E 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[Docket No. 260512-0129; RTID 0648-XR135]

Endangered and Threatened Wildlife and Plants; Notice of 12-Month Finding on a Petition to List Gulf of Alaska Chinook Salmon as Threatened or Endangered Under the Endangered Species Act

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of 12-month petition finding.

SUMMARY: We, NMFS, announce a 12-month finding on a petition to list one or more Evolutionarily Significant Units (ESUs) of Gulf of Alaska (GOA) Chinook salmon (*Oncorhynchus tshawytscha*) as threatened or endangered under the Endangered Species Act (ESA). In response to the petition submitted by Wild Fish Conservancy, the Status Review Team (SRT) completed a review of the status of GOA Chinook salmon and defined three ESUs for GOA Chinook salmon (Southeast, Central, and Northwest GOA). Based on the best scientific and commercial data available, including the Status Review Report written by the SRT, we conclude that the three ESUs of GOA Chinook salmon are not currently in danger of extinction throughout all or a significant portion of their ranges nor likely to become so within the foreseeable future. Therefore, we find that listing any of the ESUs of GOA Chinook salmon under the ESA is not warranted at this time.

DATES: This finding was made available on **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: The petition, Status Review Report, **Federal Register** notices, and the list of references can be accessed electronically online at: *https://www.fisheries.noaa.gov/species/Chinook-salmon-protected#conservation-*

management. The peer review report is available online at: *https://www.noaa.gov/information-technology/biological-status-of-gulf-of-alaska-chinook-salmon*.

FOR FURTHER INFORMATION CONTACT: Anne Marie Eich, NMFS Alaska Region, *annemarie.eich@noaa.gov*; or Heather Austin, NMFS Office of Protected Resources, at *heather.austin@noaa.gov,* (301) 427-8422.

SUPPLEMENTARY INFORMATION:

Background

On January 11, 2024, we received a petition from the Wild Fish Conservancy to delineate and list one or more ESUs of Chinook salmon in southern Alaska, which the petition stated "encompasses all Chinook populations that enter the marine environment of the Gulf of Alaska," as threatened or endangered under the ESA, and to designate critical habitat concurrently with the listing. The petition indicated that this "includes all populations on the southern side of the Aleutian Peninsula, Cook Inlet, and the coast of Alaska south of Cook Inlet to the southern end of the Alaska/British Columbia border," hereafter referred to as GOA Chinook salmon. The petition asserted that GOA Chinook salmon are threatened by all of the ESA section 4(a)(1) factors: (A) the present or threatened destruction, modification, or curtailment of habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms to address identified threats; and (E) other natural or manmade factors affecting its continued existence (16 U.S.C. 1533(a)(1), 50 CFR 424.11(c)). The petition is available online (see **ADDRESSES**).

On May 24, 2024, NMFS published a 90-day finding that the petition, viewed in the context of information readily available in our files, presented substantial scientific and commercial information indicating the petitioned action may be warranted (89 FR

45815). NMFS also announced the initiation of a status review of GOA Chinook salmon, as required by section 4(b)(3)(A) of the ESA, and opened a 60-day comment period to solicit pertinent information to inform the status review. In response to public requests, NMFS extended the comment period an additional 45 days (89 FR 53936, June 28, 2024). We received information from the public in response to the 90-day finding. Additionally, information gathered from Tribal participants during Tribal Consultations and Subsistence Regional Advisory Council meetings informed our analyses. All relevant information was incorporated into the Status Review Report (GOA Chinook SRT 2026; available electronically (see **ADDRESSES**)) and this 12-month finding.

Listing Determinations Under the ESA

NMFS is responsible for determining whether a species under our jurisdiction meets the definition of threatened or endangered under the ESA (16 U.S.C. 1531 *et seq.*). To make this determination, we first consider whether a group of organisms constitutes a species under section 3 of the ESA, then whether the status of the species qualifies it for listing as either threatened or endangered. Section 3 of the ESA defines species to include "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature" (16 U.S.C. 1532(16)). In 1991, we issued the Policy on Applying the Definition of Species Under the ESA to Pacific Salmon (ESU Policy; 56 FR 58612, November 20, 1991). Under the ESU Policy, a Pacific salmon population is a distinct population segment (DPS), and hence a species under the ESA, if it represents an evolutionarily significant unit (ESU) of the biological species. Under this policy, a Pacific salmon population unit must satisfy two criteria to be considered an ESU: (1) it must be substantially reproductively isolated from other conspecific population units, and (2) it must represent an important component in the evolutionary legacy of the species. The first criterion, reproductive isolation, need not be absolute, but must be strong enough to permit evolutionarily important differences to

accrue in different population units. A population would meet the second criterion if it contributes substantially to the ecological and genetic diversity of the species as a whole. The ESU Policy is used exclusively for evaluating whether a population unit of Pacific salmon qualifies as a DPS under the ESA. A joint NMFS-U.S. Fish and Wildlife Service (USFWS; jointly, the Services) policy clarifies the Services' interpretation of the phrase "distinct population segment" for the purposes of listing, delisting, and reclassifying a species under the ESA (DPS Policy; 61 FR 4722, February 7, 1996). In announcing this policy, the Services indicated that the ESU Policy was consistent with the DPS Policy and that NMFS would continue to use the ESU Policy for Pacific salmon.

Section 3 of the ESA defines an endangered species as "any species which is in danger of extinction throughout all or a significant portion of its range" and a threatened species as one "which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" (16 U.S.C. 1532(6), (20)). Thus, we interpret an endangered species to be one that is presently in danger of extinction. A threatened species is not presently in danger of extinction but is likely to become so within the foreseeable future.

When we consider whether a species qualifies as threatened under the ESA, we must consider the meaning of the term, foreseeable future. Our implementing regulations describe the foreseeable future as extending into the future as far as we can make reasonably reliable predictions about the threats to the species and the species' responses to those threats (50 CFR 424.11(d)). The regulations instruct us to describe the foreseeable future on a case-by-case basis, using the best available data and taking into account considerations such as the species' life history characteristics, threat-projection timeframes, and environmental variability. The regulations also state that we need not identify the foreseeable future in terms of a specific period of time.

Section 4(a)(1) of the ESA requires us to determine whether any species is

endangered or threatened as a result of any one or a combination of the following factors: (A) the present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence (16 U.S.C. 1533(a)(1)). Section 4(b)(1)(A) of the ESA requires us to make listing determinations solely on basis of the best scientific and commercial data available after conducting a review of the status of the species and after taking into account efforts, if any, being made by any state or foreign nation or political subdivision thereof to protect the species (16 U.S.C. 1533(b)(1)(A)). In evaluating the efficacy of existing domestic conservation efforts that have yet to be implemented or demonstrate effectiveness, we rely on the Services' joint Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE; 68 FR 15100, March 28, 2003).

NMFS formed an SRT comprised of biologists from the NMFS Alaska Fisheries Science Center and the NMFS Alaska Region to conduct the status review of GOA Chinook salmon. NMFS charged the SRT with reviewing and evaluating the best scientific and commercial data available relating to GOA Chinook salmon biology to determine if any populations or groups of populations met the criteria to qualify as ESUs, and if so, to assess the extinction risk to each potential ESU. Two scientists from the Alaska Department of Fish and Game (ADF&G) and a Tribal liaison were included in the SRT review process as advisory, non-voting SRT members (which means they participated in the process except for the SRT's final assessment of extinction risk). The Status Review Report, prepared by the SRT, summarizes the best scientific and commercial information available on GOA Chinook salmon distribution, abundance, life history, genetics, and biology. Based on this information, the Status Review Report: identifies ESUs and outlines reasoning for how they were chosen; evaluates the

demographic factors (abundance, productivity, spatial structure, and diversity); identifies threats or stressors affecting the status of the species; and describes management, mitigation, and conservation efforts. The Status Review Report presents the SRT's risk matrix results, which assigns an estimate of risk caused by each demographic factor and threat/stressor to each stock and assigns overall risk for each ESU, incorporating the extinction risk faced now and in the foreseeable future. The SRT then evaluated each ESU's overall extinction risk (high, moderate, or low) using a qualitative risk assessment framework that incorporates all demographic factors and threats/stressors, acting together, throughout the range of the ESU. The SRT then conducted a similar analysis for the significant portion of its range for each ESU. The Status Review Report presents the SRT's professional scientific judgement on the extinction risk facing each of the potential ESUs but makes no recommendation as to their listing status. The Status Review Report also incorporates information received in response to our request for information (89 FR 45815, May 24, 2024), Tribal outreach and engagement, and comments from four independent, external peer reviewers (see **Peer Review** below).

We subsequently reviewed the Status Review Report, its cited references, and the peer reviewer comments, and concluded that the Status Review Report, upon which this 12-month finding is based, provides the best available scientific and commercial data on GOA Chinook salmon. Much of the information discussed below on GOA Chinook salmon biology, ESU structure, demographics, threats, and extinction risks is attributable to the Status Review Report. However, in making the 12-month finding determination, we independently applied the statutory provisions of the ESA, including evaluation of the factors set forth in section 4(a)(1)(A)–(E), regulations regarding listing determinations (50 CFR part 424.11), and relevant policies identified herein.

Life History of Chinook Salmon

Chinook salmon (*O. tshawytscha*) were historically distributed from the Ventura River in California to Point Hope, Alaska in North America, and in northeastern Asia from Hokkaido, Japan to the Anadyr River in Russia (Healey 1991). Additionally, Chinook salmon have been reported in the Mackenzie River area of northern Canada (McPhail and Lindsey 1970). Of the Pacific salmon, Chinook salmon exhibit arguably the most diverse and complex life history strategies across their range. Healey (1986) described 16 age categories (combinations of freshwater and saltwater ages) for Chinook salmon: 7 total ages, with 3 possible freshwater ages. As described by Gilbert (1912), stream-type or yearling Chinook salmon reside in freshwater for a year or more following emergence, whereas ocean-type or sub-yearling Chinook salmon migrate to the ocean within their first year. According to the best available data, nearly all populations of Chinook salmon in Alaska comprise individuals from the stream-type life history (Taylor 1990; Lewis *et al.*, 2015). However, one population (Situk River) contains primarily ocean-type individuals (Johnson *et al.*, 1992), and other populations (*e.g.*, Keta River, Blossom River) contain some proportion of ocean-type individuals (Pahlke 2001; Fleischman *et al.*, 2011). While there have also been some historical observations of ocean-type individuals in the Deshka River (Delaney 1982), more recent data (2005-2014) show no ocean-type individuals observed based on scale data from returning adults (Lescanec 2017).

The generalized life history of Pacific salmon involves incubation, hatching, and emergence in freshwater; migration to the ocean; and subsequent initiation of maturation and return to freshwater for completion of maturation and spawning. Additionally, some young male Chinook salmon mature in freshwater (minijacks), thereby forgoing emigration to the ocean. Minijacks have been documented only through hatchery work in Alaska, but have been anecdotally observed in some wild populations in Southeast

Alaska. Salmon exhibit a high degree of variability in life history traits, which are determined by a combination of genetic and environmental factors. Many of these traits appear to have a substantial genetic component (Carlson and Seamons 2008), and some appear to be largely controlled by variation at a few or single genomic regions (Barson *et al.*, 2015; Pearse *et al.*, 2019; Thompson *et al.*, 2020, Barry *et al.*, 2024).

Several types of biological evidence were considered in evaluating the contribution of GOA Chinook salmon to the ecological and genetic diversity of the biological species under the ESA. Life history traits examined for naturally spawning Chinook salmon populations included freshwater life history, age and size at spawning, river-entry timing, spawn timing, and ocean migration. These traits are thought to have both a genetic and environmental basis, and similarities among populations could indicate either a shared genetic heritage or similar responses to shared environmental conditions.

ESU Delineations

ESUs have not been previously defined for Chinook salmon in the GOA. Consistent with the criteria outlined in the ESU Policy, the SRT considered neutral genetic data analyzed for spawning populations in this region for the reproductive isolation criterion, supplemented by inferences about barriers to migration created by environmental differences and habitat breaks. The SRT also considered information on ocean distribution and, to a lesser extent, information on life history variation. Based on this information, the SRT defined the following three ESUs (complete information regarding ESU delineation can be found in the Status Review Report): (1) Southeast Gulf of Alaska (SEGOA: populations from the southern border of Alaska to Cape Fairweather), (2) Central Gulf of Alaska (CGOA: populations from Cape Fairweather through Prince William Sound), and (3) Northwest Gulf of Alaska (NWGOA: populations from the Kenai Peninsula through Chignik).

Southeast Gulf of Alaska ESU

The SEGOA ESU includes populations from the Chilkat River in northern Southeast Alaska to the Keta and Blossom Rivers entering Behm Canal in southern Southeast Alaska near the northern coastal border of British Columbia. Chinook populations in the SEGOA ESU are part of the eastern genetic lineage and are highly genetically diverged from the closest populations to the north (Alsek River), which are part of the western genetic lineage (Templin *et al.*, 2011). Populations from the SEGOA and the Alsek River are also separated by a large geographic distance (350 km waterway distance). Populations at the southern end of this ESU (Keta and Blossom Rivers) are separated from the nearest populations to the south in Portland Inlet across the U.S. border in British Columbia by approximately 150 km. Although some straying may occur among Chinook salmon populations in southern Southeast Alaska and British Columbia, these groups are largely genetically isolated. Therefore, we find that the SEGOA ESU is substantially reproductively isolated from other ESUs. Fish from the Taku and Stikine Rivers, classified as outside rearing, primarily rear in the GOA and Bering Sea, and are rarely captured in inside waters as immature fish. Contrastingly, other stocks in SEGOA are classified as inside rearing, and a portion of them rear in SEGOA inside waters and are caught as immature fish in this region; some also use the GOA and Bering Sea as rearing habitat. This ESU contains four primary genetic groups: Chilkat River, King Salmon River, Taku and Stikine Rivers, and the short, coastal streams in southern Southeast Alaska. We find that the SEGOA ESU contributes substantially to the ecological and genetic diversity of the species as a whole. Therefore, we find that the SEGOA ESU meets the definition for an ESU as described in the ESU Policy.

Central Gulf of Alaska ESU

The CGOA ESU includes populations from the Copper, Situk, and Alsek Rivers. Populations from the Copper River are highly genetically differentiated from Cook Inlet

populations to the north, and from Southeast Alaska populations to the south. Copper River populations are also isolated by major habitat breaks. To the north, populations from the Copper River are separated from the closest populations on the Kenai Peninsula (~500 km away) by Prince William Sound, a rugged, mountainous region that does not contain any self-sustaining Chinook salmon populations. To the south, Copper River populations are separated from the Situk and Alsek Rivers by an area of rugged coastline containing glacially influenced rivers that do not contain any large, known populations of Chinook salmon, although there may be some small populations in this region. The Situk and Alsek Rivers are the only two rivers monitored for escapement by ADF&G with self-sustaining Chinook salmon (*i.e.*, no hatchery supplementation) in an 800 km region that spans from the Copper River to the Chilkat and Taku Rivers in Southeast Alaska. Both of these populations appear to be recently colonized based on genetic data, which is unsurprising given the dynamic nature of this landscape characterized by shifting glaciers. Therefore, we find that the CGOA ESU is substantially reproductively isolated from other ESUs.

The Situk River is the only known population in the GOA that is composed primarily of ocean-type individuals. The SRT determined that grouping the Alsek River populations in the same ESU as the Copper River populations was appropriate, given their genetic similarity and the fact that no conspicuous life history differences exist between the lower Copper River and Alsek River populations. Contrastingly, the Situk River is unique both in terms of life history (ocean type) and genetics (intermediate between many populations). However, the SRT did not conclude that it constitutes an evolutionarily unique population because it may have been recently recolonized from strays from many populations, may undergo periodic extinction and recolonization events, and/or may be a sink for strays that prevents it from evolving independently. The SRT therefore chose to group it in the CGOA ESU, which has the most geographically

proximate populations. We find that the CGOA ESU contributes substantially to the ecological and genetic diversity of the species as a whole. Therefore, we find that the CGOA ESU meets the definition for an ESU as described in the ESU Policy.

Northwest Gulf of Alaska ESU

The NWGOA ESU includes populations from the Chignik River on the South Alaska Peninsula, Kodiak Island (Ayakulik and Karluk Rivers), and Cook Inlet (includes the Susitna drainage and populations on the Kenai Peninsula). Populations from this ESU rear in the GOA and the eastern Bering Sea, according to the best available information. The ESU boundaries correspond to habitat breaks and genetic breaks. Populations from the North Alaska Peninsula inhabit relatively low gradient coastal tributaries that drain flat tundra areas, whereas the South Alaska Peninsula is much more rugged and mountainous. Populations in Cook Inlet at the other margin of the ESU are separated from populations in the Copper River by Prince William Sound, which contains steep mountains and glaciers that do not provide suitable habitat for self-sustaining populations of Chinook salmon.

Although genetic differences exist among populations from the Kenai Peninsula, Cook Inlet, and the South Alaska Peninsula, these differences are generally smaller than those found between ESUs. Additionally, distributional breaks in this region are generally smaller than the break between other ESUs, with the exception of the habitat break between Chignik and Kodiak. Furthermore, there is no evidence that different genetic subgroupings within this ESU contain unique life history diversity that is important to maintaining the evolutionary legacy of the species. Therefore, splitting this ESU further is not warranted. We find that the NWGOA ESU is substantially reproductively isolated from other ESUs. We also find that the NWGOA ESU contributes substantially to the ecological and genetic diversity of the species as a whole. Together,

these factors indicate that the NWGOA is a single ESU that meets the definition for an ESU as described in the ESU Policy.

Analysis of Demographic Factors

After identifying the three ESUs, the SRT evaluated the best scientific and commercial data available regarding four demographic viability factors: abundance, productivity, spatial structure, and diversity. These factors, rooted in conservation biology, represent the key attributes of a viable salmonid population and collectively serve as strong indicators of extinction risk (McElhany *et al.*, 2000). For each ESU, the SRT evaluated the demographic factors and their trends. The SRT summarized their conclusions for each ESU and each indicator stock within each ESU (stocks are populations of salmon grouped together for management purposes such as harvest accounting, assessment, and reporting) in the risk matrix results. Indicator stocks, for the purpose of the SRT's assessment, were those for which escapement data were available. See Status Review Report. These results informed our conclusions about the viability of each ESU.

For each ESU, the SRT first considered abundance. Producing an overall estimate of total abundance for salmon ESUs is a complex process due to their anadromous nature, multiple life stages, and multiple stocks. Run size estimates represent the estimated number of returning adults (specifically wild Chinook), which is an appropriate measure of stock abundance. The SRT was provided minimum estimates for each of the 22 stocks for which run size data exist from ADF&G. These data are presented in the Status Review Report. For the SEGOA and NWGOA ESUs, the SRT also estimated the minimum estimated annual return of wild adult Chinook salmon between 2010 and 2023, based on ADF&G-provided run reconstruction data for the major Chinook systems. Because the SRT generated these estimates to compare to the estimated annual returns of hatchery adults, results are not available for the CGOA, which does not host any

Chinook-producing hatcheries. The SRT also considered a study that compared the relative abundance of different stocks among areas by scaling the proportion of each stock from a mixed stock sample to the overall abundance of that stock (Larson *et al.*, 2013). This method produces coarse estimates, reported below for each ESU, and the SRT used this study to indicate that the SEGOA and NWGOA ESUs have relatively similar abundances, while the CGOA ESU's abundance is roughly one-third lower than the other two.

To investigate trends in the abundance of GOA Chinook salmon, the SRT focused on two primary questions: Have there been any short-term (15-year periods) declines in abundance across the available data? And have there been any long-term (full time series, since 1980) declines in abundance across the available data? To address these questions, the SRT analyzed the 31 stocks monitored by ADF&G within the three ESU designations. While similar reviews conducted by other SRTs across the Pacific Northwest have identified escapement data as the most reliable metric of the available data for such assessments (Ford 2022, OC and SONCC SRT 2024), the SRT distinguished between escapement data (a productivity measure of the number of salmon that survive to spawn) and escapement goals, which are a management target. Escapement goals (the number of fish allowed to escape the fishery and spawn) in Alaska are designed for sustained yield, not as thresholds for population viability. As described above, run size estimates provide a more accurate estimate of minimum abundance and are a better metric to assess population trends. However, run size estimates, which integrate harvest and escapement data, were available for only 22 stocks.

As noted above, for each ESU, the SRT also considered productivity. As described above, escapement is one measure of productivity. They also considered size and age at maturity. These data do not exist at the stock level for every indicator stock, which precluded a comprehensive assessment of these metrics at the ESU level.

Therefore, the SRT considered available literature on changes in size and age at maturity more broadly in the GOA as a whole. Reductions in size can potentially reduce productivity through decreases in fecundity and/or egg quality (Oke *et al.*, 2020; Malick *et al.*, 2023), and smaller females may not be able to dig deep enough redds to reduce susceptibility to scouring (Healey 1991). Reduction of age diversity could increase variation in abundance and decrease portfolio effects and population stability (Schindler *et al.*, 2010). For stocks with run size estimates, the SRT also performed a depensation analysis. Depensation (also known as Allee effects) refers to a decline in productivity at low abundance. Mechanisms for depensation include impaired reproduction (difficulty finding mates) and predator saturation. Results from the depensation analysis were highly variable, and no significant trends were found. See the Status Review Report for details.

Finally, the SRT considered the spatial distribution and diversity of each ESU. Spatial distribution includes geographic range and connectivity. Diversity includes genetic, habitat, and life history diversity.

Southeast Gulf of Alaska ESU

The SEGOA ESU exhibits a large total abundance. Using mixed stock analyses, Larson *et al.* (2013) estimated a total stock size of 181,000 salmon in Southeast Alaska and Northern British Columbia, grouped in this study due to poor genetic resolution. The SRT estimated a minimum annual return of 53,000 wild adult Chinook salmon in the SEGOA ESU. The ESU includes 25 indicator stocks, and run size data are available for 9 representative indicator stocks.

Overall trends in abundance do not indicate long-term decline for the ESU. Short-term declines have been observed in certain stocks; these patterns are highly variable, but are within the historical variability and have either stabilized or begun to rebound in recent years. Evaluating escapement and run size for each stock, the SRT found little support for sustained, long-term declines (*i.e.*, the 50 and 90 percent credible intervals

overlapped with zero). Short-term analyses indicate a high degree of variability over space and time. There have been recent declines in estimated total run size and spawning escapements for several stocks within the SEGOA ESU, particularly since the early 2000s and 2010s. For example, run size and escapement have decreased in systems such as the Chilkat, Unuk, King Salmon, Stikine, and Taku Rivers. However, the stocks in King Salmon, Taku, and Chilkat Rivers have shown early signs of recovery in the most recent 5-year period. For most stocks, long-term trend estimates indicate that these short-term declines largely fall within the range of historical variability. See the Status Review Report for stock-specific results. There is some synchrony (*i.e.*, correlation among run size and/or escapement trends) among stocks.

To evaluate productivity, the SRT first considered escapement. As described above, the data do not support a long-term, sustained decline in escapement for the ESU. Mean age and size-at-age have declined over the past 20-25 years (Lewis *et al.*, 2015; Ohlberger *et al.*, 2018; Oke *et al.*, 2020). In particular, the abundance of the oldest age classes has declined. Additionally, the size at age of older age classes (3 to 5 years in the ocean) has decreased, while the sizes of younger age classes (1 to 2 years in the ocean) have increased (Ohlberger *et al.*, 2018). The SRT analyzed the missed escapement goals and evidence of decreasing size and age at maturity, potential threats specifically identified in the petition and 90-day finding, and found that these measures of productivity remain within the range for viable populations. We agree.

The SEGOA ESU demonstrates broad spatial distribution with spawning populations in numerous rivers and creeks throughout Southeast Alaska. Seasonally, immature fish from this ESU are distributed throughout the GOA and Bering Sea. Genetic data generally support four primary groupings within the ESU: Chilkat River, King Salmon River, Taku and Stikine Rivers, and the short, coastal streams in southern Southeast Alaska. In general, population structure follows an isolation by distance pattern

and is organized hierarchically by major river systems. The SRT found, and we agree, that spatial distribution is unlikely to contribute significantly to, and is likely a buffer against, the ESU's risk of extinction.

The SEGOA ESU demonstrates high genetic diversity. Despite genetic isolation among some rivers, there is limited evidence of reduced genetic diversity in stocks. For example, while the King Salmon River stock displays relatively lower genetic diversity, this is consistent with a small, stable population size across many generations. Thus, concerns regarding reductions in genetic diversity or inbreeding are minimal. Habitat diversity is also high. Some populations occupy shorter, coastal streams, while others occur in rivers that traverse the coastal mountain range. Spawning populations in the Taku and Stikine rivers are found in upland plateaus. This diversity makes it highly unlikely that a single catastrophe could impact the entire ESU. Therefore, the SRT found, and we agree, that diversity is unlikely to contribute significantly to, and is likely a buffer against, the ESU's risk of extinction.

Central Gulf of Alaska ESU

The CGOA ESU exhibits a large total abundance. Using mixed stock analyses, Larson *et al.* (2013) estimated a total stock size of 89,000 salmon in Copper, Situk, and Alsek Rivers. The SRT estimated a minimum annual return of 103,865 wild adult Chinook salmon. The ESU includes three indicator stocks with run size data for each. Trends in abundance indicate an overall stable population trajectory, with no strong evidence of sustained declines across the ESU. Evaluating escapement and run size for each stock, the SRT found little support for sustained, long-term declines (*i.e.*, the 50 and 90 percent credible intervals overlapped with zero). The largest stock, Copper River, has exhibited increasing escapement over multiple decades. Short-term analyses of the Alsek and Situk stocks indicate reductions since the early 2000s; however, recent abundance estimates are similar to long-term median values. A notable characteristic of the CGOA

ESU is the lack of strong interannual synchrony among stocks for both escapement and run size.

To evaluate productivity, the SRT first considered escapement. As described above, the data do not support a long-term, sustained decline in escapement for the ESU. Similar to the SEGOA ESU, mean age and size-at-age have declined over the past 20-25 years (Lewis *et al.*, 2015; Ohlberger *et al.*, 2018; Oke *et al.*, 2020). After analyzing missed escapement goals and evidence of decreasing size and age at maturity, the SRT concluded that productivity remains within the range for a viable population. We agree.

The CGOA ESU demonstrates broad, albeit patchy, spatial distribution. This has led to significant population structure within the ESU. Populations spawn in the upper, middle, and lower Copper River, which are genetically differentiated. While the Alsek stock is genetically similar to the lower Copper River populations, the Situk stock is genetically unique. The Situk and Alsek stocks were likely recently colonized, possibly as glaciers shifted. The SRT found, and we agree, that spatial distribution is unlikely to contribute significantly to, and is likely a buffer against, the ESU's risk of extinction.

Although smaller and with fewer stocks than the other two ESUs, the CGOA ESU exhibits high diversity. Spawning habitats range from recently deglaciated rivers in rugged mountainous terrain to upland highlands draining tundra. Its life history characteristics are also diverse. The Situk River stock is the only population in Alaska composed primarily of ocean-type Chinook salmon. Genetic diversity includes fine-scale adaptive variation among Copper River populations. This diversity makes it highly unlikely that a single catastrophe could impact the entire ESU. Therefore, the SRT found, and we agree, that diversity is unlikely to contribute significantly to, and is likely a buffer against, the ESU's risk of extinction.

Northwest Gulf of Alaska ESU

The NWGOA ESU exhibits a large total abundance. Using mixed stock analyses, Larson *et al.* (2013) estimated a total stock size of 131,000 salmon in the South Peninsula and Cook Inlet. The SRT estimated a minimum annual return of 103,865 wild adult Chinook salmon. The ESU includes 19 indicator stocks with run size data available for 10 of them.

Run size and escapement data provide evidence for long-term declines in several stocks of the NWGOA ESU. For these stocks, the 95 percent credible intervals overlapped with zero, but the 50% credible intervals were negative. Short-term analyses indicate that many stocks, including Alexander Creek, Deshka River, Theodore River, Ninilchik River, and Karluk River, have experienced significant reductions in escapement in recent decades. Similarly, declines in run size have been observed in several stocks, including the Anchor River, Kenai River (early and late runs), East Susitna, Talkeetna, and Yentna Rivers. While these declines have persisted over multiple 15-year periods, some stocks show signs of stabilization, though at lower abundance levels than historical averages. The degree of decline varies by system, with some stocks exhibiting gradual reductions while others have shown more abrupt decreases, particularly in the early 2000s. There is some synchrony (*i.e.*, correlation among run size and/or escapement trends) among stocks. The SRT expressed concern over abundance trends in this ESU. However, the declining trend is buffered by the number of stocks (19) and the overall large abundance of the ESU. For these reasons, the SRT concluded, and we agree, that abundance is unlikely to contribute significantly to the ESU's risk of extinction now or in the foreseeable future. The SRT found that the small abundance of Theodore River may significantly influence the long-term persistence of this stock. However, this stock is small and is geographically located near 12 other stocks in the Upper Cook Inlet.

Therefore, this stock did not substantially influence or determine the SRT's risk assessment for the abundance of the NWGOA ESU as a whole.

To evaluate productivity, the SRT first considered escapement. As described above, the data indicate a long-term, sustained decline in escapement for multiple stocks within the ESU. Similar to the other ESUs, mean age and size-at-age have declined over the past 20–25 years (Lewis *et al.*, 2015; Ohlberger *et al.*, 2018; Oke *et al.*, 2020). Although missed escapement goals and shifts toward smaller, younger fish indicate reduced productivity, the magnitude and nature of these changes are not consistent with conditions that would place the ESU at risk of extinction. Escapement goals are designed to optimize yield rather than define viability thresholds, and thus viable populations may miss escapement goals repeatedly without necessarily reaching the point of elevated risk of extinction. Accordingly, the SRT concluded based on both current numbers and observed trends in escapement that population viability is not threatened within the foreseeable future. We agree.

The NWGOA ESU demonstrates broad spatial distribution. It occurs in numerous rivers and creeks, across multiple major watersheds (Susitna, Kenai, Karluk, Chignik), and throughout Cook Inlet, the Kenai and South Alaska Peninsulas, and Kodiak Island. Seasonally, immature fish from this ESU are distributed throughout the GOA and eastern Bering Sea. Genetic data generally indicate three primary groupings within the ESU: South Alaska Peninsula and Kodiak Island, northern Cook Inlet, and Kenai Peninsula. There may be additional population sub-structuring within these groups. The SRT found, and we agree, that spatial distribution is unlikely to contribute significantly to, and is likely a buffer against, the ESU's risk of extinction.

The NWGOA ESU demonstrates high genetic diversity. There is also temporal diversity in run timing. The Kenai Peninsula group contains some late run populations in the Kenai and Kasilof Rivers that spawn 4 to 6 weeks later than other populations in these

systems. Habitat diversity is also high. Populations on the South Alaska Peninsula inhabit rugged coastal rivers that drain from mountainous regions and contain large lakes. Populations in northern Cook Inlet inhabit a myriad of low-lying coastal streams or tributaries. This diversity makes it highly unlikely that a single catastrophe could impact the entire ESU. Therefore, the SRT found, and we agree, that diversity is unlikely to contribute significantly to, and is likely a buffer against, the ESU's risk of extinction.

Analysis of Section 4(a)(1) Factors

As described above, section 4(a)(1) of the ESA and NMFS' implementing regulations (50 CFR 424.11(c)) state that we must determine whether a species is endangered or threatened because of any one or a combination of the following factors: the present or threatened destruction, modification, or curtailment of its habitat or range; overutilization for commercial, recreational, scientific, or educational purposes; disease or predation; the inadequacy of existing regulatory mechanisms; or other natural or manmade factors affecting its continued existence. The SRT evaluated whether and the extent to which each of the foregoing factors contributes to the overall extinction risk of the GOA chinook salmon ESUs. The SRT summarized their conclusions for each ESU and each stock in the risk matrix results. See Status Review Report. This informed our conclusions about whether the ESUs are threatened or endangered because of any one or a combination of these factors.

The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

In all three ESUs, a large portion of land is protected at the state or Federal level, ranging from approximately 40 to 80 percent, depending on the ESU. Due to these protections and the regulatory measures described below, many habitats in the corresponding watersheds are in good condition. Therefore, much of the ESUs' habitat

remains intact and, given existing regulatory mechanisms, is expected to remain so in the foreseeable future.

To assess present and threatened modification of habitat, the SRT focused on human activities that can have adverse impacts on the different life history stages of Chinook salmon in watersheds within the boundaries of the three ESUs. The intensity of the various activities differs among ESUs, though the impacts are largely the same. In particular, the SRT quantified land use (timber harvest, agriculture, oil and gas extraction, and mining) and urbanization (including proximity to cities, population size, roads and culverts, and dams) that may negatively impact the ESUs and their habitat at present and through the foreseeable future (GOA Chinook SRT 2026).

Although not at a large scale, timber harvest occurs in the ranges of all three ESUs. Some of the primary concerns associated with timber harvest are erosion, removal of streamside vegetation, water quality degradation, and the construction of roads and culverts (Limpinsel *et al.*, 2023). Impacts may include smothering salmon eggs, impeding fish passage, altering stream temperature, or reducing in-stream habitat complexity (Limpinsel *et al.*, 2023). However, the Alaska Forest Resources and Practices Act and the U.S. Forest Service plans for the Tongass and Chugach National Forests aim to minimize the impacts of timber harvest on fish habitat. These laws and guidelines include designing roads and culverts in ways that minimize impacts to streams, preserving vegetated buffers along streams, and reforestation (USDA 2016; USDA 2020; ADNR 2017). The SRT found that land use for active timber harvest is less than 0.01 percent in SEGOA habitat and less than 0.1 percent in NWGOA habitat. There is no active timber harvest in CGOA habitat. Given the minimal exposure to timber harvest and guidelines in place to reduce impacts to Chinook habitat, we find timber harvest to be a low risk to habitat for all three ESUs.

Mining also occurs in the ranges of all three ESUs. Mines may negatively impact water quality, including through the leaching of heavy metals and other contaminants into river systems (Sergeant *et al.*, 2022). Active mines are limited in each ESU such that the ESU-wide risk from any localized reduction in water quality is considered minimal. Additionally, most mines are not located near Chinook-bearing streams, and there are regulations in place to reduce the impact of mining on fish habitat. Thus, we find mining to be a low risk to habitat for all three ESUs.

Two more land uses with potential impacts are agriculture and oil and gas extraction. These land uses are found only in the NWGOA watersheds and are not present in the CGOA or SEGOA watersheds. Agricultural areas can lead to both physical habitat loss and reductions in water quality (Limpinsel *et al.*, 2023) but are minimal throughout the state and primarily concentrated in the Matanuska-Susitna Valley and some parts of the Kenai Peninsula in the NWGOA. Oil and gas extraction can lead to habitat alteration and pollution (Limpinsel *et al.*, 2023), but these activities are limited to Cook Inlet in the NWGOA. Due to their absence in the CGOA and SEGOA ESUs, the SRT found that agriculture and oil and gas extraction poses no risk to habitat for these ESUs. While these land-uses do occur in the NWGOA, they are limited in magnitude and spatially-restricted. Thus, agriculture and oil and gas extraction pose a low risk to habitat for the NWGOA ESU.

Multiple aspects of urbanization present threats to fish and fish habitat, including physical loss of habitat and increased runoff from impervious surfaces, often containing pollutants (McCarthy *et al.*, 2008; Limpinsel *et al.*, 2023). Road development extends these impacts from impervious surfaces and is also associated with the construction of culverts that may block or impede fish passage (Limpinsel *et al.*, 2023). Dams, including hydropower facilities, may also block or impede fish passage, in addition to altering flow and water temperature (Limpinsel *et al.*, 2023). While large areas of land in the ranges of

all three ESUs remain undeveloped or minimally developed, the NWGOA ESU experiences significantly more impacts from urbanization in comparison to the SEGOA and CGOA ESUs. However, even within NWGOA habitat, increased urbanization impacts remain limited to a few systems in the Cook Inlet area, and habitat within the ESU as a whole is largely intact.

As described in detail in the Status Review Report, and summarized here, the SRT reviewed all present or threatened impacts to the ESUs' habitat and range. The SRT reviewed such impacts for each stock and overall for each ESU. The data demonstrate that exposure to such threats is limited due to the limited development across the broad spatial distribution of each ESU. Each ESU retains predominantly intact habitats such that potential impacts to the ESU have not materialized and are not likely to materialize in the foreseeable future. Therefore, the SRT found it unlikely that habitat threats contribute significantly to each ESU's extinction risk, now or in the foreseeable future. We agree that the present or threatened destruction, modification, or curtailment of each ESU's habitat or range is a low-level threat.

Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

For this review, the SRT analyzed 133 years (1890–2022) of GOA Chinook salmon harvest estimates (GOA Chinook SRT 2026). Since marine harvests are often mixed stocks, stock-specific estimates were derived by subtracting spawning escapement from total run size. Historical harvest levels are strongly influenced by regulations and management actions, meaning harvest levels do not necessarily indicate overall stock abundance or health.

Harvests occur across various fisheries (commercial, recreational, subsistence, *etc*.) and are conducted using multiple methods (*e.g.*, purse seine, gillnet, troll). Contemporary data comes from ADF&G reports and databases, reports on bycatch in federally managed groundfish fisheries, and the Cook Inlet EEZ Area fishery (since

2024). Data are largely collected by ADF&G and attributed to their management areas, which do not align with the ESUs identified herein, so the SRT focused on stock-specific data that could be attributed to stocks within the ESUs. These data represent the best available scientific and commercial information.

Overall, for the time series, the mean annual harvest of GOA Chinook salmon was 423,484 fish, the median harvest was 410,237 fish, and the average harvest over the last 10 years was 434,081 fish. The maximum harvest was 992,000 fish in 1937, and the minimum was 0 fish harvested in 1892. Overall, harvests appear to be variable but stable (neither increasing nor decreasing) since the 1960s. Commercial catch accounts for the majority of the harvest, followed by sport, groundfish bycatch, and subsistence. The SRT estimated harvest for each stock for which both run size and escapement data were available. See the Status Review Report for stock-level results.

Southeast Gulf of Alaska ESU Harvest

Chinook salmon harvest estimates for stocks associated with the SEGOA ESU are complex, involving a mixture of stocks from Alaska, British Columbia, Washington, and Oregon, as well as various gear types and fisheries within ADF&G's Southeast Alaska Region. Available data varies, with some reports providing total estimated Chinook harvests by fishery (*e.g.*, Hagerman *et al.*, 2022) and others offering stock-specific breakouts for SEGOA and non-SEGOA stocks (Peterson *et al.*, 2024). The SRT focused on stock-specific harvest estimates for the nine indicator stocks representative of the 25 known Chinook stocks in the SEGOA ESU, noting that these estimates are confined to large fish or a specific size/age class, consistent with escapement goals. For untagged stocks, surrogate harvest rates from nearby hatcheries, such as the ACI (Andrew Creek/King Salmon River) and AKB (Blossom/Chickamin/Keta Rivers) indicators produced by the Pacific Salmon Commission Chinook Technical Committee, are used for run reconstruction, where total run is calculated as escapement divided by the mature run

equivalent exploitation rate, with adjustments for differences between hatchery indicators and wild stocks.

Central Gulf of Alaska ESU Harvest

Historical harvest information for Chinook salmon associated with the CGOA ESU, focused on the three indicator stocks: the Alsek, Situk, and Copper Rivers. The Alsek and Situk rivers drain into the marine waters of ADF&G's Yakutat Management Area, part of ADF&G's Southeast Alaska Region. The Copper River drains into the marine waters of ADF&G's Copper River District, which is part of ADF&G's Central Region (encompassing Prince William Sound, Cook Inlet, and Bristol Bay management areas).

Northwest Gulf of Alaska ESU Harvest

The SRT provides Chinook salmon harvest estimates for the NWGOA ESU, which encompasses indicator stocks and associated harvests in ADF&G's Central Region and Westward Region. The NWGOA ESU includes ten Chinook salmon indicator stocks, but the disparate management boundaries used by ADF&G's Divisions of Sport and Commercial Fisheries, such as the Commercial Fisheries Division's Central Region versus the Sport Fish Division's larger Southcentral Region, complicate harvest reporting. Nevertheless, this assessment attempts to compile complete harvests across all management boundaries and fisheries.

Summary of Gulf of Alaska ESU Harvest Trends

Across ESUs, estimates of stock-specific Chinook salmon harvests and harvest rates (harvest relative to total run size) have generally declined in recent years, when compared to historical rates, likely as management actions have restricted fisheries in response to lower levels of Chinook salmon abundance. However, for some stocks in the SEGOA ESU, harvest rates have been relatively high during the last decade (see section 7.3 of the Status Review Report).

Bycatch

Chinook salmon originating from the GOA are caught incidentally in the GOA and Bering Sea and Aleutian Islands (BSAI) Federal groundfish fisheries, especially in the pollock pelagic trawl fishery. Salmon are considered a prohibited species catch (PSC) in groundfish fisheries, and cannot be retained for sale or personal use (50 CFR 679.7; 50 CFR 679.21). These fish are counted and sampled by fisheries observers (none are released), and some are retained for seafood donation programs. Nearly all salmon taken as bycatch in these fisheries are Chinook salmon or chum salmon. To limit the amount of bycatch of Chinook salmon, the North Pacific Fishery Management Council (NPFMC) and NMFS have implemented mandatory Chinook salmon PSC limits, apportioned by fishery sector; the attainment of a PSC limit results in the closure of the responsible fishery. Other Chinook bycatch reduction measures in place for the GOA groundfish fisheries include the use of gear modifications (*i.e.*, salmon excluder devices) and incentive plan agreements designed to incentivize vessel operator avoidance of Chinook bycatch.

The estimated average number of GOA-origin Chinook salmon incidentally caught in the Federal Bering Sea (mainly in summer) and GOA groundfish fisheries each year from 2010 to 2023 averaged 1,081 fish (range = 198–2,336) and 3,325 fish (range = 1,633–5,857) respectively. The primary Chinook salmon stocks bycaught in these fisheries between 2011 and 2023 were from the SEGOA and NWGOA ESUs, with annual bycatch averaging 2,755 fish (range = 1,810–4,091) from the SEGOA ESU and 1,416 fish (range = 500–4,333) from the NWGOA ESU. Stocks from the CGOA ESU were rarely encountered in these fisheries (2011–2023 yearly average = 234, range = 35–646). A small number of Chinook salmon originating from the GOA are also caught as bycatch in state-managed non-salmon fisheries (*e.g.*, state-managed trawl fisheries; <1,000 fish annually between 2008 and 2023, with an annual average of 275 fish), and

many of those salmon are likely from stocks outside the GOA (ADF&G 2024). Because bycatch rates are low for GOA stocks, we consider impacts of bycatch on abundance and productivity to be limited and thus presents a low risk to each ESU.

Summary of Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

As described in detail in the Status Review Report, and summarized here, the SRT reviewed all available catch and bycatch data for each ESU. Overall, the SRT found that current state and Federal management practices are effective for managing GOA Chinook stocks in a way that mitigates the risk of overutilization (GOA Chinook SRT 2026). Therefore, the SRT found it unlikely that overutilization contributes significantly to each ESU's extinction risk, now or in the foreseeable future. We agree that overutilization is a low-level threat.

Disease and Predation

Disease

Infectious disease is one of many factors that influence adult and juvenile salmon survival. Chinook salmon are exposed to numerous bacterial, fungal, protozoan, viral, and parasitic organisms in spawning and rearing areas, hatcheries, migratory routes, and the marine environment. However, no indigenous or emerging exotic diseases have been identified as threats to Chinook salmon in the GOA (GOA Chinook SRT 2026). Additionally, the State of Alaska has a robust fish health monitoring program and strict protocols to minimize transmission of diseases between hatchery and wild fish, including Chinook salmon (ADF&G 2026).

Predation

Salmon are an integral part of the food web, and predation on salmon naturally occurs at all salmon life stages in both freshwater and marine environments. Predation occurs from a variety of native piscine, avian, and mammalian species. In the marine

environment, it has been hypothesized that the broadly observed demographic changes (*e.g.*, decline in age at maturity) in Chinook salmon could be due to size-selective predation by sharks or marine mammals. However, based on the synthesis of a suite of studies detailed in the Status Review Report, there is no direct evidence that predatory impacts are outside normal ecosystem dynamics and imperiling the long-term existence of GOA Chinook salmon populations.

The introduced northern pike (*Esox lucius*) is the only freshwater predator identified as a potential threat to early life stages of GOA Chinook salmon, but their impact is limited to only certain systems in the NWGOA ESU. Although northern pike have driven declines in the Alexander Creek stock, the state and its partners have multiple management strategies for eradication and suppression, particularly in high-impact areas such as the Kenai Peninsula, Anchorage, and Mat-Su Valley (Dunker *et al.*, 2022). The use of rotenone treatments has increased, and in conjunction with fish salvage programs, native salmonids are being reintroduced into lakes where pike populations have been eradicated. Improved gillnetting strategies, with year-round monitoring efforts, have led to significant reductions in pike densities in targeted lakes. Experimental exclusion barriers are being installed in critical migration corridors to prevent pike from entering high-priority salmon habitats. Long-term monitoring and mitigation efforts are planned to ensure that restored salmon populations remain stable and viable in previously impacted watersheds (Dunker *et al.*, 2022).

The SRT concluded that current state management practices are effective for mitigating the risk of northern pike predation (GOA Chinook SRT 2026). Therefore, the SRT found it unlikely that predation and disease contribute significantly to each ESU's extinction risk, now or in the foreseeable future. We agree that disease and predation are low-level threats.

Inadequacy of Existing Regulatory Mechanisms

Numerous regulatory mechanisms exist to protect GOA Chinook salmon from present and future impacts of threats. The SRT reviewed each of these existing regulatory mechanisms in detail. See Status Review Report. In the paragraphs below, we summarize their findings.

A wide array of Federal, state, Tribal, and local laws, regulations, and treaties currently and effectively address the survival and habitat quality of GOA Chinook salmon. Fisheries management is primarily conducted by the State of Alaska and is supplemented by state and Federal policies governing subsistence and personal use. Federally, the Magnuson–Stevens Fishery Conservation and Management Act governs marine fisheries, includes provisions to designate Essential Fish Habitat, and requires Federal agencies to consult with NMFS on actions that may impact that habitat. Additionally, Chinook hatchery propagation is guided by state policies aimed at maintaining wild stock genetic integrity, preventing disease spread, and prioritizing wild stock conservation in mixed-stock fisheries.

Land and water management across the GOA region involves significant Federal oversight. The U.S. Forest Service, USFWS, Bureau of Land Management, and National Park Service manage millions of acres that overlap with Chinook watersheds, with management plans that include objectives for fish and fish habitat protection. Federal water regulation is fairly comprehensive, with statutes such as the Clean Water Act and Rivers and Harbors Act providing authority to the U.S. Army Corps of Engineers to regulate activities such as wetland filling, the discharge of dredged material, and construction in navigable waters. Furthermore, the Federal Energy Regulatory Commission regulates non-Federal hydropower under the Federal Power Act, which grants NMFS the authority to issue mandatory prescriptions for fish passage and to recommend other measures to protect anadromous salmon and to improve their habitat.

State and local agencies also play a crucial role in regulating salmon habitat. ADF&G enforces the Anadromous Fish Act, requiring permits for activities in essential anadromous waters. The Alaska Department of Natural Resources (ADNR) administers laws like the Alaska Forest Resources and Protection Act, setting standards for protecting fish habitat and water quality. Locally, many boroughs and the Municipality of Anchorage enforce development setbacks from anadromous streams. On Tribal lands, Alaska Native Claims Settlement Act corporations manage substantial acreage with varied priorities, while Tribal Conservation Districts and Tribes actively work to conserve and restore salmon habitat for cultural and subsistence use. Internationally, the Pacific Salmon Treaty and the Boundary Waters Treaty foster cooperation between the U.S. and Canada on salmon management and transboundary water protection, and the Canadian Environmental Assessment Acts address large projects in transboundary streams.

The SRT reviewed all existing regulatory mechanisms relevant to GOA Chinook and concluded that none are inadequate to such an extent that they are posing a threat to any of the ESUs. For example, land use regulatory mechanisms reduce the impacts of timber harvest, mining, agriculture, and oil and gas extraction. Fisheries management reduces the impact of overutilization. Northern pike eradication and prevention measures reduce the impact of predation. The extensive proactive management strategies and measures in place to protect and monitor Chinook salmon allow management to respond long before population viability is threatened. Thus, the SRT found it unlikely that the inadequacy of existing regulatory mechanisms contributes significantly to each ESU's extinction risk, now or in the foreseeable future. We agree that this is a low-level threat.

Other Natural or Human Factors Affecting Its Continued Existence

Environmental Variability

Increasing environmental variability observed throughout the range of GOA Chinook salmon is a challenge for maintaining stock productivity and predictability. Trends of increased environmental variability include observations of pronounced changes to hydrologic structures and processes in GOA Chinook salmon freshwater systems, and increased prevalence and severity of marine heatwaves. See the Status Review Report for details. Such trends are likely to continue in the foreseeable future.

Recent climate vulnerability assessments for salmon indicate that some populations exhibit moderate-to-high vulnerability to increased environmental variability, depending on their life history, geographic location, and habitat use (Crozier *et al.*, 2019). Changes in freshwater temperature, flow variability, and marine prey availability all contribute to their vulnerability. Chinook salmon, which exhibit extended freshwater rearing and extensive marine migrations, are considered to be among the more sensitive salmon species (Crozier *et al.*, 2019). The SRT found that environmental variability poses the greatest threat to GOA Chinook of all threats considered, and continued monitoring of environmental changes and responses to these changes in Chinook salmon is warranted. However, the SRT did not find any stock nor any ESU to be at high or moderate risk of extinction (*i.e.*, now or in the foreseeable future) due to changing environmental conditions. Please see the Status Review Report for details. Below, we summarize their reasoning.

Within the GOA river systems, there have been documented widespread premature mortality of salmon in some years due to high water temperatures and drought conditions (von Biela *et al.*, 2022); however, GOA Chinook salmon were not among these premature mortality observations. It has also been posited that deglaciation may increase available spawning habitat for Alaskan salmon (Pitman *et al.*, 2020; Pitman

et al., 2021). Climatic variability is estimated to be more impactful to Alaska stream fishes compared to other anthropogenic stressors (*e.g.*, land use or fire; Murdoch *et al.*, 2020). However, it should be noted that actual hydrologic changes in GOA freshwater landscapes will be impacted by local factors, such as vegetation, fine-scale topography, and wind (Littell *et al.*, 2018); therefore, the timing, magnitude, and ecological consequences of these transitions will vary depending on microclimate, watershed physiography, and elevation. The SRT considered all of these conditions in its risk assessment of each stock and overall for each ESU. While environmental variability has localized impacts in some cases depending on the individual river system, the SRT found it unlikely that environmental variability contributes significantly to each ESU's extinction risk, now or in the foreseeable future. While it will likely increase over time, we agree that this is a low-level threat now and in the foreseeable future.

Hatcheries

Concerns regarding hatchery and wild salmon interactions generally fall into three categories: (1) genetic and epigenetic interactions, (2) spatial competition for freshwater habitat, and (3) competition for food resources (Naish *et al.*, 2008). Typically, the first category references intraspecific interactions, while the latter two categories may refer to either intraspecific or interspecific interactions, particularly with large-scale hatchery releases of pink or chum salmon.

Hatchery-reared salmon populations are at risk of genetic and phenotypic change (Grant 2012). Changes in hatchery-reared salmon can occur through domestication selection, inbreeding, genetic drift, epigenetic modifications, or a combination of these mechanisms. These changes can affect genetic diversity, individual fitness, population productivity, and probability of extinction (Keller and Walker 2002; Frankham 2005; O'Grady *et al.*, 2006; Kardos *et al.*, 2016). Of the five species of Pacific salmon propagated in Alaska hatcheries, Chinook salmon may be the most vulnerable to hatchery

influences due to the extended rearing time typically required before their release into the marine environment. However, the extended rearing time and resources required (*e.g.*, food, water, personnel) also make Chinook the least propagated species of anadromous salmonid in Alaska hatcheries (Wilson 2024). The comparatively low release numbers, coupled with the ADF&G Genetic Policy (Davis *et al.*, 1985), likely reduce the potential for hatchery Chinook to adversely impact wild stocks. However, the degree of risk may vary between ESUs.

Spatial competition or habitat displacement of wild Chinook salmon by hatchery-origin fish during their juvenile, freshwater life history stages are unlikely in the GOA, as hatchery-origin Chinook are released as smolts to begin their marine migration. However, spatial competition or habitat displacement of adult wild Chinook by adult hatchery-origin fish on the spawning grounds may be more likely. Such intraspecific spatial competition has been documented outside of Alaska, particularly in areas where hatchery release (*i.e.*, imprinting) sites are near wild stocks. Interspecific spatial interactions between wild Chinook and more abundant hatchery species, like chum and pink salmon, which have higher stray rates, are also possible. Generally, species-specific redd site requirements, habitat partitioning, and temporal differences in spawn timing reduce the likelihood of this type of interspecific competition (Fukushima and Smoker 1998; Geist *et al.*, 2002; Quinn 2005; Beechie *et al.*, 2008). However, data gaps exist regarding potential intraspecific and interspecific spatial competition, so increased monitoring of localized impacts of stray hatchery fish on wild populations is warranted.

The spread of disease from hatchery fish to wild stocks is also a concern. Within Alaska hatcheries, several management strategies and health policies implemented by ADF&G's Fish/Shellfish Health Program exist to prevent transmission of new pathogens to wild stocks as well as to surveil existing, emerging, and exotic disease agents (ADF&G 2026). The State of Alaska's Fish Health and Disease Control Policy (5 AAC

41.080) is designed to prevent the spread of infectious diseases in fish and shellfish (Evenson *et al.*, 2018). It mandates rigorous health protocols for hatcheries, including disinfection of salmon eggs transported between watersheds, regular inspections of hatchery facilities, and detailed disease reporting and isolation measures to control disease spread.

The SRT concluded that current state management practices are effective for mitigating risks caused by hatcheries. Therefore, the SRT found it unlikely that hatcheries contribute significantly to each ESU's extinction risk, now or in the foreseeable future. We agree that hatcheries present a low-level threat.

Rangewide Risk of Extinction

Based on the best scientific and commercial data available on each of the demographic and ESA section 4(a)(1) factors, the SRT completed a risk matrix for each stock and ESU. Following the assessment of stock-level demographic factors and threats using this risk matrix approach, each team member independently evaluated the overall extinction risk for each ESU as low, moderate, or high (defined below). To accommodate individual uncertainty and support a representative expression of expert opinion, the team applied the "likelihood point" method, commonly referred to as the Forest Ecosystem Management Assessment Team (FEMAT) approach, based on its use in the FEMAT process (FEMAT 1993). Under this method, each reviewer allocated 10 likelihood points across the 3 risk categories to represent their confidence in the ESU's true status. For example, a reviewer confident in a low-risk classification might assign all 10 points to that category, while a reviewer with greater uncertainty could distribute points across 2 or all 3 categories. This approach has been used in most anadromous Pacific salmonid status reviews since 1999. The three risk levels have been used in prior Pacific Northwest salmonid species reviews with minor wording changes (Stout *et al.*, 2012; Ford 2022; OC and SONCC SRT 2024).

- High Risk: A species or ESU with a high risk of extinction is at or near a level of abundance, productivity, spatial structure, and/or diversity that places its continued persistence in question. The demographics of a species or ESU at such a high level of risk may be highly uncertain and strongly influenced by stochastic or depensatory processes. Similarly, a species or ESU may be at high risk of extinction if it faces clear and present threats (*e.g.*, confinement to a small geographic area; imminent destruction, modification, or curtailment of its habitat; or disease epidemic) that are likely to create imminent and substantial demographic risks.

- Moderate Risk: A species or ESU is at moderate risk of extinction if it is on a trajectory that puts it at a high level of extinction risk in the foreseeable future (see description of "High risk" above). A species or ESU may be at moderate risk of extinction due to current and/or projected threats or declining trends in abundance, productivity, spatial structure, or diversity. The appropriate time horizon for evaluating whether a species or ESU is more likely than not to be at high risk in the foreseeable future depends on various case- and species-specific factors. For example, the time horizon may reflect certain life history characteristics (*e.g.*, long generation time or late age-at-maturity) and should also reflect the time frame or rate over which identified threats are likely to impact the biological status of the species or ESU (*e.g.*, the rate of disease spread). The appropriate time horizon is not limited to the period that status can be quantitatively modeled or predicted within predetermined limits of statistical confidence. The biologist (or Team) should, to the extent possible, clearly specify the time horizon over which it has confidence in evaluating moderate risk.
- Low Risk: A species or ESU is at low risk of extinction if it is not at moderate or high level of extinction risk (see "Moderate risk" and "High risk" above). A

species or ESU may be at low risk of extinction if it is not facing threats that result in declining trends in abundance, productivity, spatial structure, or diversity. A species or ESU at low risk of extinction is likely to show stable or increasing trends in abundance and productivity with connected, diverse populations.

The extinction risk determination reflects the informed professional judgment of each SRT voting member, based on a synthesis of available information. This assessment was structured around a risk matrix framework that integrated demographic risk indicators with anticipated interactions among threats and other relevant factors, now and in the foreseeable future. For a detailed explanation of the risk matrix framework methods, see section 8 in the Status Review Report. The foreseeable future was defined as a period of 25 to 40 years, corresponding to approximately 5 to 8 generations of GOA Chinook salmon. This timeframe extends as far into the future as the SRT could make reasonably reliable predictions about threats to the species and the species' responses to those threats. The SRT based this timeframe on the availability of comprehensive demographic data for each ESU and the projected impacts of environmental variability, ocean conditions, and freshwater habitat trends on GOA Chinook salmon viability. Further justification of this timeframe can be found in Section 8.2 of the SRT report (GOA Chinook SRT 2026).

Southeast Gulf of Alaska ESU

The SRT concluded, and we agree, that the SEGOA ESU is at low risk of extinction now and for the foreseeable future, throughout its range. Of 90 points total, the SRT assigned 87 points to low extinction risk and three points to moderate extinction risk, reflecting their confidence in this conclusion.

The SEGOA ESU exhibits a large total abundance based on mixed-stock analyses and the minimum estimated annual return of wild adult Chinook salmon. The ESU

includes 25 stocks, nine of which have estimated run sizes and escapements in the thousands. These data do not indicate sustained, long-term declines in abundance for the ESU. Many SRT members emphasized that although short-term declines have been observed in certain stocks, these patterns are highly variable, fall within the historical variability, and have either stabilized or begun to rebound in recent years. Productivity has also declined but has remained within limits for viable salmon populations. Further buffering the SEGOA ESU from extinction risk are high spatial distribution and diversity, which includes genetic, habitat, and life history diversity. In conclusion, the risk matrix evaluations across the demographic factors (abundance, productivity, spatial structure, and diversity) were uniformly low.

Next, the SRT considered the threats caused by the ESA section 4(a)(1) factors, individually and combined. They found it unlikely that the ESA section 4(a)(1) factors, individually or combined, contribute significantly to the extinction risk of the ESU. Instead, the SRT found that estuarine and freshwater habitats remained in relatively pristine condition. Hatchery influence, predation, and overutilization occur at low levels. While productivity, habitat quality, and diversity and connectivity among populations were key factors supporting a low-risk determination, several SRT members acknowledged environmental variability as the most pressing emerging threat to this ESU. Concerns included shifts in streamflow patterns, reduced snowpack, increased peak flows, and marine heatwaves, all of which could negatively impact key life stages. However, these climate-related risks were generally viewed as insufficient to conclude that the ESU is likely to become endangered within the next 25–40 years, alone or in combination with other threats. Some SRT members assigned a small portion of likelihood points to the moderate risk category to reflect uncertainty about future environmental impacts, particularly in glacially influenced systems such as the Taku and Stikine. Nonetheless, SRT members agreed that current management actions, low levels

of other threats (*e.g.*, hatchery influence, predation, overutilization), and demographic resilience support the conclusion that this ESU is not in danger of extinction or likely to become so in the foreseeable future, throughout its range.

Central Gulf of Alaska ESU

The SRT concluded, and we agree, that the CGOA ESU is at low risk of extinction now and for the foreseeable future, throughout its range. Of 90 points total, the SRT assigned 87 points to low extinction risk and three points to moderate extinction risk, reflecting their confidence in this conclusion.

The CGOA ESU exhibits a moderately large total abundance based on mixed-stock analyses. The ESU includes three stocks; in addition, the largest stock (Copper River) is composed of numerous metapopulations that provide demographic and spatial resilience. There is little evidence for sustained, long-term declines for the ESU overall. The Copper River stock abundance has been increasing over multiple decades. Short-term analyses of the Alsek and Situk stocks indicated reductions since the early 2000s; however, recent abundance estimates are similar to long-term median values and fall within historical variability. Productivity has also declined but remained within limits for viable salmon populations. Further buffering the CGOA ESU from extinction risk are high spatial distribution and diversity, which includes genetic, habitat, and life history diversity. In conclusion, the risk matrix evaluations across the four demographic factors (abundance, productivity, spatial structure, and diversity) were uniformly low.

Next, the SRT considered the threats caused by the ESA section 4(a)(1) factors, individually and combined. They found it unlikely that the ESA section 4(a)(1) factors, individually or combined, contribute significantly to the extinction risk of the ESU. Instead, the SRT found that habitat conditions remain largely intact. Predation and overutilization occur at low levels. While the overall risk was low, several SRT members acknowledged environmental variability as the most pressing emerging threat to this

ESU, particularly related to environmental variability and potential ecological isolation among populations. Environmental-related concerns included altered hydrology, warming stream temperatures, and changing marine conditions, which may impact key life stages and reduce productivity over time, but not to the point of endangering the ESU within the foreseeable future. Some SRT members assigned some points to the moderate-risk category, citing environmental variability and past declines as justification for acknowledging uncertainty about the ESU's long-term trajectory. Additionally, concerns were noted about limited buffering capacity due to the isolation of populations and potential ecological risks from hatchery programs. However, these factors were generally not considered sufficient to elevate the extinction risk above the low category due to low levels of all factors, considered alone or in combination. Within this ESU, high levels of diversity and habitat intactness, combined with recently stable or increasing trends in abundance and productivity, support the conclusion that this ESU is not in danger of extinction or likely to become so in the foreseeable future, throughout its range.

Northwest Gulf of Alaska ESU

The SRT concluded, and we agree, that the NWGOA ESU is at low risk of extinction now and for the foreseeable future, throughout its range. Of 90 points total, the SRT assigned 75 points to low extinction risk and 15 points to moderate extinction risk, reflecting their confidence in this conclusion, which is slightly lower than their confidence in the conclusions for the other ESUs.

The NWGOA ESU exhibits the largest total abundance of all GOA ESUs based on mixed-stock analyses and the minimum estimated annual return of wild adult Chinook salmon. The ESU includes 19 stocks, most of which have estimated run sizes and escapements in the thousands. There is moderate evidence (negative 50 percent confidence intervals, but the 95 percent confidence intervals overlap with zero) for declines in multiple stocks within the ESU. Some stocks also exhibit signs of

demographic stress. Despite these declines, abundance, productivity, spatial structure, and diversity all remain high, providing resilience and buffering against future threats. With one exception (abundance in Theodore River, a small stock in Upper Cook Inlet), the risk matrix evaluations across the four demographic factors (abundance, productivity, spatial structure, and diversity) were low.

Next, the SRT considered the threats caused by the ESA section 4(a)(1) factors, individually and combined. Environmental variability was identified as the most prominent overarching threat to the ESU, with additional cumulative stressors including predation by invasive northern pike, habitat impacts associated with urban development, and ecological risks from hatchery interactions, particularly in Cook Inlet and other road-accessible watersheds.

While these risks warrant continued attention within the NWGOA ESU, there are numerous measures in place that mitigate them. Within Cook Inlet, the state has management strategies for controlling the expansion of the northern pike, an escapement-based management approach for addressing demographic stress, and habitat protections for urbanization impacts. These risks, mitigated by current actions, do not rise to a level that would place the ESU beyond the low-risk category. The SRT's inclusion of a few moderate-risk points reflects some uncertainty regarding the level of risk posed by demographic stress and the *potential* for cumulative threats to influence long-term outcomes within the foreseeable future of 25 to 40 years. Overall, the SRT's assessment reflects a low extinction risk for the NWGOA Chinook salmon ESU throughout its range. Within this ESU, high abundance, productivity, spatial structure, and diversity in addition to ongoing monitoring, threat mitigation, and proactive management support the conclusion that this ESU is not in danger of extinction or likely to become so in the foreseeable future, throughout its range.

Significant Portion of Its Range Analysis

As noted above, the definitions of threatened and endangered species contain the phrase: throughout all or a significant portion of its range (SPR). This phrase provides two independent bases for listing: a species may be endangered or threatened throughout all of its range or a species may be endangered or threatened throughout a SPR. Thus, in construing the statutory definitions of threatened and endangered species, NMFS is required to give independent meaning to the SPR phrase to avoid rendering it superfluous to the "throughout all" language (*see Defenders of Wildlife* v. *Norton*, 258 F.3d 1136, 1141–45 (9th Cir. 2001)).

A joint USFWS–NMFS policy, finalized in 2014, provided the Services' interpretation of the SPR phrase (SPR Policy; 79 FR 37578, July 1, 2014). It explains that we will use the same standards and methodology to determine whether a species is endangered or threatened throughout a portion of its range that we use to determine if a species is endangered or threatened throughout its range. Further, depending on the case, it might be more efficient for us to address the significance question or the status question first. Regardless of which question we choose to address first, if we reach a negative answer with respect to either question, we do not need to evaluate the other question for that portion of the species' range. In other words, if we determine that a portion of the range is not significant, we will not need to determine whether the species is endangered or threatened there; if we determine that the species is not endangered or threatened in a portion of its range, we will not need to determine if that portion was significant.

Courts have held that the threshold definition of significant contained in the SPR Policy was invalid, stating it set too high a standard to allow for an independent basis for listing species—*i.e.*, it did not give independent meaning to the phrase "throughout . . . a significant portion of its range" (*see, e.g.*, *Center for Biological Diversity, et al.* v. *Jewell*, 248 F. Supp. 3d 946, 958 (D. Ariz. 2017); *Desert Survivors* v. *Dep't of the Interior*, 321

F. Supp. 3d 1011, 1069-74 (N.D. Cal. 2018)). However, those courts did not take issue with the fundamental approach of evaluating significance in terms of the biological significance of a particular portion of the range to the overall species. NMFS did not rely on the definition of significant in the SPR Policy when making this 12-month finding. While certain other aspects of the SPR Policy have also been addressed by courts, the policy framework and key elements remain in place, and until the policy is withdrawn, we apply those aspects of it that remain valid.

For salmonids, status reviews generally include detailed population- or subpopulation-level assessments to inform the rangewide extinction risk determination. In these cases, the SPR analysis draws directly from that foundational work, using population-level data to assess whether any portion of the range may independently meet the criteria for listing as threatened or endangered. In other words, the individual stocks within the ESUs comprised the portions that were assessed during the SPR analysis. The SRT took guidance for this process from other recent NMFS salmon status reviews (*e.g.*, OC and SONCC SRT 2024).

Following the determination of the overall ESU level risk for all three GOA Chinook salmon ESUs, the SRT analyzed individual stocks comprising each ESU as portions to evaluate in the SPR analysis. The SRT used the risk matrix approach, evaluating the demographic and section 4(a)(1) factors for each stock. All factors were found to pose low-level threats or risks, except for one small stock (Theodore River) at one factor (abundance). The SRT found that the low abundance of this stock contributes to its long-term risk of extinction (*i.e.*, moderate score); however, all other factors fell into the low-risk category, and thus this stock was rated at low-risk for extinction overall. Therefore, the SRT concluded that the Chinook in this portion of the ESU's range are at low risk of extinction now and within the foreseeable future. We agree with this conclusion and find that the NWGOA ESU is not in danger of extinction, or likely to

become so in the foreseeable future, throughout any significant portions of its range. Based on our review of the SRT's assessment, we also conclude that the SEGOA and CGOA ESUs are not at risk of extinction, or likely to become so in the foreseeable future, throughout any significant portions of their ranges.

Peer Review

In December 2004, the Office of Management and Budget (OMB) issued a Final Information Quality Bulletin for Peer Review (M-05-03; December 16, 2004) establishing minimum peer review standards, a transparent process for public disclosure of peer review planning, and opportunities for public participation. The OMB Bulletin, implemented under the Information Quality Act (Pub. L. 106-554), is intended to enhance the quality and credibility of the Federal government's scientific information, and applies to influential or highly influential scientific information disseminated on or after June 16, 2005. To satisfy our requirements under the OMB Bulletin, we solicited independent peer review comments on the draft Status Review Report from four scientists selected from the academic and scientific community with expertise in conservation biology, salmonid genetics, stock assessment, and Chinook salmon biology. All peer review comments on the Status Review Report were addressed prior to dissemination of the final version of the report that was referenced for this 12-month finding. The peer review report can be found online at: *https://www.noaa.gov/information-technology/biological-status-of-gulf-of-alaska-chinook-salmon*.

Final Determination

Section 4(b)(1) of the ESA requires that we make listing determinations based solely on the best scientific and commercial data available after conducting a review of the status of the species and taking into account those efforts, if any, being made by any state or foreign nation, or political subdivisions thereof, to protect and conserve the

species. We have independently reviewed the best scientific and commercial information available, including the petition, public comments submitted on the 90-day finding, the Status Review Report (GOA Chinook SRT 2026), and other published and unpublished information, and have consulted with species experts and individuals familiar with GOA Chinook salmon.

After reviewing the SRT's analysis of reproductive isolation and evolutionary legacy according to the ESU Policy, we identify three ESUs: SEGOA, CGOA, and NWGOA. For each of the three ESUs, we assessed the four demographic factors: abundance, productivity, spatial distribution, and diversity. We then evaluated each ESU to determine whether it is endangered or threatened because of any one or a combination of the ESA section 4(a)(1) factors. Despite some declines in abundance and productivity, the ESUs exhibit large overall population sizes spread across multiple stocks, viable levels of productivity, broad spatial distributions, and high diversity. As described in the Status Review Report, the habitat of GOA Chinook salmon in all three ESUs remains undeveloped or minimally developed. While the NWGOA ESU experiences more impacts from urbanization than other ESUs, increased urbanization impacts are limited to a few systems in the Cook Inlet area, and habitat within the ESU as a whole is largely intact. Across the three ESUs, current state and Federal management practices specific to harvest and bycatch are effective for managing GOA Chinook stocks in a way that mitigates the risk of overutilization. No indigenous or emerging exotic diseases have been identified as major threats to Chinook salmon in the GOA, and the State of Alaska maintains a robust fish health surveillance program. Predation on GOA Chinook salmon is considered to be within normal ecosystem dynamics, with the exception of invasive northern pike, which is limited to only a few systems in the NWGOA. Comprehensive regulatory mechanisms enforced by Federal, state, and Tribal entities, as well as laws and regulations at the local level, currently and effectively address the harvest, northern pike

predation pressure, and habitat quality of GOA Chinook salmon. Other human factors, *e.g.*, risks posed by hatchery interactions, are controlled and well-mitigated through established policies and protocols implemented by the State of Alaska. Natural factors, specifically environmental variability, pose a threat to GOA Chinook salmon, and there is uncertainty about future environmental conditions. However, GOA Chinook salmon are ecologically resilient, and fluctuations in abundance and productivity levels are expected for salmon. Stocks in the SEGOA ESU have experienced short-term and highly variable declines, which have stabilized or have begun to rebound in recent years. High quality habitat as well as the high abundance, productivity, spatial distribution, and diversity indicate long-term population viability in this ESU. The CGOA ESU shows an overall stable population trajectory, without evidence of sustained declines. Additionally, high quality, intact habitat and high levels of spatial distribution and diversity support long-term population viability in this ESU. The NWGOA ESU has experienced multiple periods of persistent declines and is currently at lower abundances than historical averages. However, some stocks are showing signs of stabilization. While additional stressors impact the NWGOA ESU, such as predation by invasive northern pike and increased urban development, these stressors are mitigated by dedicated management actions that are likely to continue into the foreseeable future. Large abundance, spatial connectivity, robust spatial structure and diversity, and broad geographic distribution in conjunction with established proactive management strategies, monitoring protocols, and habitat protections support the long-term population viability of this ESU. Therefore, we find that the ESA section 4(a)(1) factors, collectively and individually, present a low extinction risk to the SEGOA, CGOA, and NWGOA ESUs of Chinook salmon.

Within each of the three ESUs, we did not find any portion of the range that was both significant and had a high or moderate risk of extinction (*i.e.*, at risk of extinction now or in the foreseeable future). Based on the best available scientific and commercial

information, we conclude that the SEGOA, CGOA, and NWGOA ESUs of GOA Chinook salmon are not in danger of extinction throughout all or a significant portion of their ranges, nor likely to become so within the foreseeable future. Therefore, the SEGOA, CGOA, and NWGOA ESUs do not meet the definition of an endangered or threatened species and do not warrant listing under the ESA.

This is a final action, and, therefore, we are not soliciting public comments.

References

A complete list of all references cited herein is available online (see **ADDRESSES**) and upon request (see **FOR FURTHER INFORMATION CONTACT**).

Authority: The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: May 12, 2026.

Samuel D. Rauch III,

Deputy Assistant Administrator for Regulatory Programs,

National Marine Fisheries Service.

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