

***SUBMITTED VIA FEDERAL eRULEMAKING PORTAL***

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Public Comments Processing  
Attn: FWS-R4-ES-2020-0010  
U.S. Fish and Wildlife Service  
MS: PRB/3W  
5275 Leesburg Pike  
Falls Church, VA 22041-3803

**Re: FWS-R4-ES-2020-0010; 12-month finding for the purple lilliput (*Toxolasma lividum*); listing rule and critical habitat designations for the longsolid (*Fusconaia subrotunda*) and round hickorynut (*Obovaria subrotunda*) freshwater mussels, 85 Fed. Reg. 61,384 (Sep. 29, 2020)**



*From left to right: purple lilliput, longsolid and round hickorynut. Photo by Matthew Patterson, USFWS.*

The following are the comments of the Center for Biological Diversity (“Center”) and Friends of the Blackwater regarding the 12-month findings, proposed listing determinations and proposed critical habitat designations for the purple lilliput (*Toxolasma lividum*), longsolid (*Fusconaia subrotunda*), and round hickorynut (*Obovaria subrotunda*). Staff and members of our organizations live and recreate in Michigan, Pennsylvania, Ohio, Indiana, Illinois, Kentucky, West Virginia, Virginia, North Carolina, Tennessee, Georgia, Alabama, Mississippi, Missouri, Arkansas, Oklahoma and Kansas in the range of these mussels, and their survival is of scientific, moral, aesthetic, recreational, spiritual, economic, and other value to our members.

**Background**

On April 20, 2010, the Center submitted a formal petition to the Service, requesting the agency to list 404 aquatic, riparian, and wetland southeastern United States species as endangered or threatened under the ESA. These species included the longsolid, purple lilliput, and round hickorynut. Subsequently, in 2015, the Center successfully sued the Service to compel the agency to make listing and critical habitat determinations for all three of these species.

The purple lilliput, longsolid, and round hickorynut are among the hundreds of mussel species in the southeastern U.S. that are at risk of extinction. They play a vital ecological role in maintaining the health of rivers, acting as living filters that maintain water quality, and they also require good water quality. Thus, their imperilment acts both as a warning signal about the dramatic decline of water quality across the region, and also threatens to further degrade water quality across vast swaths of the continent.

The southeastern United States is the world capital of freshwater mussel diversity, but the region has already lost 23 species to extinction. Nearly 70% of mussels are at risk of extinction due to unchecked historical exploitation and widespread modern-day disturbance of their habitat and the surrounding landscape.

The purple lilliput is a small freshwater mussel that grows up to 1.5 inches long, with a relatively thick, inflated, oval shell that typically darkens with age. It has historically been found in the Great Lakes as well as the Ohio, Cumberland, Tennessee, Arkansas-White-Red, and Lower Mississippi major river basins, within the States of Alabama, Kentucky, Missouri, Arkansas, Ohio, Illinois, Indiana, Michigan, Tennessee North Carolina, Georgia, Oklahoma and Virginia. It is also suspected to occur in Kansas.

The longsolid is a five-inch long mussel with a light brown shell with darker brown stripes and a pronounced ridge. It lives in the Ohio, Cumberland and Tennessee River basins in Alabama, Kentucky, North Carolina, New York, Ohio, Pennsylvania, Tennessee, Virginia and West Virginia.

The round hickorynut is a 2.5-inch, almost perfectly round mussel with a greenish-olive shell with a yellow band. It lives in the Great Lakes and in the Ohio, Cumberland, Tennessee and Lower Mississippi River basins in Alabama, Indiana, Kentucky, Michigan, Mississippi, Ohio, Pennsylvania, Tennessee and West Virginia.

All three of these mussels are suffering from precipitous, unchecked declines across their ranges. The threats to these species include habitat loss, fragmentation, and degradation due to development and urbanization; agricultural pollution and sedimentation; road development; as well as channelization, dredging and commercial navigation of their riverine habitat. Chemical pollution and other water quality impacts from coal, oil, gas and timber exploitation have also played significant roles in these species' declines. Dams, climate change and invasive species are also contributing to the decline of these species, as is the genetic isolation of extant populations. These threats have resulted in drastic reductions in these species' historic ranges. Many of their populations are also at great risk of extirpation from stochastic events because their numbers have dwindled and many of their remaining populations are small and isolated.

### **Purple Lilliput**

Unfortunately, the Service has chosen to issue a “not warranted” 12-month finding for the purple lilliput. 85 Fed. Reg. 61,384 (Sep. 29, 2020). As a preliminary matter, due to the Service's admitted lack of general knowledge about the species, combined with the precipitous documented declines of its populations, *Id.* at 61,387, the Service should take a precautionary approach and list the mussel under the ESA to ensure its survival and recovery. This is particularly true in light of the

Service's acknowledgement of "enigmatic population declines," which have led to the complete collapse of entire populations of the species for reasons that remain "mysterious and currently puzzling" to modern science. (Service 2020, p.69). Without substantial knowledge of the species' needs and the reasons for its precipitous decline, the Service should take a precautionary approach by listing the species and protecting its critical habitat.

Furthermore, the agency's "not warranted" finding does not comport with the facts in the record, and contradicts the agency's own analysis. The purple lilliput has already suffered the loss of 47 percent of its historical populations, while up to 21 percent of its extant populations are expected to be completely lost over the next two or three decades. 85 Fed. Reg. at 61,388. Sadly, the agency's projections indicate that an additional 70 percent of extant populations projected to be lost—or nearly lost—shortly thereafter. (Service 2020, p.94). The species has already been extirpated from 52 percent of its historical range. (Service 2020, p.9). In addition to these dramatic declines, the continuously escalating threats of development, logging, mining, oil and gas drilling, climate change and invasive species that threaten its existence show no signs of abating across the species' range. With these facts in mind, it is apparent that the purple lilliput is likely to be under the threat of extinction within the foreseeable future throughout all or a significant portion of its range. Thus, at a minimum, the Service should list the purple lilliput as a threatened species pursuant to the ESA. 16 U.S.C. § 1532(20).

This species is already "presumed extirpated" or "possibly extirpated" from four of the thirteen states in its historical range (North Carolina, Virginia, Georgia, and Oklahoma)(Service 2020, p.9). Of the remaining 9 states where the mussel is believed to persist, all of those populations are ranked by NatureServe on a scale ranging from "imperiled" to "critically imperiled." *Id.* at 16. Clearly, the species is at risk of extinction across all of its range. However, the Service attempts to portray the overall resiliency of the purple lilliput across its range as "moderate," and then supports that assessment with contradictory data: "86 of the 146 populations (59 percent) are in low condition compared to 36 populations (25 percent) in moderate condition, and 23 populations (16 percent) in high condition." *Id.* at 44. This data reads like the description of a species that has been run over by a truck, not one in a moderately healthy condition.

The Service's dissonant analysis is compounded by deeper pessimism layered with ominous uncertainty as the Species Status Assessment ("SSA") unfolds:

[S]mall populations are already at an increased risk for extinction given the biological restrictions associated with small populations and reduced distribution (Furedi 2013, p. 3). While it is likely that climate change may further magnify the factors contributing to the decline of the species (e.g., fragmentation), the precise locations and extent of these magnifications that may be influenced specifically by changing climate conditions are difficult to predict.

*Id.* at 63. With an existing acknowledgment that nearly half of the lilliput's populations have already been wiped out, and that 59 percent of the extant populations are currently at an increased risk for extinction, the Service's conclusion that the species is not likely to be on the brink of extinction in the near future is patently arbitrary and capricious. 16 U.S.C. § 1532.

Moreover, the Service's failure to find that the purple lilliput is in danger of extinction now or in the foreseeable future in a "significant portion of its range," ("SPR"), 16 U.S.C. § 1532(6), (20), is even more egregious. The Service's SPR analysis indicates that the species may be extirpated from the Great Lakes and Cumberland River basins in the coming years due to ongoing threats to its extant populations there. 85 Fed. Reg. at 61,388. However, the Service then goes on to conclude that it "did not find that these areas constituted significant portions of the species' range." *Id.* But the Great Lakes and Cumberland River basins, two of the six major river basins within the species' range, clearly constitute a "significant portion of [the purple lilliput's] range." *Id.*; see also *Significant Definition*, MERRIAM-WEBSTER, <https://www.merriam-webster.com/dictionary/significant> (last visited Dec. 28, 2020) ("[O]f a noticeably or measurably large amount"). The Service's failure to find as much violates the ESA, and its failure to explain as much renders its "not warranted" finding arbitrary and capricious.

Similarly, while the Service's Species Status Assessment acknowledges the extirpation of the mussel from 67 of 135 historically-occupied Management Units, it states that "substantial geographic range reductions have not been observed to date." (Service 2020, p.32). Setting this see-no-evil perspective aside, the Service quickly acknowledges that "considerable range-thinning (localized extirpation, or diminishment of populations) has occurred." *Id.* While the Service has no certain explanations for the causes behind the rash of extirpations of the purple lilliput across 50 percent of its range, it explains that they are suspected to be caused by the same compound of factors that threaten all of the species' surviving populations today: "impaired water quality due to pollution and land use changes; the introduction of nonnative species; and habitat alteration and loss, fragmentation, and degradation due to agriculture and impoundment." *Id.* at 33.

Most revealing of all is the Service's "Future Condition Scenarios" analysis, in which the condition of the species is assessed based on three alternate scenarios, looking into the future. The most pessimistic scenario is Scenario 3. Scenario 3 anticipates a future where the existing threats to the existence of the purple lilliput grow more intense as time progresses, further degrading the condition of the species and its habitat. Revealingly, the Service admits that it expects that Scenario 3 is the future that the species is most likely to face:

The Purple Lilliput faces a variety of factors negatively influencing the species throughout its range, including habitat degradation or loss (i.e., declines in water quality, reduced water levels, riparian and instream fragmentation, and genetic isolation from development, urbanization, contaminants, agricultural activities, impoundments, changing climate conditions, resource extraction, and forest conversion), as well as impacts associated with invasive and nonnative species. These negative influences, which are expected to be exacerbated by continued growing human populations that demand associated development, energy, infrastructure, and water needs, as well as (but to a lesser degree than the former) climate change, are important factors in our assessment of the future viability of the Purple Lilliput. Given current and future decreases in resiliency, populations become more vulnerable to extirpation from stochastic events (particularly the small populations that are linearly distributed), in turn, resulting in concurrent losses in representation and redundancy.

(Service 2020, p.94). All of the human-generated population pressures that are harming the purple lilliput are slated to intensify with the ongoing expansion of development and fossil fuel exploitation into the future, and the SSA admits as much. That was an acknowledgment that Scenario 3 is the most

likely outcome, and the likely outcome of the status quo. However, the Service did not consider the consequences of Scenario 3 in reaching its final conclusions. In other words, the Service did not base its conclusions on the projected facts provided by Scenario 3. The Service must draw a “rational connection between the facts found and the choice made.” *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983). Unfortunately, the agency’s analysis has overlooked the facts in the record and its own analysis to ignore the obvious status of the purple lilliput as a species likely to reach the brink of extinction in the near future. 16 U.S.C. § 1532(20).

Given the region’s trajectory towards Scenario 3, the Service’s analysis has shown what we can expect for the future of the purple lilliput. Overall, 20 percent of currently extant MUs would be wiped out, 71 percent of extant populations would be left with a low or very low resiliency, and under 10 percent of extant MUs would exist in a moderate condition. (Service 2020, p.94). As the SSA’s definitions make clear, a population with “low” or “very low” future condition essentially has no realistic long-term prospect of a future. They are no longer reproducing, and are likely to be wiped out by a stochastic event. *Id.* at 72-73. Therefore, under the status quo trajectory, the SSA has revealed that 91 percent of the purple lilliput’s extant MUs will either be extirpated in the next 20 to 30 years, or shortly thereafter. To base a projection of a “moderate” future condition for the species on such an analysis is arbitrary and capricious. *Motor Vehicle Mfrs.*, 463 U.S. at 43; 5 U.S.C. § 706(2)(A).

Based on the facts in the record and the analysis in the SSA, the Service must list the purple lilliput as threatened or endangered, and protect its critical habitat pursuant to the ESA, without further delay. 16 U.S.C. § 1532. As described above, given the analysis in the SSA, the species must, at a minimum, be found to be threatened or endangered across an SPR. The agency’s SPR analysis is at odds with the facts and analysis in the SSA. *Motor Vehicle Mfrs.*, 463 U.S. at 43; 5 U.S.C. § 706(2)(A).

In addition to showing logical consistency between the facts found and the decisions made, the Service’s final analysis should analyze the projected future condition of the species relative to its historic range, and not exclusively relative to its extant range.<sup>1</sup> The SSA bases its conclusions about the present and future condition of the species on the size of the present-day lilliput population, which erases all historic harm from the equation, creating a false sense of security about the condition of a species that has lost half of its population and range.

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<sup>1</sup> *Def’s. of Wildlife v. Norton*, 258 F.3d 1136, 1145 (9th Cir. 2001)(“But where, as here, it is on the record apparent that the area in which the lizard is expected to survive is much smaller than its historical range, the Secretary must at least explain her conclusion that the area in which the species can no longer live is not a “significant portion of its range”). *See also, e.g., Ctr. for Biological Diversity v. Zinke*, 900 F.3d 1053, 1067 (9th Cir. 2018)(“The SPR policy still requires that FWS consider the historical range of a species in evaluating other aspects of the agency’s listing decision, including habitat degradation. *Id.* at 605-06. The SPR policy recognizes that loss of historical range can lead to reduced abundance, inhibited gene flow, and increased susceptibility to extinction. [79 Fed. Reg. at 37,584](#). The SPR policy’s interpretation of ‘range’ is ‘consonant with the purposes of the [ESA],’ as it provides protections for species that have lost a substantial part of their historical range”).

## Longsolid Listing and Critical Habitat Designation

We urge the Service to finalize its rulemaking to list the longsolid as a threatened species pursuant to Section 4 of the Endangered Species Act (“ESA”), without further delay.

Furthermore, we urge the Service to designate critical habitat for the longsolid throughout its historic range, without further delay. Species with critical habitat are more likely to move towards recovery than species which lack designated habitat (Taylor et al. 2005). Because of their constricted range, reduced population size, and compromised resiliency, all remaining occupied habitats for the longsolid should be designated as critical habitat.

The Service’s proposed critical habitat designations for the longsolid are insufficient to ensure the conservation of the species. The Service has only proposed critical habitat within the species’ currently occupied habitat. This policy neglects the essential protection of unoccupied territory pursuant to 16 U.S.C. 1532(5)(A)(ii). The Service’s assertion that all of the unoccupied territory of the species is unessential to the conservation of the species does not stand up to scrutiny. The longsolid has lost 63 percent of its historic populations and has been wiped out across 57 percent of its range, with only three out of 60 surviving populations (5 percent) considered to have a high chance of survival. With so many overwhelming extinction pressures shaping the fate of this species in a manner that only accelerates over time, the idea that protection of only occupied habitat for this species is sufficient to ensure the survival and recovery of the species is not justifiable.

Indeed, the Service’s proposed 4(d) rule excludes captive propagation and stocking of streams by state wildlife agencies from the take prohibitions in this species’ proposed listing. The failure to protect as critical habitat the currently unoccupied habitat across Georgia, Indiana, Illinois and the rest of its range that soon may be subject to these anticipated state re-stocking efforts undermines the Service’s charge under the ESA to fashion a concerted regulatory scheme to ensure the long-term viability of this species by bolstering its range and resiliency. To improve the resiliency of the species in the face of escalating existential threats, the Service should work in tandem with state efforts to reestablish extirpated populations of the longsolid via its critical habitat designation powers. We call upon the Service to designate suitable, unoccupied critical habitat in each of the Cumberland, Ohio and Tennessee River basins in the longsolid’s historic range to prevent the further deterioration of their once-and-future habitat.

The Service’s Consideration of Economic Impacts indicates that the longsolid’s listing will only contribute nominal administrative costs to those already being incurred under the status quo. When the Service finalizes critical habitat for this species, it should take into consideration the economic benefits of protecting habitat for these mussels, including ecosystem services, the protection of clean water, the reduced cost of water treatment for drinking water supplies, as well as public health benefits.

## Round Hickorynut Listing and Critical Habitat Designation

We urge the Service to finalize its rulemaking to list the round hickorynut as a threatened species pursuant to Section 4 of the Endangered Species Act (“ESA”), without further delay.

Furthermore, we urge the Service to designate critical habitat for the round hickorynut throughout its historic range, without further delay. Species with critical habitat are more likely to move towards recovery than species which lack designated habitat (Taylor et al. 2005). Because of their constricted range, reduced population size, and compromised resiliency, all remaining occupied habitats for the round hickorynut should be designated as critical habitat.

The Service’s proposed critical habitat designations for the round hickorynut are insufficient to ensure the conservation of the species. The Service has only proposed critical habitat within currently occupied habitat. This policy neglects the essential protection of unoccupied territory pursuant to 16 U.S.C. 1532(5)(A)(ii). The Service’s assertion that all of the unoccupied territory of the species is unessential to the conservation of the species does not stand up to scrutiny. The round hickorynut has lost 88 percent of its historic populations and has been wiped out across 75 percent of its range, with only four out of 65 surviving populations (6 percent) considered to have a high chance of survival. With such dramatic population pressures shaping the fate of this species in a manner that only accelerates over time, the proposition that protection of only the occupied habitat for this species is sufficient to ensure the survival and recovery of the species is neither rational nor defensible.

Indeed, the Service’s proposed 4(d) rule excludes captive propagation and stocking of streams by state wildlife agencies from the take prohibitions in this species’ proposed listing. The failure to protect as critical habitat the currently unoccupied habitat across Georgia, North Carolina, Virginia, Illinois, New York, the Great Lakes and the rest of its range that soon may be subject to these anticipated state re-stocking efforts undermines the Service’s charge under the ESA to fashion a concerted regulatory scheme to ensure the long-term viability of this species by bolstering its range and resiliency. To improve the resiliency of the species in the face of escalating existential threats, the Service should work in tandem with state efforts to reestablish extirpated populations of the round hickorynut. We call upon the Service to designate suitable, unoccupied critical habitat in each of the Great Lakes, Ohio, Cumberland, Tennessee, and Lower Mississippi River basins in the hickorynut’s historic range to prevent the further deterioration of their once-and-future habitat.

The Service’s Consideration of Economic Impacts indicates that the round hickorynut’s listing will only contribute nominal administrative costs to those already being incurred under the status quo. When the Service finalizes critical habitat for this species, it should take into consideration the economic benefits of protecting habitat for them, including ecosystem services, the protection of clean water, the reduced cost of water treatment for drinking water supplies, as well as public health benefits.

In light of the above, we call on the Service to issue a final rule listing and designating critical habitat for all three of these unique freshwater mussels.

On Behalf of All Parties,



Perrin de Jong  
Staff Attorney  
Center for Biological Diversity  
P.O. Box 6414  
Asheville, NC 28816  
[perrin@biologicaldiversity.org](mailto:perrin@biologicaldiversity.org)  
(828)252-4646

### References

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CC: Emmie Cornell  
Director of Field Operations  
Friends of the Blackwater  
P.O. Box 247  
571 Douglas Rd  
Thomas, WV 26292