# Supplemental Information

This paper compiles several datasets to illustrate impacts of the 2014-16 marine heatwave on fisheries of the U.S. and Canada West Coast. We describe the compilation of these datasets below.

**Sea surface temperature data (Figure 1)**

The sea surface temperature data were obtained from the COBE Sea Surface Temperature (SST) dataset (Ishii et al., 2005), which provides monthly SST data on a globally complete 1°x1° grid from 1850-present based on an interpolation of in-situ and satellite-derived SST observations.

**Federal fisheries disaster data (Figure 2)**

The federal fisheries disaster data were obtained from Bellquist et al. (2021). These data describe information on every U.S. federal fisheries disaster declaration occurring from 1989-2020, including information on the fishery impacted, the cause of the disaster, the amount of relief money requested and awarded, and other relevant information.

**Commercial revenues data (Figures 3 & S1)**

We used annual statewide fisheries revenue data to evaluate impacts of the heatwave on commercial fisheries. To create this dataset, we combined data from a few sources. We used annual revenue data from the PacFIN database for the U.S. West Coast (California, Oregon, and Washington) and data provided directly from NOAA for the Gulf of Alaska. We were unable to use the AKFIN database (i.e., the equivalent of PacFIN for Alaska) for Alaska because the AKFIN database only includes crabs and groundfish (i.e., it is less comprehensive), is not species-specific (i.e., it is more generic), and does not separate the Gulf of Alaska from the Bering Sea and Aleutian Islands regions. We focus on the Gulf of Alaska region because this was the region impacted by the 2014-16 marine heatwave. We used annual revenue data provided directly by Fisheries and Oceans Canada (DFO) for British Columbia.

**Recreational landings data (Figures 4 & S2)**

We used estimates of annual statewide fisheries landings (i.e., number of retained fish) to evaluate impacts of the heatwave on recreational fisheries. To create this dataset, we

combined data from a few sources. We used estimates of annual landings from the RecFIN database for the U.S. West Coast (California, Oregon, and Washington) and from the ADFG website for the Gulf of Alaska. However, the RecFIN data does not include catches of highly migratory species in California's for-hire (Commercial Passenger Fishing Vessel or CPFV) fleet. Thus, we used data from the CDFW Landings Reports for these species. We used the ADFG database for Alaska because the AKFIN database does not include recreational landings estimates. Although the NOAA FOSS database includes estimates of recreational landings by state, these estimates have been transformed into biomass (pounds) and are thus less representative of the original data. Furthermore, they do not include recreational landings estimates for Alaska.

**Case study time series data**

*Dungeness crab management history (Figure 6A)*
We obtained the spatial-temporal history of the Dungeness crab fishery from (Free, Moore, et al., 2022). These data describe the location and duration of every closure (or evisceration order) in the West Coast Dungeness crab fishery from 2014-2021.

*GOA Pacific cod revenues data (Figure 6B)*
We obtained time series of commercial Gulf of Alaska (GOA) Pacific cod fisheries revenues by gear and subarea from the AKFIN database.

*Red abalone landings data (Figure 6C)*
We obtained time series of recreational red abalone landings estimates by county from a CDFW report (CDFW, 2015). CDFW estimated these values using abalone "report cards" (i.e. creel survey) and telephone surveys (Kalvass & Geibel, 2006).

*Klamath River Fall Chinook escapement forecasts and observations (Figure 6D)*
We obtained time series of Klamath River Fall Chinook salmon pre-season escapement forecasts and post-season escapement observations from the 2022 pre-season report (PFMC, 2022). Escapement represents the number of salmon that escaped fishing and returned upriver.

*Pacific sardine revenues data (Figure 6E)*

We obtained time series of commercial Pacific sardine fisheries revenues by state from the PacFIN database (PSMFC, 2021), as compiled in the CALFISH database (Free, Vargas Poulsen, et al., 2022).

*Pacific bluefin tuna landings data (Figure 7A)*

We obtained time series of Pacific bluefin tuna landings by source waters (U.S. or Mexico) by California's recreational for-hire fleet from the California Marine Logbook System (MLS). The data query was submitted and processed by a co-author who is a CDFW employee.

*Market squid revenues data (Figure 7B)*

We obtained time series of commercial market squid fisheries revenues by port complex from the PacFIN database (PSMFC, 2021), as compiled in the CALFISH database (Free, Vargas Poulsen, et al., 2022).

*Bocaccio recruitment estimates (Figure 7D)*

We obtained time series of Bocaccio rockfish recruitment estimates from the first author of the most recent bocaccio rockfish stock assessment (DFO, 2021).

*Shortbelly rockfish bycatch data (Figure 7E)*

We obtained time series of shortbelly rockfish landings and discard estimates from the Groundfish Expanded Mortality Multiyear (GEMM) (Somers et al., 2020, 2021).

*Northern anchovy index of abundance data (Figure S3)*

Larval anchovy time series is from the CalCOFI spring survey. Young of the year time series is from the Rockfish Recruitment and Ecosystem Assessment Survey (RREAS) in southern California (Thompson, Bjorkstedt, et al., 2022).

*Pacific bluefin tuna trophy size fish data (Figure S4)*

We obtained time series of trophy size Pacific bluefin tuna reported in the "Whoppers of the Week" section of Western Outdoor News from 1968-2019 from (Bellquist et al., 2016).

## Supplemental references

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