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 for1970 - 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, 02.
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.