



Table S1. Bite force and body mass table

Species	Order	Family	BM (kg)	BF (N)
<i>Rhea americana</i>	Rheiformes	Rheidae	12.5	30.095
<i>Geranoaetus melanoleucus</i>	Falconiformes	Accipitridae	3.1	50
<i>Sarcoramphus papa</i>	Ciconiiformes	Cahartidae	3.375	69
<i>Cariama cristata</i>	Gruiformes	Cariamidae	1.5	19.42
<i>Chunga burmeisteri</i>	Gruiformes	Cariamidae	1.3	19.42
<i>Amadina erythrocephala</i>	Passeriformes	Estrildidae	0.0227	4
<i>Amadina fasciata</i>	Passeriformes	Estrildidae	0.0185	5.2
<i>Chloebia gouldia</i>	Passeriformes	Estrildidae	0.0152	4.1
<i>Erythrura trichroa</i>	Passeriformes	Estrildidae	0.0131	5.3
<i>Estrilda troglodytes</i>	Passeriformes	Estrildidae	0.0074	1.1
<i>Hypargos niveoguttatus</i>	Passeriformes	Estrildidae	0.0161	3.1
<i>Lagonosticta senegala</i>	Passeriformes	Estrildidae	0.0069	1.2
<i>Lonchura fringilloides</i>	Passeriformes	Estrildidae	0.0162	5
<i>Lonchura pallida</i>	Passeriformes	Estrildidae	0.0132	3.3
<i>Lonchura punctulata</i>	Passeriformes	Estrildidae	0.0124	3.7
<i>Neochima modesta</i>	Passeriformes	Estrildidae	0.0132	2
<i>Neochmia ruficauda</i>	Passeriformes	Estrildidae	0.012	2.1
<i>Padda oryzivora</i>	Passeriformes	Estrildidae	0.304	9.6
<i>Phoephila acuticauda</i>	Passeriformes	Estrildidae	0.0183	2.6
<i>Taeniopygia bichenovi</i>	Passeriformes	Estrildidae	0.0097	1.9
<i>Poephila cincta</i>	Passeriformes	Estrildidae	0.0157	2.5
<i>Pytilia hypogrammica</i>	Passeriformes	Estrildidae	0.0153	3.1
<i>Taenopygia guttata</i>	Passeriformes	Estrildidae	0.0227	3.9
<i>Uraeginthus bengalus</i>	Passeriformes	Estrildidae	0.01	1.3
<i>Carduelis chloris</i>	Passeriformes	Fringillidae	0.0283	13.6
<i>Carduelis flammea</i>	Passeriformes	Fringillidae	0.0126	2.9
<i>Carduelis sinica</i>	Passeriformes	Fringillidae	0.02	8.1
<i>Carduelis spinus</i>	Passeriformes	Fringillidae	0.013	3.1
<i>Carpodactus erythrinus</i>	Passeriformes	Fringillidae	0.0216	6.3
<i>Eophona migratoria</i>	Passeriformes	Fringillidae	0.052	36.1
<i>Mycerobas affinis</i>	Passeriformes	Fringillidae	0.07	38.4
<i>Pyrrhula pyrrhula</i>	Passeriformes	Fringillidae	0.0209	4.9
<i>Rhodopechys obsoleta</i>	Passeriformes	Fringillidae	0.0225	6.4
<i>Serinus leucopygius</i>	Passeriformes	Fringillidae	0.0095	2.1
<i>Serinus mozambicus</i>	Passeriformes	Fringillidae	0.012	2.9
<i>Serinus sulphuratus</i>	Passeriformes	Fringillidae	0.0182	11.8

BM = Body Mass expressed in kilograms; BF = Bite Force expressed in newtons.

1 **Text S1.** *Andalgalornis*' fossil
2 *Andalgalornis steulleti* (= *A. ferox* [1]) FMNH P14357: Skull and jaws; pre-synsacral
3 vertebral series complete except for the atlas; sixth rib complete; first, third, and fourth
4 rib almost complete and the others with the exception of the second and the eighth are
5 represented only by the proximal parts; pelvis and synsacrum complete.
6 Horizon and locality: Andalhuala Formation (~ 5 Ma, lower Pliocene), Chiquimil,
7 Catamarca province, Argentina.
8 General skull morphology: Undoubtedly, the most outstanding feature of the skull is the
9 huge beak, which in *Andalgalornis* is three times taller than wide, completely hollow
10 (Figure S1), ends in a massive hook, and has small narial openings displaced
11 caudodorsally. *Andalgalornis* has a relative small encephalic cavity relative to the rest of
12 the skull. The occipital region is broad and vertical in disposition and the temporal fossa
13 is wide, deep, and triangular. The quadrate is massive and obliquely positioned such that
14 the jaw joint is retracted caudally beyond the level of the occiput. On the contrary, in
15 extant birds the quadrate is directed forward, and the mandibular articulation is situated
16 more rostrally, in front of the occiput. The lacrimal is well developed and it is fused
17 anteriorly with the nasals and frontals. It shows two very robust rami: one forms the
18 supraorbital lamina and the other one descends, contacting the jugal bar by a wide area.
19 There is a little medial flange in the area of the jugal contact that makes the articulation
20 even stiffer. Hypertrophy of this descending ramus seems to be a found only in the larger
21 phorusrhacids (e.g., the patagornithine *Patagornis*, the phorusrhacine *Kelenken*, but not in
22 the Psilopterinae). Nevertheless, the homology of this descending ramus has not been
23 fully tested. In the seriemas, the descending ramus of the lacrimal is well developed but it
24 reaches the jugal bar through a rod-like bone (Burmester in [2]). This bone seems to be
25 the ossification of the *lig. lacrimojugale*. It seems that the descending ramus of the
26 lacrimal in *Andalgalornis* (and the larger phorusrhacids) is formed by the fusion of the
27 descending ramus itself and this ossification of the *lig. lacrimojugale*. This feature has
28 not been observed in other birds.
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30 1. Patterson B, Kraglievich L (1960) Sistemática y nomenclatura de las aves
31 fororracoideas del Plioceno Argentino. Publicación del Museo Municipal Ciencias
32 Naturales y Tradicionales de Mar del Plata 1: 1-51.
33 2. Andrews CW (1896) Remarks on the Stereornithes, a group of extinct birds from
34 Patagonia. Ibis 7 (2): 6-12.