

1995 Water Quality Control Plan Periodic Review

Topic 8: River Flows: San Joaquin River at Airport Way Bridge, Vernalis

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National Marine Fisheries Service

Protected Resources

Sacramento Area Office

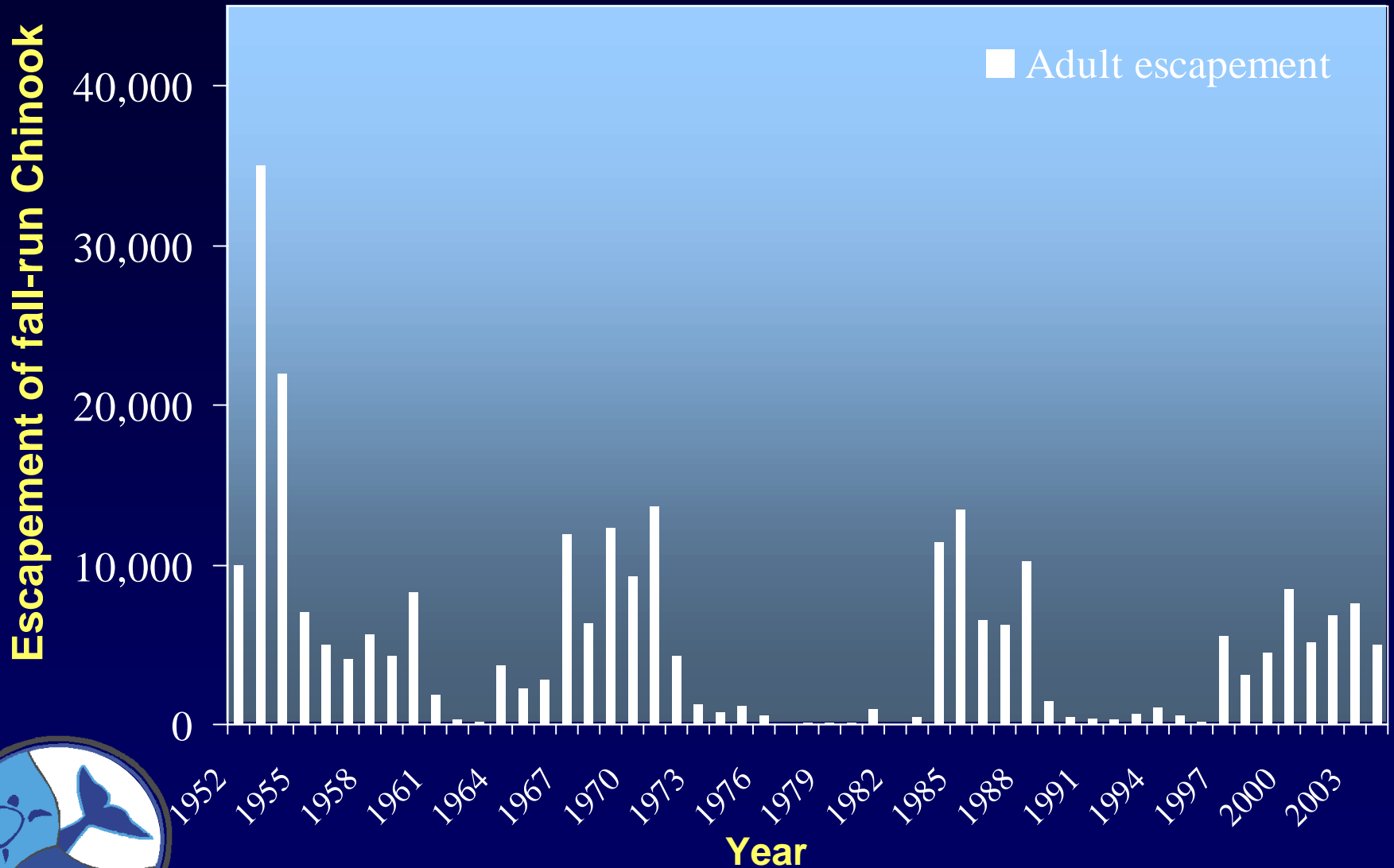


Presentation Outline

- **Salmonid population trends in the San Joaquin Basin**
- **Temporal distribution**
- **Salmonid flow needs**
- **National Marine Fisheries Service recommendations**



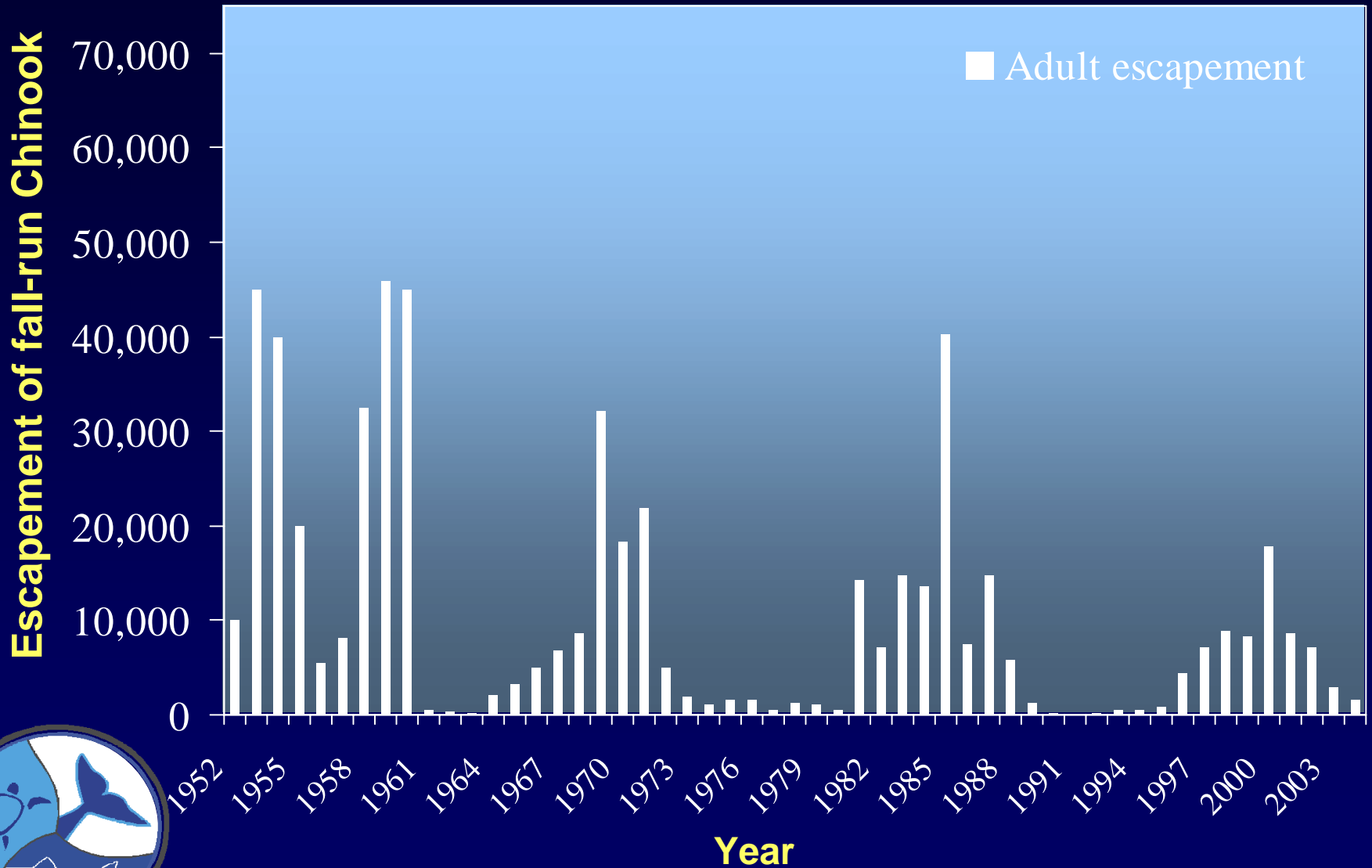
Estimated Yearly Escapement of Stanislaus River Adult Fall-run Chinook Salmon*



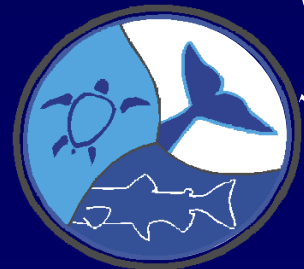
* from CDFG Grand Tab (Feb 3, 2005). Note DOI Exhibit 17.



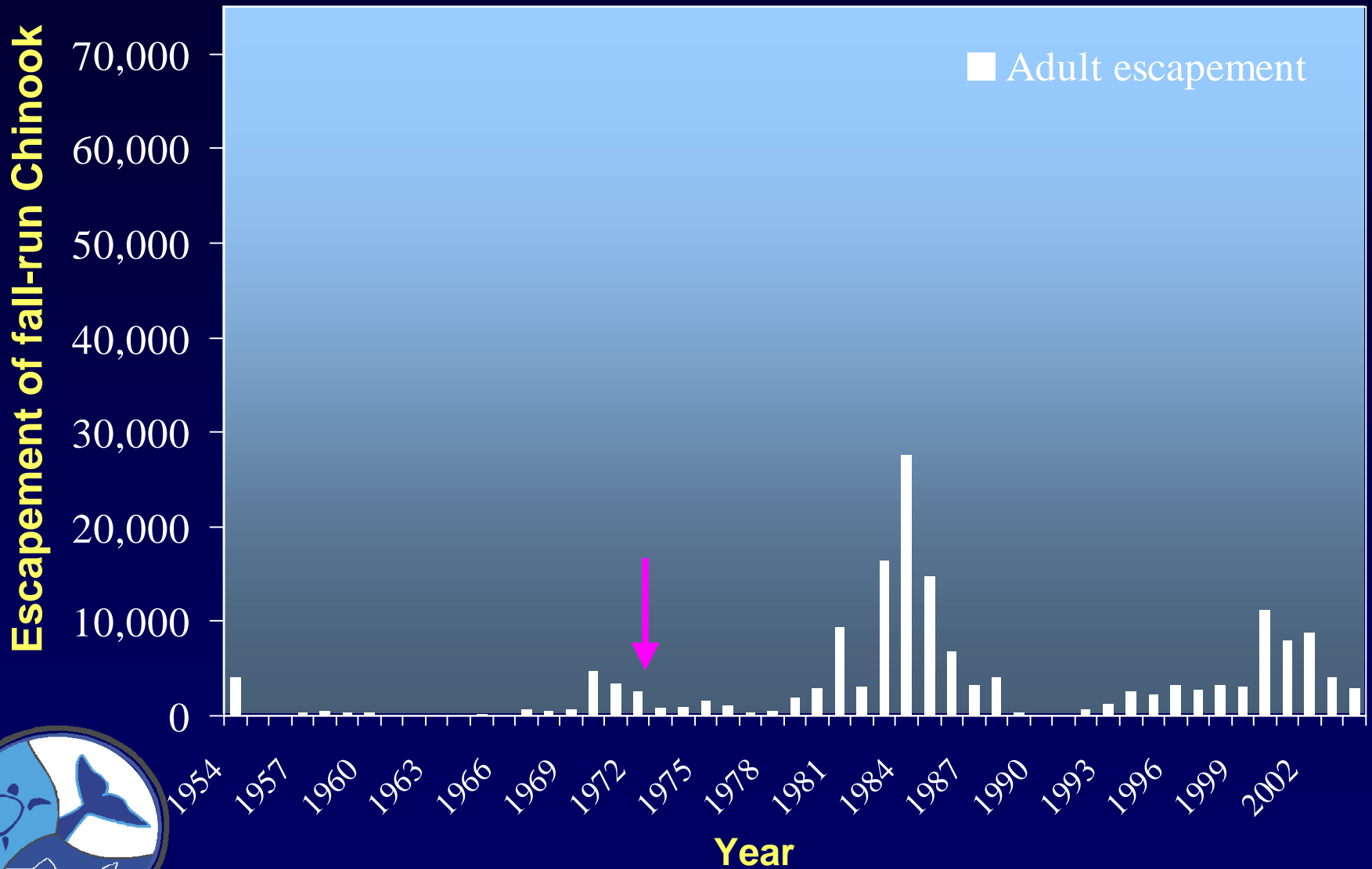
Estimated Yearly Escapement of Tuolumne River Adult Fall-run Chinook Salmon*



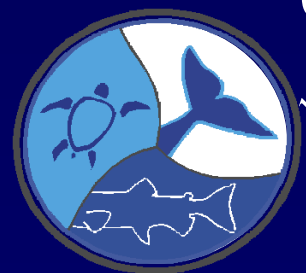
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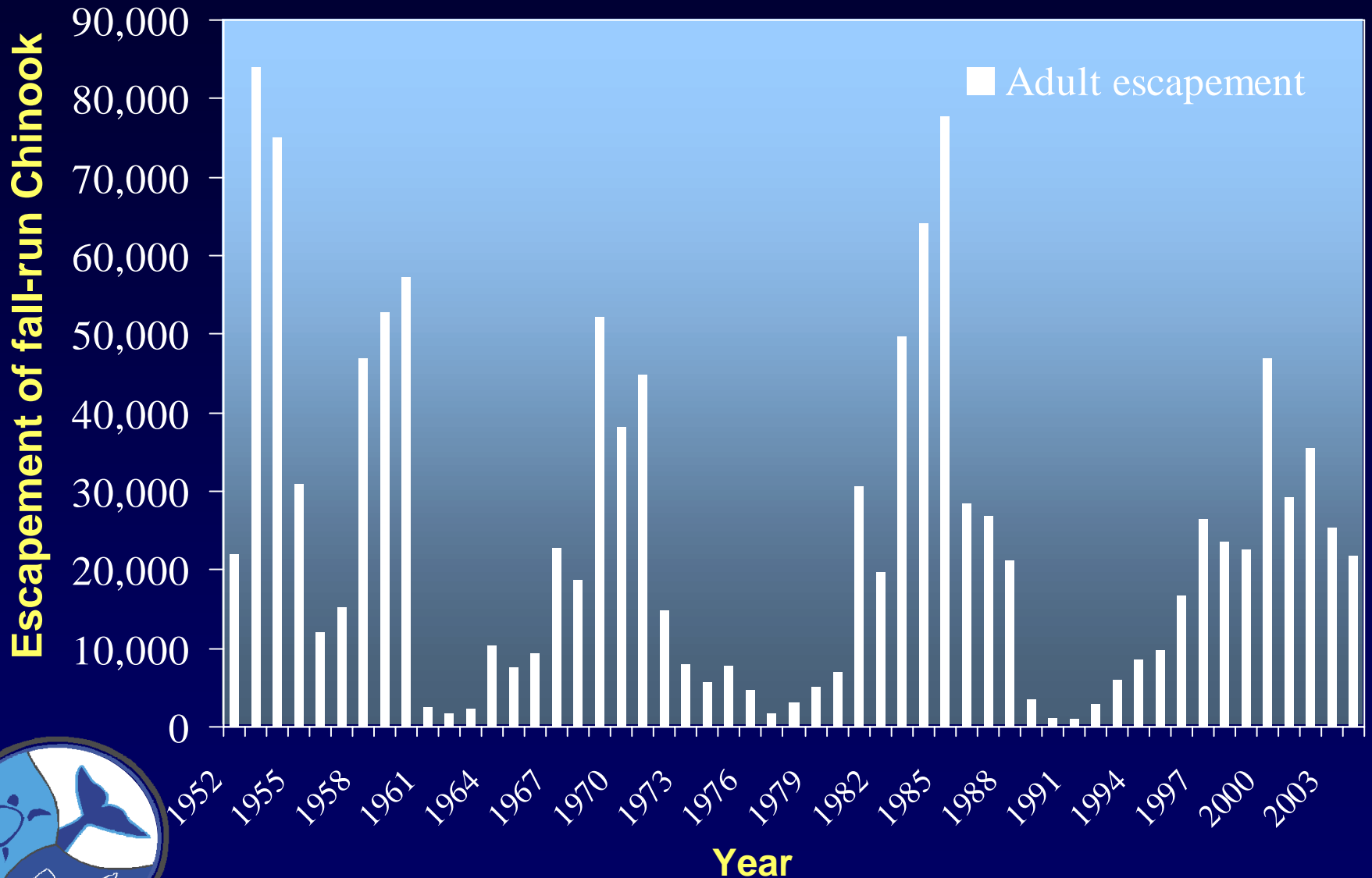
Estimated Yearly Escapement of Merced River Adult Fall-run Chinook Salmon*



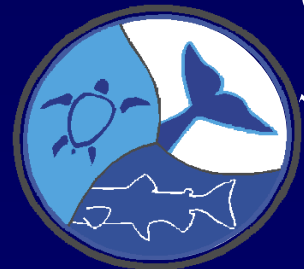
* from CDFG Grand Tab (Feb 3, 2005). Note DOI Exhibit 17.



Estimated Yearly Escapement of San Joaquin Basin Adult Fall-run Chinook Salmon*



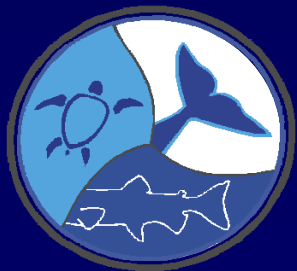
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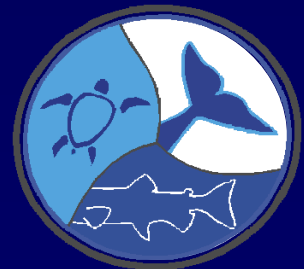
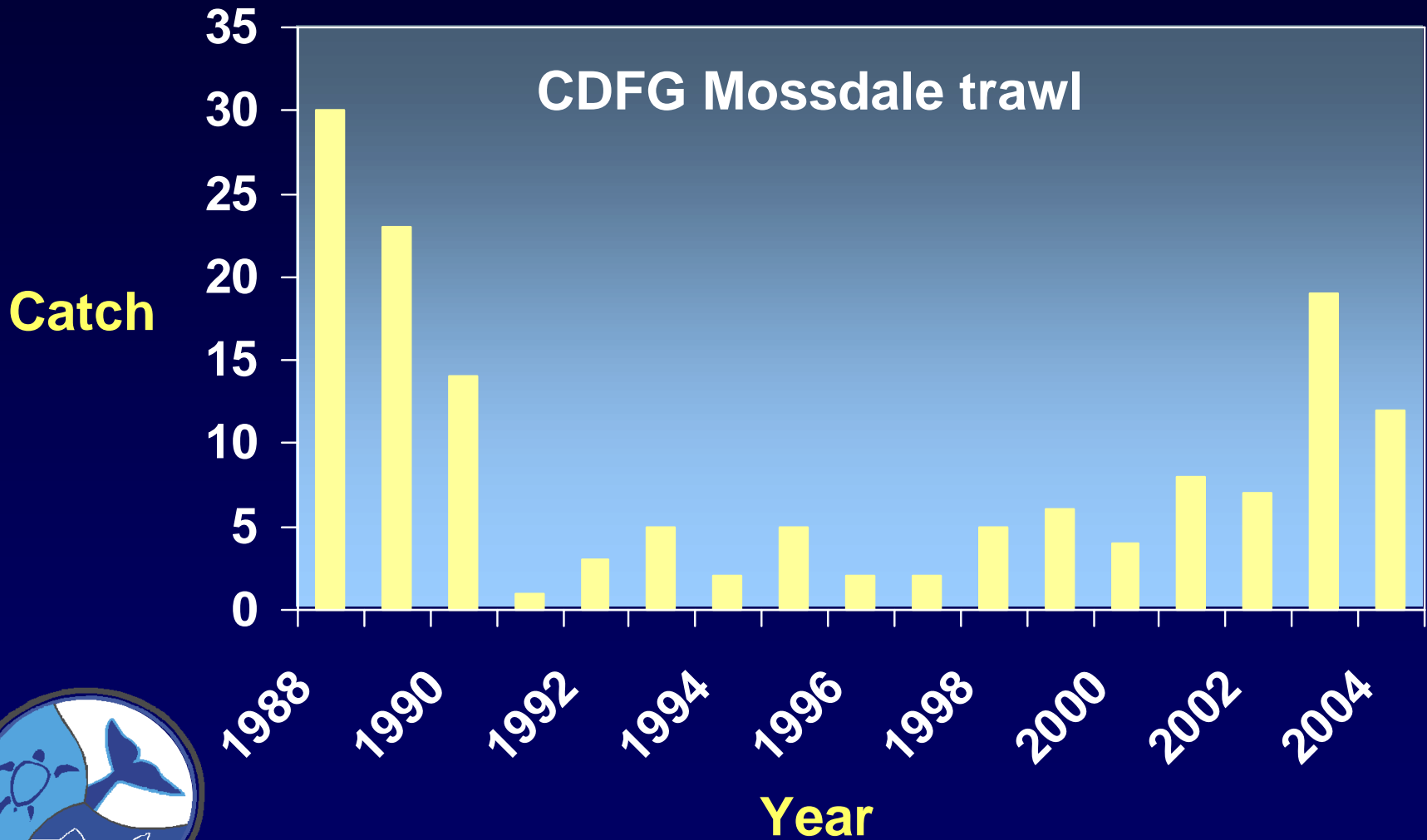
Chinook Population Trends

Escapement trends of San Joaquin Basin fall-run Chinook salmon appear to be variable and related to water year type. Despite the variability related to water year type, it appears overall returns are decreasing through time.

Increases in abundance due to Merced River Fish Facility, and unknown contributions of hatchery stocks on other San Joaquin Basin tributaries may be masking naturally produced Chinook trends.

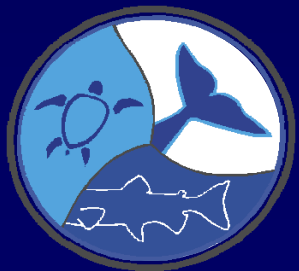
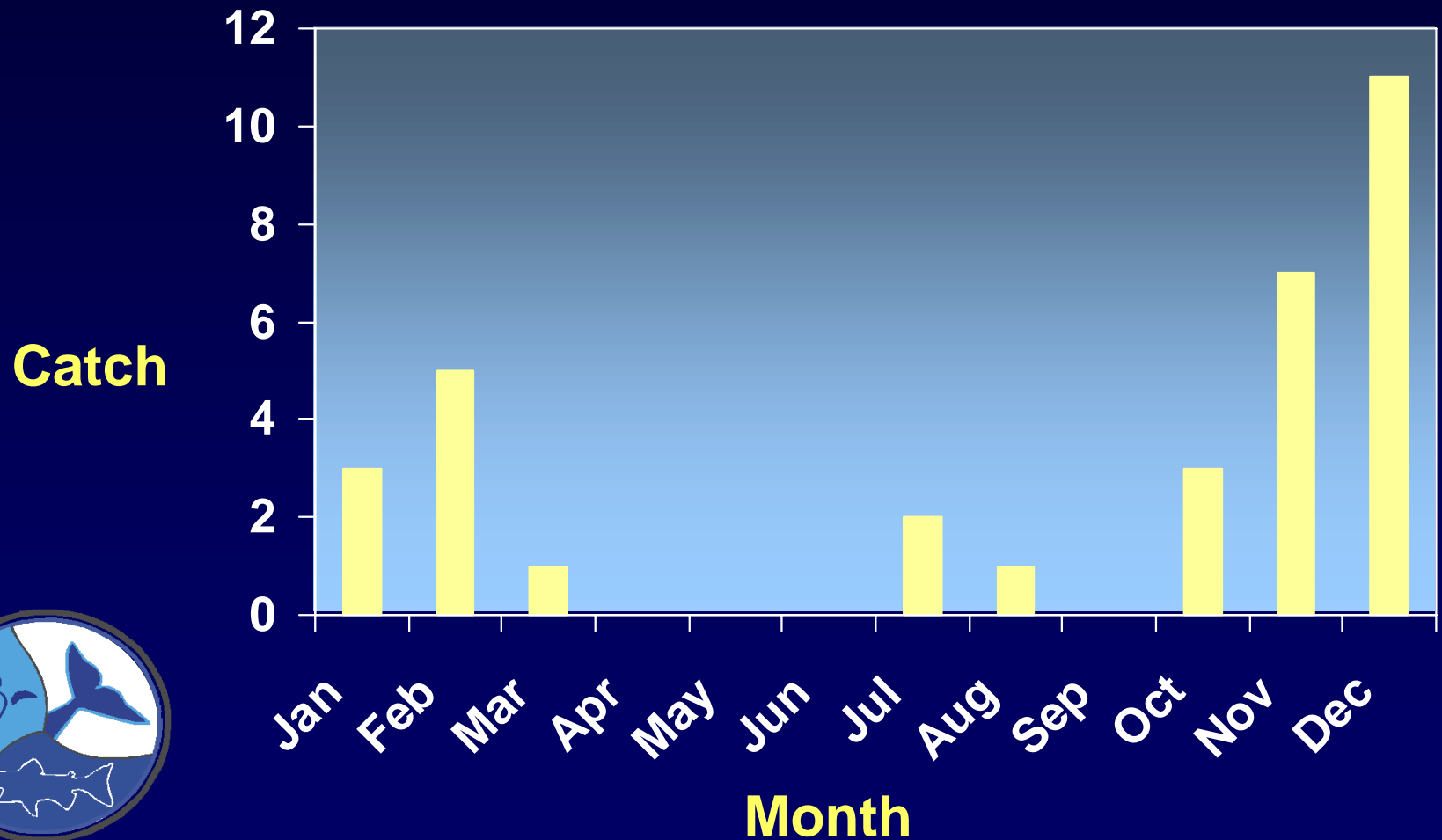


Presence of Juvenile Central Valley Steelhead in San Joaquin River



Temporal Distribution of *O. mykiss*

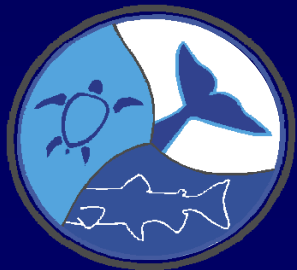
O. mykiss > 16 inches reported by anglers on the San Joaquin River downstream of the Merced River between 1993 and 2002 (DFG unpublished data).



***O. mykiss* Population Trends**

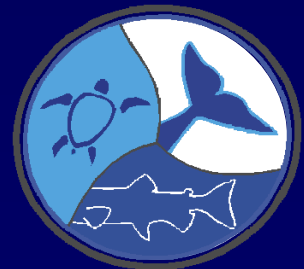
- Catch of juvenile *O. mykiss* at Chipps Island ranged from October to July in 1997, 1998, and 1999 (Nobriga and Cadrett, 2001).
- CDFG steelhead report card data indicate adult *O. mykiss* presence in the San Joaquin River may be nearly year-round.

NMFS remains highly concerned by the decline in total abundance of the *O. mykiss* ESU and that the decline appears to be continuing.

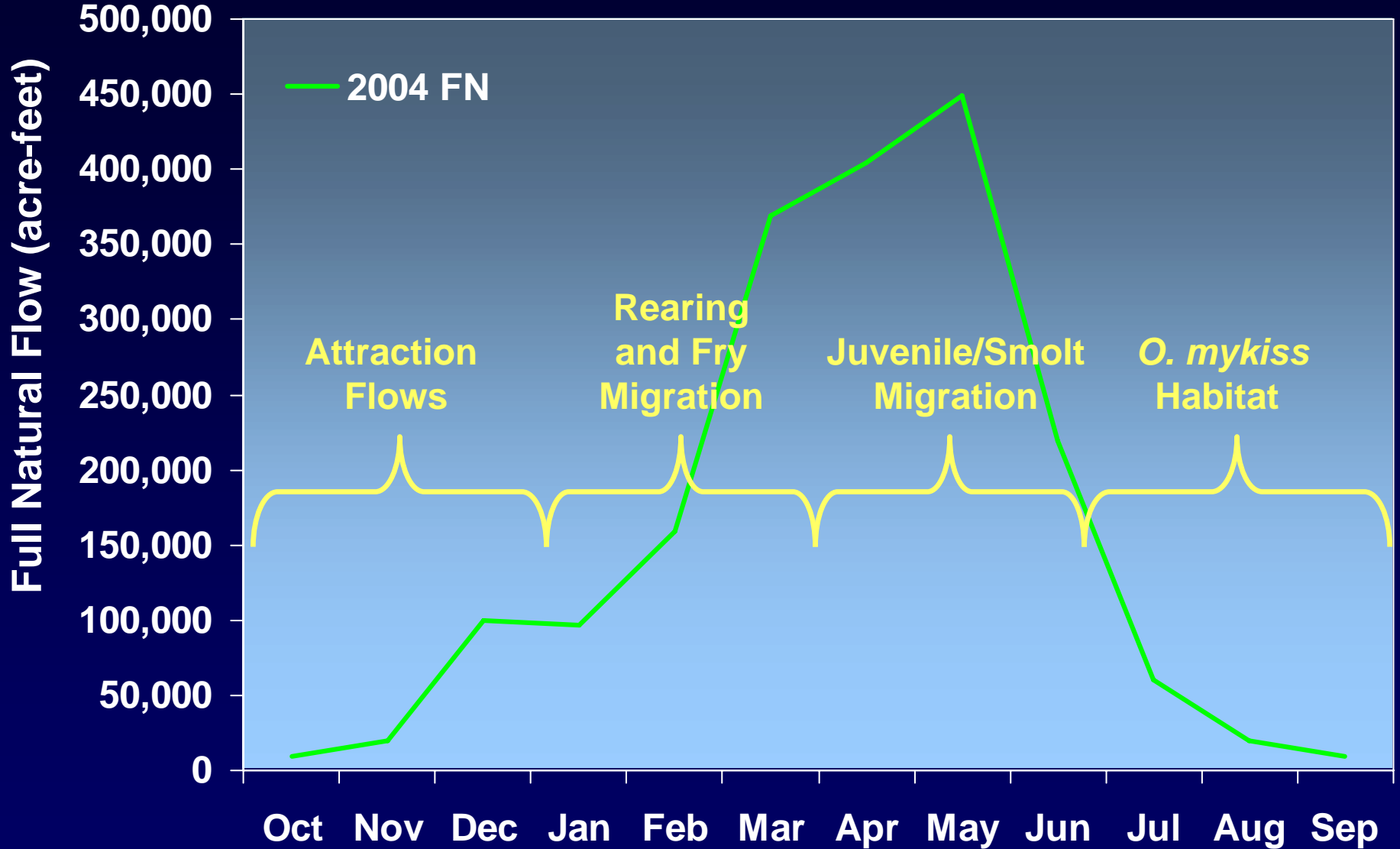


Temporal Distribution of Chinook salmon

- Catch of Chinook salmon smolts commonly occur between April and June at Mossdale (DOI Exhibits 11-16).
- Fry Chinook salmon are commonly found to be present on the lower San Joaquin River (downstream of Merced River) in January, February, and March (DOI Exhibit 11-16).

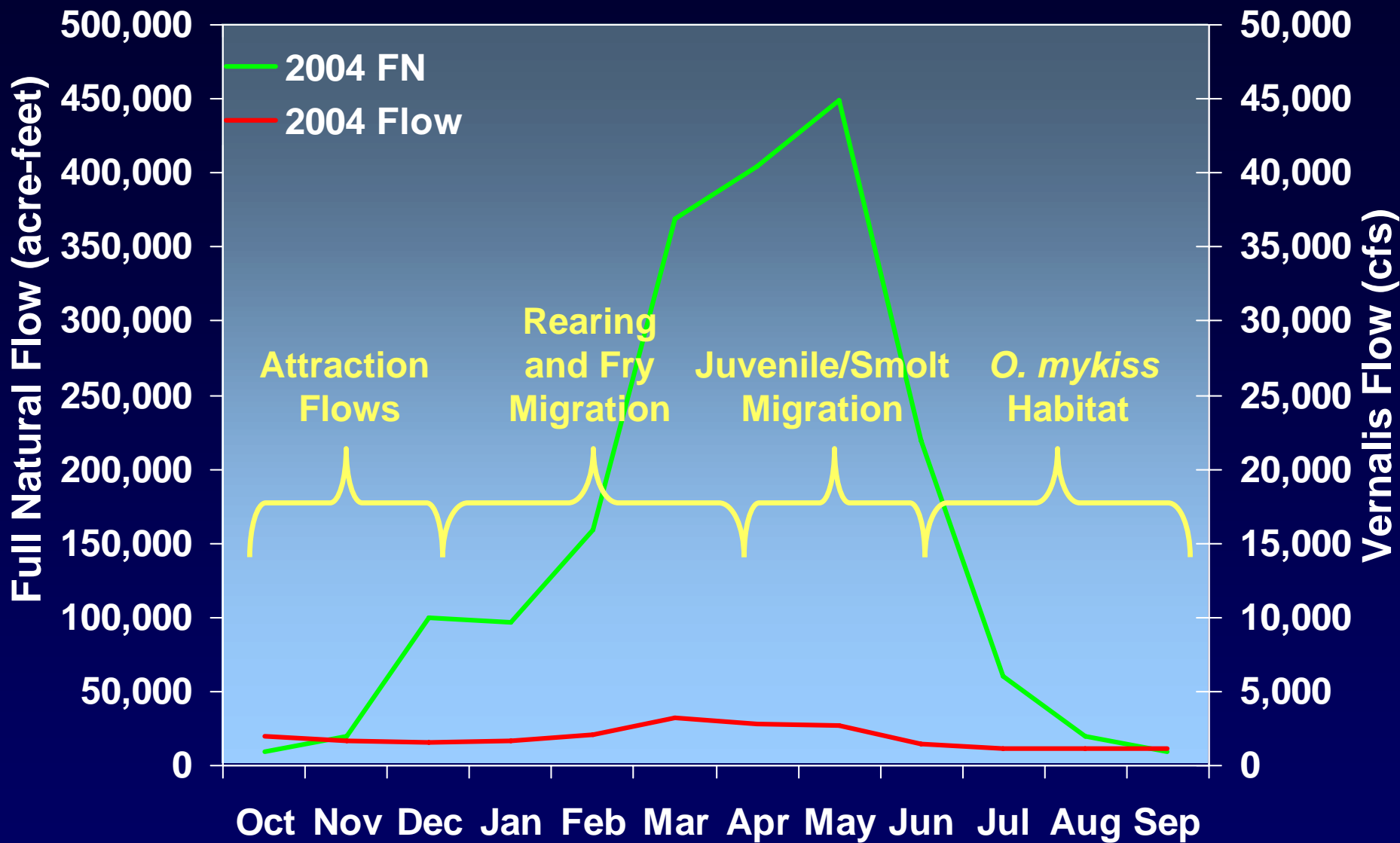


San Joaquin Flow at Vernalis



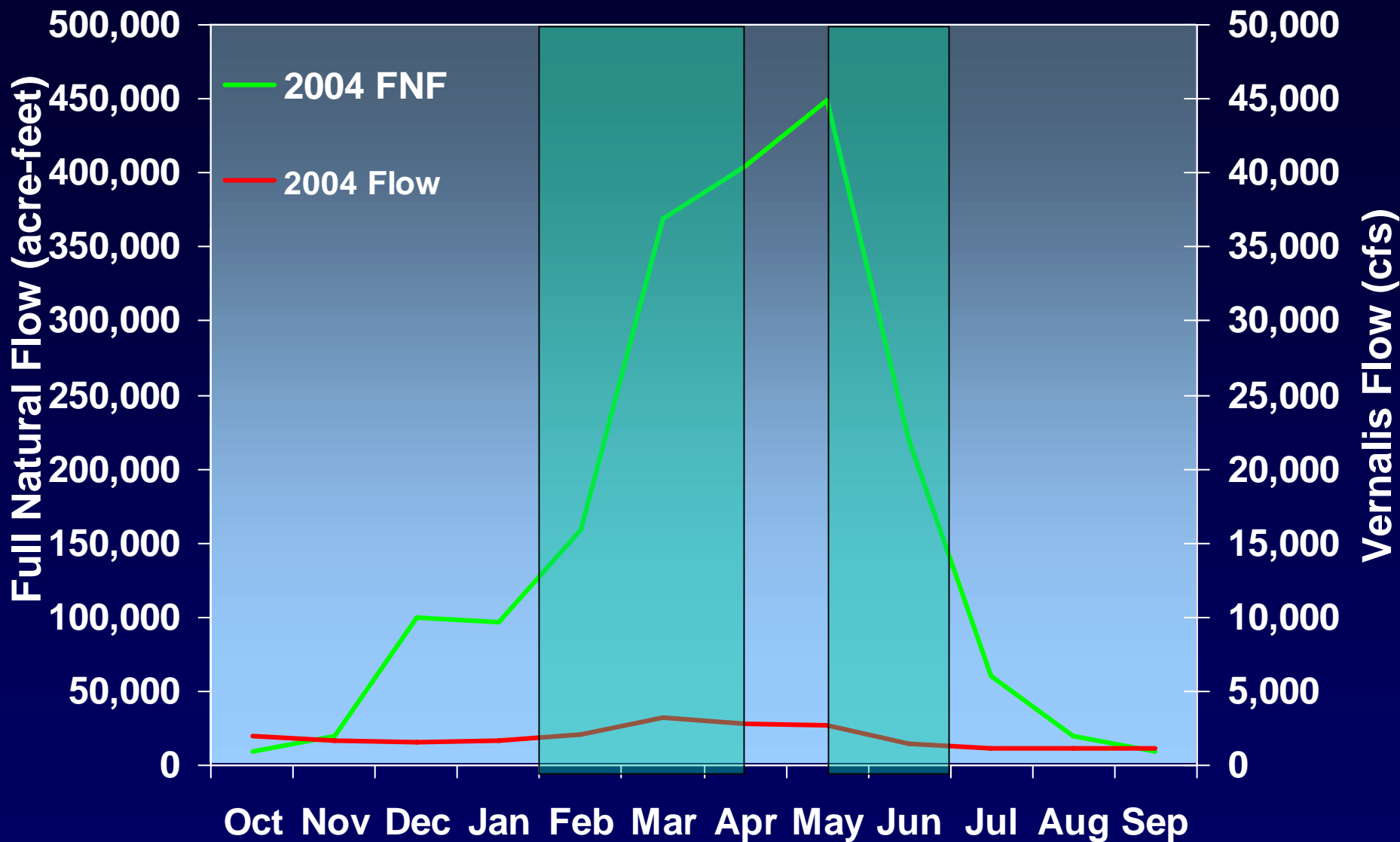
FN Flow = sum of Stan, Tuol, Mer, and San Joaquin FN flow (CDEC) converted from acre-ft to cfs.
Vernalis Flow = Monthly flow (CDEC, VNS station)

San Joaquin Flow at Vernalis



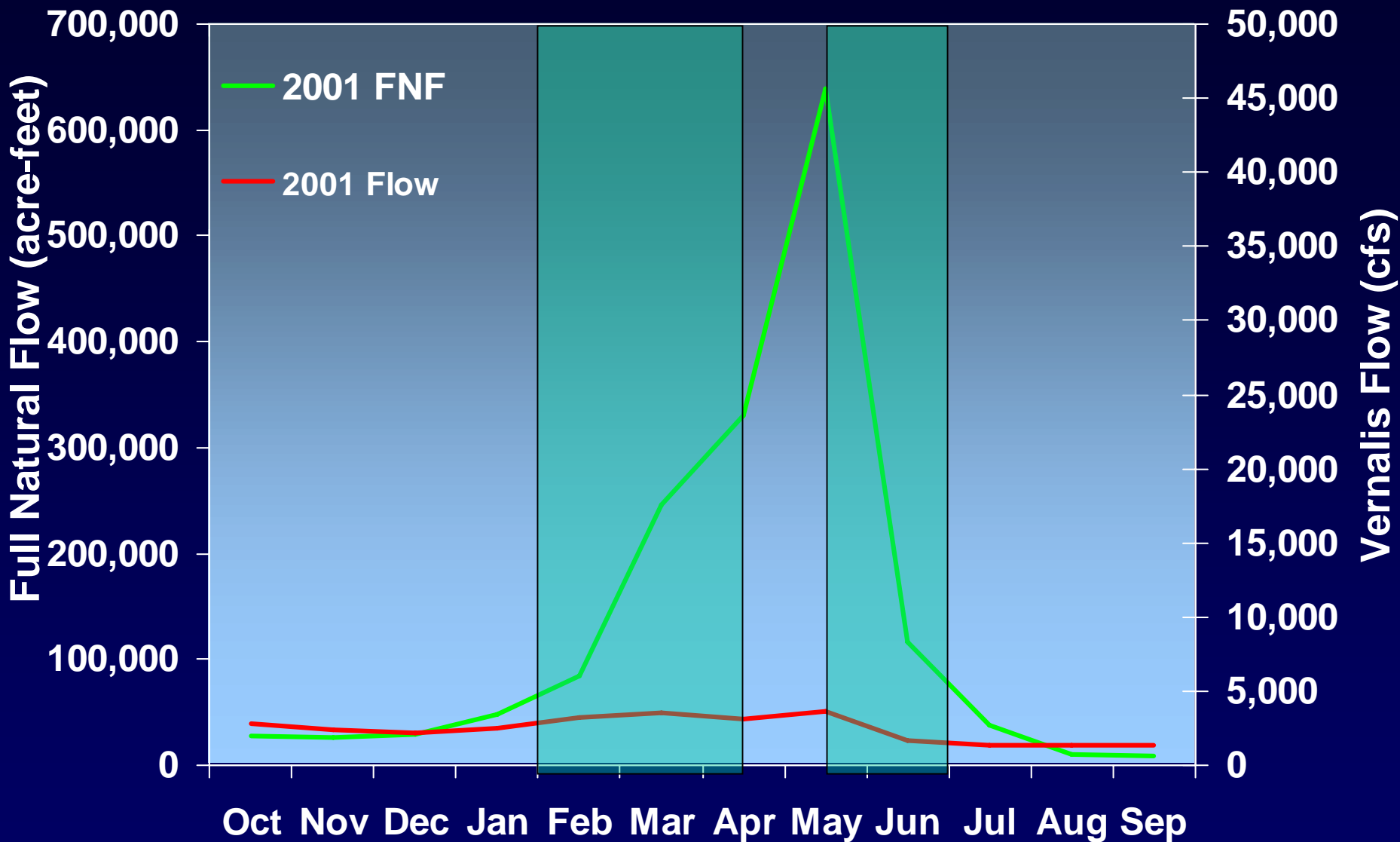
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San Joaquin Flow at Vernalis



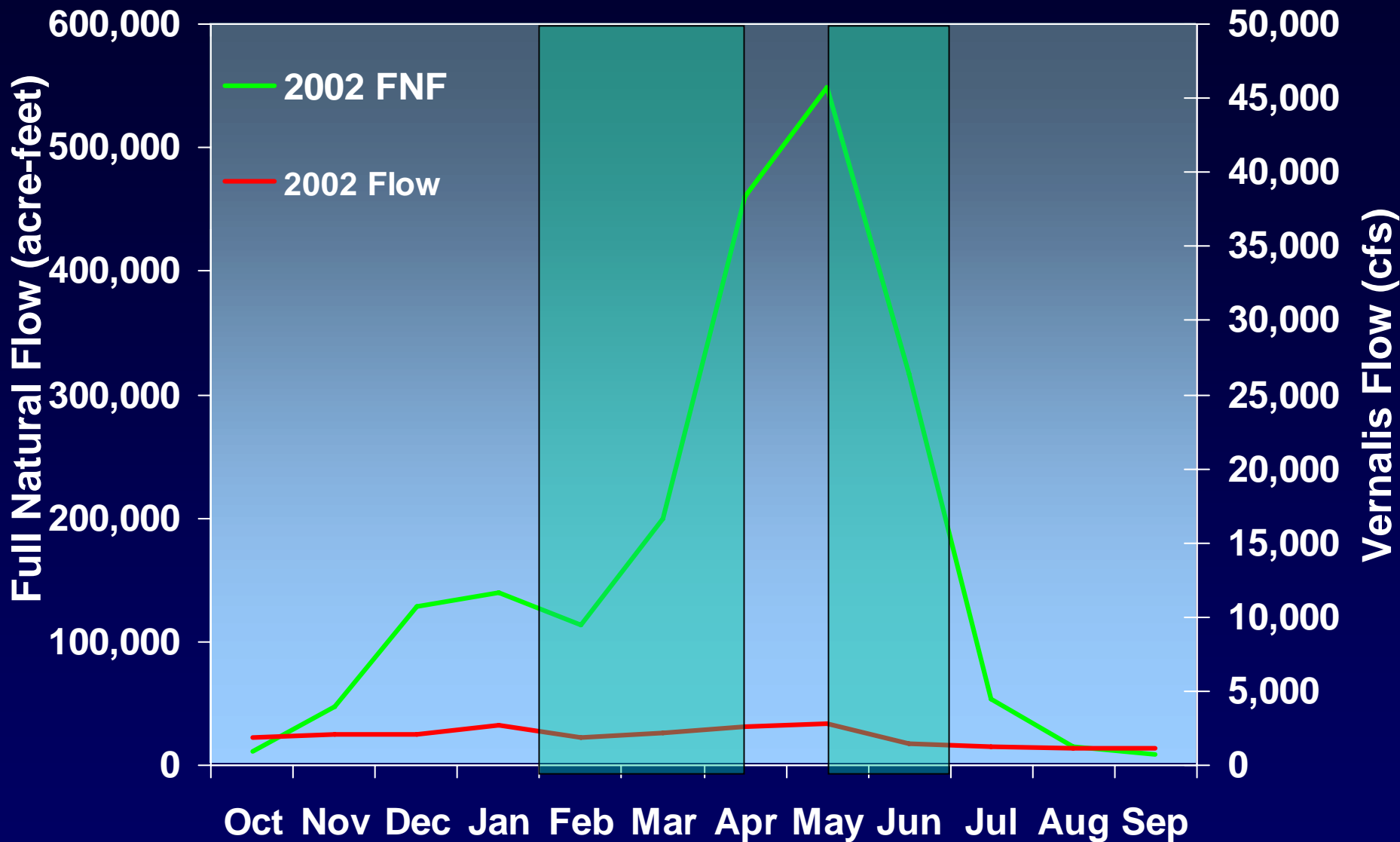
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Baker and Morhardt, 2001. Survival of Chinook salmon smolts in the Sacramento-San Joaquin Delta and Pacific Ocean.

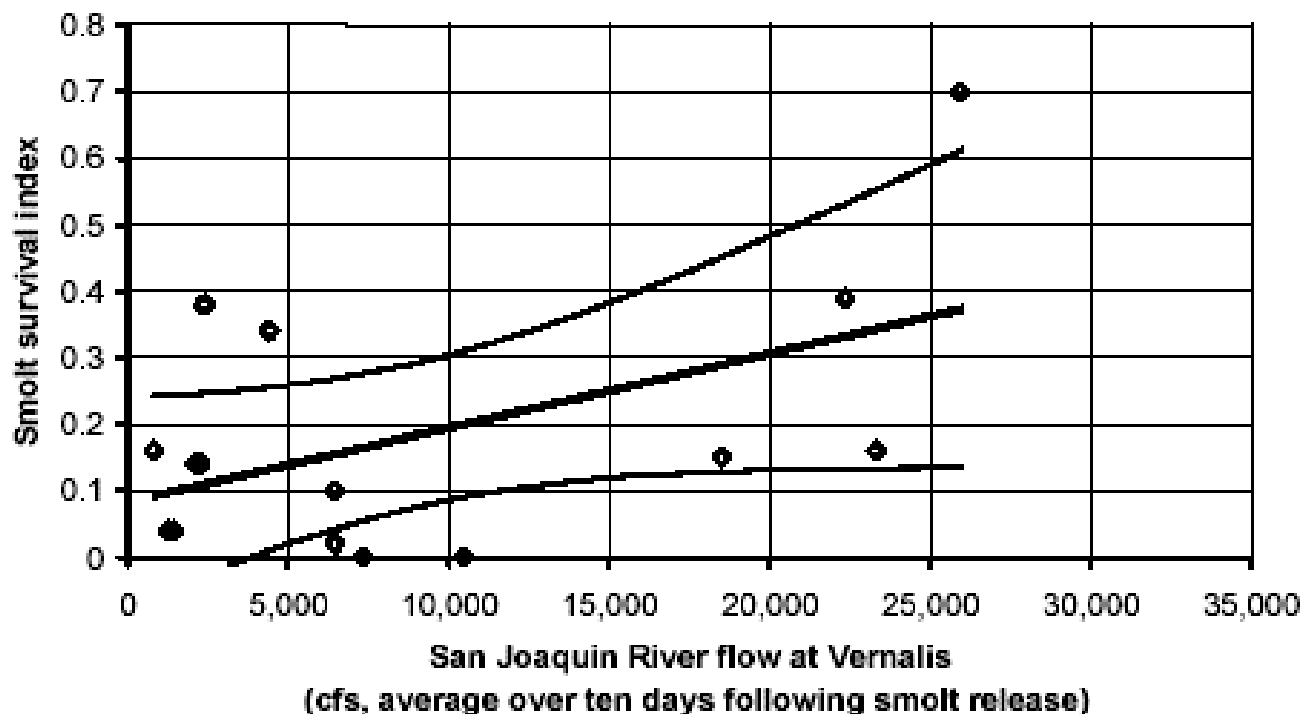


Figure 10 USFWS smolt survival index for tagged smolts released in the lower San Joaquin River at Dos Reis and average flow in the San Joaquin River at Vernalis over the 10 days following tag release. Fitted regression line and envelope of 95% confidence region for fitted line are shown.

Baker and Morhardt. 2001. Survival of Chinook salmon adults in the Sacramento-San Joaquin Delta and Pacific Ocean.

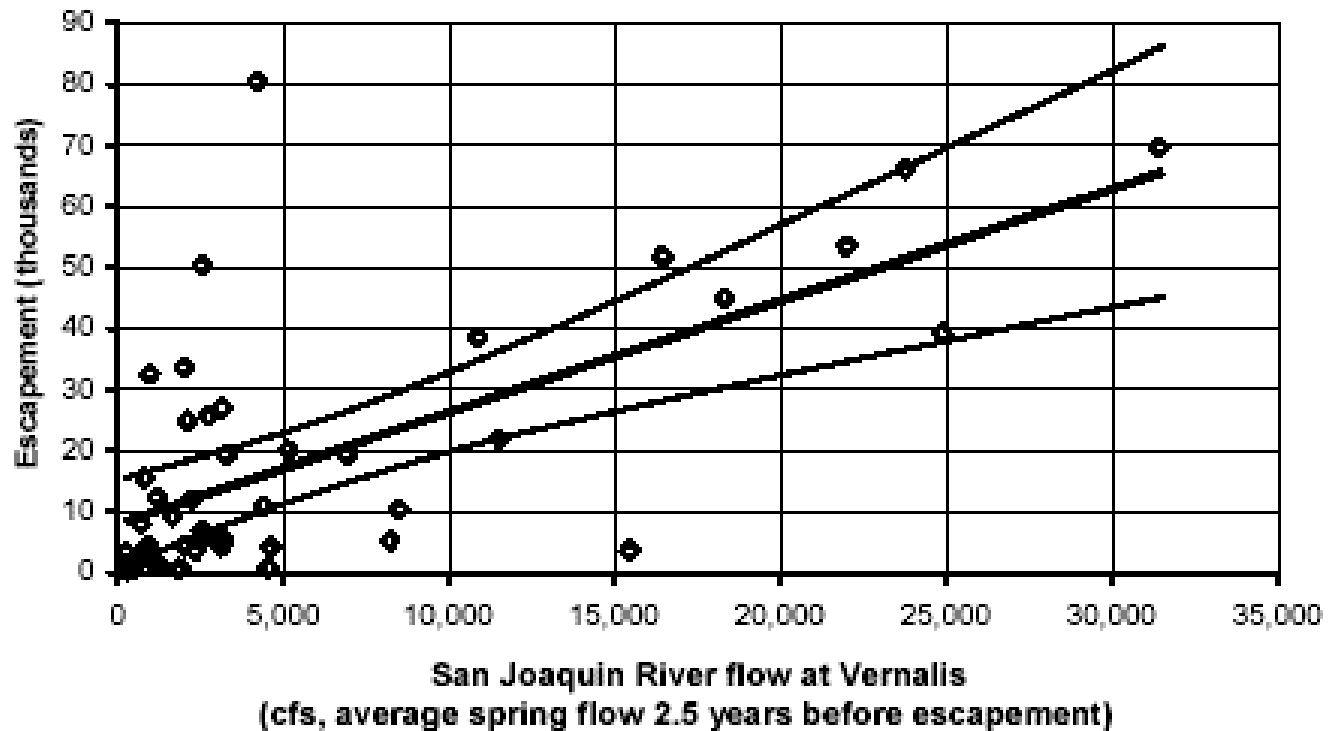
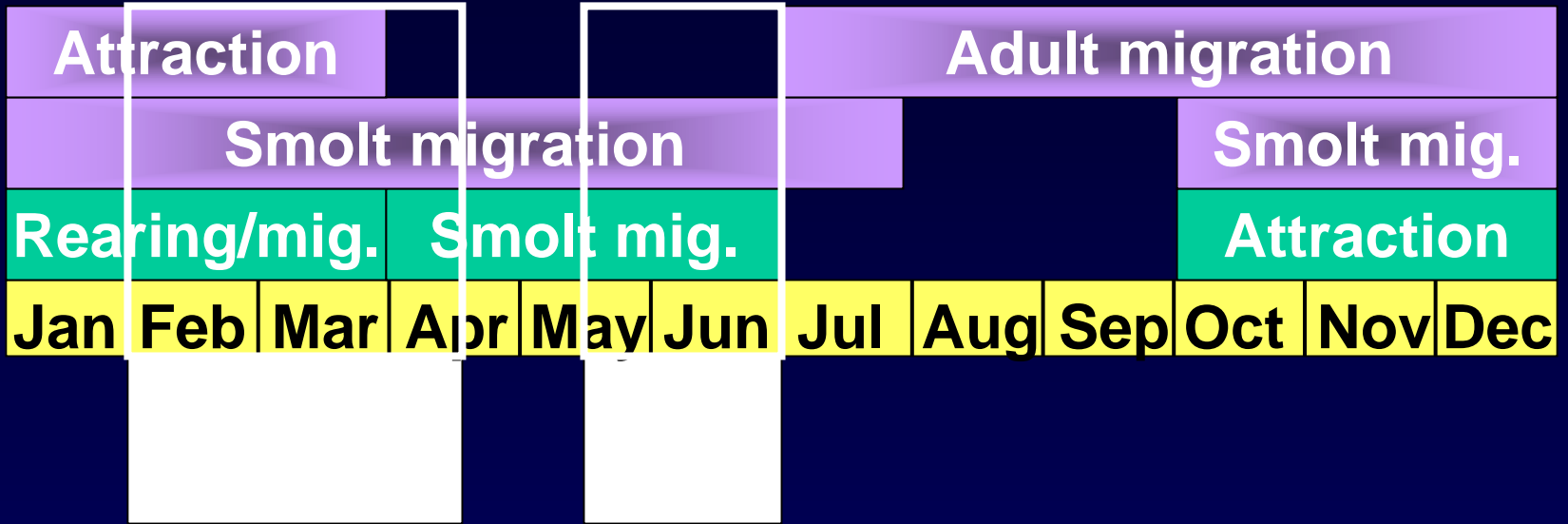


Figure 11 Total escapement to San Joaquin tributaries, 1951 through 1996, and spring flow in the San Joaquin River at Vernalis 2.5 years earlier. Fitted regression line and envelope of 95% confidence region for fitted line are shown.

Summary



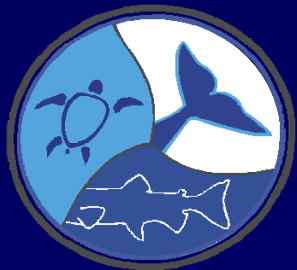
VNS standard
 Chinook
O. mykiss

NMFS Recommendations

It is clear Chinook salmon and *O. mykiss* populations in the San Joaquin Basin are not showing signs of improvement and continue to require the protection of the Vernalis flow standard to ensure protection of all life stages.

NMFS recommends the Vernalis flow standard remain unchanged at a minimum

NMFS does not recommend incorporating flexibility into the Vernalis standard



NMFS Recommendations

NMFS is concerned that the existing Vernalis standard may be too low and recommends the Board consider increasing the current standard

NMFS recommends an independent scientific peer review panel be established to address potential changes to Vernalis standards

