

Seasonal Change in Foraging Behavior of Long-billed Curlew (*Numenius americanus*)

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Introduction

Long-billed curlew, largest North American shorebird
"Highly Imperiled" in the U.S. Shorebird Conservation Plan
Curlews will increase body mass in preparation for migration
Hypothesis: If body mass is a factor in successful migration, then curlews will increase time foraging as migration gets closer⁵

Study Area

- Humboldt Bay mixed semi-diurnal tide pattern³
- Tidal mudflats crucial wintering habitat
- Curlews surveyed at the Elk River Mouth and Elk River Wildlife Sanctuary (Fig. 1)
- Surveyed at low tide from February 2023 - April 2023

Methods

- Focal animal sampling strategy at ten-minute intervals during daytime low tide¹
- Surveyed 3 times/week, 1 site/day
- Behaviors observed: feeding, roosting, preening, flying, walking, and defending territory
- Data analyzed using linear regression and chi-squared test

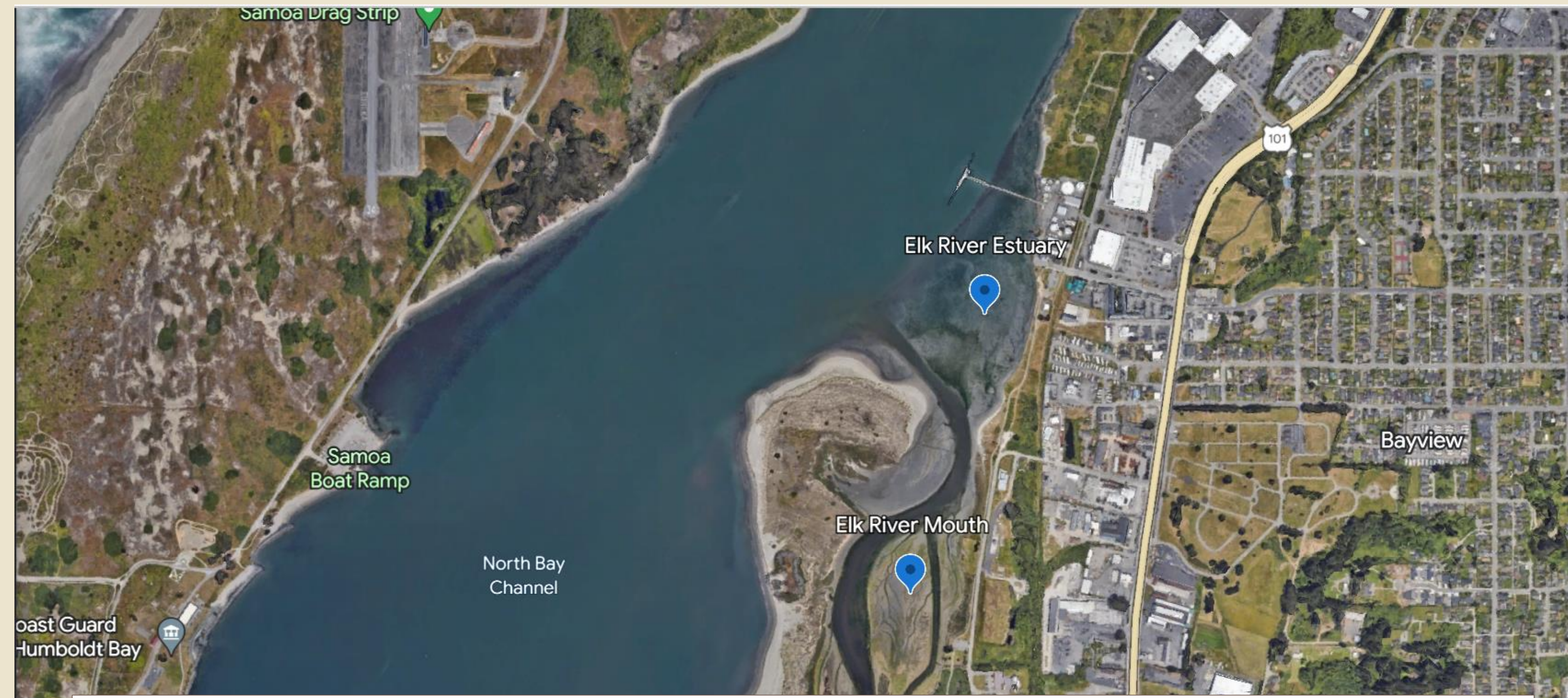


Figure 1. Map of long-billed curlew survey sites from 2 Mar – 8 Apr 2023 Eureka, California, USA.

Behavior	Observed 1 st half	Observed 2 nd half	X ²	Df	P-Value
Feeding	25	19	23.554	4	<0.001
Roosting	8	2			
Preening	6	2			
Walking	4	9			
Flying	3	5			
Observed					

Table 1. (left) Count of observed behaviors during survey period.
Table 2. (above) Chi-squared results of observed behaviors

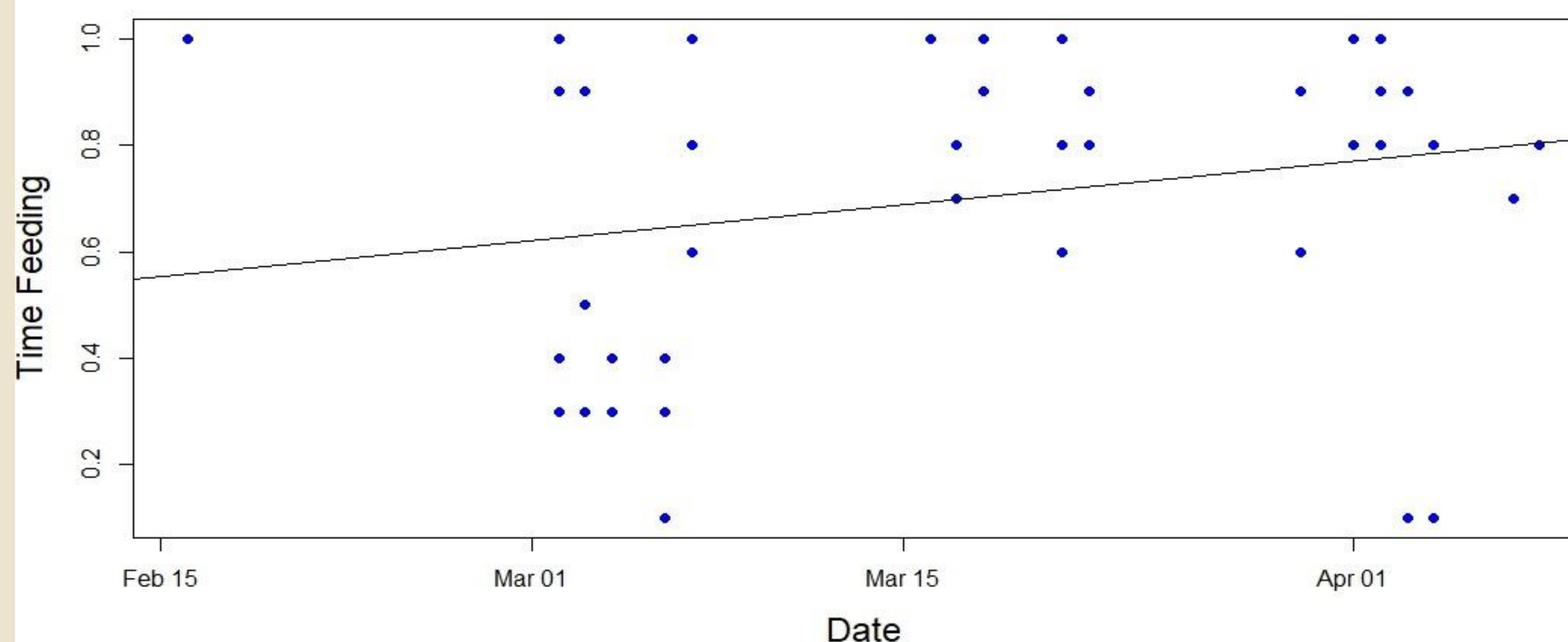


Figure 2. Proportion of time long-billed curlews spent feeding in response to time until migration

Results

- 88 behavior observations recorded (Table 1)
- 47 curlews observed
- Chi-squared test found differences in behavior to be significant
 $\chi^2 = 23.554$, $df = 4$, $p\text{-value} = <0.001$ (Table 2)
- Linear regression found no significance between time feeding in response to migration
 $P\text{-value} = 0.370$ and $AIC = 53.322$ (Fig. 2)

Discussion

- Chi-squared: Significant behavioral changes observed between survey period start and end
- Linear regression: Feeding time did not significantly vary with time until migration
- Confounding factors: Small sample size, habitat loss, increased prey availability in agricultural lands, human disturbance, energy intake²

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Citations
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