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### Data S4

### Data and code necessary to reproduce the seven figures in the publication.

### Author(s) [of the material provided in DataS4.zip]

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### File list (files found within DataS4.zip)

Figure1\_map.R

Figure2\_map.R

Figure3\_boxplot.R

Figure4\_deltaCV.R

Figure5\_samplingeffort.R

Figure6\_deltacv\_heatmap.R

Joint\_posterior.csv

Trap\_only\_posterior.csv

map\_data.csv

site\_data.csv

trap\_data.csv

simulation\_scenarios.csv

simulation\_joint\_summary.csv

simulation\_trap\_summary.csv

**Description**

Figure1\_map.R – Code necessary to reproduce Figure 1.

Figure2\_map.R – Code necessary to reproduce Figure 2.

Figure3\_boxplot.R – Code necessary to reproduce Figure 3.

Figure4\_deltaCV.R – Code necessary to reproduce Figure 4.

Figure5\_samplingeffort.R – Code necessary to reproduce Figure 5.

Figure6\_deltacv\_heatmap.R – Code necessary to reproduce Figure 6.

Joint\_posterior.csv – Posterior distributions derived from the joint model (fit using collected data) for estimated µ at each of 20 sampled sites, as well as estimated p10, β, and Φ. Data include the values from the 10,000 sampling iterations for each estimated parameter.

Trap\_only\_posterior.csv – Posterior distributions derived from the trap-only model (fit using collected data) for estimated µ at each of 20 sampled sites, as well as estimated Φ. Data include the values from the 10,000 sampling iterations for each estimated parameter.

map\_data.csv – Site location and detection metadata for map figure generation. Data include site ID (Site), site longitude in xy coordinates (X), site latitude in xy coordinates (Y), color associated with detection type used to generate Figure 1 (det), site label longitude in xy coordinates used to generate Figures 1 & 2 (X\_label), and site label latitude in xy coordinates used to generate Figures 1 & 2 (Y\_label).

site\_data.csv – Metadata for each sampled site. Data include the site-specific index for estimated parameter µ (param), site ID (Site), site designation as a location with crabs trapped historically from 2017-2021 (historic\_trap), region associated with site (Region).

trap\_data.csv – Trap data used to fit the models. Data include the full site name (Full\_site\_name), site ID (Site), date of trap sample collection (Date), ID of trap sample (TrapID), number of crabs trapped in trap sample (Count), latitude of trap sample (Latitude), and longitude of trap sample (Longitude).

simulation\_scenarios.csv – Simulation scenarios (sites) used in simulation study. Data include simulation scenario ID from 1-99 (ID), µsim associated with each simulation scenario (mu), the number of traps set associated with each simulation scenario (traps), and the true probability of molecular detection associated with mu (p11).

simulation\_joint\_summary.csv – Summary of simulation results using the joint model. Data include simulation scenario ID from 1-99 (ID), the mean of the posterior distribution of estimated µsim associated with each scenario replicate (mean), the standard deviation of the posterior distribution of estimated µsim associated with each scenario replicate (sd), the coefficient of variation of the posterior distribution of estimated µsim associated with each scenario replicate (cv).

simulation\_trap\_summary.csv – Summary of simulation results using the trap-only model. Data include simulation scenario ID from 1-99 (ID), the mean of the posterior distribution of estimated µsim associated with each scenario replicate (mean), the standard deviation of the posterior distribution of estimated µsim associated with each scenario replicate (sd), the coefficient of variation of the posterior distribution of estimated µsim associated with each scenario replicate (cv).