

Delta Smelt SDM - Limiting Factors model update

Brian Crawford <bcrawford@compassrm.com>

Fri 2/2/2024 4:00 PM

To: Samuel N Luoma <snluoma@ucdavis.edu>; ben.geske@deltacouncil.ca.gov <ben.geske@deltacouncil.ca.gov>; William Bennett <billbennett22@gmail.com>; Eakin, Michael@Wildlife <michael.eakin@wildlife.ca.gov>; Scott Hamilton <scott@resourceeconomics.net>; Acuna, Shawn C <sacuna@mwdh2o.com>; Ching-Fu Chang <cchang@ccwater.com>; Mahardja, Brian <bmahardja@usbr.gov>; sam.pyros@deltacouncil.ca.gov <sam.pyros@deltacouncil.ca.gov>; Culberson, Steve@DeltaCouncil <steve.culberson@deltacouncil.ca.gov>; Bashevkin, Sam@Waterboards <sam.bashevkin@waterboards.ca.gov>; Nobriga, Matt <matt_nobriga@fws.gov>

Cc: Sally Rudd <srudd@compassrm.com>; Dan Ohlson <dohlson@compassrm.com>; Bruce DiGennaro <bruce@essexpartnership.com>; Darcy Austin <daustin@swc.org>; Elan Failing <efailing@compassrm.com>

Hello TWG,

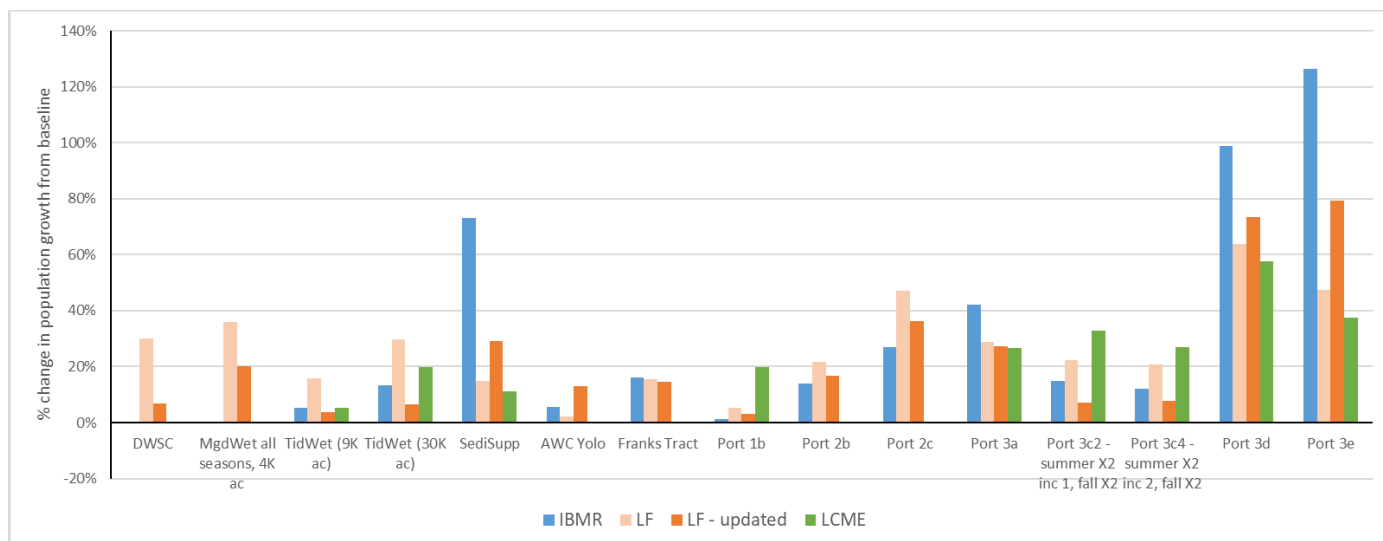
As you all work on science action sheets and reviewing the final report draft, we wanted to send a quick note on work Scott's been doing to update the Limiting Factors model.

Scott Hamilton recently completed an updated version of the Limiting Factors model for use in this SDM process. In short, he removed the first flush covariate from the original version of the model to explore underlying covariates that directly affected Delta Smelt abundance. The updated model has 12 covariates: (1) Exports in Mar-Apr, (2) End of spawning (essentially spawning duration), (3-5) Secchi depth in Mar-Apr, May-Jun, Sep-Oct, (6-8) Food in Mar-Apr, Jun-Aug, Sep-Oct, (9) Water Temperature in June, (10) Last Flush, and (11-12) EC in Jul-Aug, Sep Oct.

Results showed that this updated model is less sensitive to increases in food (but still predicts benefits from spring and summer food), more sensitive to increases in turbidity (now more similar to IBMR patterns), and predicts a slightly inverse relationship with summer outflow. Below is a figure comparing the results from the updated and original LF model, as well as the IBMR and LCME for selected actions and portfolios. All results are in the main Model Results workbook on the TWG SharePoint.

Compass has already put these updated results – replacing the original LF results – in the final report, and we plan to continue moving forward with the updated results when developing materials for presentations and final reports. Please let us and/or Scott know if you have any questions, feedback, or would like to discuss any of this further.

Thanks,
Brian



Brian Crawford, PhD
(he/him)
Decision scientist / ecologist
Compass Resource Management
Phone: (301) 529-8206
www.compassrm.com

