

CERTIFIED FOR PUBLICATION

IN THE COURT OF APPEAL OF THE STATE OF CALIFORNIA
THIRD APPELLATE DISTRICT
(Sacramento)

CENTRAL COAST FOREST ASSOCIATION et al.,

C060569

Plaintiffs and Respondents,

(Super. Ct. No. 07CS00851)

v.

OPINION ON REMAND

FISH AND GAME COMMISSION,

Defendant and Appellant.

APPEAL from a judgment of the Superior Court of Sacramento County, Gail D. Ohanesian, Judge. (Retired judge of the Sacramento Super. Ct., assigned by the Chief Justice pursuant to art. VI, § 6 of the Cal. Const.) Reversed.

Edmund G. Brown, Jr., Kamala D. Harris and Xavier Becerra Attorneys General, Mary E. Hackenbracht, Kathleen A. Kenealy and Robert W. Byrne, Assistant Attorneys General, Sara J. Russell, Gavin G. McCabe, Tara L. Mueller and Cecilia L. Dennis, Deputy Attorneys General, for Defendant and Appellant.

Deborah A. Sivas, Robb W. Kapla and Molly Loughney for Environmental Law Clinic, Center for Biological Diversity, Turtle Island Restoration Network, California Trout, Central Coast Forest Watch and Lompico Watershed Conservancy as Amici Curiae on behalf of Defendant and Appellant.

Murphy & Buchal and James L. Buchal for Plaintiffs and Respondents.

Damien M. Schiff and Anthony L. Francois for Pacific Legal Foundation as Amicus Curiae on behalf of Plaintiffs and Respondents.

The California Endangered Species Act (Fish & G. Code, § 2050 et seq., hereafter CESA)¹ provides that a wild, native, species may be added to or removed from the regulation listing endangered species by a finding of the Fish and Game Commission (Commission) based on scientific information from the Department of Fish and Wildlife (department).² (§§ 2074.6, 2075.5.) The standard for adding a wild, native species is that it is in serious danger of extinction. (§ 2062.)³

The Commission added coho salmon in streams south of San Francisco (Santa Cruz County) to the list of endangered species in 1995 pursuant to a petition from the Santa Cruz County Fish and Game Advisory Commission. The Commission joined them with coho salmon north of San Francisco (to Punta Gorda) in 2004 as members of the Central California Coast (CCC) evolutionary significant unit (ESU).⁴

The respondents Central Coast Forest Association and Big Creek Lumber Company (hereafter petitioners), have petitioned the Commission to remove (delist) coho salmon south of San Francisco from the list of endangered species in California. Petitioners own and harvest timber from lands in the area of the coho salmon spawning streams in the Santa Cruz Mountains. Timber harvesting is in part responsible for

¹ Further statutory references to sections of an undesignated code are to the Fish and Game Code.

² The Department of Fish and Game has been renamed the Department of Fish and Wildlife. (§ 700.)

³ The CESA provides for two lists, a list of endangered species and a list of threatened species. (§§ 2062, 2067, 2070.) Since the procedure is the same for both lists and this case concerns only endangered species we refer to that list in the opinion.

⁴ An ESU is a population of organisms that is considered distinct for purposes of conservation. The determination whether the coho salmon constitute an ESU is a matter of judgment and expertise. An ESU is included within the term “species or subspecies” in sections 2062 and 2067. (*California Forestry Assn. v. California Fish & Game Commission* (2007) 156 Cal.App.4th 1535, 1548-1549 (*California Forestry*).)

declining coho salmon populations. (*California Forestry, supra*, 156 Cal.App.4th at p. 1543.)

The procedure for adding or removing a species from the list of endangered species has two stages. In the first stage the Commission determines whether the petitioned action may be warranted. (§ 2074.2.) If the Commission determines the petition may be warranted the Commission determines in a second stage whether the petitioned action is or is not warranted. (§ 2075.5.) This case tenders questions involving the first stage.⁵

The petitioners argue: (1) there never were wild, native coho salmon in streams south of San Francisco, a requirement of being listed as endangered; (2) if there were, they were extirpated by environmental conditions unfavorable to the species; and (3) the salmon currently present in the streams are hatchery plants, implying that the fish are not members of the CCC ESU, and consequently are not deemed wild or native to California. They tender evidence in support of the petition, which they claim “may . . . warrant[]” delisting by the Commission. (§ 2072.3.)⁶

Evidence may warrant consideration by the Commission if sufficient scientific evidence contained in the petition, considered in the light of the department’s scientific report and the department’s expertise, would justify delisting of the species. We shall conclude that is not the case.

⁵ In a prior proceeding in the case, this court held that the petitioners could not seek to delist the salmon because they had failed to seek review of the final determination of the Commission pursuant to Code of Civil Procedure section 1094.5 as provided in section 2076 of the CESA. The Supreme Court held that the petitioners could collaterally attack the listing as if there had been no prior proceeding and returned the case to this court to determine whether petitioners had tendered evidence that “may warrant” delisting.

⁶ Section 2072.3 provides in relevant part: “To be accepted, a petition shall, at a minimum, include sufficient scientific information that a petitioned action may be warranted.”

There is conclusive evidence in the form of coho salmon museum specimens collected in 1895 from four adjacent streams in Santa Cruz County, that coho salmon inhabited the streams prior to the beginning of hatchery activity in 1906, and it is unchallenged that a population of coho salmon bearing genetic markers similar to each other and to the remaining CCC coho ESU inhabit streams south of San Francisco today. The petitioners tendered historical evidence from which they draw an inference that coho salmon could not have inhabited the streams south of San Francisco prior to hatchery introduction. The inference is refuted by the uncontradicted fact coho salmon were present in Santa Cruz County streams in 1895, as evidenced by the museum specimens. Petitioners offer no counter evidence, but merely speculation. Such speculation warrants no further consideration.

Since there is no reasonable dispute that coho salmon currently inhabit streams south of San Francisco, petitioners' claim that the coho presently there are the result of nonnative hatchery plantings comes down to the inference that because of inhospitable environmental conditions coho would have been extirpated without hatchery support. However, even assuming petitioners' evidence is sufficient to show that native coho salmon must have died out in the streams south of San Francisco, their evidence is not sufficient to show that the current fish are not native fish. The term "native" as used in CESA means native to California. Petitioners have not offered sufficient evidence that the current inhabitants of the streams south of San Francisco are directly the result of out-of-state hatchery stock. Moreover, the Commission relied on recent genetic data, the results of which rule out the claim that hatchery fish replaced the native stock south of San Francisco. Petitioners draw other inferences from this evidence, but under our substantial evidence review, we draw all inferences in favor of the Commission, and having done so find substantial evidence to support the determination by the Commission that there is insufficient evidence to conclude the petition to delist coho salmon may be warranted.

The Commission's determinations are judicially reviewed for substantial evidence. (*Center for Biological Diversity v. Fish & Game Com.* (2008) 166 Cal.App.4th 597, 609 (*CBD*).) Where the Commission has made a determination on matters that are technical or obscure, and over which the Commission, through the department's staff of scientists, has “ ‘a comparative interpretive advantage over the courts[,]’ ” we defer to the Commission's determination on those matters. (*Yamaha Corp. of America v. State Bd. of Equalization* (1998) 19 Cal.4th 1, 12 (*Yamaha*).)

The statutory structure of CESA indicates that the courts should accord a great deal of deference to the Commission where its determination is supported by department scientists. The department staff has a significant role in guiding the Commission at both stages of the listing process. The department recommends criteria for determining if a species is endangered. (§ 2071.5.) A petition to add or remove a species from the list of endangered species is initiated by a petition from an interested person or a recommendation from the department. (§§ 2071, 2072.7.) The petition or recommendation must contain scientific information relating to the present ability of the species to survive and reproduce. (§ 2072.3.) In the first or preliminary stage, the department's evaluation of the petition and the department's recommendation are submitted to the Commission, and the Commission uses the department's evaluation and recommendation in deciding whether to accept the petition for consideration. (§§ 2073.5, 2074.2.) The Commission must hold a public hearing on the petition, at which it receives information and receives testimony from, *inter alia*, the department staff and the petitioner. (§ 2074.2, subd. (a).) The Commission must accept and consider the petition if it contains “sufficient information to indicate that the petitioned action may be warranted . . .” (§ 2073.5, subd. (a)(2).) If accepted, the department submits a recommendation and written report to the Commission “based upon the best scientific information available . . .” (§ 2074.6.) In the final stage, the Commission determines, based on the department's scientific report, whether the petitioned action is warranted.

(§§ 2075, 2075.5.) The department is delegated the responsibility of reviewing the listed species every five years to determine whether the original listing conditions are still present. (§ 2077, subd. (a).)

We shall conclude that the petition does not contain sufficient scientific evidence, considered in light of the department's scientific report and expertise, to justify delisting the coho salmon south of San Francisco; therefore, there is insufficient evidence that the delisting may be warranted.⁷

FACTUAL AND PROCEDURAL BACKGROUND

A. The 1995 Commission Decision

Petitioners own and harvest timber from lands in the area of the coho salmon spawning streams in the Santa Cruz Mountains. In 1993 the Santa Cruz County Fish and Game Advisory Commission filed a petition requesting the listing of coho salmon in Scott and Waddell Creeks in Santa Cruz County south of San Francisco as endangered. In 1994 the Commission designated the coho salmon as a candidate species. (§ 2068.) It provided notice thereof to petitioner Big Creek Lumber Company. The department conducted a status review and prepared a rulemaking file for the Commission setting forth scientific information showing that the coho salmon was an endangered species and recommending that it be listed as endangered.

The Commission accepted the recommendation and enacted a rule listing the coho salmon as endangered, effective December 31, 1995. (Cal. Code Regs., tit. 14, § 670.5, subd. (a)(2)(N), Register 95, No. 48 (December 31, 1995).) The Commission's determination stated it was "based on the best available scientific information regarding the distribution, abundance, biology and nature of threats to coho salmon south of San Francisco Bay . . ." The Commission found that "[c]oho salmon numbers south of San

⁷ Petitioners' request for judicial notice filed after the court heard oral argument is denied.

Francisco Bay have declined over 98 percent since the early 1960's and currently are restricted to one remnant population in Waddell Creek, one small naturalized (hatchery-influenced) population in Scott Creek, and a small hatchery-maintained, non-native run in the San Lorenzo River, Santa Cruz County. There is minimal possibility of successful natural expansion of the remnant Waddell and Scott Creek populations to neighboring drainages due to the functional extinction of two of the three brood year lineages, inadequate numbers of adult coho to naturally produce the necessary founder populations for successful recolonization of streams, loss of genetic and population viability, and general lack of secure adjacent suitable habitat."

The department recommended recovery measures. "The first priority should be to set minimum flows necessary to sustain the coho salmon on Scott and Waddell Creeks. . . . [¶] Following the establishment and maintenance of minimum flows, restoration of coho salmon habitat should be initiated to produce enough habitat to allow for more juvenile coho to be reared in Scott and Waddell Creeks. Instream habitat restoration in Scott and Waddell Creeks is a viable option [because] County and State regulations, land ownership patterns, and improvement in present land use practices can bring about better control of accelerated erosion in the watershed."

The Commission published a notice of its determination and distributed it to a list of interested persons including petitioner Big Creek Lumber Company.

B. The 2004 Commission Decision

Five years later, in July 2000, the Commission received a petition from the Salmon and Steelhead Recovery Coalition to add coho salmon from the area north of San Francisco Bay to the Oregon border to the list of endangered species. In November of 2000, the department recommended to the Commission that it accept the petition for consideration. In April 2001, the Commission held a hearing and took testimony from numerous persons including a representative of respondent Big Creek Lumber Company. In April 2002, the department submitted a status report identifying two groups of coho

salmon, one from Punta Gorda to the Oregon border, referred to as the Southern Oregon/Northern California Coasts ESU (SONCC ESU) and the other from south of Punta Gorda to the San Lorenzo River in Santa Cruz County, referred to as the CCC ESU.

The department based its determination on the scientific analysis of the reproductive isolation and genetic differences between the two groups. In April 2002, the department submitted a written report on the status of the species to the Commission as required by section 2074.6. On May 28, 2002, the department recommended to the Commission that it “list coho salmon north of Punta Gorda (Humboldt Co.) as a threatened species and coho salmon south of Punta Gorda (Humboldt Co.) . . . as an endangered species . . .” Coho salmon south of Punta Gorda were joined in the report with coho salmon south of San Francisco as the CCC ESU. On August 30, 2002, the Commission found “that coho salmon north of Punta Gorda and coho salmon south of Punta Gorda warrant listing as [respectively] threatened and . . . endangered,” but delayed rulemaking for one year while the department prepared a recovery plan. On February 11, 2004, the Commission proposed a rule to “add the populations of coho salmon between San Francisco Bay and Punta Gorda, California, to the [California Code of Regulations, title 14,] Section 670.5 list as an endangered species . . .” On February 25, 2004, the Commission staff issued a notice of intent to begin the “rulemaking process to add coho salmon north of Punta Gorda and coho salmon south of Punta Gorda to the list [respectively] of threatened and endangered species.”

On August 5, 2004, the Commission amended the 1995 regulation that listed coho salmon south of San Francisco as endangered by joining them with coho salmon north of San Francisco. The rule, to be found at California Code of Regulations, title 14, section 670.5, subdivision (a)(2)(N), declares that the following species are endangered: “Coho salmon . . . south of Punta Gorda (Humboldt County), California.” The context of the regulation makes clear that south of Punta Gorda included the streams south of San

Francisco, the subject of the 1995 final determination of the Commission. This court upheld the 2004 listing in *California Forestry, supra*, 156 Cal.App.4th 1535.

C. The Delisting Petition

Although petitioner Big Creek Lumber Company was given notice of the 1995 proceeding and participated in the 2004 proceeding it did not seek review of the Commission's findings in either matter pursuant to Code of Civil Procedure section 1094.5. Rather, petitioners initiated a collateral attack on the listing by filing a separate, delisting petition asking that the Commission redefine the southern boundary of the CCC ESU to remove coho salmon in streams south of San Francisco from the rule listing endangered species.

Petitioners' delisting petition was filed on June 17, 2004, two months before the Commission's final action in the 2004 proceeding. It states that "the petitioners hereby request that the California Fish and Game Commission redefine the southern boundary of the Central California Coast coho salmon evolutionary significant unit [ESU] to exclude coastal waterways south of San Francisco, thereby delisting coho salmon south of San Francisco from the list of endangered or the list of threatened species." The petition makes clear that it was challenging the facts underlying the 1995 decision placing the coho salmon on the list of endangered species. It stated: "[T]he status review prepared by the California Department of Fish and Game indicating whether the petitioned action is warranted must be based on the best scientific information available.^[8] The preponderance of previously unconsidered scientific and historical evidence presented herein clearly shows that the legal standard for listing under the California Endangered Species Act has not been met. [¶] Archeological evidence strongly supports the concept

⁸ The reference to "status review" is to the written report of the department upon which a final determination by the Commission is based. (§§ 2074.6, 2075) In this case it refers to the rulemaking files underlying the 1995 and 2004 final determinations by the Commission.

that coho salmon populations were not present prehistorically in coastal streams south of San Francisco. . . . [H]arsh environmental conditions for coho survival beyond the fringe of their range (south of San Francisco) prevented the establishment of permanent populations in this area. The scientific and historical record since the arrival of Europeans substantiates the absence of coho populations. In particular, professional ichthyologic surveys in the latter part of the 1800s report the absence of coho south of San Francisco.” Further, “[a]lthough no single scientific disciplinary source may be sufficient to conclude unequivocally that coho are or are not native south of San Francisco, the mutually consistent patterns disclosed independently by multiple scientific disciplines and historical records provide a preponderance of evidence. This same evidence also indicates that populations of coho salmon south of San Francisco are not an important component in the evolutionary legacy of the species. Most importantly, no petition or [department] status review presents any legitimate or compelling evidence to the contrary. Therefore, coho salmon populations south of San Francisco do not constitute nor are part of any evolutionary significant unit.”

Petitioners further asserted that the department’s “status reviews of coho salmon in 1995 and 2002 . . . were undertaken without benefit of the information in [their] 2004 Petition.” The 2004 petition explains that “[i]n order to qualify for listing under the [CESA], a species or subspecies must be native and represent an important component in the evolutionary legacy of the species. Additionally, the status review prepared by the [department] indicating whether the petitioned action is warranted must be based on the best scientific information available. The preponderance of previously unconsidered scientific and historical evidence presented herein clearly shows that the legal standard for listing under the [CESA] has not been met.” Petitioners asserted that “[s]cientific and historic research unequivocally establishes that there have never been permanent colonies of native coho in these streams. The artificially introduced and hatchery maintained coho

populations south of San Francisco are not native, carry no important genetic heritage and do not qualify for listing as an ESU or part of an ESU under the CESA.”

In February 2005, the Commission considered the delisting petition and denied it consideration on the ground that it did not contain sufficient scientific information that delisting may be warranted. It ratified the denial in March 2005, and published a notice of its findings. Petitioners challenged the rejection of the petition in the superior court which remanded the matter to the Commission in November 2006. The Commission again denied the petition in March 2007, and filed a notice of its findings and statement of reasons in April 2007. The Commission joined issue with petitioners in considering the petition pursuant to the threshold test of section 2072.3, whether the petition contained sufficient information to indicate that the petitioned action may be warranted. The Commission said: “One of the most obvious omissions in the petition is a failure to include specific information that the species in question is ‘no longer threatened by any one or any combination of the . . . factors’ ” set forth in California Code of Regulations, title 14, section 670.1, subdivision (i)(1)(A). This is the regulatory standard for judging the substantive merits of a petition to delist a species.

The superior court again overturned the Commission’s decision and the Commission appealed the resulting judgment. We reversed the trial court, reasoning that a delisting petition was not appropriate to collaterally attack the Commission’s listing decision. We held that a delisting petition must be directed to events that occur after the listing of a species. The Supreme Court disagreed, holding that a delisting petition may be based on new evidence that challenges an earlier listing decision by showing that the listed species does not qualify for listing. (*Central Coast Forest Assn. v. Fish & Game Com.* (2017) 2 Cal.5th 594, 604.) The Supreme Court remanded the case back to us to consider the merits of the appeal.

DISCUSSION

I

Evidentiary Standard and Standard of Review

A. Evidentiary Standard Applied by the Commission

To be successful before the Commission, petitioners were required to present “sufficient information to indicate that the petitioned action [i.e., delisting] may be warranted.” (§ 2074.2, subd. (e)(2).)⁹ This court has considered the evidentiary standard embodied in the above phrase, and concluded it means “that amount of information -- when considered in light of the Department of Fish and Game’s written report and the comments received [citation]-- that would lead a reasonable person to conclude there is a ‘substantial possibility’ the [petitioned action] ‘could’ occur” (*Natural Resources Defense Council v. Fish & Game Com.* (1994) 28 Cal.App.4th 1104, 1109 (NRDC).) “Substantial possibility” is something more than a fair argument, and something less than “‘more likely than not.’ ” (*Id.* at p. 1125.)

Thus, the phrase “may be warranted” means simply “may be justified” by the criteria set forth in the statute and implied from the scientific evidence submitted in support of the petition and evaluated by the department staff in the light of the department’s scientific information and expertise. The evidence is sufficient if it is credible and supports the petition, in this case delisting. In that sense it must be worthy of rational and relevant consideration. The evidence relates to the standard “may be warranted” definitionally, i.e., it is an example of “may be warranted.” Here, for example, the petition argues the coho south of San Francisco cannot be listed as endangered, because they are not native. As evidence of this criterion the petition tenders archaeological, environmental, and historical evidence. This evidence is sufficient to

⁹ Section 2074.2 has been amended since the petition was filed, and the part of the statute setting forth the standard has been moved. We shall refer to this section as it reads currently.

meet the “may be warranted” standard only if it is material to the criteria at issue, is credible, supports the petition, and, when weighed against the department’s written report and any comments received, is strong enough to indicate that delisting may be justified.

In making its determination, “the Commission takes evidence for and against [the petition], weighs it, and determines in its discretion what is essentially a question of fact.” (*NRDC, supra*, 28 Cal.App.4th 1104, 1125.) The Commission not only weighs the evidence, it evaluates the evidence, i.e., determines whether the evidence is scientifically credible, reasonable, and reliable. (*Mountain Lion Foundation v. Fish & Game Com.* (1997) 16 Cal.4th 105, 118.) The Commission’s decision is a discretionary one. (*Ibid.*)

B. Judicial Standard of Review

Section 2076 provides that the Commission’s final decision is subject to judicial review under Section 1094.5 of the Code of Civil Procedure.¹⁰ This court has determined that review of the Commission’s determination at this initial stage is also reviewed pursuant to section 1094.5 of the Code of Civil Procedure. (*NRDC, supra*, 28 Cal.App.4th at p. 1116.)

“[C]ommentators have characterized CESA’s listing and delisting process as ‘quasi-judicial,’ finding the Commission’s ‘wide discretion to make listing determinations similar to a judge’s decision-making role in a courtroom. [Fn. omitted.]’ (*Dwyer & Murphy, Fulfilling the Promise: Reconsidering and Reforming the California Endangered Species Act* (1995) 35 Nat. Resources J. 735, 745; see also Kelly &

¹⁰ Code of Civil Procedure section 1094.5 provides, in relevant part: “(b) The inquiry in such a case shall extend to the questions whether the respondent has proceeded without, or in excess of, jurisdiction; whether there was a fair trial; and whether there was any prejudicial abuse of discretion. Abuse of discretion is established if the respondent has not proceeded in the manner required by law, the order or decision is not supported by the findings, or the findings are not supported by the evidence. [¶] (c) Where it is claimed that the findings are not supported by the evidence [in the absence of a vested right] . . . abuse of discretion is established if the court determines that the findings are not supported by substantial evidence in the light of the whole record.”

D'Angelo, *Near Extinction: California's Protection of Endangered Species* (Spring/Summer 1990) 10 Cal. Regulatory L. Rptr. 1, 4, 9.)” (*Mountain Lion Foundation v. Fish & Game Commission, supra*, 16 Cal.4th at p. 118.) “[I]t follows that [the agency decision] can be vacated only in the manner and upon the grounds that would justify the vacation of a judgment rendered by a court of record, and a mere error in the adjudication of a question of fact, not procured by fraud extrinsic or collateral to such question, is not a ground upon which it may be vacated, since, if it were, no adjudication of a question of fact would ever become final, so long as new evidence could be had.” (*People v. Los Angeles* (1901) 133 Cal. 338, 342-343.)

We review the Commission’s decision, rather than the trial court’s decision. (*CBD, supra*, 166 Cal.App.4th at p. 609.) Our task in reviewing the Commission’s decision is to determine whether it is supported by substantial evidence in the record. (*Ibid.*) “We look to the information adduced as a whole to determine whether that ultimate finding can be upheld as within the range of discretion accorded to the Commission. [Citation.]” (*Id.* at p. 610.) We do not reweigh the evidence, but indulge all presumptions and resolve all conflicts in favor of the Commission’s decision. (*Donley v. Davi* (2009) 180 Cal.App.4th 447, 456.) When conflicting inferences may be drawn from the evidence, we cannot substitute our own deductions for that of the Commission. (*Ibid.*)

If the Commission’s decision is clearly justified by the weight of the evidence, we of course affirm. (*CBD, supra*, 166 Cal.App.4th at pp. 610-611.) If the balance of the evidence is unclear, we also affirm the Commission’s decision. (*Ibid.*) Only if the evidence *clearly* weighs against the Commission’s decision may we reverse. (*Ibid.*)¹¹

¹¹ It is this directive that the trial court failed to follow. The trial court’s ruling reversing the Commission consisted of a list of evidence the trial court believed the Commission failed to consider and evidence the trial court believed the Commission should not have relied upon. The Commission’s decision was not reversible for failure to

C. Deference

Because the matters at issue are technical and scientific in nature, we accord the Commission a degree of deference. The Commission, in turn, must accord substantial deference to the conclusions of the department staff, as indicated by the structure of CESA, and the fact that the Commission’s decision is ultimately a technical, scientific determination. The structure of the legislation governing the listing and delisting of species indicates the Legislature intended that the Commission accord substantial deference to the recommendation of the department’s staff.

The department’s substantial role in the process is consistent with the deference we must accord its determination when reviewing the Commission’s decision. Where the question at issue is one in which the administrative agency possesses some expertise, it is accorded some degree of judicial deference. (*Yamaha, supra*, 19 Cal.4th at p. 11.) “Whether judicial deference to an agency’s interpretation is appropriate and, if so, its extent — the ‘weight’ it should be given — is thus fundamentally *situational*. A court assessing the value of an interpretation must consider a complex of factors material to the

consider evidence unless that evidence could have led the Commission to a different conclusion. The evidence the trial court believed the Commission should have considered was directed to petitioners’ argument that coho did not exist in streams south of San Francisco prior to hatchery plantings. As discussed below, the museum specimens are the best evidence on this point, outweighing less reliable evidence. In particular, the trial court took issue with the Commission’s failure to address petitioners’ concerns regarding the archaeological evidence from Año Nuevo and the museum specimens. However, as discussed below, in both cases petitioners’ concerns consisted of speculation, not evidence.

As to the National Oceanic and Atmospheric Administration (NOAA) memorandum that the trial court believed the Commission should not have considered, this is scientific evidence from which the Commission, informed by the department staff whose opinion is entitled to deference, may draw an inference. Petitioners argue against what the evidence says, but do not argue that the evidence is wrong. The courts defer to the Commission’s conclusions regarding the meaning of technical, scientific evidence because the Commission has “ ‘a comparative interpretive advantage over the courts’ ” in such matters. (*Yamaha, supra*, 19 Cal.4th at p. 12.)

substantive legal issue before it, the particular agency offering the interpretation, and the comparative weight the factors ought in reason to command.” (*Id.* at p. 12.) Judicial deference is more likely where “ ‘the agency has expertise and technical knowledge, especially where the legal text to be interpreted is technical, obscure, complex, open-ended, or entwined with issues of fact, policy, and discretion.’ ” (*Ibid.*) The matters we review here fit this description.

We also must be mindful of the Legislature’s express policy to “conserve, protect, restore, and enhance any endangered species or any threatened species and its habitat” (§ 2052) and that the conservation, protection and enhancement of endangered and threatened species and their habitat is a matter of statewide concern. (§ 2051.)

II

Coho Are a Native Species South of San Francisco Because They Inhabited the Streams Prior to Known Hatchery Activity and There Is No Evidence the Current Population Is Descended from Out-of-state Stock

CESA provides that an “ ‘Endangered species’ ” is a “native species or subspecies . . . in serious danger of becoming extinct throughout all, or a significant portion, of its range . . . ” (§ 2062.) Petitioners’ argument that the fish are not native, reduced to its essential elements, is as follows: (1) coho were never native south of San Francisco because they never existed there prior to hatchery plantings;¹² (2) coho are only in streams south of San Francisco currently because of nonnative hatchery plantings; and (3) the coho south of San Francisco are not a unique species, subspecies, or part of an ESU.

Petitioners offered four categories of evidence to show that coho are not native because they never existed south of San Francisco and are there now only because of hatchery plantings: (1) archaeological evidence; (2) historical accounts; (3) natural

¹² The petition argues: “Listing coho salmon south of San Francisco purports to restore something that never existed.” “The abundance of coho today in Scott and Waddell Creeks following a century of active hatchery intervention is obviously much greater than it was prior to 1906 (zero or imperceptible) . . . ”

conditions that are too harsh to support coho south of San Francisco; and (4) evidence of extensive hatchery plantings.

A. Archaeological Evidence

1. Evidence Presented to the Commission

Petitioners' argument that coho were not native south of San Francisco was based in part on archaeological excavations of Native American refuse middens south of San Francisco. The delisting petition stated that while other fish remains were discovered, no salmonid remains were found south of San Francisco. The petition relied heavily on studies performed by Dr. Kenneth Gobalet.

The department's report, looking specifically at Dr. Gobalet's studies as well as others that found no identifiable coho remains in Native American middens south of San Francisco, noted that the reason there is little evidence of coho remains is because of the difficulty of distinguishing between species of salmonid bones, because salmonid bones do not preserve well, and because the fish may have been prepared where they were caught. Even in areas where salmonid were plentiful, finding salmonid bones in archaeological middens is problematic. Dr. Gobalet stated: “ ‘Because of this paucity of materials, far more sampling is required to use the archeological record as definitive evidence for the absence of coho salmon from this section of coast.’ ” Dr. Gobalet also warned: “ ‘We must . . . be cautious because the absence of evidence is not evidence of absence.’ ”

The Commission also considered a 2006 study from an archaeological site at Año Nuevo State Reserve, which is south of San Francisco. As is pertinent here, the study found two salmonid vertebral centra, which one team of experts identified as two coho, and another expert identified as one coho and the other steelhead. The study stated: “The significance of these find[ings] at SMA-18 is that they establish that coho salmon were native to the coastal streams of San Mateo and Santa Cruz Counties, as species spawning in streams near the site, e.g., Green Oaks Creek, Año Nuevo Creek, or Waddell

Creek to the south of Año Nuevo. The latter is an especially likely source, because coho are found there today. The only definitive representatives of the salmonid family hitherto defined among archeological remains south of San Francisco have been steelhead rainbow trout This finding has important legal, conservation, and management implications [citation] in establishing coho as a native species.”

At the hearing before the Commission, petitioners’ attorney argued that the coho bones found at Año Nuevo were most likely from fish caught in the ocean, rather from coastal streams. The attorney noted that since the petition had been filed, the thesis of the petition had been turned into a scientific journal article. That article, published in the August 2006 publication of *Fisheries Magazine*, was written by Dr. V.W. Kaczynski, a consulting fisheries scientist in Parkdale, Oregon, and Fabian Alvarado, a former staff researcher with Big Creek Lumber Company and a graduate student at Yale University. (Kaczynski et al., *Assessment of the Southern Range Limit of North American Coho Salmon: Difficulties in Establishing Natural Range Boundaries* (Aug. 2006) *Fisheries*, at p. 374 (hereafter, Kaczynski and Alvarado).)

Dr. Gobalet, whose work petitioners relied upon, wrote a letter to Robert Briggs, director of petitioner Central Coast Forest Association. In the letter, Dr. Gobalet stated that the Kaczynski and Alvarado article had “distorted the archaeological record north of San Francisco.” Dr. Gobalet stated that the archaeological record *north* of San Francisco, which consisted of a single find in Del Norte County, is “paltry and up until recently the only documentation from coastal California.”

Also before the Commission was a draft article that had been submitted to *Fisheries* magazine for publication.¹³ The article was written specifically as a rebuttal to the 2006 Kaczynski and Alvarado article. The authors were Dr. Peter Adams of NOAA,

¹³ The article was published in September 2007. (Adams et al., *Coho Salmon are Native South of San Francisco Bay: A Reexamination of North American Coho Salmon’s Southern Range Limit* (Sept. 2007) *Fisheries*, at p. 441 (hereafter Adams article).)

National Marine Fisheries Service (NMFS); Dr. Louis Botsford of the University of California, Davis; Dr. Kenneth Gobalet; Dr. Robert Leidy of the United States Environmental Protection Agency (EPA); Dennis McEwan of department; Dr. Peter Moyle of the University of California, Davis; Dr. Jerry Smith of San José State University; Dr. John Williams, a fisheries consultant; and Dr. Ronald Yoshiyama of the University of California, Davis. This article, like Dr. Gobalet's letter, remarked on the paucity of archaeological evidence of coho anywhere in California. It stated: "To be accurate, Kaczynski and Alvarado (2006) should have reported that the archaeological record for coastal California showed no coho south of Mendocino County and not just south of San Francisco." With the discovery of coho remains at Año Nuevo, the archaeological record of coho south of San Francisco is just as extensive as the record north of San Francisco.

2. Commission's Findings

The Commission found that the petition "omitted a clear qualification" in the Gobalet article it cited as support. That article noted that "far more sampling is required to use the archaeological record as definitive evidence for the absence of coho salmon from this section of coast." The Commission stated that Dr. Gobalet indicated that if coho south of San Francisco existed in the archaeological records at the same frequency as in the San Francisco Bay area, at least 7,506 elements would have to be recovered before a single coho would be found. The Commission also found that salmonid bones do not preserve well due to higher porosity and because they are thinner than other bony fish, as stated by Dr. Gobalet. The Commission relied on Dr. Gobalet's research indicating that coho remains have only been documented at archaeological sites in the eastern San Francisco Bay and Del Norte County, despite the fact that the species is known to be native to Marin, Sonoma, Mendocino, and Humboldt Counties. The Commission found that the coho remains discovered at Año Nuevo south of San

Francisco “positively refutes petitioners’ arguments that archaeological remains of coho salmon have never been found south of San Francisco.”

B. Historical Accounts

1. Evidence Presented to Commission

In support of its claim that coho never existed south of San Francisco, the petition offered two scientific historical statements and four historical newspaper articles.

The scientific statements were made by David Starr Jordan, a Stanford University ichthyologist. These two comments were: “‘Only the king salmon [(Chinook)] has been noticed south of San Francisco[,]’” and “‘Only the quinnat [(Chinook)] and the dog [(chum)] salmon have been noticed south of San Francisco.’” The first of these comments was published in 1892 and 1894. The second comment was published in 1904 and 1907.¹⁴ The petition admits that there is little detailed natural history information prior to the late nineteenth century, and admits the literature from the latter period “reveals a great deal of confusion over the different types of fish, and especially the different varieties of anadromous fish in California.” The petition also cites a number of other indefinite comments made in the late nineteenth century that do not rule out the presence of coho south of San Francisco.¹⁵

The petition also cited two newspaper and two magazine articles. One article from December 1905 anticipated the upcoming planting of Chinook and coho salmon eggs from Washington, and stated: “It is believed if raised and planted here they will frequent our streams and thus give us another valuable game fish.” An article from 1906 noted that 50,000 coho eggs from Washington were being hatched, and stated: “if they thrive

¹⁴ The significance of the timing of these comments becomes apparent later with respect to the mislabeling of fish specimens at the Stanford museum.

¹⁵ For example: “‘This species [coho salmon, *Oncorhynchus kisutch*] is not common south of the Columbia, but it is sometimes taken in California’” and “[*Oncorhynchus kisutch*] is abundant from San Francisco northward.’”

here as hoped they will prove a valuable addition to the piscatorial tribe of our Santa Cruz waters.” An article from 1907 stated: “The hatching of the silver [(coho)] salmon is an experiment . . . with the hope of introducing into the streams of the county a new species of fish . . .” A 1909 article stated: “The silverside [coho] salmon have been hatched at the Brookdale hatchery and much is expected from this fine fish. The first planting in this State was made in the San Lorenzo River and a number have been taken this fall making a run up that stream.” Petitioners argue these articles indicate coho were not native to the locale, but were introduced to offer a new type of game fish.

Regarding the absence of historical accounts of coho, the department noted that there are specimens of coho from Scott and Waddell Creeks in the California Academy of Sciences (CAS) ichthyology collection that were collected in 1895, years before the first known planting of hatchery coho south of San Francisco in 1906. Eleven coho were collected from Waddell Creek and four from Scott Creek on June 5, 1895. Two were collected from San Vincente Creek and one from Gazos Creek by the same party, and although those samples were not dated, the reasonable assumption is that they were collected during the same period. Furthermore, coho were commercially harvested on the Pescadero and San Gregorio Creeks in San Mateo County as late as 1870.

Petitioners offered the Kaczynski and Alvarado article to explain the CAS specimens as follows. These specimens were collected from Scotts, Waddell, San Vicente, and Gazos Creeks by a Stanford University expedition in 1895. The Stanford University accession register and two original labels incorrectly identified the fish as chum and Chinook specimens, not coho. These specimens were kept at Stanford University before they were transferred to CAS. A recent examination determined that all but one of the specimens are coho. The article asserted, “the chain of custody has been broken and the reliability of the specimens is questionable.” The article also speculated that because the 1906 earthquake broke over 1,000 bottles and jars (although the majority survived intact), the specimens and date labels may have been switched after

the earthquake damage. The article further speculated that even if the specimens are correctly labeled, they came from “obscure fish planting activities” or stray spawning and represent “ephemeral populations.”

A letter from David Catania, the senior collection manager at the CAS, stated that the specimens have been examined in the last few years by three experts who have positively identified 17 of the fish as coho. As to the possibility that the specimens were damaged and misidentified in the earthquake, Catania stated: “The 1906 earthquake broke fewer than 25% of the bottles [in the collection]. The ichthyologists used their expertise to salvage specimens and the corresponding data from jars that had broken. Unless they were relatively certain, the specimens were discarded. Although one cannot completely rule out the possibility, there is no indication that any of the four bottles containing these 17 coho was ever broken.”

The Adams article also discussed and refuted the claims that the CAS specimens were unreliable. It dismissed the chain of custody argument, saying that “[i]t is unlikely that any museum specimens collected prior to the 1906 San Francisco earthquake, or even most modern reference collection, could withstand this legal standard.” With regard to any possible label mix up, the article states that after the earthquake “broken jars were recorded and accounted for, with their specimens bearing a unique label stating ‘Bottle broken during earthquake.’ [Citations.] Specimens were discarded if it could not be determined which broken bottle they belonged to, and specimens for which there was some doubt were placed in jars with labels [citation].” The coho specimens at issue are in the original jars and include the original locality labels and metal identification tags.

The Adams article noted that Jordan was the first president of Stanford University, where he established a major ichthyological program and fish collection. The article argued that Jordan’s statement that only the quinnat (Chinook) or dog (chum) salmon had been noticed south of San Francisco have no bearing on the absence of coho in light of the misidentification of juvenile salmon from the region. In fact, the timing of Jordan’s

statements coincide with the collection of the misidentified specimens at the Stanford collection. “Jordan added chum (dog) salmon as one of the only species noticed south of San Francisco between 1894 and 1904, indicating that he was aware of these collections . . . and accepted them as legitimate. This would be logical since he was based at Stanford University where these fish collections were being held.”

The department stated at the Commission hearing that it did not believe the lack of documented coho sightings in the historical literature to be determinative. The department quoted a statement by W.H. Shebley, the superintendent of hatcheries for the department, from 1913: “Strange as it may appear, the presence of the silver or coho salmon in the waters of the state remained unnoticed until Dr. Gilbert a few seasons ago called attention to them. Heretofore, all the salmon taken in our rivers have been commercially classed as Quinot or Chinook salmon.” Also J.O. Snyder, a West Coast ichthyologist stated in 1931: “Silver salmon are said to migrate to the headwaters of the Klamath to spawn. Nothing definite was learned about them from inquiry because most people are unable to distinguish them.”

2. Commission Findings

The Commission found that the general statements of Jordan indicating coho were abundant elsewhere did not mean they were absent south of San Francisco. The Commission discounted the early newspaper articles as “non-scientific reports of already depressed salmonid populations rather than as definitive scientific proof that these fishes were unquestionably absent from the area.” The Commission did not address Jordan’s comments that only the king and dog salmon were found south of San Francisco.

The Commission stated that early scientific collection efforts produced “clear evidence of historic coho salmon populations south of San Francisco.” The Commission was referring specifically to the CAS specimens. The Commission concluded that the petitioners’ claims regarding the validity of the CAS specimens was “pure speculation.”

In so concluding, the Commission considered the letter from the CAS ichthyology collections manager asserting the reliability of the specimens.

C. Environmental Conditions

1. Evidence Presented to Commission

The petition posited the theory that geographic conditions limited the coho to a prehistoric range with San Francisco as its southern limit. The petition emphasized the volatile nature of precipitation in the Santa Cruz Mountains. Comparing the precipitation trends in Santa Cruz County versus precipitation within the Puget Sound ESU, the petition stated that although Santa Cruz County receives less rainfall annually, the severity of local storm events exceeds those of Puget Sound from November through May. The petition reasoned that these storms wash out coho nests (“redds”). At the same time, the Santa Cruz Mountains are more likely to experience drought conditions throughout the year. This creates a tendency for the streams to develop sand bars that prevent fish from entering or leaving the streams. The petition stated that “in California” the droughts of the twentieth century were “‘eclipsed several times by droughts earlier in the last 2000 years, and as recently as the late sixteenth century.’” The petition concluded that coho salmon did not prehistorically establish permanent populations in streams south of San Francisco.

The petition surmised that coho are not currently abundant south of San Francisco for the same reasons that they were not present there prior to hatchery support. Thus petitioners claim that the combination of drought and flood would destroy coho populations without hatchery support.

The department’s report argued that the climatic and physical instability of the habitat south of San Francisco is not significantly different from that north of San Francisco, where there are known populations of native coho. The department found no evidence the streams south of San Francisco were more prone to flash flooding. A comparison of Lagunitas Creek, a known coho bearing stream in Marin County with the

San Lorenzo River south of San Francisco, showed very little variance in the amplitude of flow over a 20-year period that was chosen to include both drought and flood years. There was also little climatic difference from north to south of San Francisco.

Dr. Smith wrote a letter in response to the Kaczynski and Alvarado article, and the letter is part of the administrative record. The letter stated in pertinent part:

“[The Kaczynski and Alvarado] article made extensive references to my research at Gazos, Waddell and Scott creeks in 1988 and 1992 to 2006 to support their arguments that coho are not native. My research was significantly misquoted and misrepresented in the [Kaczynski and Alvarado] article, and the misrepresentations are corrected here.

“In general, my research can be summarized as showing that coho in my 3 study streams have been severely impacted by drought and flood impacts. However, these impacts have been recent and probably not typical of historic conditions. Coho of all year classes apparently persisted in Waddell and Scott creeks (and probably Gazos Creek) until drought in 1991 and floods in 1992, 1995 and 1998. Harsh conditions in the 1976-77 drought and in flood years of 1982 and 1983, which also may have been historically atypical, were insufficient to eliminate coho. The recent harsh conditions may have resulted from trends since 1976 in ocean conditions. The harsh conditions, and the weak or missing year classes that they have produced, represent a major additional challenge to restoration of coho throughout California, but are not evidence that coho south of San Francisco are not native.” (Boldface omitted.)

The letter went on to state that hatchery fish are necessary to restore the coho population because they could fill in “lost or weak year classes.” The letter stated that hatchery fish are not “solely responsible for continued coho presence, as the strong year class in 1984, 1993, 1996, 1999, 2002 and 2005 indicates.” Dr. Smith’s letter took issue with the Kaczynski and Alvarado article’s claim that all the coho in Scotts and Waddell Creeks are of hatchery origin, stating that the creeks have hatchery-influenced fish, but also contain wild-produced fish.

The letter also addressed the claim that streams south of San Francisco are unsuited for coho because of flooding and drought cycles:

“Late and intense winter storms have been a recent problem . . . making the populations quite precarious, but this does not demonstrate that the region was incapable of historically supporting sustainable populations. The present risky situation may be the result of reduction in distribution and abundance of coho by past habitat impacts, ongoing water diversions, combined with a shift in ocean conditions resulting in poorer ocean survival and increases in frequency and intensity of El Nino conditions (which also result in shifting winter storms later in the season, when they are more likely to impact early-spawning coho). The topography and geology of the area also makes storms and high sediment transport likely, *but similar conditions are found further north*. In Redwood Creek in Marin County I have also studied coho since 1992, and a weak year class there has also been impacted by recent drought and flood years. In fact, the decline of coho coast-wide in California is characterized by missing or weak year classes. The problems of maintaining coho are now widespread and are not particular to streams south of San Francisco; they are merely more thoroughly documented because of my geographically restricted research.” (Italics added.)

The Adams article noted that the southern boundary of the EPA’s coastal range ecoregion is south of Santa Cruz at the northern edge of the Salinas Valley, and asserted that the southern limit of this ecoregion is an ecologically sound southern boundary for coho salmon because it marks the end of the coastal redwood forests that provide suitable habitat for coho.

The article also discussed the extreme flow conditions, which petitioners assert is the reason coho cannot survive south of San Francisco.

“*Extreme flow conditions* are largely based on graphs in Kaczynski and Alvarado (2006) that show that the region south of San Francisco region is more likely to receive more than four inches of rain in a single day than the region immediately north of San Francisco Bay (Marin County). While this is true for all months except October, the difference in rainfall pattern between Santa Cruz County and Marin County is very small. In six months of the year, Santa Cruz County is 0.22% more likely to receive more than four inches of rainfall than Marin County; while in October, Marin County is more 0.1% likely to receive more than four inches. Although extreme flow events can devastate year classes of coho in coastal California streams [citation], it is very unlikely that such small differences in extreme flow events were biologically significant under historical conditions. However, during the 1982-1998 period, severe storms occurred

unusually late (February and March) throughout Central California, occurring after most or all coho had spawned. This decadal storm sequence, which included the strongest El Nino years of record (1982-1983 and 1997-1998), resulted in severe redd destruction in southern streams and elsewhere. However, coho year classes persisted.”

The article discussed the claim that severe drought conditions make the streams south of San Francisco unsuitable for coho, stating that drought conditions also weakened the population in Marin County, and that water diversions during the drought were a major cause. As to the claim that warmer stream temperatures make the streams south of San Francisco unsuitable, the article noted that the “maximum stream temperature range in the south of San Francisco region is the same as that in several streams north of San Francisco (in Marin and Mendocino counties), while some inland coho streams further north have higher maximum temperatures.” Stream temperatures are also more likely to be affected by the distance from the coast, than by north-south distances. The article noted that the problem of fine sediment, which is abundant in Santa Cruz County streams, is neither new nor limited to streams south of San Francisco, but is a problem for all streams in the southern coho region, and has impacted northern streams as well.

2. Commission’s Findings

The petition claimed that extreme weather events are the principal reason that coho colonies are unsustainable south of San Francisco. The Commission noted that in supplemental material provided by petitioners, the claim was made that information in a joint report of the department and NOAA supported petitioners’ assertion. The Commission found that petitioners had mischaracterized the joint report. The report compared the “‘Northern Monitoring Area’” with the “‘Southern Monitoring Area’” and found that the discharge of the southern streams “‘is more episodic than northern streams.’” (Italics omitted.) However, the boundary between the two areas was at the Santa Cruz/Monterey county line, thus the Northern Monitoring Area included the streams south of San Francisco that are in dispute.

The Commission found that certain graphs cited by petitioners showed that the habitat north of San Francisco is not substantially different from that south of San Francisco: “As the graphs clearly show, percentage of wet days and amount of precipitation per wet day in Santa Cruz and San Mateo counties are essentially identical to those of Marin County and areas farther north along the central and north coast.” The Commission also relied on a NOAA publication that estimated the historical potential of streams to be suitable for coho based on geomorphic and hydrologic characteristics. The modeling described in the publication showed that Marin County streams are ecologically similar to Santa Cruz County streams.

The Commission questioned the Kaczynski and Alvarado article’s conclusion that Santa Cruz County is unsuitable for coho because it is more likely to receive four inches of rain in a single day than Marin County in the winter and spring. The Commission found that to validate this finding, one would need to examine the rain patterns along the entire range of coho. For example, the difference in precipitation patterns of Marin County and Washington State are likely to be more significant, yet coho persist in Marin County. Kaczynski and Alvarado also stated that devastating floods south of San Francisco and low stream flows that are insufficient to open sand bars are reasons coho salmon could not have persisted there. However, these conditions are also natural for streams immediately north of San Francisco, yet coho have maintained runs in those streams. Likewise, the coastal geology of the Santa Cruz Mountains is not unique, but closely resembles the geology of the Mendocino Range north of San Francisco. While there may be localized habitat differences, there is no conclusive scientific evidence to support a conclusion that the habitat differences north and south of San Francisco are significant enough to preclude coho presence south of San Francisco.

Petitioners claimed that without hatchery support, poor ocean conditions would have caused the extinction of coho populations south of San Francisco. Their argument was that ocean conditions in the region are so unsuitable that coho could not exist there

naturally. To make this determination, petitioners used a simple static cohort replacement rate (CRR) calculation. The department opined that the static CRR calculation was too simplistic to accurately model replacement rate dynamics in coho, and the Commission agreed. The Commission concluded the method used did not accurately model the way that populations behave, or properly characterize the meaning of CRR in terms of population persistence.

The Commission stated that even if the petitioners' methods were valid for predicting when a population would go extinct, which they were not, real empirical data was largely lacking for freshwater and ocean survival estimates in the region. The Commission then pointed out that the only estimate of freshwater survival in the region was from a 1954 study, that estimated the "average egg to smolt survival was 1.43%" in Waddell Creek. Using the petitioners' simple static CRR model, the Commission stated that ocean survival would have to be around 6 percent in order to return one female per spawning female, rather than 8.6 percent as stated by petitioners. The number of eggs per female used in the calculation "greatly affect the result." Citing a 1991 article, the Commission stated that individual female coho may produce between 1,983 and 4,706 eggs. Since slight variation may greatly affect the result, this range shows one of the problems with petitioners' simplistic calculations. Coho have experienced periods of poor ocean conditions over the past few decades across their range, and although populations have declined, they did not go extinct during those periods, even though petitioners' calculations could be used to predict such an outcome.

The department presented "a more dynamic simulation" that suggested coho experienced very bad conditions between 1980 and 2000, but did not suffer extinction. The Commission concluded: (1) the coho south of San Francisco are part of a larger metapopulation that includes population to the north; (2) the structure complicates the assumptions of static survival estimates because these populations are connected by exchange; (3) the three-year spawning cycle of coho also acts as an extinction buffer by

retaining a stock of fish in the ocean; and (4) the three-year life history, along with exchange among populations significantly improves the chances that coho could persist in the face of periodic poor ocean and freshwater conditions.

D. Planting and Straying

1. Evidence Presented to Commission

In making the case that coho are not native to the streams south of San Francisco, petitioners had to account for the fact that coho are now present in those streams and have been present for at least 100 years. They maintained coho were not native, but were introduced through hatchery plantings. They also speculated that strays from northern waters occasionally may have spawned in the coastal streams of Santa Cruz County.

Petitioners presented no evidence that coho were planted prior to 1906, nor evidence that the coho populations prior to 1906 were the result of straying. The first record of coho planting shown by the petition occurred in 1906 at the Brookdale Hatchery on the San Lorenzo River. The petition stated that by 1910, 400,000 coho salmon eggs had been shipped from Washington State. The petition speculated that plantings would not have been necessary if coho were already present in Santa Cruz County.

Petitioners stated that the streams of the Santa Cruz Mountains have been frequently restocked with hatchery coho, and surmised that without such intervention, the coho would not have survived.

The department report provided evidence to counter petitioners' argument that coho exist in the streams south of San Francisco only because of hatchery fish. The report pointed to the fact that coho eggs were harvested from approximately 518 females at the Scott Creek egg taking station in 1909. The report surmised that this number of females could not have been produced from the 50,000 eggs delivered to the Brookdale Hatchery on the San Lorenzo River in 1906, even if all the fry had been planted in Scott Creek. The average egg-to-fry survival rate of 75 percent, combined with the maximum

fry-to-smolt survival rate of 9.7 percent and the maximum smolt-to-adult survival rate of 7.7 percent would yield an estimated 280 adults. This is far less than the estimated 1,036 fish needed to produce 518 females in 1909, assuming a one-to-one ratio of males to females.

While acknowledging that hatcheries have operated in the area south of San Francisco since the early 1906, the department report argued there is no data to support the assertion that coho have been maintained in streams south of San Francisco only by hatchery input. This is primarily because there is little data available to evaluate the hatchery contribution to natural abundance, and the petition does not provide such data. Moreover hatchery reports indicate that hatchery production south of San Francisco has been sporadic and relatively small. From the available data it is not possible to determine whether the level of sporadic production maintained the existing natural populations.¹⁶

The petition concluded that coho populations south of San Francisco are struggling to survive because of recent reductions in hatchery support and natural hostile conditions. The department report countered that the reduction in hatchery production is because of the decline in broodstock. The department further criticized the petition for dismissing “the well-documented effect that habitat degradation has had on reducing coho salmon populations (e.g. increased sedimentation from land-use practices,

¹⁶ Hatchery plants, either as eggs or juvenile fish, totaled 2,704,742 to streams south of San Francisco, compared to a total of 6,257,333 to other CCC ESU streams. Of those south-of-San Francisco plantings with known origins, two of the plantings came from outside California--400,000 from Washington between 1906 and 1910, and 48,225 from Oregon between 1963 and 1964. Seven plantings came from California streams in the SONCC ESU--75,500 eggs or juveniles from the Eel River, 293,647 from Prairie Creek, and 19,770 from the Klamath River. The remaining 370,548 known-origin transplants came from CCC ESU fish, including 45,951 from streams south of San Francisco. The most recent transplants came from the south-of-San Francisco area itself, followed by Prairie Creek.

elimination of habitat and decreased water quality due to urbanization, reduced stream flows due to water diversion) [citation].”

The department also rejected petitioners’ argument that clear-cut forestry has actually been beneficial to salmonid. The department found that the argument “is a gross oversimplification of the complex process of geomorphology and ecology. Although deforestation can lead to higher flows, these deforested areas tend to have higher peak flows with shorter duration [citation] which can leave fishes stranded off-channel or moved to undesirable habitats [citations]. Higher peak flows can lead to decreased bank stabilization, modification of the stream through erosion and siltation, and decreased morphological complexity [citations]. Destabilized banks increase the potential for landslides and siltation which can bury or smother salmonid redds and alevins [citation]. High silt loads have also been a deterrent to migrating smolts and adults [citation] and can damage gill tissue of fry, smolt, and adults [citation]. Other impacts that can result from deforestation are reduction in cover and shade, reduction in nutrient input, and increased water temperature from solar radiation. All of these factors can have a detrimental effect on salmonid populations [citation].”

The department also provided genetic evidence to refute the claim that coho exist south of San Francisco only because of hatchery plantings. The department cited recent studies, which indicated the coho south of San Francisco are part of the CCC coho ESU, and were most closely related to populations immediately to the north in Marin County.

“These data, properly interpreted by the scientists who collected them, clearly show that current populations of coho salmon south of San Francisco experience significant genetic exchange with other populations north of them. The pattern of genetic structure seen in these datasets shows that coho salmon south of San Francisco are clearly within the Central California Coast Coho Evolutionary Significant Unit (CCC Coho ESU). South of San Francisco coho runs are most closely related to one another. Contrary to the assertions of the petitioners, the closest relatives of these south of San Francisco populations are immediately north of them in Marin County. The substantial genetic distance observed between Scott and

Waddel creek populations and Noyo River populations make it very unlikely that the southern population is descended from Noyo River hatchery fish as stated by the petitioners. Also contrary to the petitioner's assertions, these two datasets show similar concordance between genetic and geographic population structure.”

Dr. Gobalet disagreed with the petitioners' argument that current coho populations south of San Francisco are the result of early stocking programs, because such programs were not very successful.

“Early stocking programs were so unsuccessful the ‘Releasing hatchery fish into a stream is like dropping suburban teenagers into the middle of the Congo and asking them to walk out of the jungle to the coast. Few will make it’ [citation] Montgomery [citation] also quotes Dr. Henry Ward from a AAA symposium in 1938. Ward summarized efforts to transplant and introduce new runs of Pacific salmon: ‘A few of these experiments have been successful in a degree but none of them in a large way. On the other hand, most of them have been total failures and these include experiments that were large and were carried out by able, energetic and well trained personnel’ [citation].”

Dr. Smith also objected to his research being used to support the claim that hatchery introduction is solely responsible for continued coho presence. “I have never stated that the hatchery is solely responsible for continued coho presence, but I have emphasized that the restoration hatchery is probably necessary for the restoration of coho south of San Francisco. . . . The hatchery is probably now necessary for restoration, but is not solely responsible for continued coho presence, as the strong year class in 1984, 1993, 1996, 1999, 2002 and 2005 indicates.”

Dr. Smith found it “not likely” that all coho found today in Scotts and Waddell creeks are of hatchery origin.

“Coho were present in Gazos, Waddell and Scott creeks prior to any returns from the Big Creek Hatchery, which was reestablished in 1982. Since then all 3 streams have had hatchery-reared fish introduced to them, so they are hatchery-influenced, but wild-produced fish were also present. . . . In fact, the substantial environmental differences between the northern California, Oregon and Washington sources and any native fish and their habitat conditions . . . suggest that the nonnative fish would have had poor success;

they would attempt to enter streams early, when sandbars were still in place, and if successful at entering, would spawn early, when winter storms would be more likely to scour redds.” (Underscoring omitted.)

The Adams article stated that the vast majority of out-of-area hatchery fish in the streams south of San Francisco came from the 1960’s and 1970’s. The numbers of plantings used by Kaczynski and Alvarado to support their claim of coho planted in streams south of San Francisco were actually the number of fertilized eggs brought to the hatcheries, and assumed 100 percent survival of the eggs. Also, in standard early hatchery practice, the fry¹⁷ were released into streams after minimal hatchery rearing, at a stage when even the mortality of wild fish is high. “Kaczynski and Alvarado (2006) do not seem surprised that only 250,000 eggs from stocks adapted to very different conditions could establish coho populations in only a few years [(coho were commonly acknowledged to be in Monterey Bay area streams by 1910)] in habitat they characterize as marginal, harsh, and extreme.”

The Adams article supported its conclusion that coho are native south of San Francisco, rather than hatchery plants, with genetic evidence. Recent genetic studies of coho south of San Francisco show the current populations are most closely related to coho from Marin County. This strongly suggests that these fish are not descended from fish introduced from the Noyo River in Mendocino County, as suggested by Kaczynski and Alvarado.

As to straying, the Adams article pointed to the coho specimens found in 1895 in four geographically sequential streams south of San Francisco. The presence of coho in all four streams “argues strongly against the concept that these coho are simply strays

¹⁷ Coho salmon have six stages: egg, alevin (hatched egg that is more yolk sac than fish), fry, fingerling, smolt (juvenile salmon), and adult. (Goodman, *Preserving the Genetic Diversity of Salmonid Stocks: A Call for Federal Regulation of Hatchery Programs* (1990) 20 Envtl. L. 111, 116-117.)

from more northern populations, especially since all four streams contain coho at the present time.”

The article also cited commercial fishing records of coho in Monterey Bay prior to the first fish hatchery planting in 1906: “ ‘Salmon in any considerable amount have been taken in Monterey Bay only since 1900, during which period the catch has increased. In 1904 the fishery began on May 27 and lasted until August 6. . . . The catch in 1904 comprised 132,790 pounds of silver and 531,110 pounds of Chinook salmon. . . . Silver salmon weigh from 4 to 10 pounds each, the average being 6 pounds.’ [¶] Based on the average weight given in the quote, the coho catch in 1904 would have amounted to about 22,130 fish.” The article concedes that the origins of those coho are unknown, but asserts, “their significant presence in Monterey Bay makes it less likely that only a few occasional strays entered the spawning streams south of San Francisco.”

2. Commission’s Finding

The petitioners argued that there have never been any native coho in streams south of San Francisco, and that all the coho that have existed there and exist there today are the result of hatchery plantings. The Commission found “no scientifically credible data that this assertion is true.” “What the petitioners call ‘evidence’ is actually persuasive writing, not valid scientific evidence, and should be recognized as such.”

The Commission found no evidence any of the hatcheries raised or planted coho south of San Francisco prior to 1906. The department asked petitioners to provide scientifically credible support for their assertion that coho have been maintained in streams south of San Francisco only by hatchery input. Petitioners’ response was: “The **most likely times** since their introduction for coho salmon to have succumbed to stochastic extirpation would have been during one of the two most sever [*sic*] California droughts of the last century. These droughts occurred in the early 1930s and mid 1970s. It is estimated that both of these droughts were severe enough to have a recurrence interval of over 100 years [citation]. Although, they were mild in comparison to

prehistoric droughts, without anthropogenic intervention **they would probably** have been capable of stressing local coho populations to the point of extirpation. . . . The 1970s drought **nearly** extirpated all coho south of San Francisco and led to the creation of the Monterey Bay Salmon and Trout Project Similarly, prior to recent years, residents and anglers took it upon themselves to manually open the sandbars at the mouths of our creeks to allow returning anadromous fish to spawn.” The Commission found that petitioners had provided no evidence in the form of population size estimates or estimates of the ratio of hatchery to natural coho to support their claims. The Commission found that petitioners’ argument that favorable ocean conditions and human intervention had compensated for the two major droughts that would otherwise have extirpated the coho populations was “pure conjecture,” unsupported by evidence.

The Commission found the department’s evidence on stocking data to be the best available scientific information. It indicated that salmon hatchery operations in the region were relatively small and primitive, and that they relied on early stage plants, which have notoriously poor survival prospects. The Commission found that genetic information indicates coho south of San Francisco are part of the CCC coho population and are not the result of hatchery introduction. Coho populations south of San Francisco are more closely related to each other than to any other population, and their closest relatives are the population in Marin County. The Commission found the genetic results “are not consistent with the petitioners’ claim that plantings replaced lineages in the southern part of the range, or that these populations are non-native introductions.”

Petitioners argued that any populations of coho historically existing south of San Francisco were merely “ephemeral.” The Commission stated that petitioners did not define the term, but implied that if a population is ephemeral, it is not important to overall population viability and cannot be protected under CESA. The Commission concluded these implications were both wrong.

First, the Commission found petitioners had presented no significant or credible evidence that coho south of San Francisco were ephemeral populations. Second, petitioners presented insufficient evidence of the relationship of populations south of San Francisco with other nearby groups from which the Commission could determine whether ephemeral populations are important to overall population viability. The Commission stated that “in potentially non-viable populations, such as the endangered central coast coho salmon, these subpopulations take on a much greater importance for persistence of the metapopulation in that they 1) add to the genetic diversity of the larger associated population, 2) provide a means of recolonization of habitat where they had previously become extirpated, 3) provide a ‘safety net’ in case of other sub-populations are extirpated, and 4), lead to range expansion and ultimately the recovery of the species.”

There was insufficient information about California coho metapopulation structure and dynamics to determine the importance of the population south of San Francisco, but credible scientific evidence was produced that there is substantial gene flow between south of San Francisco coho and coho populations to the north, and that metapopulation processes may be important to long term viability of coho across their ranges. The Commission thus concluded that southern coho populations are important to overall California coho viability.

The Commission stated that even if the coho population south of San Francisco is the result of stray spawnings and ephemeral populations, the populations south of San Francisco would represent a range expansion of the species in California and be subject to provisions of CESA, regardless of how they got there.

E. Analysis

As indicated, petitioners’ argument that coho south of San Francisco should never have been listed as endangered is premised on the argument that they do not fit the definition of an endangered species because they are not native. This argument, reduced

to its basic elements is as follows: (1) coho salmon are not native to streams south of San Francisco because they never existed there prior to hatchery plantings, and (2) the coho salmon that currently inhabit the streams south of San Francisco are not native because they are the result of nonnative hatchery plantings.

1. The CAS Samples Prove Coho Salmon Existed in Streams South of San Francisco Before Hatcheries

Petitioners' archaeological, historical, hatchery, and environmental evidence, recounted above, was all offered to show that coho are not native in streams south of San Francisco because they never existed there before hatchery plantings. Indulging all presumptions in favor of the Commission's decision, the petitioners' evidence is not strong enough to justify delisting. Petitioners presented circumstantial evidence from which more than one inference could be drawn. For example, the inferences petitioners drew from their archaeological evidence was disputed by the very expert who authored the studies upon which the evidence was based, as well as by other archaeological evidence, i.e., the finding at Año Nuevo. Likewise, petitioners drew an inference from the historical accounts of other fish and salmon in the area that no coho were ever found in the area. This could be because there were none, or because the authors of the statements were unaware of the existence of coho that were there.

While it is not necessary that petitioners' evidence be conclusive, it is necessary that the evidence be substantial enough to warrant delisting when considered with contrary evidence in the record. If there is evidence against the petition that "persuasively, wholly undercut[s] some important component of [petitioners'] *prima facie showing*" we will affirm the Commission's decision. (*CBD, supra*, 166 Cal.App.4th at p. 612.) There is such evidence in this case-- the CAS specimens. Unlike the conflicting inferences presented by the circumstantial evidence offered by petitioners, the specimens are direct evidence from which no conflicting inferences may be derived. The specimens were captured from four adjacent streams before any recorded hatchery

coho were planted. The specimens are in existence today, and have been confirmed by experts to be coho salmon. Petitioners’ “significant questions as to the legitimacy and significance of specimens in the collection of the California Academy of Sciences,” are nothing more than speculation.¹⁸ Specifically, petitioners argued the specimens are not good evidence because they were originally mislabeled as chum and Chinook salmon, because “the chain of custody has been broken,” and because the 1906 earthquake broke more than 1,000 bottles and jars in the Stanford collection, “although the majority survived intact.” The original mislabeling as other types of salmon is of no importance. The fish specimens exist now and have been identified as coho. Petitioners do not explain in what way the chain of custody has been broken, nor how this invalidates the evidence. The possibility that the 1906 earthquake broke these particular bottles, and that these particular bottles were then mislabeled is nothing more than speculation. There is no evidence to support the argument. Moreover, the senior collection manager at CAS stated there was “no indication that any of the four bottles containing these 17 coho was ever broken.” The Adams article stated further that the specimens are in the original jars and include the original locality labels and identification tags.

The CAS specimens are more than just a counter showing that raises a conflicting inference that coho salmon existed in streams south of San Francisco prior to hatchery activity. (See *CBD*, *supra*, 166 Cal.App.4th at p. 612.) It is “countervailing information and logic [that] persuasively, wholly undercut[s] some important component of [the petitioners’] *prima facie* showing.” (*Ibid.*) Accordingly, there is unrefuted evidence to

¹⁸ The trial court found that petitioners had “raised significant questions as to the legitimacy and significance of specimens in the collection of the California Academy of Sciences, which currently are stated to be coho collected south of San Francisco in 1895. . . Dr. Kaczynski . . . pointed out various breaks in the chain of custody, changes in labeling and the fact that the original logs identified specimens as other salmon species.”

support the Commission’s conclusion that coho are native to streams south of San Francisco.¹⁹

a. *The Number of Specimens Was Sufficient to Show a Native Population*

Perhaps recognizing that the CAS specimens are determinative on the issue of the existence of coho prior to hatchery plants, petitioners set forth a few other lines of argument. First, they argued only a “handful” of specimens were collected, which does not demonstrate a self-sustaining population. We are unconvinced by the argument that we should discount the CAS specimens because only a few fish (17 to be precise) were collected and preserved. They were samples in a collection meant to be representative of the natural population. The collection was never meant to contain the entire population of coho in existence at the time. The Commission acted well within its discretion in finding the CAS samples were representative of a native population in the streams south of San Francisco.

b. *Petitioners Present No Evidence the Specimens Were Strays*

As to the “self-sustaining” nature of the population, the argument seems to be that any coho collected in 1895 were simply strays and not evidence that there was a population of self-sustaining fish. There is no evidence--only speculation--that the CAS specimens were the result of a population of strays. As stated in the Adams article, the fact that coho were found in four geographically sequential streams, and that those

¹⁹ The Legislature has apparently agreed with the conclusion that the streams south of San Francisco were part of the coho’s historical range. In 2012, the Legislature passed the Coho Salmon Habitat Enhancement Leading to Preservation Act (HELP Act). (§ 6950 et seq.) The HELP Act declared: “coastal rivers and tributaries in Del Norte, Siskiyou, Humboldt, Trinity, Mendocino, and Lake Counties. The historical range for the CCC ESU includes coastal rivers and tributaries in parts of Humboldt, Mendocino, Sonoma, Napa, Marin, Solano, Contra Costa, San Francisco, Alameda, San Mateo, Santa Clara, and Santa Cruz Counties.” (Stats. 2012, ch. 541, § 1, p. 500, italics added.) The Legislature stated that “[t]he populations south of the San Francisco Bay are listed as endangered and considered to be virtually extinct.” (*Ibid.*)

streams all now contain coho populations, make it unlikely that the specimens were taken from a stray population of northern coho.

Furthermore, we are aware of no authority that the term “native species” as set forth in CESA contains a requirement that the species or subspecies be self-sustaining, and if so for what period of time. CESA contains no such express requirement. This is not the sort of factual question contemplated by the statute, wherein we review whether the petition provided sufficient information to indicate that the petition may be warranted. (§ 2074.2.) Rather, it poses the legal question of what the Legislature intended by protecting native species. We are presented here with evidence that coho were naturally occurring in the streams south of San Francisco because the CAS specimens were taken prior to documented hatchery activity in that area. Neither we, the Commission, the department, nor petitioners have any way of knowing whether coho lived in those streams for one or one thousand years. The petitioners would put the court in the position of determining how long is long enough for a naturally occurring species to be considered native. Is one year long enough, five years, ten years, a thousand? This is a situation in which we accord the Commission’s judgment a significant amount of deference because it possesses special familiarity with the pertinent legal and regulatory issues. (*Yamaha, supra*, 19 Cal.4th at p. 11.) It is a situation where we give great weight to the Commission’s interpretation because it “ ‘has a comparative interpretive advantage over the courts,’ and . . . ‘. . . the interpretation in question is probably correct.’ [Citations.]” (*Id.* at p. 12.) We must err on the side of protecting the species in interpreting CESA because the Legislature has expressly set forth its policy of conserving, protecting, and restoring any endangered species and its habitat. (§ 2052.)

Thus, we accord substantial deference to the Commission to determine how long is long enough for a species or subspecies to be self-sustaining in a particular area before it is deemed to be a native species capable of being listed as endangered, and to apply the

facts here to that determination. Coho are thus “native,” as specified in section 2062, and may properly be listed as endangered.

c. Persistence is Not a Criterion for Listing

The data petitioners submitted on environmental conditions south of San Francisco was argued not only to show that coho could never have existed in the area, but also to show that they cannot now persist, and as a policy matter should not be protected. Whether coho can now persist in the streams south of San Francisco without hatchery support and whether as a matter of policy they should be protected is not pertinent to the question presented by the petition, i.e., whether the species should have been listed as endangered because it was not a native species. We are unaware of any authority for the proposition that a species is not endangered if it cannot “persist” without human interference. On the contrary, under the federal Endangered Species Act of 1973 (16 U.S.C. § 1531; FESA) persistence of a species has been relied upon to support the *delisting* of a species. (*Friends of Blackwater v. Salazar* (D.C. Cir. 2012) 691 F.3d 428, 435.) The necessity of using hatchery fish to support the survival of an endangered species is consistent with CESA which declares that it is the policy of the state to conserve endangered species, and that conservation includes, *inter alia*, propagation and transplantation. (§§ 2055, 2061) The Commission correctly rejected an argument that the coho did not qualify as an endangered species because it could not persist without hatchery support.

2. Petitioners Have Presented No Evidence the Native Coho Were Replaced by Nonnative Coho, and the Department Presented Evidence the Current Population is Part of the CCC ESU

Petitioners next make the argument that whatever native coho existed must have died out because of the inhospitable environmental conditions, and the coho that exist in the streams now are solely the result of hatchery plantings. However, petitioners present no evidence the native coho were extirpated and replaced by hatchery fish. Instead, the

petition says the following: “The *most likely* times since their introduction for coho salmon to have succumbed to stochastic extirpation would have been during one of the two largest California droughts of the last century. These droughts occurred in the early 1930s and the mid 1970s. It is estimated that both of these droughts were severe enough to have a recurrence interval of over 100 years [citation]. Although, they were mild in comparison to prehistoric droughts, without anthropogenic intervention they would *probably* have been capable of stressing local coho populations to the point of extirpation Coincidentally, during both of these time periods coho salmon were heavily planted in Santa Cruz County [citations].” (Italics added.)

Petitioners’ argument is based on an inference that drought conditions, coupled with other inhospitable environmental conditions, would have resulted in the extirpation of the coho populations without hatchery support. The petition stated that population structure estimations suggest that coho south of San Francisco are more closely related to Noyo River coho than Russian River coho, and that Noyo River stock was planted more recently and in greater numbers than Russian River stock.

However, even if petitioners’ evidence were sufficient to show that all the native coho salmon were extirpated at some point in the past and replaced by hatchery fish, we would still conclude that such fish are native, absent proof the current fish are descendants of out-of-state coho salmon. Our analysis of this issue depends in part on our answer to one of the questions put to this court by the Supreme Court on remand: “does the term ‘native species’ in the definition of ‘endangered species’ (§ 2062) mean ‘native to the area’ in which the species is listed, as plaintiffs assert, or ‘indigenous to California,’ as the Commission claims”? (*Central Coast Forest Assn. v. Fish & Game Com.*, *supra*, 2 Cal.5th at p. 604.)

Section 2062 provides in pertinent part: “‘Endangered species’ means a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range

due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.”

The Commission argues that both it and the department have consistently interpreted the term “native” to mean that the species as a whole must be native to California. The Commission asserts that once listed, the species are protected wherever they may be found throughout the state.

Petitioners argue that “once the focus of the statutory term ‘species’ is narrowed to a particular geographic area, it advances the purpose of [CESA] to assess ‘nateness’ within that particular area.” Petitioners argue there are logical problems with defining “nateness” on a statewide basis when the listing itself is defined by location. For example, coho north of Punta Gorda are native, but they are listed as threatened, rather than endangered. Therefore, a coho north of Punta Gorda is not an endangered species to be protected wherever it is found throughout the state, even though it is native to California.

The answer depends on an interpretation of a statute and its application to the undisputed facts, which is a question of law we review de novo. (*California Forestry, supra*, 156 Cal.App.4th 1535, 1544.) “While we exercise our independent judgment in interpreting a statute, we give deference to an agency’s interpretation if warranted by the circumstances.” (*Id.* at p. 1545.) “We begin with the basic premise that ‘[l]aws providing for the conservation of natural resources’ such as the CESA ‘are of great remedial and public importance and thus should be construed liberally.’ [Citation.] Within the CESA itself, the Legislature has ‘expressed the objects to be achieved and the evils to be remedied.’ [Citation.] The evils to be remedied include the extinction of ‘[c]ertain species of fish, wildlife, and plants,’ and the danger or threat of extinction of ‘[o]ther species of fish, wildlife, and plants.’ (§ 2051, subds. (a), (b).) The objects to be achieved include the ‘conserv[ation], protect[ion], restor[ation], and enhance[ment] [of] any endangered species or any threatened species.’ (§ 2052.)” (*Id.* at pp. 1545-1546.)

This court has held that the “range” part of the definition of an endangered species means the species’s California range. (*California Forestry, supra*, 156 Cal.App.4th at p. 1551.) In so holding, we stated, “it is reasonable to infer that the CESA’s focus is protecting species within the state, which is the extent of the state’s regulatory authority. In enacting the CESA, the Legislature declared that endangered and threatened species were of ‘value to the people of *this state*, and the conservation, protection, and enhancement of these species and their habitat is of *statewide concern*.’ (§ 2051, subd. (c), italics added.) . . . In addition, the CESA limits protection of species or subspecies to those that are ‘native.’ (§§ 2062, 2067.) By narrowing the definition of endangered and threatened species to include only native species or subspecies, the Legislature demonstrated its intent that the CESA apply to protect species or subspecies within the state.” (*Id.* at p. 1550.) The protection of an endangered species is a statewide concern. The Commission is correct that in most cases, if the endangered species is determined to be native to California it is protected wherever it is found in California. This is apparent not only from the declared purpose of CESA, but also from the list of endangered and threatened species. Only coho and Chinook salmon are designated endangered or threatened based on their location. (Cal. Code Regs., tit. 14, § 670.5, subds. (a)(N) & (b)(C-D) [coho salmon south of Punta Gorda are endangered, coho salmon north of Punta Gorda and spring-run Chinook salmon of the Sacramento River draining are threatened].) Otherwise, the protection of a native species is limited only by the California border. Thus, the term “native” means native to California.

It is apparent that native coho salmon in California are either threatened or endangered, depending on whether they are found north or south of Punta Gorda. There is no specified northern limit (other than the California border) to the listing of threatened coho, and there is no southern limit (other than the California border) to the listing of endangered coho. Thus, we assume that a bald eagle is endangered wherever it is found, but a coho salmon is *either* endangered if it is south of Punta Gorda or threatened if it is

north of Punta Gorda. Because there is no southern border attached to the listing of endangered coho salmon, any native coho found south of Punta Gorda within the state is endangered, even if the fish found in a particular stream is not genetically identical to the fish that existed there prior to hatchery support.

Because we have determined that “native” means native to California, petitioners’ evidence must show that the coho salmon currently in the streams south of San Francisco are not native because they have been transplanted from outside California. Petitioners’ evidence is wholly insufficient to show this.

The department’s evidence, on the other hand, shows that the fish currently inhabiting the streams are part of the CCC ESU.

As previously indicated, the Commission relied on recent genetic evidence to support its finding that the coho population currently inhabiting the streams south of San Francisco is a native population, albeit hatchery-influenced. The Commission relied on a NMFS finding, which in turn relied upon a 2005 NMFS/NOAA study that concluded coho salmon existed as functionally independent populations in three streams south of San Francisco, and as dependent populations in the smaller watershed that drain the coastline south of San Francisco.²⁰ The study stated:

“Recent work at the NOAA Santa Cruz Laboratory provides additional genetic data for evaluation of population structure of coho salmon in the CCC-Coho ESU . . . [¶] . . . [¶]

“Available genetic data describe a current population structure within the CCC-Coho ESU that is consistent with a plausible hypothesis for historical population structure. In particular, two analyses--the construction of phylogeographic trees . . . and examination of isolation-by-distance . . . -

²⁰ Functionally independent populations “are those with a high likelihood of persisting over 100-year time scales and conform to the definition of independent ‘viable salmonid populations’” Dependent populations “have a substantial likelihood of going extinct within a 100-year time period in isolation, yet receive sufficient immigration to alter their dynamics and reduce extinction risk.”

-offer strong support for the role of dispersal among populations in generating concordance between geographical and population genetic structure. Among-basin transfers are likely to have altered the population genetic structure of coho salmon in the CCC-Coho ESU from its historical state, but it is not clear how strong an influence such transfers have had. In some cases, however, weak differentiation among populations suggests that such transfers have had some effect.

“For example, inter-basin transfers are likely to have had at least some effect on population genetic structure of coho salmon south of the Golden Gate. Estimates of pairwise F_{ST} , which is inversely related to the rate of gene flow among populations, are substantially smaller among basins south of the Golden Gate than elsewhere in the CCC-Coho ESU, and a lack of strong differentiation among these populations underlies the apparently weak concordance between geographical and genetic structure in this region These results are consistent with the potential effects of recent transfers of coho salmon from Scott Creek to other nearby small basins. Inter-basin transfers might have had a large effect in this area, since populations of coho salmon occupy small basins and have been at substantially depressed levels for much of the recent past. However, it is also quite likely that natural dispersal among populations contributes substantially to the relatively weak genetic structure observed in this region. Indeed, uniquely high rates of dispersal have been reported among populations of coho salmon in this area by Shapovalov and Taft (1954). Nevertheless, given the intensity of recent outplanting activities relative to the size of the recipient populations, it is difficult to conclude that the degree of connectivity implied by the genetic data is solely a consequence of naturally high rates of migration. [¶] . . . [¶]

“To summarize, we conclude that the isolation-by-distance relationship and overall concordance between geographic and population genetic structure over the range of the CCC-Coho ESU support the use of geographic structure as a template for interpreting population structure throughout the CCC-Coho ESU. We are less confident that recent genetic information resolves fine-scale historical structure, particularly given the potential effects of among-basin transfers and evidence for the consequences of such transfers in some areas (e.g., south of San Francisco). However, regions where known transfers appear to have blurred historical structure are insufficient to undermine our general conclusion regarding the utility of geography for evaluating historical population structure of coho salmon.” (Bjorkstedt et al., NOAA Technical Memorandum NMFS-SWFSC-382 (Oct. 2005), pp. 62-69 (2005 NOAA Technical Memorandum).)

The Commission also relied on a memorandum from the director of the Santa Cruz Laboratory of the Southwest Fisheries Science Center. The memorandum stated in part:

“These genetic studies provide several lines of evidence indicating that coho salmon from south of San Francisco Bay, i.e., fish in Scott, Waddell and Gazos creeks, are not the result of recent introduction or stocking and are native to the area. First, all analyses performed, including matrices of genetic distance, phylogeographic trees, assignment tests and isolation by distances tests, indicate that the *Central California Coast Coho Salmon ESU* is one genetic lineage with all ESU populations more closely related to each other than to any other coho salmon populations.

Moreover, within the ESU all populations south of the Golden Gate are more closely related to each other than to any others, and populations from Marin County are their closest relatives.

“More generally, . . . [i]t is not consistent with the hypotheses that anthropogenic outplanting replaced lineages in the southern part of the range, or that these populations are non-native introductions. . . .

“While salmon from other populations in the Central California Coast ESU, primarily the Noyo River, have been transplanted into coho populations south of San Francisco Bay, they can not have had a large effect, because there are alleles present at 11 of the 18 microsatellite genes that are not found in the Noyo River. In some cases, alleles in these southern populations do not appear to be present in any other population in the Central California ESU. This result effectively eliminates the possibility that the San Mateo and Santa Cruz county populations were founded by fish planted from the Noyo River or any other California population. . . .

“While these molecular genetic results do not rule out the possibility that coho salmon populations in San Mateo and Santa Cruz counties may have received some small genetic signal from the introduction of foreign stocks, they clearly demonstrate that these populations meet all of the predictions of a native species at the southern edge of their range and should be considered as such.” (Italics added.)

In 2003, Homer McCrary, vice president of petitioner Big Creek Lumber Company, filed a federal petition with the NMFS “to redefine the southern extent of the CCC coho salmon ESU boundary by excluding coho salmon populations occupying

watersheds in Santa Cruz and coastal San Mateo counties, California, from the ESU.” (71 Fed. Reg. 14686 (Mar. 23, 2006).) NMFS published its finding pursuant to title 16 of the United States Code, section 1533(b)(3)(A), which provides that the Secretary of the Interior shall make a finding as to “whether the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted.” The NMFS finding relied on the 2005 NMFS/NOAA study, and the Commission relied in part on the NMFS finding. In concluding that the information in the federal petition did not present substantial scientific information indicating that the petitioned action “may be warranted,” NMFS made the following comments regarding the claim that the coho currently inhabiting the streams south of San Francisco are not native, but a result of hatchery activity beginning in 1906:

“The petition is correct in stating that coho salmon fry from sources outside of California have been planted in the streams south of San Francisco; however, coho salmon fry from sources within California and also from local watersheds have also been planted in these streams. Available evidence does not support the hypothesis that the out-of-state Baker Lake introductions founded the coho salmon populations south of San Francisco Bay. In fact, juvenile coho salmon specimens were collected in 1895 from San Mateo and Santa Cruz counties and are currently housed in the CAS Ichthyological Collection [citation]. As discussed previously, we do not question the authenticity of these specimens. These collections occurred 11 years prior to the coho salmon egg deliveries from Baker Lake to the Brookdale Hatchery on the San Lorenzo River, and therefore, demonstrate coho presence in the area prior to any introductions from other areas.

“Available records of out-of-area coho salmon plantings prior to 1911 indicate a total of 400,000 eggs were transferred over 5 years from Baker Lake to the Brookdale Hatchery and planted in unspecified Santa Cruz County stream locations between 1905 and 1910 (Bowers, 1906, 1907, 1908, 1909, 1910). The number of Baker Lake eggs is relatively small and is not likely to have contributed to the coho salmon populations observed by Gilbert in 1910 [citation]. The Baker Lake coho salmon eggs were almost certainly planted as fry, which was the early practice of most hatcheries throughout California, including three plantings in Scott Creek from 1913 to 1930. This practice is no longer used by hatcheries because of the extremely poor survival rate of planted fry. Thus, it is likely that few

if any of these planted fish survived to reproduce as adults, much less establish a new population in the area.

“Recent genetic evidence supports this point [citation]. Molecular genetic data assembled and analyzed by the Southwest Fisheries Science Center’s Santa Cruz Laboratory indicate coho salmon south of San Francisco Bay represent a historic part of the CCC coho salmon ESU [citation] and are not the result of anthropogenic introductions [citation] The results are not consistent with the petitioner’s claim that anthropogenic outplantings replaced lineages in the southern part of the range, or that these populations are non-native introductions [citation].

“These results suggest that, while coho salmon south of San Francisco have unique genetic characteristics, they nonetheless are clearly part of the CCC coho salmon ESU. These findings do not rule out the possibility that coho salmon populations in San Mateo and Santa Cruz counties may have received some genetic signals from the introduction of out-of-state or out-of-ESU fish; however, the number of unique alleles in the southern populations clearly demonstrates the genetic attributes of a native species at the edge of its range [citation].” (71 Fed.Reg. 14686 (Mar. 23, 2006).)

Petitioners’ response to the department’s genetic evidence was to argue that the “tiny” differences among coho prove nothing, and that the report does not compare the coho south of San Francisco to Washington State coho. However, petitioners have the burden of presenting evidence that the coho south of San Francisco are not native. The evidence presented in the initial petition that the fish currently inhabiting those streams are not native, i.e., out-of-state, is the record of out-of-state hatchery transplants from 1906 to 1910 numbering 400,000.²¹ On the other hand, the 2005 NOAA Technical Memorandum showed that out of 2,704,742 transplants, 448,225 were known to have originated outside California. Some additional out-of-state stock was planted between 1977 and 1986 (listed as “Multiple Stocks” in the table below), but the exact number is unknown. The entry listed as “Multiple Stocks” included stocks from Washington,

²¹ Petitioners later produced the Kaczynski and Alvarado article which contained a figure showing a total of approximately 2.1 million transplanted fish or eggs from 1906 to 1990. Of this number, approximately half were of out-of-state origin.

Oregon, and California. The most recent transplants were from Scott and Big Creeks, basins that are south of San Francisco.²² Petitioners' evidence is insufficient to support a conclusion that the fish currently inhabiting the streams are not from California, and therefore not native.

The Commission found the petitioners' evidence was not sufficient to show that the current population is not native, and as a result was not sufficient to find that delisting may be warranted. We affirm the Commission's decision that the current population of coho south of San Francisco is a native population because it is clearly justified by the weight of the evidence. (*CBD, supra*, 166 Cal.App.4th at pp. 610-611.)

²² Of the over 2.7 million transplants from 1906 to 1994, 400,000 were from Washington State and 48,225 were from the Alsea River in Oregon. The Washington transplants were from 1906 to 1910, and the Oregon transplants were from 1963 to 1964. The most recent transplants were from Scott and Big Creeks from 1986 to 1994. The table of transplanted fish to the basins south of San Francisco are as follows:

| Basin | Period (Years) | Egg Source | Numbers |
|---|-----------------------|-----------------------|----------------|
| Coastal tributaries south of San Francisco Bay (Gazos, Waddell, Scott Creeks) | 1932 (1) | Eel River | 15,000 |
| | 1933-1935 (2) | Prairie Creek | 44,597 |
| | 1964 (1) | Noyo River | 15,008 |
| | 1977-1986 (10) | Multiple Stocks | 1,454,552 |
| San Lorenzo River | 1906-1910 (4) | Birdsview Station, WA | 400,000 |
| | 1930-1932 (2) | Eel River | 60,500 |
| | 1933-1938 (5) | Prairie Creek | 145,960 |
| | 1963-1964 (2) | Alsea River, OR | 48,225 |
| | 1964 (1) | Unknown | 32,000 |
| | 1964-1976 (10) | Noyo River | 230,385 |
| | 1983 (1) | Klamath River | 19,770 |
| | 1984 (1) | Russian River | 17,160 |
| | 1986-1989 (3) | Noyo River | 62,044 |
| | 1986-1994 (4) | Scott Creek/Big Creek | 45,951 |
| Aptos Creek/Soquel Creek | 1990 (1) | Prairie Creek | 34,500 |
| | 1934, 1938 (2) | Prairie Creek | 68,590 |
| | 1963 (1) | Unknown | 10,500 |

(2005 NOAA Technical Memorandum, p. 60)

III

An Endangerment Listing Does Not Require That a Population Be an Important Component in the Evolutionary Legacy of the Species

The petition's other primary assertion is that the coho south of San Francisco "do not constitute and are not a constituent of any morphologically or behaviorally distinct, phenotypically or genetically unique, or otherwise important component in the evolutionary legacy of the species." For this argument to be material to the "may be warranted" standard, it must be an assertion that, if true, would have prevented the coho south of San Francisco from qualifying as an endangered species under CESA. However, neither CESA nor any state regulation requires that a population be an important component of the evolutionary legacy of the species before it can be included as an endangered species. (§§ 2062, 2067; Cal. Code Regs., tit. 14, § 670.1.)

The NMFS has promulgated an ESU policy for purposes of the FESA, which states that a population of Pacific salmonids is considered to be an ESU if it is substantially reproductively isolated from other nonspecific population units and represents an important component in the evolutionary legacy of the species. (*California State Grange v. National Marine Fisheries Service* (E.D. 2008) 620 F.Supp.2d 1111, 1123-1124.) The Commission has listed the CCC coho ESU, of which coho south of San Francisco are a part, as an endangered species, and in answer to a challenge to that listing, this court has determined that an ESU is a species or subspecies for purposes of the CESA. (*California Forestry, supra*, 156 Cal.App.4th 1535, 1542, 1549; Cal. Code Regs., tit. 14, § 670.5, subd. (a)(N).) We agree with the Commission that petitioners are urging us to misapply the federal ESU concept. The NMFS policy sets forth the definition of a Pacific salmon ESU for purposes of the FESA. (56 F.Reg. 58612 (Nov.

20, 1991).)²³ That determination has been made for the CCC coho ESU, and is why the ESU exists. It is the ESU as a whole that must represent an important component in the evolutionary legacy of the species, not each individual population that makes up the ESU.

Because the “important component in the evolutionary legacy of the species” is relevant only to the identification of an ESU, petitioners necessarily must be arguing that the coho south of San Francisco are not part of the CCC coho ESU, and therefore should not have been listed as endangered with the rest of the ESU. The argument is not supported by the evidence in the record or by the nature of the ESU determination.

Petitioners state that they “have never conceded that coho salmon south of San Francisco must be regarded” as part of the CCC coho ESU. Instead, they argue that there is little genetic variation among all coho populations across the species. Petitioners quote portions of two sentences from an over 200-page status review that noted “[p]opulations south of San Francisco may be separable from other California stocks,” but conceded that “[m]ore data are needed.” The 2002 status review was prepared by the department in response to a petition to list coho *north* of San Francisco as an endangered species. The status report explained that an ESU is “‘a group of interbreeding organisms that is reproductively isolated from other such groups.’” The status report also explained that it reviewed the status separately of the two coho ESU in California. It stated that the CCC coho ESU was from Punta Gorda south to the San Lorenzo River, which includes streams south of San Francisco. After making the statement that petitioners quote, the status report nevertheless concluded: “The Department agrees with NMFS that the coho salmon ESU designations are valid and justifiable constructs, both from a biological and management perspective, and that they represent distinct population segments of coho salmon.” The NMFS has, in turn, confirmed in 2006 that “while coho salmon south of

²³ Petitioners’ request for judicial notice filed April 28, 2017, is granted as to exhibit Nos. 2 and 3 (consisting of notices from the Federal Register) and is denied as to the remainder.

San Francisco have unique genetic characteristics, they nonetheless are clearly part of the CCC coho salmon ESU.” (71 Fed.Reg. 14686 (Mar. 23, 2006))

Petitioners also cite the 2005 NOAA/NMFS study.²⁴ The study is cited for the proposition that the population of coho south of San Francisco is genetically distinct. The purpose of the study was to delineate the historical population structure of, *inter alia*, the CCC coho ESU to use as a baseline for evaluating the status of the ESU under current and projected conditions.

The study found that the rate of gene flow among populations was “substantially smaller among basins south of the Golden Gate than elsewhere in the CCC-Coho ESU,” which it attributed to recent transplanting of fish from Scott Creek to nearby basins, as well as to natural dispersal among populations. However, the memorandum also found that genetic data suggested closely related populations along the Mendocino Coast. Nevertheless, the memorandum did *not* conclude that either the Mendocino populations or the south of San Francisco populations should be excluded from the CCC coho ESU. Based on this study, NOAA concluded a year later that the coho south of San Francisco are “clearly” part of the CCC coho ESU. (71 Fed Reg. 14686 (Mar. 23, 2006).)

Thus, while petitioners pick out bits of information that appear to substantiate their claim that the coho south of San Francisco are not part of the CCC coho ESU, the scientists who have analyzed that information have not made the same determination.

As petitioners admit, the nature of the ESU designation is such that genetics alone are not determinative: “One must look beyond genetics to questions of policy to determine which populations to include in an ESU.” The Legislature delegated to the Commission the authority to list or delist an endangered species. Necessarily included within that authority is the discretion to determine what constitutes a species or

²⁴ This is the same Technical Memorandum quoted in footnote No. 17, which was the basis of the NOAA’s conclusion that the coho south of San Francisco are not solely the result of hatchery planting.

subspecies. (§ 2062.) Although the Commission clearly could not include members of one species with another-- a trout, say, with a salmon--it must have a certain amount of discretion when it comes to delineating one subspecies or ESU from another because it is a highly technical matter within the Commission and department's scientific expertise. Because the inclusion of coho south of San Francisco within the CCC coho ESU is not clearly erroneous and touches upon policy issues with the Commission's and department's purview, it is entitled to deference. (*Yamaha, supra*, 19 Cal.4th at p. 12.) The Commission, the department, and the NMFS have all, being fully aware of the studies cited by petitioners, determined that the coho south of San Francisco are part of the CCC coho ESU. Because those entities possess the scientific expertise to make the determination, and because the Commission has been delegated the discretion on matters of policy, we conclude the evidence petitioners rely upon to show the coho south of San Francisco are not part of the CCC coho ESU is not sufficient to support a finding that the petition may be warranted.

IV Issues Raised by Supreme Court

The Supreme Court noted three issues for resolution: “(1) does the term ‘native species’ in the definition of ‘endangered species’ (§ 2062) mean ‘native to the area’ in which the species is listed, as plaintiffs assert, or ‘indigenous to California,’ as the Commission claims; (2) does the term ‘range’ in that definition (*ibid.*) mean ‘historic,’ ‘native,’ and ‘natural range,’ as plaintiffs argue, or ‘present range,’ as the Commission contends; and (3) when a species is listed as endangered—here, ‘Coho salmon . . . south of Punta Gorda (Humboldt County)’ ([Cal. Code] Regs., [tit. 14,] § 670.5, subd. (a)(2)(N))—under what circumstances, if any, does CESA permit the Commission to delist only a portion of the listed species—here, coho south of San Francisco—i.e., to carve out a population included in the listed species and remove it from CESA’s protections?” (*Central Coast Forest Assn. v. Fish & Game Com.*, *supra*, 2 Cal.5th at p.

606.) The Supreme Court indicated we should consider these issues should we find their resolution necessary. (*Ibid.*) We briefly address the issues, since they confirm our decision to reverse the judgment.

A. “*Range*” Means Current Range

Section 2062 provides that a species is endangered if it “is in serious danger of becoming extinct throughout all, or a significant portion, of its range” The Supreme Court asked: “does the term ‘range’ in [section 2062] mean ‘historic,’ ‘native,’ and ‘natural range,’ as plaintiffs argue, or ‘present range,’ as the Commission contends?” (*Central Coast Forest Assn. v. Fish & Game Com., supra*, 2 Cal.5th 594, 606.)

Because we have determined there is insufficient evidence to support petitioners’ argument that the streams south of San Francisco were not a part of the coho’s historical range, the answer to this question will not change the outcome of this case. While it is certainly not determinative, the identical language in the FESA (“significant portion of its range”) has been interpreted by the Department of the Interior to mean current range, not historical range. (Final Policy on Interpretation of the Phrase “Significant Portion of Its Range” in the Endangered Species Act’s Definitions of “Endangered Species” and “Threatened Species,” 79 Fed.Reg. 37578, 37583 (July 1, 2014).) The Department of the Interior reasoned as follows: “As defined in the Act, a species is endangered only if it ‘is in danger of extinction’ throughout all or a significant portion of its range. The phrase ‘is in danger’ denotes a present-tense condition of being at risk of a current or future undesired event. Hence, to say a species ‘is in danger’ in an area where it no longer exists—i.e., in its historical range where it has been extirpated—is inconsistent with common usage. Thus, ‘range’ must mean ‘current range,’ not ‘historical range.’ ” (*Ibid.*)

We find this reasoning persuasive. The Department of the Interior stated in the same policy interpretation that “the term ‘range’ is relevant to whether the Act protects a species, but not how that species is protected[,]” and that once a species is declared endangered or threatened, “the protections of the Act are applied ‘to all individuals of the

species, wherever found' (50 CFR 17.11(e), 17.12(e))." (79 Fed.Reg. 37583 (July 1, 2014).)

B. A Portion of an Endangered Species May be Delisted Only If It Can Be Defined as a Separate Species, Subspecies, or ESU That is Not Endangered

The Supreme Court's final question was: "When a species is listed as endangered—here, 'Coho salmon . . . south of Punta Gorda (Humboldt County)' ([Cal. Code] Regs., [tit. 14.] § 670.5, subd. (a)(2)(N))—under what circumstances, if any, does CESA permit the Commission to delist only a portion of the listed species—here, coho south of San Francisco—i.e., to carve out a population included in the listed species and remove it from CESA's protections"? (*Central Coast Forest Assn. v. Fish & Game Com.*, *supra*, 2 Cal.5th at p. 606.)

The Commission argues a population may be "carved out" and delisted only if it can be defined as a separate species, subspecies, or ESU, and if the determination can be made that said species, subspecies, or ESU is not endangered. We agree. As indicated above, if a member of an endangered species must be protected wherever found, then the requirements for "carving out" a population of an otherwise protected species are a determination that the population is a separate ESU, and a determination that the ESU is not endangered. Such a showing has not been made here.

DISPOSITION

The judgment is reversed. The parties shall bear their own costs on appeal. (Cal. Rules of Court, rule 8.278(a)(5).)

/s/
Blease, Acting P. J.

We concur:

/s/
Robie, J.

/s/
Nicholson, J.*

* Retired Associate Justice of the Court of Appeal, Third Appellate District, assigned by the Chief Justice pursuant to article VI, section 6 of the California Constitution.