



February 25, 2021

Via Electronic and Certified Mail

Scott de la Vega,
Acting Secretary
U.S. Department of the Interior
1849 C Street, N.W.
Washington, D.C. 20240
exsec@ios.doi.gov

RE: 60-day Notice of Intent to Sue the U.S. Fish and Wildlife Service for Violations of the Endangered Species Act Concerning Denial of Protection for the Clear Lake Hitch (*Lavinia exilicauda chi*)

Dear Acting Secretary de la Vega:

The Center for Biological Diversity (“Center”) provides this 60-day notice of its intent to sue the U.S. Fish and Wildlife Service (“Service”) for violations of the Endangered Species Act, 16 U.S.C. §§ 1531-1544, in connection with the Service’s finding that the Clear Lake hitch (*Lavinia exilicauda chi*) (“hitch”) is not warranted for listing as a threatened or endangered species.¹ The Service violated Section 4 of the Act, which requires it to make listing determinations “solely on the basis of the best scientific and commercial data available.”²

The Service’s not-warranted finding for the Clear Lake hitch is arbitrary and capricious and contrary to the best available science, including the Service’s own Status Assessment for the hitch. Specifically, the Service failed to rationally explain how the significant and continued elimination of suitable spawning and rearing habitat, increased competition and predation by nonnative fish, and foreseeable extirpation of its remaining population due to drought and climate change do not render the hitch endangered or threatened throughout a significant portion of its range.³ The Service ignored its own conclusions that existing regulatory mechanisms are insufficient to protect the hitch from present, ongoing, and future threats, including from climate change.⁴ The Service also arbitrarily concluded that the hitch is not endangered or threatened in a significant portion of its range, relying on a truncated analysis of “foreseeable future” that is arbitrary and contrary to the best available science, in violation of the Act.

¹ U.S. Fish & Wildlife Serv., *Eleven Species Not Warranted for Listing as Endangered or Threatened Species*, 85 Fed. Reg. 78,029 (Dec. 3, 2020).

² 16 U.S.C. § 1533(b)(1)(A), (c)(2). The Service’s not warranted finding for the hitch also constitutes agency action that is arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law within the meaning of the Administrative Procedure Act (“APA”). 5 U.S.C. § 706(2)(A).

³ U.S. Fish & Wildlife Serv., *Species Status Assessment for the Clear Lake Hitch (*Lavinia exilicauda chi*)* at 88 (2020).

⁴ Status Assessment at 35.

The Center for Biological Diversity is a national, nonprofit conservation organization with more than 1.7 million members and online activists dedicated to protecting species hovering on the brink of extinction, including the Clear Lake hitch. The Center provides this letter in accordance with the 60-day notice requirement of the citizen suit provision of the Endangered Species Act, to the extent that such notice is deemed necessary by a court.⁵

I. FACTUAL BACKGROUND

A. Natural History of the Clear Lake Hitch

The Clear Lake hitch is a large, lake-adapted minnow endemic to Clear Lake watershed in California.⁶ Adult hitch migrate each February through May upstream in Clear Lake's intermittent tributaries to spawn and then return to the lake.⁷ Fertilized eggs hatch within 7 to 10 days, fry are free-swimming after another 7 to 10 days, and young migrate to the lake at about a month old before the streams dry up.⁸ Until fall, juvenile hitch remain in the lake's nearshore wetland habitat where they rely on stands of tule (*Schoenoplectus acutus*) and other aquatic vegetation for cover and to feed.⁹ In the fall, juveniles move into open water.¹⁰ Adult hitch have an average length of 13 inches and weight of 15.5 ounces and typically live four to six years.¹¹

For spawning, Clear Lake hitch require access to tributary streams with sufficient flows, specific water quality and temperature, and riffles with fine to medium gravel substrate.¹² Hitch eggs remain in gravel and require specific water temperature for multiple days and instream depths that allow eggs to remain submerged until they hatch.¹³ Once hatched and able to swim freely, hitch require instream and overhanging vegetation for cover and temperature regulation, aquatic invertebrate prey for food, and sustained tributary flows to support downstream migration to the lake.¹⁴ Juvenile hitch rearing in the nearshore lake habitat require emergent wetland/tule vegetation for cover and to support adequate invertebrate food, as well as well oxygenated and minimally contaminated lake water for survival into adulthood.¹⁵ Adult hitch that move to open water require well oxygenated and clean lake water, an adequate food supply, and flows that support tributary access during spawning.¹⁶ Although hitch are capable swimmers,

⁵ *Id.* § 1540(g).

⁶ Status Assessment at 1.

⁷ *Id.* at 9.

⁸ U.S. Fish & Wildlife Service, Species Assessment and Listing Priority Assignment Form at 6 (July 30, 2020) [hereinafter Species Assessment Form].

⁹ Status Assessment at 9.

¹⁰ 85 Fed. Reg. at 78,037; Status Assessment at 9.

¹¹ Center for Biological Diversity, Petition to List the Clear Lake Hitch (*Lavinia Exilicauda Chi*) As Endangered or Threatened Under the Endangered Species Act at 6 (Sept. 25, 2012) [hereinafter Listing Petition]; U.S. Geological Survey, Information to Aid the Listing Decision and Critical Habitat Designation of the Clear Lake Hitch: Identifying Spawning Habitats, Population Structure, and Habitat Associations at 34 (Dec. 2018) [hereinafter USGS Report].

¹² Status Assessment at 9, 12; USGS Report at 64.

¹³ Status Assessment at 12.

¹⁴ *Id.*; Species Assessment Form at 13.

¹⁵ Status Assessment at 12.

¹⁶ *Id.*; Species Assessment Form at 15-16.

they rarely jump so spawning habitat is easily blocked—any barrier that requires jumping to traverse will likely impede upstream migration, including dewatered portions of streams.¹⁷

Once highly abundant and a staple food and cultural component for the Pomo tribes of the region, the Clear Lake hitch has declined precipitously as its namesake watershed has been ecologically altered and degraded.¹⁸ Urban development and agriculture, increased wildfire frequency, past mining activity, overgrazing, and deforestation have degraded the watershed.¹⁹ Over time, increased sediment and nutrients from urban and agricultural development and degraded tributary streams made their way into the lake, degrading its water quality.²⁰ This has resulted in increased cyanobacteria blooms and periodic fish kills in the lake.²¹ Contaminants from historical mercury mining along the lake’s shore and the use of various pesticides in and around the lake have also degraded the lake’s water quality.²²

Historically, Clear Lake hitch occurred in Clear Lake, Thurston Lake, the Blue Lakes, and Lampson Pond.²³ Now, the hitch is thought to be extirpated from the Blue Lakes and is found only in Clear Lake and Thurston Lake.²⁴ In the late nineteenth and early twentieth centuries, hitch were the most abundant fish in Clear Lake, with massive spawning runs, numbering in the tens of thousands.²⁵ Historically, hitch likely spawned in most or all of Clear Lake’s tributaries including Kelsey, Scott, Middle, Adobe, Seigler, Canyon, Manning, Cole, Morrison, and Schindler Creeks.²⁶ In the past 20 years, Clear Lake hitch have been regularly observed spawning in only five tributaries—Adobe, Cooper, Kelsey, Manning, and Middle—with only two, Kelsey and Adobe, regularly having more than 1,000 spawning fish and spawning in every year.²⁷ Even the largest, most dependable spawning runs in Kelsey and Adobe Creeks

¹⁷ Status Assessment at 33.

¹⁸ Listing Petition at 2.

¹⁹ Status Assessment at 25.

²⁰ *Id.* at 35.

²¹ *Id.*

²² *Id.*

²³ *Id.* at 6.

²⁴ *Id.* It is, according to the Service, “unclear whether Lampson Pond still exists.”

²⁵ Listing Petition at 15-16; Cal. Dep’t of Fish & Wildlife, Status Review of Clear Lake Hitch at 19-20 (May 24, 2014) [hereinafter CDFW Status Review].

²⁶ Status Assessment at ii, 6, 9.

²⁷ Chi Council for the Clear Lake Hitch, 2005-2019 Hitch Survey Results, <https://lakelive.info/chicouncil/>; Cal. Dep’t of Fish & Wildlife, 2014 Clear Lake Hitch (*Lavinia exilicauda* chi) Spawning Survey, at 6 (2014); Cal. Dep’t of Fish & Wildlife, 2016 Clear Lake Hitch (*Lavinia exilicauda* chi) Visual Surveys on Clear Lake Tributaries, at 5 (2016); Cal. Dep’t of Fish & Wildlife, 2017 Clear Lake Hitch (*Lavinia exilicauda* chi) Visual Surveys on Clear Lake Tributaries, at 7 (2017); Cal. Dep’t of Fish & Wildlife, 2018 Clear Lake Hitch (*Lavinia exilicauda* chi) Visual Surveys on Clear Lake Tributaries, at 7 (2018); Cal. Dep’t of Fish & Wildlife, 2019 Clear Lake Hitch (*Lavinia exilicauda* chi) Visual Surveys on Clear Lake Tributaries, at 5-6 (2019); Cal. Dep’t of Fish & Wildlife, Summary of the 2020 Clear Lake Hitch Survey on Clear Lake, at 7 (2020).

are vastly reduced: since 2013, the average annual maximum number of spawning fish observed has been 1,237 in Kelsey Creek and 433 in Adobe Creek.²⁸

Suitable hitch spawning habitat is swiftly disappearing. Many tributaries are degraded and have instream barriers blocking hitch migration.²⁹ CDFW estimated that over 92% of the historical 180 stream miles of spawning habitat is currently blocked or has reduced access due to the presence of barriers.³⁰ Hitch can no longer reach the vast majority of their former spawning grounds, and remaining streams dry up much earlier in the season.³¹ Water diversions, drought, and climate change cause streams to prematurely dry progressively earlier, which is detrimental for hitch reproduction since they have only a brief period of suitable stream conditions for their annual spawning run.³² This results in spawning failures or lack of spawning in dry years; earlier drying of streams may seriously affect the hitch population because its spawning period already is relatively limited.³³ Climate change will increase the frequency, duration, and severity of drought and accelerate this trend of streams drying earlier, causing further spawning failures. Although in 1960 hitch spawning was observed along the shoreline of the lake, in-lake spawning is not presently considered a significant source of Clear Lake Hitch production and recruitment.³⁴

The Clear Lake hitch population has collapsed due to degraded and diminished spawning and rearing habitat, as well as competition and predation by non-native fish. Hitch abundance is believed to have declined 100-fold from historical levels and has plummeted to only a few thousand spawning fish annually.³⁵ The closest relative of the Clear Lake hitch, the Clear Lake splittail (*Pogonichthys ciscooides*), was driven to complete extinction by the 1970s from habitat alterations that dried out spawning streams and barriers that prevented its spawning migration.³⁶ Noted California fish expert, Dr. Peter Moyle, determined that the hitch was “critically vulnerable” to the effects of climate change (specifically the change in spring hydrograph) and the hitch “is extremely likely to be driven to extinction by year 2100.”³⁷

B. Listing History for the Clear Lake Hitch

On September 25, 2012, the Center petitioned the Service to list the Clear Lake hitch as threatened or endangered because the best available science showed that habitat degradation,

²⁸ This is based on Center’s calculations from the only available information on spawning numbers: CDFW survey info and Chi Council annual survey info. Chi Council for the Clear Lake Hitch, 2005-2019 Hitch Survey Results, <https://lakelive.info/chicouncil>; Cal. Dep’t of Fish & Wildlife, 2014-2020 Clear Lake Hitch (*Lavinia exilicauda chi*) Visual Surveys on Clear Lake Tributaries.

²⁹ Status Assessment at 33.

³⁰ *Id.* at 33.

³¹ Listing Petition at 11; Peter B. Moyle *et al.*, Fish Species of Special Concern in California (2d Ed. 1995) [hereinafter Moyle *et al.* 1995].

³² CDFW Status Review at 27.

³³ Moyle *et al.* 1995; Listing Petition at 23-24, 45.

³⁴ USGS Report at 64.

³⁵ Listing Petition at 2; USGS Report at 3.

³⁶ Listing Petition at 24; Moyle *et al.* 1995 at 155; CDFW Status Review at 27.

³⁷ Status Assessment at 50.

predation and competition from non-native fish, drought, and climate change would propel the hitch swiftly towards extinction.³⁸

On April 10, 2015, the Service published a positive 90-day finding that the petition presented substantial information indicating that listing the Clear Lake hitch may be warranted and initiating a status review.³⁹ The Service based its conclusion on: (1) present or threatened destruction or modification of habitat from urban and agricultural development, dams, water diversions, migration barriers, mining activities, and grazing; (2) overutilization for commercial fishing, recreational fishing, and tribal harvest; (3) disease and predation; and (4) other natural or manmade factors affecting its continued existence, including effects from climate change, contaminants, and introduced fish.⁴⁰

On December 3, 2020, the Service issued a 12-month finding that Clear Lake hitch was not warranted for listing under the Endangered Species Act.⁴¹ Without scientific support, the Service determined that “habitat degradation, predation and competition, drought and climate change are not likely to adversely affect the overall viability of the Clear Lake hitch in a biologically meaningful way” to render it “in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range” because the hitch (1) “has a long life span,” (2) is “highly fecund,” and (3) has shown “behavioral flexibility to variable environmental conditions” through its use of different spawning strategies.⁴² The Service also claimed that regulatory mechanisms were acting to protect the hitch and that the hitch would “only undergo a slight decrease in condition into the foreseeable future.”⁴³

C. Species Status Assessment for the Clear Lake Hitch

The Service’s Sacramento Field Office assessed the status of Clear Lake hitch in April 2020 to provide biological support for the decision of whether to list the hitch as threatened or endangered.⁴⁴ The Status Assessment used the principles of resilience, representation, and redundancy to assess the hitch’s viability in the Clear Lake watershed.⁴⁵ In its analysis, the Service divided the watershed into Hydrologic Unit Code (“HUC”) 12 sub-watersheds and then grouped them into one of five strontium isotope groups (“SIG”) based on adult otolith strontium signatures indicating natal origin in order to inform its viability analysis.⁴⁶

³⁸ Listing Petition at 2, 27, 48. Presented with the same scientific information, in 2014 the California Department of Fish and Wildlife (“CDFW”) found that the science clearly showed that the Clear Lake hitch was likely to become an endangered species in the foreseeable future, so it and listed the hitch as threatened under the California Endangered Species Act (“CESA”). CDFW Status Review at 2.

³⁹ 90-Day Findings on 10 Petitions, 80 Fed. Reg. 19,259, 19,261 (Apr. 10, 2015) (to be codified at 50 C.F.R. pt. 17).

⁴⁰ *Id.*

⁴¹ Eleven Species Not Warranted for Listing as Endangered or Threatened Species, 85 Fed. Reg. 78,029 (Dec. 3, 2020) (to be codified at 50 C.F.R. pt. 17).

⁴² 85 Fed. Reg at 78,037-38.

⁴³ *Id.* at 78,038.

⁴⁴ Status Assessment at 1.

⁴⁵ *Id.* at 2-3.

⁴⁶ *Id.* at 14-16.

The Status Assessment identified six primary factors that affect the hitch's current and future viability, all of which will intensify with climate change: (1) spawning habitat loss due to blocked access or altered tributary flows; (2) wetland/tule rearing habitat loss; (3) poor lake water quality; (4) increased competition and predation by invasive fish; (5) drought; and (6) the implementation of regulatory mechanisms and management actions throughout the watershed.⁴⁷

In the Status Assessment, the Service identified the primary limiting factor for Clear Lake hitch reproduction success as access to suitable spawning habitat.⁴⁸ "For successful reproduction and recruitment, the Clear Lake hitch requires tributary streams to maintain consistent flow throughout the spawning season."⁴⁹ However, it found that "degradation of tributary streams has changed their hydrology, reducing the amount of water retained in the streams over the Clear Lake hitch's spawning season."⁵⁰ This, along with the presence of numerous passage barriers in the tributary streams, has "greatly reduced reproduction and early life stage survival (egg, larvae)."⁵¹ As the Service admits, "[t]he loss of consistent tributary flows during the spawning season . . . is affecting the hitch at the individual, population, and subspecies level and is likely continue into the future" such that it reduces the hitch's overall representation and redundancy.⁵²

The Service further described how the "conversion of wetland habitats" has impacted lake water quality and "reduced the amount of rearing habitat for any juvenile hitch that are able to migrate to the lake from their natal stream," further reducing the likelihood of recruitment.⁵³ The Service recognized that although some hitch have been observed spawning in the lake, "it is unknown whether lake spawning could support a viable population over the long-term."⁵⁴ The Service also admitted that although the Clear Lake hitch can "produce a large number of eggs during the spawning season," fecundity did not imply survival or recruitment because "a majority of those eggs will not then go on to develop into reproductive adults."⁵⁵ The Service also acknowledged that the Clear Lake hitch is at risk from environmental stochastic events such as severe storms, drought, contaminant exposure, and habitat modification by both natural and anthropogenic means.⁵⁶

The Service relied on its analysis of three "plausible future scenarios" to forecast how possible future conditions could affect the hitch's viability.⁵⁷ Under Scenario 1, the scenario that the Service identified as the most likely to occur, the Service assumed that the current threats to the hitch will continue on the same or a very similar trajectory they are on now.⁵⁸ Under Scenario 2, the Service assumed a "best case scenario" where all analysis units of the Clear Lake

⁴⁷ *Id.* at 55.

⁴⁸ *Id.* at 18.

⁴⁹ *Id.* at 23.

⁵⁰ *Id.* at 25.

⁵¹ *Id.*

⁵² *Id.* at 33.

⁵³ *Id.* at 25.

⁵⁴ *Id.* at 18, 20.

⁵⁵ *Id.* at 18.

⁵⁶ *Id.* at 17.

⁵⁷ *Id.* at 76.

⁵⁸ *Id.* at 78-79.

population either retain or improve their current condition due to widespread restoration and enhancement activities throughout the watershed.⁵⁹ Scenario 3 presents, essentially, the worst case scenario that the Service modelled, with increased risks to the hitch population that result in a low predicted future condition.⁶⁰ The Service relied on this model to conclude that the hitch would “undergo only a slight decrease in condition into the foreseeable future.”⁶¹

In the Status Assessment, the Service further admitted that no regulatory mechanisms or management actions fully ameliorate the presence of passage barriers, poor lake water quality, or habitat degradation from contamination, and none address impacts from algal blooms, predation or competition, grazing practices, drought, or climate change.⁶² Nevertheless, the Service’s 12-month finding concluded that “regulatory mechanisms . . . and local ordinances are currently acting to ameliorate the severity of some existing threats, such as the take of individuals, degradation of tributary streams, and loss of wetland habitat surrounding Clear Lake.”⁶³

II. LEGAL BACKGROUND

A. Requirements of the Endangered Species Act

Congress enacted the Endangered Species Act “to halt and reverse the trend toward species extinction, whatever the cost.”⁶⁴ To that end, the Act provides a program for conserving endangered and threatened species and the ecosystems upon which they depend.⁶⁵ The Secretary of the Department of the Interior, through the Service, must list species that it determines are endangered or threatened so that they receive crucial protections under the Act.⁶⁶

The Service must list a species as “endangered” if it “is in danger of extinction throughout all or a significant portion of its range.”⁶⁷ A species is “threatened” if it is “likely to become an endangered species within the foreseeable future.”⁶⁸ The definition of “species” includes “subspecies” and “distinct population segments of any species of vertebrate fish or wildlife which interbreeds when mature.”⁶⁹ The Service considers a species “endangered” if it “faces catastrophic threats that are both imminent and certain.”⁷⁰ All federal agencies must “conserve endangered species and threatened species and . . . utilize their authorities in furtherance of the purposes” of the Act.⁷¹

⁵⁹ *Id.* at 80-82.

⁶⁰ *Id.* at 83-85

⁶¹ 85 Fed. Reg. at 78,038.

⁶² Status Assessment at 35, 39, 44, 47, 50-51, 62.

⁶³ 85 Fed. Reg. at 78,038.

⁶⁴ *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 180 (1978).

⁶⁵ 16 U.S.C. § 1531(b).

⁶⁶ *Id.* § 1533(a).

⁶⁷ *Id.* § 1532(6).

⁶⁸ *Id.* § 1532(20).

⁶⁹ *Id.* § 1532(16).

⁷⁰ Memorandum from Acting FWS Director Dan Ashe Re: Determination of Threatened Status for Polar Bears at 4 (Dec. 21, 2011).

⁷¹ 16 U.S.C. § 1531(c)(1).

Congress aptly described Section 4 as the “cornerstone of effective implementation of the Endangered Species Act.”⁷² Section 4 requires the Service to assess five categories of threats when making listing determinations:

- (A) the present or threatened destruction, modification or curtailment of a species’ habitat or range;
- (B) overutilization for commercial, recreational, scientific or educational purposes;
- (C) predation or disease;
- (D) the inadequacy of existing regulatory mechanisms; and
- (E) other manmade or natural factors affecting the species’ continued existence.⁷³

If a species meets the definition of “endangered” or “threatened” because of *any one or a combination* of these five factors, the Act requires the Service to list the species.⁷⁴

Since its enactment, only four listed species have gone extinct and another 22 listed species are believed extinct.⁷⁵ The Act’s success is attributable to its strong science mandate, which requires the Service to make listing decisions “solely on the basis of the best scientific and commercial data available.”⁷⁶ Courts have consistently held that the “standard does not require that [the Service] act only when it can justify its decision with absolute confidence.”⁷⁷ Rather, “[e]ven if the available scientific and commercial data were quite inconclusive, [the Service] may—indeed must—still rely on it.”⁷⁸ Requiring the best available science, as opposed to scientific certainty, “is in keeping with congressional intent” that the Service “take preventive measures *before* a species is ‘conclusively’ headed for extinction.”⁷⁹ In making listing decisions solely based on the best available science, the Service also cannot consider economics or politics in deciding whether to list a species. As courts have explained, “the [Act] clearly bars economic considerations from having a seat at the table when the listing determination is being made.”⁸⁰ Similarly, the standard “requires [the Service] to disregard politics” in making listing decisions.⁸¹ In fact, “the word ‘solely’ is intended to remove from the process of the listing or delisting of species any factor not related to the biological status of the species.”⁸²

⁷² S. Rep. No. 418, 97th Cong., 2d Sess. at 10; see also H. Rep. No. 567, 97th Cong., 2d Sess. at 10.

⁷³ 16 U.S.C. § 1533(a)(1).

⁷⁴ *Id.*; 50 C.F.R. § 424.11(c); see also *Fed’n of Fly Fishers v. Daley*, 131 F. Supp. 2d 1158, at 1164 (N.D. Cal. 2000) (“These factors are listed in the disjunctive; any one or a combination can be sufficient for a finding that a particular species is endangered or threatened.”).

⁷⁵ Noah Greenwald, Kieran F. Suckling, Brett Hartl & Loyal A. Mehrhoff, *Extinction and the U.S. Endangered Species Act*, 7 PEERJ, at 3 (Apr. 22, 2019).

⁷⁶ 16 U.S.C. § 1533(b)(1)(A).

⁷⁷ *Ariz. Cattle Growers’ Ass’n v. Salazar*, 606 F.3d 1160, 1164 (9th Cir. 2010), *cert denied*, 131 S. Ct. 1471 (2011).

⁷⁸ *Sw. Ctr. for Biological Diversity v. Babbitt*, 215 F.3d 58, 60 (D.C. Cir. 2000).

⁷⁹ *Defenders of Wildlife v. Babbitt*, 958 F. Supp. 670, 679–80 (D.D.C. 1997).

⁸⁰ *N.M. Cattle Growers Ass’n v. U.S. Fish & Wildlife Serv.*, 248 F.3d 1277, 1285 (10th Cir. 2001).

⁸¹ *Save Our Springs v. Babbitt*, 27 F. Supp. 2d 739, 747 (W.D. Tex. 1997).

⁸² *N.M. Cattle Growers*, 248 F.3d at 1284–85 (quoting H.R. Rep. No. 97-567, pt. 1, at 29 (1982)) (internal quotation marks omitted).

Once a species is listed, the Act provides an array of statutory protections. For example, Section 4 requires the Service to protect “critical habitat” for listed species and engage in recovery planning.⁸³ Section 7 requires all federal agencies to ensure that their actions neither “jeopardize the continued existence” of any listed species nor “result in the destruction or adverse modification” of its “critical habitat.”⁸⁴ Section 9 makes it unlawful to “take” listed species, which means no person can harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any threatened or endangered species without prior authorization from the Service.⁸⁵

B. The Administrative Procedure Act

The Administrative Procedure Act, 5 U.S.C. §§ 701-06 (“APA”), authorizes courts to “hold unlawful and set aside agency action, findings, and conclusions found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.”⁸⁶ The agency must “examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made.”⁸⁷ In reviewing an agency’s decision, the court considers whether it was “based on a consideration of the relevant factors” and whether there has been a “clear error of judgment.”⁸⁸ An agency rule is “arbitrary and capricious” if the agency “relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.”⁸⁹

III. VIOLATIONS OF THE ENDANGERED SPECIES ACT AND APA

A. The Service’s Not Warranted Finding for the Clear Lake Hitch is Not Based on the Best Available Science and Fails to Draw a Rational Connection Between the Facts Found and the Decision Made.

The Service’s three bases for denying listing the Clear Lake hitch are arbitrary and capricious and contrary to the best available science, in violation of the Endangered Species Act. Without scientific support, the Service’s 12-month finding stated that the hitch was not in danger of extinction because it has “a long life span,” “is highly fecund,” and has “shown the ability to use different spawning strategies” that demonstrate “its behavioral flexibility to variable environmental conditions.”⁹⁰ Based on these characteristics alone, the Service concluded that habitat degradation, predation and competition, drought and climate change are not likely to

⁸³ 16 U.S.C. § 1533(a)(3), (f).

⁸⁴ *Id.* § 1536(a)(2).

⁸⁵ *Id.* § 1538.

⁸⁶ 5 U.S.C. § 706(2)(A).

⁸⁷ *Motor Vehicle Mfrs. Ass’n of U.S. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (internal quotation marks and citations omitted).

⁸⁸ *Id.*

⁸⁹ *Id.*

⁹⁰ 85 Fed. Reg. at 78,038-39.

adversely affect the hitch's overall viability such that it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range.⁹¹

The Service's "not warranted" finding casts aside scientific conclusions in the record, which find that the "combined severe pressures of habitat alteration and alien species . . . clearly threaten the Clear Lake hitch with extinction in the foreseeable future" due to a multitude of unabated threats that are not being addressed in any meaningful way.⁹² The best available science, including the Service's own analysis, shows that the hitch requires sustained water flow and access to spawning habitat within the tributaries. Accordingly, the Service's reliance on shore spawning to deny listing was arbitrary, as was its reliance on fecundity and lifespan. In denying crucial protections to the Clear Lake hitch, the Service's failure to base its decision on the best available science is arbitrary and capricious and violates the Endangered Species Act.

1. The best available science shows that hitch require sustained water flow and access to spawning habitat in tributary streams for survival.

As detailed throughout the Status Assessment, the key requirement for Clear Lake hitch survival is "sustained water flow within the tributaries and accessibility to spawning habitats."⁹³ The Service recognized that hitch require tributary flows to successfully spawn, specific water quality and temperature to hatch, and clean wetland/tule habitat to rear.⁹⁴ Indeed, the Service analyzed the primary factors affecting Clear Lake hitch viability—all related to habitat changes—and identified the number one threat as "the loss of spawning habitat . . . block[ing] access to or alter[ing] the flow regime of tributary streams."⁹⁵ The Service also identified drought, "which further reduces tributary flow," as another top risk to hitch viability.⁹⁶

Habitat loss for the Clear Lake hitch has been significant. Instream migration barriers and water diversions have eliminated over 92% of historical 180 stream miles of suitable hitch spawning habitat.⁹⁷ As the Service recognized, this substantial spawning habitat loss is particularly problematic because hitch require specific habitat features to successfully spawn.⁹⁸ To complete their lifecycle, hitch require specific water quality and temperature, sustained tributary flows, unimpeded migration to suitable spawning habitat in the spring, and the ability for adults and young to return downstream to Clear Lake before tributaries dry up or reduced flows and water depth impede migration—typically around one month of hatching.⁹⁹ Clear Lake hitch have adapted to only a brief period of suitable stream conditions for their annual spawning

⁹¹ *Id.* at 78,038.

⁹² Peter B. Moyle *et al.*, Fish Species of Special Concern in California, Clear Lake Hitch (*Lavinia exilicauda chi*) at 10 (2012) (unpublished chapter) (on file with author) [hereinafter Moyle *et al.* 2012].

⁹³ Status Assessment at 22.

⁹⁴ Status Assessment at 13; Peter B. Moyle *et al.*, 1995. Fish Species of Special Concern in California at 154 (2d Ed. 1995) [hereinafter Moyle *et al.* 1995]; Peter B. Moyle, Inland Fishes of California (2002) [hereinafter Moyle 2002]; Moyle *et al.* 2012 at 3-4.

⁹⁵ Status Assessment at 55.

⁹⁶ *Id.* at 55.

⁹⁷ CDFW Status Review at 24-25.

⁹⁸ Status Assessment at 13.

⁹⁹ *Id.* at 12-13.

run and risk spawning failures as streams prematurely dry progressively earlier.¹⁰⁰ Although the Service acknowledges that spawning and rearing habitat “must be of sufficient quality to support reproduction and growth” for the hitch to “maintain viability,” the Service fails to rationally explain how the significant loss of habitat required for hitch spawning does not warrant listing.¹⁰¹

2. The Service arbitrarily relied on shore spawning to deny listing.

The Service further provides no credible support for its claim that Clear Lake hitch do not require tributary streams to spawn but can also spawn successfully in Clear Lake itself, showing “behavioral flexibility to variable environmental conditions.”¹⁰² Indeed, the best available science does not support the viability of “shore spawning” or other “different spawning strategies” for the hitch, as the Service claims in its not warranted finding.¹⁰³

Moreover, the Service misinterprets the Feyrer *et al.* study presented as evidence in the Status Assessment that the Clear Lake hitch “is able to spawn in a number of different habitat types and not just tributary streams with continual flow.”¹⁰⁴ Feyrer *et al.*, used strontium isotope analysis from hitch otoliths to try to determine natal origins for hitch.¹⁰⁵ However, the Feyrer *et al.* study did not find that Clear Lake hitch do not require tributary streams to spawn, nor did it find that hitch can spawn successfully in Clear Lake itself.¹⁰⁶ Rather, the study merely stated that “*circumstantial evidence* suggests that within-lake spawning may be more prevalent than previously thought, especially during droughts” and that the results “suggest *indirectly* that Clear Lake hitch *may possibly* use Clear Lake and the mouths of its tributary streams for spawning more so than previously thought.”¹⁰⁷ Still, Feyrer *et al.* acknowledged that their methodology in assigning natal origin may also be flawed, as it may not have accurately separated and differentiated lake and tributary markers of strontium and, thus, natal origins of hitch:

[i]t is not possible to fully differentiate Clear Lake from all its tributaries using ⁸⁷Sr/⁸⁶Sr...classification into SIG 3 could be overestimated because of the limitation of this tool in detecting small fish from tributaries that could have migrated very quickly to Clear Lake to rear...The development of additional markers to separate Clear Lake from Adobe Creek would be needed to fully differentiate lake and stream production of Clear Lake hitch.¹⁰⁸

¹⁰⁰ Moyle *et al.* 2012 at 5.

¹⁰¹ Species Assessment Form at 12.

¹⁰² 85 Fed. Reg. at 78,038.

¹⁰³ *Id.* at 78,037-38.

¹⁰⁴ Status Assessment at 61.

¹⁰⁵ Frederick Feyrer *et al.*, Strontium Isotopes Reveal Ephemeral Streams Used for Spawning and Rearing by an Imperiled Potamodromous Cyprinid Clear Lake Hitch *Lavinia Exilicauda Chi* (Apr. 18, 2019).

¹⁰⁶ *Id.* at G.

¹⁰⁷ *Id.* (emphasis added).

¹⁰⁸ *Id.*

The Service ignored the limitations of the Feyrer *et al.* study and falsely relied on it to support its claim that hitch can spawn successfully in Clear Lake rather than tributary streams.¹⁰⁹ In fact, in a study of habitat requirements for hitch spawning that USGS provided to aid FWS’s listing decision, Feyrer expressly dismissed lake spawning as being “*not . . . a significant source*” of hitch “production and recruitment.”¹¹⁰

Additionally, CDFW evaluated the likelihood of success of Clear Lake hitch lake spawning events and concluded that they “may be limited due to losses from egg desiccation and predation on eggs and larvae.”¹¹¹ The Service ignored the science presented in the USGS report and CDFW’s conclusions and, instead, decided to not list the hitch based on an unsupported claim that hitch have “behavioral flexibility to variable environmental conditions.”¹¹²

The Service’s arbitrary reliance on shore spawning poisons other parts of its decision and analysis. For one, the Service arbitrarily dismisses the importance of spawning gravel and instream/streamside vegetation based on shoreline spawning.¹¹³ Additionally, the Service arbitrarily dismisses the impacts of drought based on assumed shoreline spawning.¹¹⁴ These incomplete conclusions—based in part on observations from over sixty years ago and in part on a flawed otolith study—are also inconsistent with recent studies about the specific hitch spawning habitat requirements necessary for survival and population resiliency.¹¹⁵

The Service’s reliance on shore spawning is also inconsistent with its own Status Assessment and not rationally connected to the facts found. The Service acknowledges that shore spawning is relevant for only a “small proportion of the population” and repeatedly admits that “it is unknown whether lake spawning could support a viable population over the long-term.”¹¹⁶ Although some hitch were observed spawning along the shores of Clear Lake in the past, the Service acknowledged that any contribution to recruitment by lake spawners is likely minimal due to heavy predation on eggs and larvae by carp and other invasive fishes.¹¹⁷ Additionally, the Service recognized the possibility that “large shoals of Mississippi silversides (*Menidia audens*) in Clear Lake’s nearshore areas further reduce the likelihood of success lake spawning as the silversides prey on hitch larvae and compete for planktonic prey resources.”¹¹⁸

¹⁰⁹ Status Assessment at 61.

¹¹⁰ USGS Report at 64.

¹¹¹ CDFW Status Review at 8.

¹¹² 85 Fed. Reg. at 78,038.

¹¹³ Status Assessment at 14.

¹¹⁴ *Id.* at 44.

¹¹⁵ USGS Report at 64.

¹¹⁶ Status Assessment at 18, 20, 44, and 55.

¹¹⁷ *Id.* at 11; J.B. Kimsey and Leonard O. Fisk, Keys to the Freshwater and Anadromous Fishes of California (1960); R.E. Geary, Life History of the Clear Lake Hitch (*Lavinia exilicauda chi*), Univ. Cali., Davis (1978) (unpublished master’s thesis).

¹¹⁸ Status Assessment at 11; Bennet and Moyle 1996, pp. 526, 529; P. Moyle *in litt.* 2020.

3. The Service’s reliance on the hitch’s fecundity and long lifespan to deny listing was also arbitrary.

Although Clear Lake hitch are highly fecund and have a relatively long lifespan, the Service neglects to explain how these attributes ensure hitch survival and persistence, particularly when considering the hitch’s specific habitat requirements for successful spawning, the significant loss of available spawning and rearing habitat, and the observed and predicted effects of climate change. In the Status Assessment, the Service acknowledged “lack of information” regarding “survival at any life stage.”¹¹⁹ Nevertheless, the Service identifies a crucial difference between fecundity and recruitment necessary for hitch survival, stating that although the hitch can produce a large number of eggs during the spawning season, “a majority of those eggs will not then go on to develop into reproductive adults,” so that any individual hitch’s reproductive effort “does not contribute to the overall population.”¹²⁰ The Status Assessment further described the primary negative influences on hitch recruitment as the loss of wetland/tule habitat and the presence of non-native fish within remaining wetlands.¹²¹

The hitch can live up to seven years but mainly lives around four years, meaning that a prolonged drought—lasting even just a few years—could swiftly drive hitch populations to extinction. As the Service acknowledged, while “a longer life-span is likely an adaptation to variable environmental conditions within the Clear Lake area. . . prolonged drought conditions can greatly impact the overall population,” particularly when combined with other stressors.¹²² Moreover, the Service provided no credible evidence that either fecundity or long lifespan could effectively mitigate Clear Lake hitch habitat loss or population decline. Indeed, no analysis, has ever identified fecundity or long lifespan as factors that mitigate hitch population decline. In denying crucial protections to the Clear Lake hitch, the Service’s failure to base its decision on the best available science is arbitrary and capricious and violates the Endangered Species Act.

B. The Service’s Climate Change Analysis Is Arbitrary and Capricious and Contrary to the Best Available Science.

The Service also failed to rationally explain why the Clear Lake hitch is not warranted for protection as a threatened or endangered species given that climate change will compound ongoing threats. Near-complete hitch spawning failure has been observed during recent dry years.¹²³ Clear Lake recently experienced three consecutive years of drought which dramatically reduced hitch spawning in tributaries and resulted in dangerously low spawning numbers; in the entire Clear Lake basin, in 2013 less than 500 spawning fish were observed in only 3 tributaries; in 2014 less than 1,500 spawning fish were observed in 5 tributaries; and in 2015 less than 800 spawning fish were observed in 6 tributaries.¹²⁴

¹¹⁹ Status Assessment at 13.

¹²⁰ *Id.* at 18.

¹²¹ *Id.*

¹²² *Id.* at 50.

¹²³ Moyle 2002 at 128; Moyle *et al.* 2012 at 9.

¹²⁴ Chi Council for the Clear Lake Hitch, 2019 Hitch Survey Results, <https://lakelive.info/chicouncil>; Cal. Dep’t of Fish & Wildlife, 2014 *Clear Lake Hitch* (*Lavinia exilicauda* chi) *Visual Surveys on Clear Lake Tributaries*, at 5.

Increased drought and rapid climate change due to warming will accelerate the premature drying of streams, driving further spawn failures.¹²⁵ The Service recognized that severe drought events “are likely . . . due to climate change.”¹²⁶ Most Clear Lake hitch live for four to six years, and few hitch live longer than six or seven years.¹²⁷ While a relatively long lifespan and high fecundity may allow hitch populations to weather a few bad spawning years, stream conditions during spawning will be progressively drier with the climatic shift towards greater aridity and variability in rainfall.¹²⁸ Clear Lake hitch expert Dr. Peter Moyle states unequivocally that “an increase in the length of dry seasons, especially for consecutive years, combined with increased mortality in the lake could result in extinction” for the hitch.¹²⁹ Dr. Moyle and others assessed the hitch’s vulnerability to climate impacts and determined that the hitch was “critically vulnerable” to the effects of climate change (specifically, the change in spring hydrograph) and, thus, “. . . is *extremely likely* to be driven to extinction by year 2100 without conservation measures.”¹³⁰ Researchers at University of California, Davis who evaluated climate impacts on freshwater fishes in California designated the hitch as endangered because they found that hitch were “critically vulnerable” to climate change.¹³¹ All that the Service says to support hitch survival in drought is that “[s]ome proportion of the [hitch] population may utilize habitats within the lake to spawn and, thus, may be able to spawn annually even during drought conditions.”¹³² But as discussed above, the Service’s reliance on lake spawning to support hitch survival is not supported.

Longer dry seasons for consecutive years combined with increased lake mortality are likely to drive hitch extinction. Under a future scenario that the Service itself identifies as most likely, the Service projects that climate change will reduce spawning habitat, increase fire and flooding causing erosion, decrease lake water quality, and extend drought.¹³³ These conditions alone prompted scientists to conclude that hitch are endangered, and thus likely to go extinct in the foreseeable future.¹³⁴

Hand in hand with drought, the region will face increased frequency and intensity of wildfire. As the Service itself states, fires in Clear Lake watershed increase stream bank erosion and channelization, decreasing the amount of water retained in tributaries for spawning hitch.¹³⁵ When the Service completed its Species Status Assessment Form in July 2020, it cites the 2018

¹²⁵ Moyle *et al.* 2012 at 9.

¹²⁶ Species Assessment Form at 12.

¹²⁷ Moyle 2002, p. 138; CDFW 2014, p. 8; Moyle *et al.* 2012, p. 2.

¹²⁸ Moyle *et al.* 2012 at 9-10; Listing Petition at 44-45.

¹²⁹ Moyle *et al.* 2012 at 9.

¹³⁰ Peter B. Moyle *et al.*, *Climate Change Vulnerability of Native and Alien Freshwater Fishes of California: A Systematic Assessment Approach*, 8 PLOS ONE 5 at 3, 7 Table S1 (May 22, 2013) (emphasis added).

¹³¹ Peter B. Moyle *et al.*, *Projected Effects of Future Climates on Freshwater Fishes of California*, Calif. Energy Comm’n Calif. Climate Change Ctr., Univ. of Calif., Davis at 19 (2012) [hereinafter CEC 2012].

¹³² Status Assessment at 18.

¹³³ *Id.* at 77.

¹³⁴ CEC 2012 at 25.

¹³⁵ Species Assessment Form at 18.

Mendocino Complex as the largest fire on record in California.¹³⁶ However, the very next month, the August Complex surpassed the Mendocino Complex as the state’s largest fire.¹³⁷ In fact, the record-breaking fire season of 2020 saw 6 of the top 20 largest wildfires in California’s history.¹³⁸ These massive wildfires are only expected to intensify in severity and frequency with even modest climate models, further threatening the hitch’s suitable spawning habitat.¹³⁹ More wildfire will mean more nutrients deposited in the lakes, which can cause more frequent algal blooms.¹⁴⁰ “Existing evidence suggests that lake nutrients, primary and secondary productivity, ions, sediments, and organic matter should increase in response to fires, whereas water clarity and thermal habitat for cold-water fishes are expected to decrease.”¹⁴¹ The Service’s not-warranted finding arbitrarily ignored science showing that the hitch faces severe risk from climate impacts.

C. The Service Arbitrarily Concluded that the Clear Lake Hitch is not Threatened or Endangered in a Significant Portion of its Range.

The Service’s finding that the hitch is not endangered or threatened in a significant portion of its range is not supported by the record. Indeed, it appears that the Service did not analyze whether the Clear Lake hitch is threatened or endangered throughout “all *or a significant portion of its range*.”¹⁴² Instead, the Service only “considered whether the threats are geographically concentrated in any portion of the species’ range at a biologically meaningful scale,” and concluded that there was no concentration of threats.¹⁴³ In doing so, the Service entirely ignored the status of the species, including most importantly its risk of extinction, in portions of its range, which is precisely what the ESA requires.

By focusing solely on “concentrations of threats,” the Service’s “significant portion of its range” analysis is unlawfully narrow. The Service must consider whether a species is in danger of extinction or likely to become endangered within a significant portion of its range, which may practically include a consideration not only of threats to the significant portion of its range but also of a species unique vulnerability to those threats in a significant portion of its range.¹⁴⁴ Here the Service arbitrarily limited its analysis to whether the identified threats were geographically concentrated, without regard for how hitch in a significant portion of its range may be impacted.

¹³⁶ *Id.* at 17-18.

¹³⁷ Shelby Grad, *Six of California’s Largest Fires in History Ignited This Year. Here’s What We Know*, L.A. Times (Sept. 11, 2020) available at <https://www.latimes.com/california/story/2020-09-11/six-of-californias-largest-fires-in-history-are-burning-right-now>.

¹³⁸ *Id.*

¹³⁹ See California’s Fourth Climate Change Assessment at 28-30, available at https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf.

¹⁴⁰ Ian McCullough *et al.*, *Do Lakes Feel the Burn? Ecological Consequences of Increasing Exposure of Lakes to Fire in the Continental United States*, *Global Change Biology* at 2846 (2019).

¹⁴¹ *Id.* at 2850.

¹⁴² 16 U.S.C. § 1532(6), (20) (emphasis added).

¹⁴³ Species Assessment Form at 73.

¹⁴⁴ *Ctr. for Biological Diversity v. U.S. Fish & Wildlife Serv.*, 246 F. Supp. 3d 1272 (N.D. Cal. 2017) (explaining the SPR standard as a broader question of whether a species is “especially vulnerable to extirpation” in a significant portion of its range).

This narrow interpretation leads to unsound results. Because the Service’s analysis omitted information relevant to determining whether the Clear Lake hitch is in danger of extinction or likely to become endangered in the foreseeable future in a significant portion of range (*i.e.*, the subspecies’ unique vulnerability to threats in a significant portion of its range), its decision not to list the Clear Lake hitch is arbitrary and capricious.

Additionally, the Service failed to consider the Clear Lake hitch’s historic range when determining whether the hitch is endangered or threatened in a significant portion of its range. The Clear Lake hitch has been extirpated from a significant portion of its historic range due to urban and agricultural development, migration barriers, altered stream flows, and increased drought. Not only has hitch spawning habitat been reduced by 92%, but hitch rearing habitat was reduced by over 85% by the 1970s.¹⁴⁵ Where once hitch likely spawned in most or all of Clear Lake’s tributaries, the hitch has recently only been observed spawning in a handful of streams and only successfully spawns in significant numbers in two of the lake’s tributaries: Kelsey and Adobe Creek. Moreover, the science shows that lake spawning is not successful for hitch production and recruitment.¹⁴⁶ The Service cannot credibly explain why the loss of 92% of the hitch’s historic spawning habitat and loss of over 85% of hitch rearing habitat (the historic range) is not “a significant portion of its range.”¹⁴⁷ The Service has unlawfully failed to account for this drastic elimination of spawning and rearing habitat for the hitch.

D. The Service Improperly Concluded that the Clear Lake Hitch Was Not at Risk of Becoming an Endangered Species in the Foreseeable Future.

The Service’s analysis of whether the hitch is warranted for protection as a threatened species is flawed for another reason. In the 12-month finding, the Service conflates “likely to become an endangered species” with whether the species is “in danger of extinction” to conclude that the hitch is not threatened.¹⁴⁸ The Service must list a species as “threatened” if it “is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.”¹⁴⁹ The Service only concludes the Clear Lake hitch will not become “extinct” in the foreseeable future but says nothing about whether it will be “endangered.”

Additionally, the Service’s analysis of “foreseeable future” is impermissibly limited. Its conclusion that the hitch “will maintain its current resiliency, representation, or redundancy, or undergo only a slight decrease in condition into the foreseeable future,” was based on its finding that the hitch “was not projected to be in danger of extinction in the next 50 years.”¹⁵⁰ However, as the Service acknowledged in the Status Assessment, Clear Lake hitch expert Dr. Peter Moyle *et al.* determined that the hitch is “critically vulnerable” to the effects of climate change and

¹⁴⁵ CDFW Status Review at 21.

¹⁴⁶ USGS Report at 64.

¹⁴⁷ *Colo. River Cutthroat Trout v. Salazar*, 898 F. Supp. 2d 191, 201 (D.D.C. 2012) (citing *Defenders of Wildlife v. Norton*, 258 F.3d 1136, 1145 (9th Cir. 2001)); *W. Watersheds Project v. Ashe*, 948 F. Supp. 2d 1166, 1189–90 (D. Idaho 2013).

¹⁴⁸ *Compare id.* § 1532(20) with 85 Fed. Reg. 78,038.

¹⁴⁹ *Id.* § 1532(20).

¹⁵⁰ 85 Fed. Reg. 78,038.

“*extremely likely to be driven to extinction by year 2100 without conservation measures.*”¹⁵¹ Indeed, climate experts often project models to 2100 to forecast a species’ climate impacts.¹⁵²

Dr. Moyle best summarized the hitch’s extinction threats:

the combined severe pressures of habitat alteration and alien species clearly threaten the Clear Lake hitch with extinction in the foreseeable future. Many of the spawning runs have disappeared ... [and] limited data that exists, suggests that remaining hitch runs are much reduced and are continuing to decline. Dewatering of tributary streams, barriers to spawning migrations and predation and competition from alien species may interact to cause extinction in the foreseeable future.¹⁵³

The Service’s finding fails to provide any scientific support for its conclusion that these threats have been addressed in a sufficient manner to protect the hitch from extinction or that they will be in the foreseeable future. On the contrary, the best available science and, indeed, the Service’s own findings show that the Clear Lake hitch is at risk of being an endangered species now and in the foreseeable future due to the combination of significant habitat loss, competition and predation with non-native fishes, and climate change.¹⁵⁴ Given the extreme likelihood that the hitch will be driven to extinction by the year 2100, and, at the very least, face severe population declines over the next 50 years, the Service’s conclusion that the hitch is not likely to become endangered in the foreseeable future is arbitrary and capricious and not based on best available science, in violation of the Endangered Species Act.

E. The Service Arbitrarily Concluded that Existing Regulations Are Adequate to Protect the Clear Lake Hitch.

The Service ignored the best available science, including its own analysis, finding that current regulatory mechanisms are inadequate to protect the hitch from its many persistent threats now and when the threats are further compounded due to climate change.¹⁵⁵ The Service must make listing determinations based on the five factors set forth in the Endangered Species Act, one of which is the inadequacy of existing regulatory mechanisms.¹⁵⁶ For the Clear Lake hitch, the Service wrongly claimed that regulatory mechanisms are sufficient to “ameliorate the severity of some existing threats” so that the hitch will “maintain its current resiliency, representation, or redundancy,” or “undergo only a slight decrease in condition into the foreseeable future”¹⁵⁷ However, as the Service determined, no regulatory mechanisms address

¹⁵¹ Moyle *et al.* 2013 at 3, 7, Table S1 (emphasis added).

¹⁵² See, e.g., Hector Galbraith & Jeff Price, *A Framework for Categorizing the Relative Vulnerability of Threatened and Endangered Species to Climate Change* (Feb. 2009).

¹⁵³ Moyle *et al.* 2012 at 10.

¹⁵⁴ *Id.*; Species Assessment Form at 36.

¹⁵⁵ Status Assessment at 35.

¹⁵⁶ 16 U.S.C. § 1533(a)(1).

¹⁵⁷ 85 Fed. Reg. 78,039.

predation and competition and no regulatory mechanisms address drought.¹⁵⁸ Moreover, no regulatory mechanisms protect the stream habitat, including protection from dewatering. Although the Service identifies CEQA as a potential regulatory mechanism that would address spawning habitat impacts, CEQA is severely limited in its ability to safeguard against stream dewatering from intensive water use. The County’s CEQA permitting is dominated by water-intensive cannabis agriculture, and a project listed directly on Adobe Creek—one of two primary spawning creeks for the hitch—concludes no impacts on protected species.¹⁵⁹

Although the hitch is listed under CESA, the Service itself noted that CESA regulations only apply to take of individuals of a species and do not prevent or reverse damage to habitat.¹⁶⁰ Still, no regulatory mechanisms address the major threats of predation and competition with nonnative fishes and spawning habitat loss due to climate change. Furthermore, given the Service’s conclusion that “no regulatory mechanisms or management actions . . . fully ameliorate the presence of passage barriers,” the Service clearly came to the wrong conclusion that existing regulations are adequate to protect the hitch.¹⁶¹ The Service’s failure renders the not-warranted finding arbitrary, capricious, and in violation of the Endangered Species Act.

F. CONCLUSION

For the foregoing reasons, the Service’s determination that listing the Clear Lake hitch is not warranted is arbitrary and capricious and violates the Endangered Species Act. The agency’s clear disregard for both the best available scientific information about the hitch’s endangered status and the Endangered Species Act’s legal requirements have led to a clearly threatened or endangered species being denied protection. If the Service does not cure these violations within 60 days, the Center intends to pursue litigation in federal court.

Please contact me if you have any questions or would like to discuss this matter.

Sincerely,



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¹⁵⁸ Status Assessment at 63.

¹⁵⁹ See Lake Cnty. Cmty. Dev. Dep’t, California Environmental Quality Act Environmental Checklist Form Initial Study (IS 19-35), Use Permit for LDM Operations (Feb. 17, 2021) available at <https://files.ceqanet.opr.ca.gov/267698-1/attachment/rHp4EufeJ-WTWjjg7V0OdDR4PBPzT8gXH8HSVnuFDNf5q12IHJsJLecGPWIPJfF9oLigZyWfalyxYPII0>.

¹⁶⁰ Status Assessment at 51.

¹⁶¹ *Id.* at 35.