

**Overview of
Constant Fractional Marking Program
&
California Recreational Fisheries Survey**

**Presented by
Melodie Palmer-Zwahlen
CDFG – Marine Region**

mpalmer@dfg.ca.gov



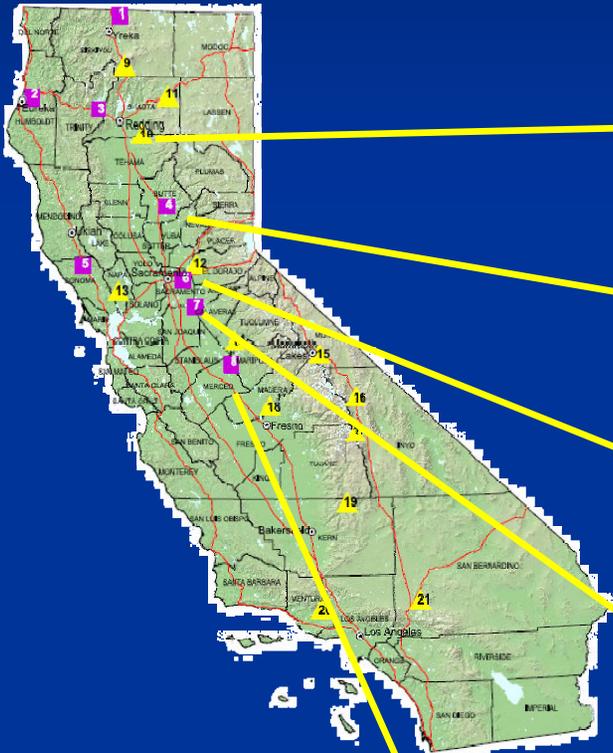


CV Fall Chinook Constant Fractional Marking (CFM) Program

- Over 32 million fall Chinook produced annually at five Central Valley (CV) hatcheries in the Sacramento River and San Joaquin River basins
- CFM program began in 2007 (2006 brood year) with a goal of marking and tagging at least 25% of fall Chinook production
- Before the CV CFM program, only experimental releases and small numbers of fall production releases were marked and tagged with coded-wire tags (CWTs); most fall Chinook were released without any representative tagging.
- Recovery phase of CFM now being implemented to process the anticipated increase in CWTs collected by ocean and inland surveys throughout the state.

Fall Chinook Production at CV Hatcheries

Sacramento River fall Chinook (SRFC) & San Joaquin fall Chinook (SJFC)



Coleman Hatchery (CNFH)
10 - 12 million SRFC

Feather River Hatchery (FRH)
8 - 9 million SRFC

Nimbus Fish Hatchery (NFH)
2 - 4 million SRFC

Mokelumne River Hatchery
1 - 2 million SJFC

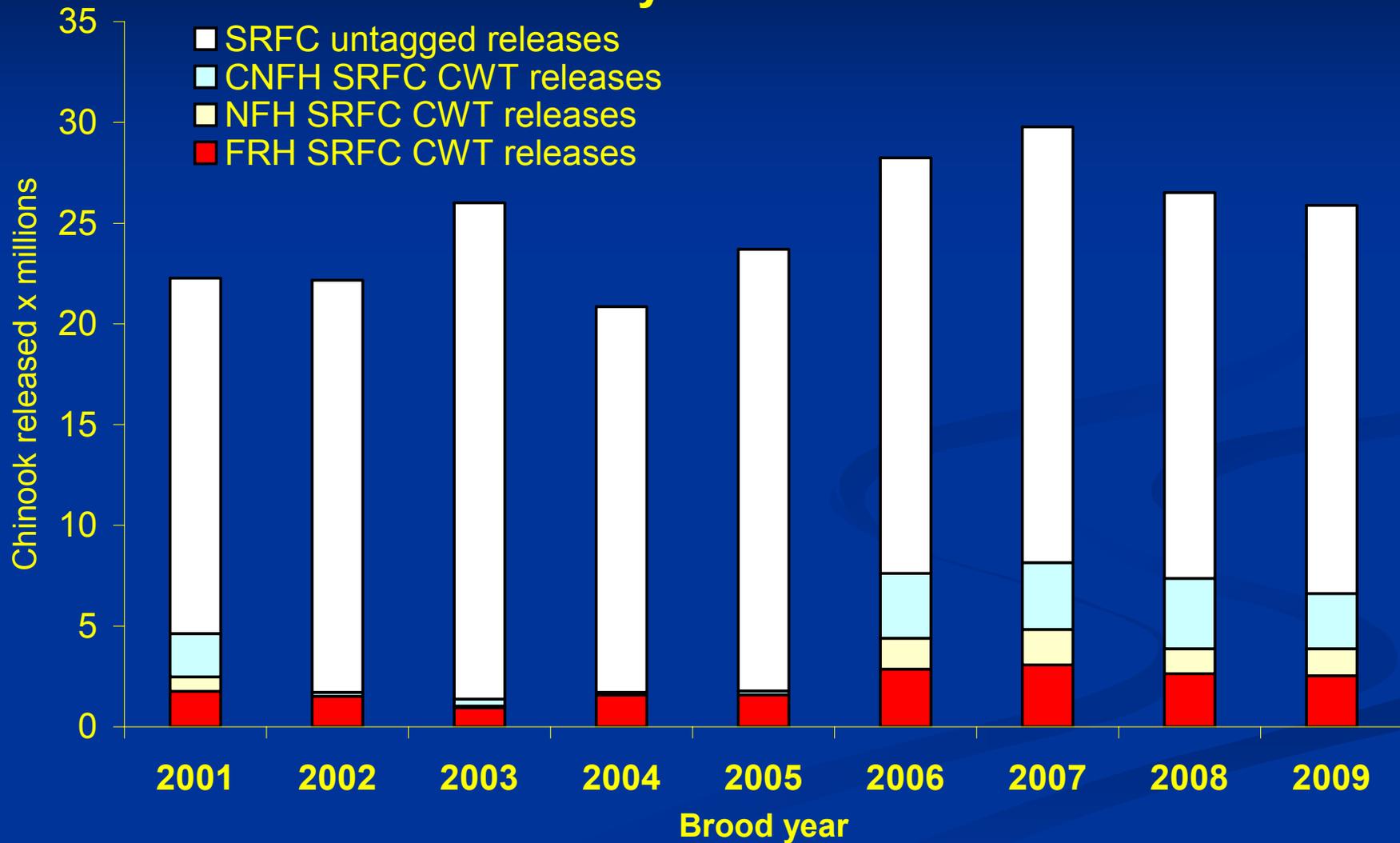
Merced River Hatchery
≤1 million SJFC

Why use coded-wire tags?

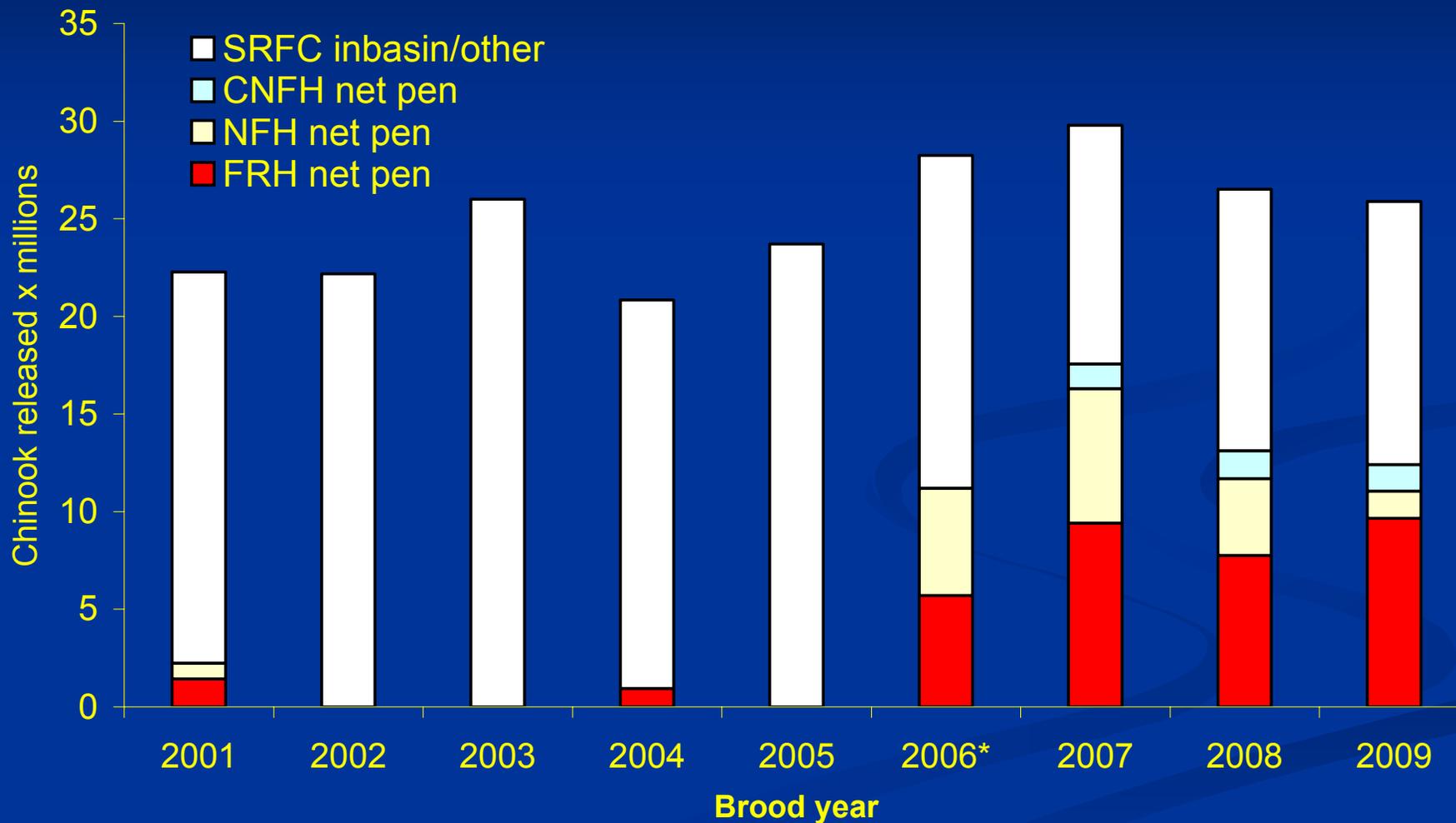


- Large scale CWT marking programs developed on west coast in late 1970s
- Microscopic tags (<1mm) uniquely coded for hatchery, brood year, fish size, release location, release date and other info
- All CA Chinook salmon containing CWTs are ad-clipped for easy external identification
- CWTs continue to be the most important tool for salmon research and management. CWT recovery data provide stock-specific ocean distribution patterns, fishery impacts by time and area, survival, maturity, and stray rates, and other pertinent info on Pacific salmon along the entire west coast

Central Valley hatcheries SRFC CWT releases Brood years 2001-2009



Central Valley hatcheries SRFC net pen releases Brood years 2001-2009



* 2006 brood SRFC CWTs released directly into bay and net pens, including various coastal sites

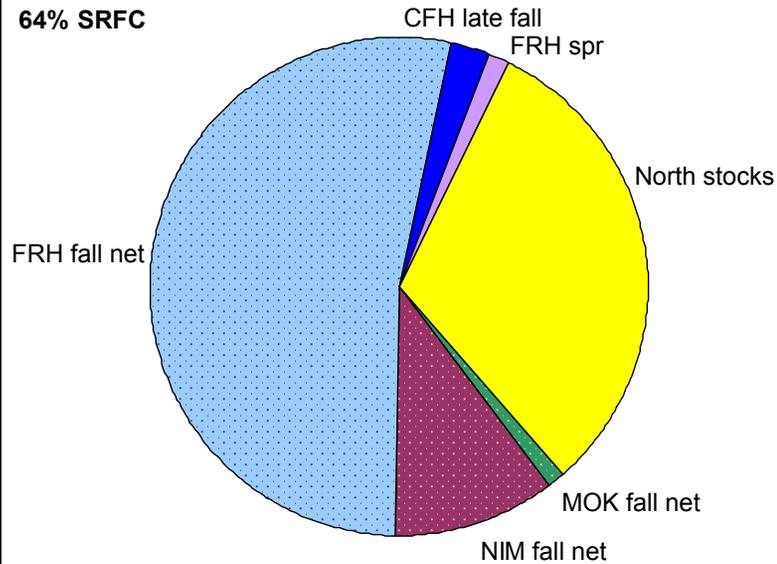
All CV fall Chinook will be CFM tagged in 2011 Ocean Salmon Fisheries

CFM tagging year	<u>Recovery Year</u>			
	Age 2	Age 3	Age 4	Age 5
BY 2006	2008	2009	2010	2011
BY 2007	2009	2010	2011	
BY 2008	2010	2011		
BY 2009	2011			

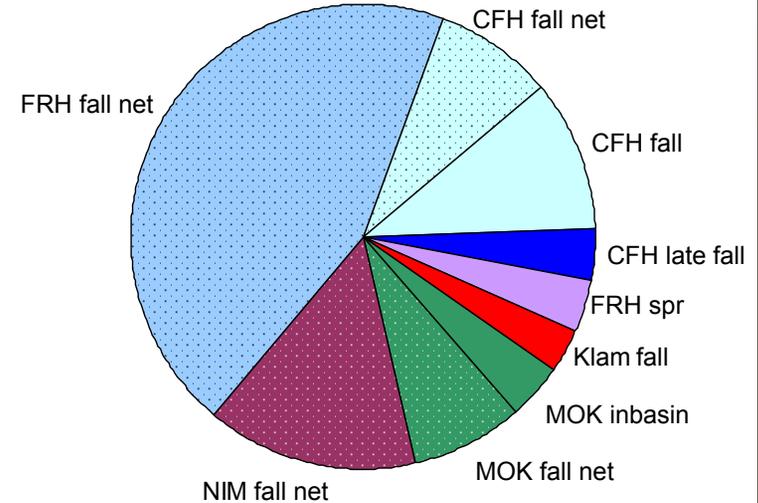
In 2010, ad-clip rate was 13% in CA commercial and 23% in CA sport

2010 CA Ocean Sport Fishery CWT Recoveries (n=908)

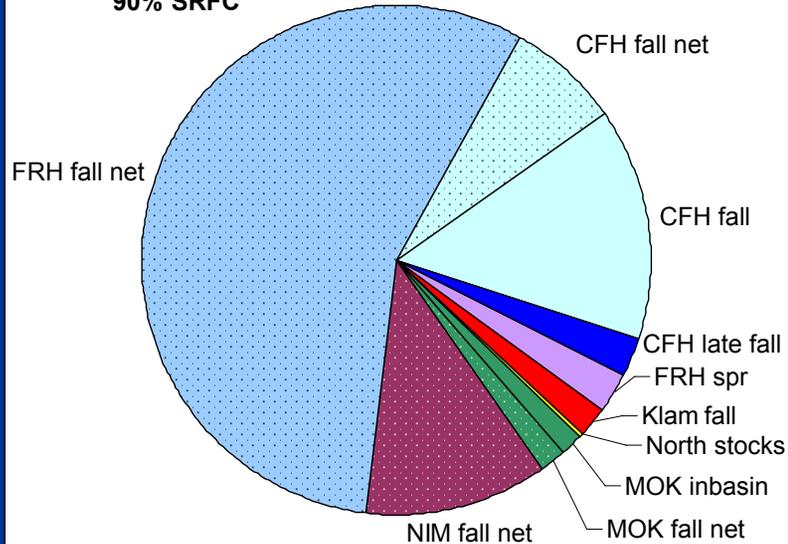
KMZ (n=25)
64% SRFC



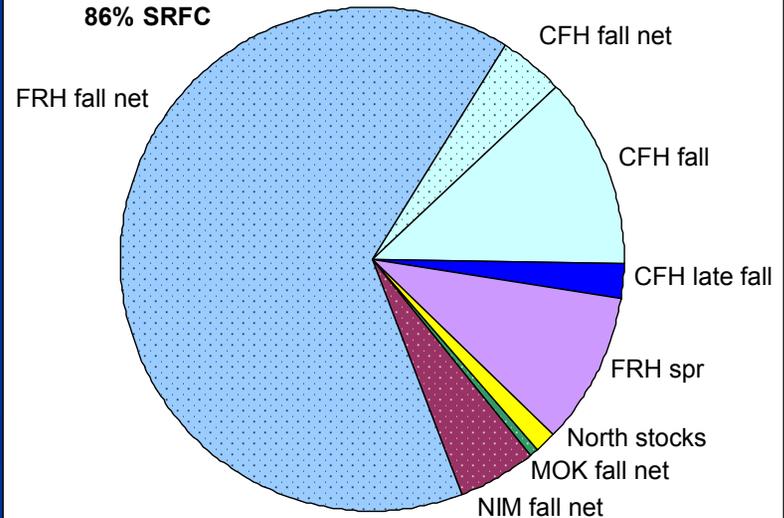
Fort Bragg (n=89)
78% SRFC



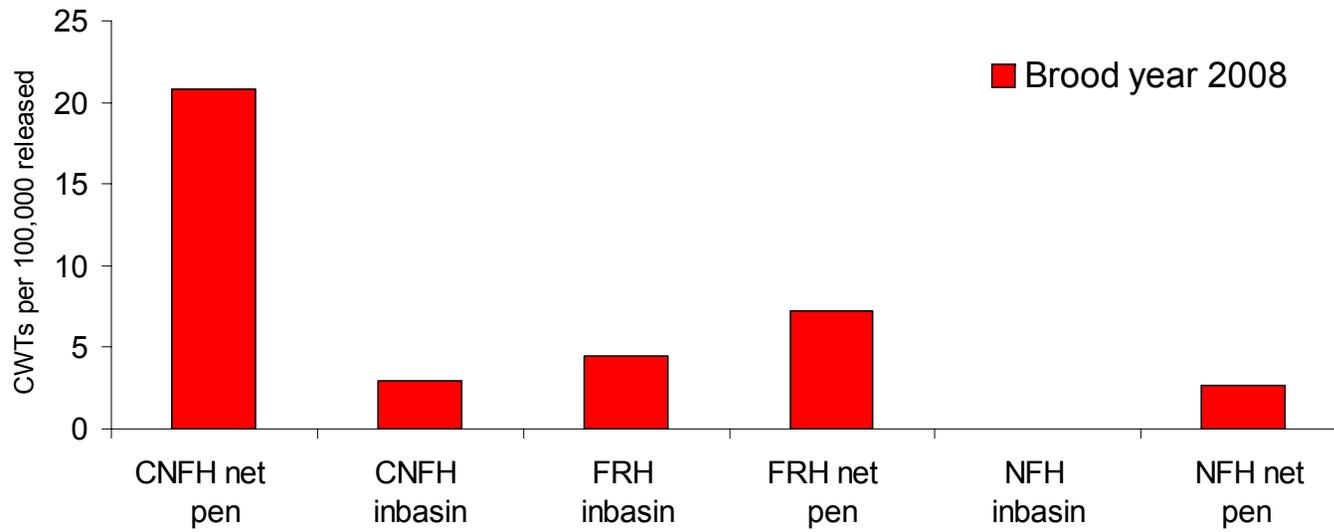
San Francisco (n=454)
90% SRFC



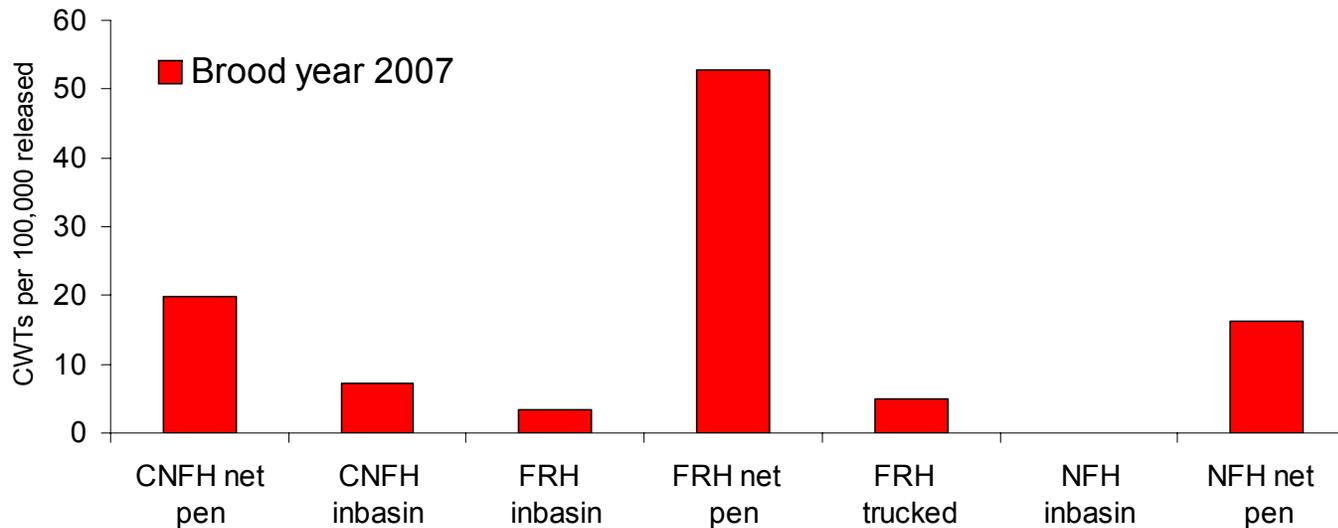
Monterey (n=340)
86% SRFC



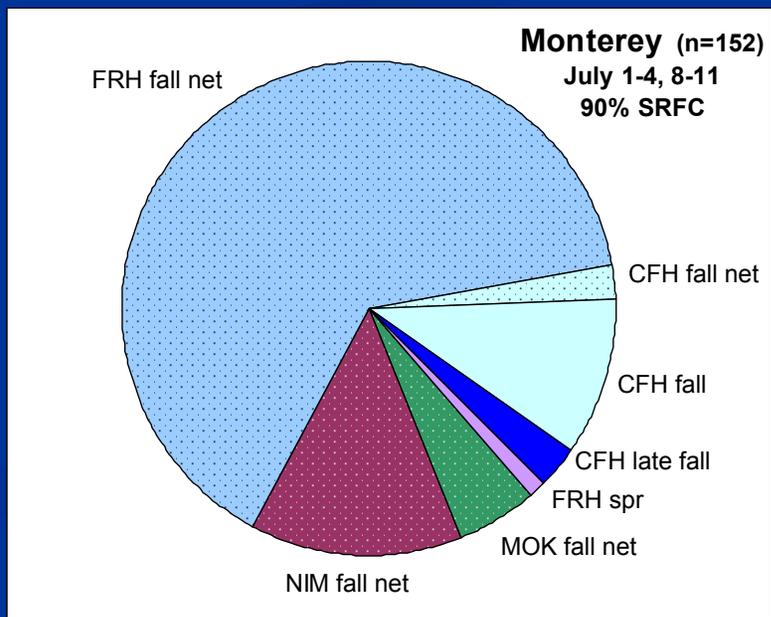
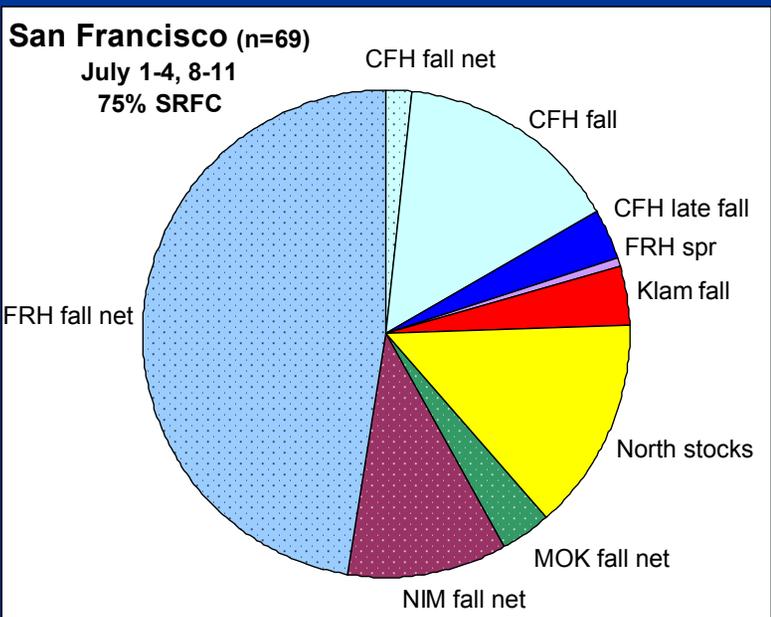
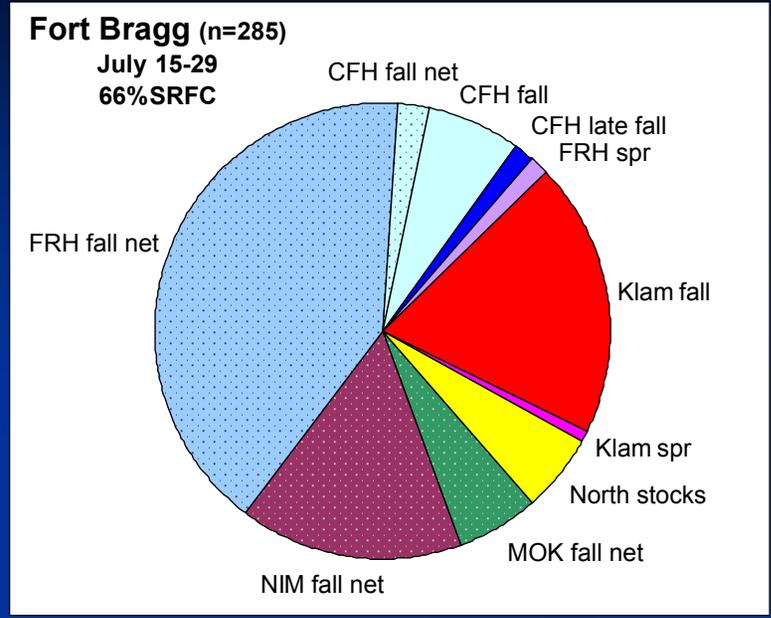
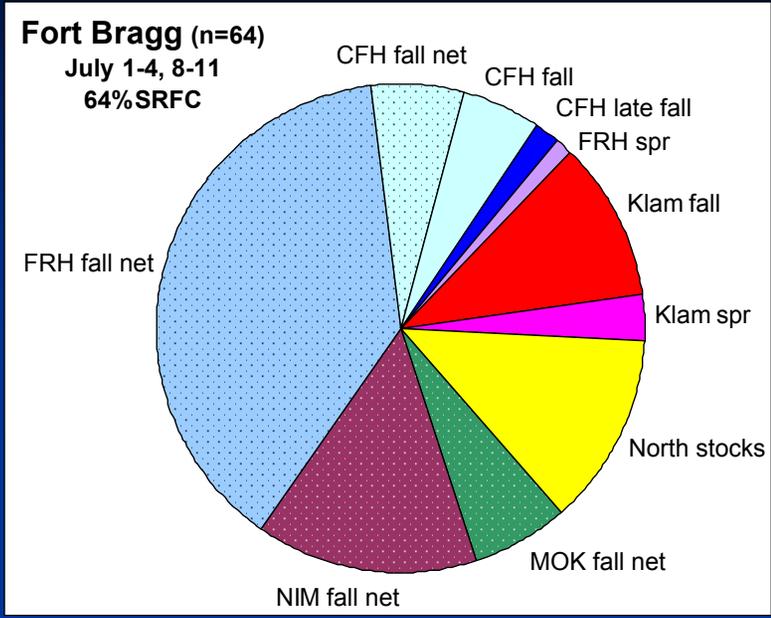
2010 Ocean Sport Age 2 SRFC CWT Recovery Rate (n=115)



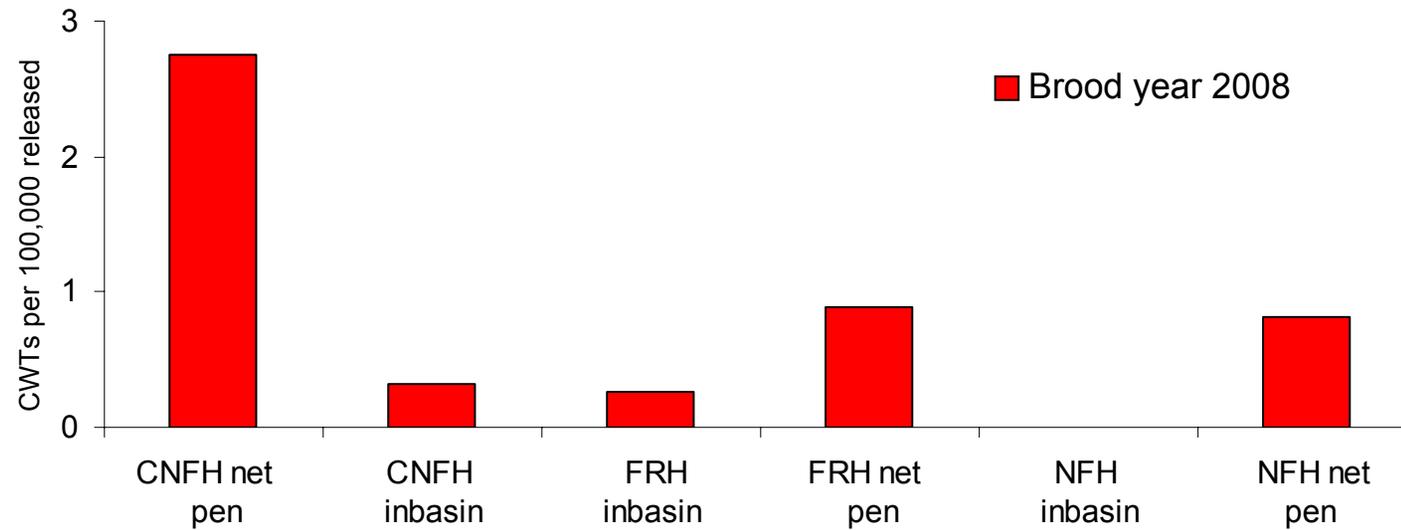
2010 Ocean Sport Age 3 SRFC CWT Recovery Rate (n=519)



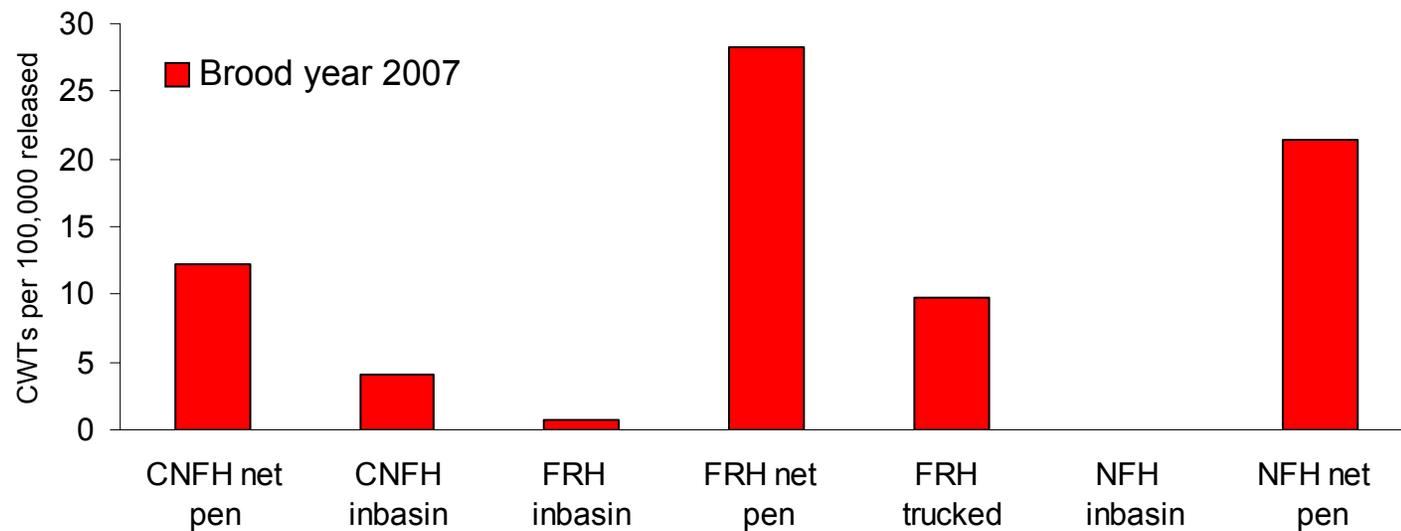
2010 July Commercial Fishery CWT Recoveries (n=570)



2010 Ocean Commercial Age 2 SRFC CWT Recovery Rate (n=29)



2010 Ocean Commercial Age 3 SRFC CWT Recovery Rate (n=699)



IMPORTANCE OF CFM CWT DATA

Fishery Management Evaluations

- Estimate stock contributions to ocean and inland salmon fisheries
- Manage fisheries by time and area to harvest abundant stocks while reducing fishery impacts on stocks of special concern
- Ensure stock conservation objectives are being met

Hatchery / Natural Stock Evaluations

- Hatchery / natural contribution rates to fisheries and spawner escapement, determine survival, maturity and stray rates by basin

Hatchery Release Strategies / Evaluations

- Time and location of release, fish size, rearing studies, net pen acclimation & other enhancement programs

Habitat Improvement Evaluations

- Evaluate habitat improvement projects by assessing natural production

California Recreational Fisheries Survey (CRFS)

- Ocean Salmon Project (OSP) has been sampling the California sport ocean salmon fishery since 1962.
- In 2004, OSP began coordinating sampling of the ocean salmon sport fishery at primary launch ramps and CPFVs with CRFS staff (PSMFC contract employees).
- On Jan 1, 2011, CRFS became a Department project and OSP/CRFS are now merged into a single, integrated, statewide sampling program.
- OSP will still collect and process all heads removed from ad-clipped salmon sampled by CRFS to retrieve CWTs.
- By 2012, CRFS will produce estimates of catch and angler effort for all species taken in CA sport fisheries.