



Tracking Number: (Click here to enter text.)

To request a change to regulations under the authority of the California Fish and Game Commission (Commission), you are required to submit this completed form to: California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814 or via email to FGC@fgc.ca.gov. Note: This form is not intended for listing petitions for threatened or endangered species (see Section 670.1 of Title 14).

Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the required categories listed on this form (Section I). A petition will be rejected if it does not pertain to issues under the Commission's authority. A petition may be denied if any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 653-4899 or FGC@fgc.ca.gov.

SECTION I: Required Information.

Please be succinct. Responses for Section I should not exceed five pages

1. Person or organization requesting the change (Required)

Name of primary contact person: **Jennifer Loda, on behalf of Petitioners Center for Biological Diversity and Save the Frogs!**
Address: **1212 Broadway, Suite 800; Oakland, CA 94609**
Telephone number: **510-844-7100 x336**
Email address: **jloda@biologicaldiversity.org**

2. Rulemaking Authority (Required) - Reference to the statutory or constitutional authority of the Commission to take the action requested: **Fish and Game Code Sections 2118(i) and 2118(k)**

3. Overview (Required) - Summarize the proposed changes to regulations: **Amend 14 CCR 671(c)(3) to add bullfrogs (*Rana catesbeiana*, *Lithobates catesbeianus*) to the list of restricted species.**

4. Rationale (Required) - Describe the problem and the reason for the proposed change: **The American bullfrog is a non-native, invasive species that negatively impacts a wide variety of native wildlife in California. Bullfrogs act as both predators and competitors of California's native wildlife. They also act as a disease vector and have been implicated in the introduction and spread of ranaviruses and the amphibian chytrid fungus, which are considered to be the most significant infectious diseases contributing to global population declines of amphibians. The Commission recognized the threat of imported live American bullfrogs to California's native fish and wildlife in a declaration in 2010, which resulted in the Department of Fish and Wildlife imposing additional requirements on importation permits. The Department recently re-assessed the threats posed by live bullfrog imports, in light of the permit modifications, and presented a report to the Commission at its February 12, 2015 meeting. In its report, entitled "Implications of Importing American Bullfrog (*Lithobates catesbeianus* = *Rana catesbeiana*) into California," the Department explained that the threats were not diminished, and suggested that amphibian importation permits should be further limited or eliminated altogether to reduce the risks to native wildlife. The Commission is obligated to take actions within its power to conserve California's threatened and endangered species. Adding the American bullfrog to the list of restricted species is clearly**



within the capacity of the Commission and will help to reduce the risks that importation of live bullfrogs has on native fish and wildlife in California, including many species protected under the California Endangered Species Act.

SECTION II: Optional Information

5. **Date of Petition: 12/07/2016**

6. **Category of Proposed Change**
 - Sport Fishing
 - Commercial Fishing
 - Hunting
 - Other, please specify: Restricted Species

7. **The proposal is to:** *(To determine section number(s), see current year regulation booklet or <https://govt.westlaw.com/calregs>)*
 - Amend Title 14 Section(s):671(c)(3)
 - Add New Title 14 Section(s): *Click here to enter text.*
 - Repeal Title 14 Section(s): *Click here to enter text.*

8. **If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition** *Click here to enter text.*
Or Not applicable.

9. **Effective date:** If applicable, identify the desired effective date of the regulation.
If the proposed change requires immediate implementation, explain the nature of the emergency: *Click here to enter text.*

10. **Supporting documentation:** Identify and attach to the petition any information supporting the proposal including data, reports and other documents: **Petition to Add Bullfrogs to the List of Restricted Species. All papers referenced in the supporting petition will also be submitted to the Commission via cd**

11. **Economic or Fiscal Impacts:** Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing: **Prohibition on importation of live bullfrogs may have some impact on the food market. However, allowance of frozen bullfrog importation, transportation, sales and possession will likely offset this minor economic impact. The vast majority of Californians do not participate in the purchase, sale or importation of American Bullfrogs.**

12. **Forms:** If applicable, list any forms to be created, amended or repealed:
Click here to enter text.

SECTION 3: FGC Staff Only



Date received: [Click here to enter text.](#)

FGC staff action:

- Accept - complete
- Reject - incomplete
- Reject - outside scope of FGC authority

Tracking Number

Date petitioner was notified of receipt of petition and pending action: _____

Meeting date for FGC consideration: _____

FGC action:

- Denied by FGC
- Denied - same as petition _____
- Granted for consideration of regulation change

Tracking Number

BEFORE THE CALIFORNIA FISH AND GAME COMMISSION
PETITION TO ADD BULLFROGS TO THE LIST OF RESTRICTED SPECIES



Photo by Carl D. Howe

CENTER FOR BIOLOGICAL DIVERSITY and SAVE THE FROGS!

December 7, 2016

I. NOTICE OF PETITION

Pursuant to Title 14, Section 662 of the California Code of Regulations (“CCR”) (*Petitions for Regulation Change*), the Center for Biological Diversity (“the Center”) and Save the Frogs! (collectively, “Petitioners”) submit this petition to the California Fish and Game Commission (“the Commission”) to amend Section 671(c)(3) of Title 14 of the CCR to add bullfrogs (*Rana catesbeiana*, *Lithobates catesbeianus*) to the list of restricted species to protect the native wildlife of this state. 14 CCR 662. Such a regulatory amendment would prevent new introductions of bullfrogs into the state, protecting against further damage to native wildlife. This non-native, invasive frog devastates native wildlife populations through disease spread and by consuming and competing with numerous species, including several that are listed under the federal Endangered Species Act (“ESA”) and/or the California Endangered Species Act (“CESA”), as well as California Species of Special Concern.

A. LEGAL AUTHORITY

The Commission possesses the authority to make such amendments pursuant to Sections 2118, and 2120 of the California Fish and Game Code (“FGC”).

B. PETITIONERS

The Center for Biological Diversity is a non-profit, public interest environmental organization dedicated to the protection of species and their habitats through science, policy and environmental law. The Center has over 1.1 million members and online activists worldwide, including over 100,000 members and supporters in California.

Save the Frogs! is the world’s leading amphibian conservation organization. Save the Frogs! works in California, across the USA, and around the world to prevent the extinction of amphibians, and to create a better planet for humans.

Authors: Jenny Loda, Center for Biological Diversity
Address: 1212 Broadway St, Suite 800, Oakland, CA 94612
Phone: (510) 844-7136
Email: jloda@biologicaldiversity.org

I hereby certify that, to the best of my knowledge, all statements made in this petition are true and complete.



Jenny Loda
Staff Attorney
Center for Biological Diversity
Submitted on behalf of Petitioners
Date submitted: December 7, 2016

II. INTRODUCTION

The bullfrog is widely recognized as one of the most destructive, invasive species in areas outside of its native range. Bullfrogs prey on and compete with, California's native wildlife. They can also play a role in the spread of novel wildlife diseases, including the amphibian chytrid fungus, which has devastated amphibian populations in California and throughout the world.

The Commission and the California Department of Fish and Wildlife (“the Department”) have previously recognized the dangers that bullfrogs pose to California's wildlife and the potential for live bullfrog imports to contribute to this problem. In response, they have taken positive steps to limit the potential for new introductions associated with trade, by adding permit measures such as requiring that animals be euthanized before leaving retail premises. Unfortunately, those changes have not been sufficient to fully remove the threat of future bullfrog introductions into California linked to live imports. The Commission has the authority to regulate imports of wild animals and on previous occasions used this authority to add species to the Restricted Animal’s List that were found to pose a threat to California’s native wildlife.

In February, 2015, the Department presented the Commission with a comprehensive peer-reviewed paper on the risks of American bullfrogs to California’s wildlife.¹ In this paper the Department found that importation of live American bullfrogs poses a significant threat to California’s wildlife, and argued for the reduction or elimination of importation of live bullfrogs to reduce that threat. The Department concluded that a more comprehensive ban or reduction would provide the best benefit to our wildlife.

III. FACTUAL AND LEGAL BACKGROUND

A. The Commission’s Authority to Act

It is California’s policy that “the importation, transportation, and possession of wild animals shall be regulated . . . to protect the native wildlife and agricultural interest of this state against damage from the existence at large of certain wild animals.”²

To enact this policy, the California Legislature gave the Commission, in cooperation with the Department of Food and Agriculture, the authority to adopt regulations governing “the entry, importation, possession, transportation, keeping, confinement, or release of any and all wild animals that will be or that have been imported into this state . . . ”³ This authority includes the power to designate additional species of wild animals as Restricted Animals when the species “is proven to be undesirable and a menace to native wildlife or the agricultural interests of the state.”⁴ As will be further explained below, the American bullfrog is a clear example of an undesirable species that is a menace to California’s native wildlife, and the Commission should

¹ California Department of Fish and Wildlife (“CDFW”). 2014. Implications of Importing American Bullfrog (*Lithobates catesbeianus* = *Rana catesbeiana*) into California.

² FGC § 2116.5 (Findings and Declarations)

³ FGC § 2120(a)

⁴ FGC § 2118(i)

use its power to restrict its importation by adding it to the Restricted Animals List in Section 671 of Title 14.

Consistent with these conservation mandates, the Commission has previously added a number of species to the Restricted Animals List at Section 671. For example, in 2007 the Commission adopted a regulatory change to add seven species and two genera to the Restricted Animals List.⁵ The Commission found the animals to be non-native invasive species that “pose[d] a threat to native fish and wildlife populations through competition for food, predation, alteration of habitats and/or as potential sources of introducing diseases or parasites to native fish and wildlife.”⁶ In that instance several of the species, such as watersnakes and coqui frogs, were already present in California, but the Commission found their addition to the list to be warranted in order to control the spread of these species.

Petitioners’ proposed regulatory amendment would afford comparable protections to the state’s fish and wildlife populations from the American bullfrog, which is a non-native invasive species that poses a threat through competition for food, predation, and as a potential source of emerging and novel wildlife diseases.

B. Species Description

The American bullfrog (*Lithobates catesbeianus*) is a frog species native to the eastern United States, but was introduced to California about a century ago. This species has been introduced all over the world to over 40 countries, as well as areas outside of its native range in North America. Bullfrogs are included in the Global Invasive Species Database’s list of “One Hundred of the World’s Worst Invasive Alien Species.”⁷ In 1997 the European Union banned the importation of live North American bullfrogs due to their invasiveness.⁸

The Department’s 2014 Report provides a thorough discussion of the bullfrog’s biology and ecology and explains how these characteristics lead to its classification as an invasive species.⁹ Bullfrogs negatively impact a wide variety of native wildlife in California and, in particular, are

⁵ Office of Administrative Law's Notice ID #Z07-0925-08;

<http://www.fgc.ca.gov/regulations/2007/#671> (Last Accessed October 13, 2016).

⁶ State of California Fish and Game Commission. September 12, 2007. Initial Statement of Reasons for Regulatory Action, Amend Section 671, Title 14, California Code of Regulations Re: Importation, Transportation, and Possession of Live Restricted Species. Available at: <http://www.fgc.ca.gov/regulations/2007/#671> (Last Accessed October 13, 2016).

⁷ Global Invasive Species Database (2016). Available at:

http://www.iucngisd.org/gisd/100_worst.php (Last Accessed Oct. 12, 2016).

⁸ Scalera, R. and Zaghi, D., 2004. Alien species and nature conservation in the EU. The role of the LIFE program. Brussels, Belgium: European Commission.

⁹ CDFW (2014) *supra* fn. 1; Kats, L.B. and R.P. Ferrer. 2003. Alien Predators and Amphibian Declines: Review of Two Decades of Science and the Transition to Conservation. Diversity and Distributions 9: 99-110.

implicated in the declines of amphibians.¹⁰ Bullfrogs act as both predators and competitors of California's native wildlife, and can cause reproductive interference for other frog species. They also act as a disease vector and have been implicated in the introduction and spread of ranaviruses and the amphibian chytrid fungus (*Batrachochytrium dendrobatidis*, *Bd*), which are considered to be the most significant infectious diseases contributing to global population declines of amphibians.

i. Bullfrogs Prey on and Compete with Native Wildlife in California

Bullfrogs are voracious, opportunistic predators, consuming a wide variety of prey dominated by invertebrates and small vertebrates. While bullfrog tadpoles primarily eat algae, they are also known to prey on the eggs and tadpoles of other frogs. Bullfrogs have been documented to prey on species listed as threatened or endangered under both the California Endangered Species Act ("CESA") and the federal Endangered Species Act ("ESA"), including California tiger salamanders, giant garter snakes, and mountain yellow-legged frogs.¹¹ They also prey on numerous other species of fish, salamanders, frogs, toads, birds, bats, snakes, and turtles, including many that are listed as Species of Special Concern in California.¹²

This ability to consume a wide variety of prey, including vertebrates, was documented in California's Cache Creek Watershed.¹³ An evaluation of stomach contents of 65 bullfrogs collected at 21 sites throughout the watershed found bullfrog consumption of a wide variety of invertebrate and vertebrate prey, including fish, birds, lizards, snakes, turtles, and frogs.¹⁴ The stomach contents included two hatchling western pond turtles and two unidentified frogs likely to be foothill yellow-legged frogs, both species classified as Species of Special Concern in California and currently being reviewed for listing under the ESA.¹⁵

The voracious appetite of bullfrogs also makes them important competitors for food with native wildlife, especially with California's amphibians since they often share the same habitats.

¹⁰ Kats, L.B. and R.P. Ferrer. 2003. Alien Predators and Amphibian Declines: Review of Two Decades of Science and the Transition to Conservation. *Diversity and Distributions* 9: 99-110; Jennings, M. R. 1996. Status of amphibians. Pages 921-944 in *Sierra Nevada ecosystem project: final report to Congress, volume 2, assessments and scientific basis for management options*. University of California, Centers for Water and Wildland Resources, Davis, California, USA.

¹¹ 69 Fed. Reg. 47212, 47233-34 (August 4, 2004); Wylie, G. D., Casazza, M. L., & Carpenter, M. (2003). Diet of bullfrogs in relation to predation on giant garter snakes at Colusa National Wildlife Refuge. *California Fish and Game*, 89(3), 139-145; 79 Fed. Reg. 24256, 24273 (April 29, 2014)..

¹² Thomson, R. C., Wright, A. N., & Shaffer, H. B. (2016). *California Amphibian and Reptile Species of Special Concern* University of California Press.

¹³ Hothem, R. L., Meckstroth, A. M., Wegner, K. E., Jennings, M. R., & Crayon, J. J. 2009. Diets of three species of anurans from the Cache Creek Watershed, California, USA. *Journal of Herpetology*, 43(2), 275-283.

¹⁴ *Id.*

¹⁵ *Id.*; Thomson et al. (2016). *supra* fn.12; U.S. Fish and Wildlife Service ("USFWS"), ECOS Environmental Conservation Online System. Available at: <http://ecos.fws.gov/ecp/> (Last Accessed Nov. 2, 2016).

Bullfrogs are a strong competitor with multiple life stages of the California red-legged frog.¹⁶ Research indicates that bullfrogs may have an additional advantage of being able to outcompete other species of amphibians where fish are present because bullfrogs are unpalatable to fish, unlike most native amphibians.¹⁷

The presence of bullfrogs can also lead to reproductive interference with other frogs and these interactions may reduce the reproductive output of California's native frogs. For example, interspecific mating has been observed between male foothill yellow-legged frogs and female bullfrogs.¹⁸

ii. Bullfrogs Aid in the Introduction and Spread of Diseases Harming Native Wildlife

Emerging infectious diseases of wildlife pose a major threat to global biodiversity.¹⁹ The global movement of plants and animals is a well-recognized mechanism for the introduction of pathogens into new regions.²⁰ International trade of wildlife can contribute to the introduction and spread of emerging and novel wildlife diseases, especially when the wildlife being traded are highly invasive species like bullfrogs.

Bullfrogs are a known carrier of the chytrid fungus *Batrachochytrium dendrobatidis* (Bd), which causes the disease chytridiomycosis. Bullfrogs are highly resistant to the disease, exhibiting no clinical signs when infected with the fungus.²¹ In a recent study examining the relationships between invasive alien species and threatened vertebrates, Bd was identified as the invasive alien species that threatens the greatest number of vertebrates.²² Chytridiomycosis is a contributor to the threatened status of almost 400 amphibian species worldwide and causes species extinctions, mass mortality events, and precipitous and persistent population declines.²³ The disease

¹⁶ Thomson et al. (2016) *supra* fn. 12.

¹⁷ 79 Fed. Reg. 24264 (April 29, 2014).

¹⁸ Lind, A. 2003. The Distribution and Habitat of Foothill Yellow-legged Frogs (*Rana boylei*) on National Forests in Southern Sierra Nevada Mountains of California. Report to the FHR Program of Region 5 of the USDA Forest Service. pp. 1-31.

¹⁹ Ip, H. S., Lorch, J. M., & Blehert, D. S. 2016. Detection of spring viraemia of carp virus in imported amphibians reveals an unanticipated foreign animal disease threat. *Emerging Microbes & Infections* 5(9), e97.

²⁰ *Id.*

²¹ Daszak, P, Strieby, A., Cunningham, A.A., Longcore, J.E., Brown, C., and D. Porter. 2004. Experimental evidence that the bullfrog (*Rana catesbeiana*) is a potential carrier of chytridiomycosis, an emerging infectious disease of amphibians. *Herpetological Journal* 14, 201-207.

²² Bellard, C., Genovesi, P., and J.M. Jeschke. 2016. Global patterns in threats to vertebrates by biological invasions. *Proc. R. Soc. B* 283: 20152454.

²³ Lips, K.R. 2016. Overview of chytrid emergence and impacts on amphibians. *Phil. Trans. R. Soc. B.* 371: 20150462. Available at <http://dx.doi.org/10.1098/rstb.2015.0465> (Last Accessed Nov. 2, 2016).

negatively impacts California's native amphibians, and played a major role in the declines of the Sierra Nevada yellow-legged frog, the mountain yellow-legged frog, and the Yosemite toad.²⁴

The African clawed frog (*Xenopus laevis*) is also implicated as having played a role in the spread of Bd, as the earliest identified Bd infection was of this species and clawed frogs appear to be resistant to the onset of disease.²⁵ Early speculation was that the widespread distribution of this species in the 1940s and 1950s for human pregnancy testing disseminated the pathogen to differing regions of the world; however, African clawed frog distributions do not always overlap with Bd outbreaks so additional hosts, such as bullfrogs must also play a role in Bd's spread.²⁶ The African clawed frog does not currently present a major threat for the introduction of new pathogens into California because imports of this species are already restricted, as all frogs in the genus *Xenopus* are included in the Restricted Animal List.²⁷

Ranaviruses are also classified as emerging pathogens, because their geographic distribution and host range appear to be expanding.²⁸ Ranaviruses are known to cause disease in amphibians, fish, and reptiles and have the potential to cause population declines and extinctions.²⁹ Ranaviruses may be a particularly significant threat to host species that are geographically isolated or exist at low abundance,³⁰ and California is home to numerous species of amphibians, fish, and reptiles that fall into these categories. Because ranaviruses can be transmitted between these different taxonomic classes of vertebrates, introductions of ranaviruses by imported bullfrogs can impact fish and reptiles, as well as amphibians.³¹ Ranaviruses are frequently moved in the regional and international trade of animals.³²

Commercial trade appears to play a major role in the spread of Bd and ranaviruses.³³ Bd and ranaviruses have been detected at bullfrog farms in Asia and South America.³⁴ In a study of newly

²⁴ 79 Fed. Reg. 24256, 24274-24275, 24296 (April 29, 2014).

²⁵ Schloegel LM; Picco AM; Kilpatrick AM; Davies AJ; Hyatt AD; 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.

²⁶ *Id.*

²⁷ Title 14 §671(c)(3)(B)

²⁸ Duffus, A.J., Waltzek, T.B., Stöhr, A.C., Allender, M.C., Gotesman, M., Whittington, R.J., Hick, P., Hines, M.K. and R.E. Marschang. 2015. Distribution and host range of ranaviruses. In *Ranaviruses*, pp. 9-57. Springer International Publishing.

²⁹ *Id.*

³⁰ *Id.*

³¹ *Id.*

³² *Id.*

³³ Schloegel, L.M., Toledo, L.F., Longcore, J.E., Greenspan, S.E., Vieira, C.A., Lee, M., Zhao, S., Wangen, C., Ferreira, C., Hipolito, M. and Davies, A.J., 2012. Novel, panzootic and hybrid genotypes of amphibian chytridiomycosis associated with the bullfrog trade. *Molecular Ecology*, 21(21), pp.5162-5177; Schloegel et al. (2009) *supra* fn. 25; Picco AM, Collins JP. 2008. Amphibian commerce as a likely source of pathogen pollution. *Conservation Biology* 22(6):1582-89.

imported bullfrogs in Los Angeles, New York, and San Francisco, researchers identified a high prevalence of Bd infections, with a presence of Bd on 62% of samples (306/493) and an infection prevalence of 8.5% (50/588) for ranaviruses.³⁵ In an additional study of 47 bullfrogs purchased from 13 shops in seven U.S. cities, 70% of the shops sold bullfrogs carrying infections with Bd, and 41% of the bullfrogs tested positive for Bd.³⁶

While the importation of live bullfrogs may not greatly increase the geographic distribution of Bd and ranaviruses in California that are already present in the state, it may aid in the introduction of new strains of these pathogens.³⁷ Recent studies of Bd have revealed that the genetic diversity of Bd is much greater than previously realized, and there are multiple strains of the fungus found throughout the world, with some strains being more virulent than others.³⁸ Bullfrogs in U.S. markets are infected with a large diversity of Bd genotypes, and thus bullfrog invasions are likely to have facilitated intercontinental gene flow of Bd.³⁹

There is still much that is unknown about additional pathogens that may be spread through the trade in wildlife. Chytrid fungus and ranaviruses are two currently recognized types of pathogens carried in the live bullfrog trade, but more are clearly possible. A recent study found that salamanders imported into the U.S. from China tested positive to spring viraemia of carp virus (“SVCV”), a pathogen not previously known to infect amphibians.⁴⁰ SVCV is a rhabdovirus pathogen of cyprinid fish that is considered an economically important pathogen impacting the commercial aquaculture industry.⁴¹ This provides just one recent example of additional pathogens that may be spread into California through imports of live bullfrogs.

C. Current Regulation of Live Bullfrogs is Inadequate

Approximately two million live bullfrogs are currently imported into California each year, which are primarily sold in food markets.⁴² These bullfrogs pose a threat to California’s wildlife, for the reasons stated above, through the potential for the accidental or intentional release of imports. The Department acknowledged in its 2014 report that bullfrogs are likely to continue to spread

³⁴ Mazzoni, R., A. Jose de Mesquita, and M.H.B. Catroxo. 2009. Mass mortality associated with a frog virus 3-like ranavirus infection in farmed tadpoles *Rana catesbeiana* from Brazil. *Diseases of Aquatic Organisms* 88(3):181-191; Schloegel et al. (2009) *supra* fn. 25; Mazzoni R, Cunningham A.A., Daszak P., Apolo A., Perdomo E., and G. Speranza. 2003. Emerging pathogen of wild amphibians in frogs (*Rana catesbeiana*) farmed for international trade. *Emerging Infectious Diseases* 9(8):995-8.

³⁵ Schloegel et al. (2009) *supra* fn. 25.

³⁶ Schloegel et al. (2012) *supra* fn.33.

³⁷ Schloegel et al. (2009) *supra* fn. 25.

³⁸ Schloegel et al. (2012) *supra* fn.33.

³⁹ *Id.*

⁴⁰ Ip, H. S., Lorch, J. M., & Blehert, D. S. 2016. Detection of spring viraemia of carp virus in imported amphibians reveals an unanticipated foreign animal disease threat. *Emerging Microbes & Infections* 5(9), e97.

⁴¹ *Id.*

⁴² CDFW (2014) *supra* fn. 1.

within California, likely via three primary pathways.⁴³ Besides the dispersal and spread of existing bullfrog populations, one of the recognized pathways is via “new introduction events associated with live bullfrog importation and trade.”⁴⁴ Another pathway recognized by the Department is via “new introduction events from ethically motivated releases of captive frogs,”⁴⁵ which may rely on live bullfrog markets to provide a source for frogs to be released.

In 2010 the Commission recognized this problem and declared “[t]he importation of non-native turtles and frogs poses threats not only to the State’s native turtles and frogs, but also to the native source populations of the imported turtles and frogs.”⁴⁶ The Commission further adopted a policy that the “Department of Fish and Game shall cease issuing importation permits for any live non-native turtles or frogs.”⁴⁷

Rather than cease issuing these importation permits, in response to the Commission’s new policy the Department amended its own policies with additional requirements for the permits, including a requirement that all animals sold be euthanized before leaving the retail premises. However, the Department concluded in its 2014 report that these amendments have not been effective, as they have accumulated evidence of numerous violations of these new requirements.⁴⁸ The Department argued that the severity of the risks of bullfrogs to native wildlife is positively correlated to the number of live bullfrogs imported into California.⁴⁹ As a result of its findings, the Department argues in its report that “further limiting or eliminating the issuance of amphibian importation permit is a reasonable alternative to current policy.”⁵⁰

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ “The Fish and Game Commission declares that:

1. The Fish and Game Commission and the Department of Fish and Game have been charged by the Legislature to protect and wisely manage the State’s living natural resources and the habitats upon which they depend.
2. The importation of non-native turtles and frogs poses threats not only to the State’s native turtles and frogs, but also to the native source populations of the imported turtles and frogs.
3. These threats include, but are not limited to: disease, hybridization, competition, and predation.

Therefore, it is the policy of the Fish and Game Commission that the Department of Fish and Game shall cease issuing importation permits for any live non-native turtles or frogs pursuant to Section 236, Title 14, CCR.

(Adopted: 4/8/2010).” California Fish and Game Commission. Miscellaneous Policies: Non-Native Turtles and Frogs. *Available at* <http://www.fgc.ca.gov/policy/p4misc.aspx> (Last Accessed Oct. 13, 2016).

⁴⁷ *Id.*

⁴⁸ CDFW (2014) *supra* fn.1.

⁴⁹ *Id.* at 11

⁵⁰ *Id.* at 12

IV. PROPOSED REGULATION AMENDMENT

Petitioners request the Commission adopt the following amendments to add American bullfrogs to the list of Restricted Live Wild Animals (additions shown in *redline italics*):

Title 14 §671. Importation, Transportation and Possession of Live Restricted Animals.

(c) Restricted species include:

(3) Class Amphibia -Frogs, Toads, Salamanders

(A) Family Bufonidae -Toads: Bufo marinus, Bufo paracnemis, Bufo horribilis (Giant toad or marine toad group) and all other large toads from Mexico and Central and South America-(D).

(B) Family Pipidae -Tongueless Toads: 1. Genus Xenopus (Clawed frog)-(D).

(C) Family Ambystomatidae-Mole Salamanders: 1. Genus Ambystoma (tiger salamanders) (D).

(D) Family Leptodactylidae -Neotropical Frogs: 1. Eleutherodactylus coqui - Common Coqui or Coqui frog

(E). Family Ranidae - True Frogs : 1. Rana catesbeiana (Lithobates catesbeianus) - American Bullfrog (D).

V. POLICY AND LEGAL JUSTIFICATION FOR PROPOSED REGULATION AMENDMENTS

A. The Commission is Legally Required to Advance Recovery of Species Listed in the California Endangered Species Act by Addressing Threats Such as Bullfrogs

The California Endangered Species Act (“CESA”) requires the Commission to utilize its authority to carry out the purposes of the Act. The rulemaking requested under this petition is within the Commission’s authority to implement and serves the purpose of CESA in reducing the detrimental impacts of bullfrogs to threatened and endangered species.

Specifically, when a species is listed as threatened or endangered pursuant to CESA, affirmative mandates come into force. CESA § 2055 requires that all state commissions and agencies “conserve endangered species and threatened species” and “utilize their authority in furtherance of the purposes” of CESA. CESA further defines “conserve” to mean “to use . . . *all methods and procedures which are necessary* to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary . . .”⁵¹

⁵¹ CESA § 2061, *emphasis added*.

Further, CESA § 2052 declares that “it is the policy of the state to conserve, protect, restore, and enhance any endangered species or any threatened species and its habitat.”

Bullfrogs negatively impact the state-threatened California tiger salamander, giant garter snake, and Sierra Nevada yellow-legged frog.⁵² They also impact mountain yellow-legged frogs, which are listed as state-endangered as three separate populations.⁵³ All of these species are also protected under the federal ESA.⁵⁴

Bullfrogs prey on and compete with the federal and state protected California tiger salamander and are considered a threat to this species’ recovery.⁵⁵ Tiger salamanders are also threatened by ranaviruses which may be spread by bullfrogs, as explained above.⁵⁶ An overall pattern of decline of this species is seen in areas where bullfrogs and other invasive species are present.⁵⁷ Bullfrogs and California tiger salamanders tend not to co-occur in the same wetlands and bullfrogs have eliminated some California tiger salamander populations.⁵⁸

Bullfrogs are also recognized as predators of the giant garter snake.⁵⁹ An examination of bullfrog stomach contents at the Colusa National Wildlife Refuge in Colusa County showed neonate giant garter snakes in three of the 99 bullfrogs examined.⁶⁰ The authors estimated the total annual predation of bullfrogs to be about 22% of giant garter snake neonate production.⁶¹

Predation by bullfrogs and introduced fishes, and the chytrid fungus (Bd) and other pathogens are two of the primary driving forces leading to population declines in the mountain yellow-legged frog complex.⁶² Predation by bullfrogs is considered to be an ongoing, significant threat

⁵² 69 Fed. Reg. 47212, 47233-34 (August 4, 2004); U.S. Fish and Wildlife Service (“USFWS”). 2012. Giant Garter Snake (*Thamnophis gigas*) 5-Year Review: Summary and Evaluation. Available at: <http://ecos.fws.gov/ecp0/profile/speciesProfile?sId=4482> (Last Accessed Oct. 19, 2016); 79 Fed. Reg. 24256, 24273 (April 29, 2014).

⁵³ 79 Fed. Reg. at 24264 *supra* fn. 52.

⁵⁴ USFWS- ECOS *supra* fn. 15.

⁵⁵ 69 Fed. Reg. 47212, 47233-34 (August 4, 2004); U.S. Fish and Wildlife Service (“USFWS”). 2016. Recovery Plan for the Santa Rosa Plain: *Blennosperma bakeri* (Sonoma sunshine); *Lasthenia burkei* (Burke’s goldfields); *Limnanthes vinculans* (Sebastopol meadowfoam); California Tiger Salamander Sonoma County Distinct Population Segment (*Ambystoma californiense*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. vi + 128 pp.

⁵⁶ 69 Fed. Reg. 47212, 47233 (August 4, 2004).

⁵⁷ *Id.*

⁵⁸ USFWS (2016) *supra* fn. 55; USFWS. 2014. Central California tiger salamander 5-Year Review. Available at: <http://ecos.fws.gov/ecp0/profile/speciesProfile?sId=2076> (Last Accessed November 4, 2016).

⁵⁹ USFWS (2012) *supra* fn. 52.; Wylie et al. (2003) *supra* fn. 11.

⁶⁰ Wylie et al (2003) *supra* fn. 11.

⁶¹ *Id.*

⁶² 79 Fed. Reg. 24256, 24275 (April 29, 2014).

to the Sierra Nevada yellow-legged frog and the mountain yellow-legged frog.⁶³ In its final listing rule for the mountain yellow-legged frog, the USFWS noted that “bullfrog predation and competition is expected to have population-level effects where bullfrog populations occupy the same areas as extant mountain yellow-legged frog populations.”⁶⁴ At present the impact of bullfrogs on Sierra Nevada and mountain yellow-legged frogs is limited to the lower elevations where they co-occur, but bullfrogs may present more of a future threat to these native frogs if they are able to expand their elevational range as a result of climate change.⁶⁵

B. The Commission Should Act to Protect California Species of Special Concern

The Commission’s policy is to “[p]rotect and preserve all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates and plants, and their habitats, threatened with extinction; or those experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation.”⁶⁶ This inherently includes Species of Special Concern, which are administratively designated by the Department to help preclude the need to list additional species by achieving conservation and recovery before they meet CESA criteria for listing as threatened or endangered.⁶⁷

In a recent synthesis of the conservation risks faced by California amphibians and reptiles that qualify as Species of Special Concern (“SSC”), 16 of the 45 species were classified as Priority I, those of greatest concern.⁶⁸ Bullfrogs prey on and/or compete with 10 of these 16 Priority I species.⁶⁹ They also prey on and/or compete with other SSC, such as the northern red-legged frog.⁷⁰

Among the 10 Priority I SSC affected by bullfrogs, the California red-legged frog, arroyo toad, and Oregon spotted frog are also federally-listed under the ESA; and the foothill yellow-legged frog, western pond turtle, and western spadefoot are currently being considered for ESA protection.⁷¹ For example, bullfrogs are a strong competitor with, and predator on, multiple life stages of California red-legged frogs resulting in a strong overall negative impact on this federally-threatened species.⁷² Although the federally-endangered arroyo toad is primarily

⁶³ *Id.* at 24275.

⁶⁴ *Id.* at 24273.

⁶⁵ *Id.* at 24273-24274.

⁶⁶ California Fish and Game Commission. Miscellaneous Policies: Endangered and Threatened Species. Available at: <http://www.fgc.ca.gov/policy/p4misc.aspx> (Last Accessed Oct. 13, 2016).

⁶⁷ Thomson et al. (2016) at 4-5 *supra* fn. 12.

⁶⁸ *Id.* at 3

⁶⁹ *Id.* at 68, 91, 104, 110, 116, 122, 134, 294, 302, 308. These Priority I SSC include arroyo toad, foothill yellow-legged frog, California red-legged frog, northern leopard frog, Oregon spotted frog, lowland leopard frog, western spadefoot, common garter snake (southern populations), southern western pond turtle, and Sonora mud turtle.

⁷⁰ *Id.* at 81-82.

⁷¹ USFWS - ECOS *supra* fn. 15.

⁷² Thomson et al. (2016) at 104 *supra* fn. 12.

threatened by the loss and degradation of their habitat, declines are occurring in areas without these threats, largely due to introduced predators like bullfrogs.⁷³

Foothill yellow-legged frogs are rare or absent in habitats where bullfrogs are present, due to competition between tadpoles of the two species, and predation of foothill yellow-legged frogs by metamorphosed bullfrogs.⁷⁴ In a study of bullfrog invasion in a northern California river system, foothill yellow-legged frogs were almost an order of magnitude less abundant in stream reaches where bullfrogs were well established.⁷⁵ In a follow-up artificial experiment bullfrog tadpoles caused a 48% reduction in survivorship of foothill-yellow legged frogs.⁷⁶

For a number of these species, the management recommendations made in the recent Department publication on amphibian and reptile SSC included the need to remove bullfrogs and to protect against the further introduction of bullfrogs into their habitats.⁷⁷ The requested regulatory change will contribute to this effort by reducing the possibility of bullfrogs being re-introduced into areas where there are management efforts to remove them, and preventing bullfrog introductions into new areas.

VI. CONCLUSION

As the Commission has recognized, American bullfrogs pose a threat to California's native fish and wildlife, as they are strong predators and competitors of native species. Bullfrogs are implicated in the introduction and spread of deadly pathogens like chytrid fungus and ranaviruses, and future bullfrog imports may facilitate the introduction of additional emerging and novel wildlife disease. These risks are especially problematic for rare animals like those protected under the federal Endangered Species Act and the California Endangered Species Act, and those classified as Species of Special Concern in California. To conserve native wildlife, as the law requires, the Commission should ban the importation of live American bullfrogs by adding this species to the list of restricted animals.

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⁷³ *Id.* at 64-68.

⁷⁴ *Id.* at 91.

⁷⁵ Kupferberg, S. J. 1997. Bullfrog (*Rana catesbeiana*) invasion of a California river: the role of larval competition. *Ecology*, 78(6), 1736-1751.

⁷⁶ *Id.*

⁷⁷ *Eg.* Thomson et al. (2016) at 68, 92, 105, 117, 303.