

Supplementary Material

Upper tidal flats are disproportionately important for the conservation of migratory shorebirds

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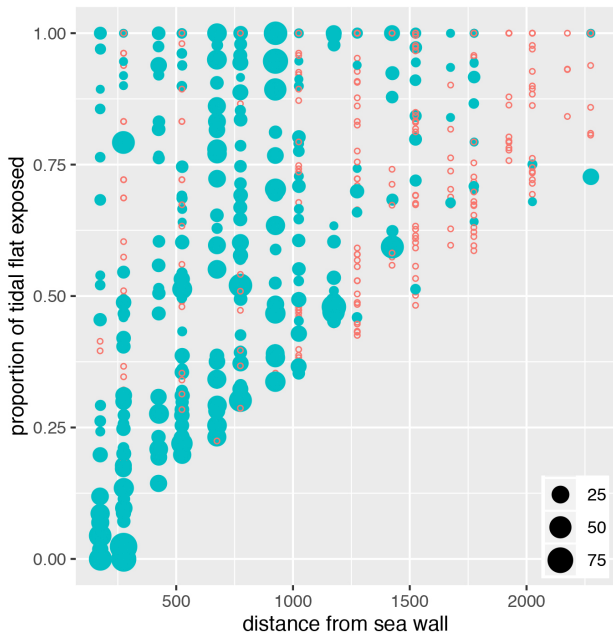
DOI: [10.1098/rspb.2020.0278](https://doi.org/10.1098/rspb.2020.0278)

Figure S1: Distribution and centroid plots of 26 shorebird populations at Nanpu and Rudong

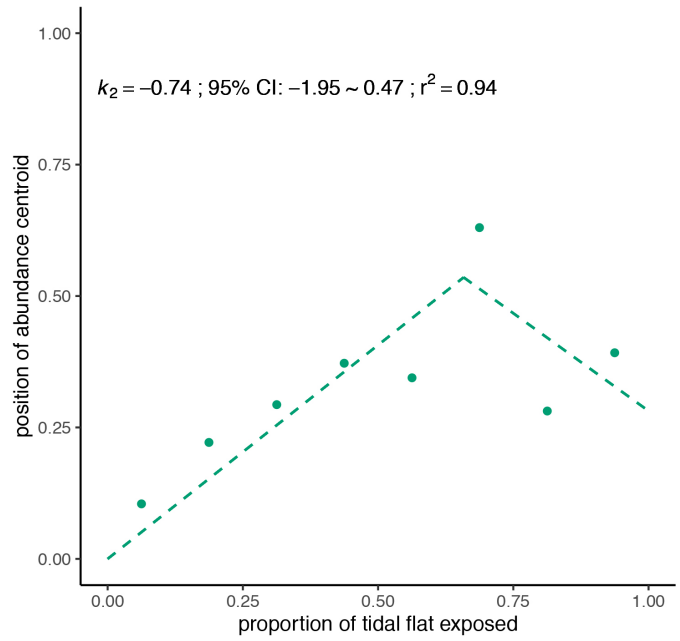
Figure S2: Cumulative foraging time along the tidal flat gradient of 26 shorebird populations at Nanpu and Rudong.

Figure S1: Distribution and centroid plots of 26 shorebird populations at Nanpu and Rudong. In the left-hand graphs, the number of foraging individuals of a given species recorded in a plot count is represented by the size of the solid blue circles, plotted with the x-axis showing the distance of the plot from the sea wall (spatial distribution), and the y-axis showing the proportion of tidal flat exposed at the time of the count (temporal distribution). The red open circles represent counts with 0 individuals. In the right-hand graphs, solid circles represent the relative positions of the abundance centroid calculated for each tidal period along the tidal flats (0: sea wall/high tide line; 1: low tide line). The solid line is the best-fitting line for the centroids passing through (0, 0) using a linear model, with 95% confidence intervals shown in grey. The dotted line has a slope of 0.5 (theoretical line for generalists) or 1 (tide followers). The dashed line represents the best fitting line predicted by the *segmented* function in R Package *segmented*. Criteria used to assign each population to a corresponding foraging type are: generalists, $0.45 \leq k \leq 0.55$ and $r^2 > 0.90$; zone specialists, $-0.05 \leq k_2 \leq 0.05$, $r^2 > 0.90$; tide followers: $0.9 \leq k \leq 1.0$ and $r^2 > 0.90$. Right-hand graphs are colored by the corresponding foraging types: generalists in yellow, zone specialists in green, tide followers in blue, and not assigned in grey.

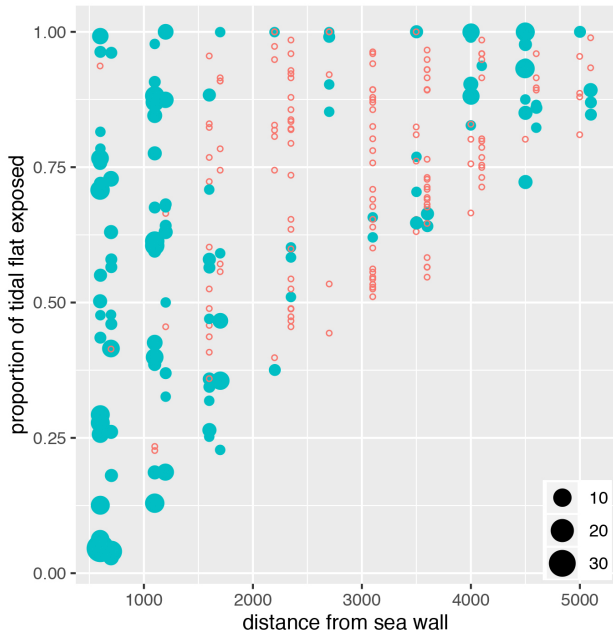
Grey Plover at Nanpu: zone specialist



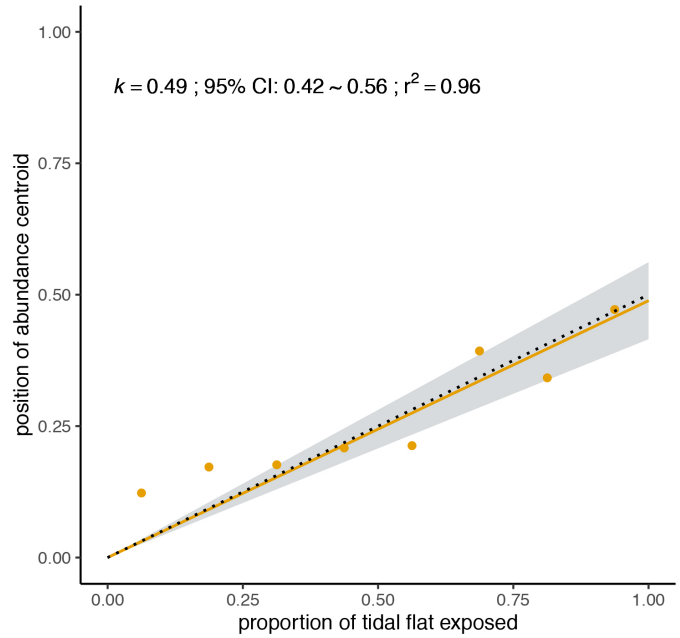
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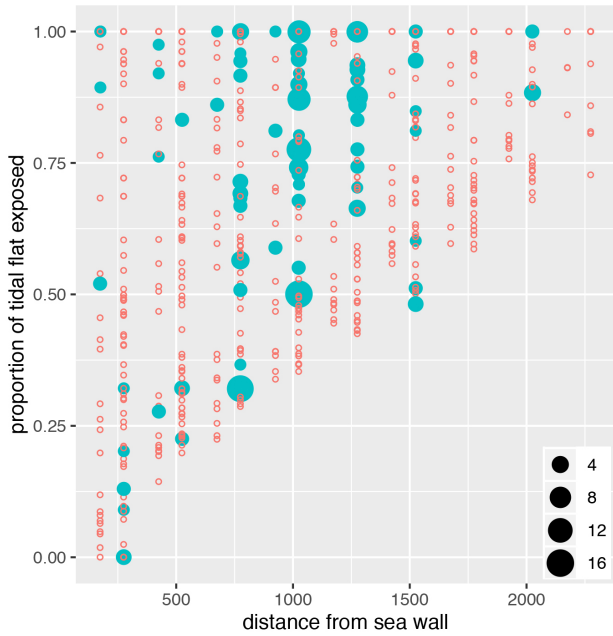
Grey Plover at Rudong: generalist



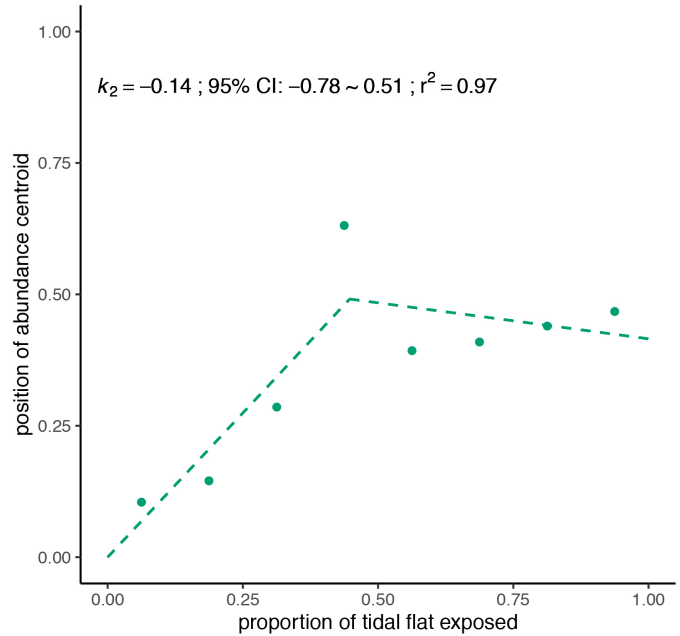
Grey Plover at Rudong: generalist



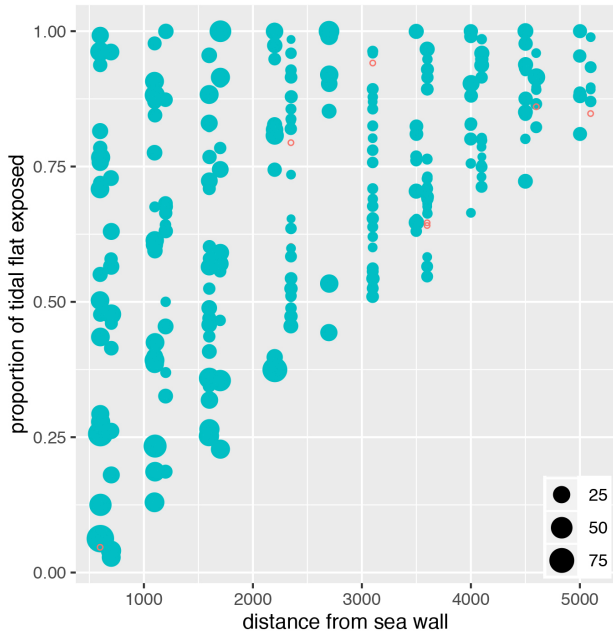
Kentish Plover at Nanpu: zone specialist



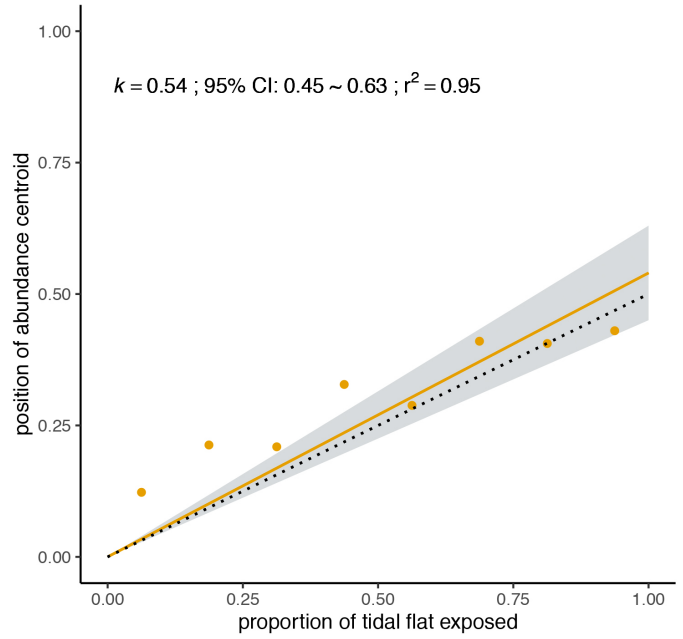
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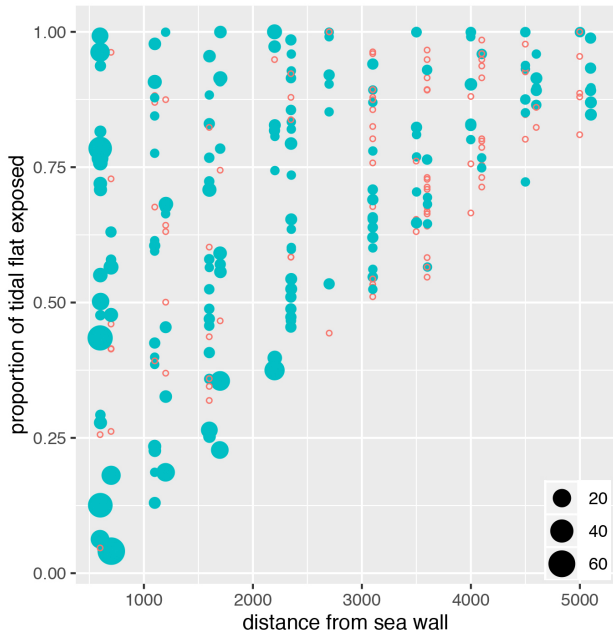
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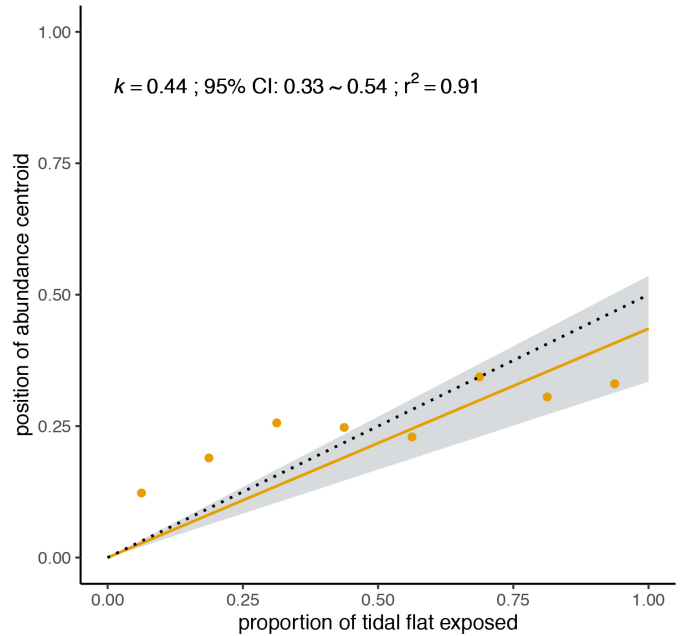
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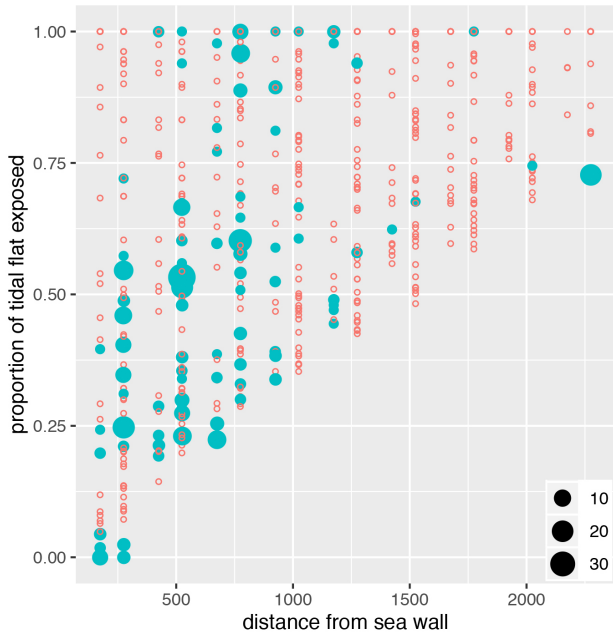
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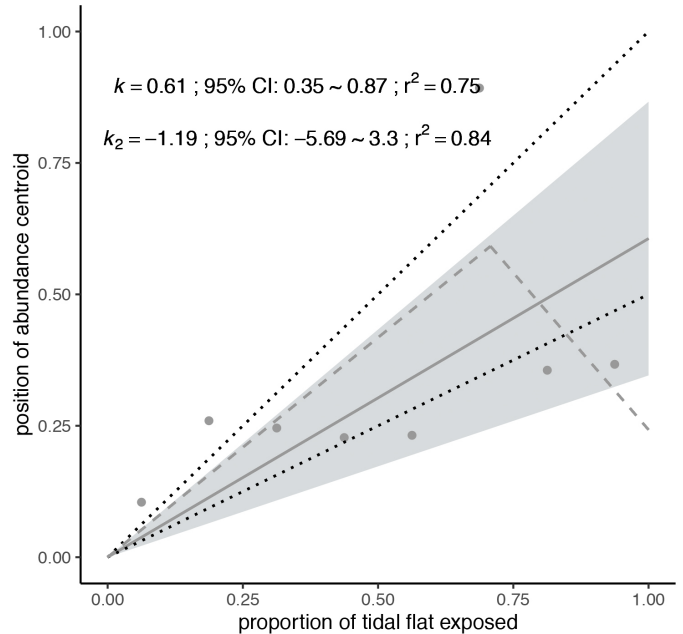
Sand Plovers at Rudong: generalist



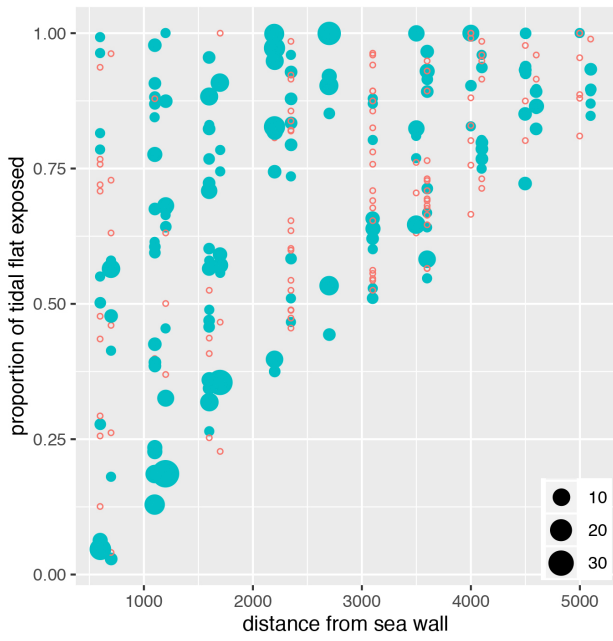
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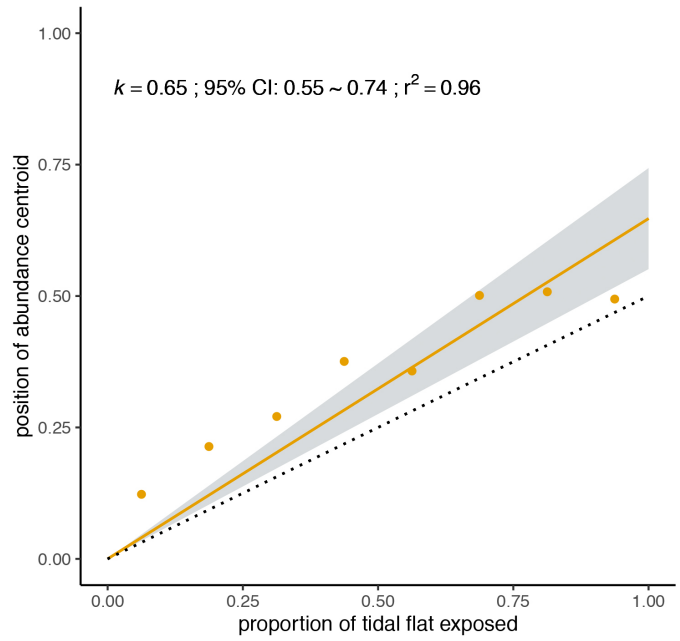
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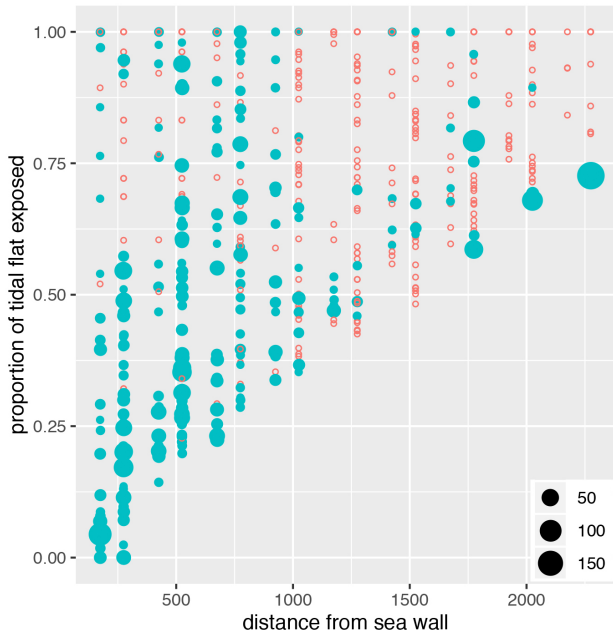
Curlews at Rudong: generalist



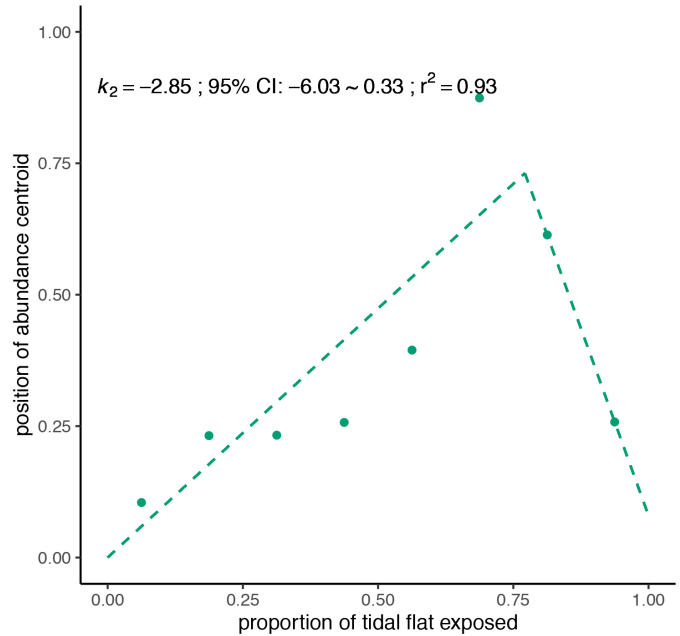
Curlews at Rudong: generalist



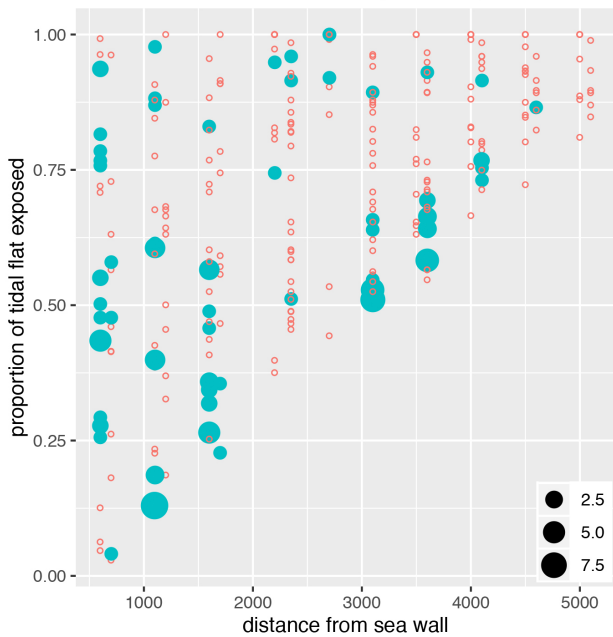
Bar-tailed Godwit at Nanpu: zone specialist



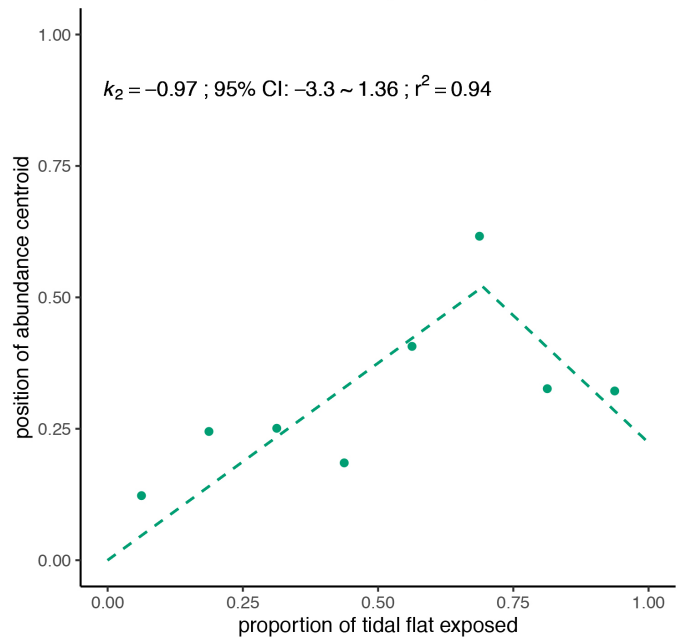
Bar-tailed Godwit at Nanpu: zone specialist



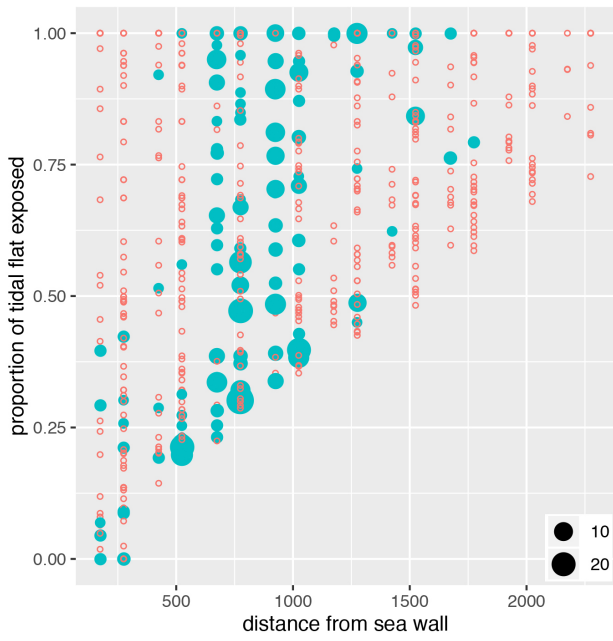
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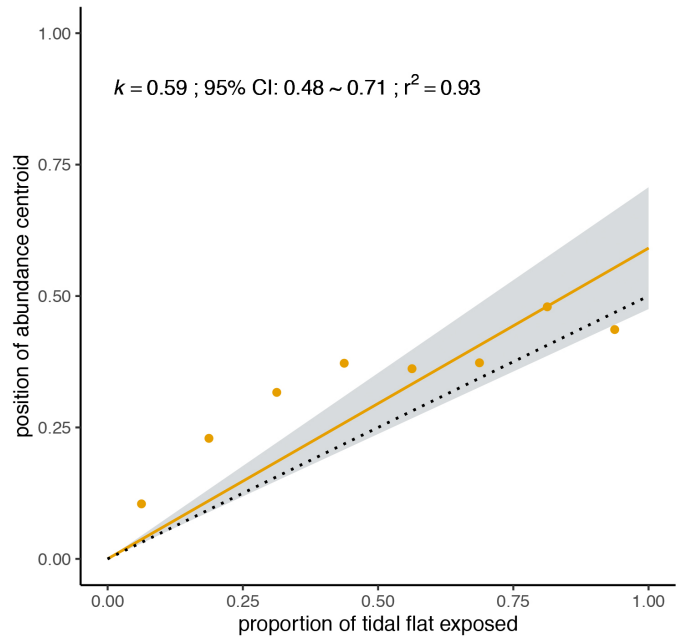
Bar-tailed Godwit at Rudong: zone specialist



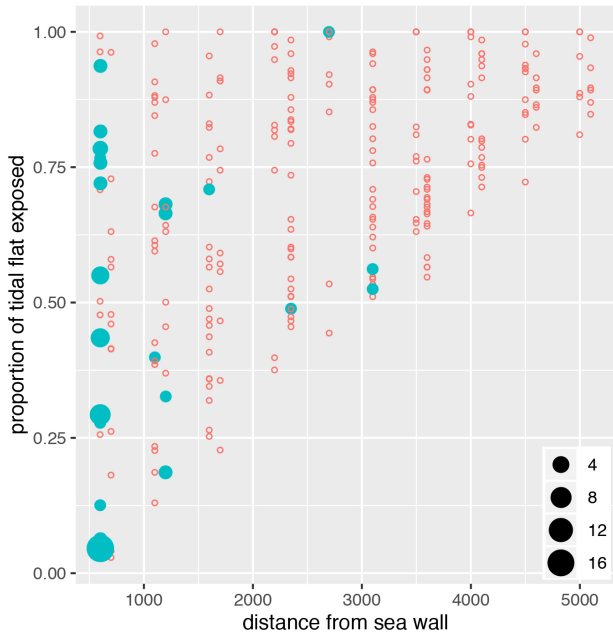
Ruddy Turnstone at Nanpu: generalist



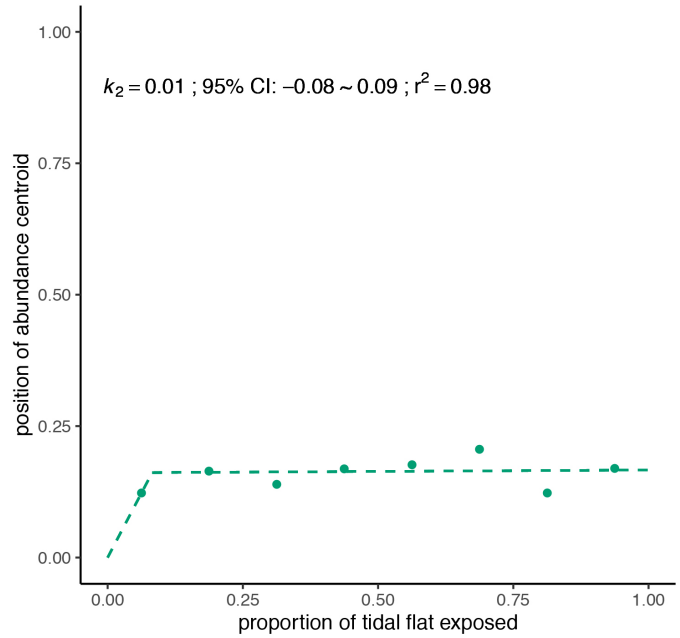
Ruddy Turnstone at Nanpu: generalist



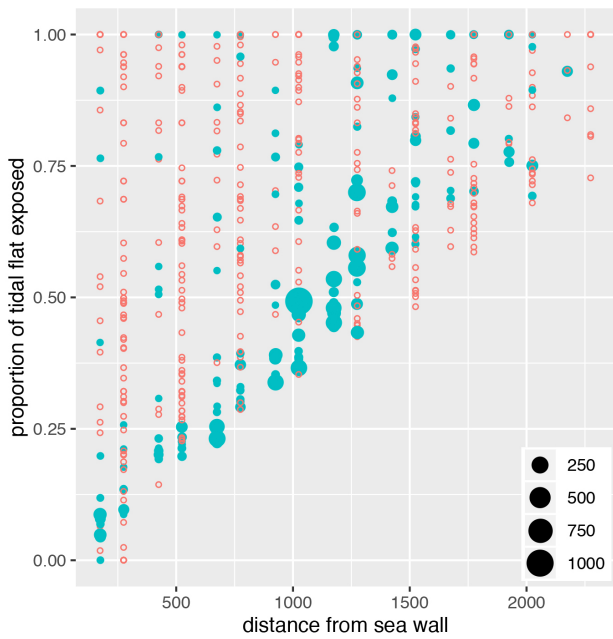
Ruddy Turnstone at Rudong: zone specialist



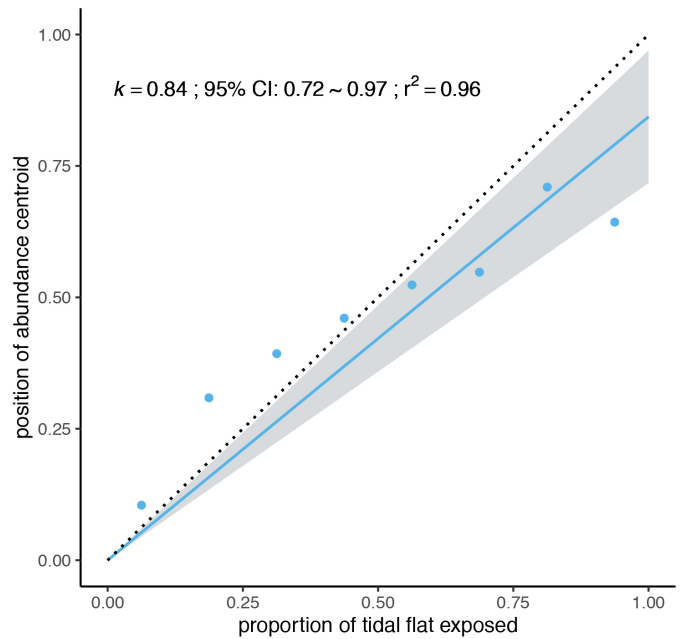
Ruddy Turnstone at Rudong: zone specialist



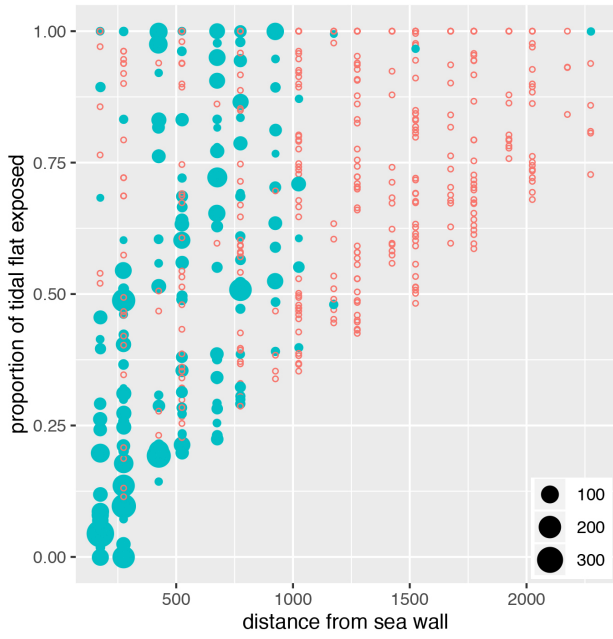
Great Knot at Nanpu: tide follower



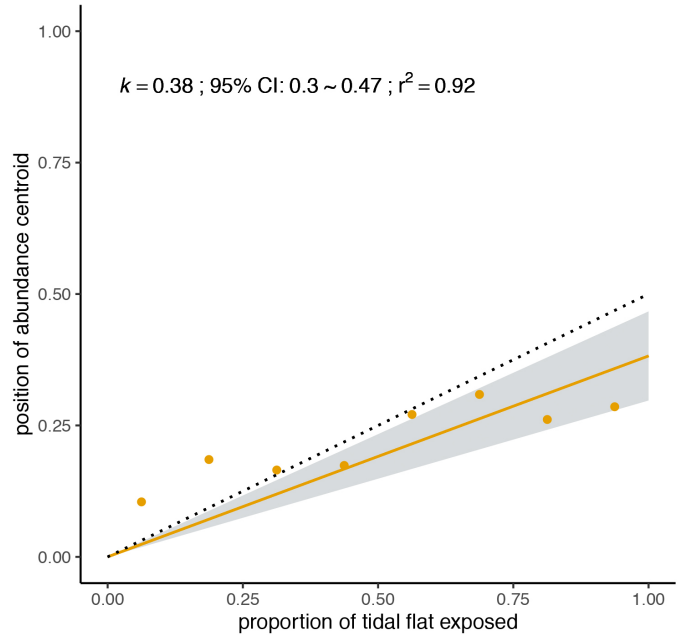
Great Knot at Nanpu: tide follower



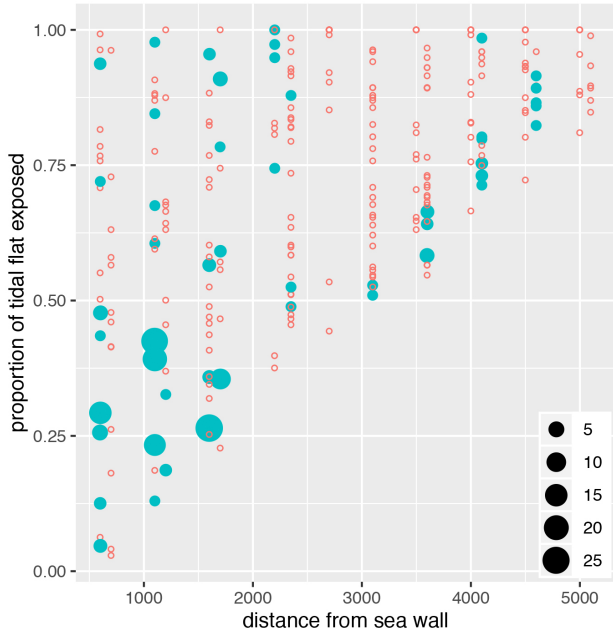
Red Knot at Nanpu: generalist



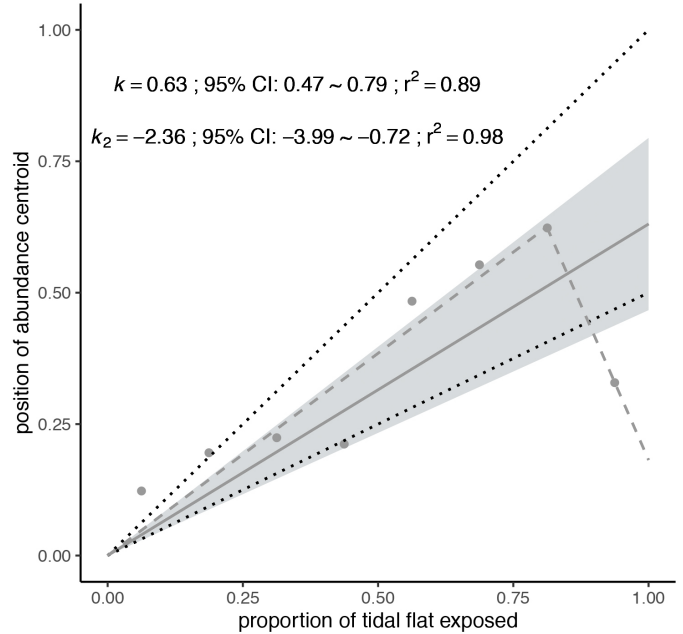
Red Knot at Nanpu: generalist



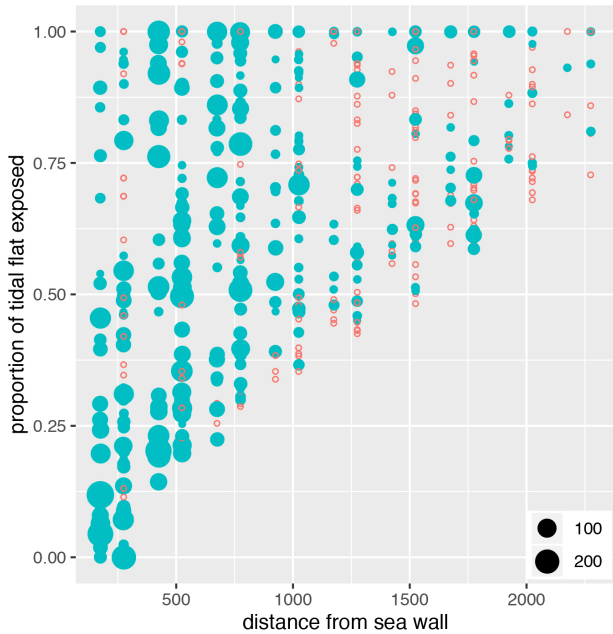
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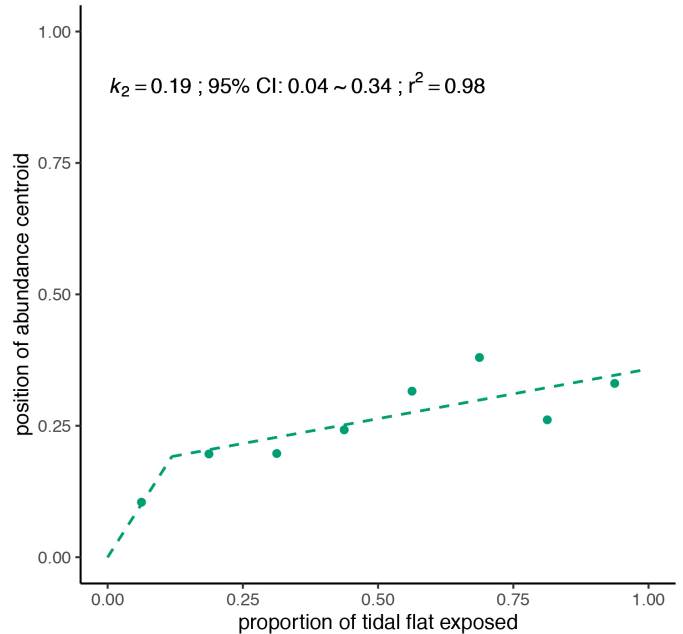
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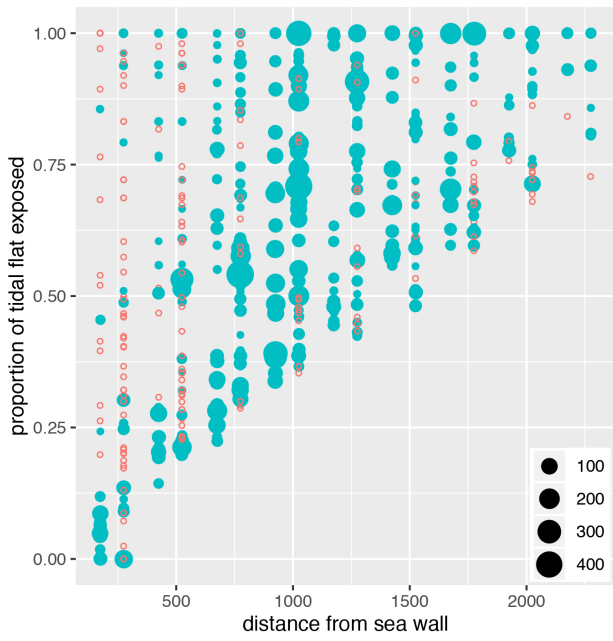
Curlew Sandpiper at Nanpu: zone specialist



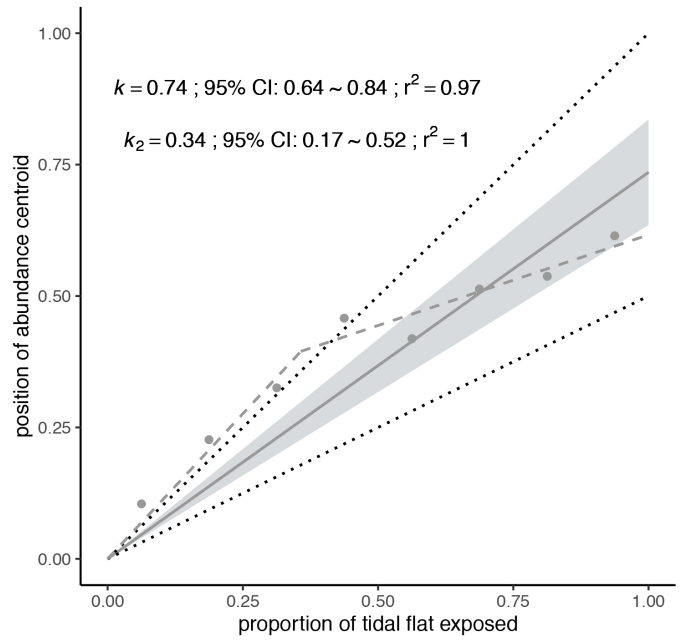
Curlew Sandpiper at Nanpu: zone specialist



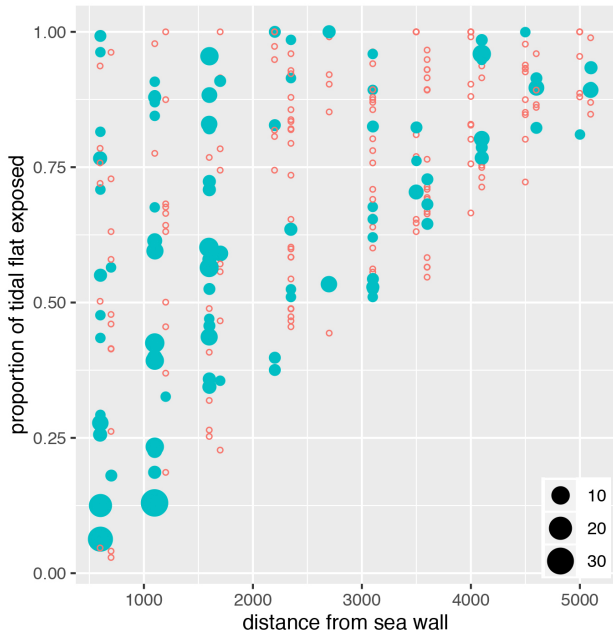
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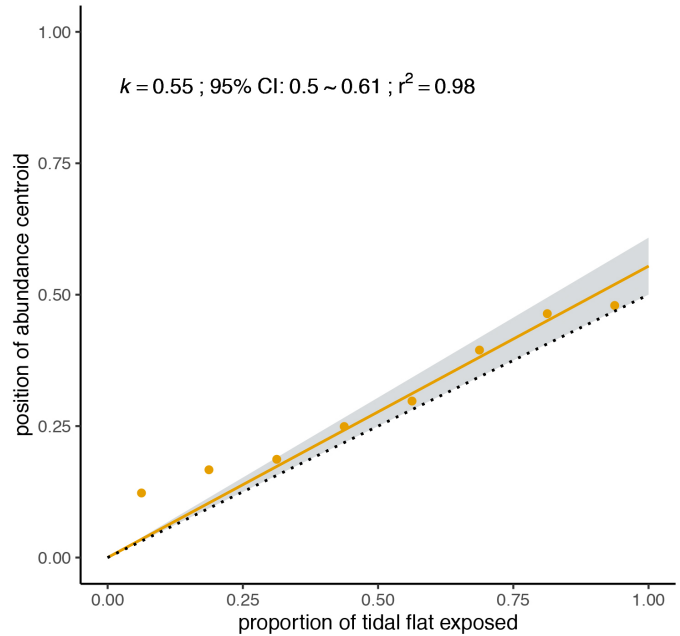
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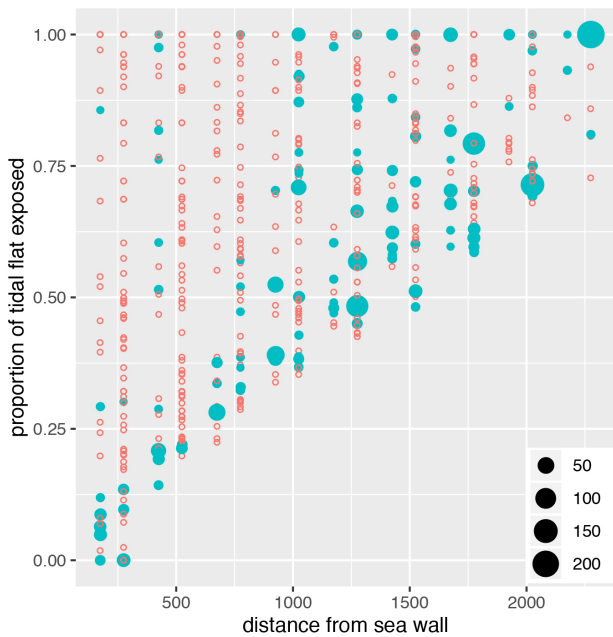
Red-necked Stint at Rudong: generalist



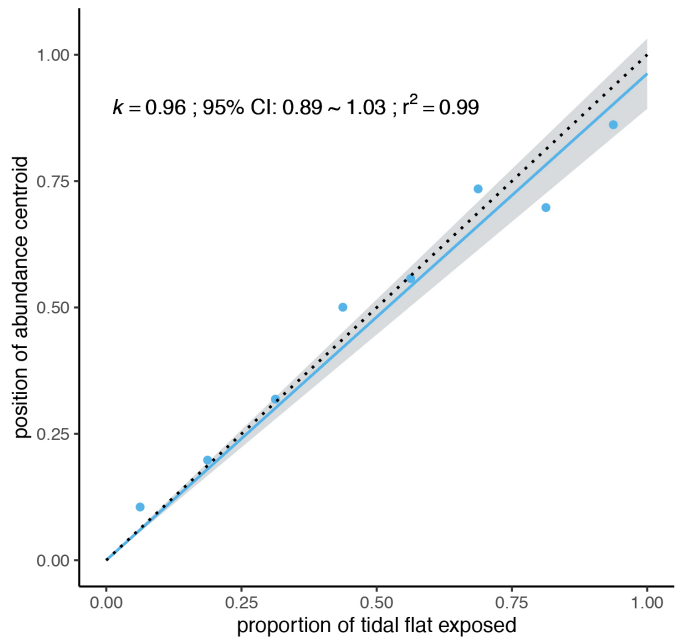
Red-necked Stint at Rudong: generalist



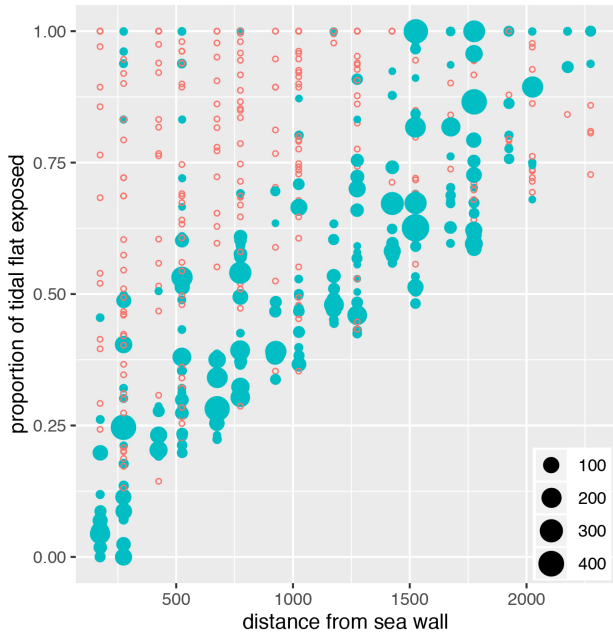
Sanderling at Nanpu: tide follower



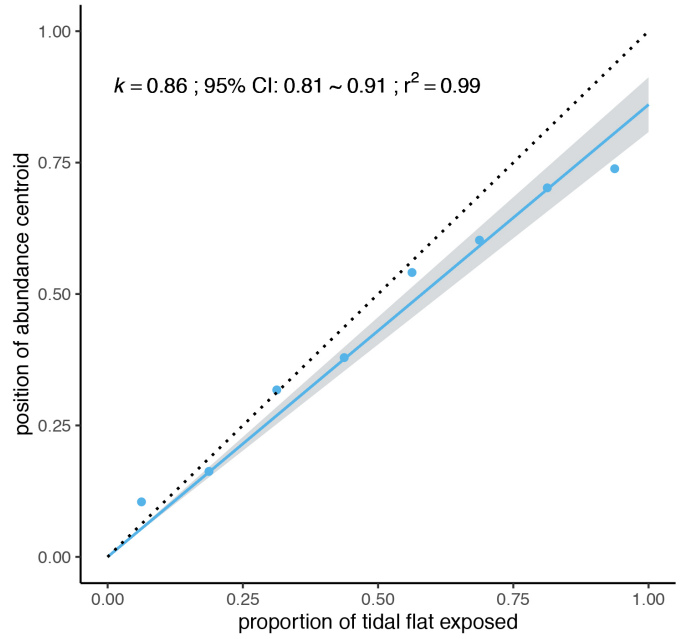
Sanderling at Nanpu: tide follower



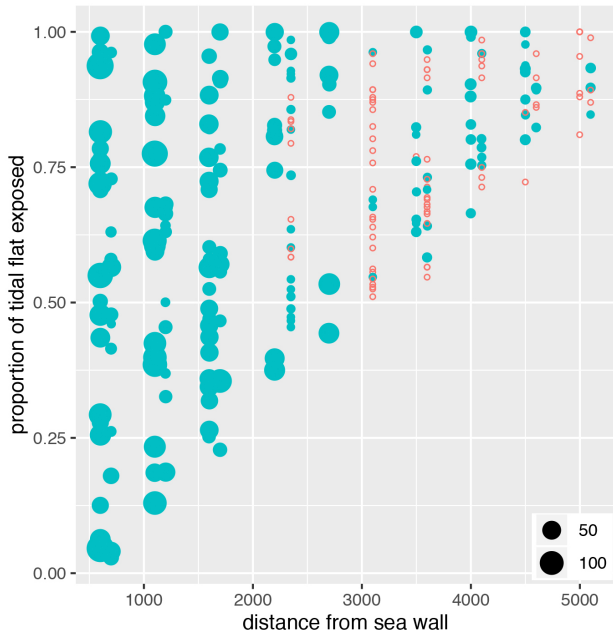
Dunlin at Nanpu: tide follower



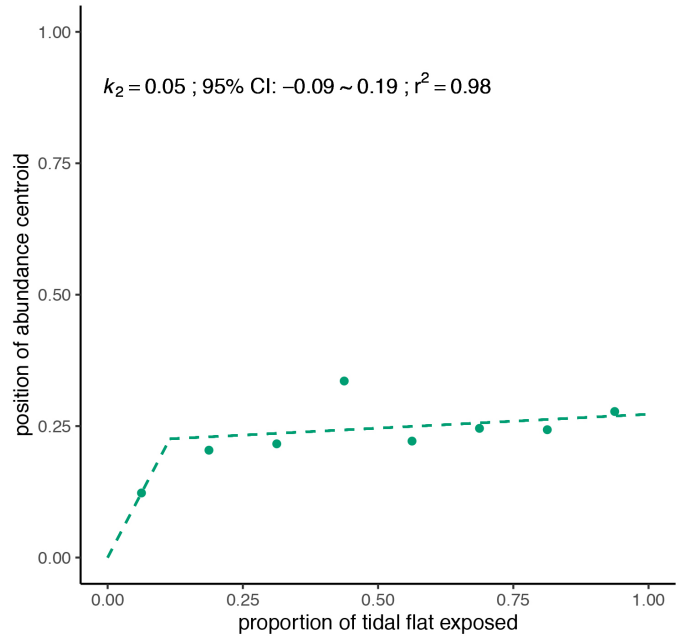
Dunlin at Nanpu: tide follower



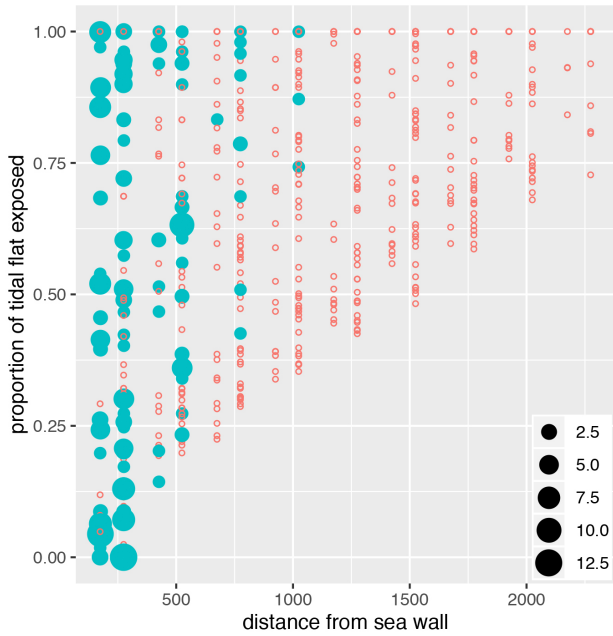
Dunlin at Rudong: zone specialist



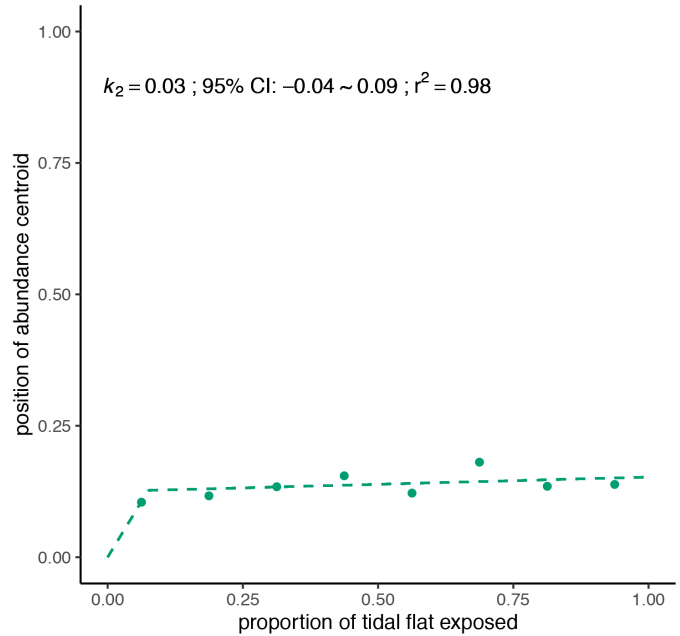
Dunlin at Rudong: zone specialist



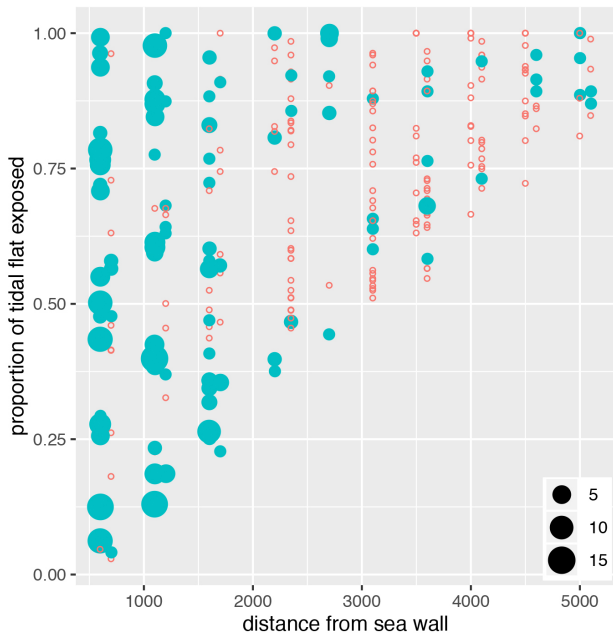
Terek Sandpiper at Nanpu: zone specialist



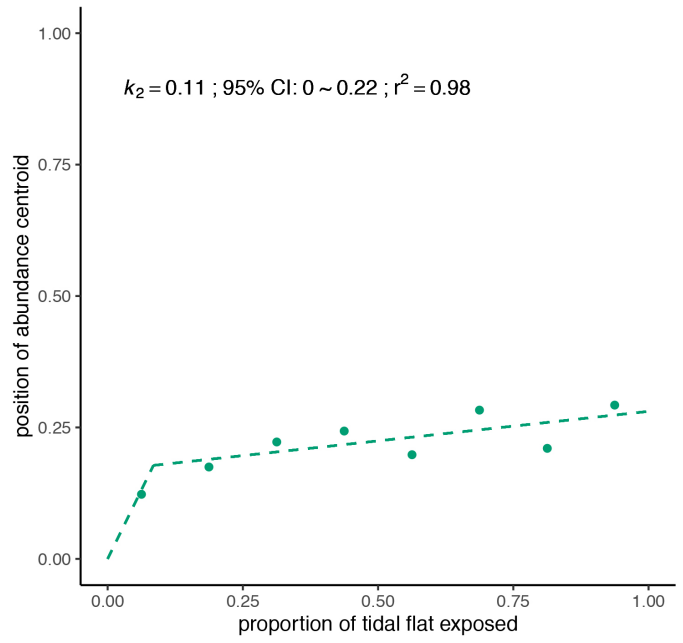
Terek Sandpiper at Nanpu: zone specialist



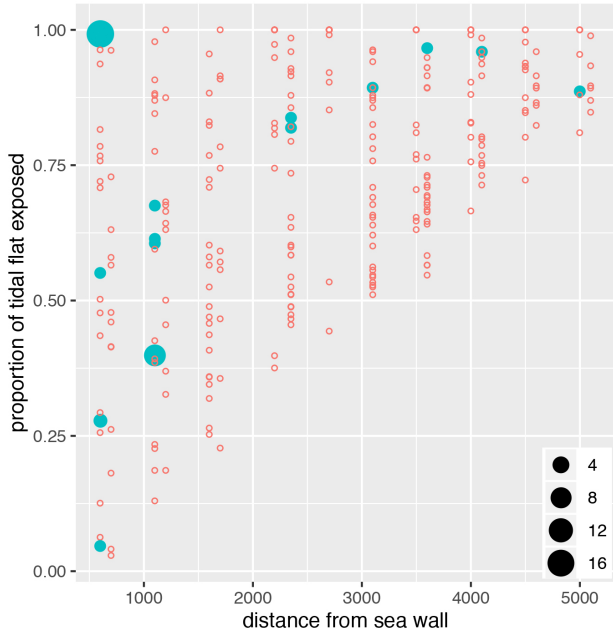
Terek Sandpiper at Rudong: zone specialist



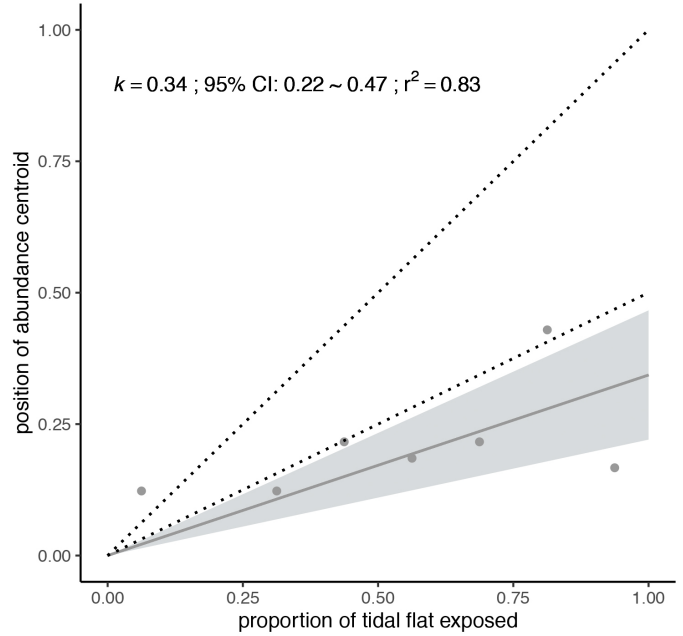
Terek Sandpiper at Rudong: zone specialist



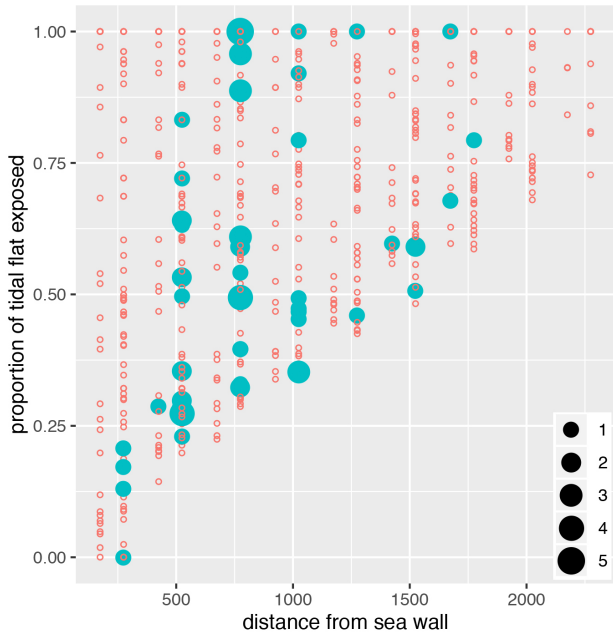
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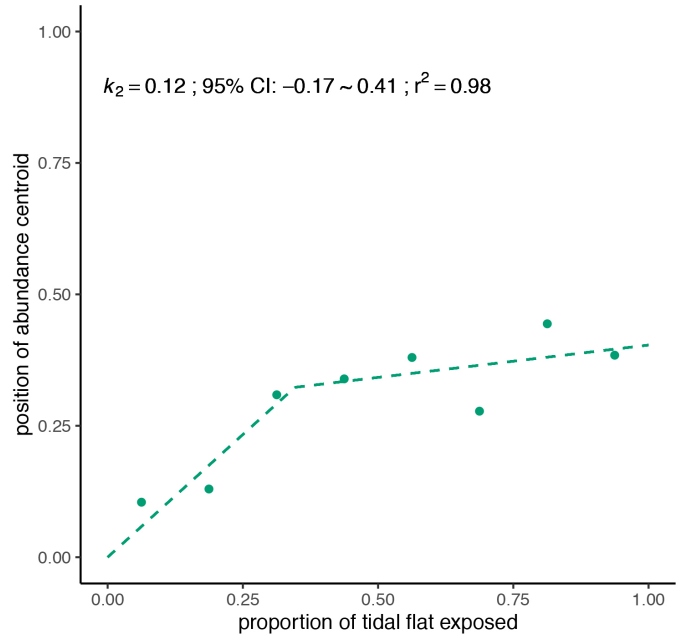
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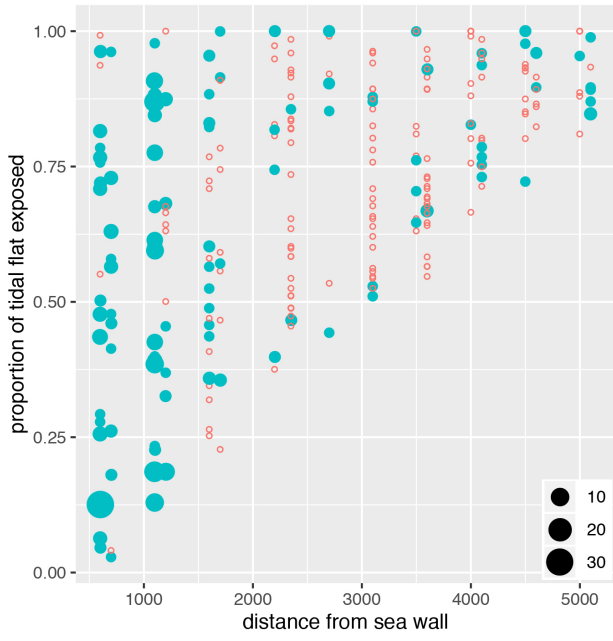
Common Greenshank at Nanpu: zone specialist



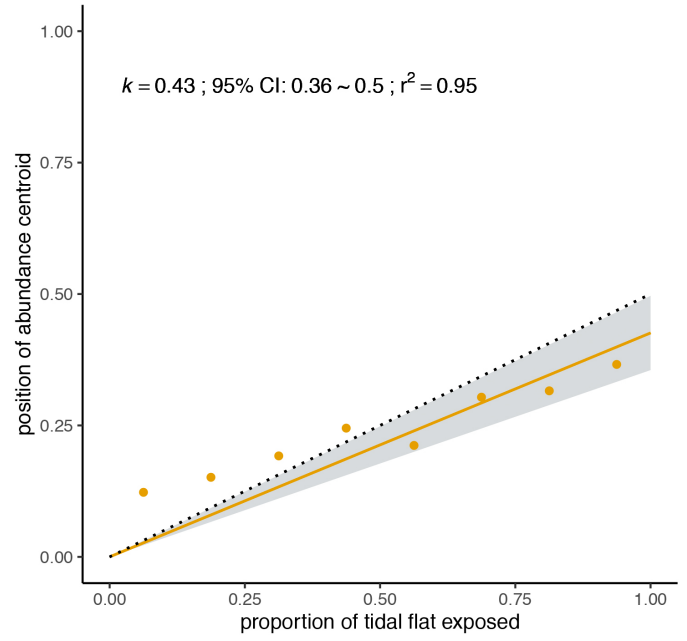
Common Greenshank at Nanpu: zone specialist



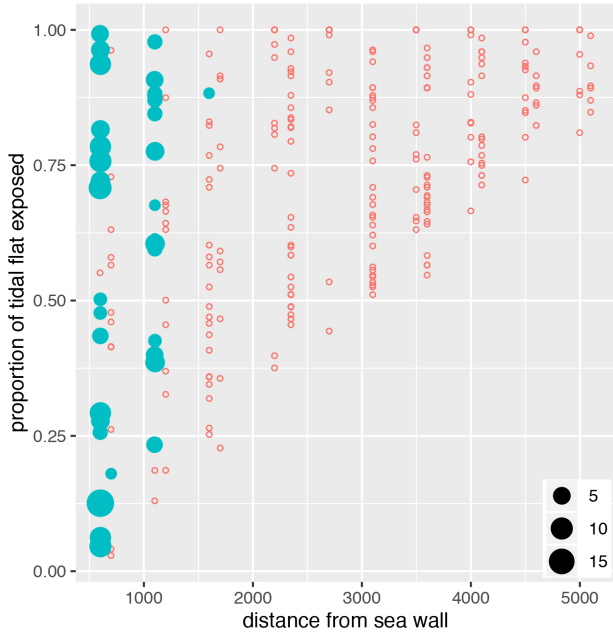
Common Greenshank at Rudong: generalist



Common Greenshank at Rudong: generalist



Marsh Sandpiper at Rudong: zone specialist



Marsh Sandpiper at Rudong: zone specialist

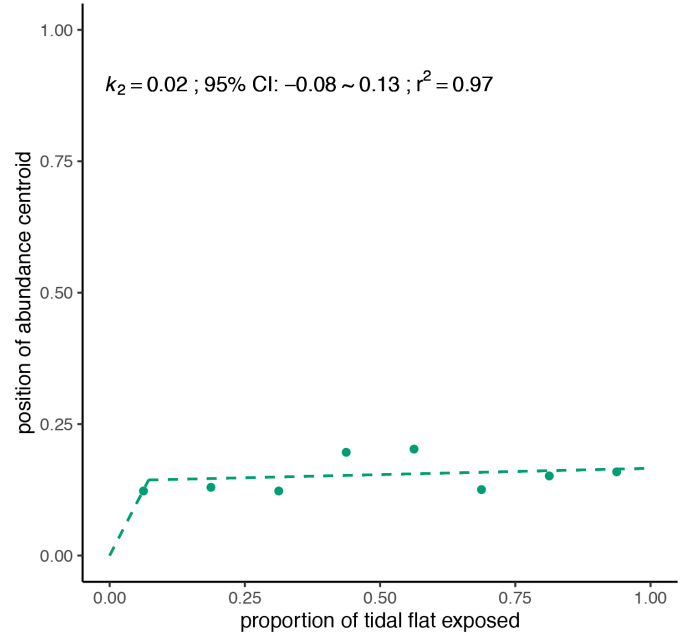
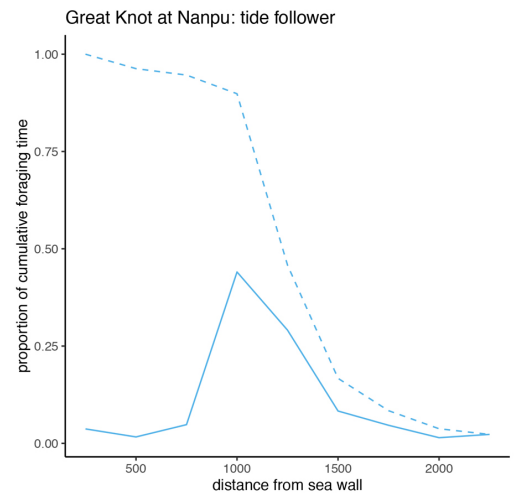
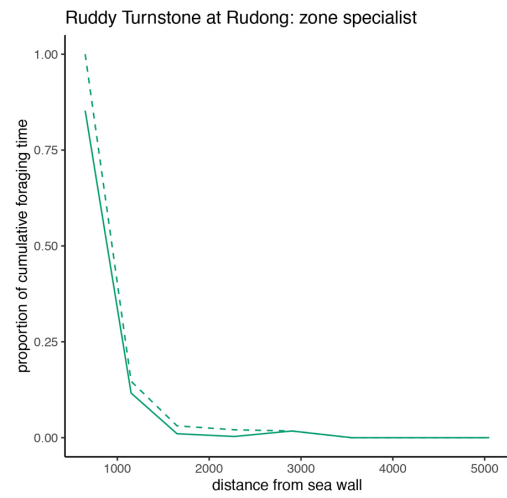
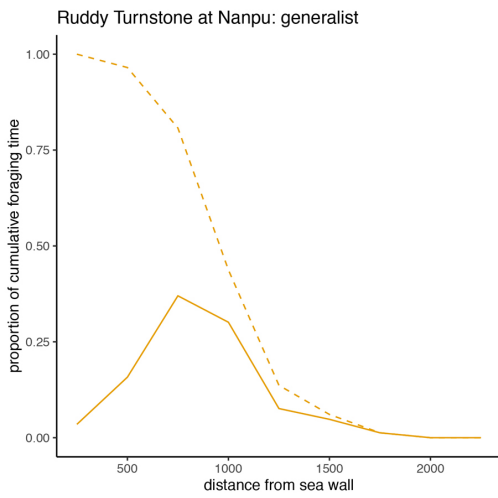
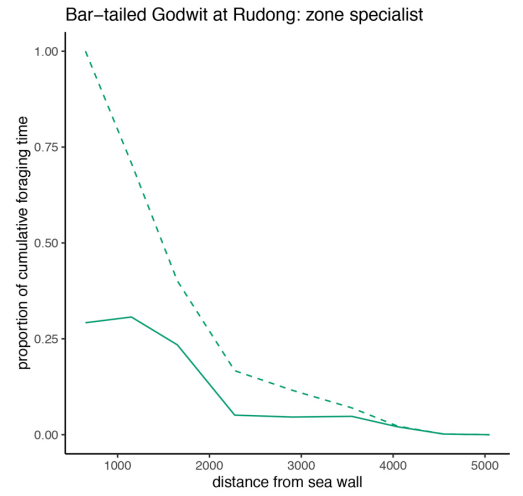
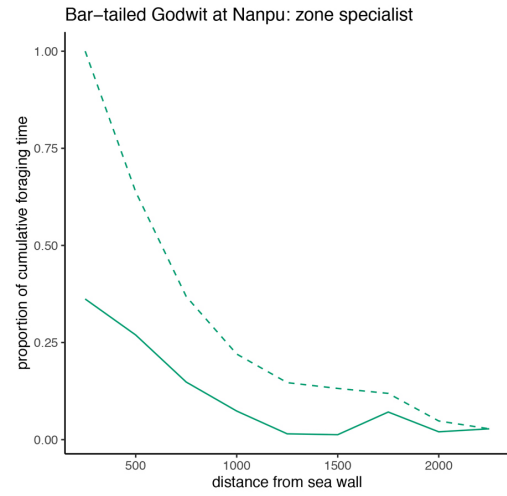
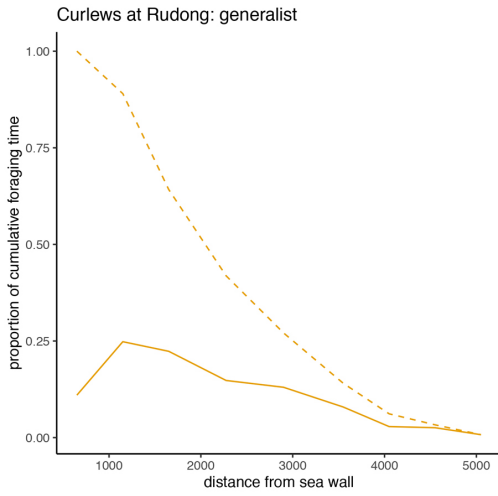
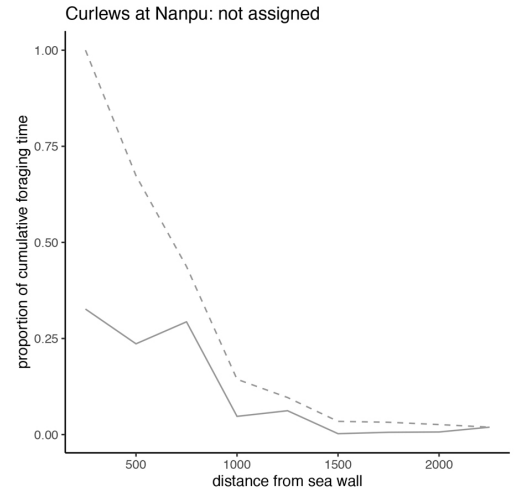
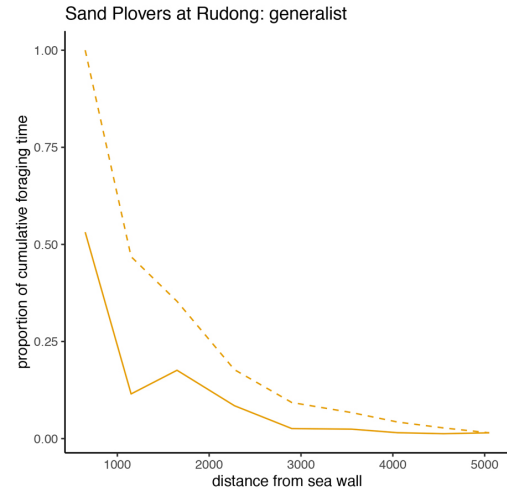
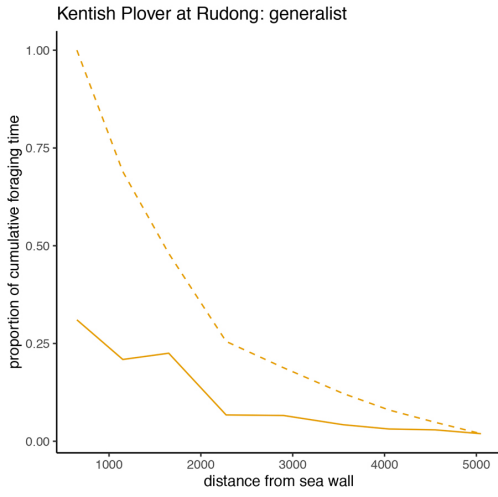
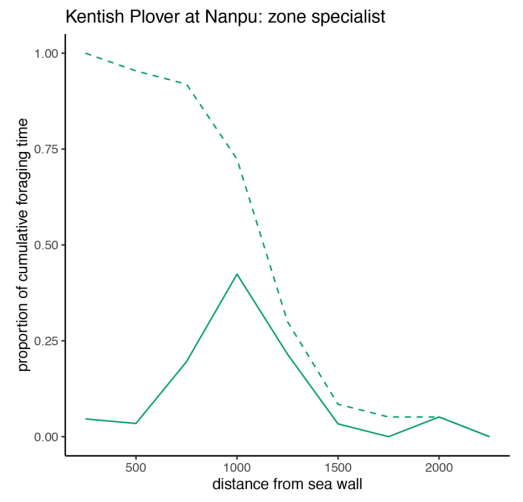
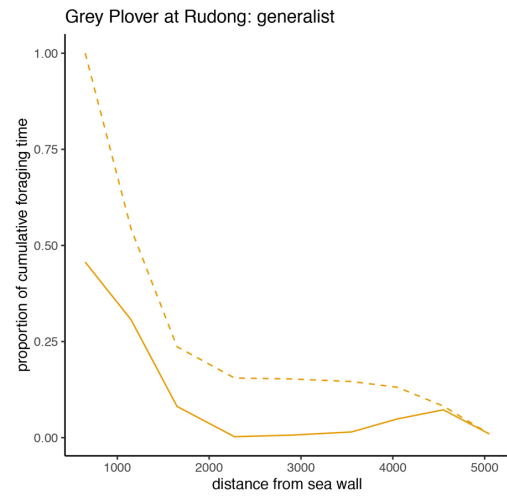
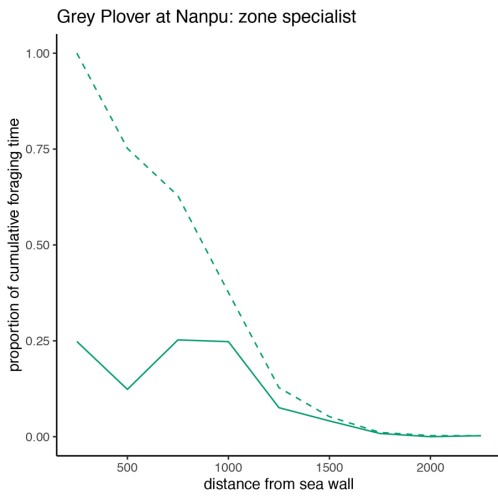
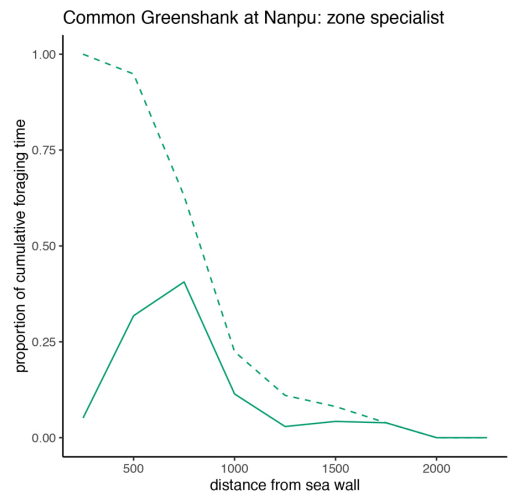
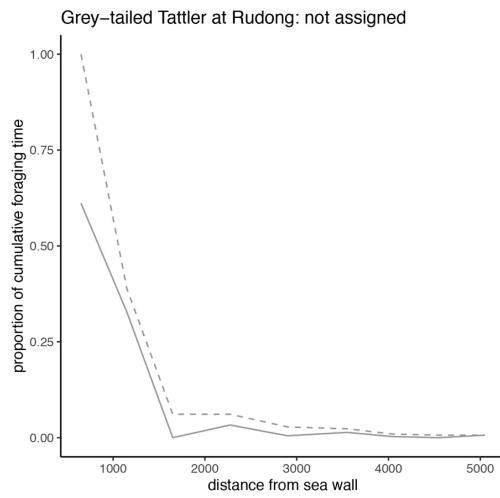
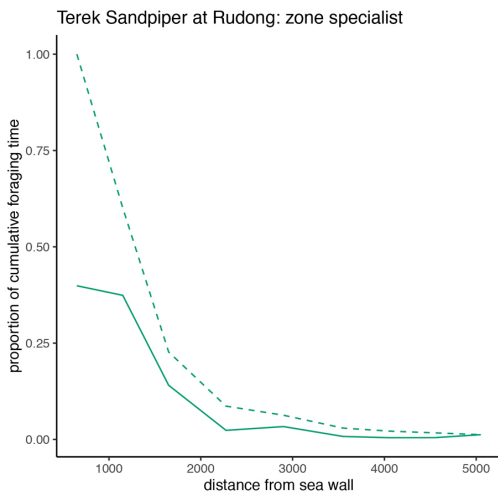
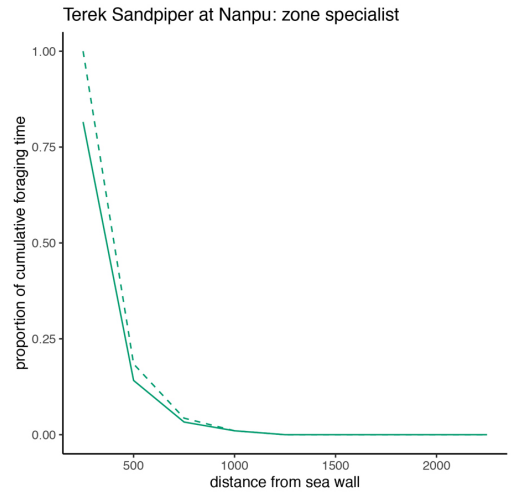
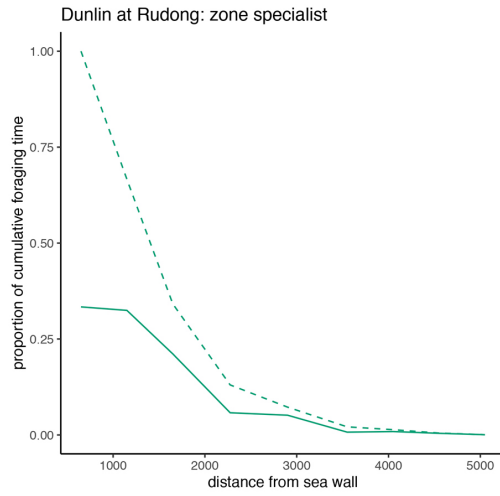
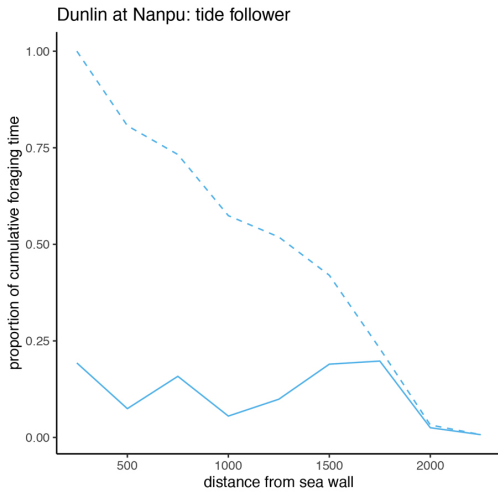
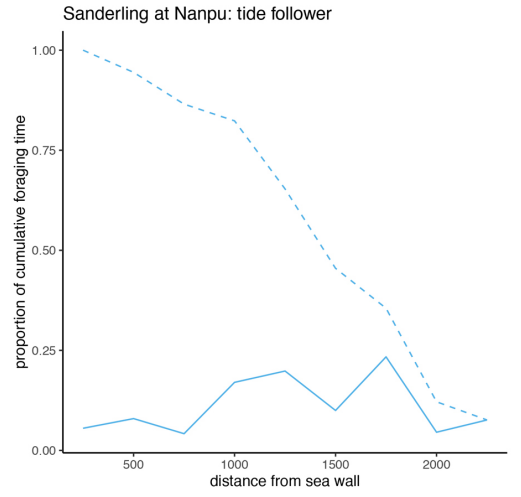
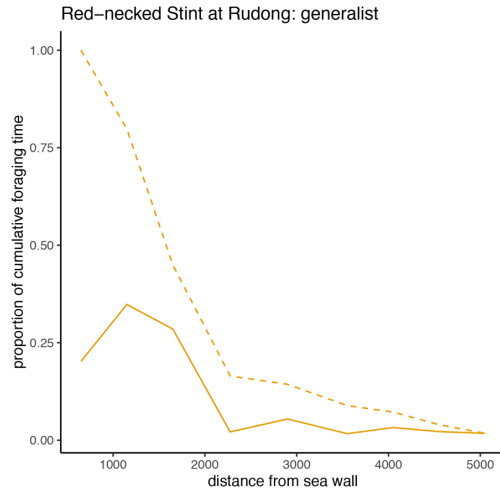
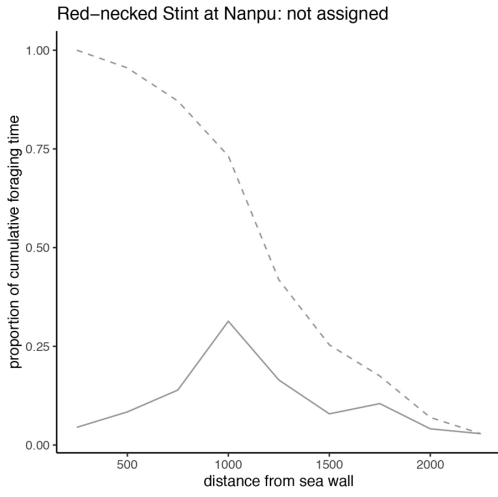
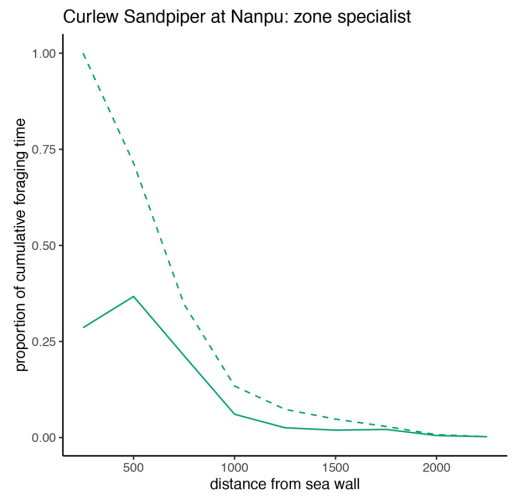
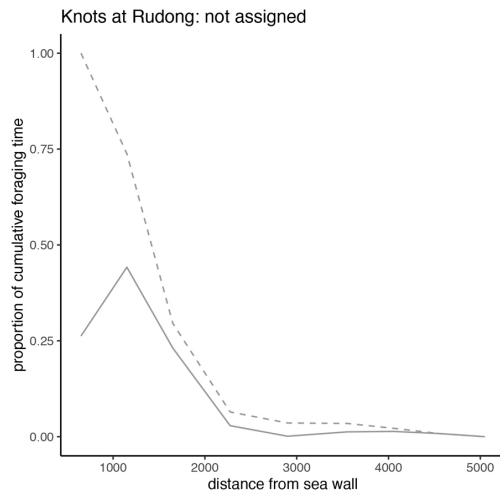
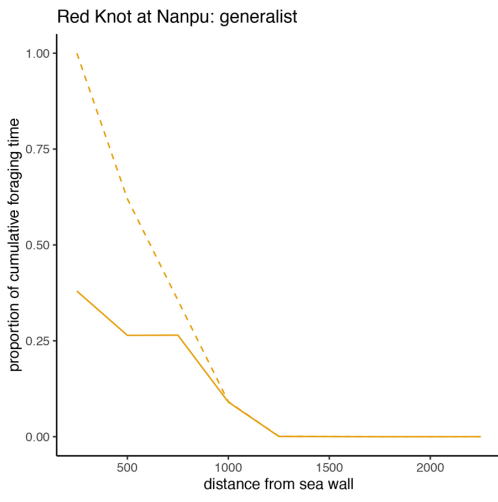
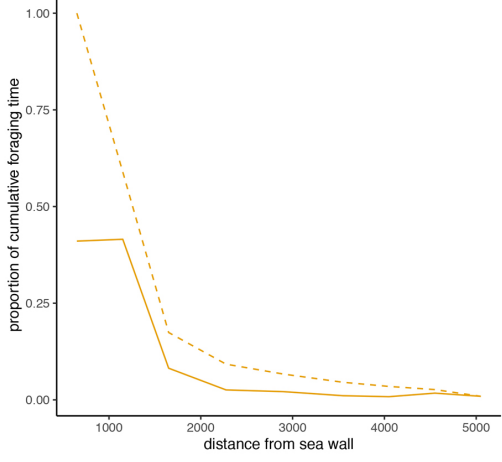


Figure S2: Cumulative foraging time along the tidal flat gradient of 26 shorebird populations at Nanpu and Rudong. The cumulative foraging time is shown as the proportion of total cumulative foraging time for a given population at a given site with transects summed. Solid lines show the distribution of cumulative foraging time of each plot along the tidal flat. Dashed lines show the reduction in total cumulative foraging time that would result from the hypothetical loss of tidal flats starting from the seawall and progressing seaward. The graphs are colored by the populations' foraging types: generalists in yellow, zone specialists in green, tide followers in blue, and not assigned in grey.





Common Greenshank at Rudong: generalist



Marsh Sandpiper at Rudong: zone specialist

