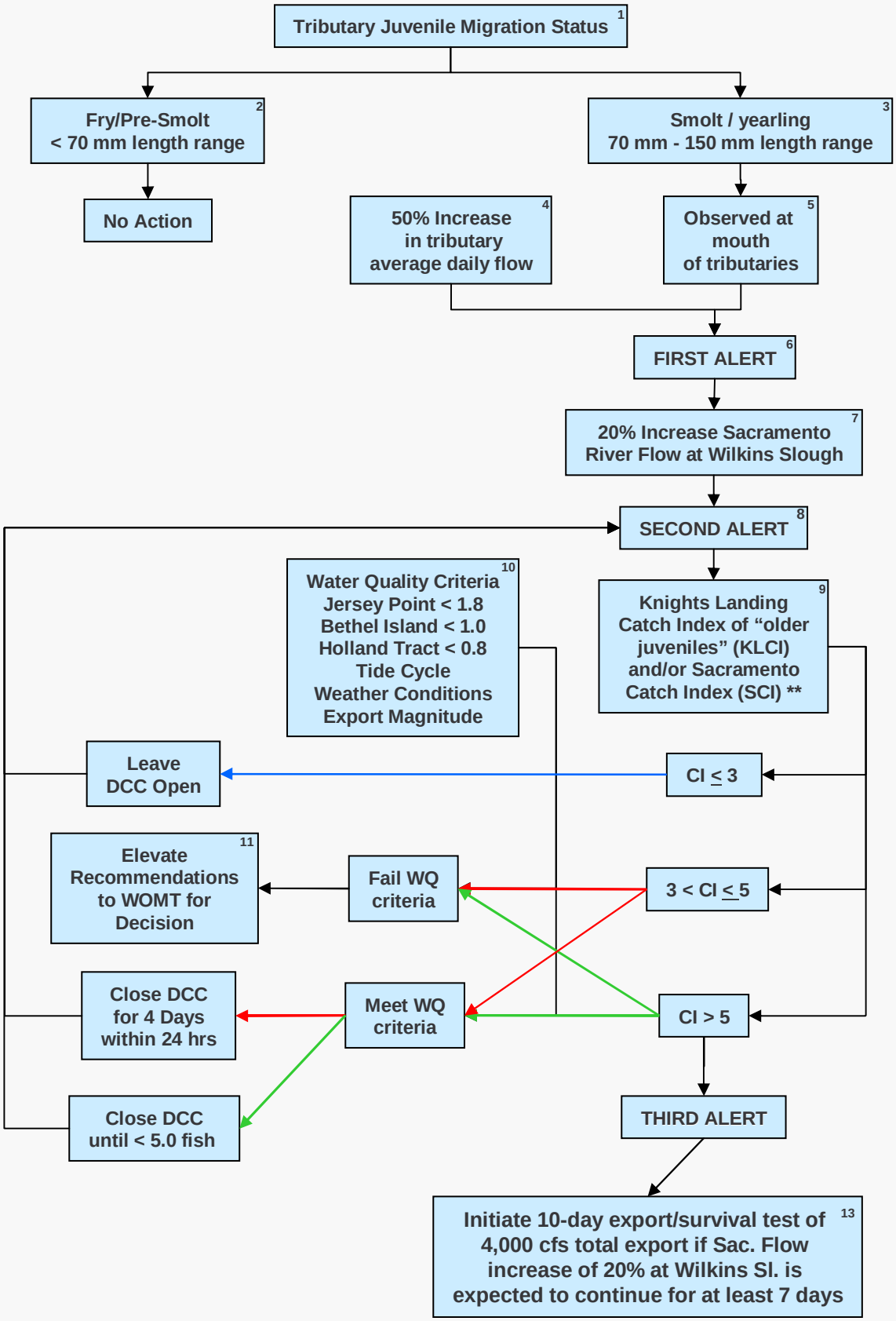
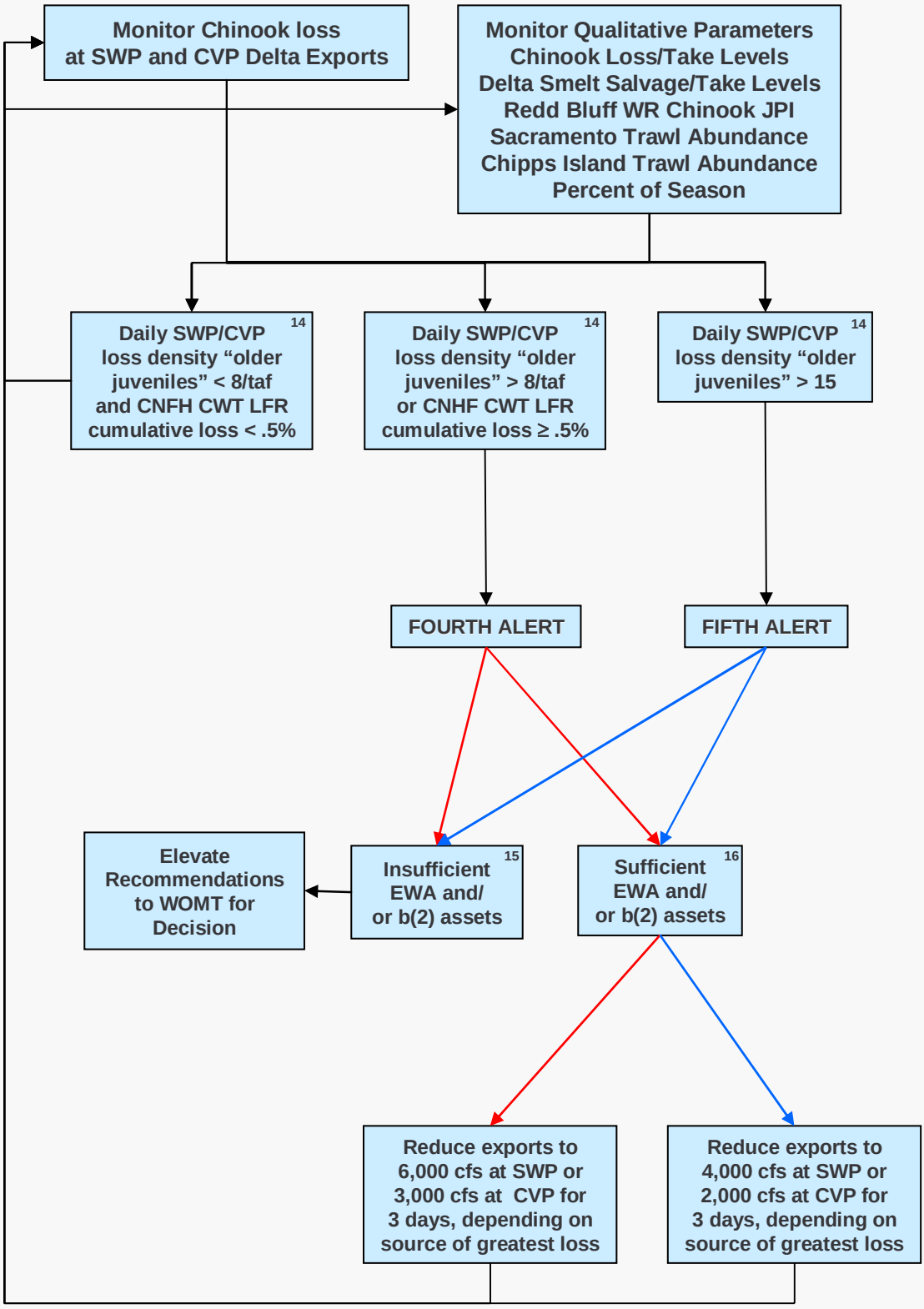
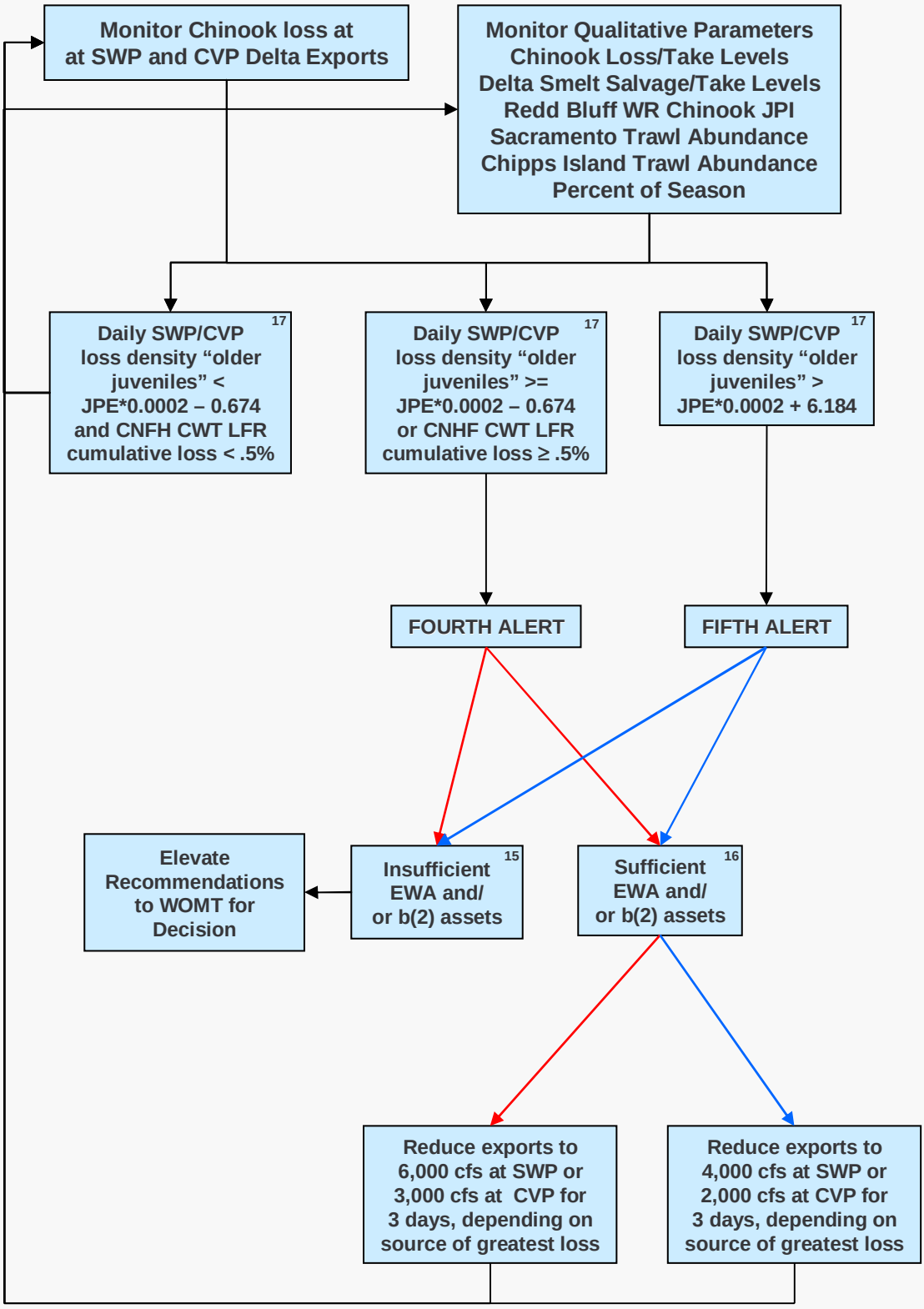


2004/2005 Chinook decision process 10/01 - 4/15 (Chart 1 of 3).



2004/2005 Chinook decision process 10/01 – 2/15 (Chart 2 of 3).



2004/2005 Chinook decision process 10/01 – 2/15 (Chart 3 of 3).

Annotation - 2003 Salmon Decision Process

1 - Mill, Deer and Butte creeks are the most important populations of spring Chinook today (DFG, ????). DFG operates rotary screw traps near the mouths of these three tributaries to monitor the emigration of spring run yearlings, and later, spring run and fall run fry.

2 - Juvenile Chinook in the spring Chinook tributaries less than 70 mm between October and April are fall run or spring run fry or pre-smolts (Figure 1) and not the focus of the Salmon Decision Process actions.

3 - Juvenile Chinook in the spring run tributaries greater than 70 mm between October and April are spring run yearlings (Figure 1) and the focus of the Salmon Decision Process actions.

4 - Yearling spring run are difficult to trap, due to their low numbers and strong swimming ability, therefore a significant increase in flow is a surrogate for trapping yearling spring run. The first significant flow in October is associated with the beginning of emigration (Figures 2 - 4).

5 - Yearling spring run at the mouths of the spring run tributaries are in the Sacramento River and are susceptible to Delta mortality factors associated with the Delta Cross Channel (DCC) and SWP/CVP export operations.

6 - The "First Alert" is the early warning criteria for closing the DCC..

7 - Wilkins Slough is the flow gage near Knights Landing, and about 35 miles upstream of the Delta. A significant flow increase at Wilkins Slough is associated with juvenile emigration past Knights Landing (Figure 5).

8 - The "Second Alert" is the warning criteria for closing the DCC. The First and Second alerts alerts are important warning criteria because information and data dissemination, and agency coordination for an action can take several days.

9 - Catches Indexes at Knights Landing and/or Sacramento are the criteria upon which the first action is based; closing the Delta Cross Channel Gates (DCC) (Figures 6 and 7). The raw catches are standardized to one day of effort, but do not include catch efficiency. Depending on the catch magnitude, there are several options for closing the DCC, ranging from not closing them, and continuing to monitor catch at KL and/or Sac, to closing them until the catch index decreases to 5 fish per day.

10 - Closing the DCC for fish protection can adversely impact Delta salinity from November through January. Without Sacramento River freshwater flowing through the DCC and into the central Delta to the bay, saline ocean water can intrude into the central and southern Delta. Water project operators developed an objective set of water salinity criteria that indicate when the Delta becomes susceptible to salinity intrusion if the DCC is closed and exports are maintained

(from Art).

11 - Fish and water salinity needs are frequently mutually exclusive, with respect to the DCC position, from November through January. Under the situation, if the Data Assessment Team (DAT) and Operations and Fish Forum (OFF) can't resolve the contradiction, they elevate it to the Water Operations Management Team (WOMT).

12 - The KL and/or Sac catch index of > 10 from November through February, and > 15 from March through April indicates the "Third Alert". A significant number of juvenile Chinook are in the Delta and potentially exposed to the south Delta exports in the following weeks.

13 - FWS conducts a juvenile Chinook Delta survival experiment each year in December and January. The goal is to try to determine the relationship between survival, exports and flow. The objective is 10 consecutive days of consistent environmental parameters, exports and inflow. The criteria to achieve the objective is a KL and/or Sac catch index > 10, and projected Sacramento River flow increased by 20%.

14 - Juvenile Chinook loss at the exports is the only export reduction criteria. The two loss criteria are based on non-clipped Chinook loss density (Figure 8), and Coleman late fall hatchery Chinook cumulative loss. Non-clipped Chinook loss density and hatchery Chinook cumulative loss are the "Fourth and Fifth alerts".

15 - Fish Management Agencies (MA) determine whether there is sufficient EWA assets to reduce exports. If there are insufficient EWA assets, the MAs elevate the issue to WOMT for resolution.

16 - If EWA assets are sufficient, the MAs reduce exports for a number of days and resume monitoring loss.

Figure 1

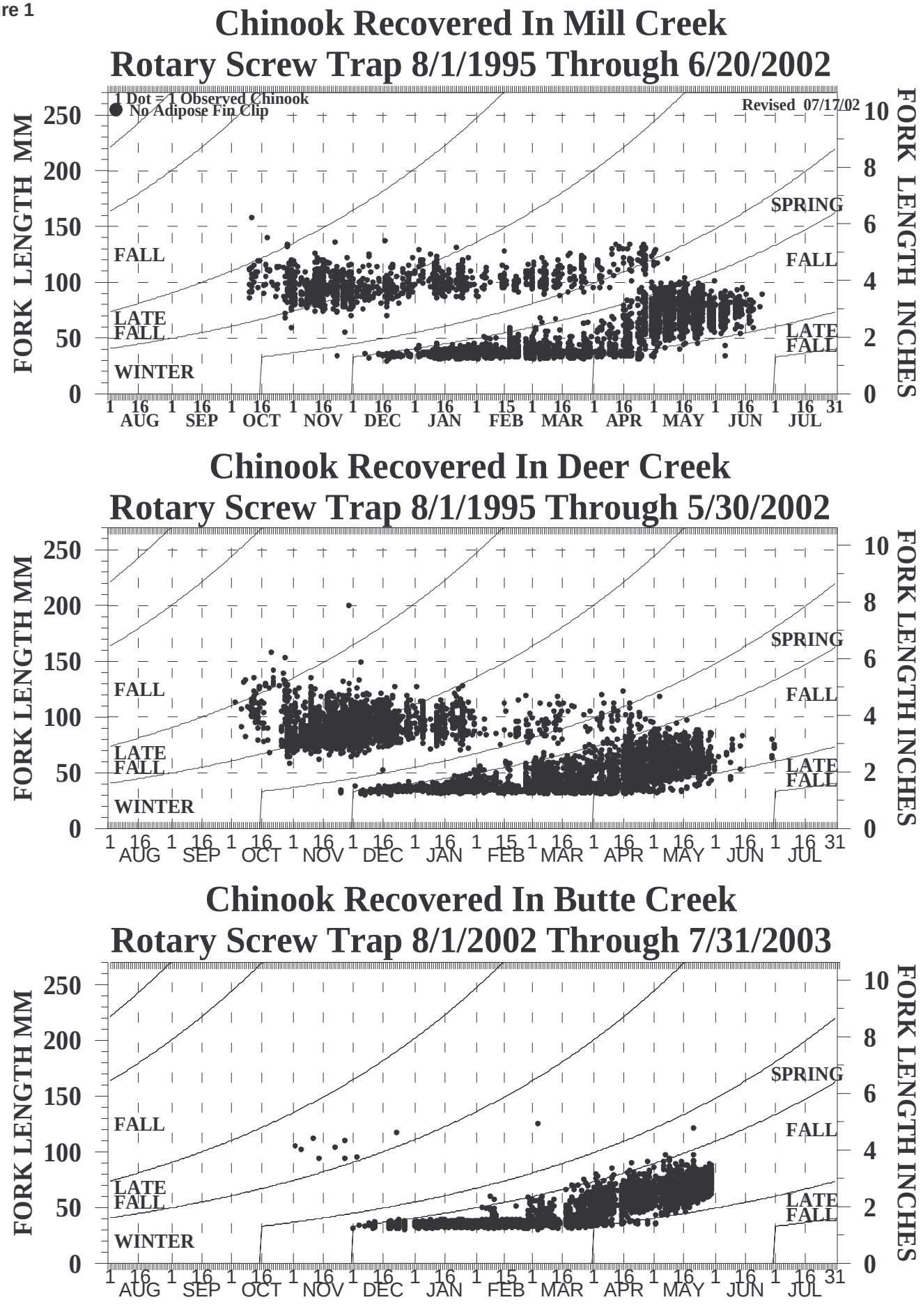

Chinook Recovered In Mill Creek
Rotary Screw Trap 8/1/1995 Through 6/20/2002
1 Dot = 1 Observed Chinook
No Adipose Fin Clip
Revised 07/17/02
FORK LENGTH MM
FORK LENGTH INCHES
FALL
SPRING
FALL
LATE FALL
LATE FALL
WINTER
AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL
Chinook Recovered In Deer Creek
Rotary Screw Trap 8/1/1995 Through 5/30/2002
FORK LENGTH MM
FORK LENGTH INCHES
FALL
SPRING
FALL
LATE FALL
LATE FALL
WINTER
AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL
Chinook Recovered In Butte Creek
Rotary Screw Trap 8/1/2002 Through 7/31/2003
FORK LENGTH MM
FORK LENGTH INCHES
FALL
SPRING
FALL
LATE FALL
LATE FALL
WINTER
AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL

Figure 2

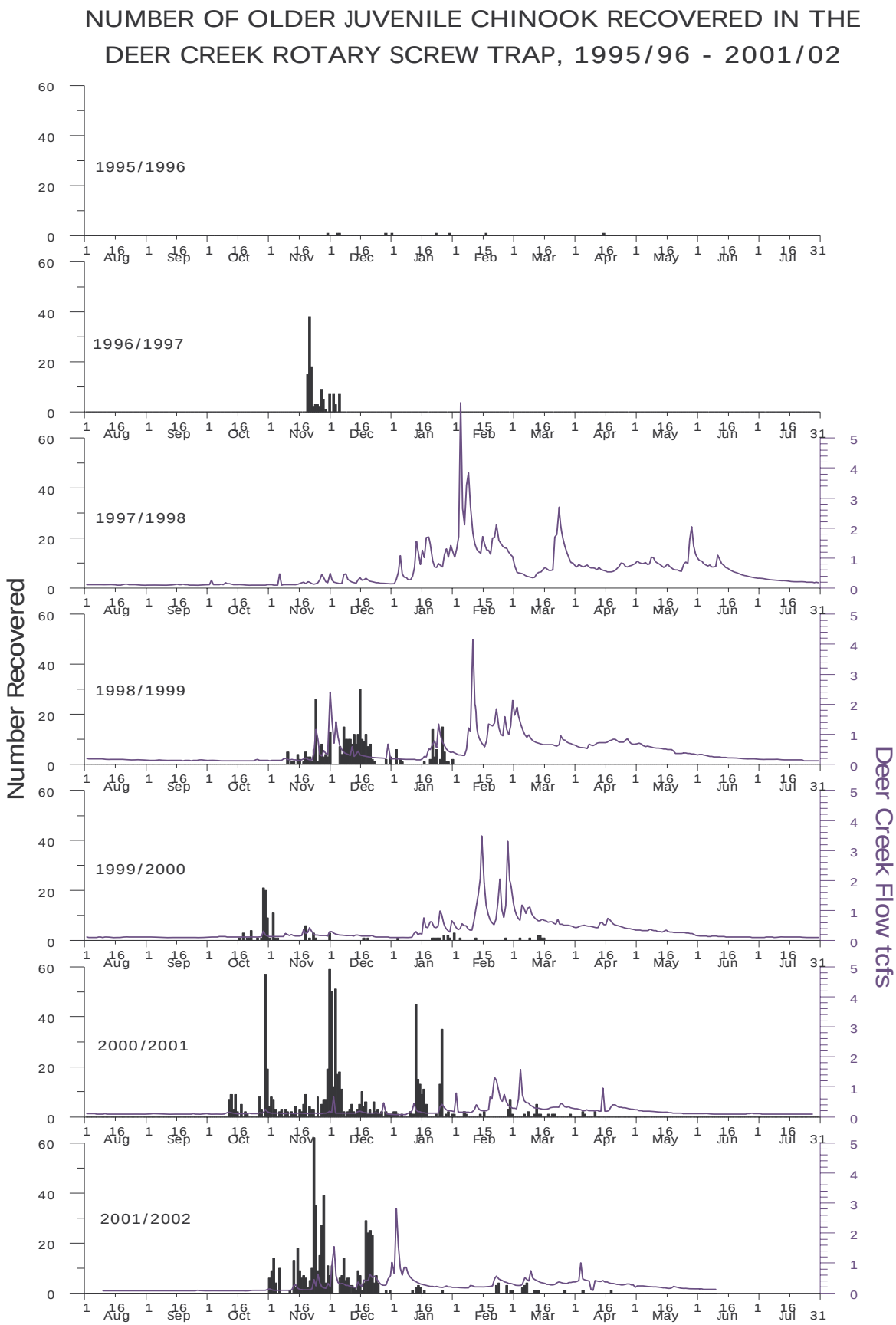

NUMBER OF OLDER JUVENILE CHINOOK RECOVERED IN THE DEER CREEK ROTARY SCREW TRAP, 1995/96 - 2001/02
Number Recovered
Deer Creek Flow tcfs
1995/1996
1996/1997
1997/1998
1998/1999
1999/2000
2000/2001
2001/2002
Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul

Figure 3

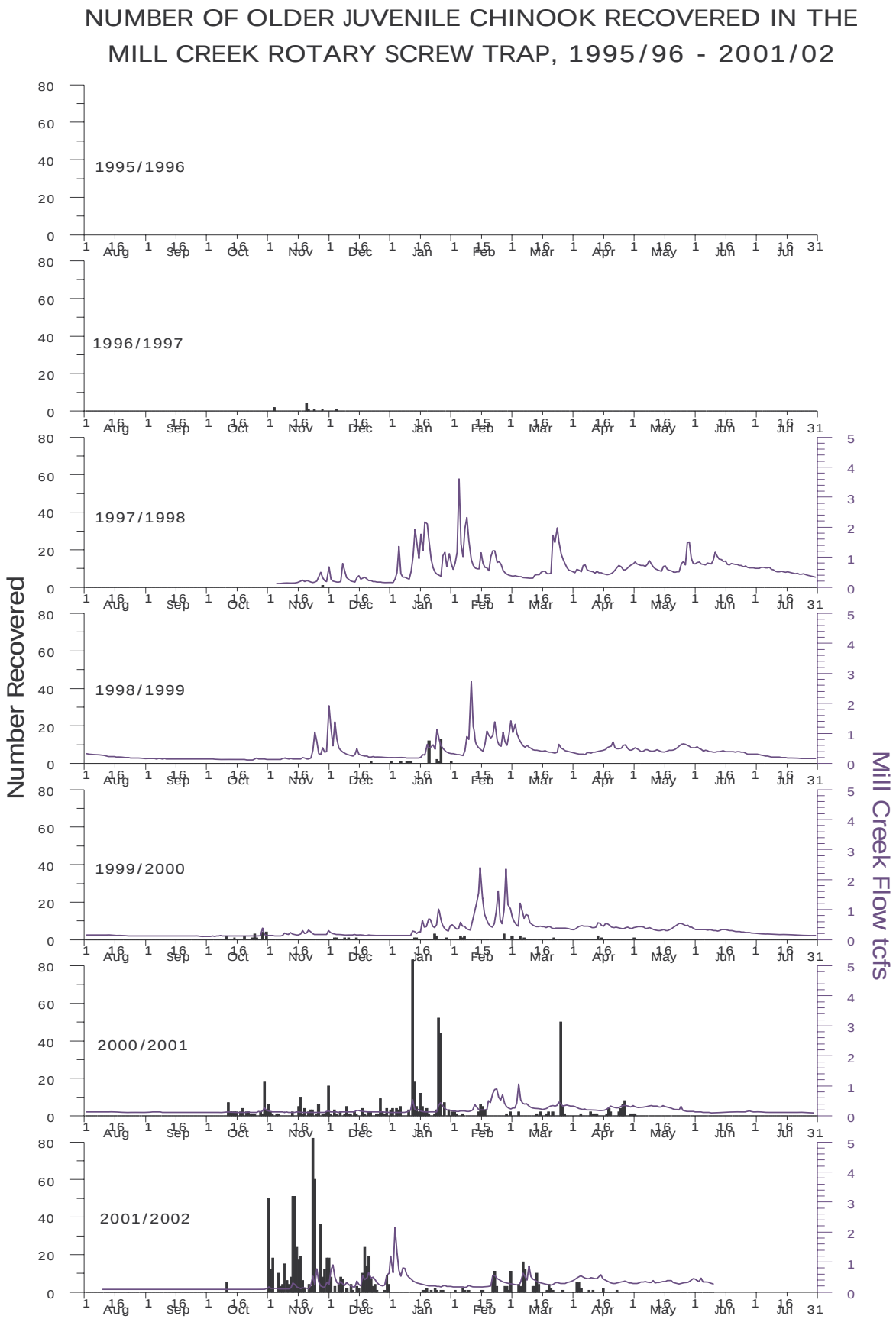

NUMBER OF OLDER JUVENILE CHINOOK RECOVERED IN THE MILL CREEK ROTARY SCREW TRAP, 1995/96 - 2001/02
Number Recovered
Mill Creek Flow tcfs
1995/1996
1996/1997
1997/1998
1998/1999
1999/2000
2000/2001
2001/2002
Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul

Figure 4

NUMBER OF OLDER JUVENILE CHINOOK RECOVERED IN THE BUTTE CREEK ROTARY SCREW TRAP AT OKIE DAM, 1995/96 - 2001/02

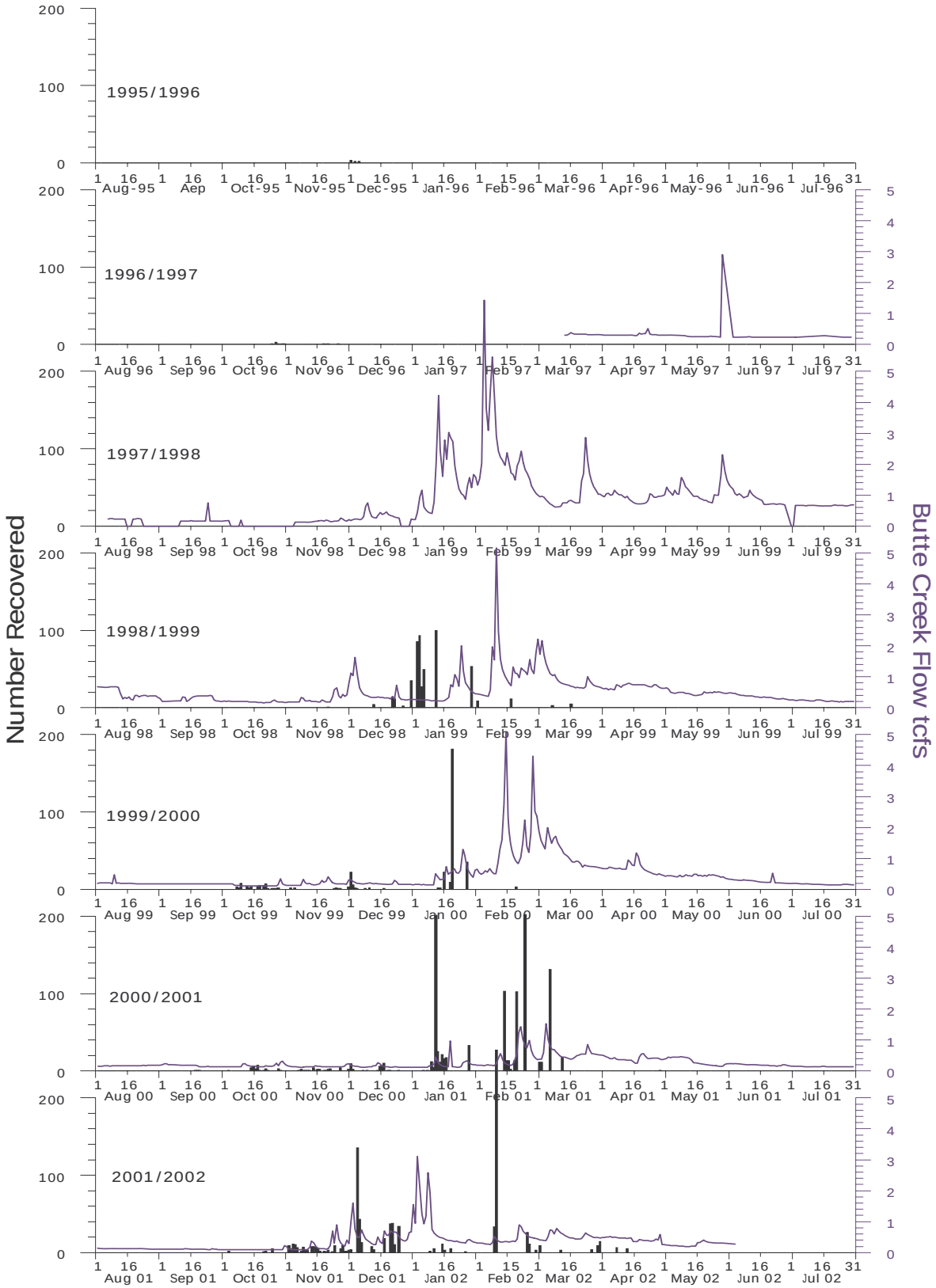


Figure 5

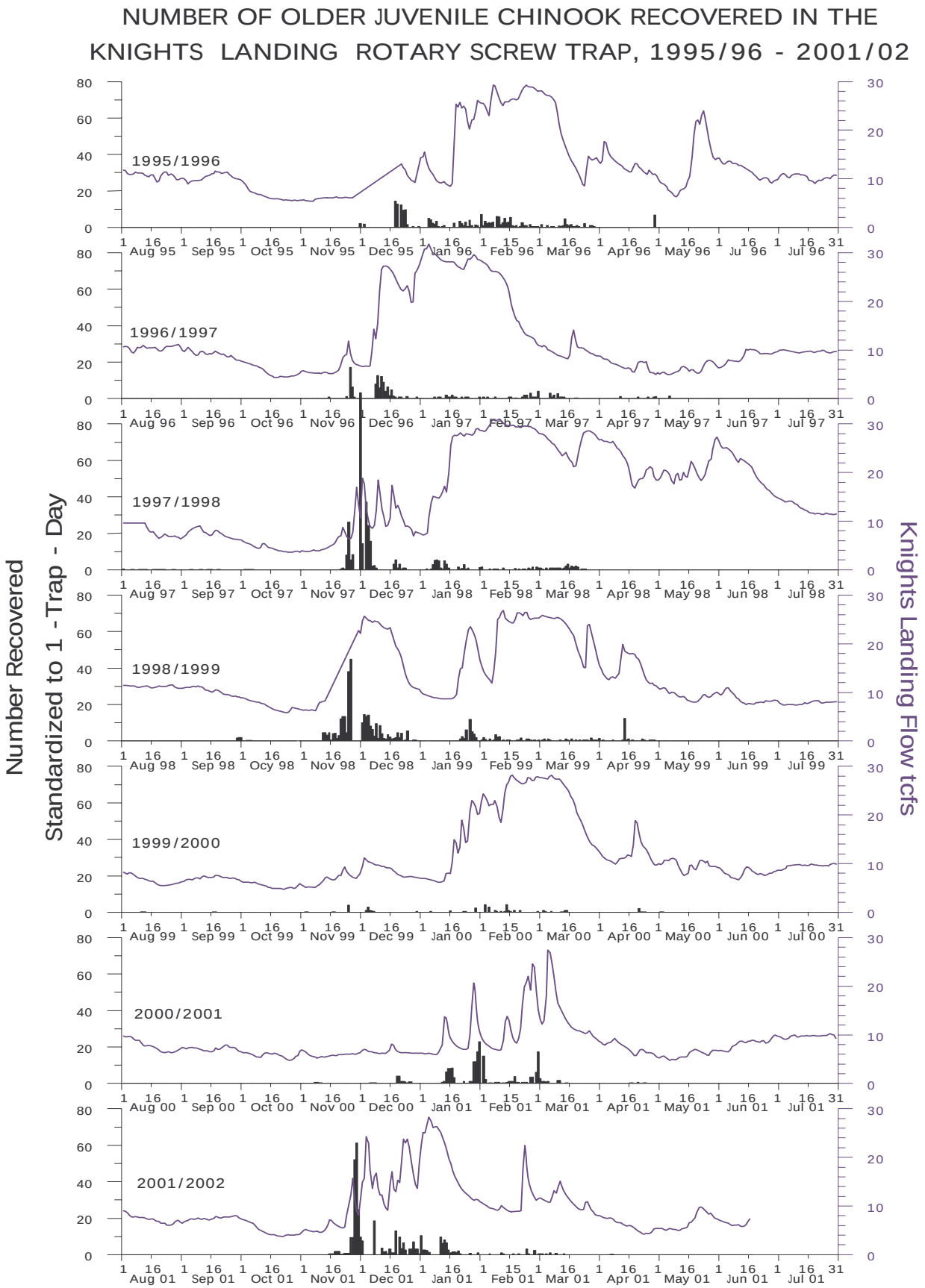

NUMBER OF OLDER JUVENILE CHINOOK RECOVERED IN THE KNIGHTS LANDING ROTARY SCREW TRAP, 1995/96 - 2001/02
Number Recovered Standardized to 1 -Trap - Day
Knights Landing Flow tcfs
1995/1996
1996/1997
1997/1998
1998/1999
1999/2000
2000/2001
2001/2002

Figure 6

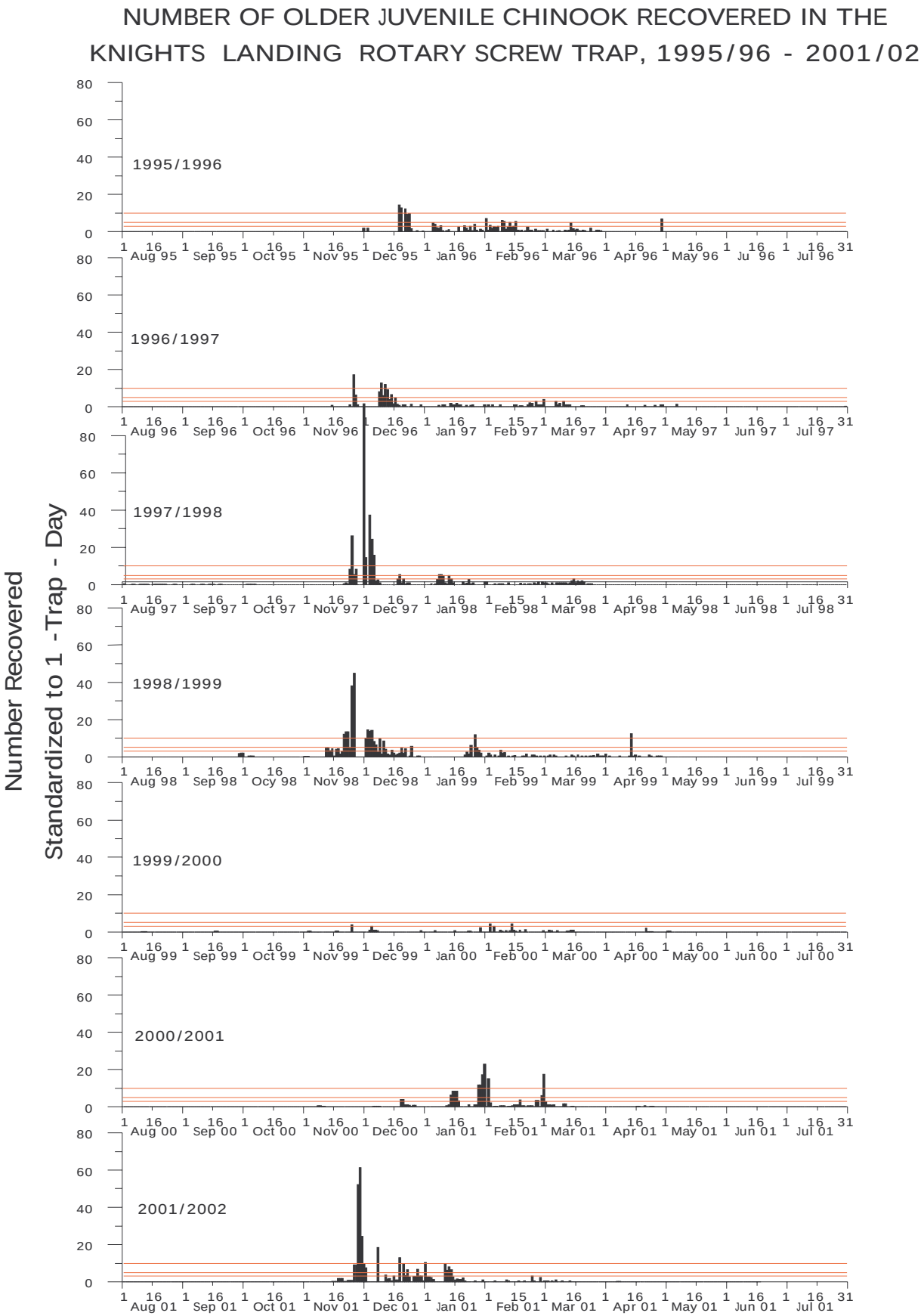

NUMBER OF OLDER JUVENILE CHINOOK RECOVERED IN THE KNIGHTS LANDING ROTARY SCREW TRAP, 1995/96 - 2001/02
Number Recovered
Standardized to 1 -Trap - Day
1995/1996
1996/1997
1997/1998
1998/1999
1999/2000
2000/2001
2001/2002

Figure 7

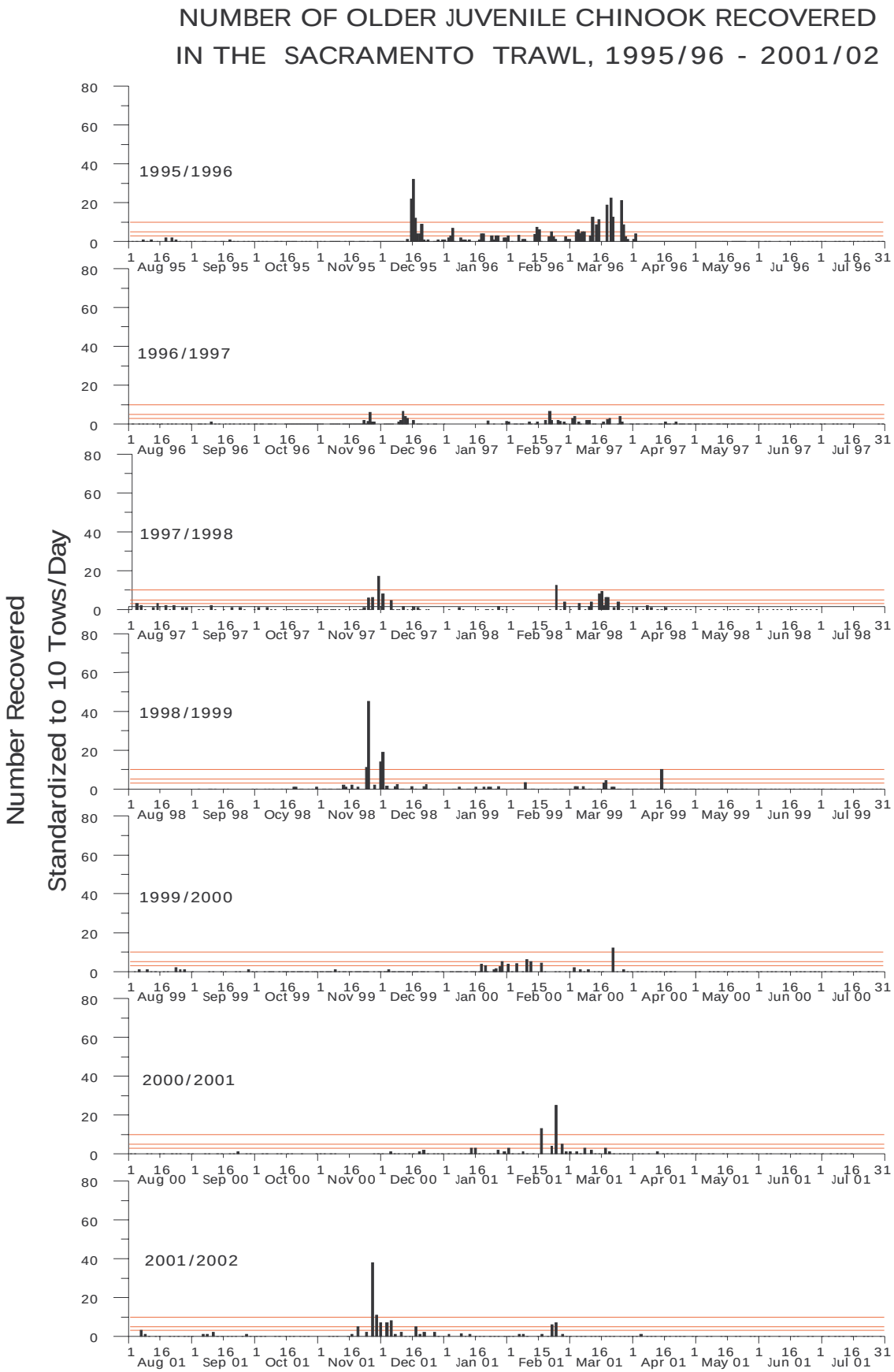
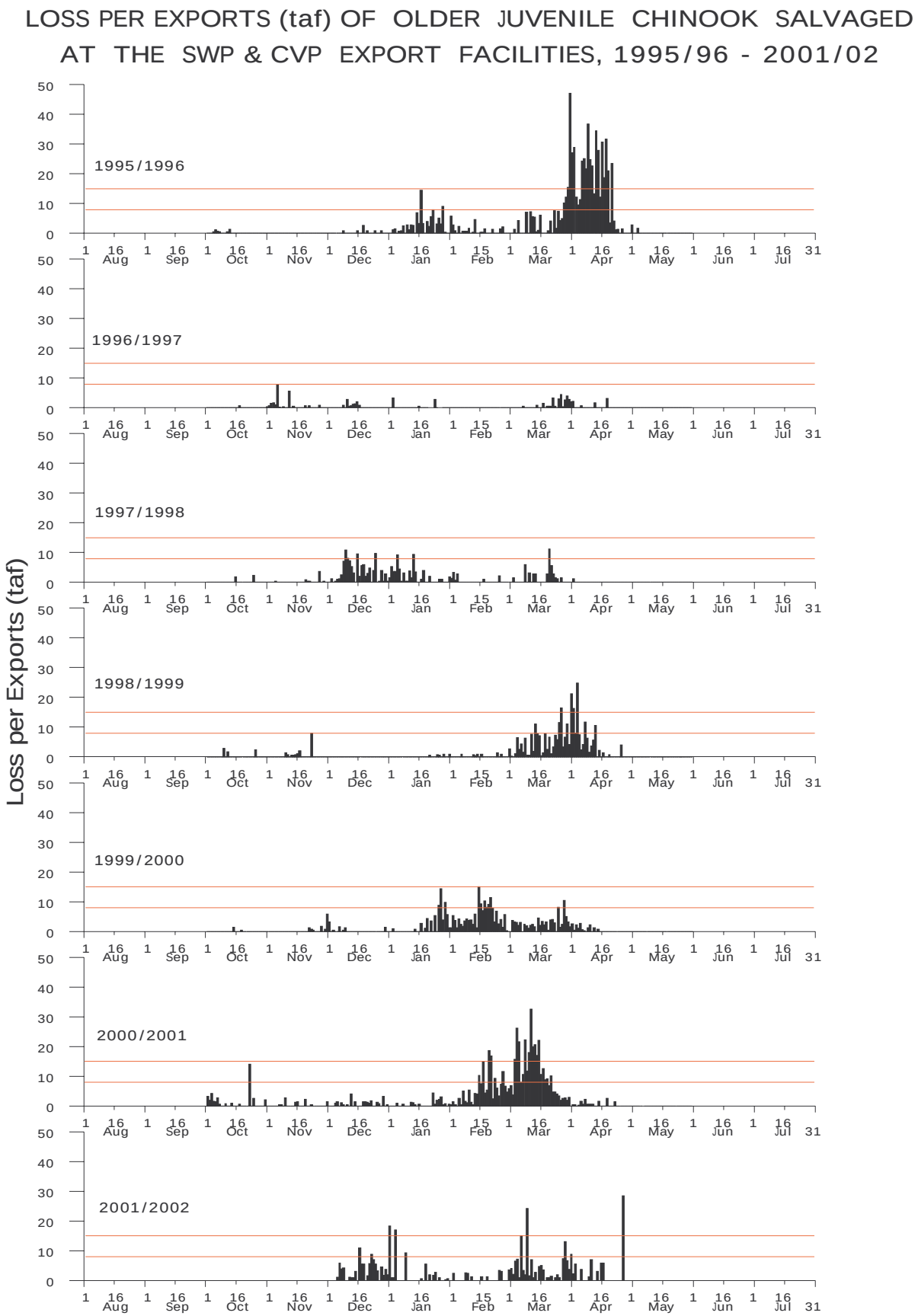

NUMBER OF OLDER JUVENILE CHINOOK RECOVERED
IN THE SACRAMENTO TRAWL, 1995/96 - 2001/02
Number Recovered
Standardized to 10 Tows/Day
1995/1996
1996/1997
1997/1998
1998/1999
1999/2000
2000/2001
2001/2002
0
20
40
60
80
1 16 1 16 1 16 1 16 1 16 1 16 1 16 1 15 1 16 1 16 1 16 1 16 1 16 31
Aug 95 Sep 95 Oct 95 Nov 95 Dec 95 Jan 96 Feb 96 Mar 96 Apr 96 May 96 Ju 96 Jul 96
Aug 96 Sep 96 Oct 96 Nov 96 Dec 96 Jan 97 Feb 97 Mar 97 Apr 97 May 97 Jun 97 Jul 97
Aug 97 Sep 97 Oct 97 Nov 97 Dec 97 Jan 98 Feb 98 Mar 98 Apr 98 May 98 Jun 98 Jul 98
Aug 98 Sep 98 Ocy 98 Nov 98 Dec 98 Jan 99 Feb 99 Mar 99 Apr 99 May 99 Jun 99 Jul 99
Aug 99 Sep 99 Oct 99 Nov 99 Dec 99 Jan 00 Feb 00 Mar 00 Apr 00 May 00 Jun 00 Jul 00
Aug 00 Sep 00 Oct 00 Nov 00 Dec 00 Jan 01 Feb 01 Mar 01 Apr 01 May 01 Jun 01 Jul 01
Aug 01 Sep 01 Oct 01 Nov 01 Dec 01 Jan 01 Feb 01 Mar 01 Apr 01 May 01 Jun 01 Jul 01

Figure 8


LOSS PER EXPORTS (taf) OF OLDER JUVENILE CHINOOK SALVAGED AT THE SWP & CVP EXPORT FACILITIES, 1995/96 - 2001/02
Loss per Exports (taf)
1995/1996
1996/1997
1997/1998
1998/1999
1999/2000
2000/2001
2001/2002
0
10
20
30
40
50
1 16 1 16 1 16 1 16 1 16 1 16 1 16 1 15 1 16 1 16 1 16 1 16 1 16 31
Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul