

Black=Stressors from CWF BiOp

Blue=Stressors from stressor tables in Integration and Synthesis (Chapter 9) of 2009 CVP/SWP BiOp

### **Species stressors**

Increased upstream temperature

Redd dewatering

Redd scour

Stranding

Screen impingement and entrainment

Increased predation (due to structures)

Travel time

Outmigration routing

Altered south Delta hydrodynamics due to exports and HORB

Entrainment and loss at facilities

Contaminant exposure

SMSCG (was explicitly in CWF PA)

Roaring River Distribution System (was explicitly in CWF PA)

Morrow Island Distribution System (was explicitly in CWF PA)

Goodyear Slough (was explicitly in CWF PA)

North Bay Aquaduct (was explicitly in CWF PA)

Contra Costa Rock Slough (was explicitly in CWF PA)

RBDD gates

Fish passage

Unscreened CVP diversions

Screened CVP diversions

Direct and indirect loss associated with export operations

Reduced spawning area

Limited spawning habitat availability

Excessive fines in spawning gravel results from lack of overbank flow

Reduction in rearing habitat quantity and quality

Limited rearing habitat availability

Reduction in rearing habitat complexity due to lack of channel forming flows

Water temperature above 56 for optimal incubation and development

Water temperature during summer holding period

Water temperatures warmer than life history stage requirements (could list specific months and life history stage as appropriate)

Exposure to stressful water temperatures

Reduced quality of rearing habitat

Lack of channel-forming flows, loss of rearing habitat and riparian habitat, loss of riparian vegetation, impaired geomorphic processes

Higher flows and cooler water temperatures during the summer (leading to residualized *O. mykiss*)

Flow fluctuations (leading to potential stranding)

Reversed natural flow pattern (high flows in summer, low flows in fall)

Flood releases

Nimbus hatchery O. mykiss spawning with natural-origin steelhead in the American River and in other CV streams

Predation

Monitoring

Studies in Appendix 2-B (on green sturgeon)

Treatment of Clifton Court Forebay with herbicides

**Critical habitat actions**

Increased upstream temperature

Redd dewatering

Redd scour

Contaminant exposure

Reduced in-delta flows