with stakeholders, including States; and then to promptly publish notice of this emergency petition in the Federal Register. Secretary Salazar should ask for and consider public comment on this petition and then promulgate the proposed regulation herein.

This petition provides a fundamentally common-sense step toward modernizing regulation of the amphibian trade. The petition has strong support from knowledgeable amphibian experts as necessary to reducing the threat of *Bd* and to aid amphibians the disease jeopardizes.

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PETITION

Introduction

Defenders of Wildlife (Defenders) is a national, member-based, non-profit group dedicated to the protection and restoration of all native wild animals and plants in their natural communities. Founded in 1947, and headquartered in Washington, DC, Defenders has approximately 145 employees and operates field offices in nine states and in Mexico and Canada.

Defenders submits this petition in order to mitigate one factor – trade – associated with a catastrophic disease threat posed to amphibians (Class Amphibia), both in the United States and worldwide.[1] There is no doubt that ongoing extirpations of wild amphibian populations have reached crisis proportions. According to The World Conservation Union (IUCN) Global Amphibian Assessment, nearly one-third of all amphibian species (at least 1,896 of 6,300 species) are threatened or endangered, making this the most jeopardized class of animals on Earth.[2] The current extinction rate for amphibians is estimated at more than 200 times the background rate of extinction, with 35 species known to have been extirpated and more than 130 additional species likely to have gone extinct in recent years.[3]

One of the striking aspects of recent amphibian extinctions is that many took place in protected areas, that is, where habitat loss was not a major contributing factor. For example, a five-year study found that in the protected Monteverde Cloud Forest in Costa Rica, 40% of amphibians - a total of 20 species including the well-known Golden toad (*Bufo periglenes*) – had been extirpated.[4] These and other amphibian extinctions are correlated to the tragic spread of the amphibian chytrid fungus, *Batrachochytrium dendrobatidis*.[5] This disease has caused the decline of approximately 200 species globally.[6]

Many amphibian populations already are stressed by habitat loss and degradation, global warming, invasive species and toxic pollution. They now suffer from heightened vulnerability to *Batrachochytrium dendrobatidis* (hereinafter referred to as "*Bd*"). This disease is the primary factor in at least one recent extirpation of the wild-breeding populations of a U.S. amphibian, the Wyoming

[1] External reviewers of the draft of this petition were: Karen R. Lips, Ph.D., Professor of Biology, University of Maryland; Joseph R. Mendelson, III, Ph.D., Curator of Herpetology, Zoo Atlanta; Deanna H. Olson, Ph.D., Research Ecologist, U.S. Forest Service; and two anonymous reviewers.

[2] Stuart, S.N., Chanson, J.S., Cox, N.A., Young, B.E., Rodrigues, A.S.L, Fishman, D.L., and Waller, R.W. 2004. Status and trends of amphibian declines and extinctions worldwide. *Science* 306(5702): 1783-1786.

[3] McCallum, M.L. 2007. Amphibian decline or extinction? Current declines dwarf background extinction rate. *J. Herpetology* 41: 483-491.

[4] Pounds, J.A., Fogden, M.P.L., Savage, J.M., and Gorman, G.C. 1997. Tests of null models for amphibian declines on a tropical mountain. *Conservation Biology* 11: 1307-1322.

[5] Lips, K.R., Brem, F., Reeve, J.D., Alford, R.A., Voyles, J., Carey, C., Livo, L., Pessier, A.P., and Collins, J.P. 2006. Emerging infectious disease and the loss of biodiversity in a Neotropical amphibian community. *Proceedings of the National Academy of Sciences of the United States of America* 102: 3165-3170.

[6] Skerratt, L.F., Berger L**.,** Speare, R., Cashins, S., McDonald, K., Phillott, A., Hines H., and Kenyon, N. 2007. The spread of chytridiomycosis has caused the rapid global decline and extinction of frogs. *EcoHealth* DOI: 10.1007/s10393-007-0093-5.

toad, *Bufo baxteri*.[7] The United States, particularly the southeastern region, is an important center of amphibian diversity, with 265 native species, of which 23 (9%) are listed by the U.S. Fish and Wildlife Service (FWS) under the Endangered Species Act (ESA) as threatened or endangered.[8]

Evidence already links the presence of *Bd* in some U.S. locations to the import trade and interstate commerce in a variety of infected live amphibians, primarily as live animals for consumption as frog legs, for pet use and as live bait.[9] Absent reform, trade will continue to spread *Bd* in the United States. Regulating this trade pursuant to the Lacey Act and other laws is the responsibility of the Secretary of the Interior. This petition seeks the necessary regulatory reforms to ensure traded amphibians are *Bd*-free based on an internationally-recommended certification and handling standard --- **a standard developed by the World Organization for Animal Health, which the United States government officially endorsed in 2008, but which now must be adopted as a regulation for the standard to have effect.**

Background on *Batrachochytrium dendrobatidis*

Bd is a pathogenic fungus that can cause the disease chytridiomycosis in amphibians, which can, but may not necessarily, lead to death.[10] The infecting fungus ingests keratin, an important structural protein in the skin. Amphibians can be infected with chytridiomycosis without having any clinical signs (aclinical chytridiomycosis) or with mild or severe clinical signs. In adult animals, these signs include dehydration, weight loss, abnormal and/or excessive molting and reddened skin, which may be a secondary infection invading opportunistically following a *Bd* infection. It remains uncertain whether amphibians die directly from the fungal damage, from the effect of damage to water and oxygen regulation functions, from toxins emitted by the fungus, or from secondary bacterial infection. Behavioral signs include lethargy, slumped posture and inability to right themselves after being inverted.[11] In tadpoles, signs of *Bd* infection include loss of pigmentation in teeth, jaw sheaths and/or jaws, (in tadpoles, only these parts contain keratin); widespread and often fatal infection follows metamorphosis, when a larger part of the skin becomes keratinized. Mortality rates in infected susceptible populations can be 100%.[12]

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[7] Stuart, S.N., Hoffman, M., Chanson, J.S., Cox, N.A., Berridge, R.J., Ramani, P., and Young, B.E. (eds). 2008. *Threatened Amphibians of the World*. Lynx Edicions, Barcelona, Spain; IUCN, Gland, Switzerland; and Conservation International, Arlington, VA.

[8] U.S. Fish and Wildlife Service. 2008. Threatened and Endangered Species System, available at: http://ecos.fws.gov/tess_public/StartTESS.do ; ESA is at 50 U.S.C. §§ 1531-1544.

[9] Fisher, M.C., and Garner, T.W. 2007. The relationship between the emergence of *Batrachochytrium dendrobatidis*, the international trade in amphibians and introduced amphibian species. *Fungal Biology Reviews* 21: 2-9; Daszak, P., et al., Infectious Diseases, in Gascon, C., Collins, J.P., Moore, R.D., Church, D.R., McKay, J.E., and Mendelson, J.R. III (eds). 2007. *Amphibian Conservation Action Plan.* IUCN/SSC Amphibian Specialist Group. Gland, Switzerland and Cambridge, UK. Available at: www.amphibians.org/newsletter/ACAP.pdf ; Picco, A.M., and Collins, J.P. 2008. Amphibian commerce as a likely source of pathogen pollution. *Conservation Biology* 22: 1582-1589; and Schloegel, L.M., Picco, A.M., Kilpatrick, A.M., Davies, A.J., Hyatt , A.D., and Daszak, P. 2009. Magnitude of the US trade in amphibians and presence of *Batrachochytrium dendrobatidis* and ranavirus infection in imported North American bullfrogs (*Rana catesbeiana*). *Biological Conservation* 142:1420-1426.

[10] Berger, L., et al. 1998. Chytridiomycosis causes amphibian mortality associated with population declines in the rain forests of Australia and Central America. *Proc. Natl. Acad. Sci. USA* 95: 9031-9036.

[11] Densmore, C.L., and Green, D.E. 2007. Diseases of amphibians. *ILAR Journal* 48(3): 235-254.

[12] Daszak, P., Berger, L., Cunningham, A.A., et al. 1999. Emerging infectious diseases and amphibian population declines. *Emerging Infectious Diseases* 5:735-748.

Bd was first recognized in 1998 and is the only chytrid fungus known to affect a vertebrate.[13] It has continued to spread rapidly both taxonomically and geographically. Worldwide, researchers have detected the pathogen in 387 amphibian species - 50% of 773 species sampled - within 37 different families and in 47 of 78 (60%) countries surveyed.[14] Of 2,449 discrete sites sampled worldwide it was detected in 1,168 (48%). It is now considered to have the broadest host species-range of any known animal pathogen and appears still far from reaching a hypothesized eventual global equilibrium.[15]

The origins of *Bd* as a pandemic may lie in global trade. In 1934, scientists discovered that the African clawed frog (*Xenopus laevis*) can be induced to ovulate if injected with the urine of a pregnant woman; this knowledge was used to develop a protocol for a rapid pregnancy test.[16] Subsequently, large numbers of African clawed frogs - now, after the fact, known as the first species to carry *Bd* - were exported around the world. Specimens also were used in embryological research and molecular biology; as a result feral populations that could potentially serve as infection reservoirs became established in the United States, Britain and Chile.[17] The North American bullfrog *(Rana catesbeiana*) may have been an additional vector for the spread of chytrid fungus. Like the African clawed frog, it is traded widely, has established feral populations in many areas and can carry the fungus without suffering adverse effects.[18] For instance, researchers in the Venezuelan Andes have found populations of introduced bullfrogs that carry the disease but do not suffer significant mortality from it.[19]

In mid-2009 *Bd* was confirmed in the Philippines, a major center of amphibian diversity and source country for live animal exports. It may have arrived there via imports of non-native frogs for farming.[20] International trade continues to be implicated in *Bd*'s spread through transporting infected animals, introducing non-native carriers into naïve populations and through infections possibly stemming from animal housing and water discharge practices.[21]

In a crucial 2009 paper in *Biological Conservation*, Schloegel et al. reported on their study of the infection rate in the bullfrog trade coming into Los Angeles, New York and San Francisco for human consumption. The authors visited market stalls and stores selling live imported bullfrogs or frog parts, purchased samples and tested them for the fungus. A remarkably high number, **62%**, of animals they sampled were infected. According to a press article:[22]

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[13] Berger et al. 1998, *supra* fn 10.
[14] Olson, D.H., Aanensen, D.M., Ronnenberg, K.L., Walker, S.F., Bielby, J., Garner, T.W., Weaver, G., Spratt, B.G., the *Bd* Mapping Group, and Fisher, M.C. 2009. Mapping the Global Emergence of Amphibian Chytridiomycosis. Unpublished report.
[15] *Id.*
[16] Shapiro, H.A., and Zwarenstein, H. 1934. A rapid test for pregnancy on *Xenopus laevis*. *Nature* 133:762.
[17] Weldon, C., du Preez, L.H., Hyatt, A.D., Muller, R., and Speare, R. 2004. Origin of the amphibian chytrid fungus. *Emerging Infectious Diseases* 10(12):2100-2105.
[18] *Id.*
[19] Hanselmann, R., Rodríguez, A., Lampo, M., Fajardo-Ramos, L., Aguirre, A.A., Kilpatrick, A.M., Rodríguez, J.P., and Daszak, P. Presence of an emerging pathogen of amphibians in introduced bullfrogs *Rana catesbeiana* in Venezuela. *Biological Conservation* 120:115-119.
[20] De Vera, E.B. 2009. Fungus that kills frogs now in RP. *Manila Bulletin* May 20. Available at: www.mb.com.ph/node/201417 .
[21] Fisher and Garner. 2007, *supra*, fn 9.
[22] Brahic, C. 2009. World frog trade spreading killer diseases *New Scientist.* May. Available at: www.newscientist.com/article/dn17093-world-frog-trade-spreading-killer-diseases.html .

> *"Considering the devastating impact Bd has had on global amphibian populations and the millions of animals being traded on an annual basis, this number is especially alarming," says Lisa Schloegel of the Wildlife Trust who led the work. "We may never completely know the extent to which trade has contributed to the global spread of amphibian diseases, but it does appear to be a major contributing factor."*

Bd has been detected in live amphibians in trade not only for human consumption, but also as pets, biomedical research organisms and bait.[23] Animals in trade often are kept in stressed conditions, where the chance of infection is great due to host density and because individuals may have weakened immune systems. In a recent analysis, Hero and Kriger state:

> *The largely unregulated pet and food trades are two likely sources of disease introduction into naïve amphibian populations. As millions of amphibians are shipped internationally each year, numerous opportunities exist for the successful introduction of pathogens to disparate parts of the word. ….[Bd-]Infected frogs are also exported via the zoo trade and laboratory animal trade.*[24]

The fungus cannot be reliably detected by visual inspection of shipments. Some chemical treatment options exist for shipments, but questions about their feasibility and effectiveness remain. Further, questions of any human safety implications of treating amphibians shipped in the live food and pet trades with chemicals are unanswered.

At present, no mandatory quarantine protocol exists to ensure amphibians imported to the U.S. are *Bd*-free and no mandatory measures are in place to prevent infected animals from spreading the pathogen to wild amphibians. No proven method exists to treat *Bd* infections on a large scale in the environment.[25] Even if *Bd* is already present in a given area, further introductions of new, more lethal, strains to that area must be guarded against.

In sum, *Bd* is the proximate cause of repeated, recent, massive population declines and a major factor in several species' extinctions worldwide. Its impact varies by the host taxa, geography and life stage and by the particular strain of *Bd* involved. It continues to be spread to areas worldwide previously considered *Bd*-free and trade is a contributing factor. Many unknowns exist regarding the spread, virulence, persistence and treatment of this disease. What is known is that preventing further human-mediated spread of *Bd* beyond the amphibians it already has devastated is an urgent conservation goal.[26]

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[23] Daszak, P., Cunningham, A.A., and Hyatt, A.D. 2003. Infectious disease and amphibian population declines. *Diversity and Distributions* 9: 141–150; Cunningham, A.A., Daszak, P., Rodrıguez, J.P., 2003. Pathogen pollution: defining a parasitological threat to biodiversity conservation. *Journal of Parasitology* 89 (Suppl.): S78–S83; Picco and Collins. 2008, *supra,* fn 9.

[24] Hero, J.M., and Kriger, K. 2008. *Threats to Amphibians in Tropical Regions.* International Commission on Tropical Biology and Natural Resources. UNESCO-EOLSS. Available at: www.savethefrogs.com/kerry_kriger/pdfs/Hero%20&%20Kriger%202008%20Threats%20to%20Amphibians.pdf .

[25] Australian Government, Department of the Environment and Heritage. 2006. Threat Abatement Plan: Infection of amphibians with chytrid fungus resulting in chytridiomycosis. Available at: www.deh.gov.au/biodiveristy/threatened/publications/tap/chytrid/ .

[26] Skerratt et al. 2007, *supra,* fn 6.

Background to Petition

No amphibians are currently regulated as injurious species under the Lacey Act or under any comparable USDA regulations. No amphibian shipments are quarantined by any Federal agency upon entry and many shipments are neither visually inspected nor fully identified to the species level when they arrive in the United States.[27] This is despite the fact that several species known to have carry *Bd* are regularly imported and essentially all species of amphibians can potentially act as *Bd* vectors or reservoirs.[28] Indeed, **a longstanding and unfortunate regulation adopted by the FWS under the Lacey Act explicitly directs that all amphibians "may be imported, transported, and possessed in captivity" in this country for most purposes**. 50 CFR §16.14 provides:

> *Upon the filing of a written declaration with the District Director of Customs at the port of entry as required under Sec. 14.61, all species of live amphibians or their eggs may be imported, transported, and possessed in captivity, without a permit, for scientific, medical, education, exhibition, or propagating purposes, but no such live amphibians or any progeny or eggs thereof may be released into the wild except by the State wildlife conservation agency having jurisdiction over the release from such agency.*

The FWS must amend 50 CFR §16.14 to repeal this blanket exemption of live amphibians or their eggs from any permit requirements. Specifically, Defenders of Wildlife requests an amendment repealing the exemption and declaring such trade is prohibited unless a shipment is accompanied by a certification that the specimens are *Bd*-free.

The basic proposal here also could be adopted into regulation by the Secretary of Agriculture, who is copied with this petition. While the U.S. Department of Agriculture (USDA) has an important role in this field, as amplified below the USDA lacks the FWS' broader statutory scope and the FWS' animal trade inspection and enforcement personnel, all of which are vital to success in protecting amphibians from the risks of trade.

Text of Proposed Amendment

Pursuant to Section 553(e) of the Administrative Procedure Act, this petition requests the Secretary of the Interior to adopt the following amendment to the FWS regulation on amphibian imports at 50 CFR §16.14, (deletions shown by ~~strikeout~~, additions by *redline italics*):

> Importation of live amphibians or their eggs. *All live amphibians and their eggs are prohibited entry into the United States, or to be exported from the United States, or transported in interstate commerce, for any purposes, except in compliance with this section.* Upon the filing of a written declaration with the District Director of Customs at the port of entry as required under Sec. 14.61, ~~all~~ species of live amphibians or their eggs may be imported, transported, and possessed in captivity, ~~without a permit, for scientific, medical, education, exhibition, or propagating purposes, but n~~ *only if the shipment*

[27] Defenders of Wildlife. 2007. *Broken Screens - The Regulation of Live Animal Imports in the United States.* Report by Defenders of Wildlife, Washington, DC. Available at: www.defenders.org/resources/publications/programs_and_policy/international_conservation/ broken_screens/broken_screens_report.pdf .

[28] See *id*., at p. 38, App. B, a list of non-native amphibians that were imported from 2000 to 2004 and were known to have posed disease and/or invasiveness risk.

> *complies with a certification and handling system that meets or exceeds recommendations of the World Organization for Animal Health in its Aquatic Animal Health Code on Batrachochytrium dendrobatidis. N*o such live amphibians or any progeny or eggs thereof may be released into the wild except by the State wildlife conservation agency having jurisdiction over the release from such agency. *All live amphibians and their eggs are prohibited from interstate commerce in the United States and from export out of the United States unless in a shipment accompanied by a written declaration, in such form as the Director of the Fish and Wildlife Service shall provide, which indicates the shipment meets or exceeds the recommendations of the World Organization for Animal Health in its Aquatic Animal Health Code on Batrachochytrium dendrobatidis.*

ANALYSIS

U.S. Amphibian Imports

The United States imports huge numbers of amphibians, many originating from *Bd*-infested regions. No required *Bd* monitoring program exists. As indicated, in the only comprehensive surveillance study, Schloegel et al. (2009) documented *Bd* in a remarkably high proportion (62%) of imported live bullfrogs in the frog leg trade into three coastal cities.[29] There was nothing to keep those imports from being transported further in interstate commerce.

After fish, amphibians are the second most-imported group of live vertebrate animals. From 2000 to 2004, the total volume of U.S. imports amounted to an average of more than **five million** individual amphibians imported each year, plus an additional average of more than **250,000 kilograms** annually of shipments counted by weight rather than by number of individuals.[30] Many imported pet amphibians are released accidentally or intentionally and the number of established feral populations has increased dramatically.[31] Further, some amphibians are used as live bait. These uses create major avenues for spreading *Bd* to native populations.

Globally, at least 28 species of introduced non-native amphibians have been shown to carry *Bd* - often asymptomatically - and to have the capacity to transmit the fungus to other amphibian populations.[32] Since 1998, the United States has continuously added, on average, 15 new non-native amphibian species to its import pool annually.[33] The accumulated number of species ever imported totaled approximately 230 in 2006 and likely now exceeds 260 (in 2009).[34] In short, the diversity of imported amphibian species likely already exceeds the total number (265) of known native species.

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[29] Schloegel et al. 2009, *supra*, fn 9.
[30] Defenders of Wildlife, 2007. *Broken Screens* report cited *supra*, fn 27 p. 10, Table 4.
[31] Kraus, F. 2009. *Alien Reptiles and Amphibians - a Scientific Compendium and Analysis.* Springer, Netherlands.
[32] Fisher and Garner, 2007, *supra*, fn 9.
[33] Romagosa, C., 2009. United States Commerce in Live Vertebrates: Patterns and Contribution to Biological Invasions and Homogenization. Ph.D. dissertation, Auburn University. Auburn, AL. 118 pp.
[34] *Id.* As further indication of the numbers of new species arriving in the country, at the Port of San Francisco/Oakland, inspection staff estimate a new amphibian species is received every two weeks and that identification of these new amphibian species could take days. Reaser, J.K. and Waugh, J.D. 2007. *Denying Entry: Opportunities to Build Capacity to Prevent the Introduction of Invasive Species and Improve Biosecurity at US Ports.* Gland, Switzerland: IUCN. 108pp.

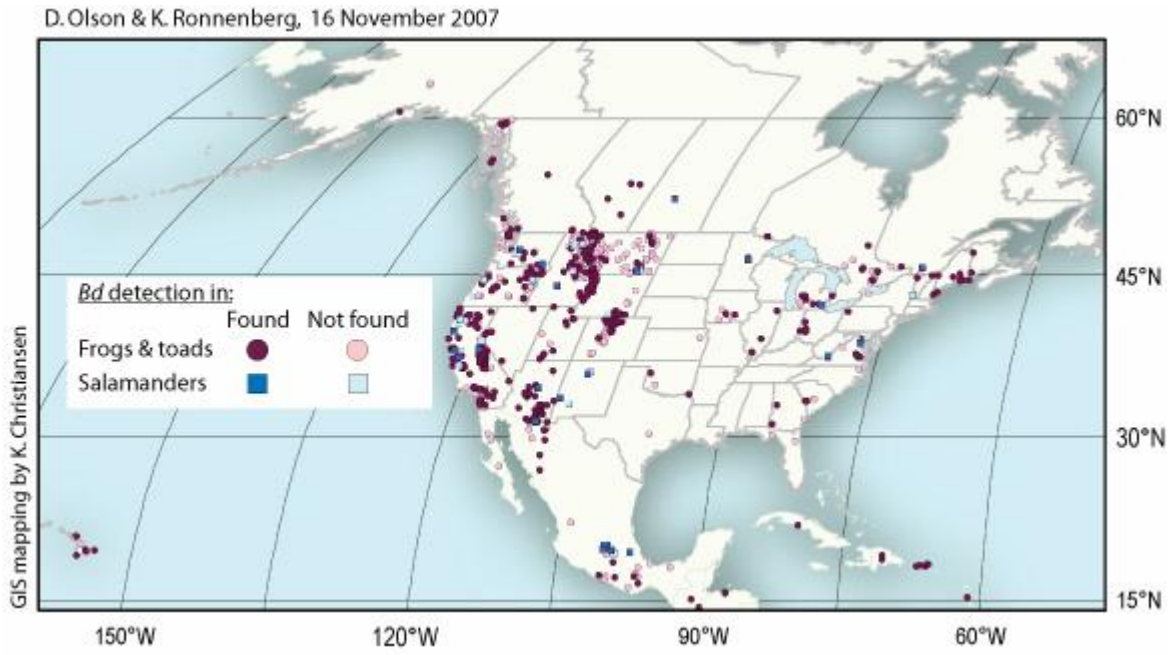
U.S. amphibians are being "swamped" by the import trade and increasingly exposed – via releases and escapes - to introduced species presenting *Bd* risk.

Interstate Commerce in Amphibians

Imports for the pet, aquarium, food, biological supply and other trades typically do not remain in the State where the entry port is situated. They are distributed rapidly to virtually every human population center in the nation. No centralized data on interstate commerce exist, but the volume is very large, being comprised not only of the bulk of the imports but also the bulk of the output of the substantial domestic captive-breeding industry for amphibians.

Bd has been sampled in at least 44 States.[35] (Fig. 1.) Absence of evidence of *Bd* in any given area does not mean that it is not present. Field studies are required to determine whether Bd is truly absent, and many areas have yet to be surveyed. It is documented that interstate commerce in tiger salamanders (*Ambylostoma tigrinum*) for the fishing bait trade has been a contributing factor in the spread of *Bd*.[36] In short, interstate commerce in amphibians is risky and even less regulated than international imports. A Federal regulatory approach is needed to effectively halt *Bd*'s further spread via this pathway.

Fig. 1 *Bd* Sampling in North America.



[35] Olson, D., and Ronnenberg, K. 2008. *Batrachochytrium dendrobatidis* Mapping Project, available at: http://parcplace.org/bdmap2008update.html .
[36] Picco and Collins. 2008, s*upra*, fn 9.

U.S. Amphibian Exports

With *Bd* already widespread in this nation the risk of exporting the disease is clear and ongoing. Analysis by Defenders of amphibian export data obtained from the FWS reveals that between 2003 and 2007, over 14,000 live specimens shipped out of the United States to Latin America and the Caribbean were of species capable of carrying *Bd* (Table 1).[37] These shipments were almost all classified as for the "commercial trade". Several of these species were not U.S.-natives, rather they were re-exports of non-native imports or from captive breeding operations.

[37] 2003-2007 data from the Law Enforcement Management Information System (LEMIS) database, obtained from the FWS Office of Law Enforcement through a Freedom of Information Act request submitted by Defenders of Wildlife, February 2008.

Table 1. Potential *Bd*-carrying Species Exported from United States to Latin America, 2003-2007.

Common Name	**Scientific Name**	**Trade Destination**	**Number Exported**
Tiger salamander	*Ambystoma tigrinum*	Argentina, Bahamas, Mexico, Panama	130
Cane toad	*Bufo marinus*	Guatemala, Honduras, Mexico, Nicaragua	57
Green poison-arrow frog	*Dendrobates auratus*	Ecuador, Argentina, Mexico, Uruguay	92
White's tree frog	*Litoria caerula*	Argentina, Chile, Costa Rica, Guatemala, Mexico, Nicaragua, Panama, El Salvador	1,965
Mudpuppy	*Necturus maculosus*	Argentina, Barbados	45
Bullfrog	*Rana catesbeiana*	Brazil, Mexico	8,005
Green frog	*Rana clamitans*	Mexico	20
Northern leopard frog	*Rana pipiens*	Mexico	279
African clawed toad	*Xenopus laevis*	Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Nicaragua, Venezuela	3,634
			Total: 14,227

Latin America and the Caribbean represent the native range of about one-half of all of Earth's amphibian species and at least seven native species have been extirpated there in recent years, largely attributed to *Bd*. An additional 40% of species in these regions are threatened with extinction.[38] Notably, the global trade in the most common export in Table 1, the ubiquitous North American bullfrog (*Rana catesbeiana*, native in much of the U.S. but broadly introduced domestically and internationally), is firmly linked to the spread of *Bd*.[39] This species is resistant to the pathogen but can act as a carrier.

The United States must take steps to certify its export shipments of U.S.-native and other species are not adding to the global devastation. The amendment proposed herein achieves this goal.

Ecological, Economic and Other Values of Native Amphibian Populations

Declines and extirpations of amphibians pose severe ecological and socio-economic implications. Beyond ecological and economic values, and benefits to human and animal health, they provide intrinsic, aesthetic and cultural benefits. Amphibians as a Class have survived the last four mass extinction events on Earth, a period of over 364 million years.[40] They are key components of many aquatic and terrestrial food webs, thus vital to nutrient cycling and other natural systems.[41] Amphibians provide important economic benefits, whether in controlling agricultural pest species or controlling insects that can carry pathogens affecting humans, domestic animals and wildlife.

Amphibians also represent an important economic resource both for the food and pet industries. In addition, amphibians represent medicinal value to humans in that they contain compounds that have led to the development of a range of drugs, including pain killers, antibiotics, cancer and HIV treatments, anesthetics and others.[42] Ongoing population declines and extinctions significantly compromise the potential to discover new medicinal properties within amphibians.

Economic impacts may not be limited to amphibians and their ecosystems. In recent years, *Bd* has been shown to affect fish in at least one U.S. fish hatchery system.[43] Although fish generally appear resistant to *Bd* to date, mutations of chytrid fungus potentially could alter this resistance in the future with devastating impact on fisheries. *Bd* might then affect fish hatcheries in a manner comparable to the devastating disease viral hemorrhagic septicemia (VHS), which has mutated and is now impacting more than 35 commercial fish species within the United States.[44]

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[38] Young, B.E., S.N. Stuart, J.S. Chanson, N.A. Cox, and T.M. Boucher. 2004. *Disappearing Jewels: The Status of New World Amphibians.* NatureServe, Arlington, VA.

[39] Schloegel et al. 2009, *supra*, fn 9; Daszak, P., Schloegel, L., Marnada, L., Cronin, A., Pokras, M., Smith, K., and Picco, A. *The Global Trade in Amphibians*. Consortium for Conservation Medicine. Unpublished interim report.

[40] Wake, D.B., and V.T. Vredenburg. 2008. Are we in the midst of the sixth mass extinction? A view from the world of amphibians. *Proc. Natl. Acad. Sci. USA* 105: 1146-11473.

[41] Whiles, M.R., K.R. Lips, C.M. Pringle, S.S. Kilham, R.J. Bixby, R. Brenes, S. Connelly, J.C. Colon-Gaud, M. Hunte-Brown, A.D. Huryn, C. Montgomery and S. Peterson. 2006. The effects of amphibian population declines on the structure and function of Neotropical stream ecosystems. *Front Ecol Environ* 4: 27–34.

[42] Chivian, E., and A. Bernstein. 2008. *Sustaining Life: How Human Health Depends on Biodiversity*. Oxford University Press, Oxford, UK.

[43] Presentation by Stuart Leon, Chief of the Division of the National Fish Hatchery System of the FWS at the PARC Amphibian Declines and Chytridiomycosis conference, Tempe, Arizona, Nov. 5, 2007.

[44] *Id*.

U.S. Department of the Interior and U.S. Department of Agriculture Regulatory Authorities

Two departments have potential authority to address the amphibian trade – Interior and Agriculture. The most applicable authority rests with Interior's FWS under the Lacey Act, through its program of listing and regulating Injurious Wildlife, codified at 18 USC §42(a)(1). For listed taxa, the agency can prohibit:

> *…importation into the United States, any territory of the United States, the District of Columbia, the Commonwealth of Puerto Rico, or any possession of the United States, or any shipment between the continental United States, the District of Columbia, Hawaii, the Commonwealth of Puerto Rico, or any possession of the United States.*

Such listings depend on a finding that the animal taxa is "injurious," elaborated in the statute as (in pertinent part):

> *…wild mammals, wild birds, fish (including mollusks and crustacea), amphibians, reptiles, ….which the Secretary of the Interior may prescribe by regulation to be injurious to human beings, to the interests of agriculture, horticulture, forestry, or to wildlife or the wildlife resources of the United States….*

Shipments of *Bd*-infected amphibians plainly threaten "wildlife" and "wildlife resources" of the United States under the definition above. Further, as indicated, **the FWS has long asserted primary regulatory jurisdiction over amphibian imports pursuant to 50 CFR §16.14 which this petition seeks to amend**. (It should be noted Defenders' proposed amendment to the regulation would not change the provision in the Lacey Act itself by which the FWS would still be authorized to give special permits to import otherwise-prohibited live amphibians, even including known *Bd*-infected animals, for "zoological, educational, medical, and scientific purposes".[45] Particularly for the scientific pursuit of solutions to *Bd*, these special permits must continue to be available, with appropriate conditions and monitoring to ensure the permits do not lead to increased risk of spreading the pathogen.)

In addition, the Lacey Act itself indicates Congress's intent that the Secretary of the Interior have lead authority to regulate wild animal imports with respect to animal health, under 18 U.S.C. § 42(c), which states:

> *…it shall be unlawful for any person, including any importer, knowingly to cause or permit any wild animal or bird to be transported to the United States, or any Territory or district thereof, under inhumane or unhealthful conditions….*

Yet, now it is known that *Bd*-infected amphibians are imported and transported interstate, without legal consequences. The Department of the Interior can stop this.

USDA's Animal Health Protection Act (AHPA) authority, at 7 U.S.C. § 8303(a), while important, more narrowly provides the:

[45] 18 U.S.C. § 42(a)(3).

> *…Secretary [of Agriculture] may prohibit or restrict…the importation or entry of any animal… if the Secretary determines that the prohibition or restriction is necessary to prevent the introduction into or dissemination within the United States of any pest or disease of livestock…*

This authority explicitly aims at protecting "livestock," defined in the AHPA as "farm-raised" animals.[46] However, no amphibian species are domesticated and none are considered to be "livestock." The USDA's potential AHPA authority to protect "farm-raised" amphibians from disease – an authority the agency has never exercised as it has no amphibian regulations – could be invoked to regulate the small number of amphibians "farmed" for the pet trade and the edible frog leg trade.

However, any disease regulations the USDA did promulgate under the AHPA may not be applicable to imports of wild-caught, non-farmed amphibians, which predominate in the U.S. import trade. An AHPA-based regulation likely would provide only incidental protection for non-farmed amphibians by reducing the extent to which they might become infected via imports of farmed amphibians.[47]

In short, USDA's AHPA authority and mission are too narrow to enact a comprehensive disease regulation with the needed effect of fully protecting wild amphibians from *Bd*. The USDA Veterinary Services office that implements the AHPA is frank about its primary role being to facilitate the needs and requests of the livestock import/export industries, i.e., serving commerce, and not serving wildlife conservation.[48]

Further, USDA lacks port of entry inspectors who routinely inspect live wild amphibians. USDA's inspectors primarily address imports of plants, domesticated livestock and commodities. Inspection of imported wild animals such as amphibians and their accompanying paperwork is done by the FWS Office of Law Enforcement (OLE) port inspectors. Live amphibians coming into the United States generally pass through one of 18 ports designated by OLE for animal imports. About 120 inspectors are at these ports of entry, who are well-trained to enforce Lacey Act injurious species regulations, including enforcing the disease-free salmonids import certification requirements in 50 CFR §16.13(a)(3), discussed below. Beyond just port inspectors, the FWS' separate OLE Special Agent corps enforces the Lacey Act generally as far as interstate commerce. And the FWS maintains the Law Enforcement Management Information System (LEMIS) database that provides volume, species, and other basic information on the live amphibian trade.

In sum, the FWS has greater **legal authority** and **institutional capacity** than does USDA in order to be the lead agency in regulating international and interstate commerce in amphibians. USDA's authority is important but insufficient standing alone. As discussed in the next section the FWS also has a clear **affirmative duty** under law to take action, as Defenders proposes herein.

Fish and Wildlife Service Precedent for Proposed Amendment

Most of the 23 species and higher taxa (including several genera and families) now on the Lacey Act "injurious list" were listed by the Secretary of the Interior due to their actual or potential

[46] Under 7 U.S.C. § 8303(10): "the term 'livestock' means all farm-raised animals".
[47] Defenders of Wildlife. 2007. *Broken Screens* report, *supra,* fn 27, at p. 24.
[48] Michael David, USDA VS, pers. comm. For the limited scope of USDA VS work, see the agency website, at: www.aphis.usda.gov/animal_health , which is devoid of any references to amphibians.

invasiveness within the United States.[49] However, one exception to this general rule exists, which is highly relevant to the amendment proposed in this petition. That is the broad listing for "all salmonids" at 50 CFR §16.13(a)(3), which provides that the following are considered "injurious":[50]

> *Live or dead uneviscerated salmonid fish (family Salmonidae), live fertilized eggs, or gametes of salmonid fish are prohibited entry into the United States for any purpose except by direct shipment accompanied by a certification that: as defined in paragraph (e)(1) of this section, the fish lots, from which the shipments originated, have been sampled; virus assays have been conducted on the samples according to methods described in paragraphs (e)(2) through (4); of this section; and Oncorhynchus masou virus and the viruses causing viral hemorrhagic septicemia, infectious hematopoietic necrosis, and infectious pancreatic necrosis have not been detected in the fish stocks from which the samples were taken….*

This Lacey Act listing based on risks of several diseases regulates all U.S. imports of potentially hundreds of salmon, trout or whitefish species worldwide based on a certification requirement (detailed in three pages of the regulation, beyond its excerpted beginning, above). It flatly prohibits shipments without the certification. The regulation demonstrates the legal authority of the Secretary of the Interior (in keeping with the Lacey Act animal health authority under 18 U.S.C. § 42(c), discussed above) to regulate a broad category of disease-prone animals as potentially injurious, not just to list "species by species". In short, this "all salmonids" regulation sets a clear precedent for the Secretary to enact detailed requirements to ensure shipped wildlife are free of a disease as proposed in this petition. Most importantly, the Lacey Act salmonids certification model has proven largely effective at keeping the listed diseases out of legal import shipments of these fish.

Precedents also exist in the Code of Federal Regulations of agencies incorporating OIE recommendations by reference into U.S. law. For example: USDA, in seeking to prevent imports of bovine spongiform encephalopathy (BSE, or "Mad cow disease"), adopted a U.S. livestock health regulation defining a "BSE-minimal risk region" as including a region with: "Surveillance for BSE at levels that meet or exceed recommendations of the World Organization for Animal Health (OIE, for Office International des Epizooties) for surveillance for BSE."[51] This petition proposes comparable language to ensure U.S. law meets or exceeds the OIE recommendation for *Bd* in amphibians.

Reasons to Adopt the OIE Recommended Standard on *Batrachochytrium dendrobatidis*

The proposed regulatory amendment rests on a new international health standard recommended for the amphibian trade. The United States is a long-time member of the Paris-based World Organization for Animal Health (OIE), the body that develops standards, guidelines and recommended procedures to address disease risk from international trade in animals.[52] The proposed amendment would provide the United States with the protections in the recent standard

[49] 50 CFR § 16.11 *et seq.*
[50] For full text of 50 CFR §16, see http://edocket.access.gpo.gov/cfr_2007/octqtr/50cfr16.13.htm .
[51] 9 CFR § 94.0.
[52] Thierman, A.B. 2003. The role of animal health and zoonoses standards on disease control and trade. World Organisation for Animal Health. Available at http://www.oie.int/eng/editr/en_thierman.htm .

on *Bd*, now codified at Chapter 2.4.1 of OIE's Aquatic Animal Health Code.[53] An expert group on amphibian diseases drafted the standard from 2007 to 2008. It then was revised based on comments from OIE members, including from the United States.[54] Every edit suggested by the United States government on the proposed standard was accepted.[55] The General Session of the OIE then adopted the standard unanimously at its May 2008 annual meeting.

According to the OIE, the purposes of the Aquatic Animal Health Code are as follows:

> *….the measures published in it are the result of consensus among the veterinary authorities of OIE Member Countries, and that it constitutes a reference within the World Trade Organization (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) as an international standard for animal health and zoonoses. The OIE Aquatic Code is a reference document for use by Competent Authorities, import/export services, epidemiologists and all those involved in international trade…*
>
> *The recommendations in each of the chapters in Part 2 of the Aquatic Code are designed to prevent the disease in question being introduced into the importing country, taking into account the nature of the commodity and the aquatic animal health status of the exporting country. This means that, correctly applied, the recommendations ensure that the intended importation can take place with an optimal level of animal health security, incorporating the latest scientific findings and available techniques.*

Thus, adoption of the recommended *Bd* standard not only would implement a unanimously-adopted certification and handling measure, which the United States voted for, it also would give assurance to amphibian exporters and importers that this nation is acting consistently with World Trade Organization (WTO) trade discipline. Adoption of the standard would provide the "optimal level of animal health security" from *Bd* based on the consensus of global amphibian experts.

The OIE *Bd* standard is not self-executing; it is merely recommended. To become law in the United States the standard must be adopted as a regulation. Key provisions in the OIE standard are excerpted in Box 1; they directly address how to stop *Bd* from arriving via shipments of live amphibians from countries where *Bd* is known or likely to occur (i.e., from locations "not declared free" of *Bd*; inclusion of illustrative provisions in Box 1 does not imply this petition is limited to them.)

For example, the standard includes the common-sense and flexible precaution that, when importing live amphibians from a country or region that has not been declared free of *Bd,* an importing country should require an "international aquatic animal health certificate" issued by the exporting country certifying the amphibians in the shipment have either been treated to eradicate any infection and subsequently tested to confirm absence of the disease according to expert specifications provided by the OIE, or the importing country should take other appropriate infection-prevention

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[53] Available at: www.oie.int/eng/normes/fcode/en_chapitre_2.4.1.pdf .

[54] See USDA comments on proposed standard to OIE Aquatic Animal Health Standards Commission, at: http://www.aphis.usda.gov/import_export/animals/oie/downloads/aahc-infect-batrachochytrium-dendrobatidis-76-oct07_cmt.pdf .

[55] See www.aphis.usda.gov/import_export/animals/oie/aquatic.shtml, under the October 2007 report, where USDA Veterinary Services provides online versions of the draft *Bd* standard, the U.S. comments on the draft and the final approved standard.

handling measures. (Box 1.) The latter would include, for example, ensuring lifelong quarantine of those shipped animals in a "biosecure" facility from which *Bd* would not be able to spread to other populations. Biosecure facilities typically would be research laboratories and accredited zoos, but would exclude pet stores, wholesale facilities and households.

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Box 1. Key OIE Recommendations on Regulating *Bd* in the Amphibian Trade.

Article 2.4.1.8. Importation of live aquatic animals for aquaculture from a country, zone or compartment not declared free from *B. dendrobatidis*

1. When importing live *aquatic animals* of species referred to in Article 2.4.1.2. [amphibians] from a country, *zone* or *compartment* not declared free from *B. dendrobatidis*, the *Competent Authority* of the *importing country* should:
a) require an *international aquatic animal health certificate* issued by the *Competent Authority* of the *exporting country* attesting that the *aquatic animals* of the species referred to in Article 2.4.1.2. have been appropriately treated to eradicate *infection* and have been subsequently tested to confirm absence of the *disease* according to specifications provided in the relevant chapter in the *Aquatic Manual* (under development); OR
b) assess the *risk* and apply *risk* mitigation measures such as: i) the direct delivery to and lifelong holding of the consignment in biosecure facilities for continuous isolation from the local environment; ii) the treatment of all effluent and waste materials in a manner that inactivates *B. dendrobatidis.*

2. If the intention of the introduction is the establishment of a new stock, the Code of Practice on the Introductions and Transfers of Marine Organisms of the International Council for the Exploration of the Seas (ICES) should be followed.

3. For the purposes of the *Aquatic Code*, the ICES Code (full version see: http://www.ices.dk/indexfla.asp) may be summarized to the following main points:
a) identify stock of interest (cultured or wild) in its current location;
b) evaluate stock health/disease history;
c) take and test samples for *B. dendrobatidis*, pests and general health/disease status;
d) import and quarantine in a secure facility a founder (F-0) population;
e) produce F-1 generation from the F-0 stock in *quarantine*;
f) culture F-1 stock and at critical times in its development (life cycle) sample and test for *B. dendrobatidis* and perform general examinations for pests and general health/disease status;
g) if *B. dendrobatidis* is not detected, pests are not present, and the general health/disease status of the stock is considered to meet the *basic biosecurity conditions* of the *importing country*, *zone* or *compartment*, the F-1 stock may be defined as *B. dendrobatidis* free or specific pathogen free (SPF) for *B. dendrobatidis*;
h) release SPF F-1 stock from *quarantine* for *aquaculture* or stocking purposes in the country, *zone* or *compartment*.
This Article does not apply to *commodities* referred to in point 1 of Article 2.4.1.3.

Article 2.4.1.9. Importation of live aquatic animals for processing for human consumption from a country, zone or compartment not declared free from *B. dendrobatidis*

When importing, for processing for human consumption, live *aquatic animals* of species referred to in Article 2.4.1.2. from a country, *zone* or *compartment* not declared free from *B. dendrobatidis*, the *Competent Authority* of the *importing country* should require that the consignment be delivered directly to and held in *quarantine* facilities for slaughter and *processing* to one of the products referred to in point 1 of Article 2.4.1.3. or other products authorized by the *Competent Authority*, and all effluent and waste materials be treated in a manner that ensure inactivation of *B. dendrobatidis*. This Article does not apply to *commodities* referred to in point 1 of Article 2.4.1.3.

Article 2.4.1.10. Importation of live aquatic animals intended for use in animal feed, or for agricultural, laboratory, zoo, pet trade, industrial or pharmaceutical use, from a country, zone or compartment not declared free from *B. dendrobatidis*

When importing live *aquatic animals* of species referred to in Article 2.4.1.2. from a country, *zone* or *compartment* not declared free from *B. dendrobatidis*, the *Competent Authority* of the *importing country* should:
1. require an *international aquatic animal health certificate* issued by the *Competent Authority* of the *exporting country* attesting that the *aquatic animals* have been appropriately treated to eradicate *infection* and have been subsequently tested to confirm absence of the *disease* according to specifications provided in the relevant chapter in the *Aquatic Manual* (under development); OR
2. assess the *risk* and apply *risk* mitigation measures such as:
a) the direct delivery to and lifelong holding of the consignment in biosecure facilities for continuous isolation from the local environment;
b) the treatment of all effluent and waste materials in a manner that inactivates *B. dendrobatidis.*
This Article does not apply to *commodities* referred to in point 1 of Article 2.4.1.3.

Despite supporting the OIE *Bd* standard, USDA, which represents the United States in OIE meetings, has not initiated rulemaking to adopt it into U.S. regulations and has not stated any plan to do so.[56]

The Proposed Regulation Will Assist in the Conservation of Threatened and Endangered Species

Forty-one species, and one genus, of amphibians have been listed by FWS as threatened or endangered or identified as candidate species (Tables 2, 3 and 4). More than half of these – 21 species and one genus – are known, in varying degrees, to be affected by *Bd*. Infection by this pathogen was a primary factor in the recent extirpation of the last wild-breeding populations of a U.S. amphibian, the Wyoming toad, *Bufo baxteri*.[57]

Section 7(a)(1) of the Endangered Species Act directs the Secretary to:

> *review* ***other programs*** *administered by him and utilize such programs in furtherance of the purposes of* [the ESA].[58] (emphasis added)

One such program is the regulation of injurious species under the Lacey Act. The proposed regulation will help further the conservation of listed amphibians by prohibiting unrestricted imports of potentially *Bd*-infected and potentially invasive non-native amphibians that harm listed species and degrade their habitats.[59]

Listed and Candidate Amphibians Under the Endangered Species Act

Table 3 lists the threatened and endangered U.S.-native amphibian species according to the FWS. Table 3 lists foreign amphibians listed by the agency as threatened or endangered. Table 4 lists candidate amphibians under the ESA. **Note**: shading of species entries in the tables signifies that research already indicates *Bd* affects that species.

[56] Michael David, Director, Sanitary International Standards Team, National Center for Import and Export, Veterinary Services (VS), USDA Animal and Plant Health Inspection Service, pers. comm.
[57] The Wyoming toad is classified as "Extinct in the Wild" due chiefly to effects of *Bd* in *Threatened Amphibians of the World* by Stuart et al. 2008, *supra,* fn 7.
[58] 16 U.S.C. § 1536(a)(1).
[59] See Defenders of Wildlife. 2007. *Broken Screens* report, *supra,* fn 27, at p. 38, App. B, for a list of non-native amphibians that were imported between 2000-2004 into the United States under the existing regulation and posed invasiveness and/or disease risks.

Table 2: Listings of U.S. Native Amphibians Threatened or Endangered in All or Part of Their Range			
Common Name	**Scientific Name**	**Range (if delineated)**	**Threatened (T) or Endangered (E)**
Coqui, golden	*Eleutherodactylus jasperi*	-	T
Frog, California red-legged	*Rana aurora draytonii*	Entire (excluding Del Norte, Humboldt, Trinity, & Mendocino Cos., CA; Glenn, Lake, & Sonoma Cos., CA, west of the Central Valley Hydrologic Basin; Sonoma & Marin Cos., CA, west & north of San Francisco Bay drainages and Walker Creek drainage; and NV	T
Frog, Chiricahua leopard	*Rana chiricahuensis*	-	T
Frog, Mississippi gopher	*Rana capito sevosa*	Wherever found west of Mobile and Tombigbee Rivers in AL, MS, and LA	E
Frog, mountain yellow-legged	*Rana muscosa*	Southern CA Distinct Population Segment (DPS)	E
Guajon	*Eleutherodactylus cooki*	-	T
Salamander, Barton Springs	*Eurycea sosorum*	-	E
Salamander, California tiger	*Ambystoma californiense*	CA - Santa Barbara County DPS	E
Salamander, California tiger	*Ambystoma californiense*	CA - Sonoma County DPS	E
Salamander, California tiger	*Ambystoma californiense*	Central CA DPS, not including Santa Barbara and Sonoma DPS	T
Salamander, Cheat Mountain	*Plethodon nettingi*	-	T
Salamander, desert slender	*Batrachoseps aridus*	-	E
Salamander, flatwoods	*Ambystoma cingulatum*	-	T
Salamander, Red Hills	*Phaeognathus hubrichti*	-	T
Salamander, San Marcos	*Eurycea nana*	-	T
Salamander, Santa Cruz long-toed	*Ambystoma macrodactylum croceum*[60]	-	E

[60] USGS National Wildlife Health Center, Quarterly Wildlife Mortality Report, July 2000-Sept. 2000, available at http://www.nwhc.usgs.gov/publications/quarterly_reports/2000_qtr_3.jsp .

Salamander, Shenandoah	*Plethodon shenandoah*	-	E
Salamander, Sonora tiger	*Ambystoma tigrinum*[61] *stebbinsi*	-	E
Salamander, Texas blind	*Typhlomolge rathbuni*	-	E
Toad, arroyo	*Bufo californicus (=microscaphus)*	-	E
Toad, Houston	*Bufo houstonensis*	-	E
Toad, Puerto Rican crested	*Peltophryne lemur*	-	T
Toad, Wyoming	*Bufo baxteri*	-	E
Total: 21 species ---------- 12 species affected by *Bd*			

Key for Tables 2, 3 and 4

Shading in table = affected by *Bd*. Shading indicates that *Threatened Amphibians of the World* or another source identifies *Bd* as having affected the species. Some entries are based on sources footnoted in the table and others on: D. Olson, USDA Forest Service, Pacific Northwest Research Station, Corvallis, OR, unpublished data. Some entries signify positive detection and others signify inferred effects. Species not detected to have had *Bd* may nevertheless be susceptible to it in the future. They may not have been challenged by the pathogen to date or yet sampled by researchers for it.

Source: FWS Threatened and Endangered Species System, available at: http://ecos.fws.gov/tess_public/StartTESS.do .

[61] Davidson, E.W., Parris, M., Collins, J.P., Longcore, J.E., Pessier, A.P., and Brunner, J. 2003. Pathogenicity and transmission of chytridiomycosis in tiger salamanders (*Ambyostoma tigrinum*). *Copeia* 2003: 601-607.

Table 3: Foreign Amphibians Listed as Threatened or Endangered under ESA

Common Name	**Scientific Name**	**Range (if delineated)**	**Threatened (T) or Endangered (E)**
Frog, Goliath	*Conraua goliath*		T
Frog, Israel painted	*Discoglossus nigriventer*	Israel	E
Frog, Panamanian golden	*Atelopus varius zeteki*	Panama	E
Frog, Stephen Island	*Leiopelma hamiltoni*	New Zealand	E
Salamander, Chinese giant	*Andrias davidianus (=Davidianus d.)*	China	E
Salamander, Japanese giant	*Andrias japonicus (=Davidianus j.)*	Japan	E
Toads, African viviparous	Nectophrynoides spp.	Cameroon, Ethiopia, Guinea, Ivory Coast, Liberia, Tanzania	E
Toad, Cameroon	*Bufo superciliaris*	-	E
Toad, Monte Verde golden	*Bufo periglenes*	Costa Rica	E
Total: 8 species + 1 genus -------- 2 species + 1 genus affected by *Bd*			

Table 4: Candidate Amphibian Species for ESA Listing in All or Part of Their Range.			
Common Name	**Scientific Name**	**Range State(s)**	**Listing Priority**
Frog, Columbia spotted (Great Basin DPS)	*Rana luteiventris*	Idaho, Nevada, Oregon	3
Frog, mountain yellow-legged Note – this is for all mountain yellow-legged frogs north of the Tehachapi Mountains. The southern California DPS is already listed as threatened.	*Rana muscosa*	California, Nevada	3
Frog, Oregon spotted	*Rana pretiosa*	California, Oregon, Washington (also Canada).	2
Frog, relict leopard	*Rana onca*	Arizona, Nevada	11
Hellbender, Ozark	*Cryptobranchus alleganiensis bishopi*	Arkansas, Missouri	3
Salamander, Austin blind	*Eurycea waterlooensis*	Texas	2
Salamander, Georgetown	*Eurycea naufragia*	Texas	2
Salamander, Jollyville Plateau	*Eurycea tonkawae*	Texas	8
Salamander, Salado	*Eurycea chisholmensis*	Texas	2
Treefrog, Arizona	*Hyla wrightorum*	Arizona	3
Toad, Yosemite	*Bufo canorus*	California	11
Waterdog, black warrior	*Necturus alabamensis*	Alabama	8
Total: 12 species -------- 7 species affected by *Bd*			

Bd is known to affect several additional non-ESA listed and non-candidate U.S. native species, including the lowland leopard frog (*Rana yavapaiensis*), canyon treefrog (*Hyla arenicolor*),[62] northern leopard frog (*Lithobates pipiens*),[63] southern leopard frog (*Lithobates sphenocephalus*) and barking tree frog (*Hyla gratiosa*). Other native amphibian species remain vulnerable to this still-emerging disease and they also need protection from future unregulated trade and interstate commerce in potential *Bd*-carriers. Furthermore, other native species that prey on amphibians are jeopardized by the drastic population declines of their prey. For example, the FWS itself recently stated, on a proposal to list the northern Mexican gartersnake (*Thamnophis eques megalops*) populations in Arizona and New Mexico under the ESA:[64]

> *Declines of native prey species of the northern Mexican gartersnake from Bd infections have contributed to the decline of this species in the United States and likely in Mexico.*

Due to the broad threat *Bd* poses to so many listed and candidate species – including both amphibians and predators that feed upon them – the FWS has an ESA duty to take affirmative steps, readily within its authority, against this devastating pathogen, as proposed in this petition.

The Role of Industry Practices

Some involved in the amphibian import/export trade may assert the new measure proposed here is unnecessary because the industry can self-police through voluntary "best practices". In particular, they may point to a "Bd-Free 'Phibs Campaign" sponsored by the Pet Industry Joint Advisory Council – and advertised as the only such campaign in the world - as evidence of the industry's efforts to prevent the spread of *Bd* via the pet trade.[65] To its credit, the Bd-Free 'Phibs Campaign recognizes that the pet trade contributes to the spread of Bd. (See campaign webpage quote: "*There is increasing evidence that the trade in amphibians for pets and other purposes (e.g., food, bait, and research) has inadvertently resulted in the movement of Bd.*") The campaign urges participants to follow quarantine, testing, disinfection and treatment protocols. No data exists on how effective this campaign is. It does not, however, obviate the need for stricter regulation of the amphibian trade. Moreover, for the massive food trade in frog legs, as well as for other live amphibian import sectors like the bait trade, no parallel campaign is known to exist.[66]

The Secretary should recognize the inherent weakness of purely voluntary measures and not view them as a surrogate for the regulatory reforms advocated in this petition. Indeed, voluntary measures aimed at prevention of harmful trade practices – standing alone - may have a "perverse effect" by creating a competitive advantage for noncompliant businesses vis-à-vis those businesses that do

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[62] Bradley, G.A., Rosen, P.C., Sredl, M.J., Jones, T.R., and Longcore, J.E. 2002. Chytridiomycosis in native Arizona frogs. *Journal of Wildlife Diseases* 38(1): 206-212.

[63] USGS National Wildlife Health Center Quarterly Wildlife Mortality Report, Jan. 2000-March 2000, available at www.nwhc.usgs.gov/publications/quarterly_reports/2000_qtr_1.jsp .

[64] FWS. 12-Month Finding on a Petition To List the Northern Mexican Gartersnake (*Thamnophis eques megalops*) as Threatened or Endangered with Critical Habitat. 73 *Federal Register* 71,808 (Nov. 25, 2008), available at: http://frwebgate3.access.gpo.gov/cgi-bin/PDFgate.cgi?WAISdocID=78590331367+2+2+0&WAISaction=retrieve .

[65] Pet Industry Joint Advisory Council, Bd-Free 'Phibs Campaign. Available at: www.pijac.org/i4a/pages/index.cfm?pageid=416 .

[66] Warkentin, I.G., Bickford, D., Sodhi, N.S., and Bradshaw, C.J. 2009. Eating frogs to extinction. *Conservation Biology*, available at: www3.interscience.wiley.com/journal/121685876/abstract , DOI: 10.1111/j.1523-1739.2008.01165.x .

comply with the voluntary measures. Thus, those U.S. amphibian importers and traders who do not follow the Bd-Free 'Phibs Campaign practices may be able to sell their products more profitably than those who do and may thereby expand their market share. Detailed studies of comparable voluntary measures in the import trade for invasive plants concluded that voluntary measures may not have their intended effect.[67] These studies indicated the need for additional "mandatory measures" to achieve "level-playing" in the plant import sector as a whole and to avoid perverse effects.

The unanimously-adopted, OIE-recommended, certification and handling approach for imports, exports and interstate commerce sought through this petition are the needed "measures". Indeed, the Bd-Free 'Phibs Campaign webpage itself includes a link to an authoritative paper that emphasizes the need for regulatory improvements to arrest *Bd*'s spread.[68] That paper, prepared by the IUCN Invasive Species Specialist Group for the entry on *Bd* in its Global Invasive Species Database, entitled *Main preventative management strategies for the Chytrid fungus Batrachochytrium dendrobatidis*, includes this element (in pertinent part, citations omitted):

> *Developing Trade and Quarantine Regulations:*
> *Regulations regarding quarantine, testing, treatment and movement of amphibians need to be introduced on an international scale to prevent the proliferation of B. dendrobatidis. In 2001 the World Organisation for Animal Health (also known as Office Internationale des Epizootes* [OIE]*) placed amphibian chytridiomycosis on the Wildlife Diseases List. This was in recognition of the risks involved in global transportation of amphibians and was the first time an amphibian disease had been listed.*

In short, the Bd-Free 'Phibs Campaign recognizes OIE's development of the needed regulatory approach. Eight years after it began that process the OIE recommendation now is available for implementing. The United States needs to take it up and not rely on unenforceable voluntary measures.

CONCLUSION

Robust regulatory protections aimed at conserving Earth's amphibians are urgently called for. The absence of Federal regulations on the import, interstate commerce and export of amphibians creates excessive risk that the devastating *Bd* pathogen will continue to enter, be spread within and be shipped out of the United States. This trade threatens the future survival of multiple amphibians, including, but not limited to, U.S. and foreign species listed by the FWS under the ESA, candidate ESA species, other amphibians, and species that predate on amphibians as well. The duty to protect these species cannot be ignored.

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[67] Caton, B.P. 2005. *Availability in Florida nurseries of invasive plants on a voluntary "do not sell" list*. Unpublished report by USDA APHIS Plant Protection and Quarantine, Center for Plant Health Science and Technology, Raleigh, North Carolina, USA**;** Moss, W., and Walmsley, R. 2005. *Controlling the Sale of Invasive Garden Plants: Why Voluntary Measures Alone Fail*, World Wildlife Fund (WWF)-Australia Discussion Paper. WWF-Australia, Sydney**.** Available at: www.wwf.org.au/News_and_information/Publications/PDF/Report/InvasivesVoluntaryMeasures.pdf .

[68] See www.issg.org/database/species/reference_files/batden/man.pdf .

As the "dominant" country in the global import trade in live animals,[69] the United States is able to set a standard and precedent for other countries to follow, which will in turn help protect jeopardized amphibian populations globally. The sooner this new precaution is broadly and effectively implemented, the greater the protection for declining amphibian populations both in the United States and worldwide.

For further information, please contact Peter T. Jenkins, Director of International Programs, at (202) 722-0293 or by email at pjenkins@defenders.org.

Respectfully submitted,

Rodger Schlickeisen, President
Defenders of Wildlife
1130 17th St. NW
Washington, DC 20036

CC: Tom Vilsack, Secretary of Agriculture

[69] Romagosa, C.M., Guyer, C.C., and Wooten, M.C. 2009. Contribution of the live-vertebrate trade toward taxonomic homogenization. *Conservation Biology* 23:1001-1007.

Animal Welfare Institute
Defenders of Wildlife
Humane Society of the United States/Humane Society International
International Fund for Animal Welfare
Natural Resources Defense Council

Dr. Kit Batten
Science Advisor to the Deputy Secretary
Department of Interior
1849 C Street, NW
Washington, DC 20240

October 26, 2009

Dear Dr. Batten,

On behalf of Animal Welfare Institute, Defenders of Wildlife, Humane Society of the United States/Humane Society International, International Fund for Animal Welfare, Natural Resource Defense Council, and our combined 14.4 million members and activists, we would like to thank you and the Department of Interior for the recent decision to submit a proposal to transfer the polar bear from Appendix II to Appendix I to be considered at next year's meeting of the Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

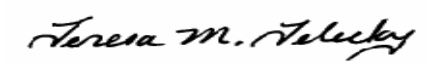
It is estimated that there are presently between 20,000 and 25,000 polar bears and the number is decreasing. The best scientific and commercial information regarding current and future threats to the polar bear indicate that the species is threatened throughout its range by habitat loss (i.e., sea ice recession related to climate change), with fully two-thirds of the world's populations being lost in less than 45 years. This threat to their future existence from climate change is exacerbated by trophy hunting and a continuing commercial trade in polar bears and their body parts with thousands of specimens exported for commercial purposes annually.

An Appendix I designation would mean that countries agree to prohibit international trade for primarily commercial purposes in polar bear specimens, such as rugs made from skins, and thus ensure that such trade – estimated to result in the death of 300 polar bears annually - will not contribute to the ongoing decrease in polar bear numbers.

Our groups commend the US government's decision to submit the proposal, and are committed to supporting this effort as a proactive and important step to ensuring the long-term survival of polar bears in the wild.

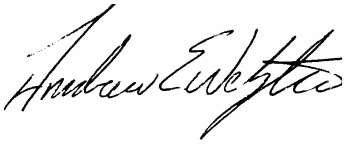
Thank you again for your Department's leadership in this important effort.

Sincerely,

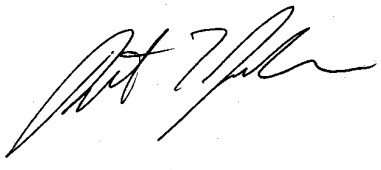


Teresa Telecky
Humane Society International

Jeffrey Flocken
International Fund for Animal Welfare



Andrew Wetzler
Natural Resources Defense Council



Peter Jenkins
Defenders of Wildlife

DJ Schubert
Animal Welfare Institute