Delta Smelt Working Group Meeting Minutes

September 26, 2006

Participating: Gonzalo Castillo (USFWS), Mike Chotkowski (USBR), Kevin Fleming (CDFG), Bruce Herbold (USEPA), Tracy Hinojosa (CDWR), Peter Johnsen (USFWS), Ann Lubas-Williams (USBR), Matt Nobriga (CDWR), Kevin Sun (CDWR), Jim White (CDFG) and Victoria Poage (USFWS, convener and scribe)

For Discussion:
Action item from August 30:
1. Analyses of data pertinent to winter salvage events

Recommendation for WOMT:
The Working Group did not have a recommendation for WOMT.

The Working Group continued its August 30 discussion of the environmental factors that correspond to the onset or increases of salvage of pre-spawning adult delta smelt. The underlying hypothesis is that delta smelt cue on certain environmental factors when moving up the estuary to spawn, which may influence their vulnerability to entrainment at the export facilities. If environmental factors could be found that are sufficiently predictive of salvage, then modifications of Project operations could be designed to proactively avoid or minimize the entrainment of adult delta smelt. A small sub-group met previously to share data and prepare analyses for discussion by the entire Working Group. Analyses were intended to evaluate several hypothetical cues, including:

- Increases in Delta inflow
- Decreases in water temperature
- Changes in ambient light due to decreasing day lengths during late fall

Water temperatures and hydrodynamic indicator variables were plotted with historic salvage for the October-thru-January period and evaluated by eye (see attachment[1]). Evaluation of the resulting graphs revealed that an algorithm would be needed to identify where a salvage "event" actually occurs, since in all years there is a period of relatively modest salvage followed by one or more peaks. As discussed at the previous meeting, inflow alone is not a satisfactory predictor of salvage events. X2 position, which is considered a good indicator of delta smelt distribution, does not respond quickly enough to be a good predictor of salvage events. Drops in water temperature always precede salvage events, but such drops occur every year, so as a single environmental factor temperature is not an adequate predictor. However, a drop in water temperature, perhaps to some threshold value, followed by an increase in inflow should be evaluated as a predictor of salvage events.

[1] The reader is cautioned to pay close attention to the scale of the various graphs; also, cumulative salvage is denoted by blue circles in all graphics except for those depicting the average temperatures at Antioch, where cumulative salvage appears as red triangles

The Working Group's next steps will be to refine the potential environmental triggers and guidelines and game them using historical salvage data. Adult delta smelt ride the tides to reach spawning habitats, so tide data could be added. An attempt must be made to define the amount and the extent of any potential curtailments. Curtailments would be defined in terms of Old River and Middle River flow targets, and the water costs of potential actions could be estimated. OR/MR flows allow for a certain amount of flexibility, as they can be achieved via reduced exports, increased SJR flow or various combinations of the two.

Potential scenarios to evaluate include:

- Export curtailment in response to an observed salvage event that triggers concern, i.e., business as usual
- A prescriptive curtailment, i.e., one beginning at a prescribed time and continuing for a prescribed period (more work would be needed)
- A curtailment triggered by an environmental predictor, e.g., temperature followed by flow as mentioned above

The same small subgroup will refine the analyses and report to the full Working Group at the next meeting.

On another topic, an evaluation of CDFG's Larval Survey sampling is needed. Thus far, the sampling has not collected very many larval delta smelt; its original intent was to evaluate gear types and sampling protocols, but last year it was subsumed by the POD effort in an attempt to determine larval distribution of species of concern. CDFG wishes to return to the original intent of the survey and use appropriate gears and deployment; however, the management questions that the survey is intended to address are unclear. If the question is when larvae become vulnerable to entrainment, it may be that this can be answered using a combination of data from spent adults, X2 and water temperatures. At a certain point, the 20-mm Survey is a more effective means of elucidating distribution. If the question is one of early detection so that actions can be taken to minimize entrainment, different gears and protocols may be needed. CDFG will submit a draft work plan to the Interagency Ecological Program.

Action Items:
1. Mike Chotkowski, Kevin Fleming, Matt Nobriga and Bruce Herbold will confer to refine the analyses, and will report back to the full Working Group at the next meeting.

Next Scheduled Meeting: Tuesday, October 10, 2006, at 2:00 pm in room W-1931 at the Cottage Way federal building.

One attachment

Submitted, VLP

Attachment

Figure 1. Delta smelt salvage by date, with dates represented as days after October 1.

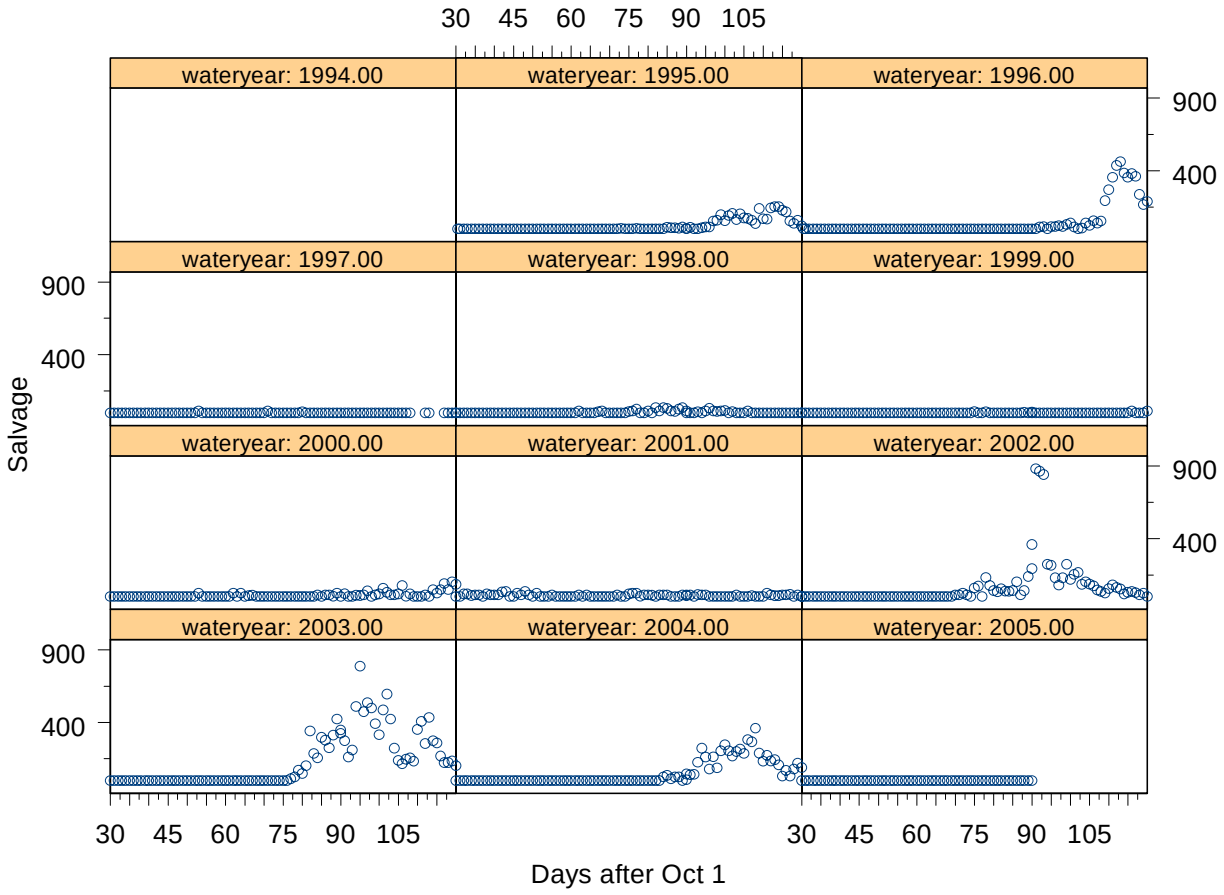

Figure 2. Cumulative delta smelt salvage with Delta inflow overlaid.

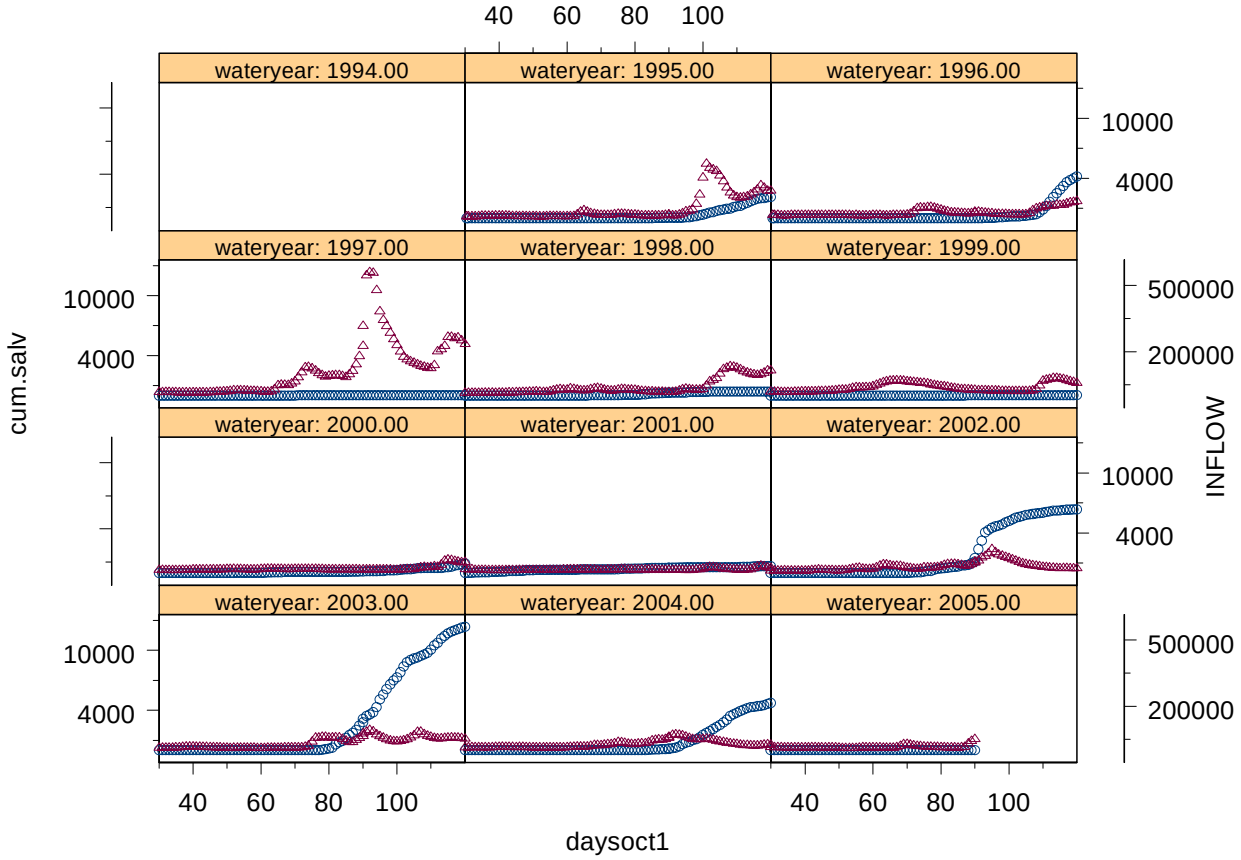

Figure 3. Cumulative delta smelt salvage with average X2 overlaid.

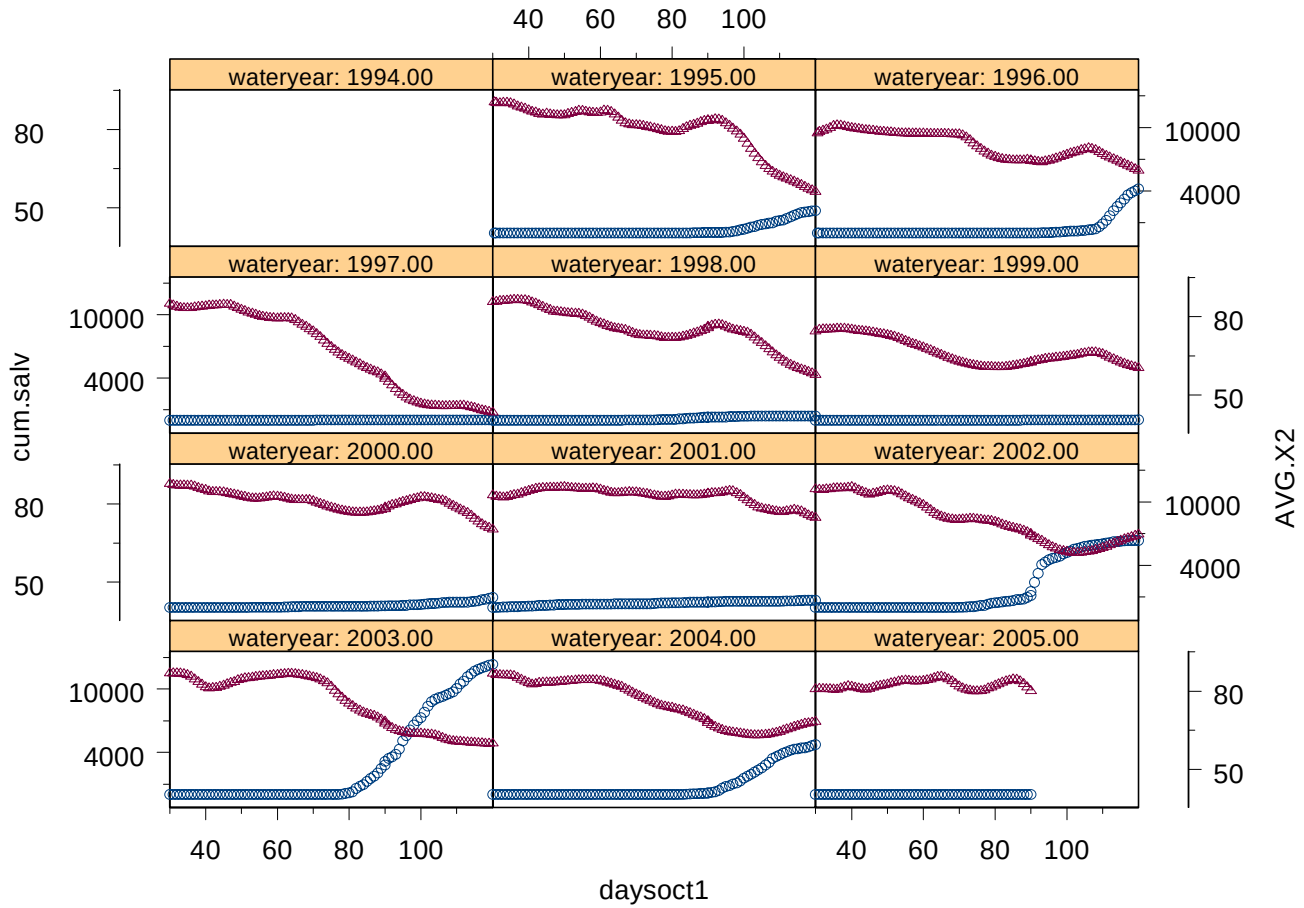

Figure 4. Cumulative delta smelt salvage with average water temperature at Antioch overlaid.

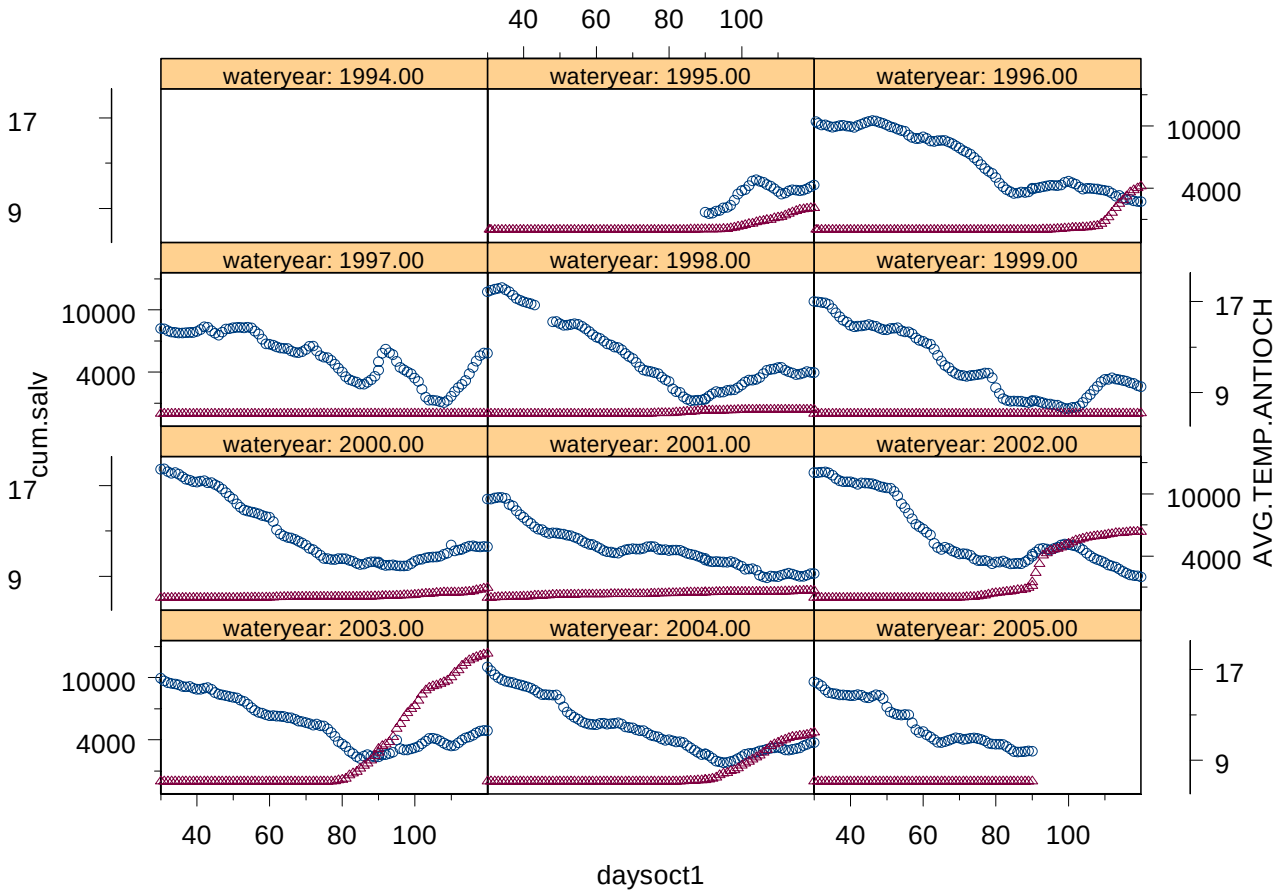

Figure 5. Cumulative delta smelt salvage with Sacramento River flow overlaid.

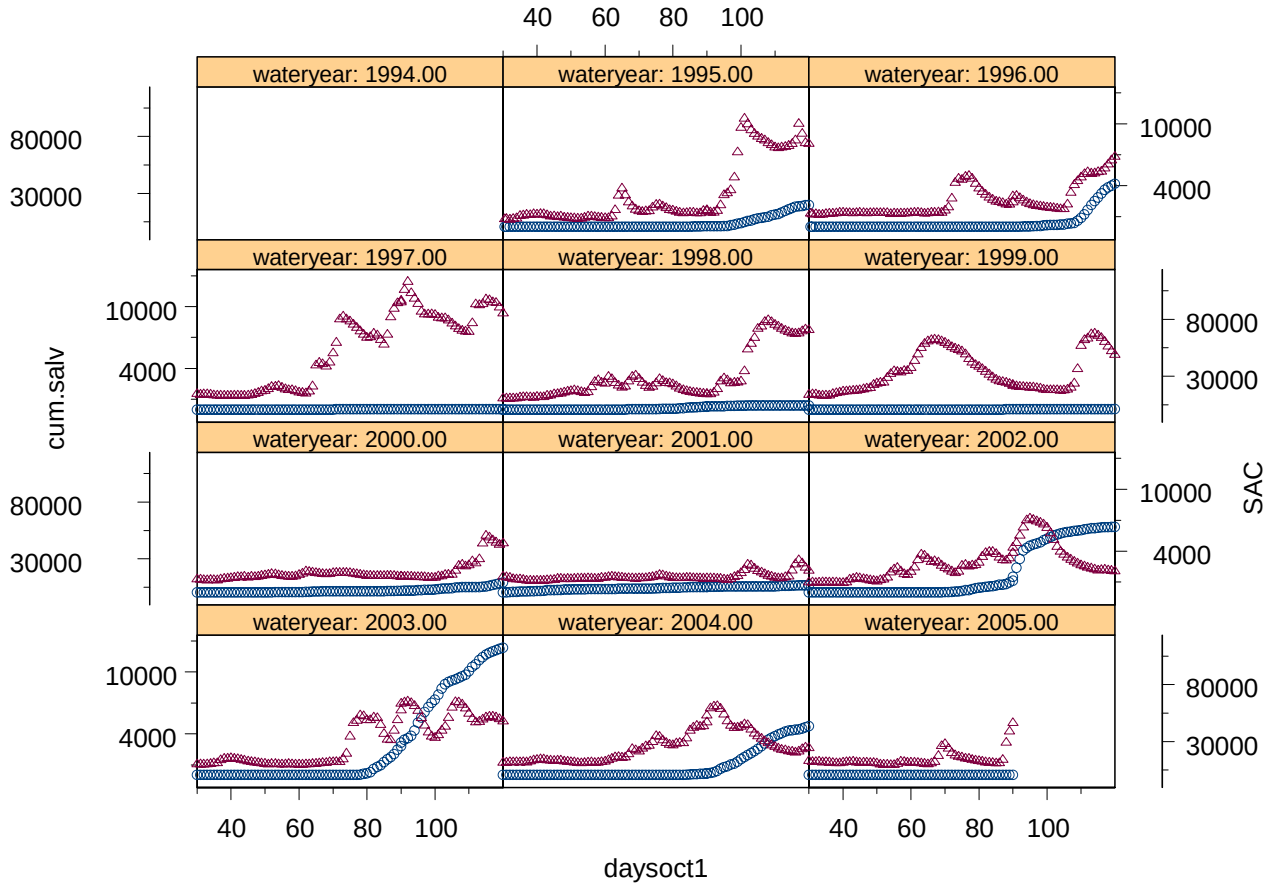

Figure 6. Cumulative delta smelt salvage with San Joaquin River flow overlaid.

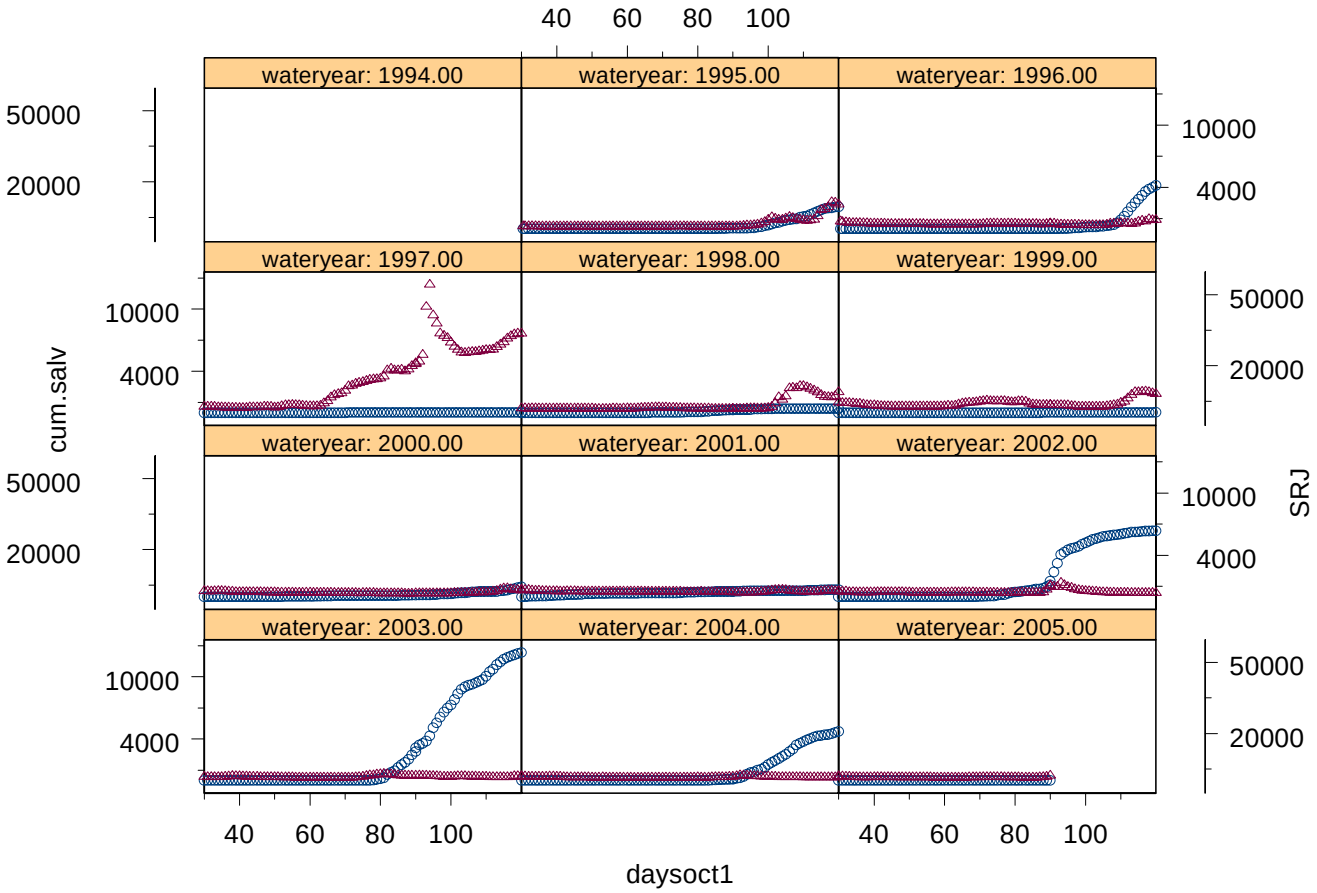

Figure 7. Cumulative delta smelt salvage with total daily solar radiation overlaid.