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Basal metabolic rate of Pacific Golden-Plovers.—It appears that shorebirds have higher basal metabolic rates (BMR) than previously recognized (Castro 1987, Kersten and Piersma 1987). Johnston and McFarlane (1967) measured BMR in two Pacific Golden-Plovers (*Pluvialis fulva*) and found discordant results. They favored the lower value, which was only 79.5% of the BMR predicted by Lasiewski and Dawson's (1967) equation for nonpasserine birds, as the more accurate figure. The purpose of the present note is to report data from a larger sample of *P. fulva* that indicate a relatively high BMR similar to other shorebirds.

Methods.—Twelve Pacific Golden-Plovers were captured in mist nets from a wintering population at Bellows Air Force Station located on the east shore of Oahu, Hawaiian Islands. Capture was between 04:00 to 06:30; all birds were adults (i.e., older than one year). There were seven males, four females and one of undetermined sex. They were brought to the laboratory before 10:00 (three individuals on 8 March, four on 10 March, and five on 12 March 1988) and measurements of BMR made over the next 1–7 hours, after which the birds were color banded and released at Bellows. Subsequent observations through early May disclosed that all of the plovers survived and migrated. During transfer from the study site, and while in the laboratory, the plovers were held individually in darkened containers. Since the birds had not fed prior to being netted (they were returning to the study area from overnight roosts when captured), and no food was provided in captivity, all specimens were in postabsorptive condition during experiments. Each bird was placed in a Collins Small Animal Chamber (covered by an opaque cloth) housed in a Hotpack Environmatic Chamber at 26°C. Following equilibration of at least 45 min, the individual's total oxygen consumption was measured during a period of 30 min using closed circuit spirometry. Immediately thereafter, rectal temperature was measured with a YSI thermistor probe (No. 402) connected to a YSI Telethermometer (No. 46 TUC). Body mass was recorded at the time of capture, time of release, and before and after the bird was enclosed in the small animal chamber.

Results.—The mean body mass of the 12 birds over the period of oxygen consumption measurement was 127.0 g ± 9.6 (SD). Their mean oxygen consumption was 1.85 ml O_2/g·h ± 0.58, equivalent to 1.31 W per bird (Table 1). The mean rectal temperature of 11 plovers was 40.5°C ± 0.6. During the time in captivity (13.3 h ± 1.0), nine birds lost body mass at a mean rate of 0.61 g/h ± 0.13. The total average mass loss over 13.3 h was 6.3% of initial body mass.

Discussion.—As shown in Table 1, mean BMR for our sample ranged from 34–54% higher than predicted values. Similarly, BMR in six other species of shorebirds averaged 42% above predicted nonpasserine levels (for details and references see Kersten and Piersma 1987). Based on these six species, Kersten and Piersma proposed the following allometric equation for shorebirds: BMR in W = 5.06(body mass in kg)$^{0.729}$. For a 127 g plover, the equation predicts a BMR of 1.12 W, thus our measured value of 1.31 W fits the expression reasonably well. Finding measured BMR to be higher than predicted BMR was not surprising. The Kersten and Piersma equation includes resting phase BMR from birds adapted to confinement, whereas we measured only active phase BMR in recent captives. Perhaps the difference would have been greater except for the very docile nature of captured Pacific Golden-Plovers. While in the chamber, there were no indications (fluttering, etc.) of agitation. Whether the birds were in a standing posture during the measurements is unknown. Possibly, this contributed to their high BMR values, although plovers normally spend much of their time standing. We conclude that the metabolic characteristics of *P. fulva* provide further evidence of relatively high BMR among shorebirds.

TABLE 1

COMPARISON OF MEASURED AND PREDICTED BMR IN THE PACIFIC GOLDEN-PLOVER

	Metabolism (W)[a]	Measured relative to predicted (%)
Measured BMR	1.31 ± 0.41	
N = 12	(0.66–2.04)[b]	
Allometric equations		
Lasiewski and Dawson (1967)[c]	0.85	+54
Aschoff and Pohl (1970)[d]	0.98	+34
Kendeigh et al. (1977)[e]	0.89	+47

[a] All calculations reflect a body mass of 127.0 g.

[b] Figures show mean ± SD, and range. BMR was less than predicted in only two individuals.

[c] Nonpasserines, day and night.

[d] Nonpasserines, active phase.

[e] Eq. 5.5 (nonpasserines, day and night).

Kersten and Piersma (1987) interpret high BMR in shorebirds as a reflection of the visceral processes necessary to sustain very active skeletal muscles. Furthermore, they suggest that the daily energy expenditure "at some period of peak demand, could well lead to a higher-than-expected BMR." Such peaks might accompany "periods of mid-winter cold spells" and "the periods of migration and premigratory fattening." Given the tropical climate on central Pacific wintering grounds, *P. fulva*'s "peak demand" likely occurs in the arctic during the inclement weather of early spring.

The mean deep-body temperature of the plovers was within the range of body temperatures reported for 18 species of shorebirds (compiled by Neumann et al. 1968). Also, it was close to the estimated body temperatures of Ruddy Turnstones (*Arenaria interpres*) and Black-bellied Plovers (*P. squatarola*) as extrapolated from a regression of heat production on air temperature (Kersten and Piersma 1987). The deep-body temperatures, air temperature, and oxygen consumptions measured in the present study allowed us to calculate the total (wet) thermal conductance of *P. fulva*'s tissues and plumage. The value calculated (0.71 mW/g°C) was higher than predicted values of 0.31–0.51 (Herreid and Kessel 1967, Aschoff 1981). It is tempting to correlate the high BMR of the plovers with their high thermal conductance, as the latter implies a low thermal insulation. However, at an air temperature of 26°C, it is unlikely that thermal conductance of the plovers was minimal and comparisons with allometrically derived predictions may be invalid. An important factor in the overall insulation of plovers would be their long legs which facilitate heat loss. It is notable that Kersten and Piersma (1987) found shorebirds to be poorly insulated, but cautioned that their laboratory results might not be representative of natural conditions.

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Intraspecific nest usurpation by a Yellow-eyed Junco.—Although the nesting activities of a number of avian species have been well studied, there are few published accounts of either inter- or intraspecific nest usurpation (Whitmore, Emu 81:111–112, 1981). We report here an observation of intraspecific nest usurpation by a pair of Yellow-eyed Juncos (*Junco phaeonotus*). Yellow-eyed Juncos are small (19 g) passerines that are monogamous, maintain all-purpose territories and build concealed cup nests on the ground (Sullivan, Ecology 69: 118–124, 1988). We made these observations at Rustler Park (elev. 2560 m, 31°55'N, 109°17'W) in the Chiricahua Mountains (Coronado National Forest) of southeastern Arizona during the 1984 breeding season (see Balda, Ph.D. diss., Univ. Illinois, Urbana, Illinois, 1967, for a detailed description of the study site and breeding biology of the Yellow-eyed Junco).

On 29 June, J. Cole found the nest of an unbanded pair of Yellow-eyed Juncos at the base of a clump of orange sneezeweed (*Helenium hoopsii*). This nest contained four warm eggs. He checked the nest on 3 July and flushed the incubating female off the four eggs. The next day (4 July) a banded female (female B) from an adjacent territory was observed entering the nest while the unbanded female (female U) was incubating. Female U flew off and began foraging when female B entered the nest. Female B remained in the nest for a few minutes but did not lay an egg. Female B and her banded mate had successfully fledged three young