# Klamath River Outmigrant Monitoring Update — April , 2022

Synopsis: The outmigration of juvenile salmonids is monitored annually on the mainstem Klamath River by the USFWS Arcata Fish and Wildlife Office (AFWO), the Karuk Tribe of California, and the Yurok Tribe of California. The objectives of this collaborative project are to:

1. Estimate the weekly abundance of juvenile Chinook Salmon and collect pertinent biological data such as fork length and presence of clinical signs of disease at four selected locations on the mainstem Klamath River.
2. Examine subsamples of Chinook Salmon, Coho Salmon, and steelhead for external disease indicators and collect, preserve, and deliver weekly-stratified, random samples of young-of-the-year (YOY) Chinook Salmon to the Service's California–Nevada Fish Health Center (CA–NV FHC) for conducting qPCR assays to estimate *Ceratonova shasta* infection rate in the outmigrant population.
3. Collect relative abundance and biological data on Coho Salmon and steelhead at the four locations on the mainstem Klamath River.

Information generated by this study are used for a variety of purposes, including stock-recruitment analyses, to inform flow management decisions, to further refine a fish disease model, and to validate and calibrate the S3 (Stream Salmonid Simulator) Chinook Salmon production model, among others.

Monitoring is conducted at four sites on the mainstem Klamath River between Iron Gate Dam (IGD; rkm 309.65) and the Trinity River confluence (rkm 64.3). The upstream-most site (rkm 307.75), referred to as the 'Bogus Trap Site' is located on the right bank downstream of the Bogus Creek confluence on Blue Heron RV Park property. The second location is the 'I-5 Trap Site' (rkm 293.55), which is positioned on the left bank downstream of the Carson Creek confluence and upstream of the I-5 bridge river crossing. The 'Kinsman Trap Site'(rkm 237.55) is positioned in a side channel on the left bank just upstream of the Kinsman Creek confluence. The 'Weitchpec Trap Site' (rkm 65) is the farthest downstream and is 0.7 km upstream of the Trinity River confluence behind the Yurok Tribal office in Weitchpec, California.

Trapping at the Bogus Trap Site is conducted using a single 3.1-m wide and 1.6-m tall frame net. Sampling at the I-5 Trap Site is conducted using two in-line 8-ft diameter rotary screw traps (RST) and one 3.1-m by 1.6-m frame net. One 5-ft diameter RST is used to capture fish at the Kinsman Trap Site. The Weitchpec trap site uses one 8-ft diameter RST on the south bank and one to two 3.1-m by 1.6-m frame nets on the north bank. Traps are typically operated four nights per week (Monday through Thursday) and checked once daily while in operation. Trapping began the week of February 28 [Calendar Week (CW) 10] at all sites in 2022.

This project update provides an in-season summary of the total catch (Table 1) and mean catch- per-day by week (Table 2) of Chinook Salmon, Coho Salmon, and steelhead at each trap site. In addition, we provide weekly estimates of mean fork length of YOY Chinook and Coho salmon from each of the four trap sites (Table 3). Expansions to generate weekly-stratified abundance estimates are calculated after the end of the sampling season and are not presented

here. Trap efficiency, a measure of the proportion of fish moving past a trap site that are caught, varies weekly. *Therefore, raw catch numbers are not representative of actual abundance and we advise against using weekly raw catch numbers to make inferences on temporal abundance.*

Included in this project update is a weekly-stratified summary of clinical signs of disease observed in the catch for the trap and seine sites (Table 4). Note that these data are based on the visual presence of external symptoms of disease, which may not always be revealed by infected fish. The percentage of live YOY Chinook Salmon in the trap and seine catches that exhibit distended bellies, gill fungus, and pale gills are presented separately for each site on a weekly basis (Table 4). Distended bellies may be a clinical sign of infection by the myxosporean parasites, *Ceratonova shasta* and *Parvicapsula minibicornis*. Gills of juvenile salmonids ≥45 mm FL are evaluated for color (red, pale/pink, white, or tan) and condition (normal, eroded, or fungal). Pale gills may be due to anemia associated with *P. minibicornis* infection. Gill fungus is likely *Saprolegnia* growing upon a columnaris (*Flavobacterium columnare*) infection.

To determine infection rates more accurately for the outmigrant juvenile Chinook Salmon population passing the Kinsman Trap Site, I-5 Trap Site, and Weitchpec Trap Site, weekly-stratified random samples are collected, preserved, and delivered to the CA–NV FHC to process using qPCR assays. This season's fish health sampling will begin the week of March 20. The CA–NV FHC investigates infection rates of *C. shasta* and other pathogens in juvenile salmonids in the Klamath River annually. The CA–NV FHC releases regular updates (which are available on the USFWS online library) and a final report for each season.

We also present daily mean discharge below IGD (Figure 1), at the Kinsman Trap Site (Figure 2), and at the Weitchpec Trap Site (Figure 3) from late February to July to help portray pertinent flow conditions. Discharge at the Bogus and I-5 trap sites are represented by USGS Gauging Station 11516530 (Klamath River below IGD, California). Discharge at USGS 11520500 (Klamath River near Seiad Valley, California) minus discharge at USGS 11519500 (Scott River near Fort Jones, California) is used as a surrogate flow for the Kinsman Trap Site. Discharge at USGS 10523000 (Klamath River at Orleans, California) is used to represent flow at the Weitchpec Trap Site.

If you have any questions regarding this summary, please contact Tyler Wallin (tyler_wallin@fws.gov) or Bill Pinnix (bill_pinnix@fws.gov).

Table 1. In-season summary of the total catch by week of adipose fin-clipped (AD Clip) and non-adipose fin-clipped (No Clip) Chinook Salmon and steelhead and left maxillary-clipped (LM Clip) and non-maxillary clipped (No Clip) Coho Salmon by trap at the Bogus, I-5, and Kinsman trap sites on the mainstem Klamath River, 2022. Note that RST = rotary screw trap, UPS = upstream, DNS = downstream, and YOY = young-of-the-year.

**USFWS 2022 Mainstem Klamath River Outmigrant Trap Juvenile Salmonid Catch Summary**

U.S. Fish & Wildlife Service, Arcata Fish & Wildlife Office, 1655 Heindon Road, Arcata, CA 95521, (707)822-7201

Preliminary Data - Subject to Revision

| | | | | | | | | Chinook (*O. tshawytscha*) | | | Coho (*O. kisutch*) | | | Steelhead (*O. mykiss*) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Q (cfs) [a] | | Water temp. (°F) [b] | | | YOY | | | | Age 1 + | | | Age 1 + | |
| Trap | Calendar week | Sample dates | Min | Max | Min | Max | Trapping days | No clip | AD clip | Age 1+ | YOY | No clip | LM clip | YOY | No clip | AD clip |
| Bogus Frame Net | 10 | 3/2-3/4 | 990 | 1,020 | 43.8 | 44.2 | 3 | 74 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 11 | 3/8-3/11 | 985 | 996 | 44.6 | 45.3 | 4 | 120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 12 | 3/14-3/18 | 982 | 992 | - | - | 0 | - | - | - | - | - | - | - | - | - |
| | 13 | 3/22-3/25 | 983 | 995 | 48.7 | 51 | 4 | 108 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| | 14 | 3/29-4/1 | 987 | 1,190 | 50.1 | 50.9 | 4 | 483 | 0 | 0 | 44 | 0 | 0 | 0 | 0 | 0 |
| I-5 UPS RST | 10 | 3/1-3/4 | 964 | 1,020 | 41.9 | 43.8 | 4 | 226 | 0 | 12 | 0 | 0 | 0 | 0 | 1 | 0 |
| | 11 | 3/8-3/11 | 985 | 996 | 42.6 | 44 | 4 | 452 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 12 | 3/15-3/18 | 982 | 990 | 43.8 | 44.9 | 4 | 291 | 0 | 0 | 0 | 1 | 378 | 0 | 0 | 0 |
| | 13 | 3/22-3/25 | 983 | 995 | 45.2 | 46.9 | 4 | 319 | 0 | 5 | 6 | 0 | 2 | 0 | 4 | 0 |
| | 14 | 3/29-4/1 | 987 | 1,190 | 48.1 | 49.6 | 4 | 416 | 0 | 0 | 19 | 0 | 1 | 0 | 0 | 0 |
| I-5 DNS RST | 10 | 3/1-3/4 | 985 | 1,020 | 41.9 | 43.8 | 3 | 104 | 0 | 8 | 0 | 0 | 0 | 0 | 3 | 0 |
| | 11 | 3/8-3/11 | 964 | 996 | 42.6 | 44 | 4 | 207 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| | 12 | 3/15-3/18 | 982 | 990 | 43.8 | 44.9 | 3 | 134 | 0 | 0 | 0 | 0 | 123 | 0 | 0 | 0 |
| | 13 | 3/22-3/25 | 983 | 995 | 45.2 | 46.9 | 4 | 220 | 0 | 0 | 2 | 0 | 9 | 0 | 3 | 0 |
| | 14 | 3/29-4/1 | 987 | 1,190 | 48.1 | 49.6 | 4 | 212 | 0 | 0 | 8 | 0 | 2 | 0 | 1 | 0 |
| I-5 Frame Net | 10 | 3/2-3/4 | 990 | 1,020 | 42.2 | 43.8 | 3 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 11 | 3/8-3/11 | 985 | 996 | 42.6 | 44 | 4 | 103 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| | 12 | 3/15-3/18 | 982 | 990 | 43.8 | 44.9 | 4 | 32 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 |
| | 13 | 3/22-3/25 | 983 | 995 | 45.2 | 46.9 | 4 | 50 | 0 | 0 | 1 | 0 | 2 | 1 | 0 | 0 |
| | 14 | 3/29-4/1 | 987 | 1,190 | 48.1 | 49.6 | 4 | 78 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 |

[a] mean discharge from day of sampling (discharge below IGD used for Bogus and I-5 sites; flow at Kinsman Site is Klamath River flow at Seiad minus Scott River flow; discharge at Weitchpec Site is discharge near Orleans)

[b] temperature recorded at time of trap check

Table 1 cont. In-season summary of the total catch by week of adipose fin-clipped (AD Clip) and non-adipose fin clipped (No Clip) Chinook Salmon and steelhead and left maxillary-clipped (LM Clip) and non-maxillary clipped (No Clip) Coho Salmon by trap at the Bogus, I 5, and Kinsman trap sites on the mainstem Klamath River, 2022. Note that RST = rotary screw trap, UPS = upstream, DNS = downstream, and YOY = young-of-the-year.

**USFWS 2021 Mainstem Klamath River Outmigrant Trap Juvenile Salmonid Catch Summary (continued)**

U.S. Fish & Wildlife Service, Arcata Fish & Wildlife Office, 1655 Heindon Road, Arcata, CA 95521, (707)822-7201

Preliminary Data - Subject to Revision

| | | | | | | | | Chinook (*O. tshawytscha*) | | | Coho (*O. kisutch*) | | | Steelhead (*O. mykiss*) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Q (cfs) [a] | | Water temp. (F) [b] | | | YOY | | | | Age 1 + | | | Age 1 + | |
| Trap | Calendar week | Sample dates | Min | Max | Min | Max | Trapping days | No clip | AD clip | Age 1+ | YOY | No clip | LM clip | YOY | No clip | AD clip |
| Kinsman RST | 10 | 3/1-3/4 | 1,338 | 1,432 | 45.0 | 47.2 | 4 | 162 | 0 | 1 | 3 | 8 | 0 | 5 | 3 | 0 |
| | 11 | 3/8-3/11 | 1,330 | 1,349 | 43.3 | 46.5 | 4 | 144 | 0 | 0 | 2 | 5 | 0 | 1 | 0 | 0 |
| | 12 | 3/15-3/18 | 1,416 | 1,438 | 44.7 | 47.8 | 4 | 109 | 0 | 0 | 1 | 5 | 6 | 0 | 5 | 0 |
| | 13 | 3/22-3/25 | 1,416 | 1,503 | 47.1 | 52.8 | 4 | 191 | 0 | 0 | 5 | 2 | 45 | 4 | 7 | 0 |
| | 14 | 3/29-4/1 | 1,449 | 1,498 | 49.1 | 51.4 | 4 | 349 | 0 | 0 | 37 | 4 | 2 | 0 | 11 | 0 |
| Weitchpec RST | 10 | 3/1-3/4 | 4,194 | 4,597 | - | - | 4 | 265 | 0 | 2 | 0 | 1 | 0 | 0 | 5 | 0 |
| | 11 | 3/8-3/11 | 3,461 | 3,687 | 46.2 | 46.6 | 4 | 203 | 0 | 2 | 0 | 1 | 0 | 0 | 2 | 0 |
| | 12 | 3/15-3/18 | 4,470 | 5,610 | 48.2 | 48.4 | 1 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 |
| | 13 | 3/22-3/24 | 4,110 | 5,290 | 48.9 | 50.5 | 3 | 138 | 0 | 0 | 0 | 1 | 16 | 0 | 15 | 0 |
| | 14 | 3/29-4/1 | 4,480 | 5,190 | 50.2 | 52.0 | 4 | 84 | 0 | 0 | 0 | 1 | 0 | 0 | 20 | 0 |
| Weitchpec US Frame | 11 | 3/8-3/11 | 3,461 | 3,687 | 46.2 | 46.6 | 4 | 94 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 12 | 3/15-3/18 | 4470 | 5610 | - | - | 0 | - | - | - | - | - | - | - | - | - |
| | 13 | 3/22-3/24 | 4,110 | 5,290 | 48.9 | 50.5 | 3 | 107 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 14 | 3/30-4/1 | 4,480 | 5,130 | 50.2 | 50.5 | 3 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

[a] mean discharge from day of sampling (discharge below IGD used for Bogus and I-5 sites; flow at Kinsman Site is Klamath River flow at Seiad minus Scott River flow; discharge at Weitchpec Site is discharge near Orleans)

[b] temperature recorded at time of trap check

Table 2. In-season summary of the average catch-per-day by week of non-adipose fin-clipped (No Clip) and adipose fin-clipped (AD Clip) Chinook Salmon and steelhead and non-maxillary clipped (No Clip) and left maxillary-clipped (LM Clip) Coho Salmon by trap at the Bogus, I-5, and Kinsman trap sites on the mainstem Klamath River, 2022. Note that RST = rotary screw trap, UPS = upstream, DNS = downstream, and YOY = young-of-the-year.

**USFWS 2022 Mainstem Klamath River Outmigrant Trap Juvenile Salmonid Catch-per-Day Summary**

U.S. Fish & Wildlife Service, Arcata Fish & Wildlife Office, 1655 Heindon Road, Arcata, CA 95521, (707)822-7201

Preliminary Data - Subject to Revision

| | | | | | | | | Chinook (*O. tshawytscha*) | | | Coho (*O. kisutch*) | | | Steelhead (*O. mykiss*) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Q (cfs) [a] | | Water temp. (°F) [b] | | | YOY | | | | Age 1 + | | | Age 1 + | |
| Trap | Calendar week | Sample dates | Min | Max | Min | Max | Trapping days | No clip | AD clip | Age 1+ | YOY | No clip | LM clip | YOY | No clip | AD clip |
| Bogus Frame Net | 10 | 3/2-3/4 | 990 | 1,020 | 43.8 | 44.2 | 3 | 24.67 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 11 | 3/8-3/11 | 985 | 996 | 44.6 | 45.3 | 4 | 30.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 12 | 3/14-3/18 | 982 | 992 | - | - | 0 | - | - | - | - | - | - | - | - | - |
| | 13 | 3/22-3/25 | 983 | 995 | 48.7 | 51.0 | 4 | 27.00 | 0.00 | 0.00 | 0.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 14 | 3/29-4/1 | 987 | 1,190 | 50.1 | 50.9 | 4 | 120.75 | 0.00 | 0.00 | 11.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| I-5 UPS RST | 10 | 3/1-3/4 | 964 | 1,020 | 41.9 | 43.8 | 4 | 56.50 | 0.00 | 3.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.25 | 0.00 |
| | 11 | 3/8-3/11 | 985 | 996 | 42.6 | 44.0 | 4 | 113.00 | 0.00 | 0.25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 12 | 3/15-3/18 | 982 | 990 | 43.8 | 44.9 | 4 | 72.75 | 0.00 | 0.00 | 0.00 | 0.25 | 94.50 | 0.00 | 0.00 | 0.00 |
| | 13 | 3/22-3/25 | 983 | 995 | 45.2 | 46.9 | 4 | 79.75 | 0.00 | 1.25 | 1.50 | 0.00 | 0.50 | 0.00 | 1.00 | 0.00 |
| | 14 | 3/29-4/1 | 987 | 1,190 | 48.1 | 49.6 | 4 | 104.00 | 0.00 | 0.00 | 4.75 | 0.00 | 0.25 | 0.00 | 0.00 | 0.00 |
| I-5 DNS RST | 10 | 3/1-3/4 | 964 | 1,020 | 41.9 | 43.8 | 3 | 34.67 | 0.00 | 2.67 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 |
| | 11 | 3/8-3/11 | 985 | 996 | 42.6 | 44.0 | 4 | 51.75 | 0.00 | 0.25 | 0.00 | 0.25 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 12 | 3/15-3/18 | 982 | 990 | 43.8 | 44.9 | 3 | 44.67 | 0.00 | 0.00 | 0.00 | 0.00 | 41.00 | 0.00 | 0.00 | 0.00 |
| | 13 | 3/22-3/25 | 983 | 995 | 45.2 | 46.9 | 4 | 55.00 | 0.00 | 0.00 | 0.50 | 0.00 | 2.25 | 0.00 | 0.75 | 0.00 |
| | 14 | 3/29-4/1 | 987 | 1,190 | 48.1 | 49.6 | 4 | 53.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.50 | 0.00 | 0.25 | 0.00 |
| I-5 Frame Net | 10 | 3/2-3/4 | 990 | 1,020 | 42.2 | 43.8 | 3 | 7.67 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 11 | 3/8-3/11 | 985 | 996 | 42.6 | 44.0 | 4 | 25.75 | 0.00 | 0.00 | 0.00 | 0.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 12 | 3/15-3/18 | 982 | 990 | 43.8 | 44.9 | 4 | 8.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.75 | 0.00 | 0.00 | 0.00 |
| | 13 | 3/22-3/25 | 983 | 995 | 45.2 | 46.9 | 4 | 12.50 | 0.00 | 0.00 | 0.25 | 0.00 | 0.50 | 0.25 | 0.00 | 0.00 |
| | 14 | 3/29-4/1 | 987 | 1,190 | 48.1 | 49.6 | 4 | 19.50 | 0.00 | 0.00 | 2.75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

[a] mean daily discharge range during sampling dates (discharge below IGD used for Bogus and I-5 sites; flow at Kinsman Site is Klamath River flow at Seiad minus Scott River flow; discharge at Weitchpec Site is discharge near Orleans)

[b] temperature recorded at time of trap check

Table 2 cont. In-season summary of the average catch-per-day by week of non-adipose fin-clipped (No Clip) and adipose fin-clipped (AD Clip) Chinook Salmon and steelhead and non-maxillary clipped (No Clip) and left maxillary-clipped (LM Clip) Coho Salmon by trap at the Bogus, I-5, and Kinsman trap sites on the mainstem Klamath River, 2022. Note that RST = rotary screw trap, UPS = upstream, DNS = downstream, and YOY = young-of-the-year.

**USFWS 2021 Mainstem Klamath River Outmigrant Trap Juvenile Salmonid Catch-per-Day Summary (continued)**

U.S. Fish & Wildlife Service, Arcata Fish & Wildlife Office, 1655 Heindon Road, Arcata, CA 95521, (707)822-7201

Preliminary Data - Subject to Revision

| | | | | | | | | Chinook (*O. tshawytscha*) | | | Coho (*O. kisutch*) | | | Steelhead (*O. mykiss*) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Q (cfs) [a] | | Water temp. (F) [b] | | | YOY | | | | Age 1 + | | | Age 1 + | |
| Trap | Calendar week | Sample dates | Min | Max | Min | Max | Trapping days | No clip | AD clip | Age 1+ | YOY | No clip | LM clip | YOY | No clip | AD clip |
| Kinsman RST | 10 | 3/1-3/4 | 1,338 | 1,432 | 45.0 | 47.2 | 4 | 40.50 | 0.00 | 0.25 | 0.75 | 2.00 | 0.00 | 1.25 | 0.75 | 0.00 |
| | 11 | 3/8-3/11 | 1,410 | 1,349 | 43.3 | 46.5 | 4 | 36.00 | 0.00 | 0.00 | 0.50 | 1.25 | 0.00 | 0.25 | 0.00 | 0.00 |
| | 12 | 3/15-3/18 | 1,416 | 1,438 | 44.7 | 47.8 | 4 | 27.25 | 0.00 | 0.00 | 0.25 | 1.25 | 1.50 | 0.00 | 1.25 | 0.00 |
| | 13 | 3/22-3/25 | 1,416 | 1,503 | 47.1 | 52.8 | 4 | 47.75 | 0.00 | 0.00 | 1.25 | 0.50 | 11.25 | 1.00 | 1.75 | 0.00 |
| | 14 | 3/29-4/1 | 1,449 | 1,498 | 49.1 | 51.4 | 4 | 87.25 | 0.00 | 0.00 | 9.25 | 1.00 | 0.50 | 0.00 | 2.75 | 0.00 |
| Weitchpec RST | 10 | 3/1-3/4 | 4,194 | 4,597 | - | - | 4 | 66.25 | 0.00 | 0.50 | 0.00 | 0.25 | 0.00 | 0.00 | 1.25 | 0.00 |
| | 11 | 3/8-3/11 | 3,461 | 3,687 | 46.2 | 46.6 | 4 | 50.75 | 0.00 | 0.50 | 0.00 | 0.25 | 0.00 | 0.00 | 0.50 | 0.00 |
| | 12 | 3/15-3/18 | 4,470 | 5,610 | 48.2 | 48.4 | 1 | 18.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.00 | 0.00 |
| | 13 | 3/22-3/24 | 4,110 | 5,290 | 48.9 | 50.5 | 3 | 46.00 | 0.00 | 0.00 | 0.00 | 0.33 | 5.33 | 0.00 | 5.00 | 0.00 |
| | 14 | 3/29-4/1 | 4,480 | 5,190 | 50.2 | 52.0 | 4 | 21.00 | 0.00 | 0.00 | 0.00 | 0.25 | 0.00 | 0.00 | 5.00 | 0.00 |
| Weitchpec US Frame | 11 | 3/8-3/11 | 3,461 | 3,687 | 46.2 | 46.6 | 4 | 23.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 12 | 3/15-3/18 | 4,470 | 5,610 | | | 0 | - | - | - | - | - | - | - | - | - |
| | 13 | 3/22-3/24 | 4,110 | 5,290 | 48.9 | 50.5 | 3 | 35.67 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 14 | 3/30-4/1 | 4,480 | 5,130 | 50.2 | 50.5 | 3 | 16.67 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

[a] mean daily discharge range during sampling dates (discharge below IGD used for Bogus and I-5 sites; flow at Kinsman Site is Klamath River flow at Seiad minus Scott River flow; discharge at Weitchpec Site is discharge near Orleans)

[b] temperature recorded at time of trap check

Table 3. In-season summary of fork lengths, compared with the last ten years of naturally produced Chinook and Coho salmon by trap type at the Bogus, I-5, and Kinsman sites on the mainstem Klamath River, 2022. RST = rotary screw trap and YOY = young-of-the-year.

**USFWS 2022 Mainstem Klamath River YOY Chinook and Coho Salmon Size Summary**

U.S. Fish & Wildlife Service, Arcata Fish & Wildlife Office, 1655 Heindon Road, Arcata, CA 95521, (707)822-7201

Preliminary data - Subject to revision

| | | | YOY Chinook (natural) - fork length data | | | | | | | | YOY Coho - fork length data | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2022 | | | | | Previous 10 years | | | 2022 | | | | | Previous 10 years | | |
| Site | Calendar Week | 2022 Sampling Dates | n | Mean (mm) | Min. (mm) | Max. (mm) | % > 55 mm | n | Years of data | Mean (mm) | n | Mean (mm) | Min. (mm) | Max. (mm) | % > 55 mm | n | Years of data | Mean (mm) |
| Bogus Frame | 10 | Mar 01-03 | 40 | 37.8 | 35.0 | 40.0 | 0 | 564 | 9 | 36.7 | 0 | -[b] | -[b] | -[b] | -[b] | 0 | 1 | - |
| | 11 | Mar 08-10 | 51 | 38.6 | 35.0 | 42.0 | 0 | 673 | 9 | 36.8 | 0 | -[b] | -[b] | -[b] | -[b] | 0 | 0 | - |
| | 12 | Mar 15-17 | 0 | -[b] | -[b] | -[b] | -[b] | 705 | 9 | 36.7 | 0 | -[b] | -[b] | -[b] | -[b] | 20 | 3 | 34.4 |
| | 13 | Mar 22-24 | 70 | 38.0 | 32.0 | 50.0 | 0 | 693 | 8 | 37.2 | 0 | -[b] | -[b] | -[b] | -[b] | 141 | 3 | 33.4 |
| | 14 | Mar 29-31 | 89 | 37.2 | 32.0 | 46.0 | 0 | 663 | 9 | 37.9 | 44 | 33.8 | 30 | 37 | 0% | 139 | 5 | 33.8 |
| I-5 RST's | 10 | Mar 01-03 | 92 | 38.7 | 33.0 | 42.0 | 0 | 604 | 9 | 37.6 | 0 | -[b] | -[b] | -[b] | -[b] | 0 | 1 | - |
| | 11 | Mar 08-10 | 89 | 38.9 | 34.0 | 43.0 | 0 | 609 | 10 | 37.6 | 0 | -[b] | -[b] | -[b] | -[b] | 1 | 1 | 35.0 |
| | 12 | Mar 15-17 | 90 | 38.7 | 35.0 | 48.0 | 0 | 657 | 9 | 36.9 | 0 | -[b] | -[b] | -[b] | -[b] | 0 | 0 | - |
| | 13 | Mar 22-24 | 89 | 37.9 | 1.0 | 49.0 | 0 | 558 | 8 | 37.7 | 5 | -[b] | -[b] | -[b] | -[b] | 10 | 3 | 34.3 |
| | 14 | Mar 29-31 | 90 | 38.9 | 32.0 | 54.0 | 0 | 707 | 10 | 39.1 | 27 | -[b] | -[b] | -[b] | -[b] | 11 | 4 | 33.7 |
| I-5 Frame | 10 | Mar 01-03 | 7 | -[b] | -[b] | -[b] | -[b] | 215 | 6 | 38.0 | 0 | -[b] | -[b] | -[b] | -[b] | 0 | 1 | - |
| | 11 | Mar 08-10 | 71 | 38.9 | 35.0 | 44.0 | 0 | 199 | 5 | 36.8 | 0 | -[b] | -[b] | -[b] | -[b] | 1 | 1 | 35.0 |
| | 12 | Mar 15-17 | 29 | -[b] | -[b] | -[b] | -[b] | 293 | 6 | 37.1 | 0 | -[b] | -[b] | -[b] | -[b] | 14 | 2 | 35.4 |
| | 13 | Mar 22-24 | 41 | 38.4 | 35.0 | 46.0 | 0 | 328 | 6 | 37.6 | 0 | -[b] | -[b] | -[b] | -[b] | 71 | 4 | 32.6 |
| | 14 | Mar 29-31 | 75 | 38.9 | 32.0 | 50.0 | 0 | 304 | 7 | 37.9 | 11 | -[b] | -[b] | -[b] | -[b] | 62 | 4 | 35.1 |
| Kinsman RST | 10 | Mar 01-03 | 84 | 39.0 | 4.0 | 51.0 | 0 | 420 | 7 | 37.5 | 0 | -[b] | -[b] | -[b] | -[b] | 2 | 1 | 33.0 |
| | 11 | Mar 08-10 | 85 | 39.9 | 35.0 | 50.0 | 0 | 518 | 8 | 38.8 | 2 | -[b] | -[b] | -[b] | -[b] | 12 | 1 | 33.4 |
| | 12 | Mar 15-17 | 67 | 41.0 | 34.0 | 59.0 | 1% | 547 | 8 | 42.0 | 1 | -[b] | -[b] | -[b] | -[b] | 31 | 2 | 33.7 |
| | 13 | Mar 22-24 | 90 | 44.0 | 34.0 | 64.0 | 7% | 566 | 8 | 42.6 | 2 | -[b] | -[b] | -[b] | -[b] | 109 | 4 | 34.2 |
| | 14 | Mar 29-31 | 90 | 47.3 | 34.0 | 61.0 | 7% | 559 | 8 | 44.6 | 29 | -[b] | -[b] | -[b] | -[b] | 33 | 5 | 35.1 |
| Weitchpec RST | 10 | Mar 01-04 | 120 | 38.3 | 4.0 | 45.0 | 0 | 0 | 0 | - | 0 | -[b] | -[b] | -[b] | -[b] | NA | NA | NA |
| | 11 | Mar 08-11 | 118 | 39.2 | 31.0 | 49.0 | 0 | 0 | 0 | - | 0 | -[b] | -[b] | -[b] | -[b] | NA | NA | NA |
| | 12 | Mar 15-18 | 18 | -[b] | -[b] | -[b] | -[b] | 0 | 0 | - | 0 | -[b] | -[b] | -[b] | -[b] | NA | NA | NA |
| | 13 | Mar 26-25 | 86 | 40.0 | 36.0 | 47.0 | 0 | 5 | 1 | 40.4 | 0 | -[b] | -[b] | -[b] | -[b] | NA | NA | NA |
| | 14 | Mar 29-Apr 01 | 55 | 39.9 | 33.0 | 61.0 | 2% | 26 | 1 | 38.3 | 0 | -[b] | -[b] | -[b] | -[b] | NA | NA | NA |
| Weitchpec Frames | 11 | Mar 08-11 | 87 | 39.0 | 30.0 | 43.0 | 0 | 0 | 0 | - | 0 | -[b] | -[b] | -[b] | -[b] | NA | NA | NA |
| | 12 | Mar 15-18 | 0 | -[b] | -[b] | -[b] | -[b] | 0 | 0 | - | 0 | -[b] | -[b] | -[b] | -[b] | NA | NA | NA |
| | 13 | Mar 22-25 | 90 | 40.3 | 36.0 | 51.0 | 0 | 0 | 0 | - | 0 | -[b] | -[b] | -[b] | -[b] | NA | NA | NA |
| | 14 | Mar 29-Apr 01 | 50 | 41.8 | 9.0 | 63.0 | 2% | 11 | 1 | 35.5 | 0 | -[b] | -[b] | -[b] | -[b] | NA | NA | NA |

[a] trap not set this week because trapping operations were limited due to reduced efforts in response to the Covid-19 pandemic

[b] sample size too low for a reportable calculation

Table 4. In-season summary of clinical signs of disease in young-of-the-year Chinook Salmon by site at the Bogus, I-5, and Kinsman sites on the mainstem Klamath River, 2022. *Note: Although only Chinook Salmon are reported in this table, we also monitor clinical signs of diseases in Coho Salmon and other species.*

## USFWS 2022 Mainstem Klamath River YOY Chinook Salmon Clinical Signs of Disease Summary

U.S. Fish & Wildlife Service, Arcata Fish & Wildlife Office, 1655 Heindon Road, Arcata, CA 95521, (707)822-7201

Preliminary Data - Subject to Revision

| | | | | | | Belly condition | | | Gills | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Color | | Condition | |
| | Calendar | Sampling | Weekly mean | Water temp. (°F) [b] | | Sample | Distended | | Sample | Pale or worse | | Eroded or fungal | |
| Site | week | dates | flow (cfs) [a] | Min | Max | size | # positive | % | size | # positive | % | # positive | % |
| Bogus | 10 | 3/2-3/4 | 980 | 43.8 | 44.2 | 40 | 0 | 0.0% | 0 | - | -[c] | - | -[c] |
| | 11 | 3/8-3/11 | 994 | 44.6 | 45.3 | 51 | 0 | 0.0% | 0 | - | -[c] | - | -[c] |
| | 12 | 3/14-3/18 | 993 | - | - | - | - | | - | - | | - | |
| | 13 | 3/22-3/25 | 995 | 48.7 | 51.0 | 70 | 0 | 0.0% | 1 | 0 | -[c] | 0 | -[c] |
| | 14 | 3/29-4/1 | 1,061 | 50.1 | 50.9 | 87 | 0 | 0.0% | 2 | 0 | -[c] | 0 | -[c] |
| | | | | | | | | -[c] | | | -[c] | | -[c] |
| I-5 | 10 | 3/1-3/4 | 980 | 41.9 | 43.8 | 98 | 0 | 0.0% | 0 | - | -[c] | - | -[c] |
| | 11 | 3/8-3/11 | 994 | 42.6 | 44.0 | 161 | 0 | 0.0% | 0 | - | -[c] | - | -[c] |
| | 12 | 3/15-3/18 | 993 | 43.8 | 44.9 | 114 | 0 | 0.0% | 2 | 0 | -[c] | 0 | -[c] |
| | 13 | 3/22-3/25 | 995 | 45.2 | 46.9 | 128 | 0 | 0.0% | 2 | 0 | -[c] | 0 | -[c] |
| | 14 | 3/29-4/1 | 1061 | 48.1 | 49.6 | 158 | 0 | 0.0% | 7 | 0 | -[c] | 0 | -[c] |
| Kinsman | 10 | 3/1-3/4 | 1367 | 45.0 | 47.2 | 85 | 0 | 0.0% | 3 | 0 | -[c] | 0 | -[c] |
| | 11 | 3/8-3/11 | 1345 | 43.3 | 46.5 | 85 | 0 | 0.0% | 12 | 0 | -[c] | 0 | -[c] |
| | 12 | 3/15-3/18 | 1410 | 44.7 | 47.8 | 67 | 0 | 0.0% | 13 | 0 | -[c] | 0 | -[c] |
| | 13 | 3/22-3/25 | 1444 | 47.1 | 52.8 | 90 | 0 | 0.0% | 41 | 0 | 0.0% | 0 | 0.0% |
| | 14 | 3/29-4/1 | 1507 | 49.1 | 51.4 | 90 | 0 | 0.0% | 66 | 0 | 0.0% | 0 | 0.0% |
| Weitchpec | 10 | 3/1-3/4 | 4167 | - | - | 120 | 0 | 0.0% | 0 | - | -[c] | - | -[c] |
| | 11 | 3/8-3/11 | 3644 | 46.2 | 46.6 | 195 | 0 | 0.0% | 0 | - | -[c] | - | -[c] |
| | 12 | 3/15-3/18 | 4542 | 48.2 | 48.4 | 7 | 0 | -[c] | 0 | - | -[c] | - | -[c] |
| | 13 | 3/22-3/24 | 4750 | 48.9 | 50.5 | 176 | 0 | 0.0% | 0 | - | -[c] | - | -[c] |
| | 14 | 3/29-4/1 | 4937 | 50.2 | 52.0 | 105 | 0 | 0.0% | 9 | 0 | -[c] | 0 | -[c] |

[a] discharge below IGD used for Bogus and I-5 sites; discharge at Kinsman Site is Klamath River discharge near Seiad Valley minus discharge in the Scott River near Fort Jones; discharge at Weitchpec Site is discharge near Orleans

[b] temperature recorded at time of trap check/seine

[c] sample size too low for a reportable calculation

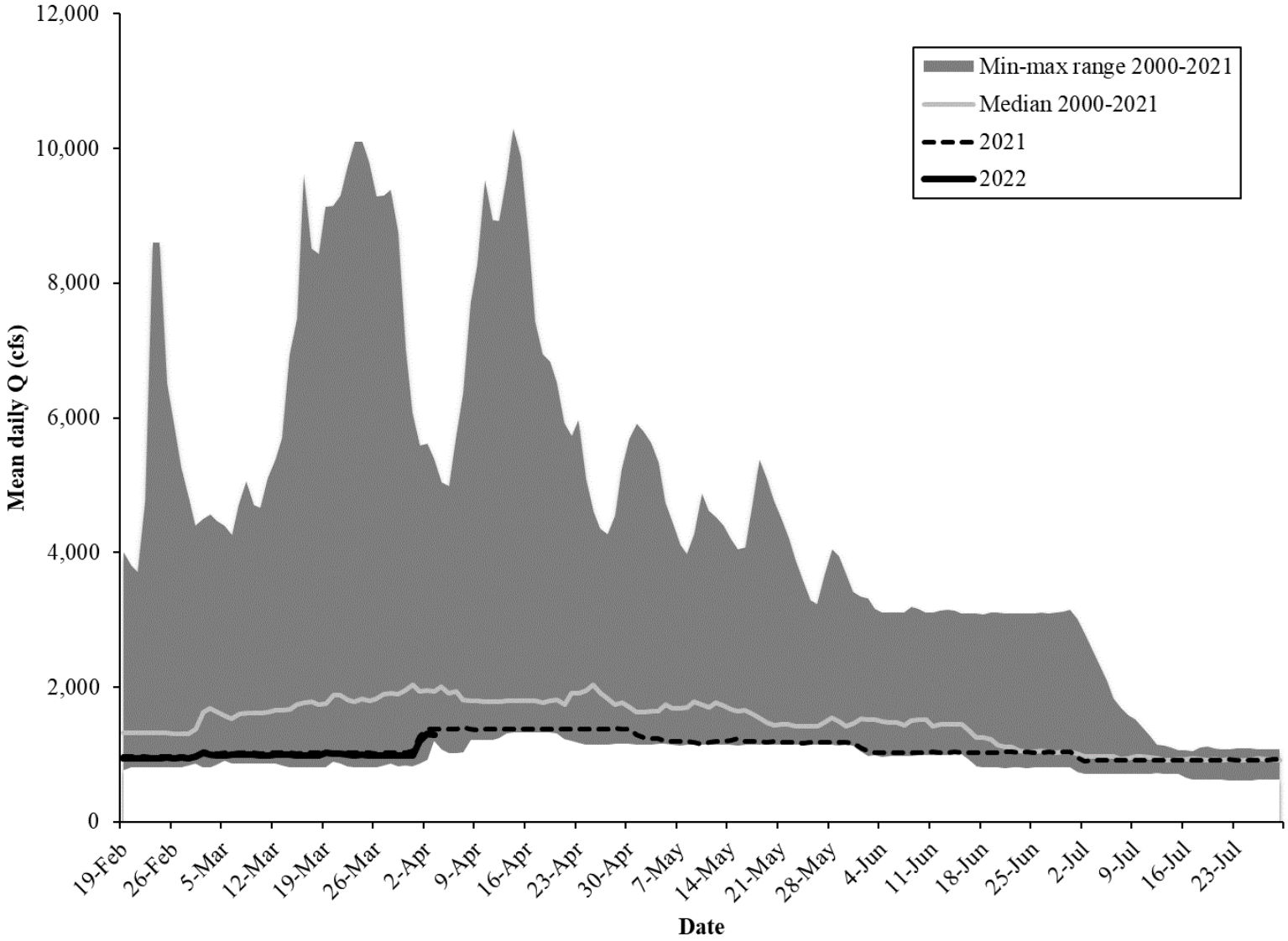


Figure 1. Daily mean discharge below Iron Gate Dam, Klamath River (USGS Gaging Station 11516530) from late February through July, 2000–2022.

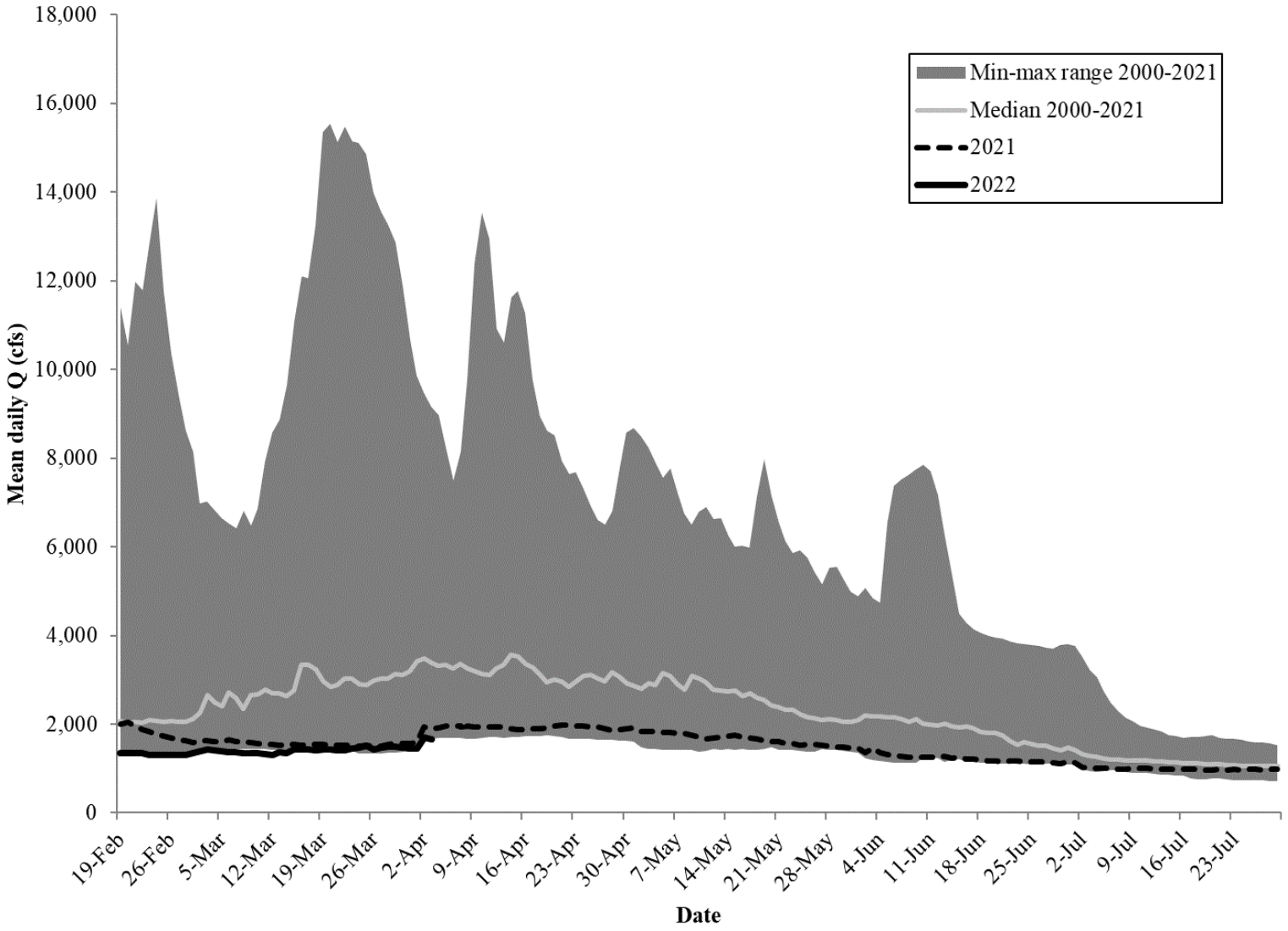


Figure 2. Klamath River daily mean discharge at the Kinsman Trap Site from late February through July 2000–2020. Flow measurements are not available at this location. Therefore, Klamath River flow near Seiad Valley, California (USGS Gaging Station 11520500) minus flow from the Scott River near Fort Jones, California (USGS 11519500) is used as a surrogate.

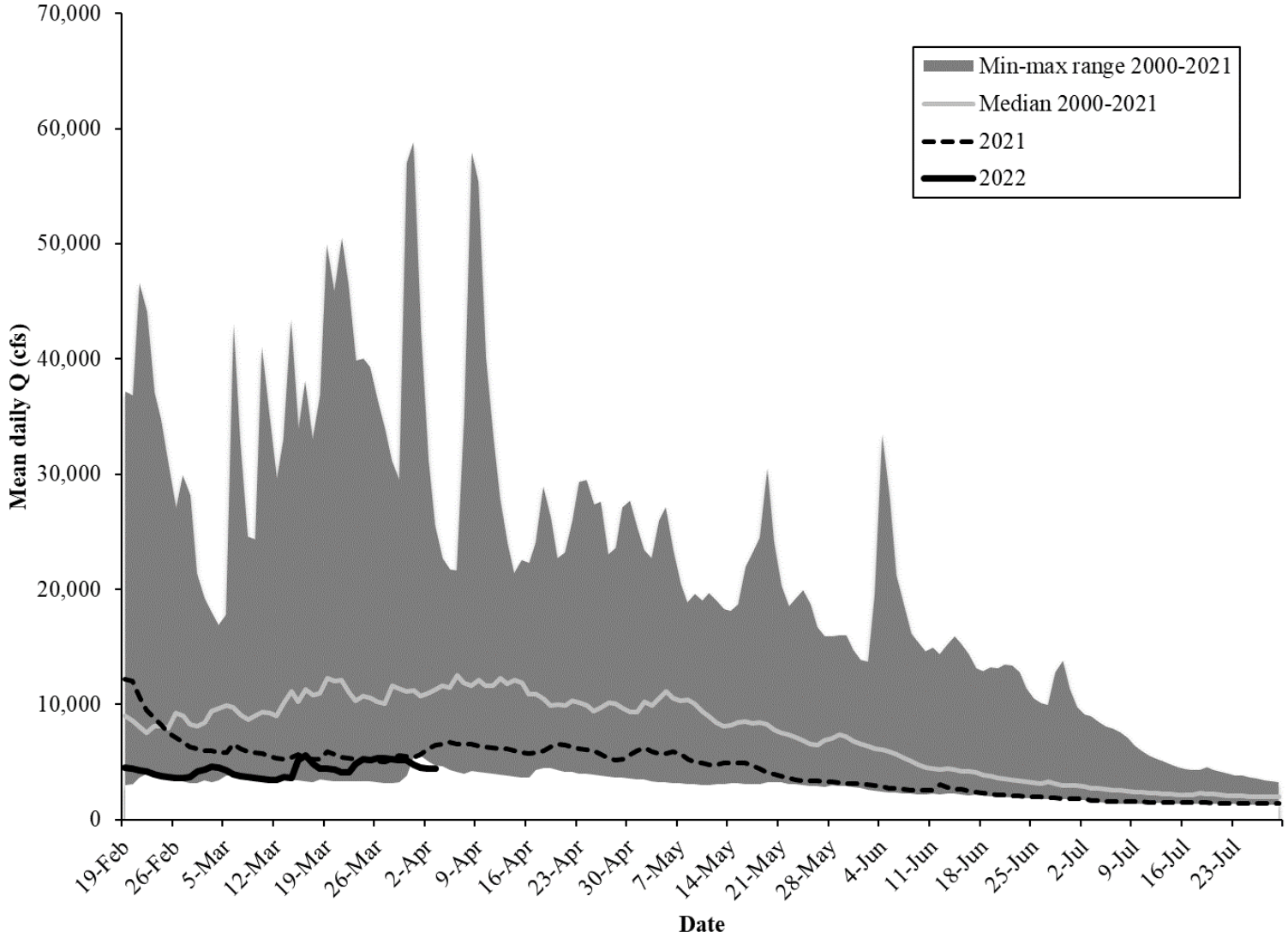


Figure 3. Daily mean discharge of Klamath River at Orleans, California (USGS Gaging Station 10523000) from late February through July 2000–2022.