

ARTICLES

BIRD WEIGHTS FROM THE ORANGE FREE STATE (PART 1: NON-PASSERINES)

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INTRODUCTION AND METHODS

Bird weights may be used as standards for body size, in systematics, in assessing the physiological condition of individuals and in the analysis of ecological communities (Clark 1979), which is why there is a need for published weights from various parts of the region. Various workers have compiled lists of the weights of birds in Africa (e.g. Anon. 1968; Biggs *et al.* 1979; Britton & Dowsett 1969; Day 1975; Earle 1980, 1981; Liversidge 1968; Pierce 1984; Skead 1971, 1977). Interpretation of weights from mixed samples of live and dead birds, however, may need care as Von Brockel (1973) observed a weight loss of more than 5,5 % in the Garden Warbler *Sylvia borin* weighed within 15 minutes after death. This is, however, of no great significance here, as the collected specimens were weighed immediately after being shot. Body condition and the contents of the crop or stomach may also significantly influence weight and thus obscure sexual differences.

All weights are presented in grams. Pesola spring balances as well as a triple beam balance were used and are believed to be accurate to the nearest 0,5 g. In some cases (where weight data were available for six or more months), samples are given by month. Samples are, however, mostly too small to draw any conclusion. All birds were adults (M = males; F = females; U = unsexed), except those specifically referred to as juveniles (Juv). Weights for five or more birds of the same species are described in terms of the mean, range, S.D. and sample size.

The lack of data on sex is a major shortcoming in most papers on weights (e.g. Day 1975; Skead 1977). In sexually monomorphic species the sex was determined only in the specimens dissected for scientific purposes, whilst birds netted are listed as adults or juveniles. As most of the weights listed here are from collected specimens, the above mentioned problem is of little importance in this paper.

Species marked with an asterisk (*) or a plus sign (+) are, respectively, those for which Maclean (1985) provides few or no weights or provides weights of unsexed birds only.

RESULTS

PODICIPEDIDAE

- + Little Grebe *Tachybaptus ruficollis*
 M 186,0; 197,1 F 163,0

The average weight for both males and the female (182,0 g) is higher than the 147,0 g for 14 unsexed birds weighed at Barberspan (Skead 1977). The weights of the males given here correspond with the 191,7 g of a single male weighed at the Kaffrarian Museum (Anon 1968).

ARDEIDAE

- *+ Yellowbilled Egret *Egretta intermedia*
 M 527,5

The weight given here is much higher than the 314,0 g recorded by Skead (1977) for a single unsexed bird at Barberspan.

- + Cattle Egret *Bubulcus ibis*
 M 372,0 F 360,0

Weights given correspond to the average of 344,7 g for four unsexed birds reported by Maclean (1985)

- + Squacco Heron *Ardeola ralloides*
 F 241,0

Blackcrowned Night Heron *Nycticorax nycticorax*
 Juv. 432,5; 595,0

- * Little Bittern *Ixobrychus minutus*
 F 124,0

The weight given is slightly heavier than the 110,0 g reported for a single female (Maclean 1985).

CICONIIDAE

- * White Stork *Ciconia ciconia*
 U 2 400,0

PLATALEIDAE

- * African Spoonbill *Platalea alba*
 M 1 542,4 F 1 543,3

ANATIDAE

Whitefaced Duck *Dendrocygna viduata*
 U Mean 690,5 S.D. 35,9
 Range 635,0 - 760,0 n = 10

Weights given correspond to those listed by Maclean (1985) and Skead (1977).

Fulvous Duck *Dendrocygna bicolor*
M 525,4

The weight of 693,0 g for a juvenile male (Skead 1977) is heavier than that of the male given, but the weight of the latter corresponds to the six unsexed birds given by Maclean (1985).

South African Shelduck *Tadorna cana*
M Mean 1 187,0 S.D. 113,8
Range 1 012,3 - 1 295,4 n = 5

F 1 049,3; 1 240,0; 1 230,0

Yellowbilled Duck *Anas undulata*
U Mean 1 007,7 S.D. 121,3
Range 660,0 - 1 220,0 n = 42

Cape Shoveller *Anas smithii*
F 497,6

ACCIPITRIDAE

Blackshouldered Kite *Elanus caeruleus*
U Mean 251,8 S.D. 17,5
Range 230,0 - 275,0 n = 5

* Black Eagle *Aquila verreauxii*
U 3 300,0

+ Steppe Buzzard *Buteo buteo*
F 712,8; 767,5; 783,4 U 873,1

+ Pale Chanting Goshawk *Melierax canorus*
M 684,4 U 685,0

Greater Kestrel *Falco rupicoloides*
U Mean 234,1 S.D. 39,3
Range 170,0 - 285,0 n = 7

Lesser Kestrel *Falco naumanni*
M Mean 143,4 S.D. 6,2
Range 132,4 - 147,0 n = 5

F 101,5; 145,2

PHASIANIDAE

* Coqui Francolin *Francoelinus coqui*
M 247,6 U 153,9

Greywing Francolin *Francoelinus africanus*
M 446,0

Orange River Francolin *Francoelinus levallantoides*
M 414,2 U 436,0

Swainson's Francolin *Francoelinus swainsonii*
 M 356,5

The weight given is much lighter than the mean of 706,0 g for 90 males given by Maclean (1985), and the 741,0 g for nine males from Barberspan (Skead 1977).

Helmeted Guineafowl *Namibia meleagris*
 U 1 410,0; 1 430,0; 1 345,0; 1 270,0

RALLIDAE

+ Purple Gallinule *Porphyrio porphyrio*
 F 390,0

+ Moorhen *Gallinula chloropus*
 M 332,0 F 239,0

Redknobbed Coot *Fulica erythrorhynchos*
 M 620,0; 732,7

U Mean 825,9 S.D. 96,8
 Range 585,0 - 1 080,0 n = 37

OTIDIDAE

Black Korhaan *Eupodotis afra* (Table 1 below)

The sample size is too small to draw conclusions, but on average both males and females seem to be heaviest in winter.

TABLE 1

MONTHLY VARIATION IN THE BODY WEIGHTS OF ADULT
 BLACK KORHAAN *EUPODOTIS AFRA*

		Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Mean	M			790,0	762,0	766,9		775,7	722,3		711,8	800,0	
	F		740,0	779,2	762,1								740,3
Range	M				744,0- 780,0	752,2- 781,5		725,2- 815,1					
	F			740,3- 815,0									
n	M			1	2	2		5	1		1	1	
	F		1	4	1								1

- * Blue Korhaan *Eupodotis caerulescens*
 U 1 120,0; 1 612,0

ROSTRATULIDAE

- * Painted Snipe *Rostratula benghalensis*
 F 85,0

The weight given is much lighter than the mean of 130,3 g for three females listed by Maclean (1985).

CHARADRIIDAE

Kittlitz's Plover *Charadrius pecuarius*
 U Mean 37,4 S.D. 8,6
 Range 17,2 - 46,6 n = 8

Threebanded Plover *Charadrius tricollaris*
 U Mean 36,9 S.D. 3,5
 Range 32,0 - 45,2 n = 10

The mean given is higher than the 31,2 g for 92 birds weighed at Barberspan (Skead 1977).

Blacksmith Plover *Vanellus armatus*
 U Mean 171,8 S.D. 17,1
 Range 153,0 - 217,0 n = 13

SCOLOPACIDAE

Wood Sandpiper *Tringa glareola*
 U 52,0; 55,0; 59,0; 69,3

- + Curlew Sandpiper *Calidris ferruginea*
 F 53,9; 57,2; 65,3

- + Little Stint *Calidris minuta*
 M Mean 21,8 S.D. 2,0
 Range 18,3 - 24,5 n = 6

U Mean 24,3 S.D. 2,6
 Range 20,1 - 28,4 n = 14

The mean corresponds to the 24,0 g for 18 unsexed birds listed by Maclean (1985).

Ruff (M) Reeve (F) *Philomachus pugnax*
 M 147,0; 165,0 F 61,5

RECURVIROSTRIDAE

- + Avocet *Recurvirostra avosetta*
 F 258,3; 263,0

The weights given are lighter than the mean of 318,7 g for 15 unsexed birds (Maclean 1985).

*+ Blackwinged Stilt *Himantopus himantopus*
M 153,7; 163,7 F 163,8

BURHINIDAE

+ Spotted Dikkop *Burhinus capensis*
U 438,3; 504,0 F 480,0

GLAREOLIDAE

*+ Temminck's Courser *Cursorius temminckii*
U 73,2

+ Doublebanded Courser *Rhinoptilus africanus*
F 80,0 U 88,2

+ Blackwinged Pratincole *Glareola nordmanni*
M Mean 93,0 S.D. 2,6
Range 89,6 - 96,5 n = 5

F 96,0; 84,5; 90,0; 93,5

Although weights from sexed birds were published (Maclean 1985) the sample sizes were not given. Weights listed here, correspond to those published.

LARIDAE

+ Greyheaded Gull *Larus cirrocephalus*
M 358,0

PTEROCLIDAE

* Namaqua Sandgrouse *Pterocles namaqua*
F 177,0; 180,0

COLUMBIDAE

Rock Pigeon *Columba guinea*
M 337,6; 349,3; 360,7

Laughing Dove *Streptopelia senegalensis* (Table 2 opposite)

Adult weights remain fairly even throughout the year, although they may be a little heavier in winter.

Namaqua Dove *Oena capensis*
F Mean 37,5 S.D. 4,3
Range 30,2 - 43,5 n = 12

CUCULIDAE

* Redchested Cuckoo *Cuculus solitarius*
M 74,5

The weight given is heavier than the 67,0 g for a single male (Britton *et al.* 1969), but is the same as the one weight of 74,0 g for a female (Maclean 1985).

TABLE 2

MONTHLY VARIATION IN THE BODY WEIGHTS OF ADULT
LAUGHING DOVE *STREPTOPELIA SENEGALENSIS*

	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Mean	98.9	97.3	110.0	94.2	97.4			90.4		100.6	100.3	108.2
Range	82.4- 115.0	77.0- 110.0	100.0- 120.0	72.0- 105.0	89.5- 104.9			70.5- 99.0		96.2- 103.0	86.8- 112.0	78.0- 135.0
n	17	3	3	5	5			4		3	3	6

* Striped Cuckoo *Clamator levaillantii*
U 71,0

* Jacobin Cuckoo *Clamator jacobinus*
F 77,0

Diederik Cuckoo *Chrysococcyx caprius*
M 29,2; 30,1; 31,0; 37,4

Juv 23,2; 32,0; 33,4; 40,2

TYTONIDAE

+ Barn Owl *Tyto alba*
F 218,8; 221,0

The weights given are much lighter than the mean of 334,4 g for unsexed birds (n = 24) listed by Maclean (1985) and the 345,6 g (n = 16) published by Biggs *et al.* (1979).

+ Cape Eagle Owl *Bubo capensis*
F 1 195,0 U 957,6

+ Spotted Eagle Owl *Bubo africanus*
F Mean 559,3 S.D. 62,3
Range 470,0 - 638,0 n = 5

No weights for sexed birds were listed by Maclean (1985), the mean is a little less than those published by Maclean (1985) and Biggs *et al.* (1979).

CAPRIMULGIDAE

- * European Nightjar *Caprimulgus europaeus*
M 50,0

The weight given is lighter than the 67,0 g for a single male given by Maclean (1985).

- * Rufouscheeked Nightjar *Caprimulgus rufigena*
M 51,8; 52,4 F 51,3; 52,4

APODIDAE

- + European Swift *Apus apus*
M 33,2; 40,3 F 35,4; 41,3; 43,2

Maclean (1985) listed the mean for 2 000 unsexed birds as 43,0 g, No weights for sexed birds could be obtained.

Black Swift *Apus barbatus*
Juv 29,8

- + Whiterumped Swift *Apus caffer*
M 22,4; 25,8
U 23,2; 25,0; 25,0; 25,8;
25,9; 26,4; 27,1; 27,9

- + Horus Swift *Apus horus*
M 34,0 F 34,2

All the weights given by Maclean (1985) are for unsexed birds. The two weights listed here are, however, much heavier than the mean of 26,2 g published by this author.

- + Little Swift *Apus affinus*
M 31,5; 31,6; 31,7
U 22,0; 26,6; 27,0; 31,8; 31,9

Weights given here correspond to the mean of 26,3 g for 110 unsexed birds (Maclean 1985).

COLIIDAE

- + Redfaced Mousebird *Colius indicus*
M 58,5; 60,6; 64,9 F 48,9; 50,7; 55,5
U Mean 52,7 S.D. 3,0
Range 47,5 - 59,5 n = 17
- + Speckled Mousebird *Colius striatus*
M 54,8; 55,2; 57,5 F 56,6; 65,0
- + Whitebacked Mousebird *Colius colius*
M Mean 43,7 S.D. 5,3
Range 37,2 - 54,0 n = 7

+ Whitebacked Mousebird (contd.)
 U Mean 39,4 S.D. 5,0
 Range 29,0 - 46,0 n = 8

TROGONIDAE

* Narina Trogon *Apaloderma narina*
 Juv 45,1

ALCEDINIDAE

Pied Kingfisher *Ceryle rudis*
 M 69,9; 69,9

The weights given are much lighter than those listed by Maclean (1985) for two males which weighted 74,0 g and 77,0 g respectively.

* Giant Kingfisher *Ceryle maxima*
 M 338,0 U 375,0

+ Malachite Kingfisher *Alcedo cristata*
 M 19,6; 21,0 F 16,9; 17,0; 21,1

Brownhooded Kingfisher *Halcyon albiventris*
 M 59,4; 66,5; 68,0; 69,4

F Mean 64,6 S.D. 2,7
 Range 62,5 - 69,0 n = 5

MEROPIDAE

* European Bee-eater *Merops apiaster*
 M 50,8

** Whitefronted Bee-eater *Merops bullockoides*
 M 31,4; 34,1 F 29,1; 31,0; 31,7

U Mean 34,8 S.D. 1,5
 Range 31,5 - 38,0 n = 39

CORACIIDAE

** European Roller *Coracias garrulus*
 F 119,6

* Lilacbreasted Roller *Coracias caudata*
 M 112,0 F 97,0; 98,0

The weights given are much lighter than the single weight published for a female by Maclean (1985).

UPUPIDAE

+ Hoopoe *Upupa epops*
 M 47,7; 63,6 F 54,5; 56,1 U 57,8

PHOENICULIDAE

- *+ Scimitar-billed Woodhoopoe *Phoeniculus cyanomelas*
 F 33,0; 36,6

CAPITONIDAE

- + Black-collared Barbet *Lybius torquatus*
 M 48,3; 57,9; 59,3 F 55,6; 58,7
- + Pied Barbet *Lybius leucorhynchus* (Table 3 below)

Adult weights remain fairly even throughout the year. The samples are, however, too small to draw valid conclusions.

- + Crested Barbet *Trachyphonus vaillantii*
 M 74,5 F 62,8
 U 58,5; 60,5; 63,5; 71,3

TABLE 3

MONTHLY VARIATION IN THE BODY WEIGHTS OF ADULT
 PIED BARBET *LYBIUS LEUCORHYNCHUS*

		Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Mean	M	35,4								34,6	35,5		37,1
	F	37,1				33,5				34,2		36,8	
	U	34,4	35,5										33,8
Range	M	34,5- 36,2								33,0- 36,2	34,0- 36,9		35,5- 38,6
	F	33,8- 41,5				31,6- 36,5				31,9- 35,7		35,7- 37,8	
	U	27,9- 38,0	33,5- 37,0										
n	M	2								2	2		2
	F	4				3				3		2	
	U	9	6										1

INDICATORIDAE

- + Greater Honeyguide *Indicator indicator*
F 49,0
- + Lesser Honeyguide *Indicator minor*
M 24,9; 26,0; 26,5 F 23,1; 25,7; 27,4

PICIDAE

- * Ground Woodpecker *Geocolaptes olivaceus*
M 109,0; 121,8; 130,0
- + Goldtailed Woodpecker *Campethera abingoni*
M 74,5
- * Cardinal Woodpecker *Dendropicus fuscescens*
M 35,1; 35,5 F 37,0
- * Olive Woodpecker *Mesopicus grissocephalus*
M 47,5 Juv 43,5

OPSOMMING

Massas word aangebied vir 551 voels van 85 spesies (32 families) wat in die Oranje-Vrystaat gewoog is, hetsy lewendig tydens beringingsoperasies, of tydens versameltoegte vir wetenskaplike doeleindes. Waar massas beskikbaar was vir ses of meer maande van die jaar, is dit getabuleer en kortliks bespreek.

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