**Supplementary Material**

Trends and population estimate of the threatened Buff-breasted Sandpiper wintering in coastal grasslands of southern Brazil

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Table S1. Coordinates of Buff-breasted Sandpiper, *Calidris subruficollis*, surveys conducted at four wintering locations in southern Brazil, 2008–2019. Lat = Latitude, Lon = Longitude, b = beginning, e = end of transections, and m = meters. All coordinates are in World Geodetic System 84 datum. See Figure 1 in main text for locations of study areas.

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| --- | --- | --- | --- | --- | --- | --- |
| Site | Transect | Lat\_b | Lon\_b | Lat\_e | Lon\_e | Length (m) |
| Cordões Litorâneos | 1 | 32°27'48.8"S | 52°27'34.9"W | 32°27'16.6"S | 52°27'28.0"W | 1009 |
| Cordões Litorâneos | 2 | 32°27'10.9"S | 52°27'26.5"W | 32°26'39.4"S | 52°27'17.6"W | 999 |
| Cordões Litorâneos | 3 | 32°26'33.2"S | 52°27'15.9"W | 32°26'01.4"S | 52°27'07.2"W | 1004 |
| Cordões Litorâneos | 4 | 32°25'29.0"S | 52°26'49.2"W | 32°24'58.7"S | 52°26'36.1"W | 994 |
| Taim | 1 | 32°32'29.1"S | 52°32'41.6"W | 32°32'51.8"S | 52°33'09.4"W | 1006 |
| Taim | 2 | 32°32'57.8"S | 52°33'12.0"W | 32°33'22.8"S | 52°33'36.9"W | 1010 |
| Taim | 3 | 32°32'10.6"S | 52°33'56.3"W | 32°32'23.1"S | 52°33'20.7"W | 1005 |
| Taim | 4 | 32°32'25.3"S | 52°32'53.2"W | 32°32'01.0"S | 52°32'27.9"W | 999 |
| Taim | 5 | 32°32'02.7"S | 52°31'52.5"W | 32°31'32.4"S | 52°32'06.0"W | 997 |
| Taim | 6 | 32°32'05.9"S | 52°31'36.8"W | 32°32'11.3"S | 52°30'59.0"W | 999 |
| Torotama | 1 | 31°55'48.7"S | 52°10'00.1"W | 31°55'34.1"S | 52°09'25.5"W | 1013 |
| Torotama | 2 | 31°55'31.3"S | 52°09'23.7"W | 31°55'24.4"S | 52°08'46.1"W | 1010 |
| Torotama | 3 | 31°55'11.9"S | 52°08'21.5"W | 31°55'34.1"S | 52°07'53.4"W | 1002 |
| Lagoa do Peixe NP | 1 | 31°13'20.3"S | 50°56'56.3"W | 31°13'36.7"S | 50°57'28.9"W | 1000 |
| Lagoa do Peixe NP | 2 | 31°15'12.6"S | 50°59'12.3"W | 31°14'50.8"S | 50°58'48.8"W | 900 |
| Lagoa do Peixe NP | 3 | 31°15'15.4"S | 50°59'22.0"W | 31°15'35.7"S | 50°59'47.5"W | 950 |
| Lagoa do Peixe NP | 4 | 31°19'45.0"S | 51°03'49.0"W | 31°19'17.7"S | 51°03'28.3"W | 1000 |
| Lagoa do Peixe NP | 5 | 31°26'28.5"S | 51°09'51.7"W | 31°26'55.4"S | 51°10'08.9"W | 950 |
| Lagoa do Peixe NP | 6 | 31°27'03.0"S | 51°10'14.9"W | 31°27'26.9"S | 51°10'42.3"W | 1000 |

Table S2. There was no increasing or decreasing trend in Buff-breasted Sandpiper (*Calidris subruficollis*) density over time at any of the four wintering areas in southern Brazil, 2008-2020. (A–D) Coefficients, standard error (SE), *t* value, and *P* value from linear regression of estimated bird density on time (year). Buff-breasted Sandpiper density was estimated using line transect and distance sampling methods. Bird density estimates (birds per ha) and sample sizes are provided in Table 2 of the main text.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **A. Cordões Litorâneos (2008-2012)** | | | | |
|  | Coefficient | SE | *t* | *P*(>|*t*|) |
| Intercept | 0.27 | 0.28 | 0.96 | 0.41 |
| year | 0.03 | 0.08 | 0.31 | 0.78 |
|  |  |  |  |  |
|  |  |  |  |  |
| **B. Torotama (2008-2013, 2015, 2018-2019)** | | | | |
|  | Coefficient | SE | *t* | *P*(>|*t*|) |
| Intercept | 7.43 | 2.11 | 3.53 | 0.01 |
| year | -0.10 | 0.31 | -0.32 | 0.76 |
|  |  |  |  |  |
|  |  |  |  |  |
| **C. Lagoa do Peixe (2008-2015, 2018-2019)** | | | | |
|  | Coefficient | SE | *t* | *P*(>|*t*|) |
| Intercept | 4.36 | 2.30 | 1.90 | 0.09 |
| year | 0.02 | 0.34 | 0.05 | 0.96 |
|  |  |  |  |  |
|  |  |  |  |  |
| **D. Taim (2008-2012, 2015)** | | | | |
|  | Coefficient | SE | *t* | *P* |
| Intercept | 0.07 | 0.17 | 0.43 | 0.69 |
| year | 0.04 | 0.04 | 0.96 | 0.39 |

Diagram, engineering drawing

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Diagram

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Figure S1. Detection functions from a hierarchical distance sampling model of Buff-breasted Sandpiper (*Calidris subruficollis*) density at four wintering locations in Brazil, 2008–2019. A hazard rate function was used in 2008, 2010, and 2013; a half-normal function was used in all other years.