



December 4, 2014

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VIA E-MAIL AND CERTIFIED MAIL

RE: Sixty-Day Notice of Intent to Sue the United States Fish and Wildlife Service for Violations of the Endangered Species Act in its Revised 12-Month Finding on a Petition to List the Upper Missouri River Distinct Population Segment of Arctic Grayling as an Endangered or Threatened Species, 79 Fed. Reg. 49,384

Dear Secretary Jewell and Director Ashe,

On behalf of Center for Biological Diversity, Western Watersheds Project, George Wuerthner, and Pat Munday, we hereby provide notice that the United States Fish and Wildlife Service ("FWS") is in violation of the Endangered Species Act ("ESA"), 16 U.S.C. § 1533, and its implementing regulations, 50 C.F.R. § 402 et seq., with regard to a 12-Month negative finding on a petition to list the Upper Missouri River Distinct Population Segment ("DPS") of Arctic grayling as an endangered or threatened species. 79 Fed. Reg. 49,384 (Aug. 20, 2014). In light of the imperiled status of the Arctic grayling in the upper Missouri River basin and both present and future threats to the species' survival, FWS's decision to not propose listing of the species violates section 4 of the ESA. 16 U.S.C. § 1533.

Arctic grayling are hanging by a thread in the lower-48 states. Today, grayling inhabit only one river and four lakes in their once extensive range in Montana's upper Missouri River ecosystem. These fish are faced with a barrage of threats, including low flows and barriers in the rivers, rising water temperatures, increased pressure from nonnative fish, and very low population numbers. These threats are even more significant because of the predicted impacts of climate change. These fish more than qualify for protections under the ESA as they currently face a very real threat of extinction in the foreseeable future.

Pursuant to the citizen suit provision of the ESA, 16 U.S.C. § 1540(g)(2), this letter provides you notice that, unless within 60 days of receipt of this letter FWS promulgates a

proposed rule listing the Upper Missouri River Arctic grayling DPS as threatened, we intend to challenge in federal district court FWS's 12-month finding.

I. ARCTIC GRAYLING IN THE UPPER MISSOURI RIVER BASIN

A. Arctic Grayling

The Arctic grayling (*Thymallus arcticus*) is a member of the family Salmonidae, which contains salmon, trout, charr and whitefishes. Grayling have long, trout-like bodies with deeply forked tails and a sail-like dorsal fin. Adults typically average 12-15 inches in length. Arctic grayling are native to 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 U.S., including both the upper Missouri River basin population and a separate population in Michigan that is extinct today. The upper Missouri River grayling probably share a common ancestry with the lineage of grayling found on the North Slope of Alaska, but 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 (which has particularly extensive stocking), New Mexico, Utah, Washington, and Wyoming.

Arctic grayling have two general life-history forms: Fluvial (river or stream-dwelling) and adfluvial (lake-dwelling). Historically the fluvial form predominated in the Missouri River basin. According to FWS, there "appears to be some plasticity in behavior where individuals from a population can exhibit a range of behaviors." 79 Fed. Reg. at 49,392. However, fluvial grayling exhibited a greater tendency to hold their position in flowing water relative to progeny from adfluvial types. Therefore, FWS found "the frequent failure of introductions of adfluvial Arctic grayling into fluvial habitats suggest a cautionary approach to the loss of particular life-history forms is warranted." Id.

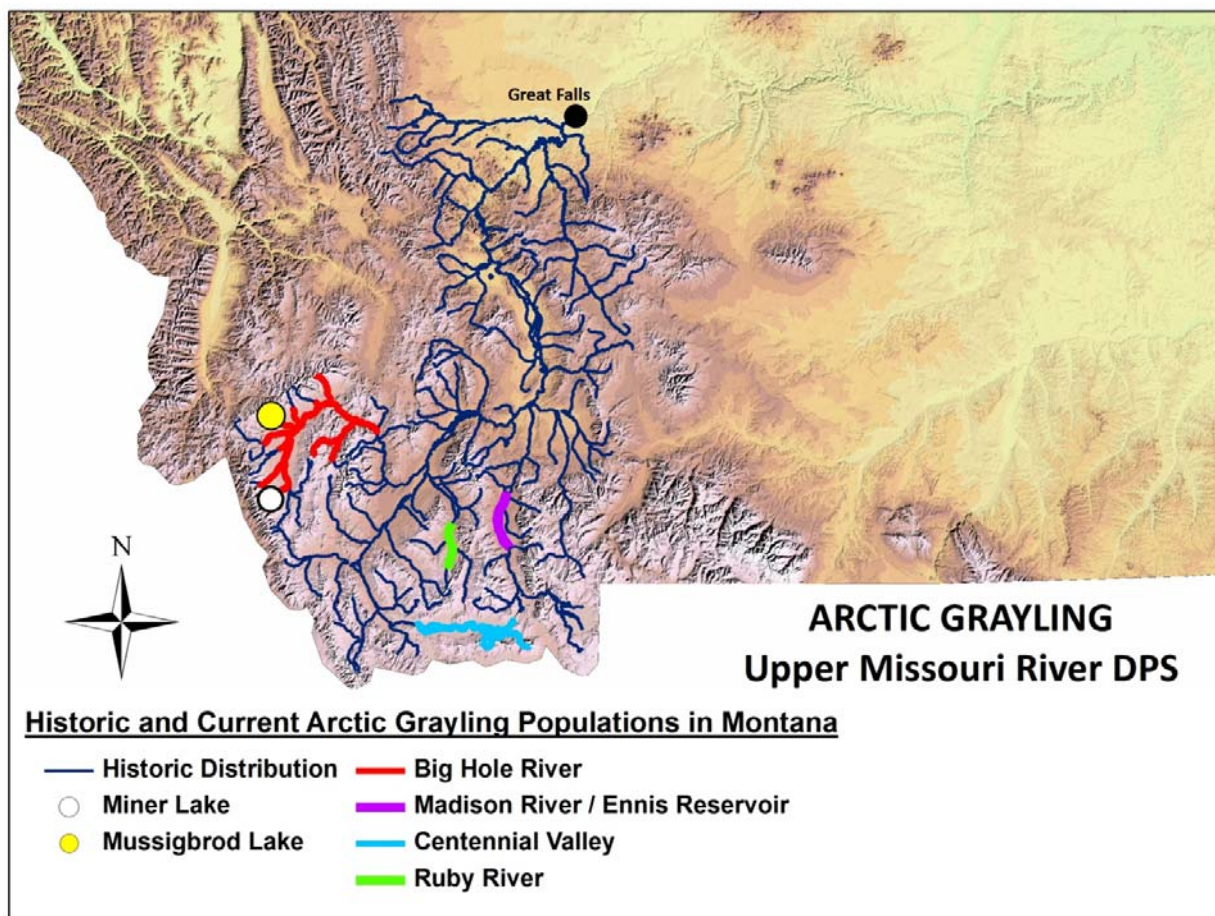
Arctic grayling require clear, cold water—optimal thermal habitat is between 45 and 63 degrees Fahrenheit, and habitat becomes unsuitable above 68 degrees Fahrenheit. In Montana, grayling generally spawn in the spring or early summer, from late April to mid-May, by depositing adhesive eggs over gravel substrate without excavating a nest. The time required for development of eggs from embryo until they emerge from stream gravel and become fry depends on water temperature.

Grayling are migratory fish, whose year consists of cyclic patterns of movement between refuge, rearing-feeding, and spawning habitats. In some drainages, individual fish may migrate considerable distances (over 90 miles) to overwintering habitats. In the Big Hole River, grayling migrate long distances to overwintering habitat and migrate to colder tributary streams in summer when the mainstem of the Big Hole becomes too warm. 79 Fed. Reg. at 49,391.

Arctic grayling in the upper Missouri River typically mature at age 2 (males) or age 3 (females) and individuals older than age 6 are rare. Arctic grayling of all ages feed primarily on aquatic and terrestrial invertebrates, but will also feed on fish and fish eggs.

B. Distribution and Population Data

Grayling were once abundant in all of the major rivers of the upper Missouri Basin, including the Missouri mainstem, Smith, Sun, Jefferson, Madison, Gallatin, Big Hole, Beaverhead, and Red Rock Rivers and their tributaries, along with adfluvial populations in a small number of lakes, including Red Rock Lakes in the Centennial Valley and Elk Lake. The distribution of native grayling went through a dramatic reduction in the 20th century, especially the fluvial populations. Today, there are just five remaining populations of grayling with the sole fluvial population limited to 181 miles of the Big Hole River and its tributaries. There are adfluvial populations in 15 miles of the Madison River in and above Ennis Reservoir, Miner Lakes, Mussigbrod Lake and Red Rock Lakes. The Smith, Sun, Jefferson, Beaverhead, Gallatin and mainstem Missouri Rivers are considered extirpated.



Source: Arctic Grayling Monitoring Report 2013 at 1.

Native fluvial grayling populations in the Big Hole and adfluvial grayling populations in the upper Madison, Red Rock Lakes and Elk Lake are precariously small and at risk of extinction. The fluvial form currently occupies less than 4 percent of its historical range, which places the population at immediate risk of extinction. Arctic Grayling Monitoring Report 2013 at 1. Efforts to reintroduce grayling to the Ruby River have had limited success with some

reproduction taking place, but the population is still too small to be self-sustaining. FWS's 2010 finding that listing the Upper Missouri River population of Arctic grayling was warranted summarized the evidence that both the Big Hole and Madison River populations underwent severe declines in recent years. FWS concluded "the best available data" shows the Big Hole population "declined by one half between the early 1990s and the early 2000s, and the Madison population to "currently exist at only 10 to 20 percent of the abundance observed in the early 1990s." Notice of Revised 12-Month Finding on a Petition To List the Upper Missouri River Distinct Population Segment of Arctic Grayling as an Endangered or Threatened Species, 75 Fed. Reg. 54,708, 54,723-4 (Sept. 8, 2010). In support of the 2010 finding, FWS ran a simple population viability analysis to determine extinction risk from demographic and genetic stochasticity and found that all of the populations except Mussigbrod Lake were at risk of extinction within 30 years. Id. at 54,725.¹ FWS found that the Madison River population has the greatest probability of extinction by stochastic processes (36-55 percent), followed by Big Hole (33-42 percent), Red Rock Lakes (31-40 percent), and Miner (13-37 percent). Id.

FWS's 2014 revised 12-month finding does not describe any additional effort to determine population viability. The 2014 finding described the Big Hole River, Centennial Valley, and Ruby River populations as increasing, the Madison River population as decreasing, and the Mussigbrod and Miner Lake populations as stable, but failed to engage in any quantitative assessment of population viability based on these asserted trends. See 79 Fed. Reg. at 49,398.²

For listing purposes, FWS considered the 20 introduced populations and 6 existing populations of Arctic grayling in the upper Missouri River basin to constitute the listable entity,

¹ Stochasticity refers to the effect of random or unpredictable events affecting a population's growth rate. Although the 2010 finding in one place states that FWS looked only at demographic and genetic stochasticity (i.e. the effect of random changes in factors like reproductive rates and genetic drift), 75 Fed. Reg. at 54,725, the finding elsewhere suggests the analysis also considered environmental stochasticity (i.e., the effect of random changes in environmental factors, such as drought), id. at 54,741. To the extent that the analysis excluded consideration of environmental stochasticity, it drastically understates the populations' extinction risks.

² FWS found that the Big Hole River contained between 500 and 900 breeding adults that contributed genetics to offspring, with a total annual census population between 1,595 and 5,305 total fish. The Centennial Valley contains 458 breeding adults, with a total population between 714 and 2,374 fish. The fluvial population in the Ruby River has between 54 and 179 fish and the Madison River population has between 697 and 2,317 fish. Although these population numbers generally represent an increase over the population data in the 2010 finding, except with respect to the Madison River population, 79 Fed. Reg. at 49,399, they are still substantially lower than the Arctic grayling's historic abundance. See 75 Fed. Reg. at 54,741 (stating that "[h]istorically, effective population sizes of Arctic grayling in the Missouri River were estimated to be 1 or 2 orders of magnitude greater (10 to 100 times) than those currently observed [in 2010]"). In addition, other population studies, discussed below, did not confirm an increase in the Arctic grayling population.

though 6 of the introduced populations are considered to have low conservation value. Although FWS in 2010 determined that the remaining introduced populations also had low conservation value, FWS reversed this finding in 2014 and concluded that these introduced populations could provide a source for future reintroduction efforts.

C. Voluntary Conservation Efforts

In denying the grayling protection, FWS relied on voluntary conservation efforts under the auspices of the Big Hole River Candidate Conservation Agreement with Assurances (“CCAA”), as well as a voluntary Drought Management Plan for the Big Hole, and Montana’s Arctic Grayling Recovery Program (developed in 1987) which includes grayling relocation and reintroduction. The intent of the CCAA was to entice landowners to participate in the CCAA by providing assurances that they will not be subject to additional regulatory requirements to protect the species were it to be listed. *See* Mont. Dep’t of Fish, Wildlife & Parks and U.S. Fish & Wildlife Serv., Candidate Conservation Agreement with Assurances for Fluvial Arctic Grayling in the Upper Big Hole River (March 30, 2006) at 3 (hereafter “CCAA”).

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 or eliminating entrainment threats, and (4) removing barriers to grayling migration. *Id.* For several reasons discussed below, the CCAA does not provide the requisite high level of certainty that its conservation provisions will ensure that the Upper Missouri River DPS of Arctic grayling is not endangered or threatened.

II. THE ENDANGERED SPECIES ACT AND ARCTIC GRAYLING

Congress enacted the Endangered Species Act in 1973 with the goal of protecting and recovering species that are in danger of extinction or are likely to become so within the foreseeable future. In the words of the ESA, its purpose is “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved,” and “to provide a program for the conservation of such endangered species and threatened species.” 16 U.S.C. § 1531(b). In the seminal case on the Endangered Species Act, *Tennessee Valley Authority v. Hill*, the Supreme Court confirmed that it is “beyond doubt that Congress intended endangered species to be afforded the highest of priorities.” 437 U.S. 153, 174 (1978).

To achieve the goal of conserving threatened and endangered species, section 4 of the ESA requires the Secretary of the Interior to determine whether a species is threatened or endangered, 16 U.S.C. § 1533(a)(1), designate critical habitat for the species, *id.* § 1533(a)(3), and promulgate and implement a recovery plan for the species, *id.* § 1533(f). Under the ESA, a species is “endangered” if it is “in danger of extinction throughout all or a significant portion of its range,” *id.* § 1532(6), and it is “threatened” if it is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range,” *id.* § 1532(20).

The ESA requires the Secretary to "determine whether any species is an endangered species or a threatened species" because of "any" of the five 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.

Id. § 1533(a)(1). The ESA mandates that the Secretary evaluate these factors “solely on the basis of the best scientific and commercial data available to [her] after conducting a review of the status of the species.” Id. § 1533(b)(1)(A). See also Nw. Ecosystem Alliance v. U.S. Fish & Wildlife Serv., 475 F.3d 1136, 1147 (9th Cir. 2007) (“The ESA instructs the Service to make its determinations ‘solely on the basis of the best scientific and commercial data available’”) (quoting 16 U.S.C. § 1533(b)(1)(A)).

Courts interpreting these statutory provisions 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). FWS’s listing and delisting actions have frequently been held arbitrary and capricious on these specific grounds. A recent case on grizzly bear delisting, for instance, vacated FWS’s delisting rule because “[t]he Rule did not articulate a rational connection between the data before it and its conclusion.” Greater Yellowstone Coal., Inc. v. Servheen, 665 F.3d 1015, 1030 (9th Cir. 2011). See also Trout Unlimited v. Lohn, 645 F. Supp. 2d 929, 944 (D. Or. 2007) (agency “violated the ESA by not relying on the best available science”). The requirement to use the best available science—and the necessity of overturning agency action that fails to do so—is therefore clear in the language of the Act and is also well established in ESA case law.

Despite considering the upper Missouri River population of fluvial Arctic grayling as a candidate for ESA listing as early as 1982, 79 Fed. Reg. at 49,384, FWS has failed to implement essential protections for this population that are both warranted and required under the ESA. Instead, over the past three decades, FWS has put forward a host of different erroneous legal theories and flawed science to support its determination not to list. The Biodiversity Legal Foundation (now Center for Biological Diversity) petitioned FWS in 1991 to list the Arctic grayling as an endangered species. In response to the petition and a lawsuit, FWS determined in 1994 that listing the grayling was “warranted but precluded” and assigned it a listing priority number of 9, indicating relatively low priority, based on ongoing conservation efforts. 59 Fed. Reg. 37,738 (July 25, 1994). Responding 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 again sued FWS for failing to protect the grayling. FWS raised the listing priority of the grayling to a 3, which is the highest priority number afforded a distinct population segment, and agreed to make a determination of the grayling’s status by April 2007. However, when the time came for FWS’s listing decision, FWS determined the upper Missouri River

grayling no longer warranted protection, not because the grayling's status had improved, but rather based on an assertion that it no longer qualified as a DPS. 72 Fed. Reg. 20,305 (Apr. 24, 2007). The Center and Western Watersheds Project challenged this decision as well, resulting in yet another agreement by FWS to determine whether listing was warranted. Under this agreement, FWS determined in 2010 that the upper Missouri population does qualify as a distinct population segment that warrants protection, but again determined that protection was precluded by other higher priority listing actions. 75 Fed. Reg. 54,708 (Sep. 8, 2010). On September 9, 2011, FWS reached an agreement with the Center for Biological Diversity stipulating that FWS would submit either a proposed listing rule for the Upper Missouri River population of Arctic grayling or a not-warranted finding by no later than the end of 2014.

On August 20, 2014, FWS published a revised 12-month finding reversing its 2010 conclusion that listing was "warranted" and instead determining that the Upper Missouri River DPS of Arctic grayling did not warrant listing. The parties to this letter intend to challenge FWS's 2014 finding as arbitrary, capricious, and contrary to the ESA.

III. FWS VIOLATED THE ESA IN DENYING THE UPPER MISSOURI RIVER POPULATION OF GRAYLING PROTECTION UNDER THE ENDANGERED SPECIES ACT

FWS's most recent theory for denying ESA protections for the upper Missouri River population of Arctic grayling cannot be sustained because it fails to rely on the best available science when considering ongoing and increasing threats to the population; fails to determine whether conservation efforts designed to protect the species qualify as adequate regulatory mechanisms as required by the statute; unlawfully relies on future, voluntary conservation actions that do not adequately ameliorate those threats; and irrationally reverses FWS's 2010 determination that ESA listing was warranted.

A. FWS's Finding that the Upper Missouri Population of Grayling is No Longer Endangered Despite its Very Small Population is Arbitrary and Capricious and Fails to Follow Best Available Science

FWS's conclusion that Arctic grayling are not threatened despite their very small population size is arbitrary. See 16 U.S.C. § 1533(a)(1)(E) (FWS required to determine whether species is threatened by "other natural or manmade factors affecting its continued existence"). As FWS has previously acknowledged, "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. In determining that the grayling populations in the upper Missouri River basin are not threatened due to lack of abundance, FWS unlawfully relied on speculation rather than the "best scientific ... data available," 16 U.S.C. § 1533(b)(1)(A), and failed to justify its reversal of a contrary conclusion in 2010, see Purepac Pharm. Co. v. Thompson, 354 F.3d 877, 884 (D.C. Cir. 2004) (stating that a court may not "sanction agency action when the agency fails to justify seeming inconsistencies in its approach") (quotations, alterations, and citation omitted). FWS also failed to acknowledge population data that contradicted its conclusions regarding population trends.

In 2010, FWS found that Arctic grayling populations in the upper Missouri River basin faced significant risks of extinction in the next 30 years due to their small population sizes. 75 Fed. Reg. at 54,725. Specifically, FWS performed population viability analyses (“PVA”) demonstrating that the Madison River population had a 36-55 percent probability of becoming extinct in the next 30 years, the Big Hole population had a 36-55 percent risk of extinction, and the Red Rock Lakes population had a 31-40 percent risk of extinction. *Id.* “Consequently, we believe that extinction risk from random environmental variation (droughts, floods, etc.) represents a significant threat in the foreseeable future based on the PVA.” *Id.* at 54,741. Although FWS stated that it was unknown whether demographic factors alone would threaten grayling populations, FWS concluded “that the upper Missouri River DPS of Arctic grayling faces threats from population isolation, loss of genetic diversity, and small population size, which all interact to increase the likelihood that random environmental variation or a catastrophe can extirpate an individual population.” *Id.* In other words, FWS conducted a scientific analysis to rationally conclude in 2010 that the combination of threats due to small population size, including genetic threats and lack of resilience to withstand extreme environmental events, warranted ESA protections for grayling.

FWS now believes that grayling numbers are sufficient to withstand genetic threats, 79 Fed. Reg. at 49,418-19, but FWS failed to explain how its current population estimates alter FWS’s 2010 conclusion that “[l]oss of genetic variation relative to the historical condition thus represents a threat to Arctic grayling in the foreseeable future,” 75 Fed. Reg. at 54,741. That conclusion was based on FWS’s determination that “[t]he point estimates for genetic effective population sizes observed in the Big Hole River, Miner Lakes, Madison River, and Red Rock Lakes populations are above the level at which inbreeding is an immediate concern, but below the level presumed to provide the genetic variation necessary to conserve long-term adaptive potential.” *Id.* The same is true today. In general, effective population sizes around 500 are required to maintain long-term genetic diversity. *See, e.g.,* Peterson and Ardren 2009, pp. 1766-7, 1769, Jamieson and Allendorf 2012. FWS estimated effective population sizes for fluvial Arctic grayling at 12.5 in the Ruby River to 371 in the Big Hole River. 79 Fed. Reg. at 49,398. FWS did not claim that these numbers are sufficient for long term genetic diversity, *see id.* at 49,418 (stating only that there is “considerable debate about what effective population size is adequate to conserve genetic diversity and long-term adaptive potential”), and instead attempted to downplay long-term genetic threats by stating that “other processes, such as habitat degradation, have a more immediate and greater impact on species persistence,” *id.* at 49,419. While FWS’s candid recognition of the importance of habitat degradation to grayling survival is beyond dispute, the existence of one threat is not a rational basis upon which to dismiss another. Particularly where FWS has determined that the threat of habitat degradation will be sufficiently addressed, FWS was required to determine whether long-term loss of genetic variation continues independently to “represent[] a threat to Arctic grayling in the foreseeable future.” 75 Fed. Reg. at 54,741.

With respect to the ability of small grayling populations to recovery from potential environmental disturbances, FWS’s 2014 finding again falls short of legal requirements to rely on the best available science and make a rational finding to support its reversal of the 2010 finding. FWS instead relied on the separation of the upper Missouri River grayling populations to address this threat. 79 Fed. Reg. at 49,419 (“Populations of Arctic grayling in the Upper

Missouri River DPS are for the most part widely separated from one another, occupying 7 of 10 historically occupied watersheds”). Yet FWS also wrote off the exceptionally high extinction risk for the decreasing Madison River population, id. at 49,399, later describing this population as not essential to the survival of the species. Id. at 49,419. In addition to the declining Madison River population, in the vast majority of historic grayling habitat the population is zero. FWS’s assertion that fluvial grayling are not threatened by small population size cannot be squared with this evidence.

In its 2014 finding, FWS did not repeat its PVA using updated population numbers, nor did FWS attempt to explain why the conclusions FWS drew from its 2010 analyses were no longer valid. 79 Fed. Reg. at 49,418-19 (discussing “Stochastic (Random) Threats, Genetic Diversity and Small Population Size”). Instead, FWS based its finding on speculation rather than scientific analysis, taking comfort in the redundancy of grayling populations, and finding that even introduced populations could be used in future conservation actions as source stock. Id. at 49,419. (“Thus, risk of extirpation by a rare, high-magnitude environmental disturbance (i.e., catastrophe) is relatively low.”). However, the same was true in 2010. See 75 Fed. Reg. at 54,741. While FWS now appears to regard any given grayling population in the upper Missouri Basin expendable, in 2010, FWS found that “[i]ndividually, each population appears to be at substantial risk of extirpation by catastrophe from one or more factor.” Id. (emphasis added). This “likelihood that random environmental variation or a catastrophe can extirpate an individual population” supported ESA listing. Id. (emphasis added). FWS failed to justify its contrary conclusion in 2014.³ FWS also failed to contend with the agency’s own concession that adfluvial grayling, despite being genetically identical with the fluvial life history, may not survive if introduced into a river ecosystem. 79 Fed. Reg. at 49,392.

More fundamentally, despite its claims of a significantly higher grayling population in its 2014 12-month finding, actual population monitoring surveys do not reflect this population increase:

Big Hole River Reach	2013 Reach Length (Miles)	Grayling Population Count 2013	Grayling Population Count 2012	Grayling Population Count 2011	Grayling Population Count 2010
Big Hole CCAA (A)	1.33	0	0	0	0
Big Hole CCAA (B)	2.51	0	0	0	0
Big Hole	6.32	0	1	11	4

³ Furthermore, while FWS touts successful reintroduction efforts in the Ruby River over the past three years as producing “a viable replicate of the fluvial ecotype” in the event of extirpation of the Big Hole population, 79 Fed. Reg. at 49,419, FWS has not cited any evidence that the Ruby River population—consisting of just 54-179 mature fish—will persist in the future as a self-sustaining population. Indeed, in light of the history of unsuccessful grayling reintroduction efforts—including prior Ruby River reintroductions—any such projection would appear overly optimistic.

CCAA (C)					
Big Hole CCAA (D)	5.83	7	24	2	21
Big Hole CCAA (E)	3.28	3	5	2	1
Governor Creek (A)	1.05	0	0	0	0
Miner Creek (B)	0.60	0	0	0	0
Rock Creek (C) (location of recolonization efforts)	2.86	13	94	309 + 201	317 + 84
Steel Creek (D)	2.91	14	14	44	22
Swamp Creek	1.33	14	22	37	37
Plimpton Creek	1.30	9	35	2 + 19	65
Howell Creek	1.55	9	11	3	n/a
Pintlar Creek	0.74	3	9	2	n/a
Squaw Creek	0.93	29	15	n/a	n/a
Deep Creek (E)	1.41	17	18	6	13
Total (may include other monitoring sites not reported here)	-	118	156	678	581

Source: Annual Monitoring Reports prepared by Montana Fish, Wildlife, and Parks.

These data were not reported by FWS in its 12-month finding. Instead, FWS reported the population's "estimated effective population size," and, estimated using that value, an "annual census population size." The biological date for the data referenced in FWS's 2010 finding was 2000-2003, in which FWS reported an estimated effective population size in the Big Hole River of 208, and an estimated adult population size between 828 and 1,486. 75 Fed. Reg. at 54,722. In its 2014 12-month finding, FWS reported an estimated effective population size in the Big Hole River of 371, and an estimated adult population size between 1,595 and 5,305. The biological date for the data was 2006-2009. 79 Fed. Reg. at 49,398. However, at least one comprehensive study making population estimates based on genetic information found that the Big Hole River population's effective number of breeders declined from the 1980's to the present (2014). DeHann et al., Genetic Monitoring of Arctic Grayling in the Big Hole River and Red Rock Creek and Association with Recent Climate Trends, January 22, 2014, at 16, 29. This

study contradicts FWS's claim that the population in the Big Hole is increasing, yet FWS did not even address the monitoring data in the DeHann et al. study, let alone refute its conclusions.

Therefore, FWS's arbitrary conclusion that Arctic grayling are not threatened despite their very small population size was based on speculation rather than the "best scientific ... data available," 16 U.S.C. § 1533(b)(1)(A), including data with respect to population viability, population size and trend, and genetic threats.

B. The Best Available Science Demonstrates Arctic Grayling Are Threatened by Habitat Loss and Degradation

FWS's determination that Arctic grayling in the upper Missouri River basin are not threatened by "[t]he present or threatened destruction, modification, or curtailment of its habitat or range" is arbitrary and not based on the best available science. 16 U.S.C. § 1533(a)(1)(A) (FWS required to determine whether species is threatened by "the present or threatened destruction, modification, or curtailment of its habitat or range").

1. Grayling are Threatened by Habitat Loss Due to Low Stream Flows and High Stream Temperatures

FWS acknowledged that one of the most pressing threats to the survival of the grayling is water withdrawal from the Big Hole River. See 75 Fed. Reg. at 54,728 ("Especially in the Big Hole River, dewatering from irrigation represents a past and present threat to Arctic grayling."). Yet FWS failed to employ the best available science to rationally analyze whether such continued withdrawals constitute a threat to the species that warrants listing. Water withdrawals result in reduction of habitat for grayling by reducing available space, increasing maximum water temperatures, stranding eggs and young fish, increasing inter- and intra-specific 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 grayling. In the Big Hole River, irrigation "has substantially altered the natural hydrologic function of the river and has led to acute and chronic stream dewatering." Id. at 54,727. This dewatering 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. Id. at 54,723. This dewatering is due to irrigated agriculture and ranching. About 90 percent of the fluvial population of Arctic grayling in the Big Hole River occurs on private land, which FWS identified as a challenge to conservation efforts because all such efforts need support from involved agencies and private landowners. 79 Fed. Reg. at 49,400.

Low flows caused by dewatering lead to higher water temperatures, as is currently observed in the Big Hole River. Summer water temperatures consistently exceed 70 degrees in this river, which is above the 68 degree threshold for temperatures to be considered physiologically stressful for grayling—and several monitoring stations recorded temperatures above 77 degrees at some point during the season. Arctic Grayling Monitoring Report 2013 at

6.⁴ Similar effects have been observed in the Madison River and Red Rock watersheds. Thermal fish kills in the Big Hole River have been documented as the clear result of high water temperature. 75 Fed. Reg. at 54,728. At water temperatures below the level for instant fish kills, individual fish can still be affected. Id. These temperatures can cause chronic stress that impairs feeding and growth and ultimately reduces survival and reproduction. Id.

FWS's only response to this ongoing concern is that the CCAA is improving flow conditions in the Big Hole. However, the CCAA's goal is to achieve flow targets 75 percent of the days in years of average or greater snowpack. 79 Fed. Reg. at 49,404. 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—and both 2012 and 2013 had below-average snowpack—even though below-average years are the years when low flows and high water temperatures are most likely to impair the grayling population. See id. Although FWS stated that the CCAA is meeting the goal of achieving flow targets 75 percent of the time in years of average snowpack, id., FWS provided no analysis demonstrating that this goal itself is sufficient to alleviate the threat to Arctic grayling in the Big Hole from low flows and high water temperatures.⁵

Further, the CCAA does nothing at all to address low flows and high water temperatures affecting grayling populations outside of the Big Hole River. As FWS 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. In the 2014 finding, FWS again changed course. FWS acknowledged that "[i]ncreased water temperatures also are present in the Madison River and Centennial Valley" and even average summer water temperatures have exceeded the 70 degree threshold above which grayling are harmed. 79 Fed. Reg. at 49,404. FWS nonetheless dismissed this threat by asserting that "grayling in these systems appear to be able to cope with these temperatures by using cooler tributaries and spring sources as thermal refugia." Id. (citing Jaeger 2014b, pers. comm). But FWS's only citation for its optimistic speculation about grayling's coping skills is an email containing some speculation as to the benefits of thermal refugia. See email from Matt Jaeger, Fisheries Management Biologist, to James Boyd, Feb. 11, 2014.⁶ FWS fails to explain how this email constitutes the best available science when average

⁴ While the 12-month finding states that there were zero days in which the maximum temperature in the Big Hole exceeded 70 degrees, this is not supported by the Big Hole Arctic Grayling Strategic Habitat Conservation Plan (as cited by FWS) which states that temperature data is still being analyzed. Strategic Habitat Conservation Plan at 12.

⁵ Furthermore, FWS concedes that "many other factors influence instream flows in the Big Hole River that are outside the control of landowners (e.g., snowpack, precipitation). 79 Fed. Reg. at 49,404. Therefore the CCAA will not address all known flow issues, and is limited in its efficacy.

⁶ This appears to be the email referenced in the 12-month finding. It states, in part:

temperatures in these waterbodies exceed the level FWS previously deemed to be a threat. FWS also states that Arctic grayling appear to have “an inherent ability” to “adjust spawn timing with changing water temperature regimes.” Id., citing Wedekind and Kung 2010. But this study (conducted on a fully protected grayling population in Switzerland) ultimately concluded that, while grayling were able to spawn earlier, ultimately changes in water temperatures could be contributing to the overall decline in grayling abundance, and that “a temperature-induced onset of spawning may not fully compensate for the effects of climate change on embryos and fry.” Wedekind and Kund at 1421-22. Accordingly, the study upon which FWS relied as the best available science on grayling adaptation to warming stream temperatures contradicts, rather than supports, FWS’s conclusion.

Exacerbating FWS’s failure to adequately address the current threat to grayling caused by low flows and high stream temperatures, FWS arbitrarily dismissed the compounding effects of climate change.⁷ Both water temperature and stream flow are sensitive to climate change. For example, observations on flow timing in the Big Hole, Upper Madison, and Red Rock Creek already “indicate a tendency toward earlier snowmelt runoff (Wenger et al. 2011, entire; Towler et al. 2013, entire; De Haan et al. 2014, p. 41). These hydrologic alterations may be biologically significant for Arctic grayling in the Missouri River basin because they typically spawn prior to the peak of snowmelt runoff.” 79 Fed. Reg. at 49,406. In addition to earlier snowmelt, warmer temperatures harm grayling by increasing stream temperatures. Recent climate analyses in the Big Hole River Valley and Centennial Valley indicate that air temperatures rose between 1.8 and 3.2 degrees Fahrenheit per decade from the 1980s to mid-2000s. And FWS acknowledged that the land area of the upper Missouri River basin is predicted to warm even more through the end of the century. Moreover, the 2014 12-month finding does not address flows and temperatures in the Ruby River, even while FWS’s decision not to list depends on the survival of this inchoate population as “a viable replicate of the fluvial ecotype.” Id. at 49,419. For all of these reasons,

“This is one of those issues where I’d tend to look at the population for empirical [sic] evidence that [warm temperatures are] or [are not] a threat rather than try to theoretically apply data and essentially “guess” at how the population will reconcile a potential threat and mitigating factor [thermal refugia]. The population there has clearly already experienced exposure to potentially warmer temperatures over the past 10 years and right now it’s on an increasing trend and is doing better than it has in the past 40 years. As with most of the proposed threats, because we have empirical information that suggests things are going well I think it’s difficult to make a solid argument that warm temperatures in the lake are a threat despite the cool water refugia that exist there. If the population was still steadily declining or at abundances seen in the mid-1990’s I think we’d have a different take.”

⁷ FWS’s climate change analysis in its 2010 decision resulted in the conclusion that grayling habitat will not be immune from the effects of climate warming, and that climate change may contract the species’ range and “increase the species’ risk of extinction over the next 30 to 40 years as climate impacts interact with existing stressors such as habitat degradation, stream dewatering, drought, and interactions with nonnative trout that are already affecting the DPS.” 75 Fed. Reg. at 54,740. FWS acknowledged in 2010 that the CCAA would not ameliorate this risk for the DPS. Id.

FWS's determination that grayling populations outside of the Big Hole River are not threatened by low flows and high temperatures was arbitrary.

Despite the fact that Arctic grayling depend on cold water for their survival, FWS confronted the effects of climate change with guesswork instead of science. In the face of undisputed warming, FWS relied on the asserted capability of Big Hole River and Centennial Valley Arctic grayling "of increasing in abundance and distribution despite a warming climate." *Id.* at 49,407. But FWS's "evidence" comes from a time when state and federal biologists were taking active steps to augment these populations, including by placing remote site incubators in stream segments. Increasing abundance and distribution under these circumstances would appear directly related to these efforts, and do not support the suggestion that such increases may continue as the climate warms and efforts to augment the population cease. FWS also cited riparian restoration as a factor that will minimize the effects of increasing water temperatures due to climate change, without actually analyzing the specific effects of existing habitat improvements. *Id.* FWS's speculation that grayling may adapt to ever lower flows and higher stream temperatures in an inevitably warming climate does not constitute the best available science and cannot support FWS's decision that grayling are not threatened.

2. *Arctic Grayling are Threatened by Habitat Degradation*

Arctic grayling in the Big Hole River are also threatened by ongoing habitat degradation. FWS has acknowledged that degradation of the Big Hole River has dramatically reduced the suitability of grayling habitat, including shifts in channel form, increased erosion rates, reduced cover, increased water temperatures, and reduced recruitment of large wood debris. 75 Fed. Reg. at 54,729. In finding that this threat does not warrant listing, FWS arbitrarily relied on the Big Hole CCAA. Today in the Big Hole, only half of the stream miles in the CCAA Management Area are enrolled in the CCAA: 170 miles of riparian habitat, out of 340 miles of total riparian habitat. Of the enrolled habitat, only 65 percent (110 miles) of habitat is improving in condition. Less than half of the habitat enrolled in the CCAA is currently functioning at a sustainable level (80 miles out of 340 miles of total habitat). 79 Fed. Reg. at 49,402. A "sustainable" rating indicates that the area is acting as a healthy riparian zone, with access to its floodplain among other criteria. Although FWS concluded that this extremely limited improvement, as well as the promise of future improvement through the CCAA adaptive management, is sufficient to address the current threat of habitat degradation, FWS failed to support its conclusion with any analysis.⁸ In particular, the agency did not analyze whether only 80 miles of sustainable habitat is sufficient to support the Arctic grayling population in the Big Hole. In light of this omission, FWS's conclusion that grayling are not threatened by habitat degradation was arbitrary.

C. **FWS Failed to Assess the Adequacy of these Conservation Efforts to Protect the Arctic Grayling and Improperly Relied on Voluntary Conservation Efforts**

⁸ As described below, FWS's reliance on future implementation of the CCAA to dismiss current threats was improper, as FWS failed to evaluate the certainty that such implementation will continue to occur.

FWS's 12-month finding is unlawful because it relied on voluntary conservation actions that it deemed necessary to prevent acknowledged threats to fluvial Arctic grayling from causing the species to become endangered within the foreseeable future without properly evaluating those actions either as "regulatory mechanisms," 16 U.S.C. § 1533(a)(1)(D), or state conservation efforts, *id.* § 1533(b)(1)(A), or even under their own "policy for the evaluation of conservation efforts." Policy for Evaluation of Conservation Efforts When Making Listing Decisions, 68 Fed. Reg. 15,100 (March 28, 2003) ("PECE"). FWS relied on future actions under the CCAA to support its finding that listing is not warranted. *See, e.g.*, 79 Fed. Reg. at 49,403 ("Riparian habitat in the Big Hole River is expected to continue improving because of the proven track record of conservation evidenced by the current upward trend in riparian habitat quality. As more site-specific plans are signed under the Big Hole CCAA, more riparian improvement is expected."); at 49,405 ("We expect irrigation withdrawal volume to remain similar to current levels, particularly in the Big Hole River, in the future as more flow agreements are signed under the CCAA"); at 49,409 ("In the future, we do not expect habitat to decline in the Big Hole River because of the proven track record of CCAA projects"); at 49,418 ("the implementation of the [CCAA] is likely to minimize some of the effects of drought in the Big Hole River, by reducing the likelihood that human-influenced actions or outcomes ... will interact with the natural effects of drought"). FWS also discussed its optimism at the existence of voluntary conservation efforts from landowners who chose not to enroll in the CCAA. *Id.* at 49,408-09. In addition to FWS's failure to acknowledge the uncertainty inherent in voluntary action, FWS did not address the additional uncertainty created when FWS eliminated the Arctic grayling's status as a candidate for listing, which previously provided an incentive for both voluntary conservation efforts and enrolling in the CCAA. Because future implementation of the CCAA and voluntary efforts is uncertain, FWS's reliance was unlawful under both section 4(a)(1)(D), 16 U.S.C. § 1533(a)(1)(D), and section 4(b)(1)(A), 16 U.S.C. § 1533(b)(1)(A). Accordingly, FWS's decision not to list Arctic grayling lacked legitimate foundation and was arbitrary.

1. The CCAA Is Not An Adequate "Regulatory Mechanism"

Even if FWS had evaluated the CCAA to determine if it qualified as an adequate regulatory mechanism, which it did not, FWS's decision would still be arbitrary because the voluntary conservation actions prescribed by the CCAA are in fact not adequate "regulatory mechanisms" because they are not enforceable as required by both the plain meaning of the term and applicable case law. 16 U.S.C. § 1533(a)(1)(D). As a matter of plain meaning, a "regulation" demands more than voluntary compliance; to "regulate" is to "control, govern, or direct by rule." 13 *Oxford English Dictionary* 524 (2d ed. 1989); *see United States v. Reynolds*, 710 F.3d 434, 435 (D.C. Cir. 2013) (statutory construction begins "with the statutory language and if its meaning is plain and unambiguous as to the disputed issue, that is where we stop") (citations omitted). Accordingly, adequate "regulatory mechanisms" under ESA § 4(a)(1)(D) must sufficiently control or direct those actions that, absent adequate regulation, would imperil Arctic grayling.

For this reason, courts repeatedly have held that "the FWS cannot rely on promised and unenforceable conservation agreements in evaluating existing regulatory mechanisms." *Colo. River Cutthroat Trout v. Salazar*, 898 F. Supp. 2d 191, 208 (D.D.C. 2012); *accord Ctr. for Biological Diversity v. Morgenweck*, 351 F. Supp. 2d 1137, 1141 (D. Colo. 2004) (rejecting

FWS reliance on non-binding conservation plans); Sw. Ctr. for Biological Diversity v. Norton, 2002 WL 1733618, at *9 (D.D.C. July 29, 2002) (rejecting reliance on “future and uncertain actions” under ESA § 4(a)(1)(D), while affirming FWS reliance on binding forest plan); Fed’n of Fly Fishers v. Daley, 131 F. Supp. 2d 1158, 1165-66 (N.D. Cal. 2000) (rejecting reliance on promises of “future conservation actions” in listing determination); Or. Natural Res. Council v. Daley, 6 F. Supp. 2d 1139, 1153-55 (D. Or. 1998) (FWS “should not be able to rely on unenforceable efforts” to provide needed conservation measures); Biodiversity Legal Found. v. Babbitt, 943 F. Supp. 23, 26 (D.D.C. 1996) (FWS may not rely on “promises of proposed future actions” in ESA § 4 analysis).

Because acknowledged threats to Arctic grayling such as insufficient stream flows and degraded habitat justify listing absent sufficient regulation, the agency may not rely on voluntary assurances to substitute for regulatory guarantees. See Colo. River Cutthroat Trout, 898 F. Supp. 2d at 207-08 (FWS may not rely on “promised and unenforceable” measures in evaluating “regulatory mechanisms”); see also Am. Wildlands v. Norton, 193 F. Supp. 2d 244, 256 (D.D.C. 2002) (“Having identified hybridization as a threat to [trout subspecies], FWS should have identified whether the regulatory mechanisms in place were adequate to protect a viable population of the subspecies.”).

As discussed below, conservation actions under the CCAA lack implementation deadlines and other quantifiable measures of compliance that are prerequisite to “regulatory” action. FWS unlawfully relied on such non-regulatory measures to address persistent threats to Arctic grayling. 16 U.S.C. § 1533(a)(1)(D).

2. The CCAA Does not Satisfy FWS’s “Policy for Evaluation of Conservation Efforts”

Even if FWS could rely on non-regulatory measures to address present, known threats to Arctic grayling—and it cannot—the CCAA and voluntary conservation actions identified in the 12-month finding are insufficiently certain to support FWS’s conclusion that listing is not warranted. Although FWS must “tak[e] into account those efforts, if any, being made by any State ... to protect such species,” 16 U.S.C. § 1533(b)(1)(A), FWS may not rely on mere promises of future action. See, e.g., In re Polar Bear ESA Listing & Section 4(d) Rule Litig., 794 F. Supp. 2d 65, 113 n.56 (D.D.C. 2011) (“[T]he ESA does not permit FWS to consider speculative future conservation actions when making a listing determination.”), aff’d, 709 F.3d 1 (D.C. Cir. 2013); Or. Natural Res. Council v. Daley, 6 F. Supp. 2d 1139, 1153 (D. Or. 1998) (FWS may not, under 16 U.S.C. § 1533(a)(1)(D) or § 1533(b)(1)(B), rely on future conservation efforts to decline listing a species as endangered or threatened).

To ensure that conservation efforts satisfy these minimum requirements for certainty, FWS promulgated a Policy for Evaluation of Conservation Efforts When Making Listing Decisions. 68 Fed. Reg. at 15,100. The PECE is designed to “set a rigorous standard for analysis and assure a high level of certainty associated with formalized conservation efforts....” Id. at 15,104. Under this policy, FWS 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). To this

end, the PECE requires FWS to assess the adequacy of existing conservation efforts based on two factors—(1) “the certainty of implementing the conservation effort” and (2) “the certainty that the effort will be effective,” *id.* at 15,113—and provides specific criteria for those twin assessments.

FWS failed to evaluate the CCAA under the PECE, or even to mention the PECE in the 12-month finding.⁹ However, the CCAA does not provide the requisite high level of certainty that its voluntary conservation measures will maintain and restore fluvial Arctic grayling in the upper Missouri River to the extent that the DPS will not be endangered or threatened. Thus, while the CCAA promotes conservation efforts that may benefit the grayling, the CCAA does not and cannot obviate the need for listing, either under 16 U.S.C. § 1533(b)(1)(A) or the PECE.

- a. The CCAA omits specific objectives tied to conservation of grayling and quantifiable measures of compliance and effectiveness

The CCAA does not contain “[e]xplicit incremental objectives...and dates for achieving them,” which are essential to demonstrate a conservation effort’s effectiveness. 68 Fed. Reg. at 15,115. Moreover, the plan provides no quantitative metrics for assessing whether conservation measures that are implemented suffice to mitigate critical threats to grayling. The CCAA thus touts the effectiveness of planned mitigation without providing any quantitative benchmarks necessary to objectively evaluate the success of such mitigation.

For example, the CCAA identifies insufficient flows in the Big Hole River as a primary threat to the viability of fluvial Arctic grayling and requires that site-specific implementation plans include measures to address that threat. *See* CCAA at 22-25. But the CCAA does not quantify the contributions it will make to restoring flows nor confirm whether such contributions will suffice to protect Arctic grayling. Indeed, the CCAA expressly rejects such benchmarks, stating that it is not possible to estimate either the optimal flow regime for Arctic grayling in the Big Hole River nor the water savings associated with full implementation of the plan. *See* CCAA at 35-36; *see also id.* at 37 (stating that CCAA’s stream flow targets “should be interpreted as [] general...because it is not currently possible to provide a valid quantitative prediction of streamflow improvements resulting from CCAA implementation”). Nevertheless, it asserts that “[t]he combination of improved control over diversions, compliance with water rights, SFAs and irrigation management [prescribed by the plan] will lead to dramatic improvements in streamflows within the Project Area.” *Id.* at 35. The promise of “dramatic improvements” is insufficient to satisfy the PECE, as it is not supported by assurances that the touted conservation measures—even if fully implemented—would suffice to sustain a fluvial grayling population that is not endangered or threatened.

The CCAA’s assessment of the impact of individual conservation strategies prescribed in the plan is equally vague. For example, the CCAA relies on landowners’ voluntary reductions in

⁹ Compare to FWS’s recent 12-month finding on the petition to list the least chub as endangered or threatened, which contained a substantive PECE analysis. 79 Fed. Reg. 51,042, 51,047-48 (Aug. 26, 2014).

diversions but asserts that the quantity of water that will be returned to the river “is difficult to estimate.” Id. at 32. Nevertheless, the CCAA surmises that enhancement of instream flows from such voluntary reductions “may be substantial given the heavy water use that has historically occurred and the over-allocation of unadjudicated water rights in the Project Area.” Id. But even if voluntary reductions in diversions actually occur, the CCAA does not provide a high level of certainty that their effects will in fact be “substantial,” let alone sufficient to obviate the need for listing the DPS as threatened or endangered.

Similarly, the CCAA relies on landowners’ upgrading existing irrigation systems and/or altering the composition and distribution of irrigated crops to reduce water use. See id. at 33. The plan emphasizes that landowners retain “flexibility” to choose among these strategies but assures, without factual support, that “[w]hichever option or combination of options is utilized, the water savings will be substantial and the saved water will be turned back at the point of diversion to provide beneficial use for instream flows.” Id. Again, even if landowners in fact undertake changes that will yield “significant” reductions in withdrawals, the CCAA provides no assurance that such reductions will suffice to sustain the fluvial grayling population in the project area.

The omission of “[e]xplicit incremental objectives for the conservation effort” and “[q]uantifiable, scientifically valid parameters” to measure the sufficiency and achievement of such objectives renders the CCAA insufficient to obviate the need for listing. See 60 Fed. Reg. at 15,115.

b. The CCAA lacks a funding commitment

The CCAA does not include any funding commitment; rather, the plan states that funding for the conservation measures therein “is not guaranteed,” CCAA at 73, and that implementation depends upon the future, as-yet-uncommitted “appropriation, authorization, and allocation of funds,” id. at 88; see also id. at 97 (affirming that “no funding is allocated specifically for the implementation of this Agreement or private landowners[’] site-specific plans”) (emphasis added). With the exception of the USDA Natural Resources and Conservation Service, which is a cooperating agency under the agreement and commits in the CCAA to “[a]ctively pursue and provide available Federal funding to support implementation,” id. at 73, no agency is charged with securing the necessary funds. While the CCAA identifies a list of potential funding sources, it provides only the weak promise that the cooperating agencies “may utilize and/or pursue” funding from the identified sources. Id. at 97. Therefore, the CCAA neither qualifies as an “existing regulatory mechanism” nor satisfies the minimum standard articulated in the PECE, which is to assure at least one year of implementation funding and provide a documented commitment to secure future funding. 68 Fed. Reg. at 15,109.

c. The CCAA provides an inadequate schedule for completing and evaluating conservation measures

The CCAA does not include schedules for completing and evaluating the prescribed conservation measures that provide a high level of certainty that those measures will be implemented. In fact, the CCAA contains no concrete timelines for implementation of necessary

conservation measures, as the timelines provided do not begin to run until the date that a particular landowner voluntarily enrolls in the program. See CCAA at 68 (providing timelines for implementing three phases of plan, measured in days, months, and years from the date an individual landowner enrolls). Furthermore, the CCAA's timelines are contingent on voluntary landowner enrollment. Thus, the plan provides no guarantee that its conservation measures will be implemented within even an estimated time measured from the plan's adoption or any other date certain. There is also no way to determine when site-specific implementation of conservation measures will occur on any given parcel in the upper Big Hole River drainage and, accordingly, no method or timeframe by which FWS could effectively gauge whether the CCAA is being implemented as planned.

Furthermore, the CCAA lacks specific implementation measures and benchmarks to ensure that it will effectively mitigate those threats "to the point that the species does not meet the definitions of threatened or endangered." 68 Fed. Reg. at 15,107. As a result, even if it were fully implemented, the CCAA cannot obviate the need for listing. The CCAA fails to provide detailed identification of the steps necessary for effective implementation. For example, as described in relation to the CCAA's insufficient articulation of implementation benchmarks, the plan does not identify the number of landowners who must reduce their water withdrawals and the magnitude of necessary reductions to meet the plan's overarching conservation objective. Identifying these necessary steps is apparently deferred until the development of site-specific implementation plans but, as already discussed, there is no concrete timeline for the development of such plans and no requirements for what each plan must achieve.

The CCAA also does not identify the level of landowner enrollment or the number and type of completed conservation projects necessary to assure that the affected grayling population will not be threatened or endangered. Relatedly, the CCAA does not provide any indication that the necessary level of voluntary participation will be reached. Currently 31 landowners have enrolled 158,000 acres (52% of total enrollable land) in the CCAA, though only 21 of these had completed site-specific plans at the time of the FWS 12-month finding. 79 Fed. Reg. at 49,407. FWS stated that it did not consider future anticipated conservation efforts in unsigned site plans, but was "very encouraged" by the fact that certain landowners did not enroll in the CCAA but were making some voluntary conservation efforts. Id. at 49,407-08.

Because the CCAA's timelines are contingent on voluntary landowner enrollment—and, even when triggered, largely have been disregarded—they cannot satisfy the PECE's demand for verifiable implementation schedules, which are "critical to determining that the effort will be implemented and effective and has improved the status of the species under the [Endangered Species] Act at the time [FWS] makes [its] listing determination." 68 Fed. Reg. at 15,103. Indeed, under the CCAA, there is no way to determine when site-specific implementation of conservation measures will occur on any given parcel in the upper Big Hole River drainage and, accordingly, no method or timeframe by which FWS could effectively gauge whether the CCAA is being implemented as planned. This fundamental uncertainty is unacceptable given the precarious status of fluvial Arctic grayling and renders the CCAA insufficient under FWS's PECE.

- d. The CCAA contains inadequate provisions for monitoring and reporting implementation progress

The CCAA's monitoring provisions also are insufficient. The CCAA requires monitoring and reporting of fluvial grayling population data; stream flow, stream channel morphology, and stream temperature data; entrainment; riparian habitat status; and fish passage and exclusion information, as well as landowner compliance with site-specific plan provisions. CCAA at 75-78. However, the CCAA lacks a verifiable implementation schedule and quantifiable parameters of conservation effectiveness. This failing is particularly damaging given the extremely reduced size of the fluvial Arctic grayling population. Given the state of the population, general information regarding habitat conditions and landowner compliance, even if positive, is insufficient to inform the responsible agencies and the public whether the CCAA's conservation efforts are sufficing to hold the grayling population back from the brink. Thus, the CCAA's monitoring and reporting provisions fail, in letter and in practice, to satisfy FWS's standards articulated in the PECE.

D. FWS Failed To Consider Whether Arctic Grayling Are Threatened Throughout a Significant Portion of their Range

In addition to threats within currently occupied grayling habitat, Arctic grayling populations are also threatened in a significant portion of their overall range due to the substantial contraction of the species' historical range. While both fluvial and adfluvial grayling populations once thrived in the upper Missouri River basin, today the fluvial grayling exist in a remnant population in only one river, and the adfluvial form in only five lakes in its historic range.

The loss of Arctic grayling populations in the vast majority of historically occupied areas constitutes a dramatic contraction of the grayling's range in the lower-48 states. The fluvial Arctic grayling, for example, occupy only 4 percent of their historic range. The ESA defines a threatened species as one that is likely to become endangered "throughout all or a significant portion of its range." 16 U.S.C. § 1532(20). The total extirpation of grayling populations from these vast expanses of habitat warrants a finding that Arctic grayling are threatened throughout a significant portion of the species' range.

IV. CONCLUSION

As set forth in this letter, FWS violated the ESA in its determination that the Upper Missouri River Arctic grayling distinct population segment is not threatened or endangered. FWS failed to rely on the best available scientific information in determining that climate change and other threats will not significantly impact the species in the foreseeable future. FWS also failed to draw rational conclusions from the scientific information before it. If FWS does not retract its 12-month finding and issue a final rule listing the Upper Missouri River Arctic grayling as threatened within 60 days of the receipt of this letter, the parties to this notice letter will institute a legal action to challenge the FWS's determination in federal district court.

Sincerely,

Jenny K. Harbine
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