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High basal metabolic rate in Sanderlings (*Calidris alba*).—Physiological data from a number of species permit the estimation of basal metabolic rate (BMR) from allometric equations (Lasiewski and Dawson 1967, Aschoff and Pohl 1970, Kendeigh et al. 1977). Here I report BMR for Sanderlings (*Calidris alba*) taken on their wintering grounds on the Peruvian Coast and compare these results with estimates of BMR from three allometric equations.

Methods.—Nine Sanderlings (all adults, sex unknown) were caught with mist nets on Villa beach, near Lima, Peru, on 21 August 1984 at 22:00. They were kept in the laboratory over night at 19°C. BMR for each bird was measured the next day beginning at 8:00. BMR was estimated from oxygen consumption of the birds during 30-min periods. All individuals were in a postabsorptive (without food in their stomachs) condition, and they had been resting in a dark 1-l metabolic chamber for at least 1 h prior to the experiments. The temperature in all the determinations was 25 ± 1°C [SD] (see Castro et al. 1985).

I tested the accuracy of the apparatus by measuring oxygen consumption in a strain of laboratory mice of known basal metabolism. The results fitted the expected values.

Results.—Mean body weight was 50.44 ± 4.59 g [SD]. Mean oxygen consumption was 1.98 ml/g/h $\pm$ 0.53, equivalent to 48.15 kJ/day assuming a conversion factor of 20.1 kJ per liter of oxygen consumed (fat and carbohydrate metabolism, Dawson 1974).

These results are 12–28% higher than those predicted by the equations of Aschoff and Pohl (1970), Lasiewski and Dawson (1967), and Kendeigh et al. (1977) (Table 1).

Discussion.—Few measurements of shorebird BMR have been published. Thus it is difficult to know whether the high values reported here might be representative of shorebirds in general. Johnston and McFarlane (1967) showed values for 2 individuals of the Lesser Golden-Plover (*Pluvialis dominica*). One of them had a value 14% lower than that predicted using Aschoff and Pohl's (1970) equation, but the other had a value 28% higher than predicted. Johnston and McFarlane rejected the second measurement, arguing that the bird in question "evidently never reached a basal level" based on allometric predictions. Kendeigh et al. (1977) reported a value for *Charadrius dubius* that was 34% higher than that predicted by Aschoff and Pohl (1970). Kersten and Piersma (in press) report values for three other species of shorebirds that run an average of 34% over those predicted by Aschoff and Pohl's (1970) equations. Thus it appears likely that shorebirds have higher metabolic rates than

TABLE 1
COMPARISON OF THE VALUES OF BMR WITH THE PREDICTED VALUES FOR A 50-G
SANDERLING

	Metabolism (kJ/day)	Difference from actual measurement
Actual measurement	48.13	
Allometric equations		
Aschoff and Pohl[a]	42.84	+12%
Lasiewski and Dawson[b]	37.53	+28%
Kendeigh et al.[c]	38.70	+24%

[a] Nonpasserines in the diurnal cycle.
[b] Nonpasserines, day and night.
[c] Eq. 5.5 (nonpasserines, day and night).

those predicted from standard allometric equations. Passeriformes also show higher BMR than predicted by the above allometric equations; however, the adaptive value of a high BMR is unclear (see Kersten and Piersma [in press] for further discussion).

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