

DEFT Fish Concerns

- Delta smelt adults (entrainment in Feb-Mar)
- Delta smelt young (take exceeded in late May/early Jun of recent years)
- SJ salmon fry (high takes following high flows in Jan/Feb)
- SJ salmon smolts (portion of outmigrants not covered by VAMP)
- Spring-run yearlings (outmigrating in Nov-Jan)
- Steelhead outmigrants (period variable from Feb-May, but passage swift)
- Striped bass young of year (especially May-Jul)

Five Ways to Reduce Fish Entrainment

- Increase Sacramento River flow to enhance fish migration and hydrodynamic conditions
- Close Delta Cross Channel to reduce diversion of fish into Central Delta channels
- Increase San Joaquin River flow to enhance fish migration and hydrodynamic conditions
- Operate Head-of-Old-River barrier (gates) to reduce diversion of fish into South Delta channels
- Reduce Delta export pumping to limit direct and in-direct mortality

Potential Controls on Delta Exports

- Banks Permitted Capacity
- Required Outflow (salinity control & X2)
- Export/Inflow Ratio
- Possible QWEST Limits
- San Luis Storage & Delivery (demands)
- Fish Triggers

Five Basic Water-Supply Tools for Balancing Fish Protection Measures

- Reducing demands for Delta exports through water conservation and recycling
- Increasing export pumping capacity during periods of high Delta inflow when fish density is low
- Increasing storage capacity of surface reservoirs
- Increased recharge and extraction capacity of ground water storage basins
- Reducing demands for Delta exports through water conservation and recycling programs
- Increasing water transfers and exchanges

Three Types of Flexible Operations Measures to Increase Fish Protection

- Type 1: Impose more restrictive flow and export standards that have on and off triggers. Water supply balance provided by relaxation of standards and development of new supplies.
- Type 2: Environmental water generated by relaxation of existing standards and sharing of new supplies. Relaxations and use of environmental water defined by an Eco Manager.
- Type 3: Impose export restrictions based on fish salvage and monitoring triggers. Additional fish protection measures provided by environmental water generated by new water supplies.

Benefits and Options of Type II Scenario

- Risk shared equitably between water supply and environmental protection
- Both water supply and environmental protection improve with new water supply measures
- Water accounting can be based on existing standards
- Shifts from regulatory to market based solutions
- Promotes scientific framework for strong adaptive management

Benefits and Options of Type III Scenario

- Results in water-producing trade between the uncertain benefits of the E/I ratio and the more certain benefits of real-time operations
- Trick is to develop a set of rules that will produce environmental benefits
- Produces sufficient water to share (relative to Accord + upstream AFRP)

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BIOLOGICAL ISSUES

- Export Effects
- Importance of Habitat
- Fish Passage Dynamics

Export Effects

- Population effects of entrainment and salvage losses
- Importance relative to other sources of mortality
- Effects on hydrology and fish distribution
- Entrainment of eggs and larval fish
- Effects on fish habitat and estuary foodweb

Importance of Habitat

- Benefits of habitat improvement versus entrainment reductions
- Potential benefit of improving habitat in the south Delta
- DEFT does agree on habitat list and priorities

Fish Passage Dynamics

- Fish migration cues: flow versus tides/salinity
- Head-of-Old-River Barrier
- Closure of Delta Cross Channel
- Small Hood test diversion
- South Delta Barriers