



DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R3–ES–2018–0056; FF09E21000 FXES11110900000 212]

RIN 1018–BD26

Endangered and Threatened Wildlife and Plants; Endangered Species Status for the Missouri Distinct Population Segment of Eastern Hellbender

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), determine endangered species status under the Endangered Species Act of 1973 (Act), as amended, for the Missouri distinct population segment (DPS) of eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*), a salamander species. This rule adds this DPS of this species to the Federal List of Endangered and Threatened Wildlife.

DATES: This rule is effective [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: This final rule is available on the Internet at <http://www.regulations.gov> in Docket No. FWS–R3–ES–2018–0056 and https://www.fws.gov/midwest/endangered/amphibians/eastern_hellbender/. Comments and materials we received, as well as supporting documentation we used in preparing this rule, are available for public inspection at <http://www.regulations.gov>. Comments, materials, and documentation that we considered in this rulemaking will be available by appointment, during normal business hours, at: U.S. Fish and Wildlife Service, Columbia, Missouri Ecological Services Field Office, 101 Park DeVill Drive, Suite A,

Columbia, MO 65203–0057; telephone 573–234–2132.

FOR FURTHER INFORMATION CONTACT: Karen Herrington, Field Supervisor, Missouri Ecological Services Field Office, 101 Park DeVille Drive, Suite A, Columbia, MO 65203; telephone 573–234–2132. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Previous Federal Actions

On April 4, 2019, we published a proposed rule (84 FR 13223) to add the Missouri DPS of the eastern hellbender as an endangered species to the List of Endangered and Threatened Wildlife in part 17 of title 50 of the Code of Federal Regulations (at 50 CFR 17.11(h)). We concurrently published a not warranted finding on the listing of the eastern hellbender subspecies as a whole. See the proposed listing rule for the Missouri DPS of the eastern hellbender for more information regarding the previous Federal actions on the hellbender species and related subspecies.

Background

The Missouri DPS of the eastern hellbender lies completely within the boundaries of the State of Missouri with eastern hellbenders known to occur in Big River, Big Piney River, Courtois Creek, Gasconade River, Huzzah Creek, Meramec River, Niangua River, and Osage Fork of the Gasconade River (figure 1). The Meramec River watershed, which includes the Big River and Courtois Creek, drains directly into the Mississippi River; whereas all of the other watersheds in the Missouri DPS drain directly into the Missouri River. Please refer to our April 4, 2019, proposed rule (84 FR 13223) for a summary of species background information available to the Service at the time that it was published.

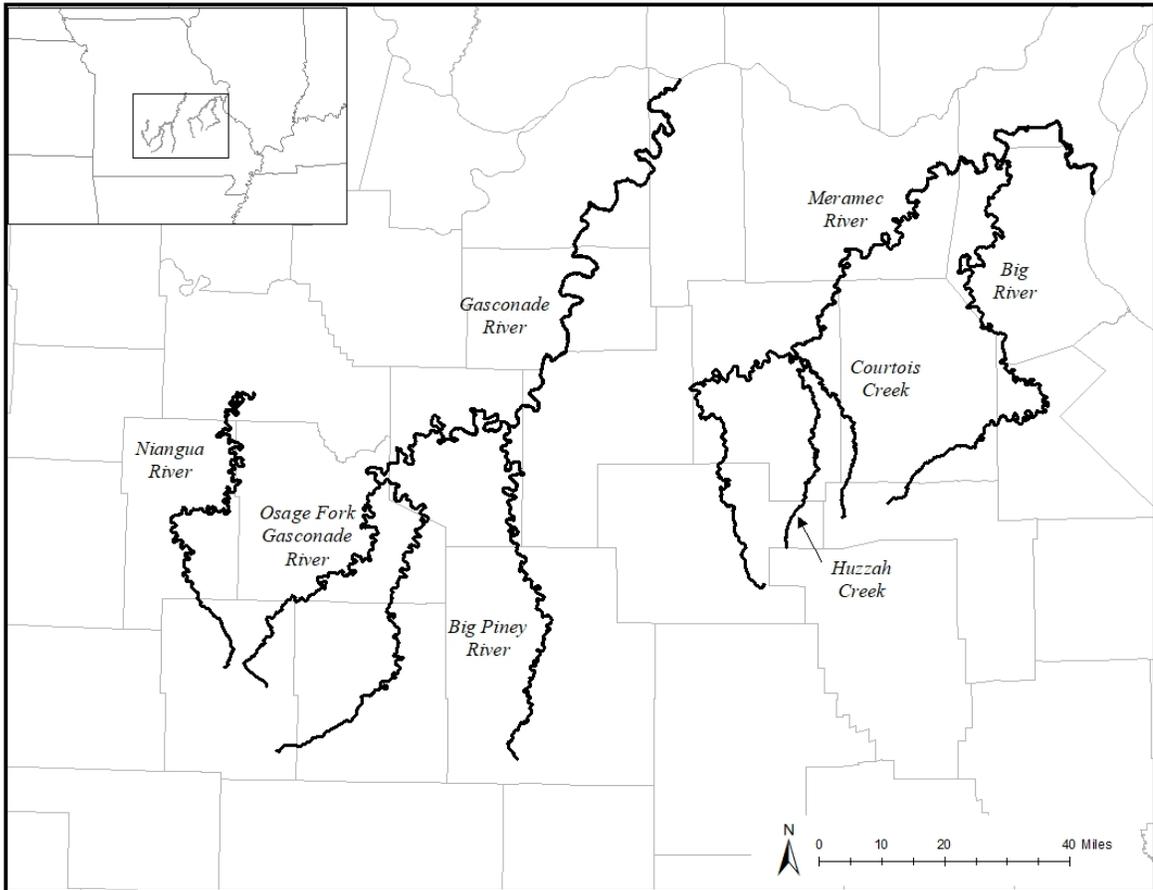


Figure 1. Streams within the Missouri DPS in which the eastern hellbender is known to occur.

Regulatory and Analytical Framework

Regulatory Framework

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species is an “endangered species” or a “threatened species.” The Act defines an endangered species as a species that is “in danger of extinction throughout all or a significant portion of its range,” and a threatened species as a species that is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” The Act requires that we determine whether any species is an “endangered species” or a “threatened species” because of any of the following factors:

- (A) The present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) Overutilization for commercial, recreational, scientific, or educational purposes;
- (C) Disease or predation;
- (D) The inadequacy of existing regulatory mechanisms; or
- (E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We use the term “threat” to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term “threat” includes actions or conditions that have a direct impact on individuals, as well as those that affect individuals through alteration of their habitat or required resources. The term “threat” may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an “endangered species” or a “threatened species.” In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those

actions and conditions that will have positive effects on the species—such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an “endangered species” or a “threatened species” only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

Our proposed rule described “foreseeable future” as the extent to which we can reasonably rely on predictions about the future in making determinations about the future conservation status of the species. The Service since codified its understanding of foreseeable future in 50 CFR 424.11(d) (84 FR 45020). In those regulations, we explain the term “foreseeable future” extends only so far into the future as the Service can reasonably determine that both the future threats and the species’ responses to those threats are likely. The Service will describe the foreseeable future on a case-by-case basis, using the best available data and taking into account considerations such as the species’ life-history characteristics, threat-projection timeframes, and environmental variability. The Service need not identify the foreseeable future in terms of a specific period of time. These regulations did not significantly modify the Service’s interpretation; rather they codified a framework that sets forth how the Service will determine what constitutes the foreseeable future. Accordingly, although these regulations do not apply to the final rule for the Missouri DPS of the eastern hellbender because it was proposed prior to their effective date, they do not change the Service’s assessment of foreseeable future for the Missouri DPS of the eastern hellbender as contained in our proposed rule and in this final rule. In the discussion of threats and the species’ response to those threats that follows, we include a discussion of, where possible, either a qualitative or quantitative assessment of the timing of the threats and species’ responses to those threats.

Analytical Framework

The Eastern Hellbender (*Cryptobranchus alleganiensis alleganiensis*) Species Status Assessment Report (SSA report) documents the results of our comprehensive biological status review for the eastern hellbender subspecies as a whole, including an assessment of the potential stressors to the species (U.S. Fish and Wildlife Service 2018, entire). The SSA report does not represent a decision by the Service on whether the subspecies (or the DPS) warrants listing as an endangered or threatened species under the Act. It does, however, provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies. The following is a summary of the key results and conclusions from the SSA report, specifically related to the Missouri DPS of the eastern hellbender; the full SSA report can be found at Docket No. FWS–R3–ES–2018–0056 on <http://www.regulations.gov> and at https://www.fws.gov/midwest/endangered/amphibians/eastern_hellbender.

To assess eastern hellbender viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–310). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years), redundancy supports the ability of the species to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the ability of the species to adapt over time to long-term changes in the environment (for example, climate changes). In general, the more resilient and redundant a species is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species' viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated individual species' life-history needs. The next stage involved an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the SSA involved making predictions about the species' responses to positive and negative environmental and anthropogenic influences. This process used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time. We use this information to inform our regulatory decision.

Summary of Biological Status and Threats

We identified four geographical units (referred to in the SSA report as adaptive capacity units (ACUs)), based on Hime *et al.*'s (2016, entire) evaluation of genetic markers, to delineate variation in genetic and ecological traits within the eastern hellbender's historical range (*i.e.*, evolutionary lineages; figure 2). The units are: (1) Missouri River drainage (MACU), (2) Ohio River-Susquehanna River drainages (OACU), (3) Tennessee River drainage (TACU), and (4) Kanawha River drainage (KACU). Through the DPS analysis described in the proposed rule (84 FR 13223, April 4, 2019), the Service determined that the MACU adaptive capacity unit was a distinct population segment and that the DPS met the definition of endangered. Any reference to the MACU in the SSA can be understood to mean the Missouri DPS of eastern hellbender. The term MACU is used throughout this document (and the SSA report) but references the same geographic areas as the Missouri DPS of the eastern hellbender.



Figure 2. Evolutionary distinct lineages identified within the eastern hellbender subspecies by Hime *et al.* (2016, pp. 4–13). (1) Missouri (MACU), (2) Ohio River-Susquehanna River drainages (OACU), (3) Tennessee River drainage (TACU), and (4) Kanawha River drainage (KACU).

The Missouri DPS of eastern hellbender (or MACU) historically had five populations. One of the populations is considered functionally extirpated (i.e., the number of individuals remaining is so low that the population is no longer considered to be viable; while the four other populations are declining and not in healthy condition. As noted in our DPS analysis in the proposed rule, eastern hellbenders occupy small home ranges, and the populations within the Missouri DPS are disjoined from other populations of eastern hellbender by such a large geographic distance (200 river miles) that there is no feasible way other populations could act as a source for any populations within this DPS (84 FR 13232, April 4, 2019). The Missouri DPS's current condition is most strongly influenced by sedimentation, poor water quality, disease, habitat disturbance, small population size, and direct mortality. Additionally, collection and sale of eastern

hellbenders continues to be a threat to the species. Augmentation is an important positive influence, but even with introductions ongoing, all extant populations have a declining trend in abundance. Though redundancy has declined with the functional extirpation of eastern hellbenders in one stream of the DPS, we have concluded that DPS-wide extirpation is unlikely due to a catastrophic chemical pollution event (Service 2018, p. 37). One of the largest freshwater oil spills in the nation (863,268 gallons of crude oil) occurred within the range of the Missouri DPS of eastern hellbender in 1988. The DPS persisted after the spill, but resiliency and redundancy have both declined since the spill. We have also concluded that the Missouri DPS of eastern hellbender likely has lower viability and greater vulnerability to current and potential future stressors, compared to other segments of the species' range. We summarize the major influences to the Missouri DPS of eastern hellbender viability below; for more detail see chapter 5 of the SSA report (Service 2018, pp. 34–56).

Influences on the Missouri DPS of Eastern Hellbender

In consultation with species' experts, we identified the past and current negative and beneficial factors that have led to the eastern hellbender's current condition and which may influence population dynamics into the future. Factors having a negative impact on eastern hellbender individuals are referred to as risk factors (also as threats or stressors), while factors having a beneficial effect are referred to as conservation factors. We referred to risk and conservation factors collectively as "influences." A brief summary of the most influential factors is presented below; for a full description of these factors, refer to chapter 5 of the SSA report (Service 2018, pp. 26–48).

Sedimentation

Sedimentation was identified as the factor most impacting the status of the Missouri DPS of eastern hellbender. Sedimentation is the addition of fine soil particles (*e.g.*, sands, silts, clays) to streams. These sediments bury shelter and nest rocks (Blais

1996, p. 11; Lipps 2009, p. 10; Hopkins and DuRant 2011, p. 112), suffocate eggs (Nickerson and Mays 1973, pp. 55–56), alter habitat for crayfish (the primary food source of adult eastern hellbenders) (Santucci *et al.* 2005, pp. 986–987; Kaunert 2011, p. 23), and degrade habitat for larval and juvenile hellbenders, as well as habitat for macroinvertebrates, which are an important food source for larval hellbenders (Cobb and Flannagan 1990, pp. 35–37; Nickerson *et al.* 2003, p. 624). Because sedimentation affects all life stages of the eastern hellbender, impairs or prevents successful reproduction, and is pervasive throughout the subspecies' range, it has specifically been implicated as a cause of eastern hellbender declines and as a continuing threat throughout much of the Missouri DPS range.

Water Quality Degradation

Degraded water quality was estimated as having the second highest impact on the Missouri DPS's status because it can cause direct mortality of eastern hellbenders and, at sublethal levels, can alter physiological processes and increase vulnerability to other threats (Maitland 1995, p. 260). Major sources of aquatic pollutants include domestic wastes, agricultural runoff, coal mining activities, road construction, and unpermitted industrial discharges. There are a few documented cases of eastern hellbender kills (Williams, Chapman, and Floyd 2017, pers. comm.; Feller and Thompson 2011, entire) and many examples of fish and mussel kills from chemical pollution within the eastern hellbender range (USFWS 2013, pp. 59279-59284; Henley *et al.* 2002, entire). However, there is no information available to estimate how frequently chemical pollution events occur or the likelihood of this causing catastrophic decline in the Missouri DPS. Several databases track reported chemical spill events, 303(d) listed streams, and chemical pollution; however, the effects of chemicals on eastern hellbender remain largely unknown (Burgmeier *et al.* 2011b, p. 836; Pugh *et al.* 2015, pp. 105-6). While it is unlikely that a single chemical spill could cause catastrophic loss of the entire DPS, such loss is possible if multiple spills occur in

the Missouri DPS of eastern hellbender. For further discussion about water quality degradation see **Risk and Conservation Factors** of the SSA report (Service 2018, pp. 34—56).

Disease

Disease (specifically, *Bd*) was estimated to be strongly contributing to the current condition of the Missouri DPS of the eastern hellbender and was ranked fourth in threats currently affecting eastern hellbenders by species experts (Service 2018, p. 36). Diseases can act as stressors and have the potential to cause catastrophic loss of hellbender populations. Emerging infectious diseases (EID), especially fungal EIDs in wildlife (discussed below), are on the rise (Fisher *et al.* 2012, p. 188). Salamanders are especially susceptible given the high magnitude of legal and illegal trade in herpetofauna. The importation of wildlife is a known pathway for transmission of pathogens.

Batrachochytrium dendrobatidis (*Bd*) is a fungal pathogen responsible for causing chytridiomycosis, a highly infectious amphibian disease associated with mass die-offs, population declines and extirpations, and potentially species extinctions on multiple continents (Berger *et al.* 1998, pp. 9031–9036; Bosch *et al.* 2001, pp. 331–337; Lips *et al.* 2006, pp. 3165–3166). The range of occurrence within eastern hellbenders in the Missouri DPS ranges among the rivers from 3-8 percent (Briggler 2019, pers. comm), and Bodinof *et al.* (2011, p. 3) found the earliest detection in Missouri occurred in 1975. Although the exact impact of *Bd* remains unclear, species experts believe that even mild chronic *Bd* infections may negatively impact eastern hellbenders and may increase susceptibility of eastern hellbenders to other infections. While *Bd* currently does not appear to be causing large-scale mortality events in populations of eastern hellbenders in the Missouri DPS, other stressors, such as environmental contaminants or rising water temperatures, can weaken animals' immune systems, leading to outbreaks of clinical

disease, and cause mortality events in the future (Briggler *et al.* 2007, p. 18; Regester *et al.* 2012, p. 19).

Batrachochytrium salamandrivorans (*Bsal*) is a fungal pathogen that invaded Europe from Asia around 2010 and has caused mass die-offs of fire salamanders (*Salamandra salamandra*) in northern Europe (Martel *et al.* 2014, p. 631; Fisher 2017, pp. 300–301). Given extensive unregulated trade and the discovery of *Bsal* in Europe in 2010, the introduction of this novel pathogen could cause extirpations of naïve salamander populations in North America (Yap *et al.* 2017, entire) were *Bsal* to be introduced here. Given the high risk of *Bsal* invasion, on January 13, 2016, the Service published in the *Federal Register* (81 FR 1534) an interim rule to list 20 amphibian genera known to carry *Bsal* as injurious under the Lacey Act to limit importation into the United States. Despite this protection, it is possible that an unknown carrier or illegal import could introduce this pathogen into eastern hellbender populations. The Missouri DPS of the eastern hellbender has a low to moderate risk of *Bsal* introduction based on proximity to areas with a high volume of amphibian trade (Richgels *et al.* 2016, p. 5); unregulated trade of amphibians occurs in the range of the DPS and releases of infected amphibians could lead to the introduction of *Bsal* to this area.

Habitat Disturbance

Anthropogenic disturbance in the form of rock-moving by people recreating on rivers is a stressor on eastern hellbenders and can cause mortality. Large shelter rocks are removed to reduce obstructions to recreational canoeing or tubing. Additionally, collection of boulders, rocks, and cobble for landscaping has been suspected in some areas in Missouri (Briggler *et al.* 2007, p. 62). Because large rocks serve as shelter and nesting habitat for adults, and smaller rocks and cobble provide larval and juvenile habitat, moving rocks of any size has the potential to lead to mortality of some life stage. For example, Unger *et al.* (2017, entire) documented a deceased adult eastern hellbender

under a recently constructed rock stack and a deceased larval eastern hellbender under freshly moved cobble at the base of a small, artificial dam. Both structures were presumed to have been constructed by recreational visitors to the small, heavily used stream (Unger *et al.* 2017, entire).

Small Populations, Population Fragmentation, and Isolation

Populations of the Missouri DPS of eastern hellbender are small and isolated from one another by impoundments and large reaches of unsuitable habitat. This isolation restricts movement among populations and precludes natural recolonization from other populations (Dodd 1997, p. 178; Benstead *et al.* 1999, pp. 662–664; Poff and Hart 2002, p. 660).

Increased Abundance of Species of Predators

Some native predators of the eastern hellbender, such as raccoons, have increased in abundance due to anthropogenic influences, while others have recently been reintroduced into hellbender streams within the range of the Missouri DPS (*e.g.*, river otters) (Briggler *et al.* 2007, p. 17). Nonnative predators are also present within a large portion of the Missouri DPS of eastern hellbender's range and include predatory fish stocked for recreation, such as rainbow trout (*Oncorhynchus mykiss*) and brown trout (*Salmo trutta*) (Mayasich *et al.* 2003, p. 20). Species experts presume nonnative trout species directly impact eastern hellbenders by predateding on eggs, larvae, and subadults (Briggler *et al.* 2007, p. 23).

Direct Mortality or Permanent Removal of Animals

Large numbers of eastern hellbenders have historically been removed from some streams within the Missouri DPS for scientific and educational purposes (Peterson 1985, p. 59; Ingersol 1991, pp. 61, 63). Though there is no documentation of collection of eastern hellbenders within the Missouri DPS for the pet trade, we presume that individuals were also collected for this purpose based on documentation of the large

number of Ozark hellbenders illegally collected for the pet trade (Nickerson and Briggler 2007, entire) and the proximity of the Missouri DPS to Ozark hellbenders. These removals likely contributed to the population declines seen in some streams. The current rate of permanent removal of eastern hellbenders is likely significantly lower than it has been historically. However, collection and sale of eastern hellbenders continues to be a threat, with internet advertisements as recent as 2010 soliciting purchase of wholesale lots of eastern hellbenders (Briggler 2010, pers. comm.). Killing of eastern hellbenders by some anglers and the removal of individuals for personal use and the pet trade also continues in some areas (Briggler *et al.* 2007, pp. 18, 59). Even though many eastern hellbenders targeted by scientists and nature enthusiasts are returned to the stream, the act of searching for eastern hellbenders can result in increased egg and larval mortality. Eastern hellbenders are typically captured by lifting large shelter rocks and catching individuals by hand. Many researchers have speculated that rock lifting to collect eastern hellbenders results in adverse impacts to all life stages, especially when done during the breeding season (Williams *et al.* 1981b, p. 26; Lindberg and Soule 1991, p. 8; Williams 2012, pers. comm.).

As a long-lived species, removing adult eastern hellbenders from stream populations may be particularly detrimental, as stable populations of long-lived species typically have high adult survival rates, which compensates for correspondingly low rates of recruitment into the adult populations (Miller 1976, p. 2). In eastern hellbender populations with low densities and little evidence of recent recruitment into the adult population, the removal of any individuals from a population may be deleterious (Pfungsten 1988, p. 16). Because many populations within the Missouri DPS of eastern hellbender are already stressed by habitat degradation, compensation for high adult mortality through high recruitment of juveniles is even less likely. Although the magnitude of the threat of removing individuals from the wild is not known with

certainty, its occurrence is commonly noted by field researchers, suggesting that it is a relatively common occurrence in some portions of the subspecies' range. Furthermore, as the number of populations decline and become concentrated on public lands, locations and animals might be easier to find (discussed below in the Conservation Efforts section and the SSA report; Service 2018, p. 56).

Synergistic Effects

In some instances, effects from one threat may increase effects of another threat, resulting in what is referred to as synergistic effects. Synergistic effects often include an increased susceptibility to predation (Moore and Townsend 1998, pp. 332–333), disease (Kiesecker and Blaustein 1995, pp. 11050–11051; Taylor *et al.* 1999, pp. 539–540), or parasites (Kiesecker 2002, pp. 9902–9903; Gendron *et al.* 2003, pp. 472–473). In addition, chronic, increased levels of stress hormones have been shown to inhibit immune response (Rollins-Smith and Blair 1993, pp. 156–159; Romero and Butler 2007, pp. 93–94). Other stressors present in the eastern hellbender's environment (*e.g.*, habitat modification, degraded water quality) could reduce immune response and thereby increase vulnerability to disease and parasites.

Conservation Efforts

Beneficial efforts, primarily of population augmentation, were also ranked by species' experts as an important influence on the Missouri DPS's status. Captive-rearing increases the survival rate of young by raising them in captivity to 2 to 4 years of age (Briggler 2019, pers. comm.). Once reared, young are released into the wild to augment existing populations or reintroduced into areas where the species has been extirpated. However, we currently have no data on whether released individuals have successfully reproduced or can successfully reproduce, or the survival rates of any resulting offspring.

In addition, artificial nest boxes have been successfully used for reproduction by hellbenders in Missouri (Briggler 2016, p. 1). However, the survival of fertilized eggs

and larvae from these nest boxes is unknown. Because nest boxes may present a curiosity to stream recreationists, hellbenders occupying the nests are susceptible to disturbance, persecution, and collection if the nest boxes are not properly camouflaged.

Lastly, the eastern hellbender (including the Missouri DPS) is listed on Appendix III of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). CITES is an international agreement among governments with the purpose of ensuring that international trade in wild animals and plants does not threaten their survival. Appendix III includes native species that at least one Party country (i.e., a country that is part of CITES) has identified as requiring regulation to prevent or restrict exploitation. Under Appendix III, that Party country requests the help of other Parties to monitor and control the trade of that species.

Summary

In summary, stressors are pervasive across the range of the Missouri DPS of the eastern hellbender. The primary stressors affecting the Missouri DPS of eastern hellbender include sedimentation, water quality degradation, disease, habitat disturbance, small population size, and direct mortality. Although augmentation has the potential to influence the status of the DPS, little data exist as to whether successful sustained reproduction and recruitment can be achieved and whether augmentation is logistically possible throughout the range. With regard to redundancy, there is high vulnerability for DPS-wide extirpation due to the low number (four) and reduced distribution of populations.

Populations of the Missouri DPS eastern hellbender have declined as much as 77 percent over a twenty-year period in the Big Piney River, Gasconade River and Niangua River (Wheeler et al. 2003, p. 155). The threats described above have already resulted in the functional extirpation of one of five populations of the eastern hellbender in Missouri and the declining condition of the remaining four populations. Of the four remaining

populations, none are currently healthy, contributing to their low resiliency. The lack of healthy populations, the limited spatial extent of the Missouri DPS and the likely functional loss of population(s) in the event of a catastrophic event greatly reduce the DPS's resiliency and redundancy (the ability of a species to withstand normal environmental variation, periodic disturbances, stressors, and catastrophes currently and into the future). Based on threats currently affecting the Missouri DPS, we expect all populations to continue to decline in health (Service 2018, Chapter 6). Additionally, under two out of three future scenarios, we expect an additional population to become extirpated within 10 years (Service 2018, Chapter 6).

Population resiliency is low due to the unhealthy condition of the four remaining populations of the Missouri DPS of eastern hellbender. The functional loss of a population has decreased the overall redundancy of the DPS and the limited geographic extent (5 streams closely located to one another) of the DPS leads to low overall redundancy as well.

The eastern hellbender SSA report (Service 2018, entire) contains a more detailed discussion of our evaluation of the biological status of the eastern hellbender in Missouri and the influences that may affect its continued existence. Our conclusions are based upon the best available scientific and commercial data, including the expert opinion of the species' experts (fishery biologists, aquatic ecologists, and geneticists from State and Federal agencies and academic institutions) and the SSA team members. Please see the proposed listing rule and its supporting materials for a complete list of the species experts and peer reviewers and their affiliations (84 FR 13231, April 4, 2019; Docket No. FWS–R3–ES–2018–0056).

Summary of Comments and Recommendations

In the April 4, 2019, proposed rule (84 FR 13223), we requested that all interested parties submit written comments on the proposal by June 3, 2019. We also contacted

appropriate Federal and State agencies, scientific experts and organizations, and other interested parties and invited them to comment on the proposal. We did not receive any requests for a public hearing.

Peer Reviewer Comments

In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review actions under the Act (16 U.S.C. 1531 *et seq.*), we solicited expert opinion from five knowledgeable individuals with scientific expertise that included familiarity with the eastern hellbender and its habitat, biological needs, and threats. We received responses from two peer reviewers.

We updated the SSA report based on the peer reviewer's comments. The changes consisted of clarifications and corrections to the SSA report, including typographical edits, and incorporation of omitted references.

Public Comments

We received eight public comments on the proposed rule and more than five thousand form letters expressing support for the listing of the eastern hellbender under the Act. One of the comments received during the public comment period did not address or provide any information concerning the Missouri DPS of the eastern hellbender. The remaining commenters did not provide substantive comments or new information concerning the proposed listing of the Missouri DPS of the eastern hellbender. We note the SSA report, a list of literature referenced, the public comments and the peer reviewer reports, all of which helped inform this listing decision, are available to the public on <http://www.regulations.gov> under Docket No. FWS-R3-ES-2018-0056.

(1) *Comment:* A commenter suggested that, when making a final determination, the Service should consider all feedback it receives at the 2019 Hellbender

Symposium, a biennial gathering of researchers and species experts from across the country.

Our Response: We received no new information at the symposium pertaining to the Missouri DPS of the eastern hellbender.

Two public commenters expressed opposition to the Service's proposed determination not to designate critical habitat for the eastern hellbender. These comments were generally centered on five main topics and are addressed individually below.

(2) *Comment:* The commenters opined that information in the SSA report demonstrates that collection pressure is among the least influential of the primary factors impacting population health in Missouri; whereas sedimentation and water quality impairment are the two strongest and together make up 32 percent of the relative influence of all factors on population status. This information suggests that concerns about Federal activities that may degrade habitat and water quality dramatically outweigh concerns about collection pressure.

Our Response: The commenters stated that collection pressure was not ranked as a factor currently having a high influence on eastern hellbender population health in Missouri because various measures have been implemented to restrict the disclosure of specific locations of occupied sites. If the exact location of occupied sites were publically available, we expect the threat of illegal collection would be much higher. Collection, as a threat, is discussed further above in the **Summary of Biological Status and Threats** section and the SSA report (Service 2018, pp. 48–50)

(3) *Comment:* The commenters stated that designating critical habitat would not increase the risk of unlawful eastern hellbender collection because eastern hellbender locations are already widely available on the internet via articles published in scientific journals. These articles and other sources identify waterways where eastern hellbenders live and include maps, verbal descriptions, and capture techniques.

Our Response: Though the streams in which eastern hellbenders occur are readily available to the public, the identification of these streams does not provide sufficient detail to facilitate illegal collection. Disclosure of the exact location of occupied sites within these rivers, however, would facilitate illegal collection. Therefore, disclosure of this information to the public is limited. The exact location of some sites has been published in scientific journals, but these sites constitute only a small proportion of the total number of sites occupied by eastern hellbenders, and species experts now recommend that exact locations no longer be published due to the threat of illegal collection. The designation of critical habitat would result in publishing of site-specific information and maps in the *Federal Register*. The Service is already aware of instances in which the publication of locality information for Ozark hellbender (*Cryptobranchus alleganiensis bishopi*) occupied sites resulted in the removal of almost all individuals from the location. Thus, we have concluded that publishing location information for eastern hellbender would further facilitate illegal collection and result in similar consequences.

(4) Comment: The commenters stated that designating critical habitat would not increase the risk of unlawful eastern hellbender collection because the Service can designate critical habitat without revealing exact locations of eastern hellbenders.

Our Response: When designating critical habitat, the Service must determine the physical or biological features that are essential to the conservation of the species and which may require special management considerations or protection. Essential physical and biological features are the features that occur in specific areas and that are essential to support the life-history needs of the species. Appropriate cover rocks or other crevices are necessary features to fulfill the life-cycle needs of the eastern hellbender because they provide protection and nesting habitat. Stream reaches with suitable habitat for the eastern hellbender are not continuous, and areas with suitable habitat are often separated

by miles (kilometers) of unsuitable habitat (data from mark-recapture studies indicate that hellbenders rarely move between sites). Therefore, by mapping the critical habitat and describing the physical and biological features essential to the conservation of the species, the Service would disclose the specific location of occupied sites and subject the Missouri DPS of eastern hellbenders to collection.

(5) Comment: The commenters stated that designating critical habitat would provide significant benefits to the eastern hellbender because the Act imposes an additional consultation requirement where an action will result in the “destruction or adverse modification” of critical habitat.

Our Response: In consultations for species with critical habitat, Federal agencies are required to ensure that their activities do not destroy or adversely modify critical habitat. However, once a species is listed under the Act, the provisions prohibiting take come into effect where the species is present. In most cases, “take” refers to a direct effect on an individual of the species. “Take” may also apply to actions that result in modification of the habitat of the species where such modification may be considered to constitute “harm” to the listed species. These prohibitions are completely independent of the designation of critical habitat. That is, the prohibition against take of the listed species applies regardless of whether critical habitat is designated. Although eastern hellbenders are considered functionally extirpated in one population within the Missouri DPS, species experts believe that a small number of individuals may still be present. Thus, there are no areas within the eastern hellbender range in the Missouri DPS that are considered unoccupied and for which section 7 consultation would not apply.

(6) Comment: The commenters stated that given the predicted future impacts to habitat throughout the MACU, the benefits of critical habitat designation far outweigh any concerns about additional collection pressure in the MACU. Even when there is no Federal nexus requiring consultation, critical habitat has value because it educates

landowners, State and local governments, and the public about the conservation value of an area.

Our Response: The benefits provided by the designation of critical habitat can duplicate those already provided to the species without the designation of critical habitat by the “jeopardy standard,” especially in the cases of species with smaller ranges. The Service recognizes that, in some instances, designation of critical habitat could provide some benefits to the Missouri DPS of the eastern hellbender. However, these benefits do not outweigh the increased illegal collection that is likely to occur if critical habitat maps are published and the specific locations of currently occupied sites are disclosed.

Comments from States

We received a comment letter from the State of Missouri Department of Conservation that supported our decision to seek Federal listing of the Missouri DPS of the eastern hellbender. The State also expressed agreement with our finding that the designation of critical habitat was not prudent. They did not provide further substantive information during the comment period that would influence a change in the Service’s decision from the proposed rule.

Summary of Changes from the Proposed Rule

As discussed above, we made no changes to this final rule after consideration of the comments we received.

Distinct Population Segment (DPS) Analysis

Please see our proposed listing rule for the Missouri DPS of the eastern hellbender published on April 4, 2019, for the full description of our DPS analysis (84 FR 13223). We did not receive substantive additional information during the open comment

period regarding whether or not the Missouri DPS of eastern hellbender is a valid distinct population segment.

Determination of Missouri DPS of Eastern Hellbender Status

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of “endangered species” or “threatened species.” The Act defines an “endangered species” as a species that is “in danger of extinction throughout all or a significant portion of its range,” and a “threatened species” as a species that is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” The Act requires that we determine whether a species meets the definition of “endangered species” or “threatened species” because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) Overutilization for commercial, recreational, scientific, or educational purposes; (C) Disease or predation; (D) The inadequacy of existing regulatory mechanisms; or (E) Other natural or manmade factors affecting its continued existence. For a more detailed discussion on the factors considered when determining whether a species meets the definition of “endangered species” or “threatened species” and our analysis on how we determine the foreseeable future in making these decisions, please see the *Regulatory Framework* section above.

Status Throughout All of Its Range

After evaluating threats to the species and assessing the cumulative effect of the threats under the section 4(a)(1) factors, we have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the Missouri DPS of the eastern hellbender. Our analysis of this information indicates that the most important risk factors affecting the eastern hellbender’s current and future status

and trends in Missouri are habitat destruction and modification from sedimentation and water quality degradation (Factor A), disease and pathogens (Factor C), and habitat disturbance (Factor A), and these factors are the primary causes of the decrease in the population health within the Missouri DPS of eastern hellbender now and into the future. The unauthorized collection of eastern hellbenders, especially for the pet trade (Factor B), remains a concern. Other factors, such as an overabundance of predators (Factor C) or population isolation (Factor E), are also affecting the Missouri DPS of eastern hellbenders but to a lesser degree. Although conservation efforts, such as population augmentation, artificial nest boxes, and listing under the Convention on International Trade in Endangered Species of Fauna and Flora, are being implemented, it is unclear if they will improve population viability in the long term.

Populations of Missouri DPS eastern hellbender have declined as much as 77 percent over a twenty year period in the Big Piney River, Gasconade River and Niangua River (Wheeler et al. 2003, pg. 155). The threats described above have already resulted in the functional extirpation of one of five populations of the eastern hellbender in Missouri and the declining condition of the remaining four populations. The lack of healthy populations, the limited spatial extent of the Missouri DPS and the likely loss of population(s) in the event of a catastrophic event greatly reduce the DPS's resiliency and redundancy (the ability of eastern hellbenders to withstand normal environmental variation, periodic disturbances, stressors, and catastrophes currently and into the future). Based on threats currently affecting the Missouri DPS, we expect all populations to continue to decline in health (Service 2018, Chapter 6). Additionally, under two out of three future scenarios, we expect an additional population to become extirpated within 10 years (Service 2018, Chapter 6). Thus, after assessing the best available information, we determine that the Missouri DPS of the eastern hellbender is in danger of extinction throughout all of its range.

Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. We have determined that the Missouri DPS of the eastern hellbender is in danger of extinction throughout all of its range, and accordingly, did not undertake an analysis of any significant portion of its range. Because we have determined that the Missouri DPS of the eastern hellbender warrants listing as endangered throughout all of its range, our determination is consistent with the decision in *Center for Biological Diversity v. Everson*, 2020 WL 437289 (D.D.C. Jan. 28, 2020), in which the court vacated the aspect of the 2014 Significant Portion of its Range Policy that provided the Services do not undertake an analysis of significant portions of a species' range if the species warrants listing as threatened throughout all of its range.

Determination of Status

Our review of the best available scientific and commercial information indicates that the Missouri DPS of the eastern hellbender meets the definition of an endangered species. Therefore, we are listing the Missouri DPS of the eastern hellbender as an endangered species in accordance with sections 3(6) and 4(a)(1) of the Act.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies; private organizations; and individuals. The Act encourages cooperation with the States and other countries, and calls for recovery actions to be carried out for listed species. The protection required by Federal agencies and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Subsection 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning consists of preparing draft and final recovery plans, beginning with the development of a recovery outline and making it available to the public within 30 days of a final listing determination. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan also identifies recovery criteria for review of when a species may be ready for delisting, and methods for monitoring recovery progress, which may include downlisting criteria when appropriate. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our website (<http://www.fws.gov/endangered>), or from our Missouri Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally needs the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include addressing factors contributing to sedimentation (e.g., streambank stabilization, restoring riparian corridors, excluding cattle from streams), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

Now that the Missouri DPS of the eastern hellbender listing is final, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the State of Missouri will be eligible for Federal funds to implement management actions that promote the protection or recovery of the Missouri DPS of the eastern hellbender. Information on our grant programs that are available to aid species recovery can be found at: <http://www.fws.gov/grants>.

Please let us know if you are interested in participating in recovery efforts for the Missouri DPS of the eastern hellbender. Additionally, we invite you to submit any new information on this species whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section

7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a proposed threatened or endangered species or result in destruction or adverse modification of its proposed critical habitat. If a species is listed subsequently, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service.

Federal agency actions within the range of the Missouri DPS of the eastern hellbender habitat that may require consultation as described in the preceding paragraph include, but are not limited to, management and any other landscape-altering activities, particularly those affecting water quality or instream habitat, on Federal lands administered by the U.S. Forest Service and Department of Defense; issuance of section 404 Clean Water Act (33 U.S.C. 1251 *et seq.*) permits by the U.S. Army Corps of Engineers; and construction and maintenance of roads or highways by the Federal Highway Administration.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to endangered wildlife. The prohibitions of section 9(a)(1) of the Act, codified at 50 CFR 17.21, make it illegal for any person subject to the jurisdiction of the United States to take (which includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt any of these) endangered wildlife within the United States or on the high seas. In addition, it is unlawful to import; export; deliver, receive, carry, transport, or ship in interstate or foreign commerce in the course of commercial activity; or sell or offer for sale in interstate or foreign commerce any listed species. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to employees of the

Service, the National Marine Fisheries Service, other Federal land management agencies, and State conservation agencies.

We may issue permits to carry out otherwise prohibited activities involving endangered wildlife under certain circumstances. Regulations governing permits are codified at 50 CFR 17.22. With regard to endangered wildlife, a permit may be issued for the following purposes: for scientific purposes, to enhance the propagation or survival of the species, and for incidental take in connection with otherwise lawful activities. There are also certain statutory exemptions from the prohibitions, which are found in sections 9 and 10 of the Act.

It is our policy, as published in the *Federal Register* on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a final listing on proposed and ongoing activities within the range of a listed species.

Based on the best available information, the following actions are unlikely to result in a violation of section 9, if these activities are carried out in accordance with existing regulations and permit requirements; this list is not comprehensive:

(1) Activities authorized, funded, or carried out by Federal agencies, when such activities are conducted in accordance with an incidental take statement issued by us under section 7 of the Act;

(2) Any action carried out for scientific research or to enhance the propagation or survival of the Missouri DPS of the eastern hellbender that is conducted in accordance with the conditions of a permit issued by the Service under 50 CFR 17.22; and

(3) Any incidental take of Missouri eastern hellbenders resulting from an otherwise lawful activity conducted in accordance with the conditions of an incidental take permit issued by the Service under 50 CFR 17.22. Non-Federal applicants may

design a habitat conservation plan (HCP) for the DPS and apply for an incidental take permit. HCPs may be developed for listed species and are designed to minimize and mitigate impacts to the species to the maximum extent practicable.

We will review other activities not identified above on a case-by-case basis to determine whether they may be likely to result in a violation of section 9 of the Act. We do not consider these lists to be exhaustive and provide them as information to the public.

Based on the best available information, the following activities may potentially result in a violation of section 9 of the Act; this list is not comprehensive:

(1) Unauthorized killing, collecting, handling, or harassing of individual eastern hellbenders at any life stage in Missouri;

(2) Sale or offer for sale of any Missouri eastern hellbender, as well as delivering, receiving, carrying, transporting, or shipping any Missouri eastern hellbender in interstate or foreign commerce and in the course of a commercial activity;

(3) Unauthorized destruction or alteration of the DPS' habitat (for example, instream dredging, channelizing, impounding of water, streambank clearing, removing large rocks from or flipping large rocks within streams, discharging fill material) that actually kills or injures individual eastern hellbenders in Missouri by significantly impairing their essential behavioral patterns, including breeding, feeding, or sheltering;

(4) Any discharge or water withdrawal within the DPS' occupied range that results in the death or injury of individual eastern hellbenders by significantly impairing their essential behavioral patterns, including breeding, feeding, or sheltering; and

(5) Discharge or dumping of toxic chemicals or other pollutants into waters supporting the DPS that actually kills or injures individual eastern hellbenders by significantly impairing their essential behavioral patterns, including breeding, feeding, or sheltering.

Questions regarding whether specific activities might constitute a violation of section 9 of the Act should be directed to the Missouri Ecological Services Field Office, 101 Park DeVille Drive, Suite A, Columbia, MO 65203; telephone 573–234–2132.

Critical Habitat

In our proposed listing rule for the Missouri DPS of the eastern hellbender we found that designating critical habitat was not prudent, in accordance with 50 CFR 424.12(a)(1), because the Missouri DPS faces a threat of unauthorized collection and trade, and designation can reasonably be expected to increase the degree of these threats to the DPS. Please refer to the proposed rule for the full prudency determination analysis (84 FR 13223, April 4, 2019; Docket No. FWS–R3–ES–2018–0056).

On August 27, 2019, we published a final rule in the Federal Register (84 FR 45020) to amend our regulations concerning the procedures and criteria we use to designate and revise critical habitat. That rule became effective on September 26, 2019, but, as stated in that rule, the amendments it sets forth apply to “rules for which a proposed rule was published after September 26, 2019.” We published our proposed critical habitat designation for the Missouri DPS of the eastern hellbender on April 4, 2019 (84 FR 13223); therefore, the amendments set forth in the August 27, 2019, final rule at 84 FR 45020 do not apply to this final determination regarding critical habitat for the Missouri DPS of the eastern hellbender.

The Service’s 2019 revisions to 50 CFR 424.12 did not change the language that allows us to determine that critical habitat may not be prudent if “the species is threatened by taking or other human activity and identification of critical habitat can be expected to increase the degree of such threat to the species.” The Service relied upon this language in making the prudency determination for designation of critical habitat for the Missouri DPS of eastern hellbender.

Required Determinations

National Environmental Policy Act

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*), need not be prepared in connection with listing a species as an endangered or threatened species under the Endangered Species Act. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244).

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to tribes. We have no records of the Missouri DPS of the eastern hellbender occurring on tribal lands.

References Cited

A complete list of references cited in this final rule is available on the Internet at <http://www.regulations.gov> and upon request from the Missouri Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this final rule are the staff members of the Service’s Great Lakes Regional Office and the Columbia, Missouri, Ecological Services Field Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

AUTHORITY: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

2. Amend § 17.11(h) by adding an entry for “Hellbender, eastern [Missouri DPS]” to the List of Endangered and Threatened Wildlife in alphabetical order under AMPHIBIANS to read as set forth below:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Common name	Scientific name	Where listed	Status	Listing citations and applicable rules
* * * * *				
AMPHIBIANS				

* * * * *				
Hellbender, eastern [Missouri DPS]	<i>Cryptobranchus alleganiensis alleganiensis</i>	Missouri	E	86 FR [Insert <i>Federal Register</i> page where the document begins]; [Insert date of publication in the <i>Federal Register</i>].
* * * * *				

Martha Williams

Principal Deputy Director

Exercising the Delegated Authority of the Director

U.S. Fish and Wildlife Service.

[FR Doc. 2021-04629 Filed: 3/8/2021 8:45 am; Publication Date: 3/9/2021]