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Abstract

 S exual segregation of $\tilde{\Gamma}$ and $\tilde{\Gamma}$ are $\tilde{\Gamma}$ are shown to arise through resource partitioning in arise through resource partitioning in arise partitioning in arise partitioning in a shown in a shown in a sho number of taxa, but never in avian migrants. Western sandpipers (*Calidris mauri*) are migratory shorebirds that mainly breed in Alaska and α over a state along the community α overwints α and α are slightly larger than α . The males α is have α s substantially resulting $\frac{1}{2}$ and $\frac{1}{2}$ in a latitudinal bias in a latitudinal bias in $\frac{1}{2}$ in a latitudinal bias in sex ratio. Resource partitioning could contribute to this contribute to this could cont particular in vertebrates for $\frac{1}{2}$ at different setiment dependent sediment sediment sediment sediment dependent changes with depths, and if $\frac{1}{2}$ and if $\frac{1}{2}$ average present depths, and if $\frac{1}{2}$ and if \mathbf{I}_{cyl} is the hypothesis, it with the shown that for \mathbf{I}_{cyl} is a probing mode mode mode model mod $\operatorname{G}^{\text{an}}$ and $\operatorname{G}^{\text{an}}$ among sites, while $\operatorname{G}^{\text{an}}$ β bill length increased in both males and females and females and females and females and females the southern residuals, were also larger at a $\frac{1}{2}$ s southern site. Between and with longer bills are thought to be favoured at southern latitudes because of a postulated at southern latitudes because of a postulated at southern latitudes because of a postulated we general increase in the final increase in the increase increase in the implication of the implications of the implications for the implications of the implications for the implications for the implications for the impl $\lim_{n \to \infty} \frac{1}{n!} \sum_{n=0}^{\infty} \frac{1}{n!} \lim_{n \to \infty} \frac{1}{n!} \sum_{n=0}^{\infty} \frac{1}{n!} \sum_{n$ $2005 \text{ E}_{\text{m}}$ ι $-$ SAS. A_{m} ι ι ι ι ι ι ι $Keywords: D_{\overline{n}} \rightleftharpoons {_{h} \mathbf{q}}^{\mathbf{u}}$ $f \rightarrow {_{h} \mathbf{q}}^{\mathbf{u}}$ is $\mathbf{q} \rightarrow {_{h} \mathbf{q}}^{\mathbf{u}}$ in $\mathbf{q} \rightarrow {_{h} \mathbf{q}}^{\mathbf{u}}$ in $\mathbf{q} \rightarrow {_{h} \mathbf{q}}^{\mathbf{u}}$ is $\mathbf{q} \rightarrow {_{h} \mathbf{q}}^{\mathbf{u}}$.

1. Introduction

 S_{S} , and females \mathbb{R}^n matrix $\lim_{k \to \infty}$ season is common and $\lim_{k \to \infty}$ for $\lim_{k \to \infty}$ is N_{eff} and N_{eff} \mathcal{L} , 2000). Even tax Γ and \mathcal{L} and \mathcal{L} write $\frac{1}{2}$ $\frac{1$ $\frac{1}{\epsilon}$ (*Gasterosteus aculeatus*), $\frac{1}{\epsilon}$, $\frac{1}{\epsilon}$ $\frac{1}{\epsilon}$ Γ_1 Γ_2 caller, $\mathbf{a} \cdot \mathbf{l}$ and \mathbf{a}^Z de $(S_{\text{obs}} - \pi^{1994})$, result- $\lim_{k \to \infty} \frac{1}{k} \left(\frac{1}{k} \sum_{i=1}^{n} \frac{1}{k} \sum_{i=1}^{n} \frac{1}{k} \right)$ in $\lim_{k \to \infty} \frac{1}{k} \prod_{i=1}^{n} \frac{1}{k}$ $(\overline{R}, \overline{I}^*, \underline{\bullet}, \overline{1980}).$ L_{ike}, $\overline{I}^*, \overline{I}^*, \overline{I$ $\mathbf{u} = \mathbf{u} + \mathbf{v}$ sets to see \mathbf{u} in under \mathbf{v} h_1 , 2002) and breeding [\(Petit et al., 1990;](#page-5-0) P_{artim} \mathbf{a} ., 2004), and \mathbf{a} is shown to underlie sex-specific occupancy of underlies \mathbf{a} P^* territories of P^* _{resident} $G_{\overline{k}}^{\mu}$, 1983). In \mathbf{L} para \mathbf{L}^{max} separation of the section of the section of the section of the sexes during the non- $\frac{1}{2}$ $p_{\text{max}} = \frac{1}{2} \sum_{i=1}^{n} \frac{1}{2} \$ \overrightarrow{B} \overrightarrow{B} \overrightarrow{C} [\(Berthold, 1996;](#page-4-0) C_{ristol} et al., 1999). $H = \frac{1}{2}$ $\frac{1}{2}$ in the set of $\frac{1}{2}$ in the set of $\frac{1}{2}$ in the set of $\frac{1}{2}$ nonbreeding season in an avian migrant can be attributed to a be attributed to a be attributed to a be attributed to $\tau_{\rm s}$, $\tau_{\rm s}$ \rightarrow $\tau_{\rm s}$ \rightarrow $\tau_{\rm s}$ (*Calidris mauri*) ϵ small, migration in the breed in the breed in western A_n and eastern Siberia. They spend the non-breeding season along the non-present the non-pre- ϵ west and $e^{-\frac{1}{2}t}$ of $N \leq A$ ϵ down into S , ϵ $AT = (M + 1994)$. The species shows provide shows provid \mathbf{w} in \mathbf{f} segregation during the non-terminal season during season $\mathbf{N}^{\mathbf{c}}$ $\frac{1}{2}$, 2002). At $\frac{1}{6}$ and $\frac{1}{6}$ the northern end of the non-theorem en $\mathbf{b} = 1$, $\mathbf{b} = \mathbf{c} = 1$ and $\mathbf{b} = 1$ and $\mathbf{b} = 1$, $70^{\circ}80\%$ of we see the same \mathbb{Z} are male, which the southern end the southern end the southern end the southern end of \mathbb{Z} E_i in \mathbf{G}_n \mathbf{F}_i (1.4 9,000 km $G_{\mathbf{F}_i}$ C_{ircle} \mathbf{F}_i $\frac{1}{2}$ \mathcal{L} $\mathcal{L} = \prod_{i=1}^{n} \prod_{i=1}^{n} \prod_{j=1}^{n} \mathcal{L}$ and $\mathcal{L} = \mathcal{L}$ $\frac{1}{2}$ tion cannot fully explain the pattern observed in western same δ in western same $\frac{1}{2}$ $p_i = (N - n \cdot 2002)$. $p_i = 1 \cdot y \cdot 2002$ $\sum_{i=1}^{N}$ in fasting i individuals can survive longer periods of $\sum_{i=1}^{N}$ individuals of $\sum_{i=1}^{N}$

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 80.4 , F. 2002). Data on foraging behavior were only ~ 50.1 $\lim_{\epsilon \to 0}$ $\lim_{\epsilon \to 0}$ $\ldots C_{\ell_1,\ldots,\ell_r} M_{\ell_1,\ldots,\ell_r}$ $\qquad \qquad \ldots$ $\qquad \qquad \ldots$ $\qquad \qquad \ldots$ $\qquad \qquad \ldots$ \mathbb{S}_s , $P_{\mathbf{r}} \cap R$, Republic $P_{\mathbf{r}} \cap P_{\mathbf{r}}$ $\begin{array}{ccc} \textbf{1} & \textbf$ s_n so s_n if s_n is not individual individuals for n $\int_{0}^{\infty} f(z) dz$.

2.3. Statistical analysis

 0 bs $\frac{1}{2}$ in $\frac{1}{2}$. The form of $\frac{1}{2}$ individuals were transformed into $\frac{1}{2}$ and $\frac{1}{2}$ $a = \frac{1}{2}$ score expressed as the probes: (number of probes probes/(number of pecks + number of probes)). This score $\omega_{\rm em} = 1.4$ and the stabilize variation to $\omega_{\rm em}$ and A and A and A and A and B and A and A and A (GLM) is the statistical particle statistical package SL_3 , Soft- $\frac{1}{2}$ $\frac{1}{2004}$. Interaction terms were only reported when $\frac{1}{2}$ $p > 0.05$.

3. Results

 \texttt{Ff}^* n sandpipers sandpipers used the probing form \texttt{F} Γ_{1} and Γ_{2} and Γ_{3} are defined by Γ_{3} and Γ_{4} are defined by Γ_{5} $a_{\mathbf{r}} \in \mathbb{C}$ a single \mathbb{C} is \mathbb{C} and \mathbb{C} . $(\mathbb{F}_f, \mathbb{C})$; $\mathbb{B}_{\mathbf{r}} \in \mathbb{B}_{\mathbf{r}}$; $F_{1,13} = 2.88, p = 0.11; B_{1} = I_{1,44} = 20.54, p < 0.001;$ C_{ξ_h} _{is}: $F_{1,53} = 10.21, p = 0.002;$ **P**₂. $\int_0^{\infty} B_{y}$; $F_{1,155} = 16.54$, $p < 0.001$). $I \in \mathbb{F}_n$, then $f = \frac{1}{2} \sum_{i=1}^n \sum_{j=1}^n f(x_i, y_j)$ $(F_{3,166} = 5.28, p = 0.002), \quad \text{and} \quad \mathbb{F}^{\text{max}} \mathbb{F}^$ $p = 0.07$). In females, the females of $\frac{1}{\sqrt{2}}$ and $\frac{1}{\sqrt{2}}$ $t = \int_{0}^{t} \int_{0}^{t} \frac{1}{t} \, dt$ and $\int_{0}^{t} \frac{1}{t} \, dt$, $t = \int_{0}^{t} \frac{1}{t} \, dt$ and $\int_{0}^{t} \frac{1}{t} \, dt$

 $\sum_{i=1}^{n}$ is high, but for $i=1,2,\ldots,n$ is $\sum_{i=1}^{n}$ in $\sum_{i=1}^{n}$ $\frac{1}{\epsilon}$ at $\frac{1}{\epsilon}$ $\frac{1}{\epsilon}$ $\frac{1}{\epsilon}$ $\frac{1}{\epsilon}$ $\frac{1}{\epsilon}$ $\frac{1}{\epsilon}$ $\frac{1}{\epsilon}$ $\frac{1}{\epsilon}$ $\frac{1}{\epsilon}$ $\frac{1}{\epsilon}$ sites of B_n^{th} , $\frac{n}{2}$, 1 , $\frac{n}{2}$, A_n , B_n , $\sum_{i=1}^{n}$ sites that $\sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{j=1$ $\frac{1}{2}$ **and and UPPER Parameter B** y ($p = 0.004$). $A \text{ GLM}$ with $f \in \mathbb{R}$ of the effect of sex, and site on bill $\mathbf{e} \in \mathcal{L}$ showed that female bills were significantly longer than \mathcal{L} is the significant of \mathcal{L} **n** \mathbb{R} \mathbb{R} \mathbb{R} \mathbb{R} \mathbb{R} \mathbb{R} = 1251.11, $p < 0.001$), \mathbb{R} **1 u** π **f**_{**a**-f_{uf} **q** $(F_{1,402} = 3.59, p = 0.059)$, **c**} $\epsilon_{\text{h}} \rightarrow \epsilon_{\text{f}}$ $\mathbf{f}_{\text{a-f}}$ $(r_{2,402} = 10.82, p < 0.001; \text{F}_{\text{f}}^2$. 2. $P_{\text{total}}^{\text{in}}$ and site and site-differences, using the Bon $f = \frac{1}{\sqrt{2\pi}} \int_{\frac{\pi}{2}}^{\frac{\pi}{2}} \frac{1}{\sqrt{$ F_{r}^{r} bills were showed that bills were shown in Fig. 1. The shorter in F_{r}

 $f(x)$ for a site of the data are needed between sites, but $f(x)$ $t = \frac{1}{2}$ lating in the second τ of τ and τ is formal in formal in τ in τ . The second countering is τ tuitive at first, but can likely be attributed to the increase in bill $\sum_{i=1}^{\infty}$ $\sum_{i=$ f_{max} for f_{max} for f_{max} individuals at southern latitudes can reach invertebrates buried at greater depth in vertebrates buried at greater depth in $\frac{1}{2}$ α to the to the total α A **b** \overrightarrow{a} **p** \overrightarrow{a} **b** \overrightarrow{a} **c** \overrightarrow{a} **b** \overrightarrow{a} and \overrightarrow{a} **f** \overrightarrow{a} **f** \overrightarrow{a} \mathbf{m} at \mathbf{l} , \mathbf{l} and \mathbf{m} and \mathbf{l} $\frac{1}{\sqrt{2}}$ and $\frac{1}{\sqrt{2}}$ in $\frac{1}{\sqrt{2}}$ ϵ sandpipers sandpipers were the change their forces were the change their forces were the change of ϵ with $\frac{1}{2}$ vertext temperature from personal temperature from personal on the personal on $\frac{1}{2}$ surface to more deeply buried in $\frac{1}{2}$ [\(Nebel and Thompson, 2005](#page-5-0))

 i_n S_t, i_n C_{ar}olina t_{han} i_n \in B_{γ} γ P_anama. Γ H₁ - $\frac{1}{L}$ $\leq \frac{2}{\pi}$. $\frac{1}{R}$ in set $\frac{1}{R}$ in $\frac{1}{R}$ is $\frac{1}{R}$ was $\frac{1}{R}$, $\leq C$ $\frac{1}{2}$ $\Gamma_{\rm c}$ shows that the two sites in Panama at the two sites in $P_{\rm c}$ f_{eff} behaviour was much higher. This raise the possibility of f_{eff} \mathbf{h}_i for \mathbf{h}_i , \mathbf{h}_i , \mathbf{h}_i , \mathbf{h}_i and \mathbf{h}_i alter the \mathbf{h}_i

- $M_y = 5 \cdot 1081 \cdot A$ test of the segregation of the segregation of the segment of the seg $\frac{1}{2}$ sexes in wintering birds. Can. J. $\frac{1}{2}$, $\$
- $N = \binom{1}{B}, S, \widetilde{L}_{m}, \cdots, D.B., \widetilde{O'}H \neq_{\widetilde{e}}, P.D., F_{\text{supp.}a}$, G., $H = \binom{1}{2}, B, D \in \mathbb{N}, \mathbb{N}, F$. $\epsilon_{\rm m}$, 2002. Western Sandpipers during the non-terminal season: spatial s $\epsilon \rightarrow \bullet \bullet \quad \bullet \quad \bullet \quad \bullet \quad \bullet \quad \bullet \quad \bullet$ and Auk 119, 922–928.
- $N = \frac{1}{2}S_1$, $J^2 = \frac{1}{2}S_2$, $D.L., E_{\overline{B}} = \frac{1}{2}R$., $2005.E_{\overline{B}}$, $\frac{1}{2}$ Γ_{λ} and Γ and for an indicate in calculation in called Γ . Biol. $\left(\begin{array}{ccc} 1 & -\epsilon \end{array}\right)$.
- Nebel, S., Thompson, G.J., 2005. Foraging behaviour ofWestern Sandpipers $\mathbf{a}_1 = \mathbf{a}_2 + \mathbf{b}_3$ set the set of the their theorem in the their hemispheric for the their hemispheric theorem is the set of the three temperatures for the three temperatures for the temperature of the temperature $\frac{1}{2}$, $\frac{1}{2}$,
- $N = \frac{N}{\pi} \sum_{i=1}^{N} 2003.$ Factors N and N and N and N and N and N and N S_n , $\frac{1}{2}$, P_6 D s , S_1 , S_2 , P_3 , P_4 , P_5 , P_6 , P_7 , P_8 , P_9 , $P_$ $O'H = P.D., 2002.$ $\angle A = NP^{-1}I^* + \angle A = P - P$ in alternative life $\angle A = P$
- $s_{\rm eff}$, Ω) the properties of $\Gamma_{\rm eff}$ and $\Lambda_{\rm eff}$ distribution $\Delta_{\rm eff}$ shortly sh $(Calid\ddot{r}$ is mauri). P_h \ddot{D} $\ddot{\bm{\xi}}$. \ddot{S} , \ddot{S} , \ddot{F} , \ddot{F} , \ddot{F} , \ddot{F} , \ddot{F} , \ddot{S} , \ddot{F} , \ddot