Emily T. Qiu
Amanda D. Galvan
Sean M. Helle
Earthjustice
313 East Main Street
P.O. Box 4743
Bozeman, MT 59772-4743
Phone: (406) 586-9699
Fax: (406) 586-9695
eqiu@earthjustice.org
agalvan@earthjustice.org
shelle@earthjustice.org

Attorneys for Plaintiffs

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MONTANA
BUTTE DIVISION

CENTER FOR BIOLOGICAL DIVERSITY; WESTERN WATERSHEDS PROJECT; and PAT MUNDAY, Plaintiffs, v. DEB HAALAND, Secretary, U.S. Department of the Interior, in her official capacity; MARTHA WILLIAMS, Director, U.S. Fish and Wildlife Service, in her official capacity; and the U.S. FISH AND WILDLIFE SERVICE, Defendants.	Case No. **COMPLAINT FOR DECLARATORY AND INJUNCTIVE RELIEF**

INTRODUCTION

1. This case challenges the United States Fish and Wildlife Service's decision not to list the fluvial distinct population segment of Arctic grayling in the upper Missouri River basin as a threatened species under the Endangered Species Act ("ESA"). 85 Fed. Reg. 44,478 (Jul. 23, 2020).

2. The upper Missouri River basin population of Arctic grayling has lost nearly all its historic habitat and its population numbers have plummeted. Arctic grayling once occupied rivers and streams throughout the upper Missouri River basin in Montana and, to a small extent, Wyoming—including the Missouri, Smith, Sun, Jefferson, Madison, Gallatin, Big Hole, Beaverhead, and Red Rock rivers and their tributaries. Arctic grayling populations were also once found in Michigan. Today, native populations of grayling survive in just a portion of the Big Hole River, a few small lakes in the area, and a reintroduced, still-small population in the Ruby River.

3. Surviving Arctic grayling face a barrage of threats, including low flows and barriers in river channels, warming water temperatures, increased pressure from nonnative fish, and a very low population size.

These threats are even more significant because of the current and predicted impacts of a changing climate, which are expected to reduce water flows and raise water temperatures even further.

4. Instead of fully acknowledging these threats in its challenged decision, the U.S. Fish and Wildlife Service ("Service") irrationally determined that the upper Missouri River population of Arctic grayling does not warrant listing. The Service based this decision almost exclusively on unfounded assumptions about future grayling-population trends due to voluntary conservation measures that the Service hopes (but cannot be certain) will sufficiently address existing threats.

5. Voluntary conservation measures and actions, however well-intentioned, have not put enough water back into the Big Hole River to sustain a healthy population of Arctic grayling in areas where they currently exist. These steps also have not allowed Arctic grayling populations to rebound and, contrary to the Service's conclusions in the challenged decision, they are inadequate to ensure population viability in the future. Furthermore, because the relevant conservation efforts are voluntary, there is no guarantee that they will continue. Federal

protections are accordingly required to ensure this remarkable fish species is not lost from Montana's rivers.

6. Because the Service's challenged decision was arbitrary and unlawful under the ESA, this Court should vacate the decision and remand it to the agency for a new decision that is consistent with governing law.

JURISDICTION, VENUE, AND ADMINISTRATIVE REMEDIES

7. This action is brought pursuant to the Endangered Species Act, 16 U.S.C. § 1540(g)(1)(C), which waives the Defendants' sovereign immunity. This Court has jurisdiction over Plaintiffs' claims pursuant to 28 U.S.C. § 1331 (federal question), and may issue a declaratory judgment and further relief pursuant to 28 U.S.C. §§ 2201–02.

8. Venue is proper in this District under 28 U.S.C. § 1391(b)(2) because a substantial part of the violations alleged in this complaint occurred in this District and the majority of the historic range of upper Missouri River Arctic grayling, including the portion of the Big Hole River now occupied by grayling, is located in this District.

9. Plaintiffs provided Defendants with 60 days' written notice of Plaintiffs' intent to sue, delivering a notice to the Department of the

Interior on October 28, 2022, and to the Service on November 14, 2022, as required by 16 U.S.C. § 1540(g)(2). Defendants failed to respond to this notice.

PARTIES

10. Plaintiff Center for Biological Diversity (the "Center") is a nonprofit organization dedicated to the preservation, protection, and restoration of biodiversity, native species, and ecosystems. The Center was founded in 1989 and is based in Tucson, Arizona, with offices throughout the country, including in Missoula, Montana. The Center works through science, law, and policy to secure a future for all species, great or small, hovering on the brink of extinction. The Center is actively involved in species and habitat protection and has more than 89,000 members including more than 500 members in Montana. The Center and its members have a long-standing interest in protecting and preserving the Montana fluvial Arctic grayling through effective implementation of the ESA.

11. Plaintiff Western Watersheds Project ("WWP") is a non-profit membership organization dedicated to protecting and conserving the public lands and natural resources of watersheds in the American

West. Headquartered in Hailey, Idaho, WWP has over 12,000 members and supporters, including many members who live in Montana. WWP is active in seeking to protect and improve the riparian areas, water quality, fisheries, and other natural resources and ecological values of western watersheds. WWP and its individual members have an interest in ensuring the conservation and recovery of the Montana fluvial Arctic grayling through the grayling's listing under the ESA.

12. Plaintiff Pat Munday, PhD, is an active member of the Center who lives in Walkerville, Montana. Dr. Munday is a professor at Montana Tech University in Butte, Montana. He enjoys boating and fishing Montana's rivers, including the Big Hole River and the upper Missouri River and its tributaries. Dr. Munday has a long history of actively working to protect the fluvial Arctic grayling in the Big Hole River. He was president of the George Grant Chapter of Trout Unlimited from 2002–2003, and executive director of the Big Hole River Foundation from 1997–1998. From 1996–2006, he was a board member of both groups and represented them regarding native-species issues, such as protection and restoration of fluvial Arctic grayling in the Big Hole River. This included grant writing, writing and submitting the

organizations' comments and concerns to state and federal agencies, writing articles for newsletters, and speaking at public meetings and forums. From 1996–2005, Dr. Munday was also the Big Hole River Foundation's representative on the Big Hole Watershed Committee.

13. Dr. Munday, the Plaintiff organizations, and the organizations' staff and members use and enjoy the waters and lands of the Missouri River basin and the Big Hole River for recreational, scientific, aesthetic, and commercial purposes. They derive recreational, scientific, aesthetic, and other benefits from the existence of Arctic grayling populations in the wild—both fluvial and adfluvial—through observation, study, and photography. And they will continue to do so in the future. The past, present, and future enjoyment of these benefits by Plaintiffs and the Plaintiff organizations' members has been, is being, and—unless the relief requested in this complaint is granted—will continue to be harmed by Defendants' arbitrary refusal to protect Montana's Arctic grayling under the ESA.

14. The legal violations alleged in this complaint have injured the aesthetic, conservation, recreational, educational, and wildlife-preservation interests of Plaintiffs and members of the Plaintiff

organizations. These are actual, concrete injuries caused by Defendants' failure to comply with the ESA and its implementing regulations. These injuries would be redressed by the relief requested in this complaint. Plaintiffs have no other adequate remedy at law.

15. Defendant Debra Haaland is the United States Secretary of the Interior. In that capacity, Secretary Haaland has supervisory responsibility over the U.S. Fish and Wildlife Service, and is also the federal official vested with responsibility for properly carrying out the ESA with respect to Arctic grayling. Defendant Haaland is sued in her official capacity.

16. Defendant Martha Williams is the Director of the U.S. Fish and Wildlife Service. Defendant Director Williams is sued in her official capacity.

17. Defendant U.S. Fish and Wildlife Service is a federal agency within the Department of Interior. The Service is responsible for administering the ESA with respect to Arctic grayling, including making species-listing determinations under ESA Section 4.

THE ENDANGERED SPECIES ACT

18. The ESA was enacted to "provide a program for the conservation of … endangered species and threatened species[,]" and to "provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved." 16 U.S.C. § 1531(b).

19. The ESA is a call to species protection: a commitment, in the words of the U.S. Supreme Court, "to halt and reverse the trend toward species extinction." *Tennessee Valley Auth. v. Hill*, 437 U.S. 153, 154 (1978); 16 U.S.C. § 1531(a)(1). To be protected under the ESA, a species must first be listed as endangered or threatened. The ESA defines "endangered species" as "any species which is in danger of extinction throughout all or a significant portion of its range." *Id.* § 1532(6). A "threatened species" is "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." *Id.* § 1532(20). The term "species" is defined to include "any distinct population segment[,]" or "DPS," of "any species of vertebrate fish or wildlife which interbreeds when mature." *Id.* § 1532(16).

20. In making a decision to list a species, including a DPS, the Secretary is required to:

> 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.

16 U.S.C. § 1533(a)(1). The Service must base its listing determinations "solely on … the best scientific and commercial data available to [the agency] after conducting a review of the status of the species." *Id.* § 1533(b)(1)(A).

21. The ESA's listing requirements make clear that species must be protected by adequate regulatory mechanisms. Thus, the Secretary must provide adequate protection to any species that is endangered or threatened. The ESA allows the Service to enter into cooperative agreements with states to conserve listed species, but only if it ensures

that the state has an adequate and active program that, among other things, provides authority to conserve the species. *Id.* § 1535(c)(1).

22. In 2003, the Service adopted a policy for evaluating non-regulatory conservation efforts that is designed to assure the requisite level of certainty that such efforts will actually be implemented. *See* Policy for Evaluation of Conservation Efforts When Making Listing Decisions, 68 Fed. Reg. 15,100, 15,104 (Mar. 28, 2003) ("PECE") (stating that the PECE is designed to "set a rigorous standard for analysis and assure a high level of certainty associated with formalized conservation efforts"). Under this policy, the Service cannot rely on conservation efforts to eliminate the need for listing unless it is "*certain* that the formalized conservation effort improves the status of the species at the time [it] make[s] a listing determination." *Id.* at 15,101 (emphasis added).

23. Courts interpreting the ESA have repeatedly held that "failure by the agency to utilize the best available science is arbitrary and capricious." *Consol. Delta Smelt Cases*, 717 F. Supp. 2d 1021, 1060 (E.D. Cal. 2010). An agency's failure to draw rational conclusions from the evidence before it also constitutes arbitrary and capricious action.

Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983); *see also Greater Yellowstone Coal., Inc. v. Servheen*, 665 F.3d 1015, 1030 (9th Cir. 2011) (affirming a district-court order setting aside the Service's decision to delist Yellowstone grizzly bears because "[t]he Rule did not articulate a rational connection between the data before it and its conclusion").

ARCTIC GRAYLING: DESCRIPTION OF THE SPECIES

24. The Arctic grayling (*Thymallus arcticus*) is a member of the family Salmonidae, which includes salmon, trout, charr, and whitefishes. Grayling have long, trout-like bodies with deeply forked tails and a sail-like dorsal fin. Adults typically average 12 to 15 inches in length.

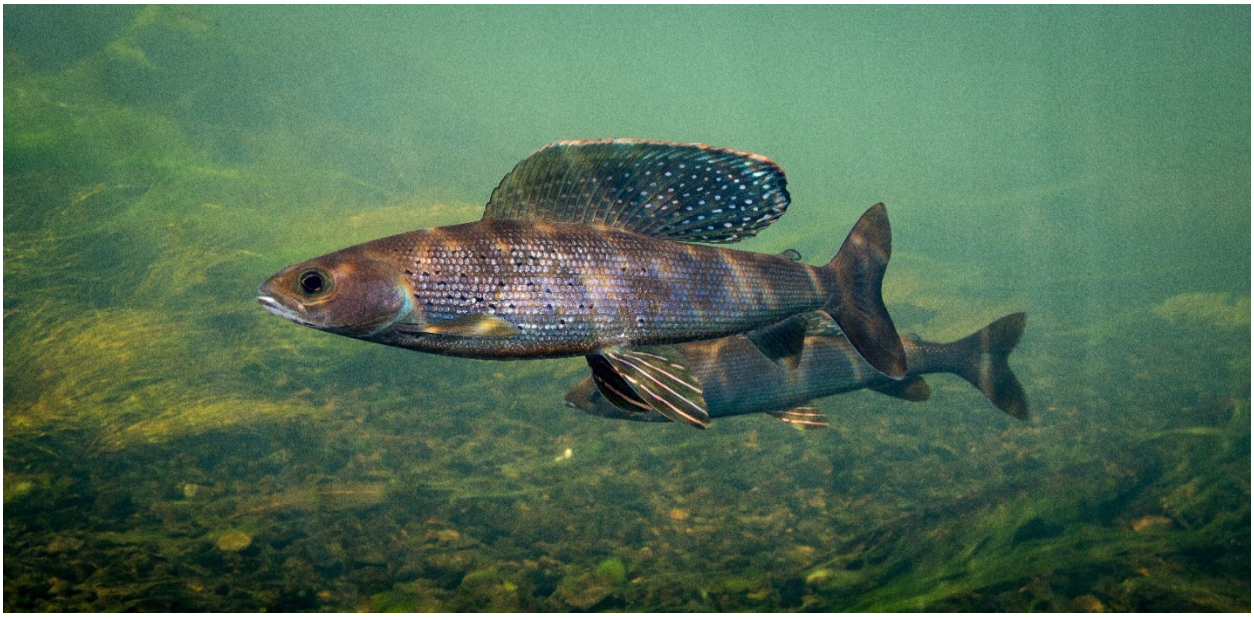


Photo source: Ryan Hagerty/USFWS

25. Grayling are native to the Arctic Ocean drainages of Alaska and northwestern Canada, and across northern Eurasia as far west as the Ural Mountains. Arctic grayling are also native to the coterminous United States, which has housed both the upper Missouri River basin population and a separate population in Michigan that is now extinct. The upper Missouri River basin grayling probably share common ancestry with the lineage of grayling found on the North Slope of Alaska, but they have been physically and reproductively isolated from these northern populations for millennia. Other U.S. populations have been stocked in lakes outside their native range in Arizona, Colorado, Idaho, Montana, New Mexico, Utah, Washington, and Wyoming. Stocking efforts in Montana have been particularly extensive.

26. Arctic grayling generally fall into one of two life-history forms: fluvial (river- or stream-dwelling), or adfluvial (lake-dwelling). Historically, the fluvial form predominated in the Missouri River basin.

27. Fluvial and adfluvial Arctic grayling are not interchangeable. Because adfluvial fish do not typically hold their position in flowing water, as fluvial grayling do, introductions of

adfluvial types to rivers have not succeeded. In its most recent listing decision, the Service stated that there appears to be "some plasticity in behavior where individuals from a population can exhibit a range of behaviors[,]" and that there accordingly "appears to be a spectrum of behaviors" among fluvial and adfluvial grayling. Fish and Wild. Serv., Revised 12-Month Finding on a Petition to List the Upper Missouri River Distinct Population Segment of Arctic Grayling at 32 (June 29, 2020) ("2020 Finding") (available at https://www.regulations.gov/search?filter=FWS-R6-ES-2020-0024-0002). However, the Service's finding ultimately acknowledged that "the frequent failure of introductions of Arctic grayling occupying lakes into flowing water habitats suggest preservation of the breadth of the known Arctic grayling life history spectrum"—meaning both fluvial and adfluvial populations—"is warranted." *Id.* at 35–36.

28. Arctic grayling require clear, cold water—their optimal thermal habitat is between approximately 45 and 63 degrees Fahrenheit (7 and 17 degrees Celsius). In Montana, grayling generally spawn in the spring or early summer, from late April to mid-May, by depositing adhesive eggs over gravel substrate without excavating a

nest. The time required for eggs to become fry depends on water temperature.

29. Grayling are migratory fish whose year consists of cyclical patterns of movement between refuge, rearing-feeding, and spawning habitats. In some drainages, like the Big Hole, individual fish may migrate considerable distances—over 90 miles—to overwintering habitats.

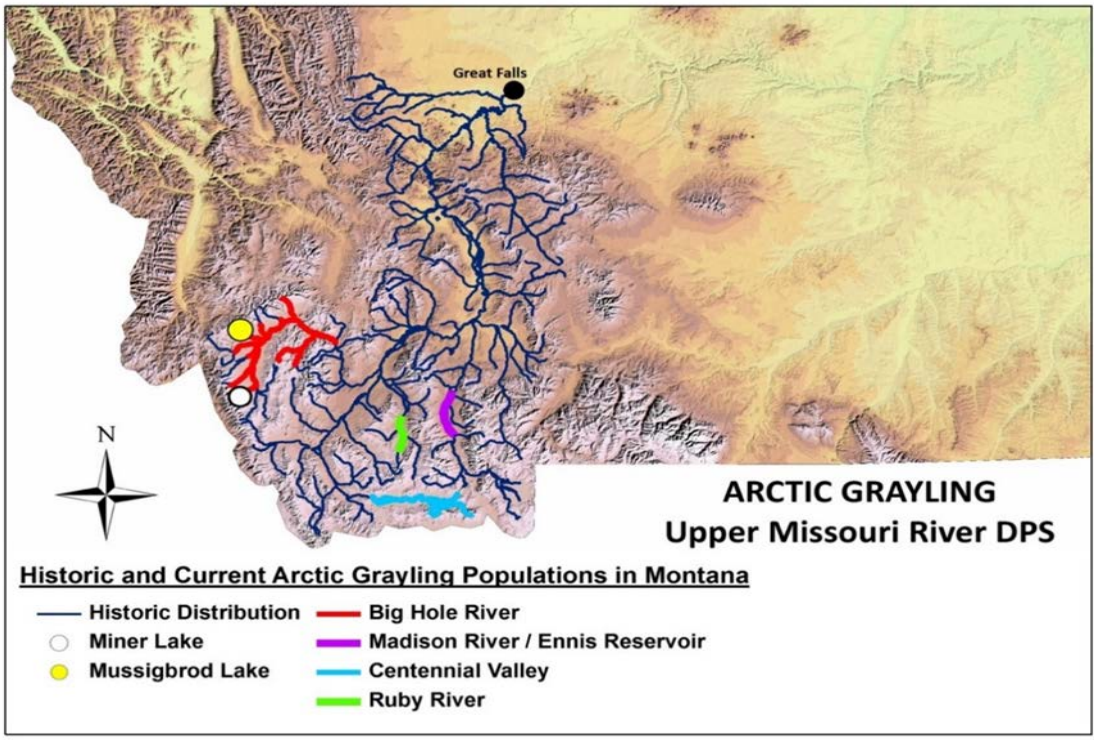
30. Arctic grayling in the upper Missouri River basin typically mature at age 2, for males, or age 3, for females; individuals older than 6 are rare. Arctic grayling of all ages feed primarily on invertebrates, but they will also feed on fish and their eggs.

31. Arctic grayling were once abundant in all of the major rivers of the upper Missouri River basin, including the Missouri mainstem and the Smith, Sun, Jefferson, Madison, Gallatin, Big Hole, Beaverhead, and Red Rock rivers and their tributaries. Adfluvial (still-water) populations were also found in a small number of lakes, including Red Rock Lakes in the Centennial Valley and Elk Lake in the Beartooth Mountains. However, the range and distribution of native grayling went through a dramatic reduction in the past century, primarily due to

habitat fragmentation by dams and irrigation diversions, as well as habitat degradation from unregulated land use.

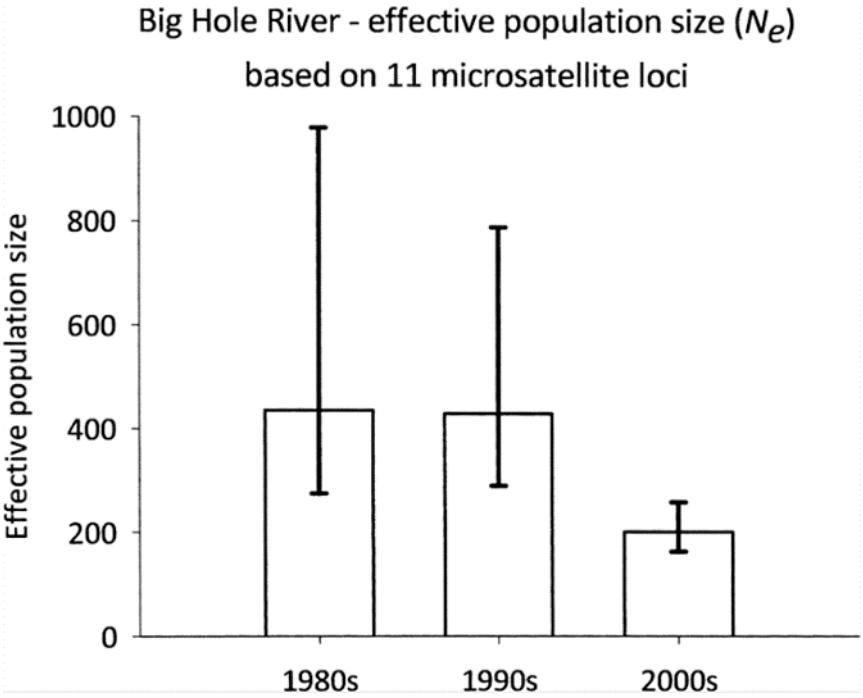
32. This reduction has had the most severe impact on the fish's fluvial populations. Today, there are just a few remaining populations of grayling in the upper Missouri River basin, with the sole fluvial population now occupying less than 200 miles of the Big Hole River and its tributaries. There are adfluvial populations in and above Ennis Reservoir, Miner Lakes, Mussigbrod Lake, and Red Rock Lakes. The Smith, Sun, Jefferson, Beaverhead, Gallatin and mainstem Missouri River populations are considered extirpated.

33. The remaining populations of Arctic grayling in the upper Missouri River basin are precariously small and at risk of extinction. The fluvial form occupies less than 4 percent of its historical range.



Source: Arctic Grayling Monitoring Report 2013 at 2 (available at https://myfwp.mt.gov/getRepositoryFile?objectID=65279).

34. In its 2010 finding, the Service was sufficiently concerned about the decline in Arctic grayling breeder numbers to find that listing was warranted.



Source: 75 Fed. Reg. at 54,708, 54,723.

35. The numbers relied on by the Service in its 2020 Finding make it clear that the upper Missouri River DPS of Arctic grayling is not doing well and that the increasing water temperatures, low water flows, and dropping breeder numbers warn of a potentially tragic fate for the species.

36. Efforts to reintroduce grayling in their historic range have had limited success. In the Ruby River, while some reproduction has taken place, the reintroduced population is still too small and unstable to contribute to redundancy and long-term viability of Arctic grayling in the upper Missouri River basin.

37. All available data—including the Service's own estimates—indicate concerning trends for many local grayling populations. These trends include data indicating a recent decline in the number of breeding adults contributing their genetics in the Ruby River, and a recent decline in spawning adults in the Centennial Valley population, where the most recent abundance estimates were below the management goal of 1,000 spawning adult fish.

38. The threats faced by the species, and its need for formal protection, is further underscored by the failure of ongoing conservation efforts to restore Arctic grayling habitat or bring fluvial Arctic grayling back from the brink of extinction.

ARCTIC GRAYLING AND THE ENDANGERED SPECIES ACT

I. ARCTIC GRAYLING LISTING HISTORY

39. The realities of a declining Arctic grayling population and deteriorating grayling habitat have existed for at least the last four decades. In the face of these threats, the Service has taken an inconsistent and inadequate approach to protecting the species. Though it considered the upper Missouri River basin population of fluvial Arctic

grayling as a candidate for listing as early as 1982, the Service has failed to grant the population the essential protections of the ESA. Instead, over the past four decades, the Service has relied on flawed science and a host of erroneous legal theories to support its determination to delay or deny listing.

40. In 1991, conservationists petitioned the Service to list the Arctic grayling as an endangered species. In response to this petition and subsequent lawsuit, the Service determined, in 1994, that listing the grayling was "warranted but precluded," and it assigned the species a low listing-priority number of 9 based on ongoing conservation efforts.

41. In response to severe declines in grayling numbers and chronically low flows in the Big Hole River due to increased irrigation pressure, the Center for Biological Diversity sued the agency for failing to protect the species. As a result of the lawsuit, the Service raised the listing priority of the upper Missouri's grayling to a 3, which is the highest-priority number afforded a distinct population segment, and it also agreed to make a determination regarding the population's status by April 2007.

42. While the Service was preparing its findings, in 2006, voluntary conservation efforts for lower-48 Arctic grayling were established under the Big Hole River Candidate Conservation Agreement with Assurances ("CCAA"). The agreement is intended to entice landowners to participate in grayling conservation by providing assurances that, if they participate, they would not be subject to additional requirements to protect the species if it is listed under the ESA.

43. The CCAA invites landowners in the upper Big Hole River drainage—the last remaining native refuge for fluvial Arctic grayling in the contiguous United States—to enter into voluntary conservation plans designed to improve grayling habitat. Specifically, the CCAA requires landowners who wish to participate in the program to develop and implement, in collaboration with state and federal agency representatives, site-specific conservation plans aimed at: (1) improving stream flows; (2) protecting and enhancing functional riparian habitat; (3) identifying and reducing entrainment threats; and (4) removing barriers to grayling migration. However, the CCAA does not provide the upper Missouri's grayling and their habitat with enforceable

protections, and it falls short of the protections that the species would receive as a result of ESA listing.

44. In 2007, when the time came for the Service's listing decision, the agency declared that grayling in the upper Missouri River basin no longer warranted protection—not because the grayling's status had improved, but rather based on an assertion that the population no longer qualified as a DPS. The Center and Western Watersheds Project challenged this decision as well, resulting in yet another agreement by the Service to determine whether listing was warranted.

45. In 2010, the Service finally recognized that the upper Missouri population did qualify as a distinct population segment that warranted protection. The agency's finding acknowledged that both the Big Hole and Madison River populations had undergone severe declines in recent years. The Service concluded that "the best available data" showed the Big Hole population "declined by one half between the early 1990s and the early 2000s," and the Madison population then "exist[ed] at only 10 to 20 percent of the abundance observed in the early 1990s." 75 Fed. Reg. at 54,723. In support of these conclusions, the Service ran a simple population-viability analysis to determine extinction risk from

demographic and genetic threats, and found that each of the small grayling populations within the upper Missouri River basin, with the exception of that in Mussigbrod Lake, was at risk of extinction within 30 years. The Service further found that the Madison River population had the greatest probability of extinction (36 to 55 percent), followed by the Big Hole (33 to 42 percent), Red Rock Lakes (31 to 40 percent), and Miner Lakes (13 to 37 percent) populations.

46. Despite its recognition of the grayling's peril, the Service ultimately concluded in its 2010 finding that ESA protections were precluded by other higher-priority listing actions. The Service later agreed, however, to submit either a proposed listing rule or a not-warranted finding by the end of 2014.

47. On August 20, 2014, the Service published a revised 12-month finding reversing its 2010 conclusion that listing was "warranted" and instead determining that the upper Missouri River basin DPS of Arctic grayling did not qualify for listing. This time, the agency acknowledged that the region's grayling constitutes a DPS, but it nonetheless claimed that the habitat-related threats it had previously identified—including habitat fragmentation, dewatering, thermal

stress, entrainment, riparian-habitat loss, and effects from climate change—no longer justified listing, as 19 of the 20 grayling populations within the basin were either stable or increasing.

48. Conservationists challenged the Service's 2014 finding and ultimately prevailed on appeal. The Ninth Circuit agreed with conservationists that the Service had acted arbitrarily and in violation of the ESA by: (1) concluding that the Big Hole River grayling population was increasing when available biological information showed that the population was declining; (2) relying on cold-water refugia in the Big Hole River without adequate support, given that data showed the river will experience low stream flows and high water temperatures; (3) not adequately explaining why the uncertainty presented by climate change with regard to low stream flows and higher water temperatures did not weigh in favor of listing the grayling; and (4) relying on the Ruby River grayling population to provide redundancy for the species outside of the Big Hole River. *Center for Biological Diversity v. Zinke*, 900 F.3d 1053, 1068, 1070, 1073–74 (9th Cir. 2018). As a result of the Ninth Circuit's opinion and order, the Service was

required to reconsider its determination that the graying population in Montana did not require the protections of the Endangered Species Act.

II. THE CHALLENGED AGENCY ACTION

49. On July 23, 2020, the Service issued a new finding on the petition to list the upper Missouri's grayling population as endangered or threatened—a finding that again concluded the population did not require ESA protections. Despite the agency's optimistic assessment of the population's predicament, however, the available data demonstrated that listing was essential. In determining otherwise, the Service disregarded the best-available science and improperly relied on the voluntary conservation efforts of the CCAA to conclude that the Arctic grayling faces no significant threats.

A. The Service Failed to Rationally Evaluate Whether Arctic Grayling are Threatened by the Inadequacy of Regulatory Mechanisms

50. The Service's 12-Month Finding was unlawful because it failed to ensure the adequacy of "existing regulatory mechanisms" to prevent acknowledged threats to Arctic grayling from causing the species to become endangered within the foreseeable future. 16 U.S.C. § 1533(a)(l)(D).

51. The finding relied extensively on voluntary conservation actions to address the significant threats to Arctic grayling without determining whether the actions actually constituted "regulatory mechanisms" and without even applying its own "Policy for the Evaluation of Conservation Efforts." Instead, the Service arbitrarily relied on future actions under the CCAA to support its finding that listing was not warranted, and it also discussed its optimism about the possibility of additional voluntary conservation efforts from landowners who chose not to enroll in the CCAA.

52. The Service's reliance on non-regulatory measures to counteract threats to the grayling was unlawful for several reasons.

53. First, despite repeated optimistic references to ongoing and future implementation of the CCAA and the Service's belief in the ability of that agreement to mitigate threats to Arctic grayling, the Service did not even evaluate conservation measures under the CCAA as regulatory mechanisms. If the agency had undertaken such an analysis, it would have been forced to conclude that the voluntary conservation actions prescribed by the CCAA are not "regulatory

mechanisms" at all, given that they are not enforceable. *See* 16 U.S.C. § 1533(a)(1)(D).

54. Even so, in its 2020 finding, the Service consistently relied on the CCAA to address the present and future threats facing grayling—such as dewatering through irrigation withdrawals and river warming. The Service also explicitly relied on the CCAA as a way to address "riparian habitats that have not improved." 2020 Finding at 89. To address climate-change impacts, the Service also relied on the CCAA, arguing that "while small cumulative impacts of warming water temperatures due to climate change are expected, they are expected to be … mitigated in large part by restoring riparian areas and restoring more flow to the mainstem Big Hole River, both of which are central tenets of the Big Hole CCAA." 2020 Finding at 174.

55. Second, even if the Service could rely on non-regulatory measures to address these present, known threats to Arctic grayling—and it could not—the voluntary conservation actions identified in the agency's 12-month finding were insufficiently certain to support a conclusion that listing was not warranted. Although the Service must "tak[e] into account those efforts, if any, being made by any State ... to

protect such species," 16 U.S.C. § 1533(b)(l)(A), the Service may not rely on mere promises of future action such as those set forth in the CCAA.

56. Finally, the Service failed to evaluate the CCAA under the PECE, or even to mention the PECE in its 12-month finding. In any event, the CCAA lacks the requisite level of certainty to satisfy the PECE.

57. Accordingly, the Service's reliance on the voluntary and uncertain implementation of the CCAA to find that grayling are not threatened by current and future habitat degradation was arbitrary and unlawful under the ESA and cannot justify the Service's decision not to list the species.

B. The Service Arbitrarily Concluded that Arctic Grayling Are Not Threatened by Their Extremely Small Population Size

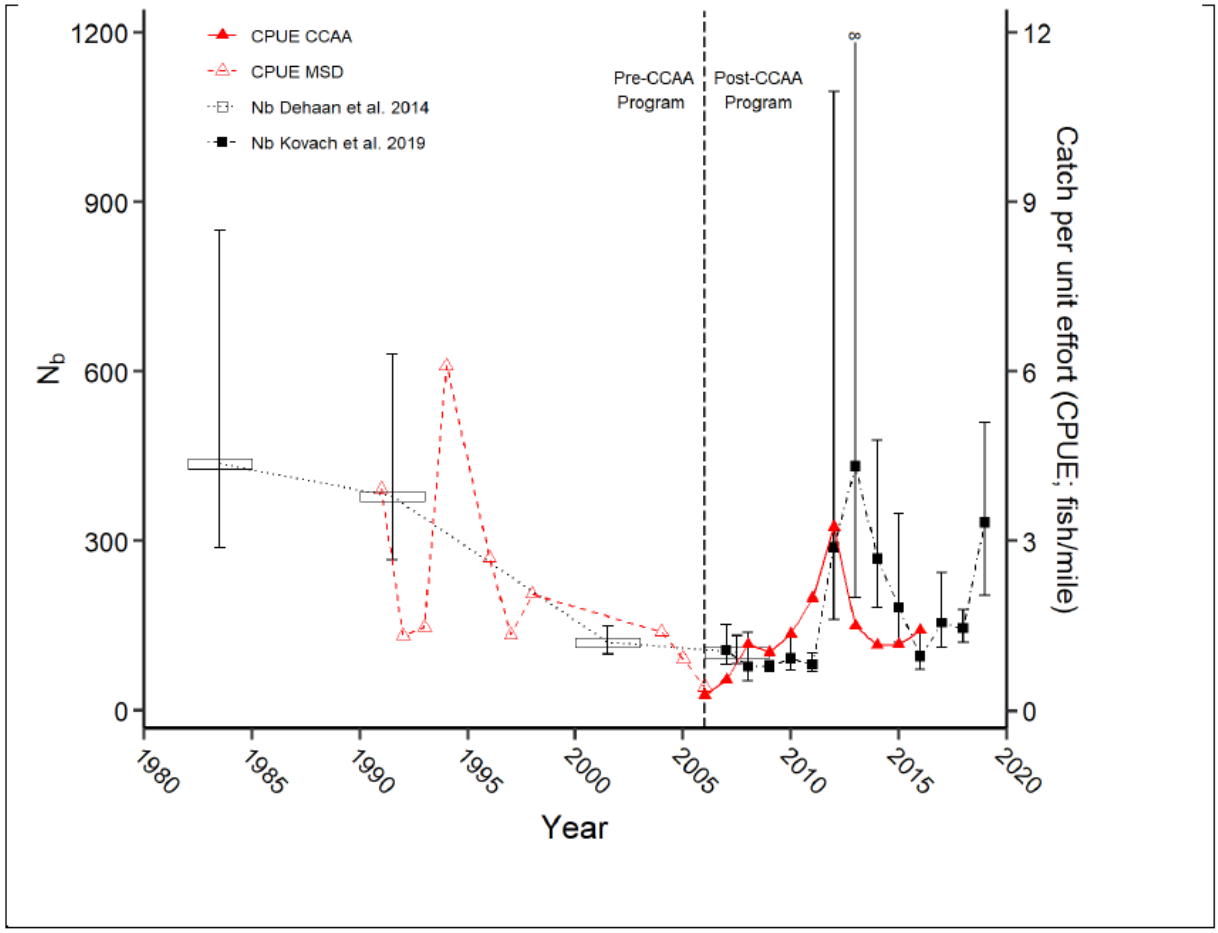
58. The Service's decision was also arbitrary and unlawful because it failed to rationally assess the risk posed by the upper Missouri River population's small size. *See* 16 U.S.C. § 1533(a)(1)(E).

59. The Service's 2020 finding failed to apply the best-available science showing that the overall grayling population was volatile and, in some areas, experiencing a decrease in the number of effective

breeders. Rather than acknowledging that the Big Hole population remained volatile and at risk of extirpation, the Service's 2020 finding arbitrarily announced that the river's fish had somehow attained a "relative stability" sufficient to ensure they will remain viable over the long term. 2020 Finding at 59.

60. To reach its conclusion that Arctic grayling are immune from the threats associated with extremely small and fragmented populations, the Service pointed to an isolated recent increase in population size while ignoring evidence of decline and instability. Essentially, the Service arbitrarily cherry-picked an isolated span of time and used it as a proxy for population viability, while ignoring contrary evidence.

61. For example, as demonstrated in the following graph, the Service repeatedly pointed to declining population trends in the Big Hole River from the early 1990's to 2006, with a population spike in 2012, and a subsequent period of so-called "stability" between 2013 and 2016—despite evidence of population fluctuation and decline—to suggest that existing voluntary conservation efforts had eliminated any need to list the species. *Id.* at 59, 63, 65–66, 178.



Trends in abundance (indexed as catch-per-unit effort; CPUE) and effective number of breeders (Nb) of Arctic grayling in the Big Hole River population from multiple datasets through time.
Source: 2020 Finding at 61.

62. The Service took the same arbitrary approach in discounting the grayling's struggles in the Centennial Valley and Ruby River populations. However, the data before the Service failed to support its conclusions as this data reflects significant and continued volatility in the species' population size over the years. The Service's reliance on an

isolated span of population trends failed to demonstrate that the population was not threatened by its small size because this data does not provide any assurance that future population trends will remain "stable."

63. In that regard, the Service's conclusion—that it presumes the population is stable and that stability automatically correlates to viability—also markedly conflicts with its 2010 acknowledgment that "smaller populations are more likely to go extinct even if they are stable because they are already close to the extinction threshold, and random environmental events can drive their abundance below that threshold." 75 Fed. Reg. at 54,741. Thus, even if the Service is correct that the population is stable—and it is not—simply identifying a population as "stable" does not eliminate extinction risk. The Service's failure to quantify that risk by performing any supporting analysis to speak to population viability, or explain why doing so is unnecessary, was arbitrary, because it represents an unsupported conclusion that the species is not at risk from its small population size.

64. The Service also irrationally dismissed scientific information demonstrating that the number of effective breeders in both the

Centennial Valley and Ruby River populations has *declined*, rather than increased, in recent years. Instead of grappling with the impacts of this decrease in effective population size on the viability of the population, the Service sought to minimize these concerns by arbitrarily, and without any scientific basis, determining that a brief stretch of alleged "stability" alone effectively assured viability for the species.

65. Even taking the Service's population estimates at face value, the agency did not claim that these numbers were sufficient for long-term genetic diversity. Instead, the Service acknowledged that the species "would lose [approximately] 10 percent of its heterozygosity over the next 50 generations (~200 years) [even] if [the current] effective population size (~300) is maintained[,]" before summarily dismissing this threat. 2020 Finding at 64. The Service's arbitrary conclusion failed to explain why a projected loss in genetic diversity for this population does not constitute a threat to the species' viability.

66. Because the Service offered an explanation for its conclusions that ran counter to the evidence before the agency and failed to offer a reasonable explanation for adopting its conclusions, the

Service's conclusion that the Arctic grayling's extremely small population size does not warrant ESA listing was arbitrary and unlawful. *See* 16 U.S.C. § 1533(a)(1)(E) (requiring listing of a species that is threatened by "other natural or manmade factors affecting its continued existence"); *id.* § 1533(b)(1)(A) (requiring listing determinations to be based on the "best scientific … data available").

C. The Service Arbitrarily Concluded that Arctic Grayling are Not at Risk from Decreasing Habitat Quality and Quantity

67. The Service's determination that Arctic grayling in the upper Missouri River basin are not threatened by "the present or threatened destruction, modification, or curtailment of its habitat or range" also was arbitrary and not based on the best available science—science that in fact demonstrated significant and increasing threats to grayling habitat. 16 U.S.C. § 1533(a)(1)(A).

68. In its 2020 finding, the Service acknowledged that degradation of the Big Hole River has dramatically reduced the suitability of grayling habitat. 2020 Finding at 87–88. Yet the Service failed to rationally analyze whether continued habitat degradation on

both public and private lands constitutes a threat to the species that warrants listing.

69. Water withdrawals due to irrigated agriculture and ranching result in habitat loss for grayling by reducing available space, increasing maximum water temperatures, stranding eggs and young fish, increasing inter- and intra-species predation by concentrating young and adult fish in remnant waters, and reducing food availability by reducing habitat for aquatic invertebrates. Higher water temperatures also favor nonnative fish species, such as brown trout, that compete with (and prey upon) grayling. In the Big Hole River, irrigation reduced the range and distribution of grayling over the past century.

70. This dewatering from irrigated agriculture and ranching is the most likely cause of an approximately 50 percent reduction in the Big Hole population from the early 1990s to the early 2000s, and is almost certainly continuing to depress the existing population. About 90 percent of the fluvial population of Arctic grayling in the Big Hole River occurs within waters on private lands, which the Service identified as a challenge to conservation efforts because all such efforts need support

from involved agencies and private landowners. *See* 2020 Finding at 162.

71. Low flows caused by dewatering lead to higher water temperatures, as recently observed in the Big Hole River. Summer water temperatures have consistently exceeded 71 degrees Fahrenheit in the river during the summer, which is above the 70 degrees Fahrenheit threshold for temperatures to be considered physiologically stressful for grayling—and several monitoring stations have recorded temperatures above 77 degrees Fahrenheit at some point during the season. Thermal fish kills in the Big Hole River have been documented as the clear result of warm water temperature, but even at water temperatures below the level for instant fish kills, individual fish still may suffer from chronic stress that impairs feeding and growth and ultimately reduces survival and reproduction.

72. The Service's primary response to this ongoing concern was that the CCAA is improving flow conditions in the Big Hole. However, this was not a rational or justifiable response under the ESA. First, the Service's reliance on future implementation of the CCAA when analyzing "the present or threatened destruction, modification, or

curtailment of its habitat or range" was unlawful. 16 U.S.C. § 1533(a)(1)(A). Having acknowledged the threat posed to grayling by low stream flows and high stream temperatures, the Service was required to assess whether the CCAA is an adequate regulatory mechanism to alleviate that threat. 16 U.S.C. § 1533(a)(1)(D). As described above, however, the Service never conducted this requisite analysis and, if it had, the CCAA would not have passed proper scrutiny as a regulatory mechanism or even as a voluntary conservation effort. Specific to the issue at hand, the CCAA lacks a requirement to maintain flows in the Big Hole at a level that does not pose a threat to the grayling.

73. Even if the Service could rely on continued implementation or future actions under the CCAA, the agreement is inadequate to ameliorate the degradation of grayling habitat. The CCAA's goal is to achieve flow targets 75 percent of the days in years of average or greater snowpack. 2020 Finding at 102. In other words, even if the CCAA is meeting its "goal," flows may be below target levels one out of every four days even in years with average snowpack. The CCAA contains no flow targets at all for years in which snowpack is below

average—as was the case in both 2019 and 2020—even though below-average years are exactly when low flows and warmer water temperatures are most likely to impair the grayling population. Although the Service stated that the CCAA is meeting the goal of achieving flow targets 80 percent of the time in years of at least average snowpack, the Service provided no analysis demonstrating that this goal itself is sufficient to alleviate the threat to grayling in the Big Hole from low flows and high water temperatures. Furthermore, the Service conceded that "many other factors influence instream flows in the Big Hole River that are outside the control of landowners (e.g., snowpack, precipitation)." *Id.* Therefore the Service acted arbitrarily in concluding that the CCAA's unenforceable—and sometimes inapplicable—flow targets were somehow sufficient to protect the grayling and its diminished habitat in the Big Hole River.

74. Further, the CCAA does nothing at all to address low flows and high water temperatures affecting grayling populations outside the Big Hole River. As the Service acknowledged in 2010, "the Big Hole River constitutes one population in the DPS and high water temperatures are likely to continue to affect grayling in the Madison

River and Red Rock Lakes. Thus, stream dewatering and high water temperatures are expected to remain a threat to the DPS in the foreseeable future." 75 Fed. Reg. at 54,728.

75. Although the Service acknowledged that summer water temperatures exceeding the grayling's 70 degrees Fahrenheit stress threshold exist in the Centennial Valley, Ruby River, and Madison River, its 2020 finding nonetheless dismissed this threat by asserting that Arctic grayling "appear to be able to cope with these temperatures by using cooler tributaries and spring sources as thermal refugia[.]" 2020 Finding at 106 (citing Jaeger 2014b, pers. comm). The Service offered no research to support this conclusion. Instead, the Service attempted to rely on two or three emails that offered nothing more than conclusory speculation. The Service failed to explain how these emails support its conclusion that listing Arctic grayling is unwarranted when *average* temperatures in these waterbodies exceeded the level the Service previously deemed a threat.

76. The Service also failed to rationally assess the best available scientific information regarding the upper Missouri River grayling's ability to adjust to changing water temperature. Significantly, the

Service pointed to no documented evidence of observed grayling adaptation to temperature changes within the lower-48 population or anywhere near it. This fact alone undermines the credibility of the Service's arguments regarding the best available information.

77. Moreover, the Service failed to support its conclusion that the CCAA's adaptive-management measures are sufficient to address the current threat of habitat degradation. Only 61 percent of the stream miles in the CCAA Management Area—207 of 340—are enrolled in the agreement. 2020 Finding at 88. And of these miles, only 110—less than one-third—are currently functioning as "sustainable." *Id.* The Service did not analyze whether only 110 miles of sustainable habitat is sufficient to support the Arctic grayling population in the Big Hole. Moreover, given the history of habitat loss as a result of agricultural practices, coupled with the voluntary and unenforceable nature of the CCAA, the Service failed to evaluate the likelihood of decreased participation in the CCAA, especially in light of likely future drought conditions exacerbated by climate change.

78. As water becomes scarcer in the West, habitat degradation from historic threats such as agriculture will grow more pressing, and

the voluntary protections of the CCAA will become increasingly inadequate. The Service's cavalier treatment of serious threats to Arctic grayling habitat, both quantity and quality, lacked rational support and ignored the best-available scientific information, rendering the Service's conclusion that grayling are not threatened by habitat loss and degradation arbitrary and unlawful. 16 U.S.C. § 1533(a)(1)(A), (b)(1)(A).

D. The Service Irrationally and Unlawfully Dismissed Climate-Change Threats

79. The Service also failed to rationally assess the threat posed by climate change to the Arctic grayling's survival. The Service must list a species as threatened or endangered when it is imperiled due to "other natural or manmade factors affecting its continued existence." 16 U.S.C. § 1533(a)(1)(E). The Service's evaluation of the threat posed by these factors must be rational, *Greater Yellowstone Coal*, 665 F.3d at 1020, and grounded in the best-available science, 16 U.S.C. § 1533(b)(1)(A). In its 2020 Finding, the Service failed to rationally assess the risk of climate change to the survival of the lower-48 Arctic grayling in light of the best-available science.

80. Despite it being well documented that the grayling is a cold-water species that will be adversely impacted by climate change, the

Service arbitrarily concluded that warming does not pose a significant threat to the survival of grayling in the upper Missouri River basin. 2020 Finding at 118–21. This finding was arbitrary and unlawful.

81. The Service arbitrarily dismissed the increasing threat of high water temperatures and low stream flows to Arctic grayling by asserting that the fish are using thermal refugia to cope with high water temperatures. To reach this conclusion, the Service assumed without support that accessible thermal refugia exist in the upper Missouri River basin; that grayling will somehow find and use these waters; and that the available refugia will be adequate to compensate for habitat loss and degradation over the long-term. In so doing, the Service rejected and failed to rationally assess and apply the best-available scientific information.

82. At the outset, the Service's conclusion that Arctic grayling will use thermal refugia is unsupported by the best-available scientific information. 2020 Finding at 94–95. To support this conclusion, the Service pointed to "multiple lines of evidence suggest[ing] that water temperatures around 25°C [(77°F)] may be prompting Arctic grayling to emigrate out of an area in search of cooler water." *Id.* at 94. The agency

incorrectly extrapolated that because fish do not appear to be dying in warmer water, and because studies suggest that grayling and other salmonids actively seek thermal refugia, these refugia will mitigate any impact of rising water temperatures. However, the Service overplayed the scientific information it relied on, which consisted almost entirely of emails containing nothing more than unfounded speculation about the potential benefits of thermal refugia based on the occasional presence of Arctic grayling in cooler water. Moreover, the Service ignored information in the emails that conflicted with its conclusions, including that there may have been other reasons for the grayling's movement. The Service's reliance on these emails for a conclusion that they do not support thus threatens, arbitrarily, to unjustifiably downplay the threats of higher stream temperatures and low stream flows on Arctic grayling.

83. Even taking the Service's unfounded assumptions about Arctic grayling seeking out thermal refugia as true, the Service also failed to rationally support its assumption that adequate thermal refugia even exist, and will continue to exist, in the Big Hole River, rendering the conclusion arbitrary and unlawful. For instance, relying

on the Vatland (2015) study, the Service asserted that "modeled water temperatures in the Big Hole … indicate that cooler water sites used by Arctic grayling in the 2000s were expected to remain relatively cool through at least the 2060s[.]" 2020 Finding at 170. However, the Service's conclusion ignored the study's other key conclusions that undermine the Service's Final Rule, including that conditions in the Big Hole River will severely decline with climate change and that thermal barriers could impact the grayling's ability to reach cooler waters, even in the river's mainstem. Vatland (2015), at 63–64. Thus, the mere existence of cooler areas is insufficient to support the agency's conclusion that grayling are not threatened by rising water temperatures, and the Service's failure to address contrary evidence, such as the presence of thermal barriers preventing the fish from finding and using cooler waters, was arbitrary.

84. Moreover, the best-available scientific information demonstrates that the tributaries of the Big Hole River are not cold enough habitats for the fish, further undermining the Service's conclusion. In particular, the Service's finding showed that the Big Hole's tributaries exceed 77 degrees Fahrenheit (25°C) about as much

as the river's mainstem. 2020 Finding at 97–98. Despite acknowledging that the best-available scientific information "indicate[s] that stressful temperature conditions for Arctic grayling in the Big Hole River *and its tributaries* … [are] still present," *id.* at 97 (emphasis added), the Service assumed that the river's tributaries would provide cold enough habitat for the fish.

85. In addition to defying the best-available scientific information, the Service's flawed assumptions entirely ignored other key factors, including the distance Arctic grayling would need to travel into the tributaries to access suitable habitat or whether that migration is even occurring. Nor did the agency reconcile its conclusion with the best-available scientific information demonstrating that most grayling are found at the mouth of tributaries. *See* Vatland (2009), at 3, 10.

86. The Service's reliance on the CCAA's "water conservation and restoration projects" to "increase instream flows and reduce water temperatures in the Big Hole River and [its] tributaries" is similarly irrational. *See* 2020 Finding at 101–03. Significantly, in its review of the Service's 2014 finding for Arctic grayling, addressing a similar strategy deployed by the Service, the Ninth Circuit has already

acknowledged that despite "improvements in stream flow and water temperature" resulting from the CCAA, "water temperatures are still above those that are ideal for the arctic grayling both in the main stem of the Big Hole River and its tributaries." *Ctr. for Biological Diversity*, 900 F.3d at 1071.

87. In its 2020 Finding, the Service makes no attempt to explain how the CCAA would achieve temperatures and stream flows sufficient to support Arctic grayling. Additionally, the Service's conclusion ignores data demonstrating multiple days where stream flows were far below even the CCAA's target requirements. 2020 Finding at 105. Once again, in the words of the Ninth Circuit, the Service's reliance on the CCAA cannot "save the agency's flawed … Finding." *Ctr. for Biological Diversity*, 900 F.3d at 1070.

88. The Service also arbitrarily ignored other threats grayling face when congregating in cold-water areas. Thermal refugia are far from ideal habitats. For example, a study relied upon by the Service in the Finding noted predation and competition increase when fish congregate at cool-water sites, a fact the Service entirely ignored in its Finding. Moreover, despite recognizing an increase in competition with

nonnative species that are "more tolerant of warm water" than Arctic grayling, the Service likewise downplayed this concern by noting that experts predicted only a five-percent reduction in grayling recruitment in the Big Hole River. 2020 Finding at 168. Yet the Service again failed to rationally support its conclusion by explaining whether the predicted loss due to competition and predation threatens Arctic grayling in the Big Hole River.

89. For each of these reasons, the Service's selective reliance on speculation regarding thermal refugia, and its failure to consider and evaluate the threats that thermal refugia can pose to Arctic grayling, were arbitrary and unlawful.

90. In addition to the Service's failure to adequately address the current threat to grayling caused by low flows and high stream temperatures, the Service also arbitrarily dismissed the compounding effects of climate change that will exacerbate these threats.

91. Both water temperature and stream flow are sensitive to climate change. For example, "[o]bservations on flow timing in the Big Hole River, upper Madison River, and Red Rock Creek in the Centennial Valley indicate a tendency toward earlier snowmelt

runoff[.]" 2020 Finding at 117. These hydrologic alterations may be biologically significant for grayling in the Missouri River basin because the fish "typically spawn prior to the peak of snowmelt runoff[.]" *Id.* In addition to earlier snowmelt, warmer air temperatures will harm grayling by further increasing stream temperatures. Climate analyses in the Big Hole River Valley and Centennial Valley indicate that air temperatures rose between 1 and 1.8 degrees Celsius per decade from the 1980s to the mid-2000s. And the Service acknowledged that the land area of the upper Missouri River basin is predicted to warm even more through the end of the century.

92. Despite evidence of the current and growing impacts of climate change, the Service confronted the effects of climate change in its 2020 Finding by summarily dismissing them without explanation. For example, the agency's own review of data indicates that water temperatures are already rising. But despite acknowledging this alarming trend, the Service dismissed these temperature exceedances by labeling them as likely "temporary and non-lethal." *Id.* at 108. And the Service's conclusions also failed to analyze the potential for increasing stretches of time in which water temperatures exceed the

grayling's biological threshold, which is only predicted to be amplified by climate change.

93. The Service's inadequate consideration of rising water temperatures is further magnified by its failure to address the corresponding impacts of rising water temperatures and low flow rates in the Ruby River in particular. For example, the Service's 2020 Finding fails to evaluate the risk of reduced genetic exchange, and a corresponding loss of genetic diversity, if grayling are forced into smaller suitable habitats in the Ruby River by climate change. This omission is particularly concerning because the agency's not-warranted finding depended on the survival of the Ruby River's inchoate population—a population that has seen a decrease in the effective number of breeding adults—to increase "redundancy and representation of life history diversity in the DPS." *Id.* at 179.

94. The Service's predictions about the resilience of Arctic grayling habitat in light of climate change were similarly unfounded. Despite acknowledging that climate change will likely "decrease available habitat for cold-water fishes," the Service nonetheless arbitrarily concluded that many grayling habitats are expected to be

"climate-resilient," noting that some "habitats capable of supporting cold-water fishes are predicted to remain at least into the 2080s[,]" and that certain higher-elevation habitats are likely to be more resilient to projected changes in water temperature. 2020 Finding at 170, 182. To support this conclusion, the Service arbitrarily relied on studies examining the impacts of river and stream temperatures on dissimilar wildlife populations and excluded from its analysis the areas most likely to be impacted by habitat loss. The Service then neglected to explain how studies focused *on other species* in different habitats supported the agency's sweeping predictions about the impacts of climate change on grayling across the upper Missouri River basin.

95. Moreover, as with several of its other conclusions throughout the Finding, the Service cherry-picked data that appeared to support its conclusion without addressing contrary evidence, such as determinations that conditions in the Big Hole River are going to severely decline with climate change, that thermal barriers could impact the grayling's ability to reach refugia, and that there is considerable uncertainty about whether the fish will be able to adapt and survive. The Service also disregarded projections that, as streams

and rivers warm, there will be "significant biological implications for both the quality and quantity of habitats available to" certain fish species and that the frequency of thermal impacts is expected to increase in the future." *See* Isaak (2012), at 513. The agency also contradicted the very same studies it relied on in its conclusions, including by asserting that "changes in ambient air temperature predicted to occur as the climate changes are not likely to have as large an effect on water temperatures as solar radiation," 2020 Finding at 118–19, despite at least one study the agency otherwise relied on predicting that ambient-air temperature is "highly correlated" with stream temperature trends, Vatland (2015), at 29.

96. The Service's arbitrary and irrational examination of climate change's future effects on the Arctic grayling renders its conclusions unlawful under the ESA.

FIRST CAUSE OF ACTION
(Violation of Endangered Species Act—Failure to analyze the adequacy of existing regulatory mechanisms)

97. Plaintiffs hereby reallege and incorporate Paragraphs 1 through 96.

98. The Service violated ESA section 4, 16 U.S.C. § 1533, in issuing its 2020 Finding because the Service relied on voluntary conservation actions that it deemed necessary to prevent the upper Missouri River DPS from being threatened without properly evaluating whether the actions constituted adequate "regulatory mechanisms." *Id.* § 1533(a)(1)(D).

99. Because the Service impermissibly relied on unenforceable and voluntary conservation efforts to address threats to grayling, its conclusions were arbitrary and in violation of the ESA. *See* 16 U.S.C. § 1533(a)(1), (a)(1)(D); 5 U.S.C. § 706(2).

SECOND CAUSE OF ACTION
(Violation of Endangered Species Act—Arbitrary evaluation of threats to Arctic grayling in the Upper Missouri River Basin)

100. Plaintiffs hereby reallege and incorporate Paragraphs 1 through 96.

101. The ESA required the Service to rationally determine, among other things, whether Arctic grayling in the upper Missouri River basin are threatened by "the present or threatened destruction, modification, or curtailment of its habitat or range," "the inadequacy of existing regulatory mechanisms," or "other natural or manmade factors

affecting its continued existence." 16 U.S.C. § 1533(a)(1)(A), (D), (E). The statute further required that, in doing this, the Service must utilize the "best scientific and commercial data available." *Id.* § 1533(b)(1)(A).

102. Here, the Service ignored and failed to utilize the best-available scientific information in concluding that Arctic grayling in the upper Missouri River basin are not threatened by factors including small population size, small effective population size, habitat degradation, low genetic diversity, and climate change. Likewise, the Service failed to articulate a rational connection between the facts found and the choice ultimately made by the agency. As a result, the Service acted arbitrarily, capriciously, and unlawfully in evaluating threats to the Arctic grayling in the upper Missouri River basin under the ESA.

103. The Service's finding was therefore arbitrary, capricious, and not in accordance with law and should be set aside. *See* 16 U.S.C. § 1533; 5 U.S.C. § 706(2).

PRAYER FOR RELIEF

THEREFORE, Plaintiffs respectfully request that the Court:

104. Declare that the Service acted arbitrarily and capriciously and violated the ESA in issuing the 2020 Finding;

105. Vacate and remand the 2020 Finding for further analysis and agency action consistent with this Court's decision;

106. Award Plaintiffs their reasonable fees, costs, and expenses, including attorneys fees, associated with this litigation; and

107. Grant Plaintiffs such further and additional relief as the Court may deem just and proper.

Respectfully submitted this 30th day of January, 2023.

/s/Emily T. Qiu
Emily T. Qiu
Amanda D. Galvan
Sean M. Helle
Earthjustice
313 East Main Street
P.O. Box 4743
Bozeman, MT 59772-4743
Phone: (406) 586-9699
Fax: (406) 586-9695
eqiu@earthjustice.org
agalvan@earthjustice.org
shelle@earthjustice.org
Attorneys for Plaintiffs