Notes and Caveats 10-21-2004

A. Notes:

1. Mills and Fisher* numbers = adult escapement for 1967 - 1991 baseline period were used to calculate AFRP doubling goals (Mills and Fisher 1994). Adult escapement numbers were based on three general methods:

- a. Direct counts RBDD and at hatcheries).
- b. Snorkel surveys.
- c. Mark-recapture methodology.
- d. Indexing of spawning areas.
- e. Aerial redd counting.
- 2. Grand Tab** numbers = adult escapement for 1952 1966 and 1992 2003 periods. Grand Tab numbers are updated at least yearly and are based on one of the following methods:
 - a. Creel survey's.
 - b. Carcus survey's.
 - c. Redd survey's.
 - d. Direct counts (RBDD and at hatcheries).
- 3. Doubling goal numbers are calculated by doubling the arithmetic mean of the baseline period (1967 1991) for each tributary.
- 4. Doubling goals are rounded off from doubling the arithmetic mean of the 1967-1991 Mills and Fisher numbers.
- B. Caveats that apply to all figures except as noted.
 - 1. Data from either Mills and Fisher (baseline period only) or Grand Tab is expanded using the methods described in the Final Restoration Plan for the Anadromous Fish Restoration Program, January 9, 2001, Appendix A11-A15.
 - 2. Numbers for the baseline 1967-1991 are from Mills and Fisher (1994), and have not been updated using Grand Tab.
 - 3. Grand Tab numbers are updated at least yearly (salmon only).
 - 4. Sampling methods may have differed between tributaries.
 - 5. Sampling methods may have differed from year to year on each tributary.
 - 6. Mills and Fisher (1994) listed methods of sampling as (salmon only):
 - a. Direct counts RBDD and at hatcheries).
 - b. Snorkel surveys.
 - c. Mark-recapture methodology.
 - d. Indexing of spawning areas.
 - e. Aerial redd counting.
 - 7. Natural production estimates are calculated in part using (salmon only):
 - a. A hatchery proportion that is based on the opinion of fishery biologists.
 - b. Instream harvest proportions are based on the opinion of fishery biologists.
 - c. Natural (in-river) and hatchery escapement numbers.
 - d. Natural escapement may include unmarked hatchery fish that are not accounted for.
 - e. Hatchery escapement numbers may be low since the hatchery ladder gate may be closed before all hatchery fish have returned.
 - 8. Doubling goal numbers were rounded off in the Final Restoration Plan, and may be higher or lower than double the 1967 1991 average (arithmetic mean).
- C. The following notes and/or caveats apply to each figure.

Figure 1.

1. Combines the Sacramento and San Joaquin basins.

Figure 2.

- 1. Combines the Sacramento and San Joaquin basins.
- 2. 2001 and 2002 adult escapement exceeds natural production estimates, possibly due to the high Battle Creek fall-run numbers.

Figure 3.

1. Combines the Sacramento and San Joaquin basins.

Figure 4.

1. Combines the Sacramento and San Joaquin basins.

Figure 5.

1. Combines the Sacramento and San Joaquin basins.

Figure 6.

- 1. Unknown reason for the low numbers 1998 and 2001.
- 2. Instream harvest % = 0.1, 1967 2001.
- 3. Hatchery % = 0.4, 1967 2001.
- 4. Hatchery escapement = 0, 1967 2001.

Figure 7.

- 1. No Grand Tab number for 1997.
- 2. Hatchery escapement = 0, 1967 2001.
- 3. Instream harvest = 0.2, 1967 2001.
- 4. Hatchery % = 0.082, 1967 2001.
- 5. Doubling goal in Final Restoration Plan should be 69,022 to match double the arithmetic mean of the baseline period.

Figure 8.

- 1. Doubling period numbers, 1992 2001, are very low.
- 2. Instream harvest = 0.2, 1967 2001.
- 3. Hatchery % = 0, 1967 2001.

Figure 9.

- 1. Instream harvest = 0.2, 1967 2001.
- 2. Hatchery % = 0, 1967 2001, although there are hatchery production winter run.

Figure 10.

- 1. No data for 1970 75, 79, 80, 83.
- 2. Instream harvest = 0.1, 1967 2001.
- 3. Hatchery % = 0.2, but there is no hatchery on the tributary, 1967 2001.

Figure 11.

- 1. No data for 1970 75, 79, 80, 93 01.
- 2. Instream harvest = 0.1, 1967 2001.
- 3. Hatchery % = 0.2, 1967 2001.

Figure 12.

- 1. No data, 1970 75, 77 83, 92 01.
- 2. Instream harvest = 0.1, 1967 2001.
- 3. Hatchery % = 0.2, 1967 2001.
- 4. No data for the 1992 2001 period.

Figure 13.

- 1. Adult escapement is greater than natural production estimates for most years.
- 2. Instream harvest = 0.1, 1967 2001.
- 3. Hatchery % = 0.9, 1967 2001.
- 4. Natural escapement and production exceed the doubling goal without restoration.
- 5. Hatchery on the tributary could cause overestimation of natural production.

Figure 14.

- 1. Mills and Fisher do not list natural escapement.
- 2. Natural production numbers for the baseline period were calculated using hatchery returns only.
- 3. Instream harvest = 0.2, 1967 2001.
- 4. Hatchery % = 0.9, 1967 2001.
- 5. No data for 1952 69, 01, 02 in Mills and Fisher and Grand Tab.
- 6. Natural escapement exceeds the doubling goal without restoration.
- 7. Hatchery on the tributary can result in overestimation of natural production.

Figure 15.

- 1. No data for 1967 68, 70 81, 90 01.
- 2. Instream harvest = 0.1, 1967 2001.
- 3. Harvest % = 0.2, 1967 2001.

Figure 16.

- 1. No data for 1952, 59, 61,78 80, 90-01.
- 2. Instream harvest = 0.1, 1967 2001.
- 3. Hatchery % = 0.2, 1967 2001.
- 4. No data for the 1992 2001 period

Figure 17.

- 1. No data for 1955, 61,90 92, 95 96, 99 01.
- 2. Instream harvest = 0.1, 1967 2001.
- 3. Hatchery % = 0.2, 1967 2001.
- 4. There is only data for only 4 of the 10 year doubling period for fall-run.

Figure 18.

- 1. No data for 1952 62, 67 69, 79, 84.
- 2. Instream harvest = 0.1, 1967 2001.
- 3. Hatchery % = 0, 1967 2001.

Figure 19.

- 1. No data for 1990, 95 96, 99 01.
- 2. Instream harvest = 0.1, 1967 2001.
- 3. Hatchery % = 0.2, 1967 2001.
- 4. Data available for only 6 of the 10 year doubling period for fall-run Chinook salmon.
- 5. Complete data for spring run during the 10 year doubling period.

Figure 20.

- 1. Missing years of data differs from Figure 19.
- 2. No data for 1952 59, 65 69, 76, 83.
- 3. Instream harvest = 0.1, 1967 2001.
- 4. Hatchery % = 0, 1967 2001.

Figure 21.

- 1. No data for 1952, 61 63, 78 79, 90 03.
- 2. No Grand Tab data after 1976.
- 3. Instream harvest = 0.1, 1967 2001.
- 4. Hatchery % = 0.2, 1967 2001.

Figure 22.

- 1. No restoration goal.
- 2. No data for 1960 68, 70, 78 79, 85 03.
- 3. Instream harvest = 0.1, 1967 2001.
- 4. Hatchery % = 0.2, 1967 2001.

Figure 23.

- 1. No data for 1952 61, 67 70, 73, 77, 79 82, 84 87, 90 94, 01.
- 2. Instream harvest = 0.1, 1967 2001.
- 3. Hatchery % = 0.2, 1967 2001.

Figure 24.

- 1. Instream harvest = 0.1, 1967 2001.
- 2. Hatchery % = 0, 1967 2001.
- 3. The 1992 01 period exceeds the doubling goal except for 1992 95, 97.

Figure 25.

- 1. Data available only for 1957, 83 85.
- 2. Instream harvest = 0.1, 1967 2001.
- 3. Hatchery % = 0.2, 1967 2001.
- 4. Doubling goal in the Final Restoration Plan should be 480 to match the arithmetic mean of the baseline period.

Figure 26.

- 1. No data for 1952 61, 70, 72, 75 76, 78 83, 86 92, 92.
- 2. No stated AFRP Restoration goal.

Figure 27.

- 1. No Grand Tab data for 1990, 98.
- 2. Instream harvest = 0.2, 1967 2001.
- 3. Hatchery % = 0.4, except for 1992 94 = 0.

Figure 28.

- 1. Exceeds the doubling goal for 1982, 96, 97.
- 2. No Grand Tab number for 1990.
- 3. Instream harvest = 0.1, 1967 2001.
- 4. Hatchery % = 0, 1967 2001.

Figure 29.

- 1. Data available for 1984 only.
- 2. Exceeds the doubling goal for 1984.
- 3. Instream harvest = 0.1, 1967 2001.
- 4. Hatchery % = 0, 1967 2001.
- 5. Doubling goal is not double the arithmetic mean of the baseline period.

Figure 30.

- 1. Exceed the doubling goal 1995, 00, 01, 03.
- 2. Instream harvest = 0.45, 1967 2001.
- 3. Hatchery % = 0.4, 1967 2001.
- 4. Hatchery on the tributary.

Figure 31.

- 1. Instream harvest = 0.1, 1967 2001.
- 2. Hatchery % 0.4, 1967 2001.
- 3. Hatchery on the tributary could result in overestimation of natural production.
- 4. Exceeds the doubling goal 95 97, 02, 03.
- 5. Periods with lower production numbers indicate drier years.

Figure 32.

- 1. No data for 1952, 59, 61, 76, 77, 82, 86, 89 97, 99 03.
- 2. Instream harvest = 0.1, 1967 2001.
- 3. Hatchery % = 0, 1967 2001.
- 4. Exceeds the doubling goal 1969, 72.
- 5. No data for the 1992 2001 period.

Figure 33.

- 1. No Grand Tab data available.
- 2. Instream harvest = 0.2, 1967 2001.
- 3. Hatchery % = 0, 1967 2001.
- 4. There is a question as to whether these fish are late-fall run or winter run.
- 5. No data for the 1992 2001 period.

Figure 34.

- 1. No data available for 1982.
- 2. Instream harvest = 0.05, 1967 2001.
- 3. Hatchery % = 0, 1967 2001.
- 4. Periods with lower production numbers indicate drier years.

Figure 35.

- 1. Instream harvest = 0.05, 1967 2001.
- 2. Hatchery % = 0, 1967 2001.
- 3. Exceeds the doubling goal for 1969 71, 85, 87.

Figure 36.

- 1. Instream harvest = 0.05, 1967 2001.
- 2. Hatchery % = 0 (1967 72, 92 97) and = 0.1 (1973 91, 98 01)
- 3. Hatchery on the tributary could result in overestimation of natural production.
- 4. Periods with lower production numbers indicate drier years.

Figure 37.

- 1. No escapement estimates in the San Joaquin mainstem.
- 2. Escapement in the San Joaquin River is calculated using the sum of the Stanislaus, Tuolumne and Merced rivers.
- * = Mills and Fisher. 1994. Central Valley Anadromous Sport Fish Annual Run-size, Harvest, and Population Estimates, 1967 through 1991. June 1993, revised August 1994.
- ** = Grand Tab. California Department of Fish and Game, Native Anadromous Fish and Watershed Branch. February 5, 2004.