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for food (Price 1984). The result is niche differentiation, which is characterized by disproportionate bill length dimorphism and sex-dependent differences in foraging behaviour and resource use. In the Charadriiformes, bill length dimorphism is only weakly associated with indices of sexual selection that explain SSD, suggesting that additional selection pressures have acted on bill length (Székely et al. 2004).

Murray 1986) and our analyses further characterize an important morphological asymmetry in this species: bill length

we suggest, then these results also contradict the notion of a latitudinal cline for body size (O'Hara et al. 2006); however, size was indexed by bill and wing-chord lengths, which may reflect variation in size and shape. One possible explanation for our opposing results for bill and tarsus lengths is that, in addition to migration distance, the morphological traits that determine size and shape might also vary in relation to factors associated with winter site size and (or) quality, such as predation danger, competition for food, and (or) the distribution of food resources (Pomeroy 2006). Consistent with this, intrasexual comparisons with the null model revealed contrasting site differences: at the small site, Punta Banda, males were relatively short-billed and at the large site, Santa María, females were relatively long-billed. This suggests that site size, or associated characteristics, may be important in determining tarsus length (structural size) and bill length optima at winter sites.

Some of the latitudinal variation in western sandpiper morphology could be attributable to a latitudinal differential in risk from falcons, such as the merlin (*Falco columbarius* L., 1758) and the peregrine falcon (*Falco peregrinus* Tunstall, 1771; Nebel and Ydenberg 2005). For forest passerines hunted by Eurasian sparrowhawk (*Accipiter nisus* L., 1758), Swaddle and Lockwood (1998) demonstrated that rounded wing tips and short femora, relative to tarsus, are associated with lower predation risk. While these specific shape attrib-

remain to be thoroughly tested, extending the analyses to other calidrid species could generate additional insights. For example, based on the hypothesized mechanisms in the present study, we predict a strong inverse relationship between bill length dimorphism and the degree of overlap between the sexes in overwintering distributions. Similarly, irrespective of the degree of overlap, bill length dimorphism should be maximal when the sex ratio is 1:1.

Acknowledgements

We thank C.G. Guglielmo for morphometric data, K.J. Mathot for access to bird collections, and M. Comeau and B.D. Smith for discussions on discriminant function analyses. S. Bonner, T. Kuwae, T. Lacourse, T.D. Williams, and R.C. Ydenberg provided insightful comments on previous drafts of the manuscript. T. Piersma and an anonymous reviewer provided valuable comments on the submitted version of the manuscript. N. Warnock and many others assisted with fieldwork in Mexico, which was supported by the Centre for Wildlife Ecology at Simon Fraser University, Environment Canada's Latin America Program, Centro de Investigación Científica y de Educación Superior de Ensenada and Patolandia Hunting Club. Graduate scholarships were awarded to G.F. by the Mexican National Council for Science and Technology (CONACYT no. 90768) and the Government of Canada.

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