

## STAFF SUMMARY FOR FEBRUARY 21, 2020

**28. KLAMATH RIVER BASIN SPORT FISHING****Today's Item****Information** **Action** 

Discuss proposed changes to Klamath River Basin sport fishing regulations.

**Summary of Previous/Future Actions**

- |                                     |                                 |
|-------------------------------------|---------------------------------|
| • Notice hearing                    | Dec 11-12, 2019; Sacramento     |
| • <b>Today's discussion hearing</b> | <b>Feb 21, 2020; Sacramento</b> |
| • Discussion hearing                | Apr 15-16, 2020; Sacramento     |
| • Adoption hearing                  | May 14, 2020; Teleconference    |

**Background**

FGC annually adopts Klamath River Basin sport fishing regulations to bring state law into conformance with federal fishery management goals. In Dec 2019, FGC authorized publication of notice of proposed changes to quotas, and size, bag, and possession limits for Klamath River Basin fall-run Chinook salmon (KRFC). Specific size, bag, and possession limits for KRFC are scheduled for adoption after the Pacific Fishery Management Council (PFMC) has reviewed the status of West Coast salmon stocks and final fishery allocation recommendations have been adopted (Exhibit 1).

Pre-season stock projections of 2020 adult KRFC will not be available from PFMC until Mar 2020; the 2020 basin allocation will be recommended by PFMC in Apr 2020 and subsequently presented by DFW for adoption as the in-river sport harvest quota at FGC's May 14, 2020 teleconference.

For notice purposes, DFW recommended a quota range of 0-67,600 adult KRFC for the in-river sport fishery, as this range encompasses the historical range of Klamath River Basin allocations and allows for adjustments by PFMC and FGC during the 2020 regulatory cycle.

The range of proposed size, bag, and possession limits for KRFC as stated in the initial statement of reasons (ISOR; Exhibit 2) are:

- Bag limit – [0-4] Chinook salmon, of which no more than [0-4] fish over [22-23] inches total length may be retained until the subquota is met, then 0 fish over [22-23] inches total length.
- Possession limit – [0-12] Chinook salmon, of which no more than [0-4] fish over [22-23] inches total length may be retained when the take of salmon over [22-23] inches total length is allowed.

***KRFC Size Limit (Grilse Size Considerations)***

For the purpose of implementing PFMC adult allocation and DFW salmon fishery harvest assessment, within the Klamath River Basin DFW currently considers 22 inches total length (TL) as a provisional size limit cutoff. Salmon greater than 22 inches TL are defined as adult

## STAFF SUMMARY FOR FEBRUARY 21, 2020

salmon (ages three to five), and salmon less than or equal to 22 inches TL are defined as grilse salmon (age two).

DFW is proposing a grilse salmon size limit cutoff range of less than or equal to 22 inches to 23 inches TL for discussion by FGC before DFW makes a final recommendation. The proposal is based on an evaluation of the potential impacts to KRFC from increasing the size limit cutoff distinguishing age-two fish from age-three fish for in-river recreational harvest (Exhibit 3).

***Brown Trout Bag and Possession Limit Increase on the Main Stem Trinity River***

DFW is proposing to increase the daily bag and possession limit for brown trout on the main stem of the Trinity River from a five fish daily bag/10 fish possession limit to a 10 fish daily bag/20 fish possession limit. The proposed change will increase fishing opportunity on a non-native trout species. As the focus for the Trinity River is on native fish production, a reduction in brown trout may help enhance habitat availability for native fish, consistent with the goals of the federally-administered Trinity River Restoration Program.

***Other Changes for Clarity***

A change for clarity was proposed by FGC staff and approved by FGC at its Dec 11-12, 2019 meeting for addition to the ISOR (Exhibit 2):

- Amend subsection 5.87(f) to ensure that the size limit cutoff between a grilse and adult Chinook salmon in the Klamath River Basin is consistent with the size limit cutoff listed in subsection 7.50(b)(91.1). The change will ensure clarity in the regulations and help anglers understand the size limit cutoff that distinguishes a grilse salmon from an adult salmon in the Klamath River Basin.

Additional non-substantive changes are proposed for clarity and accuracy.

**Significant Public Comments (N/A)****Recommendation (N/A)****Exhibits**

1. [DFW memo transmitting ISOR, received Nov 22, 2019](#)
2. [Klamath River Basin ISOR](#)
3. [ISOR Appendix A: Evaluation of Alternative Size Limits for Klamath River Fall Chinook Salmon Harvest, DFW, Oct 2019](#)

**Motion/Direction (N/A)**

## Memorandum

Date: November 19, 2019

To: Melissa Miller-Henson  
Executive Director  
Fish and Game Commission

From: Charles H. Bonham  
Director

Subject: **Initial Statement of Reasons to Amend Subsection (b)(91.1) of Section 7.50, Title 14, California Code of Regulations, Re: Klamath River Basin Sport Fishing Regulations 2020**

Please find attached the Initial Statement of Reasons (ISOR) package for the 2020 Klamath River Basin sport fishing regulations. As in the past, the California Department of Fish and Wildlife (Department) is proposing a range of bag and possession limits for adult Klamath River fall-run Chinook Salmon (KRFC) until after federal review of west coast salmon stocks has been completed and fishery allocations have been proposed. The 2020 Klamath River Basin allocation of adult KRFC will be recommended by the Pacific Fishery Management Council in April 2020 and presented to the Fish and Game Commission (Commission) for adoption at its May 14, 2020 teleconference.

Aside from minor changes for clarity, the Department is proposing two additional changes to the Klamath River Basin sport fishing regulations:

1. A potential change in the size limit of grilse KRFC (range presented is 22 to 23 inches total length); and
2. Increase in the daily bag and possession limit for Brown Trout on the main stem of the Trinity River from a five fish daily bag/10 fish possession limit to a 10 fish daily bag/20 fish possession limit.

The Department asks that the Commission request that the Office of Administrative Law make the regulations effective on or before August 15, 2020.

If you have any questions or need additional information, please contact Kevin Shaffer, Chief, Fisheries Branch, by telephone at (916) 327-8841 or by e-mail at [Kevin.Shaffer@wildlife.ca.gov](mailto:Kevin.Shaffer@wildlife.ca.gov). The public notice should identify Senior Environmental Scientist, Wade Sinnen, as the Department's point of contact for this rulemaking. Mr. Sinnen can be reached at (707) 822-5119, or by email at [Wade.Sinnen@wildlife.ca.gov](mailto:Wade.Sinnen@wildlife.ca.gov).

Melissa Miller-Henson, Executive Director  
Fish and Game Commission  
November 19, 2019  
Page 2

cc: Stafford Lehr, Deputy Director  
Wildlife and Fisheries Division  
[Stafford.Lehr@wildlife.ca.gov](mailto:Stafford.Lehr@wildlife.ca.gov)

Kevin Shaffer, Chief  
Fisheries Branch  
Wildlife and Fisheries Division  
[Kevin.Shaffer@wildlife.ca.gov](mailto:Kevin.Shaffer@wildlife.ca.gov)

Tina Bartlett, Regional Manager  
Northern Region (Region 1)  
[Tina.Bartlett@wildlife.ca.gov](mailto:Tina.Bartlett@wildlife.ca.gov)

Wade Sinnen, Sr. Env.  
Scientist (Supervisor)  
Northern Region (Region 1)  
[Wade.Sinnen@wildlife.ca.gov](mailto:Wade.Sinnen@wildlife.ca.gov)

Karen Mitchell, Sr. Env. Scientist (Spec.)  
Fisheries Branch  
Wildlife and Fisheries Division  
[Karen.Mitchell@wildlife.ca.gov](mailto:Karen.Mitchell@wildlife.ca.gov)

Michelle Selmon, Program Manager  
Regulations Unit  
Wildlife and Fisheries Division  
[Michelle.Selmon@wildlife.ca.gov](mailto:Michelle.Selmon@wildlife.ca.gov)

Ona Alminas, Sr. Env. Scientist (Spec.)  
Regulations Unit  
[Ona.Alminas@wildlife.ca.gov](mailto:Ona.Alminas@wildlife.ca.gov)

Ari Cornman, Wildlife Advisor  
Fish and Game Commission  
[Ari.Cornman@fgc.ca.gov](mailto:Ari.Cornman@fgc.ca.gov)

Craig Castleton, Analyst  
Fish and Game Commission  
[Craig.Castleton@fgc.ca.gov](mailto:Craig.Castleton@fgc.ca.gov)

State of California  
Fish and Game Commission  
Initial Statement of Reasons for Regulatory Action

Amend Subsection (f) of Section 5.87 and Subsection (b)(91.1) of Section 7.50  
Title 14, California Code of Regulations  
Re: Klamath River Basin Sport Fishing

I. Date of Initial Statement of Reasons: December 17, 2019

II. Dates and Locations of Scheduled Hearings

(a) Notice Hearing

Date: December 11, 2019

Location: Sacramento, CA

(b) Discussion Hearing

Date: February 21, 2020

Location: Sacramento, CA

(c) Discussion Hearing

Date: April 16, 2020

Location: Sacramento, CA

(d) Adoption Hearing

Date: May 14, 2020

Location: Teleconference

III. Description of Regulatory Action

(a) Statement of Specific Purpose of Regulatory Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary

Unless otherwise specified, all section references in this document are to Title 14 of the California Code of Regulations (CCR).

The Klamath River Basin, which consists of the Klamath River and Trinity River systems, is managed for fall-run Chinook Salmon (*Oncorhynchus tshawytscha*) through a cooperative system of State, federal, and tribal management agencies. Salmonid regulations are designed to meet natural and hatchery escapement needs for salmonid stocks, while providing equitable harvest opportunities for ocean sport, ocean commercial, river sport, and tribal fisheries.

The Pacific Fishery Management Council (PFMC) is responsible for adopting recommendations for the management of sport and commercial ocean salmon fisheries in the Exclusive Economic Zone (three to 200 miles offshore) off the coasts of Washington, Oregon, and California. When approved by the Secretary of Commerce, these recommendations are implemented as ocean salmon fishing regulations by the National Marine Fisheries Service (NMFS).

The California Fish and Game Commission (Commission) adopts regulations for the ocean salmon sport (inside three miles) and the Klamath River Basin (in-river) sport fisheries, which are consistent with federal fishery management goals.

Tribal entities within the Klamath River Basin maintain fishing rights for ceremonial, subsistence, and commercial fisheries that are managed consistent with federal fishery management goals. Tribal fishing regulations are promulgated by the tribes.

### **Klamath River Fall-Run Chinook Salmon**

Adult Klamath River fall-run Chinook Salmon (KRFC) harvest allocations and natural spawning escapement goals are established by the PFMC. The KRFC harvest allocation between tribal and non-tribal fisheries is based on court decisions and allocation agreements between the various fishery representatives.

The Klamath River Basin in-river sport salmon fishery is managed using adult quotas. For the purpose of implementing PFMC adult allocation and California Department of Fish and Wildlife (Department) salmon fishery harvest assessment, within the Klamath River Basin the Department currently considers 22 inches total length as a provisional cutoff. Salmon greater than 22 inches total length are defined as adult salmon (ages 3-5), and salmon less than or equal to 22 inches total length are defined as grilse salmon (age-two).

### **PFMC Overfishing Review**

KRFC stocks have been designated as “overfished” by the PFMC. This designation is the result of not meeting conservation objectives for this stock. Management objectives and criteria for KRFC are defined in the PFMC Salmon Fishery Management Plan (FMP). The threshold for overfished status of KRFC is a three-year geometric mean less than or equal to 30,525 natural area adult spawners. This threshold was not met for KRFC during the 2015-2017 period. The 30,525 KRFC natural area adult spawners is considered the minimum stock size threshold, per the FMP. The KRFC adult natural area spawning escapement for 2018 was 53,624 natural area adult spawners, which exceeded the one-year conservation threshold of 40,700 natural area adult spawners. The three-year geometric mean is still less than the required 40,700 natural area adult spawners, therefore the KRFC are still considered as an “overfished” stock.

Accordingly, the FMP outlines a process for preparing a “rebuilding plan” that includes assessment of the factors that led to the decline of the stock, including fishing, environmental factors, model errors, etc. The rebuilding plan includes recommendations to address conservation of KRFC, with the goal of achieving rebuilt status. Rebuilt status requires meeting a three-year geometric mean of 40,700 adult natural area KRFC spawner escapement. The plan developed by representatives of NMFS, PFMC, U.S. Fish and Wildlife Service, California Department of Fish and Wildlife (Department), and Tribal entities, was submitted to the PFMC in February 2019, adopted by the PFMC in June 2019, and submitted to the NMFS in August 2019. Forthcoming recommendations from the rebuilding plan may alter how KRFC are managed in the future, including changing the in-river allocation number, and/or allocating less than the normal target number.

### **Klamath River Spring-Run Chinook Salmon**

The Klamath River Basin also supports Klamath River spring-run Chinook Salmon (KRSC). Naturally produced KRSC are both temporally and spatially separated from KRFC in most cases.

Presently, KRSC stocks are not managed or allocated by the PFMC. This in-river sport fishery is managed by general basin seasons, daily bag limit, and possession limit regulations. KRSC harvest will be monitored on the Klamath River below the Highway 96 bridge at Weitchpec to the mouth of the Klamath River in 2020 and ensuing years by creel survey. The upper Trinity River, upstream of Junction City, will be monitored using tag returns from anglers in 2020 and future years.

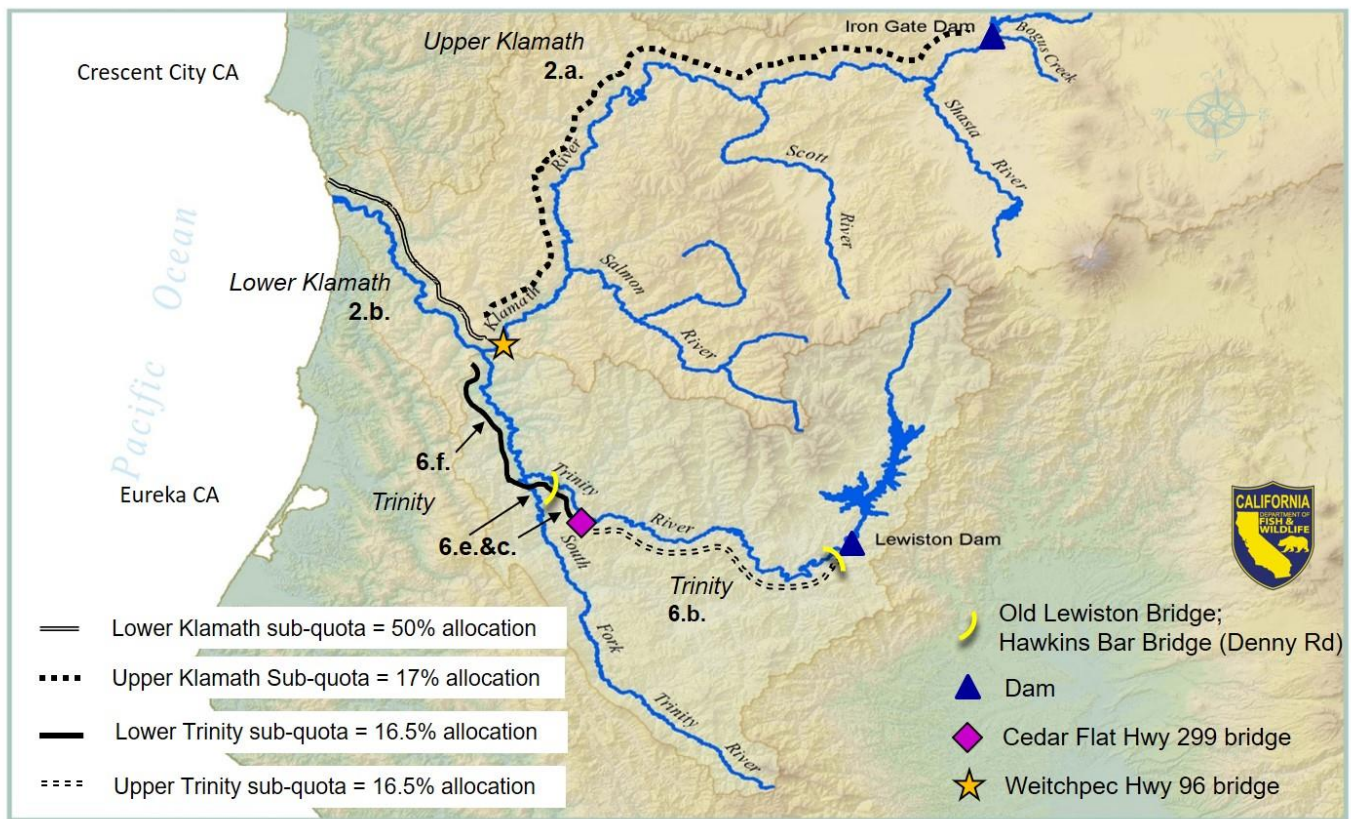
### **KRFC Allocation Management**

The PFMC 2019 allocation for the Klamath River Basin sport harvest was 7,637 adult KRFC. Preseason stock projections of 2020 adult KRFC abundance will not be available from the PFMC until March 2020. The 2020 basin allocation will be recommended by the PFMC in April 2020 and presented to the Commission for adoption as a quota for the in-river sport harvest at its May 2020 teleconference meeting.

The Commission may modify the KRFC in-river sport harvest quota, which is normally a minimum of 15 percent of the non-tribal PFMC harvest allocation. Commission modifications need to meet biological and fishery allocation goals specified in law or established in the FMP.

The annual KRFC in-river sport harvest quota is specified in subsection 7.50(b)(91.1)(D)1. The quota is split between four geographic areas with a subquota for each area, expressed as a percentage of the total in-river quota, specified in subsection 7.50(b)(91.1)(D)2. For angler convenience, the subquotas, expressed as the number of fish, are listed for the affected river segments in subsection 7.50(b)(91.1)(E). The in-river sport subquota percentages are shown in Figure 1, and are as follows:

1. for the main stem Klamath River from 3,500 feet downstream of the Iron Gate Dam to the Highway 96 bridge at Weitchpec -- 17 percent of the in-river sport quota;
2. for the main stem Klamath River from downstream of the Highway 96 bridge at Weitchpec to the mouth -- 50 percent of the in-river sport quota;
3. for the Trinity River downstream of the Old Lewiston Bridge to the Highway 299 West bridge at Cedar Flat -- 16.5 percent of the in-river sport quota; and
4. for the Trinity River downstream from the Denny Road bridge at Hawkins Bar to the confluence with the Klamath River -- 16.5 percent of the in-river sport fishery quota.



**Figure 1.** Map of the Klamath River Basin, showing the sub-quotas by reach of Trinity and Klamath rivers, and the associated subsections of 7.50(b)(91.1), Title 14, CCR.

The spit area (within 100 yards of the channel through the sand spit formed at the Klamath River mouth) closes to all fishing after 15 percent of the total Klamath River Basin quota has been taken downstream of the Highway 101 bridge.

These geographic areas are based upon the historical distribution of angler effort to ensure equitable harvest of adult KRFC in the Klamath River and Trinity River. The subquota system requires the Department to monitor or assess angler harvest of adult KRFC in each geographic area. All areas will be monitored on a real time basis, except for the following:

Klamath River upstream of Weitchpec and the Trinity River – Due to funding and personnel reductions, the Department will be unable to deploy adequate personnel to conduct real time harvest monitoring in the Klamath River upstream of Weitchpec and in the Trinity River for the 2020 season. The Department has developed Harvest Predictor Models (HPM), which incorporate historic creel survey data from the Klamath River downstream of Iron Gate Dam to the confluence with the Pacific Ocean, and the Trinity River downstream of Lewiston Dam to the confluence with the Klamath River. Each HPM is driven by the positive relationship between KRFC harvested in the respective lower and upper subquota areas of the Klamath River and the Trinity River. The HPMs will be used by the Department to implement fishing closures to ensure that anglers do not exceed established subquota targets. Using this method, the upper Klamath River subquota area generally closes between 28-30 days after the lower Klamath River subquota is reached. Similarly, the upper Trinity River subquota area



generally closes 28-30 days after the lower Trinity River subquota has been met. The Department also takes into consideration several other factors when implementing closure dates for subquota areas, including angler effort, KRFC run timing, weir counts, and ongoing recreational creel surveys performed by the Hoopa Valley Tribe in the lower Trinity River below Willow Creek.

### **Sport Fishery Management**

The KRFC in-river sport harvest quota is divided into geographic areas, and harvest is monitored under real time subquota management. The KRSC in-river sport harvest is managed by general season, daily bag limit, and possession limit regulations. Season dates have been adjusted for the 2019 year in light of another regulatory action by the Commission for protection of KRSC as a candidate under the California Endangered Species Act (CESA).

The Department presently differentiates the two stocks by the following sport fish season in each sub-area:

#### **Klamath River**

January 1 through August 14 – General Season KRSC.

For purposes of clarity, daily bag and possession limits apply to that section of the Klamath River downstream of the Highway 96 bridge at Weitchpec to the mouth.

August 15 to December 31 – KRFC quota management.

#### **Trinity River**

January 1 through August 31 – General Season KRSC.

For purposes of clarity, daily bag and possession limits apply to that section of the Trinity River downstream of the Old Lewiston Bridge to the confluence with the South Fork Trinity River.

September 1 through December 31 – KRFC quota management.

The daily bag and possession limits apply to both stocks within the same sub-area and time period. Current regulations in subsections 7.50(b)(91.1)(E)2.a. and b. specify bag limits for KRFC stocks in the Klamath River. Current regulations in subsections 7.50(b)(91.1)(E)6.b., e., and f. specify bag limits for KRFC stocks in the Trinity River. Current regulations in subsection 7.50(b)(91.1)(C)2.b. specify KRFC possession limits.

### **Proposed Changes**

#### **Key to Proposed Regulatory Changes:**

Because the PFMC recommendations are not known at this time, ranges are shown in [brackets] in the proposed regulatory text below of bag and possession limits which encompass historical quotas. A range is also shown for the Department's grilse salmon size limit delineating between adult and grilse salmon. All are proposed for the 2020 KRFC fishery in the Klamath and Trinity rivers.

The final KRFC bag and possession limits will align with the final federal regulations to meet biological and fishery allocation goals specified in law, or established in the FMP.

#### KRFC ADULT STOCKS (SPORT FISHERY QUOTA MANAGEMENT):

Quota: For public notice requirements, the Department recommends the Commission consider a quota range of 0–67,600 adult KRFC in the Klamath River Basin for the in-river sport fishery. This recommended range encompasses the historical range of the Klamath River Basin allocations and allows the PFMC and Commission to make adjustments during the 2020 regulatory cycle.

Subquotas: The proposed subquotas for KRFC stocks are as follows:

- Main stem Klamath River from 3,500 feet downstream of the Iron Gate Dam to the Highway 96 bridge at Weitchpec -- 17 percent of the total quota equates to [0-11,492];
- Main stem Klamath River from downstream of the Highway 96 bridge at Weitchpec to the mouth -- 50 percent of the total quota equates to [0-33,800];
- Trinity River downstream of the Old Lewiston Bridge to the Highway 299 West bridge at Cedar Flat -- 16.5 percent of the total quota equates to [0-11,154]; and
- Trinity River downstream from the Denny Road bridge at Hawkins Bar to the confluence with the Klamath River -- 16.5 percent of the total quota equates to [0-11,154].

Seasons: No changes are proposed for the Klamath River and Trinity River KRFC seasons:

- Klamath River - August 15 to December 31
- Trinity River - September 1 to December 31

Bag and Possession Limits: As in previous years, no retention of adult KRFC is proposed once the subquota has been met.

The range of proposed bag and possession limits for KRFC stocks are as follows:

- Bag Limit - [0-4] Chinook Salmon – of which no more than [0-4] fish over [22-23] inches total length may be retained until the subquota is met, then 0 fish over [22-23] inches total length.
- Possession limit - [0-12] Chinook Salmon of which no more than [0–4] fish over [22-23] inches total length may be retained when the take of salmon over [22-23] inches total length is allowed.

#### KRSC SPORT FISHERY:

No regulatory changes are proposed for the general KRSC opening and closing season dates, and bag, possession, and size limits.

## OTHER CHANGES

### ***KRFC Size Limit (Grilse Size Considerations)***

Grilse salmon are salmon that spend two years in the ocean before returning to their natal streams to spawn. These fish are generally smaller in size and contribute less to the overall salmon population than adult salmon, which typically spend three to five years in the ocean before returning to freshwater to spawn. Typically, age-two salmon (grilse) are mostly males (jacks) with relatively few females (jills). KRFC recreational fishery bag and possession limits generally contain an adult and grilse component. In years when the adult quota is met, angling is still allowed for KRFC less than or equal to 22 inches total length (TL). Current management in the Klamath River assumes an adult size limit of greater than 22 inches (55.9 cm) TL for recreational harvest, whereas the preliminary adult size cutoff for research and monitoring is typically 55 cm (21.7 in) fork length (FL). Fork length is used for research and monitoring of salmon and steelhead because it provides a more consistent measurement across the range of conditions encountered in a scientific context (e.g., fin erosion due to spawning, especially postmortem). These size limits are used to separate grilse from adults *during* the season because the true age of individual fish cannot be determined until well after the time of harvest.

Predicting the abundance and size at return of grilse for any given year is currently not possible because grilse are not susceptible to angling harvest prior to becoming grilse, and ocean abundance of pre-grilse sized fish is not monitored. The first indication of a large Klamath River Basin grilse population is usually from in-river recreational fishing beginning in mid-August. Grilse numbers and size compared to adult numbers and size for a given year are usually not fully known until the following January, when spawner escapement and harvest survey results are completed. For this reason, using an average of previous grilse data is a reasonable method of setting regulatory limits for future years.

When considering a grilse fishery, it is important to determine a size cutoff that balances angling harvest opportunity for grilse with protecting adult spawners and not exceeding adult quotas. If the TL size cutoff is too short (conservative), fewer grilse will be caught by anglers, and they will be underutilized because grilse are infrequently used as hatchery broodstock, or because jacks are out-competed by larger males in-river. If the cutoff is too large (liberal), then angling catch of the smaller adults will increase, reducing the hatchery and in-river spawners, and potentially causing exceedance of the adult quota.

The Department has used a provisional standard of 55 centimeters (cm) FL to estimate the grilse harvest of KRFC during the season. This equates to 21.7 inches when converted to FL, and 23.2 inches when converted to TL. Post season analyses of scale aged and known aged (coded-wire tag data) KRFC are used to determine the annual actual size cut-off between grilse and adults. Because the Klamath River Basin is managed on adult (ages 3-5) KRFC quotas, the Department believes it is prudent to be conservative when establishing maximum size for the grilse (age-two) fishery. As an example, in 1998 the Department raised the cutoff of grilse to 24 inches TL. That same year, over 20 percent of age-three fish were less than 24 inches TL, and the adult quota was greatly exceeded, in part due to this size change for the year. The size limit cutoff was changed back in Title 14, CCR to 22 inches TL the following year. In preparation for the proposed regulatory changes for the 2020 KRFC in-river recreational fishing season, the Department has completed an evaluation of the potential

impacts to KRFC from increasing the size limit cutoff distinguishing age-two fish from age-three fish for in-river recreational harvest (Appendix A; refer to Section III(e) below).

Review of brood years 1998, and 2008-2018 KRFC size at age data, including hatchery coded wire tag (CWT) recovery data (Appendix A), shows that KRFC vary in size annually and that the size separating age two and age-three KRFC also varies annually. Additionally, a size overlap between age two fish and age-three fish exists in all years as illustrated in Figures 1-4 in Appendix A. For the purpose of evaluating potential regulatory change to the current size limit cutoff the Department uses to define grilse KRFC (22 inches TL), the Department evaluated the proportions of age two fish and age-three fish greater or less than a range of 21 to 24 inches TL. Tables 1-3 in Appendix A demonstrate that a cutoff size limit of 21 inches TL is highly conservative, with few adults less than this size in all years and a large proportion of grilse larger than this size in some years. The current size limit cutoff of 22 inches TL used to separate grilse from adults protects the majority of age-three fish, while allowing a larger proportion of grilse to be available for recreational harvest. A 23 inch TL cutoff size limit has a more variable impact to age-three fish, particularly in recent years, however impacts are still relatively low (<5%). At 24 inches TL, the proportion of age-three fish less than this size is highly variable and has also increased in recent years. Potential impacts to age-three fish are observed in all years and locations, and impact rates have exceeded 10% in the Trinity River on two occasions (1998, 2016). Recent proportions of age-three fish less than 24 inches TL at all sites examined exceeded 4.86% during the 2016 -2018 return years. As indicated in the case study year of 1998, abnormally small adults in any given year can lead to large proportions of adult KRFC becoming vulnerable to grilse fisheries.

For the reasons discussed above, the Department is proposing a grilse salmon size limit cutoff range of less than or equal to 22 inches (55.9 cm) to 23 inches (58.4 cm) TL for discussion before the Department makes a final recommendation. Considered in this context, the size limit cutoff discussion is a trade-off between restricting take of the available adult salmon and quota management versus increasing harvest of two-year-old grilse salmon.

### ***Brown Trout Bag and Possession Limit Increase on the Main Stem Trinity River***

The Department is proposing to increase the daily bag and possession limit for Brown Trout on the main stem of the Trinity River from a five fish daily bag/10 fish possession limit to a 10 fish daily bag/20 fish possession limit. This proposed change will increase fishing opportunity on a non-native trout species. As the focus for the Trinity River is on native fish production, a reduction of brown trout may help enhance habitat availability for native fish, consistent with the goals of the federally-administered Trinity River Restoration Program.

### ***Other Changes for Clarity***

The Department is proposing additional changes for clarity, as follows:

1. Amend subsection 5.87(f) to ensure that the size limit cutoff between a grilse and adult Chinook Salmon in the Klamath River Basin is consistent with the size limit cutoff listed in subsection 7.50(b)(91.1). This change will ensure clarity in the regulations and help anglers understand the size limit cutoff that distinguishes a grilse salmon from an adult salmon in the Klamath River Basin.

2. Add paragraph (3) to subsection 7.50(b)(91.1)(A) to include a reference to Section 1.74, Title 14, CCR for sport fish report card requirements. This addition is necessary to help anglers understand that a North Coast Salmon Report Card is required for fishing in the Klamath River Basin.
3. Amend the heading of subsection 7.50(b)(91.1)(A) to read, "Restrictions and Requirements." This change is necessary to broaden the heading of this subsection with the inclusion of reference to Section 1.74 for the sport fish report card requirement.
4. Throughout the regulatory text in subsection 7.50(b)(91.1), update the year from 2019 to 2020 for the upcoming season.

(b) Goals and Benefits of the Regulation

It is the policy of this State to encourage the conservation, maintenance, and utilization of the living resources of the ocean and other waters under the jurisdiction and influence of the State for the benefit of all the citizens of the State and to promote the development of local fisheries and distant water fisheries based in California in harmony with international law, respecting fishing and the conservation of the living resources of the ocean and other waters under the jurisdiction and influence of the State. The objectives of this policy include, but are not limited to, the maintenance of sufficient populations of all species of aquatic organisms to ensure their continued existence, and the maintenance of a sufficient resource to support a reasonable sport use. Adoption of scientifically-based Klamath River Basin salmon seasons, size limits, and bag and possession limits provides for the maintenance of sufficient populations of salmon to ensure their continued existence.

The benefits of the proposed regulations are consistency with federal fishery management goals, sustainable management of Klamath River Basin fish resources, health and welfare of California residents, and promotion of businesses that rely on salmon sport fishing in the Klamath River Basin.

(c) Authority and Reference Sections from Fish and Game Code for Regulation

Authority: Sections 200, 205, 265, 270, 315, 316.5, 399, and 2084, Fish and Game Code

Reference: Sections 200, 205, 265, 270, 316.5, and 2084, Fish and Game Code

(d) Specific Technology or Equipment Required by Regulatory Change

None.

(e) Identification of Reports or Documents Supporting Regulation Change

*In-River Sport Fishing Economics Technical Report*, National Oceanographic and Atmospheric Administration, National Marine Fisheries Service, September 2011.

Appendix A: Evaluation of Alternative Size Limits for Klamath River Fall Chinook Salmon Harvest, California Department of Fish and Wildlife, October 2019.

(f) Public Discussions of Proposed Regulations Prior to Notice Publication

The Department presented the proposed amendments to the KRFC and Brown Trout bag and

possession limits at the Commission's Wildlife Resources Committee meeting on September 10, 2019. At this meeting, fishing interests requested that the Department include a grilse size limit range in the ISOR for the 2020 KRFC fishery.

#### IV. Description of Reasonable Alternatives to Regulatory Action

##### (a) Alternatives to Regulation Change

###### **KRFC Adult Stocks**

The use of more liberal regulations for KRFC bag limits, possession limits, and minimum adult salmon size (Alternative 1 in the STD 399; Economic and Fiscal Impact Statement) would be less desirable than those proposed, because they could create risk of an intense fishery, reaching or exceeding the quota in a very short time. Reaching the quota in a very short time could be damaging to the local economy, and exceeding the allowable harvest could damage the KRFC stocks.

###### **KRFC Size Limit**

The Department analyzed a range of grilse size limits between 21-24 inches total length (see Appendix A referenced in Section III(e)). A 21 inch total length size limit was considered overly conservative, and would prevent fishing opportunity on grilse KRFC with little benefit to adult stocks. Raising the maximum grilse size to 24 inches total length was considered too liberal at this time for several reasons:

1. Three-year-old KRFC would be vulnerable to grilse fisheries all years;
2. In some years a significant portion (>20%) of age-three KRFC would be vulnerable to grilse fisheries; and
3. Recent data suggests that the proportion of smaller age-three KRFC has increased.

Therefore, the Department has proposed a range of 22-23 inches total length for consideration. If future data suggests that current conditions have changed, the Department will re-evaluate grilse size limits.

###### **KRSC Stocks**

No changes are proposed for KRSC stocks in this rulemaking; however, should changes be necessary, they would be considered in a separate rulemaking.

###### **Brown Trout**

The proposed change to the Brown Trout bag and possession limit is based on a petition from the Hoopa Valley Tribe. No alternatives were identified by or brought to the attention of Commission staff concerning Brown Trout that would have the same desired regulatory effect.

###### **Other Changes for Clarity**

No alternatives were identified by or brought to the attention of Commission staff concerning amendments for clarity that would have the same desired regulatory effect.

##### (b) No Change Alternative

## **KRFC Adult Stocks**

The No Change Alternative (Alternative 2 in the STD 399; Economic and Fiscal Impact Statement) would leave the current 2019 daily bag and possession limit regulations in place and would not allow flexibility to develop bag and possession limits based on 2020 PFMC allocations. The proposed regulatory change for 2020 is necessary to continue appropriate harvest rates and an equitable distribution of the harvestable surplus.

## **KRFC Size Limit**

The No Change Alternative for the grilse Chinook Salmon fishery would leave in place the current size limit cutoff for grilse salmon at less than or equal to 22 inches TL. This would prevent the opportunity for anglers to potentially harvest age two fish greater than 22 inches TL and would protect potentially smaller adults in the fishery from harvest.

## **Brown Trout**

The No Change Alternative for increasing the daily bag and possession limit for Brown Trout would leave the existing 2019 regulations in place. As a result, angling opportunity for Brown Trout on the mainstem Trinity River would not change and, thus, would not contribute to enhancing habitat availability for native fish.

## **Other Changes for Clarity**

The No Change Alternative for including amendments for clarity would leave the existing 2019 regulations in place. This may mean that anglers may not fully understand that a North Coast Salmon Report Card is required for fishing in the Klamath River Basin, and may not fully understand the size limit cutoff that distinguishes a grilse salmon from an adult salmon in the Klamath River Basin. Additionally, the No Change Alternative would mean that the year for 2019 would not be updated for the 2020 season, which could cause confusion for anglers on the validity of the regulations.

## **V. Mitigation Measures Required by Regulatory Action**

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

## **VI. Impact of Regulatory Action**

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

### **(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States**

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed regulations are projected to range from minor to no impact on the net revenues to local businesses servicing sport fishermen. If the 2020 KRFC quota is reduced, visitor spending may correspondingly be reduced, and in the absence of alternative

visitor activities, the drop in spending could induce some business contraction. If the 2020 KRFC quota remains similar to the KRFC quotas allocated in previous years, then local economic impacts are expected to be unchanged. Neither scenario is expected to directly affect the ability of California businesses to compete with businesses in other states.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment

An estimated 30-50 businesses that serve sport fishing activities are expected to be directly and/or indirectly affected depending on the final KRFC quota. The impacts range from no impact (Projection 1 under the Economic Impact Assessment (EIA), below) to small adverse impacts (Projection 3, EIA, below).

Depending on the final KRFC quota, the Commission anticipates the potential for some impact on the creation or elimination of jobs in California. The potential adverse employment impacts range from no impact to the loss of 22 jobs. Under all alternatives, due to the limited time period of this regulation's impact, the Commission anticipates no impact on the creation of new businesses, the elimination of existing businesses, or the expansion of businesses in California.

For all of the proposed scenarios, the possibility of growth of businesses to serve alternative recreational activities exists. Adverse impacts to jobs and/or businesses would be less if fishing of other species and grilse KRFC is permitted, than under a complete closure to all fishing. The impacted businesses are generally small businesses employing few individuals and, like all small businesses, are subject to failure for a variety of causes. Additionally, the long-term intent of the proposed regulatory action is to increase sustainability in fishable salmon stocks and, consequently promote the long-term viability of these same small businesses.

The Commission anticipates benefits to the health and welfare of California residents. Providing opportunities for a salmon sport fishery encourages a healthy outdoor activity and the consumption of a nutritious food.

The Commission anticipates benefits to the environment by the sustainable management of California's salmonid resources.

The Commission does not anticipate any benefits to worker safety because the proposed action does not affect working conditions.

(c) Cost Impacts on a Representative Private Person or Business

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State

None.

(e) Nondiscretionary Costs/Savings to Local Agencies



None.

(f) Programs Mandated on Local Agencies or School Districts

None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code

None.

(h) Effect on Housing Costs

None.

VII. Economic Impact Assessment

The proposed regulatory amendments of subsection 7.50(b)(91.1) under consideration will set the 2020 Klamath River Basin salmon sport fishing regulations to conform to the PFMC KRFC allocation. The Klamath River Basin is anticipated to be open for salmon sport fishing at levels similar to the levels in the 2019 sport fishing seasons; however, the possibility of marine fishery area closures still exists. Ocean closures may in turn result in PFMC recommendations for Klamath River Basin salmon sport fishery closures for the take of adult KRFC. Adverse or positive impacts to jobs and businesses will depend on the 2020 KRFC allocation ultimately adopted by the PFMC, and the specific regulations promulgated by the Commission, in conjunction with the Department.

The proposed quota of 0 to 67,600 adult KRFC in 2020 represents a range from 0 percent or no salmon fishing on adult KRFC to greater than 100 percent of the 2019 Klamath River Basin KRFC quota. The Department is also proposing to increase the daily bag and possession limit for Brown Trout on the main stem of the Trinity River from a five fish daily bag/10 fish possession limit to a 10 fish daily bag/20 fish possession limit. This proposed change will increase fishing opportunity and thus will also help to mitigate any potential reductions in the adult KRFC quota that may have to be accommodated. Under all scenarios, sport fishing may be allowed for other sportfish species and most likely for grilse KRFC, regardless of PFMC allocation. Thus, any adverse impacts to businesses could be less severe than under a complete closure of fishing.

**KRFC Size Limit (Grilse Size Considerations)**

Grilse salmon are salmon that spend two years in the ocean before returning to their natal streams to spawn. These fish are generally smaller in size and contribute less to the overall salmon population than adult salmon, which typically spend three to five years in the ocean before returning to freshwater to spawn. KRFC recreational fishery bag and possession limits generally contain an adult and grilse component. When considering a grilse fishery, determining a size cutoff that balances angling harvest opportunity for grilse versus protecting adult spawners and not exceeding adult quotas is important. If the size cutoff is too short (conservative), fewer grilse will be caught by anglers, and they will be underutilized because grilse are infrequently used as hatchery brood stock, or because jacks are out-competed by larger males in-river. If the cutoff is too large (liberal), then angling catch of the smaller adults will increase, reducing the hatchery and in-river spawners and potentially causing exceedance of the adult quota.

In years when the adult quota is met, angling is still allowed for KRFC less than or equal to 22 inches TL under the current regulations. The Department is proposing a size limit cutoff range of 22 to 23 inches TL. Changing the size specification for grilse is not anticipated to impact the number or length of angler trips and thus expenditures in the fishery areas.

### **Brown Trout Bag and Possession Limit Increase on the Main Stem Trinity River**

The Department is proposing to increase the daily bag and possession limit for Brown Trout on the main stem of the Trinity River from a five fish daily bag/10 fish possession limit to a 10 fish daily bag/20 fish possession limit. While Brown Trout are not often the primary target of sportfishing, this proposed change will increase fishing opportunity and thus will also help to mitigate any potential reductions in the adult KRFC quota that may have to be accommodated.

The preservation of Klamath River salmon stocks is vital for the ongoing success of Klamath River Basin businesses that provide goods and services related to sportfishing. Scientifically-based KRFC allocations are necessary for the continued preservation of the resource, and therefore the prevention of adverse economic impacts.

Based on the 2011 NMFS report (*In-River Sport Fishing Economics of the Klamath River*, refer to Section III(e)), in a normal year, non-resident Klamath River salmon and steelhead sport anglers together contribute about \$3,442,750 (2017\$) in direct expenditures, resulting in about \$4,221,945 (2017\$) in total economic output to California businesses. The economic impact figures are expressed in 2017 dollars because adjusting for 2019<sup>1</sup> does not meaningfully alter the estimates. The NMFS study found that non-resident (outside the immediate locale) salmon or steelhead angler average expenditures are estimated to be \$108.82 (2017\$) per angler day (for lodging, food, gasoline, fishing gear, boat fuel, and guide fees). The projections do not distinguish between spring and fall runs, however, the report states that the in-river harvest is almost exclusively fall-run.

Additionally, the 2011 NMFS report excluded the Trinity River, the largest tributary to the Klamath. The Trinity River is allocated 33 percent of the KRFC total quota. Using the Trinity quota as a measure of salmon and steelhead angler effort, and thus impacts on associated businesses that support anglers, the total non-resident angler contribution to the entire Klamath River Basin (including the Trinity River) is estimated to be \$4,221,945 (2017\$) in total economic output. This revenue, again using a 33 percent increase to account for the Trinity River, provides an estimated total of 70 jobs in the State (assuming that personnel costs also rise with inflation). This is a conservative estimate of total economic impact as it counts only non-resident angler expenditures.

Local resident average expenditures per angler day are estimated to be 60 percent less (markedly reduced lodging, gasoline, and food expenditures), which yields an estimate of \$43.53 per angler-day. Local resident anglers comprise about 36 percent of Klamath River Basin anglers. Any decreases to expenditures by resident anglers associated with reduced fishing opportunities may be offset by increased expenditures on other locally purchased goods and services – with no net change in local economic activity. Thus, the economic impact analysis focuses on non-resident

---

<sup>1</sup>The Implicit Price Deflator for Personal Consumption Expenditures between 2017 and 2019 has been between one to two percent.

angler expenditures which represent new money whose injection serves to stimulate the local economy.

The total impact of non-resident angler direct expenditures supports about 45 jobs for salmon alone or up to 70 jobs for all salmon and steelhead spending (Table 1).

Table 1. Klamath Salmon and Steelhead Total Economic Output (Non-resident anglers, 2017\$)

<b>Klamath Sport Fishing</b>	<b>Salmon</b>	<b>Steelhead</b>	<b>Total</b>
Total Output	\$2,733,115	\$1,488,830	\$ 4,221,945
Labor Income	\$1,264,576	\$688,862	\$ 1,953,438
Jobs	45.7	24.9	70.6

To demonstrate the potential economic impacts that may result from a quota anywhere within the range of 0 - 67,600 KRFC, three adult salmon catch projections are as follows: 100 percent of the 2019 adult KRFC catch limit; 50 percent of the 2019 adult KRFC catch limit; and 0 percent of the 2019 adult KRFC catch limit.

(a) Effects of the Regulation on the Creation or Elimination of Jobs Within the State

Projection 1: 100 percent of the 2019 adult KRFC catch limit: The Commission does not anticipate any adverse impacts on the creation or elimination of jobs, as the quotas would not decrease effort nor curtail the number of visitors and thus probable visitor expenditures in the fisheries areas.

Projection 2: 50 percent of the 2019 adult KRFC catch limit: The Commission anticipates some impact on the creation or elimination of jobs, which may be partially offset by the potential for continued sport fishing allowed for other sportfish and grilse KRFC. A 50 percent salmon catch reduction will likely reduce visitor spending by slightly less than 50 percent, given price elasticities of demand for salmon fishing activity of less than one. As the “price” of fishing per unit catch increases, the demand for fishing trips declines by a lesser extent, particularly in the short-run. While difficult to predict, job losses associated with a 50 percent reduction in the adult KRFC catch limit are expected to be less than half of the 45 estimated total jobs supported by salmon angler visits (i.e. fewer than 22 jobs).

Projection 3: 0 percent of the 2019 adult KRFC catch limit: In the event of fisheries closures for adult KRFC in some or all Klamath River Basin areas, the Commission anticipates less than 50 percent reduction in fishery-related jobs. As mentioned above, sport fishing for other species and grilse KRFC may still be allowed, thus mitigating potential job losses.

A closure on the take of all KRFC was instituted in 2017, and only steelhead could be legally harvested during the fall season. The 2017 closure resulted in nearly a 50 percent drop in angler days. However, job creation or elimination tends to lag in response to short-term changes in consumer demand. Thus, the potential impacts of a 2020 closure on the take of adult KRFC are estimated to result in the loss of less than 22 jobs due to adjustment lags, and the continued sport fishing allowed for other species and potentially for grilse KRFC.

(b) Effects of the Regulation on the Creation of New Businesses or the Elimination of Existing Businesses Within the State

Projection 1: 100 percent of the 2019 adult KRFC catch limit: The Commission does not anticipate any impacts on the creation of new business or the elimination of existing businesses, as the quotas would not decrease effort nor curtail the number of visitors and thus probable visitor expenditures in the fisheries areas.

Projection 2: 50 percent of the 2019 adult KRFC catch limit: The Commission anticipates a decline in visits to the fishery areas of less than 50 percent due to the continued sport fishing allowed for other species and grilse KRFC. This may result in some decline in business activity, but the Commission does not anticipate any impacts on the creation of new businesses or the elimination of existing businesses directly related to fishing activities. However, with less effort being expended on salmon fishing, the possibility of alternative sportfishing activities and the growth of businesses to serve those activities exists.

Projection 3: 0 percent of the 2019 adult KRFC catch limit: In the event of salmon fisheries closures for adult KRFC in some or all Klamath River Basin areas, the Commission anticipates a decline in regional spending and thus reduced revenues to the approximately 30 to 50 businesses that directly and indirectly serve sport fishing activities with unknown impacts on the creation of new business or the elimination of existing businesses. However, adverse impacts may be mitigated by the continued opportunity to harvest other sportfish and the potential for take of grilse KRFC. Additionally, the long-term intent of the proposed regulatory action is to increase sustainability in fishable salmon stocks and, consequently, promote the long-term viability of these same small businesses.

(c) Effects of the Regulation on the Expansion of Businesses Currently Doing Business Within the State

Projection 1: 100 percent of the 2019 adult KRFC catch limit: The Commission does not anticipate any impacts on the expansion of businesses in California as the quotas would not increase effort nor increase the number of visitors and thus probable visitor expenditures in the fisheries areas.

Projection 2: 50 percent of the 2019 adult KRFC catch limit: The Commission does not anticipate any impacts on the expansion of businesses currently doing business within the State. Decreases in expenditures by resident anglers associated with reduced fishing opportunities may be offset by increased expenditures on other locally purchased goods and services – with no net change in local economic activity. For non-resident anglers, however, decreases in local expenditures associated with decreases in local fishing opportunities may result in increases in other expenditures outside the Klamath River Basin area.

Projection 3: 0 percent of the 2019 adult KRFC catch limit: In the event of salmon fisheries closures for adult KRFC in some or all Klamath River Basin areas, the Commission does not anticipate any expansion of businesses in California. Decreases in expenditures by anglers associated with reduced fishing opportunities may be partially offset by increased expenditures on other locally purchased goods and services as anglers pursue other sportfish, potentially including grilse KRFC, or the substitution of salmon fishing with other recreational activities.

(d) Benefits of the Regulation to the Health and Welfare of California Residents

Under all projections, the Commission anticipates benefits to the health and welfare of California residents. Providing opportunities for a Klamath River Basin salmon sport fishery and other sport fisheries encourages a healthy outdoor activity and the consumption of a nutritious food. Sport fishing also contributes to increased mental health of its practitioners, as fishing is a hobby and form of relaxation for many. Sport fishing also provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of California's natural resources.

(e) Benefits of the Regulation to Worker Safety

Under all projections, the Commission does not anticipate benefits to worker safety because the proposed regulations will not impact working conditions.

(f) Benefits of the Regulation to the State's Environment

Under all projections, the Commission anticipates benefits to the environment in the sustainable management of Klamath River Basin salmonid resources. It is the policy of this State to encourage the conservation, maintenance, and utilization of the living resources of the ocean and other waters under the jurisdiction and influence of the State for the benefit of all the citizens of the State and to promote the development of local fisheries and distant water fisheries based in California in harmony with international law, respecting fishing and the conservation of the living resources of the ocean and other waters under the jurisdiction and influence of the State. The objectives of this policy include, but are not limited to, the maintenance of sufficient populations of all species of aquatic organisms to ensure their continued existence, and the maintenance of a sufficient resource to support a reasonable sport use. Adoption of scientifically-based Klamath River Basin salmon seasons, size limits, and bag and possession limits provides for the maintenance of sufficient populations of salmon to ensure their continued existence.

(g) Other Benefits of the Regulation

Consistency with Federal Fishery Management Goals: California's salmon sport fishing regulations need to align with the new Federal regulations to achieve optimum yield in California. The PFMC annually reviews the status of west coast salmon populations. As part of that process, it recommends west coast adult salmon fisheries regulations aimed at meeting biological and fishery allocation goals specified in law or established in the FMP. These recommendations coordinate west coast management of sport and commercial ocean salmon fisheries off the coasts of Washington, Oregon, and California, and California inland salmon sport fisheries. These recommendations are subsequently implemented as ocean fishing regulations by the NMFS, and as salmon sport regulations for State marine and inland waters by the Commission.

## **Informative Digest/Policy Statement Overview**

Unless otherwise specified, all section references in this document are to Title 14 of the California Code of Regulations (CCR).

The Klamath River Basin, which consists of the Klamath River and Trinity River systems, is managed for fall-run Chinook Salmon (*Oncorhynchus tshawytscha*) through a cooperative system of State, federal, and tribal management agencies. Salmonid regulations are designed to meet natural and hatchery escapement needs for salmonid stocks, while providing equitable harvest opportunities for ocean sport, ocean commercial, river sport, and tribal fisheries.

The Pacific Fishery Management Council (PFMC) is responsible for adopting recommendations for the management of sport and commercial ocean salmon fisheries in the Exclusive Economic Zone (three to 200 miles offshore) off the coasts of Washington, Oregon, and California. When approved by the Secretary of Commerce, these recommendations are implemented as ocean salmon fishing regulations by the National Marine Fisheries Service (NMFS).

The California Fish and Game Commission (Commission) adopts regulations for the ocean salmon sport (inside three miles) and the Klamath River Basin (in-river) sport fisheries, which are consistent with federal fishery management goals.

Tribal entities within the Klamath River Basin maintain fishing rights for ceremonial, subsistence, and commercial fisheries that are managed consistent with federal fishery management goals. Tribal fishing regulations are promulgated by the tribes.

### **Klamath River Fall-Run Chinook Salmon**

Adult Klamath River fall-run Chinook Salmon (KRFC) harvest allocations and natural spawning escapement goals are established by the PFMC. The Klamath River Basin in-river sport salmon fishery is managed using adult quotas.

The KRFC harvest allocation between tribal and non-tribal fisheries is based on court decisions and allocation agreements between the various fishery representatives.

For the purpose of implementing PFMC adult allocation and California Department of Fish and Wildlife (Department) salmon fishery harvest assessment, within the Klamath River Basin the Department currently considers 22 inches total length as a provisional cutoff. Salmon greater than 22 inches total length are defined as adult salmon (ages 3-5) and salmon less than or equal to 22 inches total length are defined as grilse salmon (age-two).

### **PFMC Overfishing Review**

KRFC stocks have been designated as “overfished” by the PFMC. This designation is the result of not meeting conservation objectives for this stock. Management objectives and criteria for KRFC are defined in the PFMC Salmon Fishery Management Plan (FMP). The threshold for overfished status of KRFC is a three-year geometric mean less than or equal to 30,525 natural area adult spawners. This threshold was not met for KRFC during the 2015-2017 period. The 30,525 KRFC natural area adult spawners is considered the minimum stock size threshold, per the FMP. The KRFC adult natural area spawning escapement for 2018 was 53,624 natural area adult spawners, which exceeded the one-year conservation threshold of 40,700 natural area adult spawners. The three-year geometric mean is

still less than the required 40,700 natural area adult spawners, therefore the KRFC are still considered as an “overfished” stock.

Accordingly, the FMP outlines a process for preparing a “rebuilding plan” that includes assessment of the factors that led to the decline of the stock, including fishing, environmental factors, model errors, etc. The rebuilding plan includes recommendations to address conservation of KRFC, with the goal of achieving rebuilt status. Rebuilt status requires meeting a three-year geometric mean of 40,700 adult natural area KRFC spawner escapement. The plan developed by representatives of NMFS, PFMC, U.S. Fish and Wildlife Service, California Department of Fish and Wildlife (Department), and Tribal entities, was submitted to the PFMC in February 2019, adopted by the PFMC in June 2019 and submitted to the NMFS in August 2019. Forthcoming recommendations from the rebuilding plan may alter how KRFC are managed in the future, including changing the in-river allocation number, and/or allocating less than the normal target number.

### **KRFC Allocation Management**

The PFMC 2019 allocation for the Klamath River Basin sport harvest was 7,637 adult KRFC. Preseason stock projections of 2020 adult KRFC abundance will not be available from the PFMC until March 2020. The 2020 basin allocation will be recommended by the PFMC in April 2020 and presented to the Commission for adoption as a quota for the in-river sport harvest at its May 2020 teleconference meeting.

The Commission may modify the KRFC in-river sport harvest quota, which is normally a minimum of 15 percent of the non-tribal PFMC harvest allocation. Commission modifications need to meet biological and fishery allocation goals specified in law or established in the FMP.

The annual KRFC in-river sport harvest quota is specified in subsection 7.50(b)(91.1)(D)1. The quota is split between four geographic areas with a subquota for each area, expressed as a percentage of the total in-river quota, specified in subsection 7.50(b)(91.1)(D)2. For angler convenience, the subquotas, expressed as the number of fish, are listed for the affected river segments in subsection 7.50(b)(91.1)(E). The in-river sport subquota percentages are shown in Figure 1, and are as follows:

1. for the main stem Klamath River from 3,500 feet downstream of the Iron Gate Dam to the Highway 96 bridge at Weitchpec -- 17 percent of the in-river sport quota;
2. for the main stem Klamath River from downstream of the Highway 96 bridge at Weitchpec to the mouth -- 50 percent of the in-river sport quota;
3. for the Trinity River downstream of the Old Lewiston Bridge to the Highway 299 West bridge at Cedar Flat -- 16.5 percent of the in-river sport quota; and
4. for the Trinity River downstream from the Denny Road bridge at Hawkins Bar to the confluence with the Klamath River -- 16.5 percent of the in-river sport fishery quota.

### **Proposed Changes**

Because the PFMC recommendations are not known at this time, ranges are shown in [brackets] in the proposed regulatory text below of bag and possession limits which encompass historical quotas. A range is also shown for the Department’s grilse salmon size limit cutoff delineating between adult and grilse salmon. All are proposed for the 2020 KRFC fishery in the Klamath and Trinity rivers.

The final KRFC bag and possession limits will align with the final federal regulations to meet biological and fishery allocation goals specified in law, or established in the FMP.

#### KRFC SPORT FISHERY (QUOTA MANAGEMENT):

Quota: For public notice requirements, the Department recommends the Commission consider a quota range of 0–67,600 adult KRFC in the Klamath River Basin for the in-river sport fishery. This recommended range encompasses the historical range of the Klamath River Basin allocations and allows the PFMC and Commission to make adjustments during the 2020 regulatory cycle.

Subquotas: The proposed subquotas for KRFC stocks are as follows:

- Main stem Klamath River from 3,500 feet downstream of the Iron Gate Dam to the Highway 96 bridge at Weitchpec -- 17 percent of the total quota equates to [0-11,492];
- Main stem Klamath River from downstream of the Highway 96 bridge at Weitchpec to the mouth -- 50 percent of the total quota equates to [0-33,800];
- Trinity River downstream of the Old Lewiston Bridge to the Highway 299 West bridge at Cedar Flat -- 16.5 percent of the total quota equates to [0-11,154]; and
- Trinity River downstream from the Denny Road bridge at Hawkins Bar to the confluence with the Klamath River -- 16.5 percent of the total quota equates to [0-11,154].

Seasons: No changes are proposed for the Klamath River and Trinity River KRFC seasons:

- Klamath River - August 15 to December 31
- Trinity River - September 1 to December 31

Bag and Possession Limits: As in previous years, no retention of adult KRFC is proposed once the subquota has been met.

#### ***KRFC Size Limit (Grilse Size Considerations)***

The Department is proposing a grilse salmon size limit cutoff range of less than or equal to 22 inches (55.9 cm) to 23 inches (58.4 cm) total length (TL) for discussion before the Department makes a final recommendation. Considered in this context, the size limit cutoff discussion is a trade-off between restricting take of the available adult salmon and quota management versus increasing harvest of two-year-old grilse salmon. In preparation for the proposed regulatory changes for the 2020 KRFC in-river recreational fishing season, the Department has completed an evaluation of the potential impacts to KRFC from increasing the size limit cutoff distinguishing age-two fish from age-three fish for in-river recreational harvest (Appendix A to the Initial Statement of Reasons - ISOR). The Department analyzed a range of grilse size limits between 21 and 24 inches total length. A 21 inch TL size limit was considered overly conservative, and would prevent fishing opportunity on grilse KRFC with little benefit to adult stocks. Raising the maximum grilse size to 24 inches TL was considered too liberal. The range of proposed bag and possession limits for KRFC stocks are as follows:

- Bag Limit - [0-4] Chinook Salmon – of which no more than [0-4] fish over [22-23] inches total length may be retained until the subquota is met, then 0 fish over [22-23] inches total length.
- Possession limit - [0-12] Chinook Salmon of which no more than [0–4] fish over [22-23] inches total length may be retained when the take of salmon over [22-23] inches total length is allowed.



## KRSC SPORT FISHERY:

The Klamath River Basin also supports Klamath River spring-run Chinook Salmon (KRSC). Presently, KRSC stocks are not managed or allocated by the PPMC. No regulatory changes are proposed for the general KRSC opening and closing season dates, and bag, possession and size limits.

### ***Brown Trout Bag and Possession Limit Increase on the Main Stem Trinity River***

The Department is proposing to increase the daily bag and possession limit for Brown Trout on the main stem of the Trinity River from a five fish daily bag/10 fish possession limit to a 10 fish daily bag/20 fish possession limit. This proposed change will increase fishing opportunity on a non-native trout species. As the focus for the Trinity River is on native fish production, a reduction of brown trout may help enhance habitat availability for native fish, consistent with the goals of the federally-administered Trinity River Restoration Program.

### ***Other Changes for Clarity***

The Department is proposing additional changes for clarity, as follows:

1. Amend subsection 5.87(f) to ensure that the size limit cutoff between a grilse and adult Chinook Salmon in the Klamath River Basin is consistent with the size limit cutoff listed in subsection 7.50(b)(91.1).
2. Add paragraph (3) to subsection 7.50(b)(91.1)(A) to include a reference to Section 1.74, Title 14, CCR for sport fish report card requirements.
3. Amend the heading of subsection 7.50(b)(91.1)(A) to read, "Restrictions and Requirements."
4. Throughout the regulatory text in subsection 7.50(b)(91.1), update the year from 2019 to 2020.

### **Benefits of the Proposed Regulations**

The Commission anticipates benefits to the environment in the sustainable management of Klamath River Basin salmonid resources.

Other benefits of the proposed regulations are conformance with federal fishery management goals, health and welfare of California residents and promotion of businesses that rely on salmon sport fishing in the Klamath River Basin.

### **Consistency and Compatibility with Existing Regulations**

Article IV, Section 20 of the State Constitution specifies that the Legislature may delegate to the Fish and Game Commission such powers relating to the protection and propagation of fish and game as the Legislature sees fit. The Legislature has delegated authority to the Commission to promulgate sport fishing regulations (Fish and Game Code sections 200, 205, 315, and 316.5). The Commission has reviewed its own regulations and finds that the proposed regulations are neither inconsistent nor incompatible with existing State regulations. Commission staff has searched the California Code of Regulations and has found no other State regulations related to sport fishing in the Klamath River Basin.

## Proposed Regulatory Language

Section 5.87, Title 14, CCR is amended to read as follows:

### **§ 5.87. North Coast Salmon Report Card Requirement (FG 684, See Section 701).**

*...[Subsections (a) through (e), and (g) through (h) are provided for context only. No changes are proposed.]*

(a) Report Card Required in Waters of the Klamath-Trinity River System and the Smith River. All anglers must have a North Coast Salmon Report Card in their possession while fishing for or taking salmon in waters of the Klamath-Trinity River System and the Smith River, and must complete and return the card pursuant to regulations in this Section and in Section 1.74.

(b) Prior to beginning fishing activity, the cardholder shall record the month, day, and fishing location on the first available line on the report card.

(c) For the Klamath-Trinity River System: Whenever the cardholder lands (either retains or releases) a Chinook salmon, the angler shall immediately record whether the fish was an adult or a jack, and whether the fish has an adipose fin present. Whenever the cardholder releases a Coho salmon, the angler shall immediately record whether the maxillary is present or absent.

(d) For the Smith River: Whenever the cardholder lands (either retains or releases) a Chinook salmon, the angler shall immediately record whether the fish was an adult or a jack, and whether the fish has an adipose fin or left ventral fin present.

(e) Whenever the cardholder moves to another fishing location, the angler shall record the month, day, and location on the next line on the report card.

(f) In the Klamath-Trinity River System ~~and Smith River~~, a jack Chinook salmon is defined as any Chinook salmon that is less than or equal to 22[22-23] inches total length. In the Smith River, a jack Chinook salmon is defined as any Chinook salmon that is less than 22 inches total length.

(g) In the event an angler fills in all lines and returns a North Coast Salmon Report Card, an additional card may be purchased. See Section 1.74.

(h) The annual fee for the North Coast Salmon Report Card is specified in Section 701, Title 14, CCR.

Note: Authority cited: Sections 200, 205 and 265, Fish and Game Code. Reference: Sections 200, 205 and 265, Fish and Game Code.

## Proposed Regulatory Language

Subsection (b)(91.1) of Section 7.50, Title 14, CCR is amended to read as follows:

### § 7.50. Alphabetical List of Waters with Special Fishing Regulations.

. . . [No changes to subsections (a) through (b)(91)]

(91.1) Anadromous Waters of the Klamath River Basin Downstream of Iron Gate and Lewiston dams. The regulations in this subsection apply only to waters of the Klamath River Basin which are accessible to anadromous salmonids. They do not apply to waters of the Klamath River Basin which are inaccessible to anadromous salmon and trout, portions of the Klamath River system upstream of Iron Gate Dam, portions of the Trinity River system upstream of Lewiston Dam, and the Shasta River and tributaries upstream of Dwinnel Dam. Fishing in these waters is governed by the General Regulations for non-anadromous waters of the North Coast District (see Section 7.00, subsection (a)(4)).

(A) ~~Hook and Weight Restrictions~~Restrictions and Requirements.

1. Only barbless hooks may be used. (For definitions regarding legal hook types, hook gaps and rigging see Chapter 2, Article 1, Section 2.10.)
2. During closures to the take of adult salmon, it shall be unlawful to remove any adult Chinook Salmon from the water by any means.
3. See Section 1.74 for sport fish report card requirements.

(B) General Area Closures.

1. No fishing is allowed within 750 feet of any Department of Fish and Wildlife fish-counting weir.
2. No fishing is allowed from the Ishi Pishi Road bridge upstream to and including Ishi Pishi Falls from August 15 through December 31. EXCEPTION: members of the Karuk Indian Tribe listed on the current Karuk Tribal Roll may fish at Ishi Pishi Falls using hand-held dip nets.
3. No fishing is allowed from September 15 through December 31 in the Klamath River within 500 feet of the mouths of the Salmon, the Shasta and the Scott rivers and Blue Creek.
4. No fishing is allowed from June 15 through September 14 in the Klamath River from 500 feet above the mouth of Blue Creek to 500 feet downstream of the mouth of Blue Creek.

(C) Klamath River Basin Possession Limits.

1. Trout Possession Limits.
  - a. The Brown Trout possession limit is ~~4~~20.
  - b. The hatchery trout or hatchery steelhead possession limits are as follows:
    - (i) Klamath River - 4 hatchery trout or hatchery steelhead.
    - (ii) Trinity River - 4 hatchery trout or hatchery steelhead.
2. Chinook Salmon Possession Limits.

- a. Klamath River downstream of the Highway 96 bridge at Weitchpec from January 1 to August 14 and the Trinity River downstream of the Old Lewiston Bridge to the confluence of the South Fork Trinity River from January 1 to August 31: 2 Chinook Salmon.
- b. Klamath River from August 15 to December 31 and Trinity River from September 1 to December 31: ~~6~~[0-12] Chinook Salmon. No more than ~~3~~[0-4] Chinook Salmon over ~~22~~[22-23] inches total length may be retained when the take of salmon over ~~22~~[22-23] inches total length is allowed.

(D) Klamath River Basin Chinook Salmon Quotas.

The Klamath River fall-run Chinook Salmon take is regulated using quotas. Accounting of the tribal and non-tribal harvest is closely monitored from August 15 through December 31 each year. These quota areas are noted in subsection (b)(91.1)(E) with "Fall Run Quota" in the *Open Season and Special Regulations* column.

1. Quota for Entire Basin.

The ~~2019~~[2020] Klamath River Basin quota is ~~7,637~~[0-67,600] Klamath River fall-run Chinook Salmon over ~~22~~[22-23] inches total length. The department shall inform the Commission, and the public via the news media, prior to any implementation of restrictions triggered by the quotas. (NOTE: A department status report on progress toward the quotas for the various river sections is updated weekly, and available at 1-800-564-6479.)

2. Subquota Percentages.

- a. The subquota for the Klamath River upstream of the Highway 96 bridge at Weitchpec and the Trinity River is 50% of the total Klamath River Basin quota.
  - (i) The subquota for the Klamath River from 3,500 feet downstream of the Iron Gate Dam to the Highway 96 bridge at Weitchpec is 17% of the total Klamath River Basin quota.
  - (ii) The subquota for the Trinity River main stem downstream of the Old Lewiston Bridge to the Highway 299 West bridge at Cedar Flat is 16.5% of the total Klamath River Basin quota.
  - (iii) The subquota for the Trinity River main stem downstream of the Denny Road bridge at Hawkins Bar to the confluence with the Klamath River is 16.5% of the total Klamath River Basin quota.
- b. The subquota for the lower Klamath River downstream of the Highway 96 bridge at Weitchpec is 50% of the total Klamath River Basin quota.
  - (i) The Spit Area (within 100 yards of the channel through the sand spit formed at the Klamath River mouth) will close when 15% of the total Klamath River Basin quota is taken downstream of the Highway 101 bridge.

(E) Klamath River Basin Open Seasons and Bag Limits.

All anadromous waters of the Klamath River Basin are closed to all fishing for all year except those areas listed in the following table. Bag limits are for trout and Chinook Salmon in combination unless otherwise specified.

<b>Body of Water</b>	<b>Open Season and Special Regulations</b>	<b>Daily Bag Limit</b>
1. Bogus Creek and tributaries.	Fourth Saturday in May through August 31. Only artificial lures with barbless hooks may be used.	2 hatchery trout or hatchery steelhead**
2. Klamath River main stem from 3,500 feet downstream of Iron Gate Dam to the mouth.		
a. Klamath River from 3,500 feet downstream of the Iron Gate Dam to the Highway 96 bridge at Weitchpec.	January 1 to August 14.	0 Chinook Salmon 2 hatchery trout or hatchery steelhead**
	Fall Run Quota <del>1,298</del> <u>[0-11,492]</u> Chinook Salmon August 15 to December 31, <del>2019</del> <u>2020</u> .	<del>2</del> <u>[0-4]</u> Chinook Salmon - no more than <del>4</del> <u>[0-4]</u> fish over <del>22</del> <u>[22-23]</u> inches total length until subquota is met, then 0 fish over <del>22</del> <u>[22-23]</u> inches total length. 2 hatchery trout or hatchery steelhead**
	Fall Run Quota Exception: Chinook Salmon over <del>22</del> <u>[22-23]</u> inches total length may be retained from 3,500 feet downstream of Iron Gate Dam to the Interstate 5 bridge when the department determines that the adult fall-run Chinook Salmon spawning escapement at Iron Gate Hatchery exceeds 8,000 fish. Daily bag and possession limits specified for fall-run Chinook Salmon apply during this exception.	
b. Klamath River downstream of the Highway 96 bridge at Weitchpec.	January 1 to August 14.	2 Chinook Salmon 2 hatchery trout or hatchery steelhead**

<b>Body of Water</b>	<b>Open Season and Special Regulations</b>	<b>Daily Bag Limit</b>
	Fall Run Quota <del>3,819</del> <u>[0-33,800]</u> Chinook Salmon August 15 to December 31, <del>2019</del> <u>2020</u> .	2 <del>[0-4]</del> Chinook Salmon - no more than 4 <del>[0-4]</del> fish over <del>22</del> <u>[22-23]</u> inches total length until subquota is met, then 0 fish over <del>22</del> <u>[22-23]</u> inches total length.  2 hatchery trout or hatchery steelhead**
	Fall Run Quota Exception: Spit Area (within 100 yards of the channel through the sand spit formed at the Klamath River mouth). This area will be closed to all fishing after 15% of the Total Klamath River Basin Quota has been taken.  All legally caught Chinook Salmon must be retained. Once the adult (greater than <del>22</del> <u>[22-23]</u> inches) component of the total daily bag limit has been retained anglers must cease fishing in the spit area.	
3. Salmon River main stem, main stem of North Fork downstream of Sawyer's Bar bridge, and main stem of South Fork downstream of the confluence of the East Fork of the South Fork.	November 1 through February 28.	2 hatchery trout or hatchery steelhead**
4. Scott River main stem downstream of the Fort Jones-Greenview bridge to the confluence with the Klamath River.	Fourth Saturday in May through February 28.	2 hatchery trout or hatchery steelhead**
5. Shasta River main stem downstream of the Interstate 5 bridge north of Yreka to the confluence with the Klamath River.	Fourth Saturday in May through August 31 and November 16 through February 28.	2 hatchery trout or hatchery steelhead**
6. Trinity River and tributaries.		
a. Trinity River main stem from 250 feet downstream of Lewiston Dam to the Old Lewiston Bridge.	April 1 through September 15. Only artificial flies with barbless hooks may be used.	2 hatchery trout or hatchery steelhead**

<b>Body of Water</b>	<b>Open Season and Special Regulations</b>	<b>Daily Bag Limit</b>
b. Trinity River main stem downstream of the Old Lewiston Bridge to the Highway 299 West bridge at Cedar Flat.	January 1 to August 31.	2 Chinook Salmon 5 <u>10</u> Brown Trout 2 hatchery trout or hatchery steelhead**
	Fall Run Quota 4,260[0-11,154] Chinook Salmon September 1 to December 31, 2019 <u>2020</u> .	2[0-4] Chinook Salmon - no more than 4[0-4] fish over 22[22-23] inches total length until subquota is met, then 0 fish over 22[22-23] inches total length.  5 <u>10</u> Brown trout 2 hatchery trout or hatchery steelhead**
	Fall Run Quota Exception: Chinook Salmon over 22[22-23] inches total length may be retained downstream of the Old Lewiston Bridge to the mouth of Indian Creek when the department determines that the adult fall-run Chinook Salmon spawning escapement at Trinity River Hatchery exceeds 4,800 fish. Daily bag and possession limits specified for fall-run Chinook Salmon apply during this exception.	
c. Trinity River main stem downstream of the Highway 299 West bridge at Cedar Flat to the Denny Road bridge at Hawkins Bar.	January 1 through August 31.	2 Chinook Salmon 5 <u>10</u> Brown Trout 2 hatchery trout or hatchery steelhead**
	September 1 through December 31.	Closed to all fishing.
d. New River main stem downstream of the confluence of the East Fork to the confluence with the Trinity River.	September 15 through November 15. Only artificial lures with barbless hooks may be used.	2 hatchery trout or hatchery steelhead**

<b>Body of Water</b>	<b>Open Season and Special Regulations</b>	<b>Daily Bag Limit</b>
e. Trinity River main stem downstream of the Denny Road bridge at Hawkins Bar to the mouth of the South Fork Trinity River.	January 1 to August 31.	2 Chinook Salmon 5 <del>10</del> Brown Trout 2 hatchery trout or hatchery steelhead**
	Fall Run Quota 4,260 <del>0-11,154</del> Chinook Salmon September 1 through December 31, 2019 <del>2020</del> . This is the cumulative quota for subsections 6.e. and 6.f. of this table.	2 <del>[0-4]</del> Chinook Salmon - no more than 4 <del>[0-4]</del> fish over 22 <del>[22-23]</del> inches total length until subquota is met, then 0 fish over 22 <del>[22-23]</del> inches total length. 5 <del>10</del> Brown Trout 2 hatchery trout or hatchery steelhead**
f. Trinity River main stem downstream of the mouth of the South Fork Trinity River to the confluence with the Klamath River.	January 1 to August 31.	0 Chinook Salmon 5 <del>10</del> Brown Trout 2 hatchery trout or hatchery steelhead**
	Fall Run Quota 4,260 <del>0-11,154</del> Chinook Salmon September 1 through December 31, 2019 <del>2020</del> . This is the cumulative quota for subsections 6.e. and 6.f. of this table.	2 <del>[0-4]</del> Chinook Salmon - no more than 4 <del>[0-4]</del> fish over 22 <del>[22-23]</del> inches total length until subquota is met, then 0 fish over 22 <del>[22-23]</del> inches total length. 5 <del>10</del> Brown Trout 2 hatchery trout or hatchery steelhead**
g. Hayfork Creek main stem downstream of the Highway 3 bridge in Hayfork to the confluence with the South Fork Trinity River.	November 1 through March 31. Only artificial lures with barbless hooks may be used.	2 hatchery trout or hatchery steelhead**



<b><i>Body of Water</i></b>	<b><i>Open Season and Special Regulations</i></b>	<b><i>Daily Bag Limit</i></b>
h. South Fork Trinity River downstream of the confluence with the East Fork of the South Fork Trinity River to the South Fork Trinity River bridge at Hyampom.	November 1 through March 31. Only artificial lures with barbless hooks may be used.	2 hatchery trout or hatchery steelhead**
i. South Fork Trinity River downstream of the South Fork Trinity River bridge at Hyampom to the confluence with the Trinity River.	November 1 through March 31.	0 Chinook Salmon. 2 hatchery trout or hatchery steelhead**

. . . [No changes to subsections 7.50(b)(91.2) through (b)(212)]

\* Wild Chinook Salmon are those not showing a healed adipose fin clip and not showing a healed left ventral fin clip.

\*\*Hatchery trout or steelhead in anadromous waters are those showing a healed adipose fin clip (adipose fin is absent). Unless otherwise provided, all other trout and steelhead must be immediately released. Wild trout or steelhead are those not showing a healed adipose fin clip (adipose fin is present).

Note: Authority cited: Sections 200, 205, 265, 270, 315, 316.5, 399 and 2084, Fish and Game Code. Reference: Sections 200, 205, 265, 270, 316.5 and 2084, Fish and Game and Code.

## APPENDIX A

### Evaluation of Alternative Size Limits for Klamath River Fall Chinook Salmon Harvest

The analyses presented herein were prepared to evaluate the potential impacts to Chinook Salmon from increasing the size limit distinguishing age-two from age-three for in-river recreational harvest of fall Chinook Salmon. Data used in this analysis was collected by staff at the California Department of Fish and Wildlife (Department) and the Hoopa Valley Tribe.

Klamath River fall Chinook (KRFC) Salmon are managed based on adult quotas, meaning that once the quota has been attained, the fishery for adult-sized KRFC is closed. The Klamath basin is divided into four “sub-quota” zones – two each in the Klamath and Trinity Rivers – to provide equitable harvest opportunities to recreational anglers throughout the basin. Each sub-quota area has its own adult allocation and can be closed independently based on near real-time adult KRFC harvest estimates. In most years, regulations allow for a grilse fishery to continue if or when adult closures have occurred, which affords extended recreational harvest opportunity when adult quotas are attained. Department data has demonstrated that the size of grilse (age-two) and adults (age-three and older) overlap in all years to some degree. Consequently, the fishery in general, and the grilse fishery in particular, need to be structured to minimize impacts to adult KRFC conservation goals and to minimize the potential for exceeding harvest quotas.

Current management in the Klamath River assumes an adult size limit of greater than 22 in (55.9 cm) total length (TL) for recreational harvest, whereas the preliminary adult size cutoff for research and monitoring is typically 55 cm (21.7 in) fork length (FL). Total length is used for recreational harvest because it is consistent with fishing regulations for all species state-wide. Fork length is used for research and monitoring of salmon and steelhead because it provides a more consistent measurement across the range of conditions encountered in a scientific context, e.g., fin erosion due to spawning, especially postmortem. These size limits are used to separate grilse from adults during the season because the true age of individual fish cannot be determined until well after the time of harvest. Some grilse are larger, and some adults are smaller than the size limit (Figures 1 and 2). Also, the size that minimizes these overlaps varies from year to year and can only be determined through retrospective analyses. Figures 3 and 4 show the interannual variability in the median and range of lengths for known or estimated age-two and age-three KRFC. The in-season size limits for recreational harvest and for research and monitoring typically do not change from year to year. Recreational anglers have expressed concern that differences in the types of measurement (i.e., TL vs. FL) and/or the size limit of 22” TL reduces their access to grilse Chinook Salmon, particularly in years when adult quotas have been attained and recreational harvest is restricted to the take of grilse.

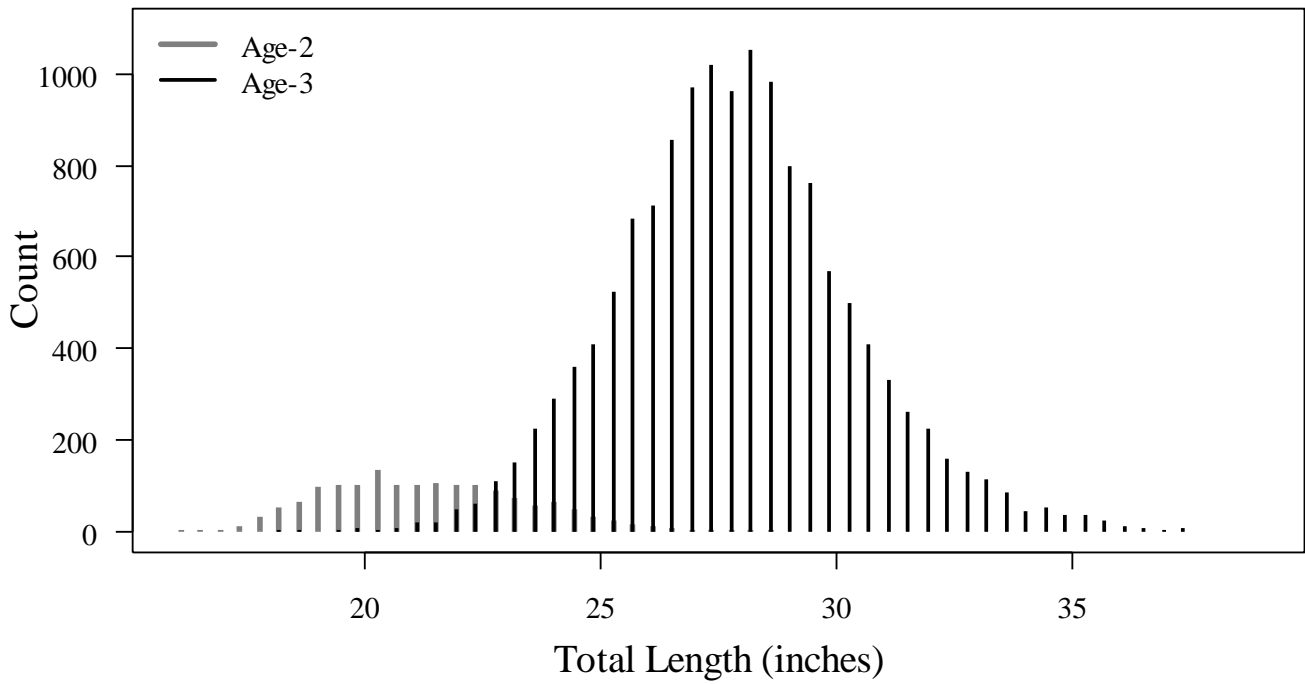


Figure 1. Length frequency histograms of known age-two and known age-three fall Chinook Salmon collected at Trinity River hatchery, 1998 and 2008-2018.

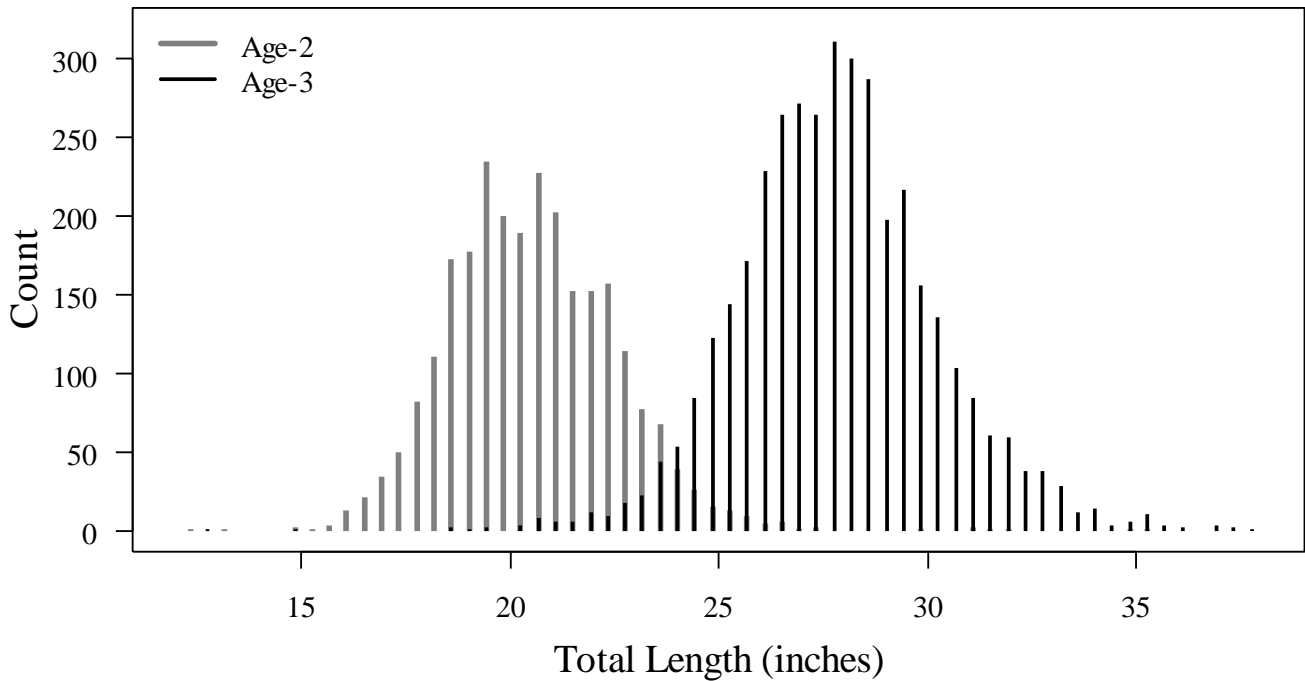


Figure 2. Length frequency histograms of estimated age-two and estimated age-three fall Chinook Salmon collected at Willow Creek weir, Trinity River, 2008-2018.

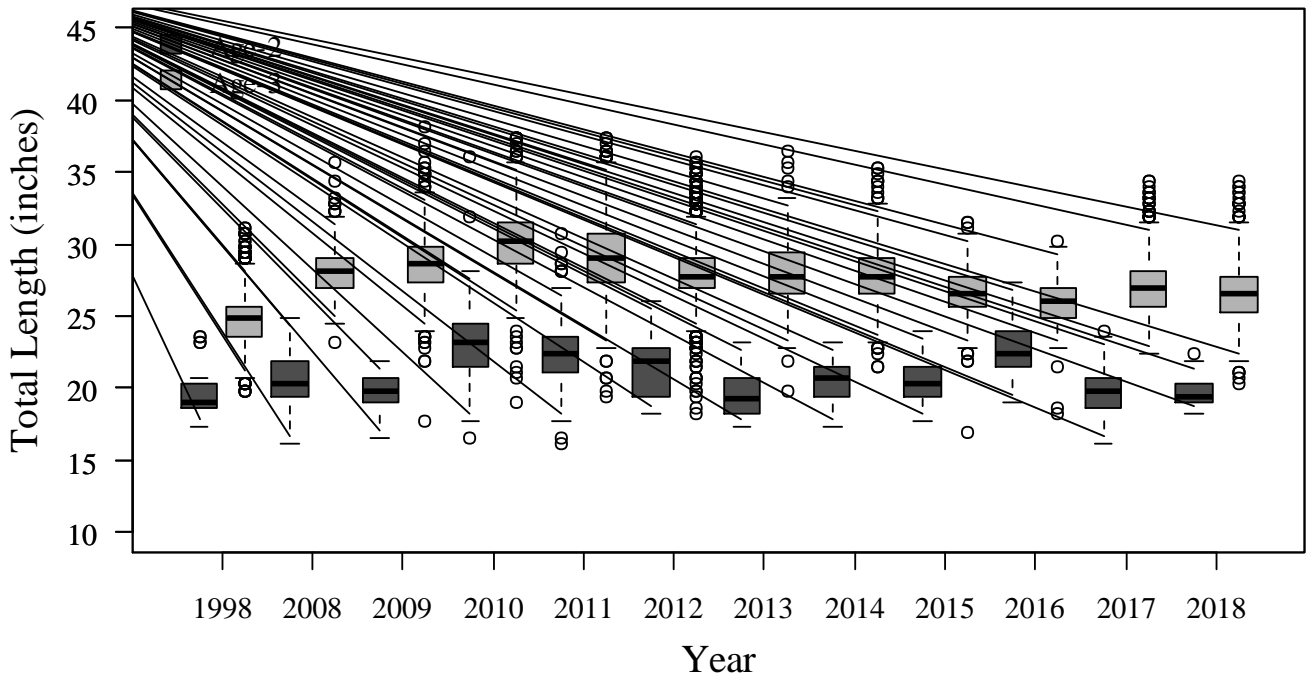


Figure 3. Timeseries of box and whisker plots of total lengths from known age-two and age-three fall Chinook Salmon collected at Trinity River hatchery, 1998 and 2008-2018. Horizontal bars indicate medians, boxes encompass the 25<sup>th</sup> to 75<sup>th</sup> percentiles, whiskers extend to 1.5 times the height of each box, and outliers are presented as open circles.

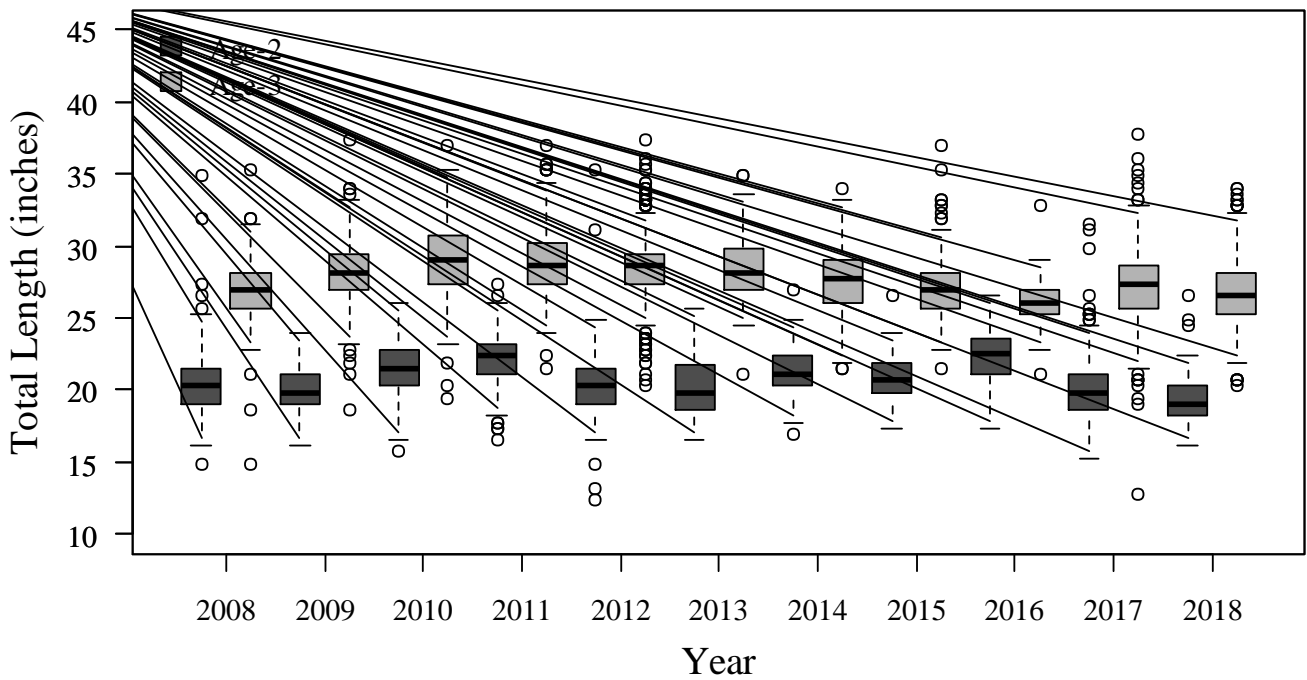


Figure 4. Timeseries of box and whisker plots of total lengths from estimated age-two and age-three fall Chinook Salmon collected at Willow Creek weir, 2008-2018. Horizontal bars indicate medians, boxes encompass the 25<sup>th</sup> to 75<sup>th</sup> percentiles, whiskers extend to 1.5 times the height of each box, and outliers are presented as open circles.

## Conversion of FL to TL

Fish are measured to the nearest centimeter FL for research and monitoring, whereas recreational angling regulations are defined by the nearest inch TL. Nearly all data available on the length of known-age or estimated-age fish (from coded wire tags [CWT] or scale aging) is from research and monitoring (i.e., centimeter fork length). Because this analysis is intended to inform recreational angling regulations, we converted centimeters FL to inches TL.

In August 2019, 115 adult Salmon captured at Junction City weir were measured to the nearest centimeter FL and TL. A linear regression model was fit to these data (Figure 5), which yielded an  $R^2$  value of 0.9934. Model residuals were examined and did not indicate any violations of model assumptions, and there were no outliers with high leverage. The fitted model was then used to estimate total length for known-age fish measured to FL at Trinity River hatchery, Iron Gate hatchery, and Willow Creek weir. Estimates of TL for known-age or estimated-age fish were then converted to inches. All Salmon used for the FL to TL regression were presumed to be spring run, but we believe it is reasonable to assume that the same relationship applies to fall run Chinook Salmon.

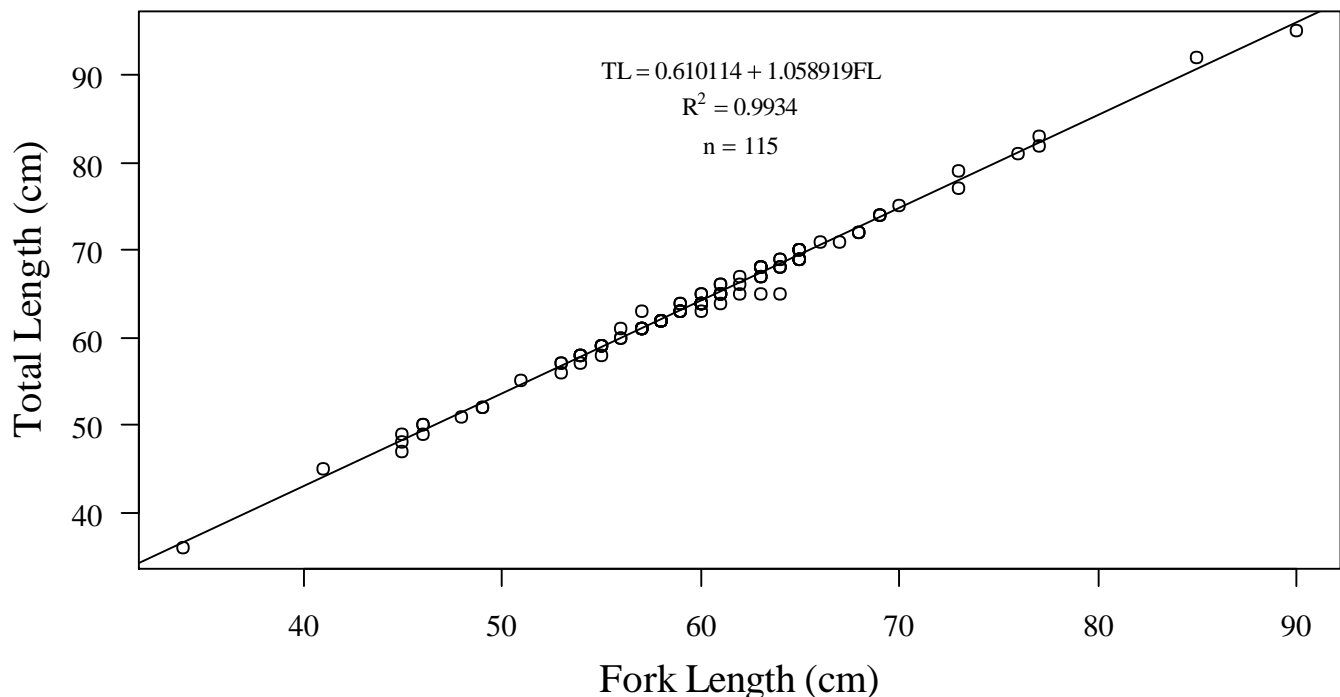


Figure 5. Scatterplot of total length vs. fork length of spring Chinook Salmon captured at Junction City weir in August 2019. The sample size ( $n$ ), fitted regression line, equation, and coefficient of determination ( $R^2$ ) are presented.

## Effects on age-three Chinook Salmon from size limits of 21 to 24 inches total length

Chinook Salmon returning to hatcheries in the Klamath and Trinity Rivers are measured to the nearest centimeter FL, and heads from fish with adipose fin clips are taken for later recovery and decoding of CWTs. Coded wire tag numbers indicate the hatchery of origin, release type (fingerling or yearling), run type (spring or fall), and brood year from which a fish originated, which in turn provides a known age. Length and known age data from all fall Chinook Salmon fingerlings and yearlings returning to Iron Gate and Trinity River hatcheries with CWTs from 1998 and 2008-2018 were obtained from Department staff. Fall Chinook Salmon were selected because in-river recreational fisheries only receive an adult quota for fall Chinook Salmon, so presumably any change

to size limits would only affect fall Chinook Salmon. Fingerlings and yearlings were selected because both are vulnerable to harvest and are indistinguishable to anglers, thus the combination of release types is more representative of fish that would be affected by a regulation change than either release type on its own. Using data from 2008-2018 is somewhat arbitrary, but we believe this period provides sufficient data to evaluate the effects of any regulation change. The size limit was increased from 22" TL to 24" TL for one year in 1998, which coincided with below average size three-year-old fish returning to the Klamath basin. We include this year as a case study.

A fish weir has been operated on the Trinity River near the town of Willow Creek annually since 1978, where salmon and steelhead are captured and tagged to estimate run sizes. Each trapped fish is measured to the nearest centimeter FL, and scales are collected from a systematic random sample of Chinook Salmon. Scales are aged by the Hoopa Valley tribe to estimate proportions of each age class in the run. Length and scale-estimated age data from fall Chinook Salmon sampled at Willow Creek weir from 2009 to 2018 were obtained from Hoopa Valley Tribe Fisheries Department staff. These data are intended to be used at the population scale, as opposed to using ages of individual fish, by estimating proportions at age that are corrected for reader bias. However, it is not possible to correct for such errors for individual fish, and we have not attempted to do so here. Accuracy of scale aging from 2009-2018 has ranged from 92.3% to 100% and averaged 98.3% for age-two fish, and ranged from 87.0% to 99.2% and averaged 96.8% for age-three fish. Consequently, we expect these data to accurately represent the population.

For each year, hatchery or weir, and proposed length cutoff (21" to 24" TL) we calculated the proportion of known (or estimated) age-two fish larger than the cutoff and the proportion of known (or estimated) age-three fish smaller than the cutoff. Age-four and age-five fish were not considered because they are rarely small enough to be affected by a 24" TL size limit in any meaningful way. The proportion of age-three fish smaller than the cutoff provides an estimate of the magnitude of potential unintended recreational harvest of age-three fish from a given minimum adult size limit (i.e., age-three fish presumed to be age-two because they are less than the cutoff), which we will refer to as impacts to age-three fish for simplicity. Age-three fish comprise the vast majority of the quota-managed fishery in most years. Results are presented separately for known-age fish returning to Iron Gate and Trinity River hatcheries and estimated-age fish captured at Willow Creek weir. It is important to note that none of these samples fully represent the combined Klamath-Trinity stock of fall Chinook Salmon for several reasons. Hatchery recoveries are skewed heavily toward hatchery-origin fish and thus underrepresent natural-origin fish if there is a systematic difference in sizes at age for these two groups. In addition, samples from all locations used in this analysis are collected from the population after in-river tribal and recreational fisheries have selectively removed certain size classes of fish due to fishing regulations (e.g., adult size limits) and/or size-selection bias of fishing methods (e.g., gill nets). Lastly, all samples are taken after Klamath and Trinity sub-stocks have segregated themselves by migrating upstream of Weitchpec into the Klamath or Trinity rivers, respectively, thus the samples may not represent the combined Klamath-Trinity stock encountered by anglers in the lower Klamath River downstream of Weitchpec.

A size limit of 21" TL would protect nearly all age-three fall Chinook Salmon in all years and shows a highly variable percent of age-two fish that would be unavailable during a grilse-only fishery (e.g., after an adult quota is met). Potential unintended impacts to age-three fish were less than 2% at all locations in all years (Tables 1-3) and were generally well below 1%. The percent of age-two fish greater than 21" ranged from 11.76% at Trinity River hatchery in 1998 to 96.41% in 2014 at Iron Gate hatchery.

The current size limit of 22" TL has protected the vast majority of age-three fall Chinook Salmon for the past 10 years. Impacts to age-three fish from a 22" TL size limit exceeded 2% at Trinity River

hatchery and Willow Creek weir in one year each and were generally less than 1% at all locations in most of the past 10 years (Tables 1-3). Impacts have increased in recent years, particularly at Willow Creek weir and Iron Gate hatchery, which reflect the small size at age we have observed in the Klamath River in recent years resulting from inland drought conditions and poor ocean conditions. The percent of age-two fish greater than 22" TL has been highly variable, ranging from 0% at Trinity River hatchery in 2009 to 88.51% at Iron Gate hatchery in 2011.

A size limit of 23" TL shows more variable impacts to age-three fish at all locations sampled, but potential impacts were still relatively low. Over the past 10 years, potential impacts have not exceeded 3.45% (Tables 1-3). Potential impacts have increased in recent years, which is particularly evident at Iron Gate hatchery. From 2009 to 2015, potential impacts to age-three fish from a 23" TL size limit averaged 0.25% and did not exceed 0.44%, but the average from 2016-2018 was 2.49% and was not less than 1.51%. The percent of age-two fish greater than 23" TL was also highly variable, ranging from 0% at Trinity River hatchery in 2009 and 2018 to 65.47% at Iron Gate hatchery in 2014.

Potential impacts to KRFC from a size limit of 24" TL is much more variable and has also increased in recent years. Potential impacts are seen at all locations in all years (i.e., none are 0%). In the past 10 years, potential impacts to age-three fish have exceeded 5% several times at each location and exceeded 10% at Willow Creek weir in 2016.

The 1998 run year presents an illustrative case study because the size limit was changed to 24" TL that year, and, coincidentally, fish were particularly small that year (Figure 1). The same methods for real-time quota management that are employed today were also used in 1998, and post-season analysis revealed that the quota had been exceeded by 5,910 fish. Even at the current size limit of 22" TL, potential impacts to age-three fish exceeded 5% (Tables 1, 3). Assuming a 24" TL size limit, potential unintended impacts to age-three KRFC may have exceeded 37% (Table 3). Reducing the minimum adult size limit from 24" to 23" TL reduced potential impacts by more than half as measured at the two hatcheries. Potential impacts were still alarmingly high for a 23" TL size limit – 14.17% at Trinity River hatchery and 17.73% at Iron Gate hatchery. While 1998 is an outlier compared to the past 10 years, recent increases in the potential unintended impacts to age-three fish suggest that caution should be exercised when considering an increased size limit.

Anecdotal observations from the 2019 run indicate that fish are small this year. Numerous Chinook Salmon less than 16.9" TL have been trapped at Willow Creek weir, and a 19.8" TL age-three fish (based on CWT) was recovered at Iron Gate hatchery.

Table 1. Proportions of known age-two falling above and known age-three falling below proposed minimum adult size limits of 21" to 24" total length collected at Trinity River hatchery, 1998 and 2008-2018 return years.

year	21" TL cutoff		22" TL cutoff		23" TL cutoff		24" TL cutoff	
	age2 > 21"	age3 < 21"	age2 > 22"	age3 < 22"	age2 > 23"	age3 < 23"	age2 > 24"	age3 < 24"
1998	11.76%	0.58%	11.76%	5.62%	11.76%	14.17%	0.00%	29.44%
2008	39.60%	0.00%	18.79%	0.00%	8.05%	0.00%	4.03%	0.29%
2009	8.11%	0.07%	0.00%	0.20%	0.00%	0.27%	0.00%	0.75%
2010	84.56%	0.22%	67.45%	0.43%	50.34%	0.65%	34.56%	0.86%
2011	76.89%	0.15%	52.80%	0.23%	34.06%	0.46%	20.19%	0.88%
2012	65.62%	0.26%	43.75%	0.40%	21.88%	0.58%	15.62%	1.21%
2013	20.00%	0.43%	6.67%	0.87%	3.33%	1.30%	0.00%	3.03%
2014	41.51%	0.00%	13.21%	0.23%	5.66%	0.81%	0.00%	2.08%
2015	36.36%	0.25%	4.55%	0.76%	2.27%	2.53%	2.27%	5.06%
2016	87.21%	1.38%	61.63%	2.07%	37.21%	3.45%	25.58%	6.90%
2017	21.00%	0.00%	4.20%	0.00%	1.31%	0.95%	0.26%	4.86%
2018	13.89%	0.13%	2.78%	0.47%	0.00%	1.73%	0.00%	5.93%

Table 2. Proportions of estimated age-two falling above and known age-three falling below proposed minimum adult size limits of 21" to 24" total length sampled at Willow Creek weir, 2008-2018 return years.

year	21" TL cutoff		22" TL cutoff		23" TL cutoff		24" TL cutoff	
	age2 > 21"	age3 < 21"	age2 > 22"	age3 < 22"	age2 > 23"	age3 < 23"	age2 > 24"	age3 < 24"
2008	32.94%	1.56%	13.41%	2.34%	6.71%	3.12%	2.96%	4.69%
2009	25.69%	0.26%	11.01%	0.78%	3.67%	1.30%	1.83%	1.81%
2010	62.35%	0.86%	38.24%	1.29%	21.76%	1.29%	12.35%	2.58%
2011	75.66%	0.00%	52.12%	0.32%	27.25%	0.63%	12.70%	0.63%
2012	36.75%	0.23%	14.53%	0.58%	3.42%	1.05%	2.56%	1.86%
2013	27.78%	0.00%	20.83%	1.52%	8.33%	1.52%	2.78%	1.52%
2014	60.82%	0.00%	34.02%	1.46%	16.49%	2.44%	4.12%	4.39%
2015	45.22%	0.00%	15.65%	0.56%	6.09%	1.69%	2.61%	3.39%
2016	87.50%	0.00%	55.00%	1.69%	35.00%	3.39%	15.00%	10.17%
2017	27.39%	0.86%	10.37%	1.60%	4.78%	2.21%	1.98%	5.40%
2018	15.74%	0.87%	3.70%	1.57%	2.78%	3.30%	2.78%	6.09%



Table 3. Proportions of known age-two falling above and known age-three falling below proposed minimum adult size limits of 21" to 24" total length collected at Iron Gate hatchery, 1998 and 2009-2018 return years.

year	21" TL cutoff		22" TL cutoff		23" TL cutoff		24" TL cutoff	
	age2 > 21"	age3 < 21"	age2 > 22"	age3 < 22"	age2 > 23"	age3 < 23"	age2 > 24"	age3 < 24"
1998	13.33%	0.85%	0.00%	8.37%	0.00%	17.73%	0.00%	37.45%
2009	57.78%	0.00%	28.89%	0.00%	13.33%	0.19%	4.44%	0.38%
2010	93.78%	0.00%	77.20%	0.00%	56.48%	0.26%	28.50%	0.26%
2011	96.39%	0.07%	88.51%	0.14%	75.46%	0.29%	51.35%	0.79%
2012	84.39%	0.08%	57.56%	0.12%	32.68%	0.26%	11.71%	0.36%
2013	61.96%	0.10%	36.08%	0.10%	20.39%	0.19%	10.59%	0.48%
2014	96.41%	0.12%	81.17%	0.24%	65.47%	0.44%	41.26%	0.61%
2015	64.52%	0.00%	25.81%	0.00%	12.90%	0.13%	3.23%	0.66%
2016	64.71%	0.30%	29.41%	0.60%	23.53%	1.51%	23.53%	6.33%
2017	71.55%	0.27%	36.64%	1.70%	14.44%	3.30%	5.17%	7.59%
2018	63.24%	0.36%	25.00%	1.08%	14.71%	2.67%	4.41%	6.26%

### Key points

- The range and average size of age-two and age-three KRFC changes annually.
- No pre-season data exists to make annual changes to the size limit for grilse KRFC.
- The KRFC fishery is managed using an adult quota designed to meet escapement objectives, and grilse are not quota managed.
- In some years (e.g., 1998) a significant proportion of age-three KRFC are less than the current 22" TL size limit, making them vulnerable to grilse-directed fisheries. These fish are later reclassified as adults, which can result in escapement shortfalls and/or exceeding adult quotas.
- The current size limit of 22" TL protects most adult KRFC in most years
- A size limit of 24" TL increases the inter-annual variability in potential unintended impacts to age-three KRFC.
- Increasing the size limit increases conservation risk due to the potential for harvest of adults less than the grilse size during grilse fisheries.