

*The following supplement accompanies the article*

## **Intra-seasonal and inter-annual patterns in the demographics of sand lance and response to environmental drivers in the North Pacific**

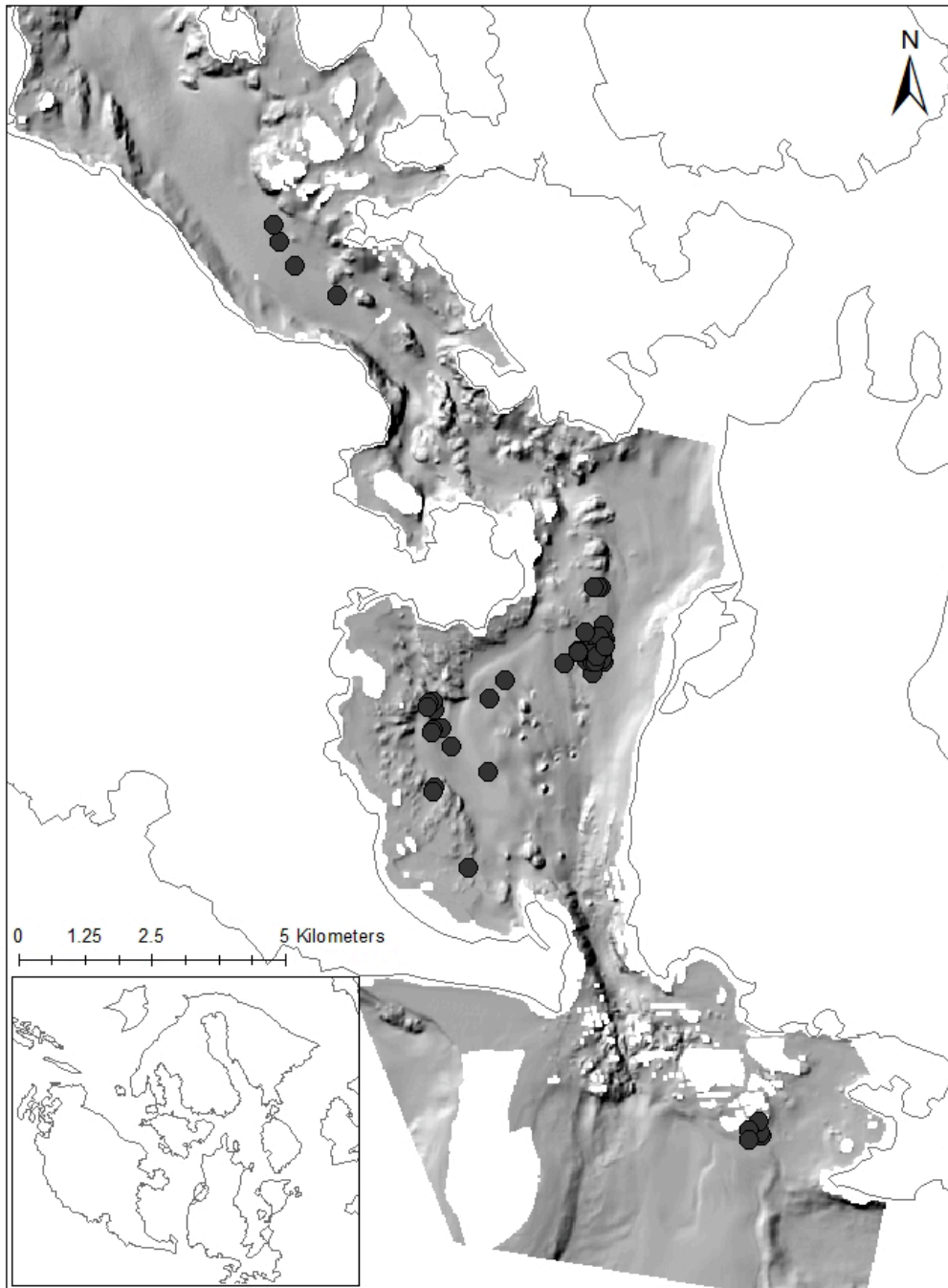
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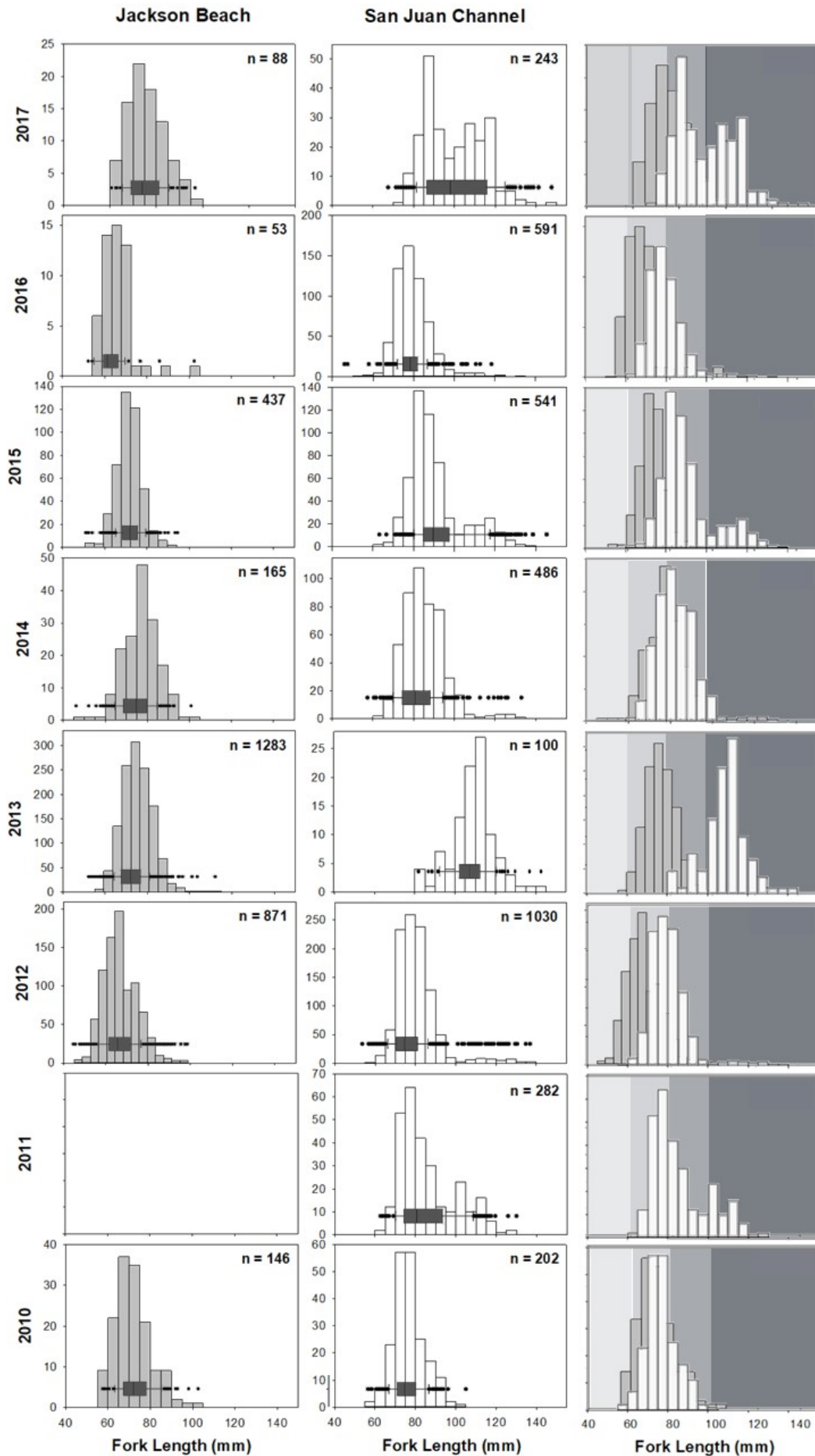
*Marine Ecology Progress Series 617-618: 221–244 (2019)*

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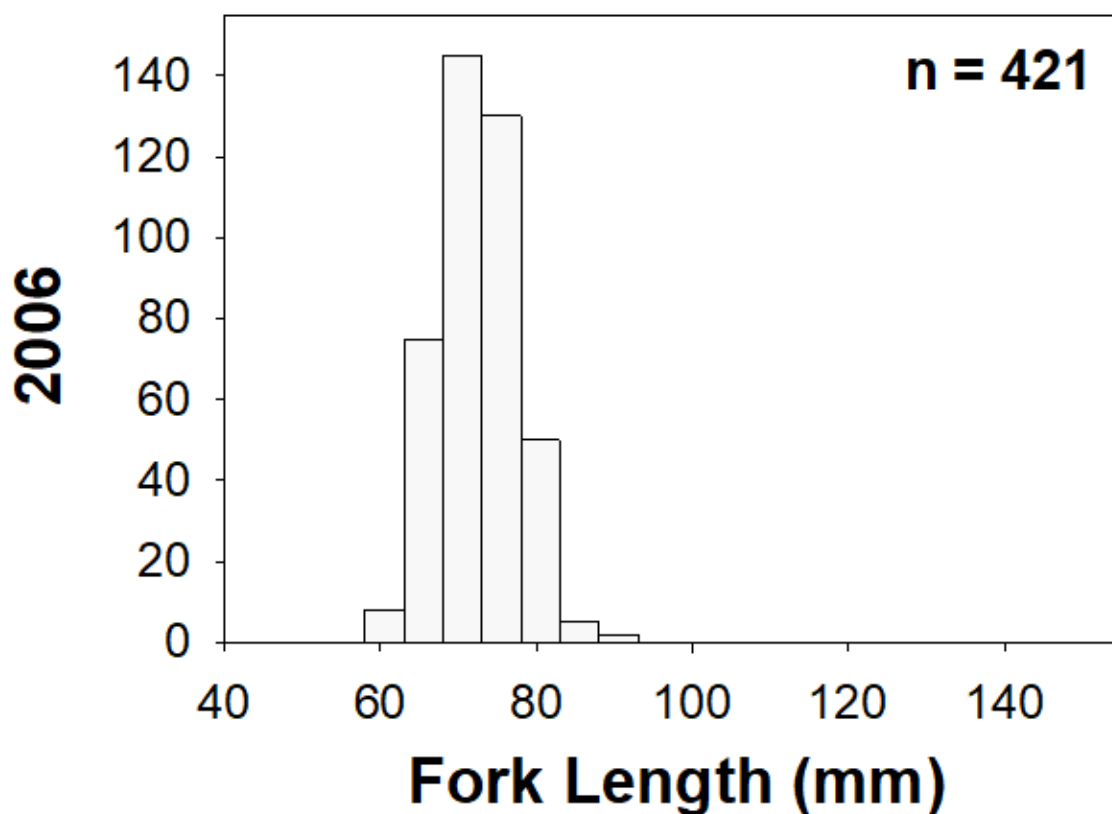
**Figure S1.** Map of Pacific sand lance (*Ammodytes personatus*) sample sites in the San Juan Island Archipelago in the area between the two known locations of JB and SJC. Van Veen sampling in the area between these two sites (SJC sand wave field, cluster far right) were all zero catches (i.e., no fish), suggesting a lack of viable benthic habitat between the two sampling locations. Sampling elsewhere in the SJC was also unsuccessful (i.e., no fish). A high-resolution multibeam bathymetry contour is provided for the full extent of the San Juan Channel (multibeam data layer courtesy of G. Greene and J. Aschoff, Moss Landing Marine Laboratories, Tomolo Mapping Team).



**Figure S2.** Pacific sand lance (*Ammodytes personatus*) length histograms at nearshore (Jackson Beach, left panel) and offshore (San Juan Channel, center panel) sites and distributional comparison (right panel), including two additional years of data (2016-2017). Boxplots (box=interquartile range, line=median, whiskers=95% CI) are overlaid for comparison of distributional spread. Trends observed in the 2010-2015 time series (i.e., immature population nearshore vs. mature population offshore, inter-annual pulse in year-class strength) were maintained.



**Figure S3.** Pacific sand lance (*Ammodytes personatus*) length histograms at the offshore site (San Juan Channel) in 2006-2017. Trends in data recorded in 2006 (Blaine 2006) correspond to trends observed in even years in the 2010-2017 time series.



**Figure S4.** Pacific sand lance (*Ammodytes personatus*) length distributions remained constant at both sites (SJC, JB) throughout the fall season in the two years analyzed, 2012 (SJC, 58-137 mm, N=984) and 2013 (SJC, 77-141 mm, N=150; JB, 54-114 mm, N=1589). In the left panel, horizontal lines mark the estimated breakpoint between age-classes. In the right panels, points represent mean values and whiskers represent SE.

