Draft Delta Smelt Working Group Decision Process

The following document represents a written description of the types of information, questions, and thought processes FWS staff and other biologists go through to determine if recommendations for operational changes are warranted. The document is not intended to add any new requirements or criteria, but rather it is intended to inform other interested parties of the decision processes presently in use.

Life stage: Adults

Timing: Pre-VAMP (February 1 - April 15)

Concerns: High relative densities of adults in the south Delta are a concern due to the potential for increase entrainment at the SWP and CVP. High relative densities of delta smelt in the south Delta also suggest spawning may occur in the south Delta, increasing the chances for exceeding the red light level[1] of incidental take in the late spring and early summer.

Data of interest:
1) Before pre-VAMP, consider fall mid-water trawl indices
2) Spring mid-water trawl
3) Salvage
4) Beach seine
5) Chipps Island trawl
6) Hydrology (wet or dry year; placement of X2)
7) Water quality conditions and water temperature
8) Condition of the fish

Assessment of conditions:
1) Adult distribution in Delta and downstream of the Delta
2) Salvage levels/densities, yellow light
3) Potential high numbers in juvenile salvage if high numbers of adults are concentrated in the south Delta

Tools for change: Reduction in exports, either concurrently at both facilities or at the facility that is salvaging the most fish

Biological questions using the available data:

1) Is the adult distribution broad or not? (Maybe hard to answer with spring mid-water trawl, should consider other approaches, ie. adding Kodiak trawls in the spring to determine adult distribution)

2) Is salvage elevated or not?

3) Is previous FMWT index high or low?

4) Are water quality conditions conducive to spawning, (eg. water temperatures)?

5) Are fish ripe for spawning (both of above may help determine if there will be a protracted spawn)

Questions concerning operations:

A) Is there a need to reduce exports at either or both facilities based on the distribution of adults and/or an increase in the salvage of adult delta smelt?

B) Is it likely to be a difficult spring/summer? That is, do we expect high levels of delta smelt salvage in the spring or summer?

Assessment of Concern:

I. If the stated recovery criteria index is lower than 239, then concern is high

II. If distribution information shows adults delta smelt are concentrated in the South and Central Delta, then concern is high

III. If the observed or predicted salvage of adults increases sharply, then concern is high

IV. If fish at the salvage facilities are on the verge of spawning and temperatures are conducive to spawning, then concern is high

Recommendations:

A) If concern is high and salvage increases abruptly, then recommendations for action is likely

B) If the observed or predicted salvage is at or approaching the red light or at the yellow light, then a recommendation for action is likely

C) If II. and III. are true, then we expect a difficult spring or summer (June and July)

[1]Yellow and red light as defined in the 1995 OCAP opinion. See attached table.

Life stage: Larvae

Timing: VAMP (April 15 - May 15)

Concerns: High numbers of larvae in the south Delta will likely result in higher numbers of fish rearing to juvenile stages and higher levels of entrainment.

Data of interest:
1) Light traps surveys
2) 20mm survey
3) Water temperatures
4) Salvage[2]
5) Hydrology (wet or dry year; placement of X2)

Assessment of conditions:
1. Spawning distribution
2. Percent distribution
3. Timing: start and duration of spawning
4. Implement model to predict future salvage (end of VAMP)
5. Water quality conditions, water temperature

Tools for change:
1. Change in San Joaquin River flows
2. Change in export reductions (1-3 = net flow)
3. Change in barrier operations

Additional data needs: 1. Increase 20mm sampling frequency

Biological questions using the available data:

1) Is distribution of spawning broad or restricted?
2) Is larval distribution broad or restricted?
3) When does spawning start?
4) Do we expect punctuated or protracted spawning?
5) Do we expect SWP and CVP to hit red light salvage levels?

Questions concerning operations:

A) Do we consider changing net flows in Old and Middle Rivers?

Questions concerning additional data needs:

A) Do we consider increasing 20mm sampling frequency?
If a fortnightly 20mm survey is occurring and red light occurs, then go to weekly 20mm survey

Assessment of Concern:

I. If light trap results demonstrates that spawning has occurred in the South Delta, then concern is high

II. If the 20 mm survey shows 50% of the delta smelt are in the zone of influence (eg. east of the confluence), then concern is high

III. If abundance in the 20 mm survey is low relative to other years, then concern is high

IV. If substantial larval recruitment is expected to occur in the south and central delta post-VAMP, then concern is high

Recommendations:

If concern is high and salvage is at or approaching red light or at yellow light, then recommendations to improve net flow in Old and Middle Rivers are likely
(This recommendation applies during VAMP and post-VAMP, although the tool used will vary)

[2] Salvage levels at this time will likely not reflect the number of delta smelt in the south Delta, since smelt begin to be counted at the salvage facilities at about 25 mm

Life stage: Juveniles

Timing Post-VAMP (May 15 - July 1)

Concerns: High numbers of delta smelt juveniles in the south and central Delta will likely result in increased entrainment when export levels increase at the end of VAMP

Data of interest:
1) 20mm survey
2) Salvage
3) summer townet
4) Hydrology (wet or dry year; placement of X2)
5) Export rates

Assessment of conditions:
1) Percent of the distribution outside the zone of influence (eg. east and west of the confluence)
2) Salvage level (number)
3) Salvage density

Tools for change:
Change in exports
Change in agricultural barrier operations[3]
Removal of HORB[3]
Position of cross-channel gates
Change in San Joaquin/Old and Middle River flows

Biological Questions using the available data:

1) What is the relative distribution in and outside the zone of influence (eg. upstream and downstream of the confluence)?

2) Is abundance high?

3) Is salvage at or approaching red light or at yellow light?

4) Are fish migrating west from the Delta?

Questions concerning operations:

A. Do we consider changing exports?
B. Do we consider changing agricultural barrier/HORB operations?
C. Do we consider changing the position of the cross channel gates after May 20?

(Changes considered under 1 and 2 above would aim to increase net positive flows in Old and Middle rivers downstream of the export facilities.)

Questions concerning additional data needs:
Do we consider increasing 20mm sampling frequency?

If a fortnightly 20mm survey is occurring and red light occurs, then go to weekly 20mm survey

Assessment of Concern:

I. If the 20 mm survey shows 50% of the delta smelt are in the zone of influence (eg. east of the confluence), then concern is high

II. If abundance in the 20 mm survey is low, relative to other years, then concern is high

Recommendations:

If concern is high and (3) is yes, then recommendation for action is likely

[3]The barriers shall be operated at stated in the USFWS biological opinion(1-1-96-F-53), April 26, 1996.