*Supplementary material*

Flexible foraging strategies of a tropical seabird in the western Atlantic Ocean

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Table S1.Mean ± standard deviation (SD), minimum and maximum values of carbon (*δ*13C) and nitrogen (*δ*15N) isotopic values from muscle samples of regurgitated prey of masked boobies (*Sula dactylatra*) from Fernando de Noronha archipelago.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Length (mm)** |  | ***δ*13C (‰)** | | |  | ***δ*15N (‰)** | | |
| Prey species | **n** | **Mean** |  | **Mean ± SD** | **Min** | **Max** |  | **Mean ± SD** | **Min** | **Max** |
| *Cheilopogon cyanopterus* | 4 | 250.0 |  | -17.81 ± 0.26 | -18.11 | -17.57 |  | 9.75 ± 1.55 | 7.66 | 11.06 |
| *Exocoetus volitans* | 25 | 161.9 |  | -17.25 ± 0.43 | -18.29 | -16.76 |  | 9.33 ± 1.33 | 5.90 | 10.54 |
| *Hirundichthys affinis* | 24 | 194.2 |  | -17.13 ± 0.30 | -17.60 | -16.69 |  | 9.00 ± 0.83 | 7.90 | 10.90 |
| Hemiramphidae | 4 | 236.6 |  | -17.51 ± 0.12 | -17.63 | -17.40 |  | 8.67 ± 0.70 | 7.71 | 9.38 |
| *Oxyporhamphus micropterus* | 6 | 132.5 |  | -17.30 ± 0.49 | -17.83 | -16.63 |  | 7.66 ± 1.44 | 5.28 | 9.34 |
| *Harengula clupeola* | 3 | NA |  | -17.86 ± 0.05 | -17.90 | -17.80 |  | 8.96 ± 0.12 | 8.84 | 8.89 |

Table S2. Standard area and overlap of Bayesian ellipses of *δ*13C and *δ*15N from whole blood samples of breeding masked booby *Sula dactylatra* in the Fernando de Noronha Archipelago by year. Ellipse areas represent 95% of the data.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year | Area | | Overlap area | Overlap proportion (%) |
| **Female** | **Male** |
| 2017 | 0.41 | 0.27 | 0.21 | 30.88 |
| 2018 | 0.76 | 0.27 | 0.21 | 20.39 |
| 2019 | 0.59 | 0.13 | 0.12 | 16.67 |
| 2022 | 0.15 | 0.31 | 0.09 | 19.57 |

Table S3.Prey species proportions (%) of contribution to the diet of females and males ofmasked booby (*Sula dactylatra*) from Fernando de Noronha Archipelago during the breeding season estimated from mixing models of stable isotopes of carbon (*δ*13C) and nitrogen (*δ*15N), separated by sampling years.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Females** | | | |  | **Males** | | | |
| Prey species | **2017** | **2018** | **2019** | **2022** |  | **2017** | **2018** | **2019** | **2022** |
| *Cheilopogon cyanopterus* | 8.6 | 10.3 | 11.8 | 18.7 |  | 4.9 | 9.2 | 13.3 | 9.9 |
| *Exocoetus volitans* | 15.7 | 14.2 | 19.9 | 14.0 |  | 13.8 | 10.4 | 17.5 | 6.5 |
| *Hirundichthys affinis* | 30.7 | 25.1 | 28.4 | 13.5 |  | 40.7 | 16.0 | 22.3 | 6.8 |
| Hemiramphidae | 17.5 | 20.9 | 15.6 | 15.7 |  | 16.3 | 23.6 | 17.4 | 10.3 |
| *Oxyporhamphus micropterus* | 14.8 | 8.9 | 12.1 | 10.2 |  | 17.6 | 12.5 | 13.6 | 5.1 |
| *Harengula cupeola* | 12.7 | 20.6 | 12.2 | 27.9 |  | 6.7 | 28.4 | 15.9 | 61.4 |

Table S4. Statistical results from Generalized Linear Mixed Models (GLMM) and Linear Mixed Models (LMM) comparing sexes ofmasked booby (*Sula dactylatra*) across sampling years. GLMM = Dtot: total distance traveled (km); Dmax: maximum distance from the colony (km); Tdur: trip duration (min); Pdiv: proportion of time diving (%); SI: straightness index.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **GLMM** | **LMM** | ***p*-value** |
| **2017** |  |  |  |
| Dtot |  | F1, 23 = 0.15 | 0.7 |
| Dmax |  | F1, 25 = 0.19 | 0.65 |
| Tdur |  | F1, 21 = 0.76 | 0.39 |
| SI | z = -1.98 | - | **0.04** |
| Pdiv | z = -0.52 | - | 0.6 |
| **2018** |  |  |  |
| Dtot |  | F1, 14 = 0.1 | 0.7 |
| Dmax |  | F1, 14 = 0.78 | 0.39 |
| Tdur |  | F1, 14 = 0.36 | 0.55 |
| SI | z = -1.4 | - | 0.15 |
| Pdiv | z = 0.94 | - | 0.34 |
| **2019** |  |  |  |
| Dtot |  | F1, 11 = 0.49 | 0.49 |
| Dmax |  | F1, 9 = 0.0079 | 0.93 |
| Tdur |  | F1, 12 = 0.1 | 0.75 |
| SI | z = -1.57 | - | 0.24 |
| Pdiv | z = 1.47 | - | 0.14 |
| **2022** |  |  |  |
| Dtot |  | F1, 113 = 0.1 | 0.75 |
| Dmax |  | F1, 35 = 1.16 | 0.28 |
| Tdur |  | F1, 27 = 0.001 | 0.97 |
| SI | z = -1.17 | - | 0.24 |
| Pdiv | z = 1.82 | - | 0.06 |

Fig. S1. Trip total distance traveled (Dtot, km), trip maximal distance from colony (Dmax, km), trip duration (Tdur, min), proportion of time diving (Pdiv, %) and straightness index (SI) of the foraging trips of male and female masked boobies (*Sula dactylatra*)during breeding seasons in the Fernando de Noronha Archipelago in 2017, 2018, 2019 and 2022.

