CALFED striped bass draft 6-15-98
Abstract.

We believe that none of the alternatives are likely to restore the adult population to historic levels (i.e., population of 1.8-3 million). Alternative 3 provides the best potential for partial restoration of the population. Alternative 3 is likely to reduce the entrainment of juveniles at the south Delta export facilities and increase the salvage of those that are entrained. Alternative 3 will likely enhance the transport of eggs and larvae in the lower San Joaquin River by positive flows and also restore Delta nursery habitat. However, both Alternatives 2 and 3 may have negative impacts by decreasing egg and larva transport below the Hood intake. Alternative 2 is also a poor choice because of passage problems created for adult fish using the Mokelumne River as a migration route to Sacramento River spawning grounds. Alternative 2 also subjects eggs and larvae to two diversion points. Alternative 1 is likely to increase the entrainment of eggs and larvae at the south Delta export facilities and is a poor choice. The common programs have both potential benefits and detriments that were difficult to quantify but are likely to have some net benefit.

Three question summary

1. Which striped bass life stages are most sensitive to diversion effects under no action and alternatives 1, 2, and 3? When and where are they most affected?

No Action. Striped bass eggs, larvae, and juveniles are directly impacted by water diversions in the Delta during the first year of life from April through fall, and sometimes during winter. The impact on eggs and young fish occurs from April to July, with further impacts on larger juveniles through summer and fall. Under current conditions, the population is likely to continue to decline in the absence of a stocking program. In recent years, young striped bass abundance has remained low despite higher-than-average delta outflows and low export rates, both of which are conducive to strong year classes in the past.

Alternative 1. Entrainment of eggs, larvae, and juveniles in the south Delta will continue and increase with channel improvements and additional storage. Closure of the cross channel gates through the spawning season from April to June would reduce the diversion of Sacramento River striped bass eggs and larvae but may cause increased flow reversal in the lower San Joaquin River.

Alternative 2. Increased numbers of eggs and larvae could be diverted and entrained from the Sacramento River because fish screens at the Hood diversion would be inadequate to screen these stages. The magnitude of diversion of eggs and larvae from both the Sacramento and San Joaquin rivers, as well as juveniles from the San Joaquin, depends on operation of the facilities. For example, temporary reduction in diversion at Hood during the striped bass spawning season would reduce diversion of eggs and larva from the Sacramento River and provide transport flow to move young bass to the nursery areas downstream. At the Clifton Court diversion, eggs, larvae, and juveniles would be continue to be entrained; more juveniles would be salvaged.

Adults would be attracted by the high proportion of Sacramento water in the Mokelumne River and they would be trapped behind the fish screen at Hood. The feasibility of passing large numbers of striped bass around or over such structures is highly questionable. Adults trapped behind the Hood fish screen would be forced to spawn in the Mokelumne River and most of their progeny would be entrained in the flow to the export pumps. If flow diverted at Hood is a large proportion of the Sacramento flow, as might occur in dry years, more fish would be attracted to the Mokelumne as a corridor to the spawning grounds.

Alternative 3. Increased numbers of eggs and larvae could be diverted and entrained from the Sacramento River because fish screens at the Hood diversion would be inadequate to screen these stages. The magnitude of diversion of eggs and larvae from both the Sacramento and San Joaquin rivers, as well as juveniles from the San Joaquin, depends on operation of the facilities. For example, temporary reduction in diversion at Hood during the striped bass spawning season would reduce diversion of eggs and larva from the Sacramento River and provide transport flow to move young bass to the nursery areas downstream. If diversions are not curtailed entrainment of egg and larva will be high and transport flows will likely be inadequate. Adult migrations would not be affected as for Alternative 2 because the facility is isolated. Because QWEST flows would be improved over existing conditions and less water would be diverted from the south Delta, we expect less entrainment of striped bass and improvement of nursery habitat in the Delta.

5. What is the risk and chances of success of species recovery for each alternative?

The adult population is affected by reduced recruitment as a result of early life stage losses. Although there is evidence of density-dependent survival (compensation) it has not been sufficient to maintain the numbers of adults that were historically present. Recovery cannot occur under the No Action Alternative. Alternatives 1 and 2 appear to exacerbate present problems associated with using the Delta as a water export conduit. Alternative 3, while falling short of restoration to historic population levels, would, if operated in a manner which minimized entrainment of young striped bass and provided adequate transport flows, provide the best opportunity for partial restoration of the population.

7. What degree of benefit and impact will the common programs provide?

The common programs will likely provide some benefits to young striped bass, but these are difficult to quantify. Screening of small Agricultural diversions would reduce mortality of young striped bass. Increasing the amount of marsh habitat for nursery areas adjacent to Suisun Bay and in San Pablo Bay would likely increase survival of young striped bass. Reducing point and non-point sources of toxic chemicals and metals could improve conditions for all life stages to some degree; however, present population impacts of toxicants have not been demonstrated. Reduction of organic input and decreasing turbidity may adversely affect striped bass production.

STRIPED BASS BULLETS (FOR PARENT MATRIX)

EXISTING CONDITION

- Major entrainment of young life stages

NO ACTION

- Major entrainment of young life stages

COMMON PROGRAMS
- Uncertain benefits of habitat improvements
- Uncertain benefits/detriments of water quality improvements
- In-Delta screening benefits juveniles

ALTERNATIVE 1
- Increased entrainment of young life stages over existing conditions
- Decreased mortality of entrained juveniles
- QWEST not improved

ALTERNATIVE 2
- Potential increased entrainment of eggs & larvae (north and south Delta)
- Transport flows for eggs and larvae possibly decreased and mortality increased
- Decreased mortality of entrained juveniles
- Improved QWEST
- Adult passage problems and detrimental change in spawning location

ALTERNATIVE 3
- Potential increased entrainment of eggs & larvae at Hood
- Reduced entrainment of eggs, larvae and juveniles from the Delta
- Transport flows for eggs and larvae possibly decreased and mortality increased unless strategic curtailments implemented.
- Improved QWEST and Delta nursery habitat.

Striped bass matrix-Alternative evaluation, summary score where 0 = existing conditions and 7= full restoration.

Alternatives	Summary score
Existing conditions	0
No Action	-1
Common Programs	1
Alternative 1	1
Alternative 2	0
Alternative 3	3