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Revision of medium-sized Cricetidae from the Miocene of the Daroca-Villafeliche area in the Calatayud-Teruel basin (Zaragoza, Spain)

Revisión de los cricétidos de talla media del Mioceno del área Daroca-Villafeliche en la cuenca de Calatayud-Teruel (Zaragoza,España)

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Abstract: Revision of *Democricetodon* (excluding *D. sulcatus* and *D.* cf *gaillardi*), *Fahlbuschia*, *Pseudofahlbuschia* and *Renzimys* from the Aragonian type area (Spain) results in the synonymization of the four genera, *Democricetodon* prevailing according to the rules of priority. *Democricetodon decipiens* is synonymized with *D. corcolesi*, *D. darocensis* with *D. larteti*, and *Renzimys bilobatus* with *D. crusafonti*. One new species of *Democricetodon* (*D. moralesi* n.sp.) is defined.Two partly contemporaneous evolutionary lineages are recognized: the *Democricetodon hispanicus - D. lacombai lineage* (*D. hispanicus-D. moralesi* n.sp.-*D. jordensi-D. lacombai*) and the *Democricetodon franconicus - D. crusafonti* lineage (*D. franconicus-D. koenigswaldi-D. larteti- D. crusafonti*).
Key words: Taxonomy, size, morphology, evolutionary trends, Aragonian, *Democricetodon*.

Resumen: La revisión realizada del material de los géneros *Democricetodon* (excluidos *D. sulcatus* y *D*. cf *gaillardi*), *Fahlbuschia*, *Pseudofahlbuschia* and *Renzimys* del área tipo del Aragoniense (España) ha dado como resultado la sinonimia de los cuatro géneros, siendo *Democricetodon* el que tiene la prioridad. *Democricetodon decipiens* se ha sinonimizado con *D. corcolesi*, *D. darocensis* con *D. larteti*, y *Renzimys bilobatus* con *D. crusafonti*. Una nueva especie de *Democricetodon* (*D. moralesi* n.sp.) ha sido definidas. Dos líneas evolutivas, parcialmente contemporáneas han sido reconocidas: La línea *Democricetodon hispanicus - lacombai* (*D. hispanicus-D. moralesi* n.sp.-*D. jordensi-D. lacombai*) y la línea *Democricetodon franconicus - D. crusafonti* (*D. franconicus-D. koenigswaldi-D. larteti- D. crusafonti*).
Palabras clave: Taxonomía, talla, morfología, tendencias evolutivas, Aragoniense, *Democricetodon*.

INTRODUCTION

Numerous field campaigns, from the fifties till 1998, in the type area of the Aragonian (lower–middle Miocene) near Villafeliche and in the Vallesian deposits (upper Miocene) around Daroca (North Central Spain) have yielded 103 rich rodent localities (DAAMS *et al*.., 1999a). For a description of the sections, and (bio)stratigraphical and sedimentological information we refer to this paper. Magnetostratigraphy of the area has enabled correlation of the sections to the GPTS (KRIJGSMAN *et al*.., 1994, 1996; DAAMS *et al*., 1999b; GARCES *et al.*, this volume), and age estimations of the individual localities, which range from 17 to 10 Ma (DAAMS *et al*., 1999a). In the present paper we analyse the dental morphology and size of medium-sized hamsters from these localities. They are known from the literature as *Democricetodon, Fahlbuschia, Pseudofahlbus-*

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chia and *Renzimys*. We will revise the already described species, add one new (*Democricetodon moralesi* n.sp.), and discuss their evolutionary relationships.

Important earlier studies on the hamsters of the area are the pioneer work of FREUDENTHAL (1963), and the one by FREUDENTHAL & DAAMS (1988) dealing with the same genera as the present study. Figure 1 gives a graphic scheme based on their discussion on the evolution of these genera and their species (pp. 216-224), which we summarise as follows:

Democricetodon hispanicus is the oldest immigrant of the medium sized cricetids in the area. It may co-occur with *Fahlbuschia koenigswaldi* which is derived from *F. decipiens* from Buñol (Valencia). The origin of *Fahlbuschia* is unknown, but they claim that two different lineages are already present in Spain during the Early Aragonian, represented by *F. decipiens* and (the smaller and more primitive) *F. corcolesi* from Córcoles. They argue that the latter cannot be the ancestor of the former, but that *F. corcolesi* may be the ancestor of *F. freudenthali*.

Fahlbuschia koenigswaldi is suddenly replaced by *Pseudofahlbuschia*, and since the latter cannot be a descendant of the former it is interpreted as an immigrant. In its turn, *Pseudofahlbuschia* is replaced by *Fahlbuschia freudenthali*, a species which is intermediate in size between *F. koenigswaldi* and *F. darocensis*, but dismissed as intermediate evolutionary step on the grounds of morphology of its upper molars, and of the length/width ratio of m1. Instead the authors postulate a possible evolutionary relationship between *F. freudenthali* and *F.* cf. *crusafonti*.

Fahlbuschia darocensis, which replaces *F. freudenthali*, immigrates in the area, but is regarded as a possible descendant of *F. koenigswaldi*. *Fahlbuschia darocensis* is in its turn replaced by *F.* cf. *crusafonti*. The latter species is badly represented, and it is considered uncertain that it is a single species.

Another immigrant in the area is *Renzimys*, the origin of which is considered to be unknown (p.214). The relationship between *Renzimys lacombai* and *R. bilobatus* is deemed improbable, because it is contradicted by the distribution of 'primitive' and 'modern' character states in the two species (p.214). They suggest that "in the future it may appear necessary to assign them to different genera" (p.214). On the other hand, they refer *Fahlbuschia ultima* (Azambujeira, Portugal) to *Renzimys*.

Our analysis is based on a much larger database, but additionally we differ considerably with FREUDENTHAL & DAAMS (1988) in taxonomical and evolutionary interpretations. In the first place we accept more intraspecific variation in the dental features than they allow for. Additionally, we will argue that a number of the diagnostic features of genera used are subject to anagenetic evolution, resulting in gradual changes in successive species. Secondly, DAAMS *et al*., (1999a) changed the biostratigraphical order of Zones D1 to D3 used by DAAMS & FREUDENTHAL (1988) into Dc (=D2) and Dd (D1+D3), because detailed sampling of the Valdemoros section, which starts with "D1" faunas, and the partly overlapping Las Umbrias (Zones D1-G) section, failed to yield typical *D2* faunas with abundant *Pseudofahlbuschia*. Hence, these faunas (VA3B, for instance; our Zone Dc) precede those of FREUDENTHAL & DAAMS' *D1* faunas (like VA1A, our Zone Dd). New biostratigraphical information (unknown to FREUDENTHAL & DAAMS) is that *Renzimys lacombai* does occur in zone Dd in the Villafeliche area. Since the revised biostratigraphical succession is confirmed by sedimentological and paleomagnetical evidence, it is used in the present study. All this inevitably leads to a revision of the existing evolutionary pattern of the Spanish medium-sized hamsters. The study of *Democricetodon* from other areas falls outside the scope of this paper.

We will argue that *Fahlbuschia, Pseudofahlbuschia* and *Renzimys* are to be synonymized with *Democricetodon*, and show that all species fit in two, largely coexisting, evolutionary lineages deriving from a *D. franconicus*(-like) stock. After presenting our methods (using measurements and character states) we will discuss the taxonomy of relevant taxa from the literature, and then discuss and interpret our metrical and morphological results. Finally we give the (emended) diagnoses of the studied species and present our phylogenetic reconstruction.

MATERIAL

The study deals with the approximately 20.000 cricetid molars, representing the complete *Democricetodon* (except for *D. sulcatus* and *Democricetodon* cf. *gaillardi*), *Fahlbuschia*, *Pseudofahlbuschia* and *Renzimys* material from the Aragonian and early Vallesian localities of the Villafeliche, Daroca and Calamocha areas. Additionally, the type material of some taxa defined outside the study area has been restudied: *Democricetodon romieviensis* from La Romieu,

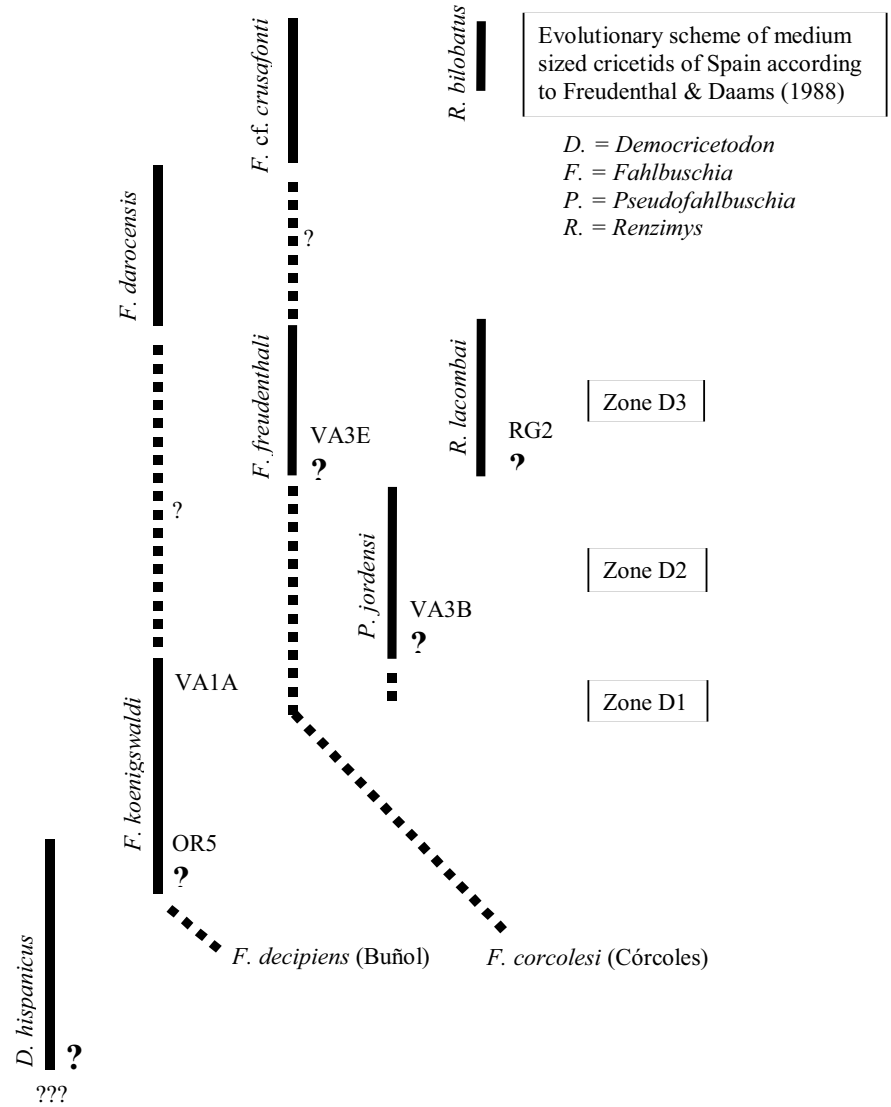


Figure 1.- Evolutionary scheme of medium sized cricetids of Spain proposed by FREUDENTHAL & DAAMS (1988). D = *Democricetodon*; F = *Fahlbuschia*; P = *Pseudofahlbuschia*; R = *Renzimys*

Figura 1.- esquema evolutivo de FREUDENTHAL & DAAMS (1988) para los cricétidos de talla media españoles. D = Democricetodon; *F* = Fahlbuschia; *P* = Pseudofahlbuschia; *R* = Renzimys

Fahlbuschia corcolesi from Córcoles, *F. decipiens* from Buñol, *F. crusafonti* from San Quirze, and *Renzimys bilobatus* from Molina de Aragón. The localities studied, the institution where each collection is stored, as well as the abbreviations used throughout this paper are shown in Table 1. The estimated ages of the Aragonian and Vallesian localities in the study area are from DAAMS *et al*. (1999a).

METHODS

MEASUREMENTS

Length and width of each of the molar have been measured following the methods of DAAMS & FREUDENTHAL (1988). Length and width have been measured perpendicular to each other. *Length* represents the

maximum length of the measured element, not only that of the occlusal surface. *Width* represents the maximum Width. In addition, two indexes have been calculated for each molar, whenever possible: *surface* as length multiplied by width, and *L/W*, which is the length/width ratio and gives an idea of the slenderness of the tooth. In Tables 2 to 13 of the measurements, the number of specimens (N), minimum and maximum values, mean and standard deviation of each of the studied assemblages are given. Measurements are given in mm, surface in mm^2.

Morphology

Nomenclature used for dental structures is after Daams & Freudenthal (1988). For the morphological study we define a series of morphological character states (morphotypes) in several dental structures in order to simplify their analysis (Tables 16-25). Although in some cases the determination of the character states is unambiguous, in others the allocation of a specimen to a particular morphotype may be uncertain, either because of its advanced degree of wear, or because the structure studied shows continuous variation. As a rule, very worn specimens have not been counted. The character states of already described samples have been recounted in order to reduce the inevitable subjectivity as much as possible.

For assemblages consisting of more than five specimens *morphology values* (MV) have been calculated (Freudenthal, 1976; Daams & Freuden-thal, 1988) for those traits that have more than two character states. Each specimen is assigned values on the basis of its character states (e.g. for the mesoloph: long=1, medium=2, short=3 and absent =4). The sum of the values (per trait, per assemblage) is divided by the number of observations. If the studied character is deemed to have evolutionary meaning, the morphology values are interpreted as the degree of evolution of the specified character in each assemblage. The values for the character states have been chosen in such a way that temporal increase of MV indicates increase of the evolutionary stage of the assemblages with respect to the trait concerned.

Anterocone (M1)

The anterocone complex consists of a central cusp from which the anterolophs descend, one toward the anterolabial basis of the paracone, the other toward the anterolingual basis of the protocone. The labial anteroloph encloses the labial anterosinus and it ascends to about midway the paracone. The lingual anteroloph is generally less developed and it may or it may not reach the basis of the protocone. The anterocone may be double, superficially split or not. Only when clearly split the anterocone is counted as *double*, in all other cases as *simple*.

Anterolophule (M1)

This ridge may be either *simple* or *forked*. When it is simple, it usually joins the anterocone complex somewhat lingually of the centrally situated anterocone. When it is forked, the labial arm may be either incomplete or complete. If it is incomplete, there is a free-ending spur which runs towards the central portion of the anterocone complex. If it is complete the labial arm joins the central part of the anterocone complex, but generally at a lower level than the connection between the lingual arm and the anterocone complex. Only in this case the anterolophule is counted as forked. In somewhat worn specimens with a completely split anterolophule the anterocone–anterolophule configuration exhibits a funnel-like structure. When it is double and incomplete, the labial arm should not be confused with a labial spur of the anterolophule, which tends to run in transverse direction. In very worn specimens the determination of the anterolophule character state is difficult, if not impossible.

The lingual anterolophule (M2)

This narrow ridge descends from the middle of the anterior border of the occlusal surface along the anterolingual border to the basis of the protocone, thus enclosing a small valley in front of the protocone. It is always present; no character states have been defined.

The labial anterolophule (M2)

This ridge sprouts from the same point as the lingual anterolophule, and runs along the anterior border of the occlusal surface to the labial border of the molar, where it reaches the basis of the paracone. It encloses the labial anterosinus. It is always present and no character states have been defined.

Protolophule (M1 and M2)

M1: The connection between paracone and protocone may be either *simple* or *double*. When it is double and incomplete, the anterior arm should not be confused with the more transverse labial spur of the anterolophule. The incomplete, anterior arm of the

Locality	Code	Age	Collection	Locality	Code	Age	Collection
Alcocer 2	AC2	12,7	RGM	Paje 1	PJE1	12,3	MNCN
Artesilla	ART	16,51	MNCN	Paje 2	PJE2	12,17	MNCN
Borjas	BOR	13,2	RGM	Pedregueras 2A	PE2A	10,25	RGM
Buñol	BU		UU	Pedregueras 2C	PE2C	10	RGM
Carrilanga 1	CAR1	10,5	RGM	Regajo 2	RG2	14,16	RGM
Caseton 1A	CS1A	14,8	RGM	San Marcos	SAM	16,7	MNCN
Caseton 2B	CS2B	14,77	RGM	San Roque 1	SR1	16,78	RGM
Córcoles	COR		MNCN	San Roque 2	SR2	16,67	RGM
Escobosa	ESC		RGM, MNCN	San Roque 3	SR3	16,35	MNCN, UU
Fuente Sierra 1	FTE1	16	MNCN	San Roque 4A	SR4A	17,02	MNCN
Fuente Sierra 2	FTE2	15,93	MNCN	San Roque 4B	SR4B	17,01	MNCN
Fuente Sierra 3	FTE3	15,92	MNCN	San Roque 5	SR5	16,66	MNCN
Fuente Sierra 4	FTE4	15,85	MNCN	Solera	SOL	11,75	RGM
La Col B	COLB	15,91	MNCN	Toril 1	T0R1	12,62	RGM
La Col C	COLC	15,89	MNCN	Toril 2	TOR2	12,61	RGM
La Col D	COLD	15,87	MNCN	Toril 3A	TOR3A	12,6	MNCN
La Col A	COLA	15,97	MNCN	Toril 3B	TOR3B	12,59	MNCN
Las Planas 4A	LP4A	13,96	RGM, UU	Valalto 1A	VT1A	13,35	MNCN
Las Planas 4B	LP4B	13,94	MNCN, UU	Valalto 1B	VT1B	13,3	RGM, MNCN
Las Planas 4C	LP4C	13,85	RGM	Valalto 2B	VT2B	13,7	RGM
Las Planas 5B	LP5B	13,47	MNCN	Valalto 2C	VT2C	13,68	RGM
Las Planas 5C	LP5C	13,46	RGM, MNCN	Valdemoros 11	VA11	15,2	MNCN
Las Planas 5H	LP5H	12,52	RGM	Valdemoros 1A	VA1A	14,64	UU
Las Planas 5K	LP5K	13,05	RGM	Valdemoros 3B	VA3B	14,85	UU
Las Planas 5L	LP5L	13,12	RGM	Valdemoros 3D	VA3D	14,83	RGM
Las Umbrias 1	LUM1	14,43	MNCN	Valdemoros 3E	VA3E	14,55	RGM
Las Umbrias 10	LUM10	14,07	MNCN	Valdemoros 3F	VA3F	14,52	MNCN
Las Umbrias 11	LUM11	14,04	MNCN	Valdemoros 6A	VA6A	14,56	MNCN
Las Umbrias 12	LUM12	14,01	MNCN	Valdemoros 6B	VA6B	14,4	MNCN
Las Umbrias 14	LUM14	13,97	MNCN	Valdemoros 7A	VA7A	14,65	MNCN
Las Umbrias 16	LUM16	14,01	MNCN	Valdemoros 7B	VA7B	14,62	MNCN
Las Umbrias 17	LUM17	13,99	MNCN	Valdemoros 7C	VA7C	14,58	MNCN
Las Umbrias 18	LUM18	13,98	MNCN	Valdemoros 7D	VA7D	14,33	MNCN
Las Umbrias 19	LUM19	13,93	MNCN	Valdemoros 7E	VA7E	14,29	MNCN
Las Umbrias 2	LUM2	14,41	MNCN	Valdemoros 7F	VA7F	14,26	MNCN
Las Umbrias 20	LUM20	13,77	MNCN	Valdemoros 7G	VA7G	14,23	MNCN
Las Umbrias 21	LUM21	13,72	MNCN	Valdemoros 8A	VA8A	15,7	MNCN
Las Umbrias 22	LUM22	13,72	MNCN	Valdemoros 8B	VA8B	14,69	MNCN
Las Umbrias 3	LUM3	14,37	MNCN	Valdemoros 8C	VA8C	14,71	MNCN
Las Umbrias 4	LUM4	14,32	MNCN	Valdemoros 9	VA9	15,35	MNCN
Las Umbrias 5	LUM5	14,3	MNCN	Vargas 11	VR11	14,39	MNCN
Las Umbrias 7	LUM7	14,17	MNCN	Vargas 1A	VR1A	16,14	RGM
Las Umbrias 8	LUM8	14,17	MNCN	Vargas 2A	VR2A	15,98	MNCN
Las Umbrias 9	LUM9	14,16	MNCN	Vargas 2B	VR2B	15,96	MNCN
Manchones	MAN	13,25	UU	Vargas 3	VR3	16,13	MNCN
Molina De Aragón	MOL		RGM, MNCN	Vargas 4A	VR4A	16,18	MNCN
Moratilla 2	MOR2	15,81	MNCN	Vargas 4B	VR4B	16,16	MNCN
Moratilla 3	MOR3	15,76	MNCN	Vargas 4BB	VR4BB	16,15	MNCN
Muela Alta	MUE		MNCN	Vargas 5	VR5	15,32	MNCN
Nombrevilla 1	NOM1	11	UU	Vargas 6	V6R	15,25	MNCN
Nombrevilla 2	NOM2	11,5	MNCN	Vargas 7	VR7	14,82	MNCN
Olmo Redondo 1	OR1	16,76	RGM	Vargas 8B	VR8B	14,75	MNCN
Olmo Redondo 2	OR2	16,73	RGM	Vargas 8C	VR8C	14,73	MNCN
Olmo Redondo 3	OR3	16,65	RGM	Villafeliche 2A	VL2A	16,64	UU, IMC
Olmo Redondo 4A	OR4A	16,32	MNCN, UU	Villafeliche 4A	VL4A	15,5	RGM
Olmo Redondo 5	OR5	16,02	RGM	Villafeliche 4B	VL4B	15,51	MNCN, UU
Olmo Redondo 8	OR8	15,99	RGM	Villafeliche 9	VL9	12,85	RGM
Olmo Redondo 9	OR9	15,95	RGM				

Table 1.- Abbreviations of the locality names used in the text and tables. The assigned ages for the faunas are after DAAMS et al. (1999a). MNCN= Museo Nacional de Ciencias Naturales, Madrid, Spain; RGM= Rijksmuseum van Geologie en Mineralogie, Leiden, The Netherlands; IVAU= Institute for Earth Sciences, Utrecht University, The Netherlands.

Tabla 1.- abreviaturas usadas para las localidades en el texto y las tablas. Dataciones de las faunas según DAAMS et al. (1999a). MNCN= Museo Nacional de Ciencias Naturales, Madrid, España; RGM= Rijksmuseum van Geologie en Mineralogie, Leiden, Paises Bajos; IVAU= Institute for Earth Sciences, Utrecht University, Paises Bajos.

protolophule is always oblique and directed toward the anterolingual basis of the paracone. The configuration of a posterior arm plus an incomplete anterior one is counted as double. Only when the anterior arm is reduced to a very small swelling deep in the valley between proto- and paracone, it is ignored and the protolophule counted as simple.

M2: This ridge may be either simple or double. When it is simple, it may be connected to the anterior side of the protocone (*anterior* character state), it may join the middle of the protocone (*transverse*), or it may be connected to the entoloph behind the protocone (*posterior*). When it is double, the two arms generally join the paracone separately. The anterior arm runs from the anterior side of the protocone to the anterolingual side of the paracone, and it may be interrupted. The posterior arm runs from the posterolingual side of the paracone to the entoloph behind the protocone, and it may be interrupted as well. Both arms are not always equally well developed. The anterior one may be wider and higher than the posterior one (*double anterior*), both arms may be of similar width and height (*double symmetrical*), or the posterior arm may be better developed than the anterior one (*double posterior*). In worn specimens, one cannot appreciate height differences any more. In these specimens, this feature is counted as double symmetrical if the widths of the separate arms are more or less the same.

Morphology values are based on anterior = 1, double anterior = 2, double symmetrical = 3, double posterior = 4 and posterior = 5.

Paracone spur (M1 and M2)

The paracone is generally a rounded cusp, but a more or less developed spur may be present at the posterior wall from where it may descend toward the basis of the mesosinus, but without reaching it. Paracone spurs have counted as *absent* or *present*. The tip of the paracone in unworn specimens may show a tiny posterior projection. This is not counted as present. In assemblages in which paracone spurs are present but extending little downward, many worn specimens have to be left out of the counts.

Mesoloph (M1 and M2)

This ridge may be either present or *absent*. When it is present, it may be *short*, of *medium length* or *long*. It is defined as short when it does not reach the centre of the mesosinus. It is of medium length when it reaches or surpasses the centre of the mesosinus, but without reaching the labial border of the molar. It is defined as long when it reaches the labial tooth border.

Morphology values are based on long = 1, medium = 2, short = 3 and absent = 4.

Metalophule (M1 and M2)

M1: This ridge sprouts from the (postero)lingual wall of the metacone, curves around backward and joins the posteroloph (*posterior*). In very few specimens there is an anterior arm of the metalophule too (*double*), joining the entoloph just before the hypocone. In very few cases too, the metalophule is *absent*.

M2: Metalophule may be either simple or double. When it is simple it may run from the middle of the metacone to the anterior part of the hypocone (*anterior*), it may join the middle of the hypocone (*transverse*), or it may join the posteroloph at any point of its lingual half (*posterior*). When it is *double*, the metalophule bifurcates near the base of the metacone. The anterior arm may join the anterior part of the hypocone, it may be connected to the middle of the cusp, or it may join any point in between these two locations. The more the posterior arm runs in a posterior direction, the more the posterosinus becomes reduced. The metalophule may also be absent (*no*).

Morphology values are based on anterior = 1, transverse = 2, Double = 3 and posterior = 4.

M3

This element has a relatively simple dental pattern. The anterior part consists of the small lingual anteroloph, which joins the labial one at the centre of the anterior tooth border. The labial anteroloph joins the basis of the paracone. The paracone may have a spur at its posterior wall that either reaches the basis of the reduced metacone, or one of the ridges of the reticulate pattern of the posterior part of the tooth.

Freudenthal & Daams (1988) devote an interesting paragraph to the cricetid M3, distinguishing seventeen different morphotypes, between which, phylogenetic relationships are postulated. The morphotypes, however, are based on the variation found in the single M3 assemblage of *D. moralesi* n.sp. from Vargas 1A (= *F. koenigswaldi* in the mentioned paper). Although it is claimed that their theory is supported by observations on the M3 and M2 of *Cricetodon* and *Megacricetodon*, we feel that a thorough study of all genera is needed before accepting the proposed 'evolution' of the cricetid M3. Such study falls outside the scope of this study. Therefore, we have excluded

a morphological analysis of M3 from this study. We did find that the invariable presence of the para-cone spur in the M3 of *D. lacombai* is a typical feature of this species. Our dental measurements show that the proportions of the lengths and surfaces of the upper (as well as the lower) three molars are very similar in all species studied (Tables 14 and 15).

The anteroconid and lingual anterosinusid (m1)

The anteroconid is always simple and may be bean-shaped or somewhat more rounded. The labial crest of this cusp descends toward the basis of the protoconid, without closing the labial anterosinusid however. The lingual wing of the anteroconid may descend either toward the basis of the metaconid, leaving the lingual anterosinusid *open*, or it may join the anterolingual wall of the metaconid (*closed*). Another possible connection starts from the anterior wall of the metaconid. If this connection is high enough the lingual anterosinusid becomes subdivided. This connection is characteristic of *Fahlbuschia* according to FREUDENTHAL and DAAMS (1988, p. 140). However, its starting position varies between the middle and the lingual part of the anterior wall within homogeneous assemblages. When in the latter position it approaches the lingual wing of the anteroconid, together closing the lingual anterosinusid. Because of this variation we counted both the instances of closure at the lingual side and of subdivision of the lingual anterosinusid as closed.

The labial anterolophid (m2)

This is a well-developed ridge that runs from the anterior centre of the tooth downward to the antero-labial basis of the protoconid, thus enclosing the labial anterosinusid. No character states are defined.

The lingual anterolophid (m2)

This ridge is either *absent* or small (*present*). When it is small, it consists of a transverse ridge that joins the anterior wall of the metaconid, thus enclosing a tiny lingual anterosinusid. When the ridge is a tiny protrusion not enclosing a lingual anterosinusid, it is counted as absent. In worn specimens the feature is not visible anymore.

The metalophulid (m1)

This ridge sprouts from the labial wall of the metaconid and it either joins the anterolophulid or does not. When the metalophulid joins this ridge, its direction may vary between *transverse* and *forward*. It appears that both the forward directing and the transverse metalophulid are common in all species, and that the absence of this ridge is less frequent.

The metaconid ridge (m1 and m2)

The lingual wall of the metaconid may be concave (ridge is *absent*), or it may have a sharp edge descending from the top of the cusp to the anterior basis of the entoconid, thus enclosing the mesosinusid. The ridge was counted to be *present* only when well developed and extending to approximately one third of the metaconid.

The mesolophid (m1 and m2)

This ridge may be either present or *absent*. When it is present, it may be *short*, of *medium* length or *long*. It is defined as short when it does not reach the centre of the mesosinusid. It is of medium length when it reaches or surpasses the centre of the mesosinusid, but without reaching the lingual border of the molar. It is defined as long when it reaches the lingual tooth border. Morphological values have been calculated as for the upper M1 and M2.

m3

The morphological variation of this molar has not been studied. The proportions in lower molar lengths and surfaces are very similar in all studied species (Tables 14 and 15).

CONVENTIONS USED FOR THE FIGURES

Figures 2-7 of the measurements (Length, Surface and Length/Width ratios) represent scatter diagrams of the studied variable against presumed age of the sample according to DAAMS *et al* (1999a). Each point represents the average value of each assemblage for the studied variable. Only samples with at least five specimens have been included. The horizontal bars that shows each point represent the mean standard error.

Figure 8 gives the morphology values for the studied dental character against age. As in the previous case, only samples with at least five specimens have been used.

Only localities from the Villafeliche-Daroca area have been included in the figures, in order to show evolution of the characters at a local scale and to avoid possible geographically induced environmental differences. Furthermore, the most accurate age assignation of localities outside the studied area are

obtained from the comparison of the evolutionary stages of the cricetids. Hence, their inclusion in the figures would introduce circular reasoning.

TAXONOMY: STATE OF THE ART

Democricetodon FAHLBUSCH, 1964

Typespecies: *Democricetodon crassus* FREUDENTHAL, 1969 [= *D. minor* (LARTET, 1851) *sensu* FAHLBUSCH (1964)]

Original diagnosis of the genus (translated from the German, p. 20): "Very short, semi-circularly shaped, longitudinal ridge in lower and upper molars. Sinusid of lower molars is either transverse or directed obliquely forward, always straight; sinus of upper molars is transverse. Anteroconid of m1 short, wide and simple; anterocone of M1 simple and M2 predominantly has a double protolophule".

Emended diagnosis (MEIN & FREUDENTHAL, 1971, p. 27) only as far as relevant to this paper (translated from French):

"Skull - the posterior border of the foramen incisivum is situated in front of the anterior border of M1 … Molars - brachyodont, relatively wider than in *Megacricetodon*.

Upper molars - three roots. The anterocone of M1 is simple (in evolved forms the anterocone may be split). The connection between paracone and protocone of M2 is double and symmetrical; in M1 this connection is posterior or double. The mesolophs are variable, often long. The sinus is transverse and straight.

Lower molars - with two very long roots. The anteroconid of m1 is simple (in some evolved forms the anteroconid may be complex). The lingual anterolophid and the anterosinusid of m2 and m3 are generally somewhat more developed than in *Megacricetodon*. The mesolophids are variable, often long, even in m3. The sinusid is transverse or directed obliquely forward.

Lower Incisor - there is flat band with two striae near the middle of the anterior face."

Democricetodon hispanicus FREUDENTHAL, 1967

Type locality and its age: Villafeliche 2A, Early Aragonian, Zone B (MN 4).

Original diagnosis (p. 306): "In size comparable to *D. minor minor* from Sansan. Mesolophid of m1 medium or long. The internal valley of m1 is blocked by a cingulum ridge connecting metaconid and entoconid. Mesostylid is absent. It differs from *D. minor minor* and *m. gracilis* by its longer mesolophids".

A detailed description is given by FREUDENTHAL (1963, pp. 61-62; fig. 19; plate I, figs. 15, 16) under the name of *Cricetodon* cf. *vindoboniensis* SCHAUB & ZAPFE, 1953.

Democricetodon franconicus FAHLBUSCH, 1966

Type locality and its age: Erkertshofen 1, (MN 4).

Original diagnosis (translated from the German, p. 112): A subspecies of *Democricetodon minor* with the following characteristics: Mesolophid of the two first lower and mesoloph of the two first upper molars mostly reaching the border of the tooth. Anterior cingulum of m1 semi-circularly bent, anteroconid weakly developed. m3 without posteriorly bent metalophulid or mesolophid. Proto- and metalophule of M1 are posteriorly directed; M2 with double protolophule and single, mostly transverse metalophule. M3 wit rounded outline, its posterior part strongly reduced.

Fahlbuschia MEIN & FREUDENTHAL, 1971

Type species: *Fahlbuschia larteti* (SCHAUB, 1925)

Original diagnosis of the genus (p. 12 and 25) (translated from the French):

"Size - small to medium.

Skull - the posterior border of the foramen incisivum is situated at the same level as the anterior border of M1, or more backwards. The surface of the lower arm of the zygomatic plate is less vertical than in the Cricetinae, the infraorbital foramen is wider.

Mandible - The mandible body is slightly to strongly inclined at its lingual side compared to the tooth row. In occlusal view the mental foramen is not visible, but hidden by the crest of the diastema; this foramen is situated rather low on the diastema, and it opens at the labial side. The diastema is rather deep. The masseteric ridges are weakly developed (in all other Cricetodontinae these ridges are stronger). Generally the m3 is completely hidden by the ascending branch (in lateral view). The antero-internal part of the angular process is little deep and passes gradually into the horizontal branch. The mandibular foramen is either lower or higher than the occlusal surface. The general aspect of the mandible is heavy, because of the shape of the ascending branch. The lower masseteric ridge is curved.

Molars - The anteroconid and anterocone of the first molars are always simple. The molars are wide in

comparison to their length. The connection between paracone and protocone of M2 is generally double and symmetrical. There are tendencies towards a strong reduction of the third lower and upper molars and of the mesolophids and mesolophs. This results in an extreme simplification of the enamel pattern. The upper molars have three roots, the lower ones have two.

Lower incisor - With a flat band showing three striae at the internal side of the anterior face."

Fahlbuschia koenigswaldi (FREUDENTHAL, 1963)

Original reference: *Cricetodon koenigswaldi*

Type locality and its age: Valdemoros 1A, Middle Aragonian Zone D, MN5.

Original diagnosis (translated from the German, p. 48-49): "This material falls within the range of variation of *Cricetodon affinis*. However, it differs from this species by the M1 in which there are only posterior proto- and metalophules. In *C. affinis* from La Grive-St. Alban (some 20 specimens in the collections of the Basel Museum) the anterior branch of the protolophule is nearly always developed, or there is a ridge in the labial anterosinus which may form more or less a prolongation of the anterior arm of the protocone and which perhaps may be considered to be homologous with the anterior protolophule. In the studied material from Valdemoros 1A these features are absent. Furthermore, the M3 is completely *larteti*-like, although it is somewhat less reduced. However, it is not comparable to the hardly reduced M3 of *C. affinis.* The m3 is also more similar to that of *C. larteti* than to that of *C. affinis*. It differs from *C. larteti* by its considerably smaller size. The metaconid of m1 is connected to the anteroconid by a forward-directed and low ridge. The first and second upper and lower molars have nearly always a clear mesoloph(id). The posterior border of M1 and M2 is little rounded. In M2 the anterior branches of protolophules and metalophules are as strongly developed as the posterior ones. Posterior branches of protolophules and metalophules may even be absent."

Fahlbuschia corcolesi FREUDENTHAL & DAAMS, 1988

Type locality and its age: Córcoles, Early Aragonian, Zone C, MN4.

Original diagnosis (p. 200): "Smallest *Fahlbuschia* known so far. In m1 the direct connection between metaconid and anteroconid is not very well developed. The mesolophids of the lower molars are little developed. The most striking feature is, that in M2 the protolophule is predominantly anterior, whereas in M1 there is no anterior protolophule."

Fahlbuschia decipiens FREUDENTHAL & DAAMS, 1988

Type locality and its age: Buñol, Early Aragonian, Zone C, MN4.

Original diagnosis (p. 199-200):"Very small *Fahlbuschia*. In almost all m1 the anterosinusid is small and shallow, and there is a connection between anteroconid and metaconid, either along the border of the molar or through the middle of the anterosinusid. The sinusid of m3 carves far into the molar, and leaves little space for the hypolophulid. A relatively large percentage of the M3 has conserved a trace of the anterior part of the entoloph/posterior branch of the protocone."

Fahlbuschia larteti (SCHAUB, 1925)

Original reference: *Cricetodon larteti*

Type locality and its age: La Grive-St. Alban, Late Aragonian, MN7/8.

Original diagnosis (translated from the German, p. 13): Lower molars: "Metalophulids point strongly forward in all three elements, and in m2 and m3 this ridge is situated at the anterior border of the tooth. Longitudinal ridge very short, the mesolophids are only indicated as a short protuberance. Protoconid with a backward descending cingulum ridge. m1 hardly narrower at the part of the two anterior cusps. Anteroconid very short, situated close to the metaconid. m3 without entoconid, with short hypoconid and deep sinusid.

Upper Molars: The outline of M1 and M2 characterized by the strong rounding of the postero-lingual border. M2 therefore subtriangular. Protolophule and metalophule directed backward. In M2 a trace of the old anterior arm of the protolophule may persist, in M3 the protolophule may be double. Longitudinal ridge short, the mesolophs rudimentary or missing. Hypocone with a forwardly descending cingulum ridge. The anterocone is wide, almost lophule-like ('querjochartig') and situated more or less symmetrical ly in front of the anterior cusps. M3 is rounded, shorter than wide, with completely reduced posterior cusps."

Emended diagnosis by FREUDENTHAL AND MEIN (1989, pp. 3-4): "Revised diagnosis – m1 with small

anteroconid, reduced anterosinusid, and well-developed direct connection between metaconid and anteroconid. There may be a labial spur on the anterolophid, that points obliquely forward. Mesolophid short or absent. m3 has the shape of a short triangle; the entoconid is small; on its occlusal surface two diverging crests may be visible. In M1 the forked anterolophule may form a small funnel on the posterior wall of the anterocone. There is hardly ever a trace of an anterior protolophule; the posterior protolophule is generally oblique. The mesoloph is short. The metalophule is very much backwards. The outline of the tooth is smoothly convex, there is no clear constriction of the lingual wall between the protocone and anterocone. M2 has often an anterior protolophule, which is weaker than the posterior connection. The mesoloph is short or absent. There is always a posterior metalophule, rarely an anterior one."

Fahlbuschia darocensis (FREUDENTHAL, 1963)

Original reference: *Cricetodon darocensis*

Type locality and its age: Manchones, Late Aragonian, Zone G2, MN6.

A formal diagnosis is not given by FREUDENTHAL (1963). Below we give a translation (from the German) of the characterization given by FREUDENTHAL (1963, p. 54): This species is closely related to *Cricetodon larteti* SCHAUB and *Cricetodon koenigswaldi* n. sp., which is clear from the shape of M3 , as well as from the typical *larteti*-like shape of the anteroconid in m1. It is distinguished from *C. larteti* by its somewhat smaller size. The metaconid-anteroconid connection in m1 (as in *C. koenigswaldi*) is often visible. The mesoloph(id)s in the first and second molars are usually clearly developed. The third molars are less reduced than in *C. larteti*. In M2 the anterior protolophule is well developed."

Fahlbuschia crusafonti AGUSTÍ, 1978

Type locality and its age: St. Quirze Trinxera, Upper Aragonian, MN7/8.

Original diagnosis (translated from the Spanish, p. 64): "*Fahlbuschia* of large size with little reduced M3".

Fahlbuschia freudenthali ANTUNES & MEIN, 1981

Type locality and its age: Amor (Portugal), Middle Aragonian, Zone D, MN5.

Original diagnosis (translated from the French, p. 177): "*Fahlbuschia* larger than *F. koenigswaldi* and smaller than *F. darocensis* and still having medium to short mesoloph(id)s in the first two molars."

Emended diagnosis by FREUDENTHAL AND DAAMS, 1988, p. 174: "Larger than *F. koenigswaldi*, smaller, than *F. darocensis*. Length/width ratio of m1 very low: 1.40 – 1.42. Anterior protolophule in M1 frequent."

Fahlbuschia ultima ANTUNES, GINSBURG & MEIN, 1983

Type locality and its age: Azambujeira (Portugal), Early Vallesian, MN9.

Original diagnosis (translated from the French):"Largest and last species of the genus. Characterized by the presence of a split anterocone in M1, differs from similar- sized *Cricetodon* by lower crowned teeth and by a more simple root pattern (3 roots in M1-2, 2 roots in m1-2). Like in other *Fahlbuschia* species, the patterns are simple: double connections are absent. The connecting ridges are obliquely backwards in the upper molars, and obliquely forwards in the lower molars. The posterolophid of the lower molars has a reduced length."

Renzimys LACOMBA, 1983

Type species: *Renzimys bilobatus* Lacomba, 1983

Original diagnosis of the genus (from LACOMBA, 1988, p. 33): " A large cricetid, with the anterocone of M1 completely divided, with a double anterolophule in M1, generally a single protolophule in M2 and relatively narrow molars with respect to their length."

Renzimys bilobatus LACOMBA, 1983

Type locality and its age: Molina de Aragón, Early Vallesian, MN9.

Original diagnosis: the same as for the genus.

Renzimys lacombai FREUDENTHAL & DAAMS, 1988

Type locality and its age: Regajo 2, Middle Aragonian, Zone D, MN5.

Original diagnosis (p. 211): " M1 and M2 on the average somewhat smaller than in *R. bilobatus*, M3 somewhat larger and less reduced morphologically.

Upper molars with a tendency to form ectolophs on the posterior walls of the paracones."

Pseudofahlbuschia Freudenthal & Daams, 1988

Type species: *Pseudofahlbuschia jordensi* Freudenthal & Daams, 1988

Original diagnosis of the genus (p. 203): "Cricetidae of medium size, morphology of cheek teeth close to *Fahlbuschia*. Mesolophids and mesolophs strongly reduced. Anterior protolophule in M1 always absent, in M2 nearly always. Teeth more slender than in *Fahlbuschia*. All m2 shorter than the shortest specimens of m1. The foramen incisivum, as seen in 1 specimen from Villafeliche 4A, is long like it is in *Fahlbuschia*, ending between the M1. Some details on the mandible are given in the descriptions of Villafeliche 4A and Casetón 1A. They may be characteristic for *Pseudofahlbuschia*, but the material is very poor."

Pseudofahlbuschia jordensi Freudenthal & Daams, 1988

Type locality and its age: Villafeliche 4A, Middle Aragonian, Zone D, MN5.

Original diagnosis (p. 203): The same as for the genus.

Distinction between *Democricetodon* and *Fahlbuschia*

Mein & Freudenthal (1971) created *Fahlbuschia* and designated *F. larteti* from the upper Aragonian of La Grive as the type species. One of their main criteria to separate *Fahlbuschia* from *Democricetodon* is the length of the foramen incisivum, which also serves as one of the distinguishing features between the Cricetodontinae (with *Fahlbuschia*) and the Cricetinae (with *Democricetodon*). It is said to be short in *Democricetodon*, ending before the anterocone of M1, and long in *Fahlbuschia*, ending just behind the anterocone. The foramen incisivum is indeed short in *Democricetodon hispanicus* from San Roque 2 (Freudenthal & Daams, 188; Pl. 3, fig. 7), but it is also short in *Fahlbuschia koenigswaldi* from Casetón 1A (Pl. 5, fig. 17) and Casetón 2B (op cit; Pl. 6, fig. 8), although they describe the foramen incisivum of *F. koenigswaldi* from Casetón 2B as being long (p. 140). In specimen VA1A 113 of *F. koenigswaldi* from Valdemoros 1A the foramen ends laterally of the anterocone, as it does in the fragmentary cranium (RGM 268 315) of *F. darocensis* from Valalto 2C, while Freudenthal & Daams describe the latter as extending "as far backwards as the posterior wall of the anterocone" (p. 181). In RGM 268 144 of *D. darocensis* from Borjas the foramen reaches a very little further than the first alveolus of M1.

Since, firstly, little is known of the intraspecific variation of the backward extension of the foramen incisivum, and secondly the observed differences are very small, and thirdly the assessment of the character state appears to be rather subjective, we do not consider it useful for the distinction of genera and subfamilies.

Another criterion would be the number of striae on the lower incisor, three in *Fahlbuschia* two in *Democricetodon*. This difference has not been dealt with by Freudenthal & Daams (1988), and we have not studied it either.

Second order morphological criteria for the generic separation mentioned by Freudenthal & Daams (1988) are, amongst others, the shape of the anteroconid and the anteroconid-metaconid connection of m1. *Democricetodon* would have a short, wide and bean-shaped anteroconid whereas this cusp would be narrower, and more pointed in *Fahlbuschia*. But in their 1988 paper Freudenthal & Daams mention that various *Democricetodon* assemblages from zone B have a mixture of these features which made them think that these assemblages might be heterogeneous. In our opinion the shape of the anteroconid is a coherently variable character, and the assemblages are homogeneous.

A similar mixture occurs when the anteroconid-metaconid connection is taken into account. According to Freudenthal & Daams (1988, p. 140) a crest protruding from the centre of the metaconid towards the anteroconid subdividing the anterosinusid "is a common feature in *Fahlbuschia* and rare, if present at all, in *Democricetodon*". However, in *Democricetodon* from zone B there are also various assemblages that show a mixture of these distinctive features. In fact, we have observed a continuous variation of this character in many assemblages, both in the place of the protrusion (from the middle of the anterior wall of the metaconid to its lingual border), and in the development of the protrusion (from non-existing to a slight protrusion on the upper part of the metaconid to a crest reaching the anteroconid crest. Various

Democricetodon species from the "Oberen Süsswasser-Molasse" (see FAHLBUSCH, 1964; Figs. 8, 10, 20) show this variation as well. Like FAHLBUSCH we consider the type of closure of the lingual anterosinusid, by a cingulum or a crest as subject to intra-specific variation. Consequently these two criteria of the m1 are, in our opinion unfit for generic separation.

On the basis of the above we conclude that there are no valid criteria to distinguish *Fahlbuschia* and *Democricetodon*. We consider *Fahlbuschia* as a junior synonym of *Democricetodon*. Further support is provided by our evolutionary interpretations below.

DISTINCTION BETWEEN *FAHLBUSCHIA* AND *PSEUDOFAHLBUSCHIA*

FREUDENTHAL & DAAMS (1988, p. 203) note the similar molar morphology of *Pseudofahlbuschia* and *Fahlbuschia*. For instance, several late species of *Fahlbuschia* have reduced mesoloph(id)s, mentioned as diagnostic feature of *Pseudofahlbuschia*. Another distinguishing feature of *Pseudofahlbuschia*, more slender teeth than *Fahlbuschia*, is only valid for m1. The other upper and lower molars have length-width relations comparable to those of *Fahlbuschia*. The diagnostic feature that all m2 are shorter than the shortest m1, only appears to be true for *Pseudofahlbuschia* from Villafeliche 4A and (almost) for Valdemoros 3D. However, this feature is also present in *Democricetodon hispanicus* (Olmo Redondo 1, 2 and Villafeliche 2A), *D. moralesi* n. sp. (Olmo Redondo 5), *F. koenigswaldi* (Las Umbrías 1, 2 ,9), *F. darocensis* (Las Umbrías 12, 20 and 21, and Valalto 2C) and *F. crusafonti* (Sant Quirze, Escobosa, Nombrevilla and Carrilanga) and can, therefore, not be considered as a diagnostic criterion. Yet another diagnostic feature of *Pseudofahlbuschia* is the strongly reduced anterior protolophule of M2, while *Fahlbuschia* has predominantly double protolophules. In *Pseudofahlbuschia* from Villafeliche 4A eight specimens have a double protolophule and 30 cases have the posterior one only (FREUDENTHAL & DAAMS, 1988, p. 207). In *P. jordensi* from Valdemoros 3D these numbers are 4 and 9 respectively (op cit.). In fact, this seems the only feature listed to distinguish between *Pseudofahlbuschia* and *Fahlbuschia*, that holds. However, late representatives of *Fahlbuschia* may also have predominantly posterior protolophules of M2 (see FREUDENTHAL & DAAMS, 1988, p. 198; and below). The character state appears to undergo anagenetic evolution (see below).

In its original description *Pseudofahlbuschia* is not compared with *Democricetodon*. From our discussions on *Fahlbuschia* it follows that, in our opinion, *Pseudofahlbuschia* has to be synonymized with *Democricetodon* as well.

DISTINCTION BETWEEN *RENZIMYS, DEMOCRICETODON, PSEUDOFAHLBUSCHIA* AND *FAHLBUSCHIA*

Since LACOMBA (1988) considers late species of *Democricetodon* (such as *D. crusafonti*) to belong to *Fahlbuschia*, his differential diagnosis of *Renzimys* from *Democricetodon* concerns only the smaller species of the latter. The characters he uses (larger size, split anterocone of M1, absence of the anterior anterolophule, reduced mesolophs and mesolophids of the first and second molars) may all be due to anagenetically derived differences. None of them is fit for generic distinction, as we will further show below. For the differences with the larger species of *Democricetodon* (in our usage) we refer to differential diagnosis of *Renzimys* with *Fahlbuschia* with which we continue.

According to LACOMBA (1988, p.33) *Renzimys* differs from *Fahlbuschia* by its split anterocone, the double (forked) anterolophule of M1, the generally single protolophule of M2, and the relatively narrow molars. FREUDENTHAL & DAAMS (1988, p. 210) consider the subdivision of the anterocone as the most striking difference. However, they note that the subdivision in the type species, *Renzimys bilobatus*, is a variable character, and that variants with moderately divided anterocone closely resemble *F. crusafonti*. Worn specimens of the two species cannot be distinguished, which according to the authors are very similar in size and general morphology (loc. cit.). Forked anterolophules are present in *F. larteti* (FREUDENTHAL & MEIN, 1989) and *Fahlbuschia* cf. *crusafonti* from, for instance Solera and Nombrevilla (FREUDENTHAL & DAAMS, 1988). Furthermore, in the same publication it appears that the small collection of *F.* sp. nov. cf. *crusafonti* from Carrilanga shows 4 specimens with posterior protolophule and one that additionally has a trace of an anterior connection. The table on p. 195, with length/width ratios of m1, shows that *R. bilobatus* falls within the range of the listed *Fahlbuschia* species. Below it will be shown that the range of this ratio in single assemblages is large. FREUDENTHAL & DAAMS (1988, p.211) remark that the bottom of the mesosinusid of the lower molars of *Renzimys* is "not horizontal, but descends steeply

from the ectolophid to the molar border" which (according to them) may be a distinctive character of the genus. The character is, however, not discussed in the descriptions of *R. bilobatus* and *R. lacombai*, neither is it obvious from the figures (LACOMBA, 1988, Pl. 2 (figs. 10-12); FREUDENTHAL & DAAMS, 1988, Pl. 15 (figs. 1-7). We have noticed the character in *Renzimys lacombai* and it is probably related to the increased height of the molars in comparison to contemporaneous *Fahlbuschia* species. Finally, FREUDENTHAL & DAAMS (1988, p. 211) state that *Renzimys* "is easily distinguished from *Fahlbuschia* by its relatively thick enamel and inflated cusps". However, these features are also shown by the late *Fahlbuschia* species, and seems to be in contradiction to their observation that "some specimens of *R. lacombai* may be mistaken for *Pseudofahlbuschia jordensi*" (loc. cit. p. 214).

They mention that *R. lacombai* is larger than *P. jordensi*, the enamel is thicker, the sinusid is narrower and often curved, and the sinus may even be strongly curved. The hypolophulids are very broad. In m1 the anteroconid is more asymmetrical, and the anterolophulid lies labially of the molar axis.

Our own observations revealed that there are not any differences between sinusids and sinuses, and that the hypolophulid is short and wide in both species. Another resemblance is the weakly developed lingual anteroloph of M2 and the stage of development of the paracone spur of M1. The paracone spur of M2 is better developed in *R. lacombai* than it is in *P. jordensi*. Another common feature of these two species is the subquadrate shape of the M2. The anterolophule of M1 is frequently forked and the longitudinal ridge of m2 is oblique in both species.

The distribution chart of DAAMS & FREUDENTHAL (1988, p. 14) shows that *R. lacombai* and *P. jordensi* are not contemporaneous, in spite of statements to the contrary (pp, 210 and 214). We consider the two as valid, anagenetic species (see below), but do not accept that they belong to different genera. *R. bilobatus*, in our opinion, has to be placed in the synonymy of *Democricetodon crusafonti*.

CONCLUSIONS

Summarizing, we conclude that the diagnoses of *Fahlbuschia, Pseudofahlbuschia* and *Renzimys* do not substantiate their generic status, and synonymize each of them with *Democricetodon*. We will use the latter genus name for all species discussed above in the next part of the text. The relationships between these species, their synonymy and emendations of their diagnoses will follow after the presentation of our results.

RESULTS

INTRODUCTION

For convenience sake, our metrical and morphological results are discussed and presented by following the anagenetic changes in the two different evolutionary lineages we reconstructed. This reconstruction is primarily based on the temporal distribution of the studied species. We call these lineages the *Democricetodon hispanicus-D. lacombai* and the *D. franconicus-D. crusafonti* lineages, the species compositions of which will be shortly given here. The (revised) diagnoses of the species, and the evidence for the proposed evolutionary pattern is given after the presentation of the results.

In the oldest faunas (Zone B) we find one *Democricetodon* species only, *D. hispanicus* succeeded by *D. decipiens*. Zone C to Zone D faunas contain two different species clearly differing in size and morphology. *D. moralesi* n.sp. (Zones C-Db), which is derived from *D. decipiens*, co-occurs with *D. franconicus* (Zone C-Dc) which we consider as an immigrant and the oldest representative of the second lineage. The faunal succession demonstrates that *D. moralesi* evolves to *D. jordensi*, which in its turn evolves to *D. lacombai.* The latest representative of the latter occurs in LP4B (Zone E). *D. franconicus* evolves to *D. koenigswaldi* and the lineage continues with *D. larteti* and *D. crusafonti*, while in the meantime the *D. hispanicus – D. lacombai* gets extinct. During the interval of their co-existence the two lineages evolve parallel, the assemblages of the *D. hispanicus-D. lacombai* lineage always being the more advanced. Hence, morphological and metrical separation of the lineages is always straightforward.

SIZE ANALYSIS

Length and Surface (Tables 2-13, Figs. 2-5)

All molars of the *D. hispanicus-D. lacombai* and the *D. franconicus-D. crusafonti* lineages show a clear trend towards larger size, the total increase being more or less the same in the two.

The increase in size of the *D. hispanicus*-*D. lacombai* lineage is fast during the first million years, jumping from *D. hispanicus* to *D. decipiens* and then to *D. moralesi* n. sp.. The latter species and *D. jordensi* shows a quite slow size increase, during the approximately two My of their distribution. Finally there is a jump in size between *D. jordensi* and *D. lacombai*, last representative of the lineage. Successive species are on the average larger that the species that precede them.

The *D. franconicus*-*D. crusafonti* lineage matches perfectly the size trend shown by the other *Democricetodon* lineage. *D. franconicus*, which has a range covering that of *D. moralesi* n. sp. and most of that of *D. jordensi*, shows a moderate size increase, which parallels that of the species of the other lineage. It is amongst the *D. koenigswaldi* assemblages that a strong size increase takes place. Between 14,5 and 14 Ma, this species shows a very fast gradual increase in size that matches the jump in size observed between *D. jordensi* and *D. lacombai*. *D. larteti* and *D. crusafonti* show a trend toward larger size, but the increase is relatively slow. As in the other lineage the successive species are on the average larger than the ones that precede them.

Length/width ratios (Tables 2-13, Figs. 6-7)

Length/width ratios have been calculated for all elements. Our assemblage means may differ from the values given by FREUDENTHAL & DAAMS (1988), because their ratios are calculated from mean lengths and widths.

The m1 display the strongest variation in length/width ratio. In the *D. hispanicus*-*D. lacombai* lineage a strong increase takes place between *D. moralesi* n. sp. and *D. jordensi*. Assemblages of the latter show L/W ratios around 1,60, those of *D. moralesi* n. sp. around 1,45. *Democricetodon hispanicus* has a L/W ratios slightly lower than those of *D. decipiens* in the Villafeliche area. This difference seems to be a local phenomenon since the type material of *D. decipiens* from Buñol shows a ratio similar to that of *D. hispanicus*. The trend toward more gracile m1 is caused by the elongation of the anteroconid-anterolophulid complex. FREUDENTHAL & DAAMS (1988) measured the length of this complex and divided it by the total length of the tooth, calling the resulting value the prelobe ratio. This ratio may change with progressive wear and is consequently not very reliable according to them.

The *D. franconicus*-*D. crusafonti* lineage does not show a clear trend towards more slender m1. The ratios range between 1,4 and 1,5 for most of the temporal distribution of the lineage, only some assemblages of *D. larteti* and *D. crusafonti* have ratios higher than 1,5.

L/W ratios of m2 change little in time. Only the m2 of *D. hispanicus* appear to have a ratio slightly lower than all other species.

No significant differences have been observed in the L/W ratios of m3 of the studied species. Both lineages show similar ratios, that generally are around 1,2.

The L/W ratios of the upper dentition show no significant differences in the *D. hispanicus*-*D. lacombai* lineage, only the M1 are relatively slightly slender at the end. This pattern is also present in the *D. franconicus*-*D. crusafonti* lineage *D. franconicus* assemblages from zones Db and Dc show relatively wider M1 and M2 than the other ones. This trend towards wider M1 coincides with the trend towards more slender m1 and M1 in the other lineage.

Element proportions for length and surface (Tables 14-15)

For all sample containing at least five cases per dental element the mean length and surface of each element has been divided by the total tooth row length and surface respectively. Tooth row values have been calculated as the sum of the means of the three upper or lower elements. In this way we calculate the percentage each element presents of the tooth row. Tables reveal no significant differences between the studied species, nor trends in the two lineages.

MORPHOLOGICAL ANALYSIS

Anterocone (M1)

The split anterocone is more or less frequently present in all studied species, except for *D. hispanicus* and *D. decipiens*. The split anterocone is predominant only at the end of the two lineages represented by *D. lacombai* and *D. crusafonti*, respectively. As can be seen in the tables 16 and 21, this is a character state, which frequency changes progressively and, therefore, inadequate for establishing generic differences as made by LACOMBA (1983) and FREUDENTHAL & DAAMS (1988).

Anterolophule (M1)

Table 16 and 21 show that the anterolophule changes progressively from single to forked along

both lineages. The forked anterolophule is never present in *D. hispanicus*, rare in *D. moralesi* n. sp., well represented in *D. jordensi* and predominant in *D. lacombai*. In the *D. franconicus-D. crusafonti* lineage, the forked anterolophule is rare in *D. franconicus*, well represented in *D. koenigswaldi,* and frequent in *D. larteti* and *D. crusafonti*. As for the anterocone, the change of the anterolophule is progressive and can neither be used for generic differentiation as proposed by LACOMBA (1963).

Protolophule (M1 and M2)

The protolophule connection with the protocone in the M1 shows differences between the two studied lineages. In *D. hispanicus-D. lacombai* lineage the double protolophule is in general rare, only assemblages of *D. hispanicus* and *D. moralesi* have a double protolophule with moderate frequency (the 25% in Villafeliche 2A being the maximum). On the contrary, the double protolophule is much more frequent in species of the *D. franconicus-D. crusafonti* lineage. *Demo-cricetodon franconicus* frequently has double protolophules, in *D. koenigswaldi* this character state starts to be moderately frequent and in *D. larteti* and *D. crusafonti* it is rare.

The protolophule of the M2 is used by FREUDENTHAL & DAAMS (1988) to distinguish *Fahlbuschia* and *Pseudofahlbuschia*. As can be seen in tables 18 and 23 this character varies in the two lineages, showing a progressive change from an anterior or double anterior connection to a posterior one. Although this trend is observed in both lineages some differences between them are noted. The anterior protolophule is frequent in the early representatives of the *D. hispanicus-D. lacombai* lineage, while it is always rare in the assemblages belonging to the *D. franconicus-D. crusafonti* lineage. The change from mainly double connections to mainly posterior connection occurs very rapidly in *D. moralesi* n. sp. while it is more slow and gradual in *D. koenigswaldi*.

Paracone spur (M1 and M2)

The presence or absence of a spur in the posterior side of the paracone in M1 and M2 is a variable character that shows a different behaviour depending on the lineage. *Democricetodon hispanicus-D. lacombai* lineage shows a trend towards more frequent presence of paracone spur (Tables 16 and 18). In *D. hispanicus* it is absent, rare in *D. moralesi*, frequent in *D. jordensi* and predominant in *D. lacombai*. On the contrary, *D. franconicus-D. crusafonti* lineage does not show this trend (Tables 21 and 23). In this lineage, although present in all its species, it is almost never the predominant character state.

Mesoloph (M1 and M2)

M1 and M2 show the same trend toward shorter mesolophs in both lineages (fig.8). The reduction is, in general, slightly more advanced in M1 than in M2, in assemblages of the *D. hispanicus-D. lacombai* lineage and of *D. franconicus* and *D. koenigswaldi*, while in *D. larteti* and *D. crusafonti* the opposite is the general feature.

The mesolophs of M1 of *D. hispanicus* (predominantly short to medium) are on the average shorter than those of the earliest assemblages of *D. franconicus* (predominantly medium to long), while the length of their mesolophs of M2 are similar.

The reduction of the mesolophs is fairly gradual through time in the *D. hispanicus-D. lacombai* lineage. In the other lineage, however, there is a rapid change from mainly long and medium mesolophs (MV<2) to frequent short and absent mesolophs (MV close to 3) between *D. franconicus* and *D. koenigswaldi*.

Metalophule (M1 and M2)

The metalophule in the M1 is generally simple and directed towards the posteroloph. In very few specimens this ridge is either double, or absent, but no trend in the character is observed..

Five character states of the metalophule of M2 have been defined above. For the calculation of the morphology values only the states in which there is a connection have been included, since absence of the metalophule cannot unambiguously be ranked together with the other character states.

M2 of the *D. hispanicus-D. lacombai* lineage have mainly an anterior or transverse connection, although the other three character states are present with varying frequencies in all four species. No general trend can be detected in this lineage. On the contrary, *D. franconicus-D. crusafonti* lineage shows a stepwise trend towards the predominance of the posterior connection, and the absence of connection is always rare. *Democricetodon franconicus* has mainly anterior or transverse metalophule connections (MV<2), in successive *D. koenigswaldi* assemblages double and posterior connections become progressively more frequent (2<MV<3,5), and in *D. larteti* and *D. crusafonti* the latter state are generally predominant (MV>3).

M1	LENGTH					WIDTH					LxW					L/W					SPECIES
	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	
LP4B		2,71			1		1,70			1		4,61			1		1,59			1	*D. lacombai*
LUM10		2,59			1		1,69			1		4,38			1		1,53			1	*D. lacombai*
LUM9		2,71			1		1,70			1		4,61			1		1,59			1	*D. lacombai*
RG2	2,54	2,66	2,77	0,081	11	1,54	1,63	1,77	0,057	19	3,98	4,37	4,83	0,253	11	1,54	1,63	1,72	0,048	11	*D. lacombai*
LUM8							1,72			1											*D. lacombai*
VA7F	2,52		2,58		2	1,66		1,67		2	4,18		4,31		2	1,52		1,54		2	*D. lacombai*
VA7E	2,48	2,55	2,62	0,056	7	1,44	1,59	1,64	0,062	10	3,64	4,05	4,23	0,196	7	1,54	1,61	1,76	0,078	7	*D. lacombai*
LUM4		2,85			1		1,75			1		4,99			1		1,63			1	*D. lacombai*
VA7D						1,57		1,57		2											*D. lacombai*
LUM3	2,59		2,63		2	1,60		1,65		4	4,22		4,34		2	1,59		1,59		2	*D. lacombai*
LUM1		2,41			1		1,52			1		3,66			1		1,59			1	*D. lacombai*
VA7C		2,48			1	1,56	1,60	1,64		3		3,87			1		1,59			1	*D. lacombai*
VA7B	2,19	2,24	2,29	0,071	2	1,46	1,52	1,63	0,062	6	3,22		3,44		2	1,49		1,53		2	*D. jordensi*
VA1A	2,35		2,39		2	1,42	1,52	1,63		3	3,34		3,61		2	1,58		1,65		2	*D. jordensi*
VA7A	2,29		2,30		2	1,47	1,48	1,51		3	3,38	3,42	3,46		2	1,52	1,54	1,56		2	*D. jordensi*
VA8B		2,27			1	1,51		1,54		2		3,43			1		1,50			1	*D. jordensi*
VA8C		2,38			1		1,59			1		3,78			1		1,50			1	*D. jordensi*
VR8B	2,25	2,33	2,46	0,078	6	1,41	1,48	1,53	0,041	9	3,26	3,47	3,69	0,171	6	1,50	1,56	1,64	0,051	6	*D. jordensi*
CS2B	2,31		2,41		2	1,49		1,53		2	3,44		3,69		2	1,55		1,58		2	*D. jordensi*
CS1A	2,28	2,34	2,42		3	1,42	1,48	1,52		3	3,24	3,45	3,61		3	1,52	1,58	1,62		3	*D. jordensi*
VR7	2,09	2,25	2,38	0,086	17	1,34	1,45	1,58	0,057	27	2,80	3,28	3,62	0,236	17	1,45	1,55	1,70	0,065	17	*D. jordensi*
VA3D	2,25	2,34	2,41	0,073	7	1,32	1,44	1,55	0,077	10	2,97	3,39	3,70	0,270	7	1,52	1,62	1,75	0,085	7	*D. jordensi*
VA3B	2,05	2,20	2,30	0,104	9	1,33	1,42	1,58	0,071	14	2,73	3,14	3,63	0,307	9	1,46	1,55	1,63	0,067	9	*D. jordensi*
VR6		2,18			1	1,47		1,51		2		3,20			1		1,48			1	*D. jordensi*
VR5	2,12	2,20	2,37	0,114	4	1,19	1,38	1,47	0,100	7	2,82	3,07	3,48		4	1,54	1,58	1,64		4	*D. jordensi*
VA9		2,22			1		1,47			1		3,26			1		1,51			1	*D. jordensi*
VL4B	2,11	2,11	2,12	0,004	5	1,28	1,34	1,39	0,038	7	2,76	2,83	2,89	0,050	5	1,54	1,58	1,63	0,034	5	*D. jordensi*
VL4A	1,95	2,11	2,31	0,097	28	1,24	1,34	1,42	0,049	30	2,42	2,83	3,28	0,223	28	1,47	1,57	1,66	0,043	28	*D. jordensi*
VA8A	1,95	2,09	2,28	0,080	19	1,28	1,38	1,49	0,057	32	2,57	2,90	3,26	0,186	19	1,42	1,52	1,63	0,051	19	*D. moralesi*
MUE		2,16			1		1,40			1		3,02			1		1,54			1	*D. moralesi*
MOR3	1,86	2,02	2,23	0,124	6	1,28	1,33	1,38	0,033	6	2,53	2,74	3,08	0,206	5	1,47	1,54	1,62	0,054	5	*D. moralesi*
MOR2	1,96	2,17	2,31	0,108	13	1,28	1,37	1,51	0,063	14	2,55	2,98	3,35	0,232	13	1,47	1,58	1,75	0,091	13	*D. moralesi*
FTE4	1,96	1,99	2,05		4	1,31	1,37	1,48	0,057	7	2,57	2,68	2,85		4	1,46	1,48	1,50		4	*D. moralesi*
COL-D	1,88	2,04	2,25	0,075	34	1,20	1,32	1,42	0,049	47	2,36	2,70	3,17	0,175	33	1,44	1,55	1,65	0,053	33	*D. moralesi*
COL-C	1,82	2,04	2,23	0,085	100	1,20	1,32	1,50	0,055	102	2,27	2,68	3,23	0,201	97	1,43	1,55	1,70	0,057	97	*D. moralesi*
COL-B	1,92	2,15	2,29	0,090	19	1,22	1,40	1,54	0,070	29	2,57	3,02	3,51	0,267	19	1,41	1,54	1,73	0,075	19	*D. moralesi*
FTE3	1,92	2,07	2,25	0,105	11	1,27	1,36	1,45	0,056	13	2,64	2,84	3,22	0,189	9	1,41	1,52	1,57	0,052	9	*D. moralesi*
FTE2	1,99	2,08	2,23	0,086	13	1,27	1,37	1,50	0,057	27	2,57	2,84	3,35	0,238	13	1,46	1,53	1,58	0,039	13	*D. moralesi*
OR9	1,89	2,04	2,21	0,083	12	1,21	1,33	1,42	0,053	15	2,34	2,72	3,14	0,204	11	1,42	1,54	1,60	0,056	11	*D. moralesi*
VR2B	1,94	2,11	2,35	0,123	13	1,27	1,38	1,53	0,060	22	2,52	2,91	3,60	0,308	13	1,45	1,54	1,63	0,057	13	*D. moralesi*
COL-A	1,94	2,07	2,22	0,116	4	1,29	1,35	1,39	0,041	6	2,67	2,87	3,09		3	1,52	1,56	1,60		3	*D. moralesi*
VR2A	1,98	2,09	2,13		4	1,21	1,32	1,37		4	2,40	2,76	2,92		4	1,53	1,58	1,64		4	*D. moralesi*
OR8	1,85		2,12		2	1,25		1,30		2	2,31		2,76		2	1,48		1,63		2	*D. moralesi*
OR5		2,02			1	1,25		1,32		2		2,67			1		1,53			1	*D. moralesi*
VR3	1,81	1,95	2,11	0,085	13	1,23	1,33	1,45	0,049	33	2,33	2,55	2,87	0,176	13	1,40	1,50	1,57	0,053	13	*D. moralesi*
VR1A	1,80	1,97	2,17	0,092	68	1,14	1,29	1,44	0,063	84	2,06	2,55	3,09	0,228	66	1,41	1,53	1,64	0,047	66	*D. moralesi*
VR4BB	1,81	1,98	2,16	0,078	67	1,18	1,30	1,44	0,051	90	2,19	2,57	2,91	0,169	67	1,40	1,53	1,63	0,053	67	*D. moralesi*
VR4B	1,85	1,97	2,08	0,090	5	1,22	1,32	1,37	0,045	9	2,26	2,58	2,79	0,211	5	1,46	1,50	1,55	0,037	5	*D. moralesi*
VR4A	1,82	1,98	2,18	0,087	43	1,16	1,31	1,46	0,052	63	2,25	2,59	2,96	0,179	42	1,41	1,52	1,64	0,066	42	*D. moralesi*
BU	1,67	1,80	1,97	0,080	26	1,10	1,20	1,32	0,059	28	1,88	2,15	2,60	0,191	26	1,40	1,51	1,61	0,052	26	*D. decipiens*
OR4A	1,72	1,80	1,88	0,062	5	1,15	1,19	1,23	0,036	5	2,04	2,13	2,20	0,059	5	1,40	1,52	1,63	0,088	5	*D. decipiens*
SR3	1,71	1,79	1,88	0,059	7	1,06	1,15	1,21	0,052	6	1,83	2,06	2,27	0,148	6	1,45	1,56	1,63	0,060	6	*D. decipiens*
ART1	1,60	1,76	1,92	0,073	25	1,05	1,17	1,25	0,050	23	1,68	2,07	2,38	0,152	23	1,34	1,52	1,62	0,058	23	*D. decipiens*
VL2A	1,54	1,67	1,84	0,117	6	1,05	1,14	1,22	0,065	6	1,71	1,91	2,24	0,226	6	1,36	1,46	1,56	0,076	6	*D. hispanicus*
OR3	1,60	1,68	1,79		3	1,05	1,08	1,14		3	1,70	1,82	2,04	0,189	3	1,51	1,55	1,57		3	*D. hispanicus*
SR5	1,59		1,79		2	1,03	1,09	1,14		4	1,64		2,04		2	1,54		1,57		2	*D. hispanicus*
SR2	1,53	1,67	1,77	0,064	14	1,03	1,08	1,15	0,040	17	1,58	1,81	1,95	0,131	13	1,47	1,55	1,61	0,039	13	*D. hispanicus*
SAM	1,50	1,69	1,80	0,078	20	0,99	1,11	1,21	0,049	23	1,49	1,88	2,15	0,153	20	1,46	1,53	1,63	0,052	20	*D. hispanicus*
OR2	1,71		1,83		2	1,13		1,15		2	1,93		2,10		2	1,51		1,59		2	*D. hispanicus*
OR1		1,63			1		1,07			1		1,74			1		1,52			1	*D. hispanicus*
SR1	1,52	1,63	1,73	0,055	14	0,95	1,06	1,14	0,057	19	1,44	1,72	1,97	0,153	14	1,45	1,55	1,63	0,054	14	*D. hispanicus*

Table 2.- Descriptive statistics for the upper first molars of the *D. hispanicus-D. lacombai* lineage. LxW= Surface (Length x Width); L/W= Length/Width; N= number of specimens; s.d.= standard deviation.

Tabla 2.- Estadísticos descriptivos del primer molar superior en la línea D. hispanicus-D. lacombai. LxW= Superficie (Longitud x Anchura); L/W= Longitud/Anchura; N= número de especímenes; s.d.= desviación estandar.

Lingual anterosinusid (m1)

In general, the lingual anterosinusid is open in both lineages. The closed morphology is well represented in all studied species with variable proportions. There is no trend in the distribution of this character.

M2	LENGTH					WIDTH					LxW					L/W					SPECIES
	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	
LUM9		1,96			1		1,66			1		3,25			1		1,18			1	*D. lacombai*
RG2	1,80	1,94	2,03	0,068	18	1,54	1,62	1,70	0,045	20	2,79	3,15	3,42	0,182	18	1,16	1,20	1,29	0,034	18	*D. lacombai*
LUM8		1,95			1		1,67			1		3,26			1		1,17			1	*D. lacombai*
LUM7		1,87			1		1,66			1		3,10			1		1,13			1	*D. lacombai*
VA7G	1,78		1,87		2	1,44		1,46		2	2,60		2,69		2	1,22		1,30		2	*D. lacombai*
VA7F	1,81		1,85		2	1,58		1,65		2	2,86		3,05		2	1,12		1,15		2	*D. lacombai*
VA7E	1,75	1,84	1,94	0,067	13	1,53	1,60	1,70	0,050	15	2,71	2,94	3,22	0,186	12	1,10	1,16	1,21	0,028	12	*D. lacombai*
LUM4	1,78	1,80	1,82		3	1,56		1,60		2	2,84		2,90		2	1,13		1,17		2	*D. lacombai*
LUM3	1,78		1,80		2		1,55			1		2,76			1		1,15			1	*D. lacombai*
VR11		1,77			1		1,54			1		2,73			1		1,15			1	*D. lacombai*
LUM1							1,55			1											*D. lacombai*
VA7C	1,71	1,79	1,90	0,066	7	1,44	1,60	1,66	0,077	7	2,46	2,87	3,15	0,228	7	1,08	1,12	1,19	0,035	7	*D. lacombai*
VA7B	1,67	1,69	1,70		3	1,51	1,55	1,60		3	2,55	2,62	2,67		3	1,04	1,09	1,12		3	*D. jordensi*
VA1A	1,65	1,70	1,73		3	1,40	1,46	1,53		3	2,41	2,49	2,63		3	1,12	1,16	1,24		3	*D. jordensi*
VA7A							1,49			1											*D. jordensi*
VA8B		1,72			1		1,48			1		2,55			1		1,16			1	*D. jordensi*
VA8C	1,64		1,70		2	1,43		1,46		2	2,35		2,48		2	1,15		1,16		2	*D. jordensi*
VR8B	1,56	1,64	1,74	0,074	6	1,44	1,49	1,61	0,053	8	2,25	2,44	2,64	0,155	6	1,02	1,11	1,19	0,065	6	*D. jordensi*
CS2B	1,73		1,77		2	1,49		1,52		2	2,58		2,69		2	1,16		1,16		2	*D. jordensi*
CS1A	1,70	1,74	1,78		3	1,38	1,43	1,48		3	2,35	2,50	2,63		3	1,20	1,22	1,23		3	*D. jordensi*
VR7	1,54	1,64	1,71	0,044	26	1,34	1,43	1,55	0,058	24	2,13	2,37	2,65	0,127	22	1,05	1,15	1,23	0,047	22	*D. jordensi*
VA3D	1,49	1,69	1,89	0,125	11	1,26	1,41	1,50	0,075	11	2,10	2,43	2,78	0,231	10	1,10	1,20	1,33	0,067	10	*D. jordensi*
VA3B	1,47	1,57	1,74	0,076	15	1,30	1,39	1,51	0,057	15	1,91	2,18	2,59	0,182	15	1,07	1,13	1,21	0,038	15	*D. jordensi*
VA11		1,62			1		1,28			1		2,07			1		1,27			1	*D. jordensi*
VR6	1,62		1,73		2	1,38		1,46		2	2,24		2,53		2	1,17		1,18		2	*D. jordensi*
VR5	1,47	1,58	1,69	0,072	9	1,32	1,38	1,46	0,046	9	1,98	2,18	2,47	0,162	9	1,09	1,15	1,21	0,035	9	*D. jordensi*
VL4B	1,44	1,51	1,55		4	1,32	1,33	1,33		4	1,92	2,00	2,06		4	1,08	1,13	1,17		4	*D. jordensi*
VL4A	1,42	1,56	1,74	0,081	35	1,14	1,31	1,45	0,071	37	1,73	2,05	2,44	0,189	35	1,08	1,19	1,38	0,066	35	*D. jordensi*
VA8A	1,41	1,52	1,59	0,050	17	1,24	1,33	1,43	0,065	19	1,82	1,99	2,20	0,113	15	1,08	1,15	1,25	0,054	15	*D. moralesi*
MOR3	1,47	1,57	1,66	0,074	9	1,21	1,27	1,31	0,031	8	1,86	1,99	2,15	0,121	7	1,15	1,21	1,30	0,052	7	*D. moralesi*
MOR2	1,47	1,58	1,70	0,074	19	1,28	1,35	1,53	0,058	21	1,88	2,11	2,43	0,150	17	1,13	1,19	1,26	0,036	17	*D. moralesi*
FTE4	1,41	1,54	1,61	0,075	9	1,29	1,33	1,37	0,032	7	1,96	2,07	2,19	0,089	6	1,07	1,15	1,24	0,064	6	*D. moralesi*
COL-D	1,39	1,53	1,72	0,068	45	1,22	1,33	1,46	0,058	55	1,74	2,03	2,51	0,174	43	1,10	1,16	1,24	0,034	43	*D. moralesi*
COL-C	1,34	1,52	1,72	0,073	119	1,16	1,30	1,48	0,054	111	1,55	1,97	2,45	0,155	101	1,08	1,17	1,29	0,044	101	*D. moralesi*
COL-B	1,33	1,54	1,69	0,085	25	1,19	1,37	1,54	0,082	21	1,58	2,12	2,60	0,242	20	1,03	1,12	1,19	0,042	20	*D. moralesi*
FTE3	1,38	1,51	1,62	0,069	16	1,27	1,34	1,46	0,050	12	1,75	2,03	2,37	0,156	12	1,07	1,13	1,18	0,038	12	*D. moralesi*
FTE2	1,42	1,50	1,57	0,048	19	1,26	1,35	1,43	0,044	19	1,84	2,01	2,25	0,110	17	1,03	1,11	1,23	0,045	17	*D. moralesi*
OR9	1,35	1,51	1,64	0,065	18	1,18	1,29	1,41	0,059	19	1,59	1,96	2,31	0,142	18	1,07	1,17	1,28	0,058	18	*D. moralesi*
VR2B	1,39	1,50	1,63	0,062	24	1,26	1,36	1,46	0,058	27	1,79	2,04	2,33	0,150	23	1,03	1,11	1,19	0,045	23	*D. moralesi*
COL-A	1,38	1,49	1,63	0,122	5	1,25	1,29	1,38	0,057	5	1,73	1,88	2,05		4	1,00	1,14	1,29		4	*D. moralesi*
VR2A	1,47	1,54	1,59		3	1,28	1,31	1,33		3	1,96	2,02	2,07		3	1,11	1,17	1,24		3	*D. moralesi*
OR5	1,40	1,50	1,59	0,071	5	1,22	1,27	1,35		3	1,72	1,85	2,00		3	1,10	1,16	1,24		3	*D. moralesi*
VR3	1,30	1,47	1,55	0,057	35	1,14	1,28	1,41	0,067	36	1,48	1,89	2,15	0,155	32	1,03	1,14	1,22	0,043	32	*D. moralesi*
VR1A	1,30	1,48	1,63	0,077	97	1,09	1,27	1,40	0,065	96	1,43	1,88	2,24	0,178	93	1,07	1,17	1,30	0,048	93	*D. moralesi*
VR4BB	1,27	1,45	1,62	0,073	83	1,17	1,27	1,43	0,054	82	1,49	1,85	2,30	0,157	78	1,05	1,14	1,23	0,041	78	*D. moralesi*
VR4B	1,37	1,47	1,64	0,086	7	1,21	1,29	1,43	0,068	7	1,72	1,91	2,35	0,212	7	1,08	1,14	1,17	0,030	7	*D. moralesi*
VR4A	1,36	1,46	1,63	0,060	65	1,19	1,28	1,41	0,048	65	1,63	1,87	2,26	0,130	61	1,03	1,14	1,23	0,041	61	*D. moralesi*
BU	1,18	1,37	1,46	0,065	19	1,11	1,19	1,33	0,056	17	1,31	1,62	1,89	0,130	17	1,03	1,15	1,25	0,059	17	*D. decipiens*
OR4A	1,30	1,37	1,47		3	1,19		1,19		2	1,55		1,75		2	1,09		1,24		2	*D. decipiens*
SR3	1,24	1,33	1,41	0,070	5	1,09	1,15	1,25	0,056	6	1,47	1,56	1,74		4	1,11	1,18	1,29		4	*D. decipiens*
ART1	1,19	1,33	1,43	0,060	39	1,02	1,15	1,22	0,049	39	1,21	1,52	1,73	0,123	38	1,08	1,16	1,24	0,042	38	*D. decipiens*
VL2A	1,08	1,18	1,26	0,050	11	1,02	1,09	1,22	0,058	9	1,10	1,29	1,54	0,117	9	1,03	1,09	1,13	0,031	9	*D. hispanicus*
OR3	1,16	1,25	1,33		3	1,06		1,25		2	1,33		1,66		2	1,06		1,18		2	*D. hispanicus*
SR5	1,21		1,26		2	1,14	1,17	1,19		4	1,38		1,45		2	1,06		1,10		2	*D. hispanicus*
SR2	1,08	1,20	1,29	0,064	10	0,99	1,06	1,11	0,040	10	1,12	1,27	1,43	0,087	10	1,04	1,14	1,28	0,073	10	*D. hispanicus*
SAM	1,17	1,21	1,25	0,029	9	1,00	1,09	1,14	0,042	9	1,17	1,32	1,43	0,072	9	1,05	1,11	1,17	0,037	9	*D. hispanicus*
OR2	1,17	1,24	1,33	0,050	9	1,03	1,10	1,17	0,052	7	1,21	1,37	1,56	0,120	7	1,11	1,14	1,18	0,030	7	*D. hispanicus*
OR1	1,16	1,19	1,22		3	1,03	1,04	1,05		3	1,19	1,24	1,28		3	1,13	1,14	1,16		3	*D. hispanicus*
SR1	1,04	1,20	1,31	0,070	18	0,92	1,06	1,15	0,058	19	0,96	1,28	1,51	0,137	18	1,05	1,13	1,19	0,037	18	*D. hispanicus*

Table 3.- Descriptive statistics for the upper second molars of the *D. hispanicus-D. lacombai* lineage. For abbreviations see table 2.
Tabla 3.- Estadísticos descriptivos del segundo molar superior en la línea D. hispanicus-D. lacombai. *Abreviaturas en Tabla 2.*

metalophulid (m1)

The two studied lineages show mainly anterior or transverse metalophulids, while absence of the ridge is rare. The double connection of the metaconid is absent in *D. hispanicus-D. lacombai* and rare in *D. franconicus-D. crusafonti*. There is no clear trend towards any of the character states, since predominance of the anterior and transverse types are observed in all the studied species, although the forward type generally is better represented in the earlier, and the transverse type in the younger representatives of both lineages.

M3	LENGTH					WIDTH					LxW					L/W					SPECIES
	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	
LUM9	1,44		1,44		2	1,44		1,50		2	2,07		2,16		2	0,96		1,00		2	*D. lacombai*
RG2	1,30	1,39	1,46	0,049	17	1,36	1,43	1,48	0,039	17	1,78	1,98	2,15	0,107	17	0,90	0,97	1,03	0,032	17	*D. lacombai*
LUM7		1,35			1		1,45			1		1,96			1		0,93			1	*D. lacombai*
VA7F		1,36			1		1,41			1		1,92			1		0,96			1	*D. lacombai*
VA7E	1,39	1,42	1,47		3	1,37	1,41	1,46		3	1,90	2,01	2,15		3	1,00	1,01	1,01		3	*D. lacombai*
VA7D		1,41			1		1,42			1		2,00			1		0,99			1	*D. lacombai*
LUM3		1,36			1		1,39			1		1,89			1		0,98			1	*D. lacombai*
VR11	1,20		1,27		2	1,26		1,33		2	1,60		1,60		2	0,90		1,01		2	*D. lacombai*
VA7C	1,30	1,35	1,40	0,045	6	1,32	1,38	1,44	0,048	6	1,74	1,86	1,99	0,121	6	0,96	0,98	1,00	0,018	6	*D. lacombai*
VA7B	1,25	1,27	1,29	0,020	3	1,22	1,33	1,43		3	1,55	1,69	1,84		3	0,90	0,96	1,04		3	*D. jordensi*
VA1A		1,33			1		1,26			1		1,68			1		1,06			1	*D. jordensi*
VA8B		1,25			1		1,25			1		1,56			1		1,00			1	*D. jordensi*
VR8B		1,24			1		1,33			1		1,65			1		0,93			1	*D. jordensi*
VR7	1,13	1,22	1,31	0,061	20	1,15	1,22	1,31	0,049	19	1,32	1,50	1,70	0,124	19	0,94	1,00	1,11	0,041	19	*D. jordensi*
VA3D	1,14	1,18	1,29	0,062	5	1,10	1,19	1,24	0,047	6	1,28	1,39	1,56	0,104	5	0,95	1,00	1,07	0,055	5	*D. jordensi*
VA3B	1,05	1,12	1,26	0,061	13	1,09	1,17	1,28	0,057	13	1,14	1,32	1,61	0,122	13	0,87	0,96	1,02	0,043	13	*D. jordensi*
VR5		1,20			1		1,21			1		1,45			1		0,99			1	*D. jordensi*
VL4B	1,02	1,06	1,09		4	1,06	1,14	1,19		4	1,08	1,21	1,29		4	0,89	0,93	0,97		4	*D. jordensi*
VL4A	0,99	1,11	1,27	0,071	25	1,03	1,13	1,21	0,052	25	1,05	1,25	1,50	0,123	25	0,88	0,99	1,09	0,055	25	*D. jordensi*
VA8A	1,07	1,15	1,23	0,047	12	1,11	1,18	1,28	0,049	13	1,23	1,36	1,54	0,095	12	0,90	0,97	1,04	0,039	12	*D. moralesi*
MUE		1,17			1		1,20			1		1,40			1		0,98			1	*D. moralesi*
MOR3	1,01	1,11	1,18	0,072	5	1,08	1,14	1,22	0,071	5	1,09	1,27	1,44	0,157	5	0,94	0,98	1,01	0,029	5	*D. moralesi*
FTE4	1,13	1,15	1,17		4	1,10	1,17	1,22	0,043	7	1,31	1,35	1,39		4	0,96	0,99	1,04		4	*D. moralesi*
COL-D	1,02	1,11	1,22	0,051	52	1,02	1,11	1,25	0,057	53	1,07	1,24	1,46	0,108	50	0,90	1,00	1,13	0,047	50	*D. moralesi*
COL-B	0,97	1,17	1,32	0,096	17	1,07	1,18	1,29	0,062	15	1,04	1,37	1,68	0,180	14	0,91	0,98	1,05	0,050	14	*D. moralesi*
FTE3	1,04	1,12	1,18	0,041	10	1,06	1,14	1,19	0,050	10	1,10	1,28	1,39	0,094	10	0,94	0,98	1,04	0,032	10	*D. moralesi*
FTE2	1,04	1,11	1,18	0,043	12	1,05	1,14	1,28	0,058	12	1,11	1,26	1,45	0,089	12	0,88	0,98	1,06	0,053	12	*D. moralesi*
OR9	0,97	1,10	1,29	0,082	25	0,97	1,11	1,30	0,080	27	0,96	1,23	1,65	0,175	25	0,91	0,98	1,07	0,045	25	*D. moralesi*
VR2B	0,99	1,11	1,18	0,052	16	1,01	1,13	1,19	0,047	15	1,00	1,26	1,39	0,098	15	0,92	0,99	1,04	0,031	15	*D. moralesi*
COL-A	1,09	1,15	1,20	0,038	8	1,07	1,10	1,12	0,019	8	1,19	1,26	1,33	0,049	8	0,97	1,04	1,10	0,037	8	*D. moralesi*
VR2A	1,13		1,14		2	1,08		1,11		2	1,22		1,27		2	1,03		1,05		2	*D. moralesi*
FTE1	1,01		1,03		2	1,06		1,12		2	1,07		1,15		2	0,92		0,95		2	*D. moralesi*
OR5	1,04	1,13	1,28	0,087	6	1,07	1,14	1,21	0,057	7	1,16	1,27	1,55	0,139	6	0,88	1,00	1,07	0,078	6	*D. moralesi*
VR3	0,98	1,07	1,16	0,045	27	1,00	1,09	1,23	0,056	26	1,01	1,16	1,39	0,100	26	0,91	0,98	1,06	0,039	26	*D. moralesi*
VR1A	0,92	1,06	1,24	0,070	95	0,98	1,08	1,28	0,059	95	0,93	1,15	1,46	0,126	95	0,88	0,98	1,13	0,050	95	*D. moralesi*
VR4BB	0,92	1,06	1,19	0,064	65	0,98	1,07	1,17	0,048	66	0,93	1,14	1,37	0,110	65	0,84	0,99	1,08	0,047	65	*D. moralesi*
VR4B	0,99	1,05	1,13	0,046	9	1,04	1,09	1,19	0,053	9	1,03	1,15	1,34	0,104	9	0,92	0,96	1,01	0,026	9	*D. moralesi*
VR4A	0,94	1,05	1,19	0,054	18	1,00	1,08	1,15	0,047	20	0,96	1,13	1,37	0,097	18	0,90	0,98	1,07	0,040	18	*D. moralesi*
BU	0,88	0,98	1,10	0,060	22	0,89	1,02	1,20	0,074	22	0,79	1,00	1,27	0,126	22	0,88	0,97	1,03	0,042	22	*D. decipiens*
OR4A	0,94	0,98	1,02	0,037	6	0,97	1,00	1,04	0,028	6	0,91	0,98	1,05	0,053	6	0,93	0,98	1,04	0,038	6	*D. decipiens*
SR3	0,97		0,97		2	0,92		0,94		2	0,89		0,91		2	1,03		1,05		2	*D. decipiens*
ART1	0,89	0,96	1,06	0,052	8	0,94	0,98	1,04	0,038	8	0,86	0,92	1,02	0,056	7	0,89	0,96	1,01	0,038	7	*D. decipiens*
VL2A	0,83	0,89	0,99	0,047	8	0,90	0,95	0,98	0,026	8	0,75	0,85	0,96	0,061	8	0,90	0,94	1,02	0,039	8	*D. hispanicus*
OR3	0,90		0,92		2	0,86		1,01		2	0,79		0,91		2	0,89		1,07		2	*D. hispanicus*
SR2	0,78	0,84	0,90	0,038	19	0,82	0,87	0,95	0,034	20	0,65	0,73	0,84	0,053	19	0,91	0,97	1,06	0,042	19	*D. hispanicus*
SAM	0,85	0,90	0,96	0,046	6	0,88	0,94	1,03	0,047	8	0,77	0,85	0,99	0,080	6	0,90	0,95	1,02	0,055	6	*D. hispanicus*
OR2	0,78		0,89		2	0,84		0,92		2	0,66		0,82		2	0,93		0,97		2	*D. hispanicus*
OR1	0,84		0,87		2	0,88		0,91		2	0,76		0,77		2	0,92		0,99		2	*D. hispanicus*
SR1	0,84	0,88	0,94	0,031	12	0,86	0,91	0,97	0,028	12	0,74	0,80	0,91	0,049	12	0,93	0,97	1,01	0,028	12	*D. hispanicus*
SR4A	0,93		0,95		2	0,97		1,05		2	0,92		0,98		2	0,89		0,98		2	*D. hispanicus*

Table 4.- Descriptive statistics for the upper third molars of the *D. hispanicus-D. lacombai* lineage. For abbreviations see table 2.
Tabla 4.- Estadísticos descriptivos del tercer molar superior en la línea D. hispanicus-D. lacombai. *Abreviaturas en Tabla 2.*

The metaconid ridge (m1 and m2)

In both lineages there is a trend towards the disappearance of the metaconid ridge. Nevertheless, its frequency is different in the two proposed lineages as well as in the two elements. The ridge is more abundant in the m1 than in the m2 in both lineages. It is in general better represented in the *D. franconicus-D. crusafonti* lineage than in the *D. hispanicus-D. lacombai* one. It is frequent in the m1 of *D. hispanicus* but rare in its m2, rare in the m1 and m2 of *D. moralesi*, almost absent in m1 and m2 of *D. jordensi* and absent in *D. lacombai*. It is predominant in the m1 of *D. franconicus* and *D. koenigswaldi* of the other lineage and frequent in their m2, rare in m1 and very rare in m2 of *D. larteti*, and absent in *D. crusafonti*.

Lingual anterolophid (m2)

The lingual anterolophid is, in general, more frequent in early assemblages of both lineages than in late ones. Since this character is only visible in unworn teeth, character states proportions may be affected by the age distribution of specimens in the sample and, therefore, not be representative of the actual proportions.

m1	LENGTH					WIDTH					LxW					L/W					SPECIES
	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	
RG2	2,11	2,22	2,35	0,085	9	1,32	1,43	1,51	0,060	11	2,86	3,16	3,38	0,166	9	1,43	1,57	1,66	0,098	9	*D. lacombai*
LUM8		2,41			1	1,51		1,52		2		3,66			1		1,59			1	*D. lacombai*
VA7F	2,03		2,12		2	1,32	1,38	1,50		3	2,68		2,80		2	1,54		1,61		2	*D. lacombai*
VA7E	2,08	2,27	2,33	0,085	8	1,30	1,39	1,48	0,060	12	2,70	3,16	3,45	0,223	8	1,54	1,64	1,75	0,084	8	*D. lacombai*
LUM4	2,11	2,19	2,25		4	1,30	1,38	1,45		4	2,87	3,01	3,22		3	1,53	1,63	1,73		3	*D. lacombai*
VA7D						1,30		1,37		2											*D. lacombai*
LUM3	2,09	2,14	2,17		4	1,27	1,31	1,34		4	2,72	2,79	2,91		4	1,60	1,63	1,69		4	*D. lacombai*
VA6A		1,95			1		1,27			1		2,48			1		1,54			1	*D. lacombai*
VA7C	2,10	2,17	2,27		4	1,31	1,39	1,57	0,083	7	2,84	2,98	3,18		4	1,56	1,58	1,62		4	*D. lacombai*
VA7B	2,09	2,18	2,26		3	1,30	1,34	1,40		3	2,72	2,94	3,16		3	1,61	1,63	1,65		3	*D. jordensi*
VA7A	2,08		2,15		2	1,31		1,31		2	2,72		2,82		2	1,59		1,64		2	*D. jordensi*
VA8B	1,93	1,95	1,98		4	1,32	1,34	1,37		4	2,56	2,62	2,69		4	1,43	1,46	1,50		4	*D. jordensi*
VA8C	1,97		2,02		2	1,33		1,34		2	2,64		2,69		2	1,47		1,52		2	*D. jordensi*
VR8B	1,87	1,98	2,08	0,084	6	1,23	1,29	1,39	0,053	8	2,36	2,52	2,73	0,172	6	1,48	1,55	1,59	0,036	6	*D. jordensi*
CS2B						1,23	1,23	1,23		1											*D. jordensi*
CS1A	1,97		2,03		2	1,22		1,25		2	2,40		2,54		2	1,61		1,62		2	*D. jordensi*
VR7	1,85	1,98	2,22	0,093	26	1,11	1,25	1,35	0,064	30	2,05	2,46	2,95	0,220	26	1,43	1,59	1,73	0,074	26	*D. jordensi*
VA3D	1,80	1,97	2,04	0,090	6	1,16	1,24	1,30	0,044	7	2,09	2,43	2,65	0,189	6	1,53	1,59	1,65	0,047	6	*D. jordensi*
VA3B	1,76	1,91	2,04	0,083	8	1,14	1,22	1,30	0,051	9	2,04	2,33	2,65	0,179	8	1,44	1,57	1,67	0,066	8	*D. jordensi*
VR6	1,70	1,73	1,80		4	1,13	1,18	1,21		4	1,92	2,04	2,12		4	1,41	1,47	1,53		4	*D. jordensi*
VR5	2,03		2,07		2	1,21		1,38		2	2,50		2,80		2	1,47		1,71		2	*D. jordensi*
VL4B	1,74	1,87	2,02	0,093	10	1,12	1,18	1,25	0,045	10	1,95	2,22	2,44	0,174	10	1,49	1,58	1,70	0,062	10	*D. jordensi*
VL4A	1,67	1,83	1,99	0,074	37	1,04	1,15	1,30	0,053	40	1,77	2,09	2,30	0,149	35	1,44	1,59	1,67	0,050	35	*D. jordensi*
VA8A	1,63	1,77	1,85	0,059	23	1,07	1,18	1,27	0,044	26	1,84	2,09	2,35	0,134	22	1,39	1,50	1,62	0,055	22	*D. moralesi*
MOR3	1,69	1,80	2,04	0,098	11	1,09	1,18	1,28	0,063	12	1,84	2,13	2,57	0,214	11	1,41	1,53	1,62	0,071	11	*D. moralesi*
MOR2	1,64	1,83	1,99	0,084	25	1,04	1,20	1,33	0,055	26	1,71	2,21	2,59	0,184	25	1,44	1,52	1,63	0,056	25	*D. moralesi*
FTE4	1,69	1,74	1,84	0,058	5	1,17	1,24	1,33	0,064	5	2,01	2,16	2,45		4	1,35	1,41	1,48		4	*D. moralesi*
COL-D	1,55	1,72	1,97	0,091	35	1,06	1,17	1,40	0,070	70	1,64	1,98	2,48	0,192	33	1,37	1,49	1,67	0,056	33	*D. moralesi*
COL-C	1,58	1,74	1,93	0,074	82	1,02	1,16	1,31	0,054	103	1,63	2,02	2,30	0,153	81	1,37	1,50	1,71	0,066	81	*D. moralesi*
COL-B	1,58	1,78	2,00	0,109	21	1,02	1,21	1,35	0,081	21	1,61	2,16	2,70	0,277	19	1,34	1,47	1,55	0,054	19	*D. moralesi*
FTE3	1,69	1,76	1,90	0,066	18	1,13	1,21	1,32	0,053	21	1,94	2,13	2,51	0,176	17	1,40	1,46	1,58	0,055	17	*D. moralesi*
FTE2	1,58	1,74	1,91	0,083	19	1,10	1,19	1,35	0,071	22	1,75	2,07	2,48	0,207	17	1,39	1,45	1,56	0,043	17	*D. moralesi*
OR9	1,57	1,72	1,85	0,070	23	1,08	1,19	1,29	0,054	25	1,70	2,04	2,39	0,160	23	1,36	1,46	1,57	0,053	23	*D. moralesi*
VR2B	1,61	1,76	1,84	0,065	18	1,11	1,22	1,30	0,048	23	1,92	2,15	2,39	0,131	17	1,33	1,45	1,60	0,064	17	*D. moralesi*
COL-A	1,59	1,68	1,81	0,082	5	1,15	1,20	1,25	0,036	8	1,91	2,01	2,14	0,083	5	1,27	1,41	1,53	0,098	5	*D. moralesi*
VR2A		1,74			1		1,18			1		2,05			1		1,47			1	*D. moralesi*
OR8	1,57	1,66	1,72		3	1,09	1,18	1,25		3	1,71	1,95	2,15		3	1,38	1,41	1,44		3	*D. moralesi*
OR5	1,57	1,72	1,80	0,094	5	1,00	1,14	1,23	0,080	8	1,79	2,00	2,20	0,171	5	1,38	1,48	1,54	0,068	5	*D. moralesi*
VR3	1,54	1,68	1,84	0,075	31	1,01	1,16	1,26	0,056	40	1,71	1,96	2,31	0,161	29	1,31	1,44	1,57	0,062	29	*D. moralesi*
VR1A	1,51	1,66	1,82	0,068	90	1,00	1,15	1,28	0,058	97	1,55	1,91	2,27	0,151	88	1,29	1,45	1,63	0,068	88	*D. moralesi*
VR4BB	1,49	1,66	1,85	0,079	70	1,02	1,15	1,28	0,058	72	1,55	1,91	2,30	0,172	67	1,29	1,45	1,58	0,058	67	*D. moralesi*
VR4B	1,46	1,56	1,66		4	1,06	1,13	1,20		4	1,60	1,76	1,98		3	1,39	1,43	1,47		3	*D. moralesi*
VR4A	1,49	1,66	1,90	0,079	56	1,03	1,15	1,27	0,057	64	1,53	1,91	2,36	0,159	54	1,24	1,45	1,60	0,070	54	*D. moralesi*
BU	1,38	1,50	1,60	0,062	19	0,96	1,06	1,15	0,050	19	1,37	1,59	1,82	0,126	19	1,33	1,41	1,52	0,056	19	*D. decipiens*
OR4A	1,43	1,55	1,67	0,091	7	1,03	1,08	1,11	0,031	7	1,47	1,67	1,85	0,123	7	1,31	1,45	1,52	0,081	7	*D. decipiens*
SR3	1,38	1,46	1,53	0,055	5	0,92	1,00	1,06	0,047	7	1,42	1,49	1,62	0,079	5	1,34	1,43	1,53	0,068	5	*D. decipiens*
ART1	1,40	1,52	1,64	0,068	30	0,96	1,04	1,10	0,036	29	1,34	1,57	1,78	0,114	28	1,38	1,46	1,61	0,055	28	*D. decipiens*
VL2A	1,27	1,38	1,47	0,068	9	0,81	0,98	1,05	0,077	9	1,03	1,36	1,49	0,156	9	1,27	1,41	1,57	0,085	9	*D. hispanicus*
OR3	1,28		1,29		2		0,95			1		1,22			1		1,35			1	*D. hispanicus*
SR5	1,35	1,46	1,56	0,069	6	0,93	1,01	1,12	0,068	7	1,26	1,50	1,68	0,155	6	1,31	1,43	1,54	0,074	6	*D. hispanicus*
SR2	1,28	1,37	1,46	0,052	19	0,93	0,99	1,07	0,033	23	1,26	1,35	1,51	0,082	19	1,29	1,39	1,46	0,049	19	*D. hispanicus*
SAM	1,35	1,44	1,52	0,053	14	0,97	1,03	1,09	0,035	14	1,36	1,48	1,61	0,081	13	1,30	1,41	1,49	0,063	13	*D. hispanicus*
OR2	1,32	1,41	1,54	0,091	6	0,92	0,99	1,07	0,055	5	1,21	1,42	1,65	0,163	5	1,37	1,43	1,48	0,039	5	*D. hispanicus*
OR1	1,33	1,35	1,36		3	0,90	0,96	1,00		3	1,22	1,30	1,35		3	1,33	1,40	1,51		3	*D. hispanicus*
SR1	1,32	1,42	1,52	0,071	14	0,93	1,02	1,07	0,042	16	1,26	1,47	1,61	0,105	13	1,29	1,39	1,46	0,053	13	*D. hispanicus*

Table 5.- Descriptive statistics for the lower first molars of the *D. hispanicus-D. lacombai* lineage. For abbreviations see table 2.
Tabla 5.- Estadísticos descriptivos del primer molar inferior en la línea D. hispanicus-D. lacombai. *Abreviaturas en Tabla 2.*

Mesolophid (m1 and m2)

Both elements, in both lineages show the same trend toward shorter mesolophs (fig.8). In both lineages, contrary to the situation in the upper molars, the reduction of the mesolophids is, in general, slightly more advanced in m2 than in m1.

The ranges of mesolophs length in the m1 and m2 of the *D. hispanicus-D. lacombai* lineage are similar to those of the *D. franconicus-D. crusafonti* lineage.

Compared to the upper molars the mesolophids are always more reduced than the mesolophs.

m2	LENGTH					WIDTH					LxW					L/W					SPECIES
	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	
LUM9							1,60			1											*D. lacombai*
RG2	1,90	1,97	2,01	0,042	10	1,54	1,62	1,70	0,050	10	3,00	3,19	3,42	0,151	10	1,18	1,21	1,27	0,029	10	*D. lacombai*
LUM8	1,95	2,02	2,12	0,071	5	1,52	1,60	1,69	0,056	6	3,04	3,29	3,58		4	1,22	1,27	1,32		4	*D. lacombai*
LUM7	1,82		1,85		2	1,49		1,52		2	2,71		2,81		2	1,22		1,22		2	*D. lacombai*
VA7G	1,88		1,89		2	1,51		1,55		2	2,85		2,91		2	1,21		1,25		2	*D. lacombai*
VA7F		1,80			1																*D. lacombai*
VA7E	1,84	1,88	1,92	0,026	6	1,49	1,52	1,60	0,035	11	2,74	2,82	2,94	0,066	6	1,23	1,25	1,26	0,008	6	*D. lacombai*
LUM4							1,53			1											*D. lacombai*
VR11							1,44			1											*D. lacombai*
VA7C		1,87			1	1,50		1,52		2		2,81			1		1,25			1	*D. lacombai*
VA7B	1,85	1,90	1,97		3	1,50	1,54	1,58		3	2,78	2,91	3,01		3	1,18	1,23	1,29		3	*D. jordensi*
VA7A							1,45			1											*D. jordensi*
VA8B	1,69	1,71	1,74		4	1,35	1,41	1,44		4	2,31	2,40	2,51		4	1,19	1,22	1,27		4	*D. jordensi*
VA8C	1,70	1,72	1,75		4	1,37	1,40	1,44		3	2,33	2,41	2,52		3	1,21	1,22	1,24		3	*D. jordensi*
VR8C							1,46			1											*D. jordensi*
VR8B	1,73	1,78	1,88	0,059	5	1,34	1,46	1,51	0,063	6	2,36	2,61	2,84	0,175	5	1,16	1,22	1,31	0,063	5	*D. jordensi*
CS1A		1,69			1		1,37			1		2,32			1		1,23			1	*D. jordensi*
VR7	1,59	1,67	1,83	0,051	28	1,24	1,37	1,49	0,055	32	2,06	2,28	2,65	0,136	27	1,11	1,22	1,34	0,049	27	*D. jordensi*
VA3D	1,40	1,64	1,84	0,147	6	1,16	1,34	1,47	0,125	6	1,62	2,21	2,70	0,383	6	1,15	1,23	1,31	0,053	6	*D. jordensi*
VA3B	1,51	1,61	1,72	0,045	25	1,20	1,33	1,44	0,055	26	1,85	2,15	2,42	0,130	25	1,15	1,22	1,33	0,046	25	*D. jordensi*
VR6	1,60	1,67	1,73		3	1,37	1,39	1,42		3	2,19	2,32	2,39		3	1,17	1,20	1,25		3	*D. jordensi*
VR5	1,66	1,67	1,68		3	1,27	1,34	1,46	0,068	7	2,11		2,14		2	1,29		1,31		2	*D. jordensi*
VL4B	1,42	1,57	1,68	0,074	9	1,24	1,30	1,37	0,047	9	1,93	2,05	2,26	0,128	9	1,04	1,21	1,27	0,067	9	*D. jordensi*
VL4A	1,39	1,56	1,66	0,066	38	1,12	1,26	1,42	0,066	39	1,62	1,97	2,34	0,169	37	1,16	1,24	1,33	0,052	37	*D. jordensi*
VA8A	1,46	1,56	1,63	0,054	15	1,14	1,29	1,44	0,069	20	1,77	1,97	2,21	0,136	14	1,13	1,22	1,36	0,056	14	*D. moralesi*
MUE		1,57			1		1,31			1		2,06			1		1,20			1	*D. moralesi*
MOR3	1,50	1,56	1,61	0,040	12	1,18	1,25	1,30	0,036	12	1,81	1,95	2,09	0,095	10	1,22	1,24	1,29	0,023	10	*D. moralesi*
MOR2	1,42	1,61	1,68	0,055	22	1,26	1,32	1,43	0,048	22	1,82	2,13	2,34	0,130	21	1,11	1,22	1,29	0,045	21	*D. moralesi*
FTE4	1,46	1,51	1,60	0,054	6	1,14	1,23	1,32	0,084	5	1,68	1,79	2,02		3	1,27	1,28	1,29		3	*D. moralesi*
COL-D	1,46	1,52	1,65	0,048	30	1,13	1,25	1,40	0,058	55	1,68	1,89	2,29	0,148	27	1,13	1,22	1,29	0,042	27	*D. moralesi*
COL-C	1,37	1,55	1,70	0,065	120	1,12	1,27	1,44	0,057	138	1,60	1,97	2,43	0,158	110	1,11	1,22	1,34	0,044	110	*D. moralesi*
COL-B	1,47	1,58	1,71	0,073	20	1,11	1,29	1,44	0,087	24	1,64	2,05	2,35	0,215	19	1,11	1,23	1,33	0,052	19	*D. moralesi*
FTE3	1,46	1,57	1,68	0,065	10	1,21	1,30	1,36	0,048	13	1,77	2,03	2,28	0,154	10	1,15	1,21	1,26	0,035	10	*D. moralesi*
FTE2	1,42	1,56	1,66	0,056	18	1,14	1,26	1,37	0,057	21	1,62	1,97	2,26	0,147	16	1,12	1,24	1,31	0,048	16	*D. moralesi*
OR9	1,50	1,57	1,64	0,042	12	1,24	1,30	1,38	0,046	14	1,91	2,04	2,16	0,068	12	1,09	1,20	1,27	0,062	12	*D. moralesi*
VR2B	1,44	1,55	1,66	0,064	24	1,17	1,28	1,38	0,064	32	1,71	1,99	2,29	0,166	24	1,12	1,21	1,28	0,045	24	*D. moralesi*
COL-A	1,50	1,53	1,57		3	1,15	1,24	1,33	0,082	5	1,73	1,82	1,90		3	1,27	1,29	1,30		3	*D. moralesi*
VR2A	1,53	1,55	1,57		4	1,25	1,28	1,30	0,018	5	1,91	1,97	2,01		4	1,22	1,22	1,23		4	*D. moralesi*
OR8		1,59			1		1,25			1		1,99			1		1,27			1	*D. moralesi*
FTE1	1,48		1,49		2	1,22		1,26		2	1,82		1,86		2	1,17		1,22		2	*D. moralesi*
OR5	1,50		1,54		2	1,28	1,35	1,43		3	1,97		2,00		2	1,13		1,20		2	*D. moralesi*
VR3	1,36	1,50	1,66	0,071	26	1,12	1,22	1,36	0,052	38	1,56	1,84	2,12	0,148	25	1,13	1,23	1,32	0,055	25	*D. moralesi*
VR1A	1,34	1,50	1,69	0,069	103	1,05	1,22	1,47	0,066	100	1,43	1,82	2,43	0,170	100	1,08	1,23	1,33	0,048	100	*D. moralesi*
VR4BB	1,35	1,49	1,65	0,064	83	1,08	1,23	1,39	0,061	91	1,47	1,84	2,29	0,163	81	1,12	1,22	1,33	0,040	81	*D. moralesi*
VR4B	1,45	1,50	1,55	0,045	7	1,09	1,20	1,27	0,055	9	1,71	1,82	1,97	0,117	6	1,21	1,24	1,30	0,032	6	*D. moralesi*
VR4A	1,39	1,49	1,61	0,054	60	1,12	1,23	1,38	0,056	66	1,59	1,83	2,19	0,139	59	1,13	1,22	1,31	0,044	59	*D. moralesi*
BU	1,15	1,38	1,51	0,076	33	1,03	1,16	1,30	0,067	36	1,22	1,61	1,94	0,162	33	1,08	1,18	1,33	0,056	33	*D. decipiens*
OR4A	1,26	1,37	1,44	0,059	8	1,06	1,13	1,18	0,045	7	1,45	1,57	1,66	0,086	7	1,14	1,23	1,29	0,053	7	*D. decipiens*
SR3	1,25	1,35	1,42	0,046	12	1,02	1,13	1,19	0,052	12	1,33	1,53	1,66	0,102	12	1,12	1,20	1,30	0,055	12	*D. decipiens*
ART1	1,28	1,37	1,46	0,048	20	1,08	1,12	1,18	0,031	19	1,40	1,53	1,68	0,087	17	1,17	1,22	1,27	0,032	17	*D. decipiens*
VL2A	1,16	1,22	1,27		4	0,92	1,04	1,09		4	1,07	1,26	1,38		4	1,07	1,18	1,26		4	*D. hispanicus*
OR3	1,17	1,23	1,28		4	0,96	1,02	1,08		4	1,12	1,26	1,38		4	1,19	1,21	1,22		4	*D. hispanicus*
SR5	1,22	1,26	1,29	0,030	5	1,00	1,08	1,15	0,053	8	1,27	1,35	1,40	0,051	5	1,06	1,19	1,27	0,081	5	*D. hispanicus*
SR2	1,05	1,19	1,30	0,059	22	0,94	1,01	1,07	0,035	22	1,03	1,21	1,37	0,086	22	1,05	1,18	1,27	0,054	22	*D. hispanicus*
SAM	1,18	1,24	1,32	0,036	11	1,00	1,07	1,15	0,039	12	1,18	1,32	1,43	0,069	11	1,07	1,16	1,22	0,049	11	*D. hispanicus*
OR2	1,14	1,22	1,27		4	1,03		1,06		2	1,28		1,35		2	1,20		1,20		2	*D. hispanicus*
OR1	1,10	1,16	1,18		4	1,03	1,04	1,05		4	1,13	1,20	1,24		4	1,07	1,11	1,13		4	*D. hispanicus*
SR1	1,14	1,24	1,33	0,051	14	0,99	1,06	1,11	0,032	14	1,17	1,31	1,41	0,073	14	1,09	1,17	1,30	0,054	14	*D. hispanicus*
SR4A	1,28		1,34		2	1,10	1,13	1,15		3	1,45		1,54		2	1,13		1,17		2	*D. hispanicus*

Table 6.- Descriptive statistics for the lower second molars of the *D. hispanicus-D. lacombai* lineage. For abbreviations see table 2.
Tabla 6.- Estadísticos descriptivos del segundo molar inferior en la línea D. hispanicus-D. lacombai. *Abreviaturas en Tabla 2.*

m3	LENGTH					WIDTH					LxW					L/W					SPECIES
	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	
LUM9		1,75			1		1,44			1		2,52			1		1,22			1	*D. lacombai*
RG2	1,70	1,78	1,89	0,056	10	1,39	1,45	1,53	0,053	10	2,45	2,59	2,81	0,131	10	1,11	1,23	1,30	0,056	10	*D. lacombai*
VA7G		1,63			1		1,39			1		2,27			1		1,17			1	*D. lacombai*
VA7F		1,69			1		1,48			1		2,50			1		1,14			1	*D. lacombai*
LUM4		1,67			1		1,32			1		2,20			1		1,27			1	*D. lacombai*
VA7D	1,63	1,69	1,74		4	1,35	1,46	1,54		4	2,27	2,47	2,66		4	1,11	1,16	1,24		4	*D. lacombai*
LUM3		1,55			1		1,31			1		2,03			1		1,18			1	*D. lacombai*
VR11		1,44			1	1,25		1,26		2		1,80			1		1,15			1	*D. lacombai*
LUM1		1,35			1		1,40			1		1,89			1		0,96			1	*D. lacombai*
VA7C	1,48	1,51	1,54		4	1,23	1,26	1,29		4	1,82	1,90	1,95		4	1,16	1,19	1,24		4	*D. lacombai*
VA7B	1,48		1,61		2	1,21		1,37		2	1,79		2,21		2	1,18		1,22		2	*D. jordensi*
VA7A		1,38			1		1,31			1		1,81			1		1,05			1	*D. jordensi*
VA8B		1,55			1		1,23			1		1,91			1		1,26			1	*D. jordensi*
VA8C	1,37		1,47		2	1,26		1,27		2	1,73		1,87		2	1,09	1,12	1,16	0,050	2	*D. jordensi*
CS1A		1,50			1		1,23			1		1,85			1		1,22			1	*D. jordensi*
VR7	1,38	1,45	1,60	0,055	19	1,13	1,19	1,34	0,054	20	1,58	1,72	2,14	0,127	19	1,13	1,21	1,32	0,054	19	*D. jordensi*
VA3D	1,31	1,43	1,63	0,114	9	1,03	1,16	1,29	0,097	9	1,38	1,67	2,10	0,266	9	1,17	1,23	1,36	0,056	9	*D. jordensi*
VA3B	1,30	1,41	1,47	0,059	10	1,05	1,15	1,30	0,062	12	1,37	1,63	1,87	0,150	10	1,11	1,22	1,29	0,047	10	*D. jordensi*
VR6		1,39			1		1,15			1		1,60			1		1,21			1	*D. jordensi*
VR5	1,35	1,43	1,50	0,054	6	1,13	1,20	1,25	0,055	6	1,62	1,72	1,88	0,114	6	1,12	1,19	1,27	0,064	6	*D. jordensi*
VL4B	1,33	1,37	1,47	0,057	6	1,04	1,11	1,18	0,055	6	1,38	1,53	1,73	0,131	6	1,17	1,23	1,28	0,041	6	*D. jordensi*
VL4A	1,21	1,36	1,53	0,081	22	1,01	1,11	1,25	0,060	21	1,26	1,51	1,84	0,160	21	1,11	1,22	1,32	0,056	21	*D. jordensi*
VA8A	1,30	1,42	1,57	0,083	14	1,03	1,13	1,22	0,053	16	1,40	1,60	1,78	0,144	13	1,18	1,25	1,35	0,048	13	*D. moralesi*
MOR3	1,29	1,39	1,48	0,078	9	1,03	1,12	1,16	0,042	9	1,34	1,57	1,70	0,118	9	1,11	1,24	1,35	0,069	9	*D. moralesi*
FTE4	1,32		1,39		2	1,07		1,15		2	1,41		1,60		2	1,21		1,23		2	*D. moralesi*
COL-D	1,22	1,35	1,48	0,059	41	0,99	1,08	1,23	0,057	44	1,21	1,45	1,64	0,115	38	1,13	1,25	1,36	0,054	38	*D. moralesi*
COL-B	1,26	1,38	1,50	0,059	20	1,03	1,12	1,19	0,046	21	1,30	1,54	1,74	0,112	18	1,15	1,23	1,35	0,053	18	*D. moralesi*
FTE3	1,26	1,37	1,51	0,071	16	1,05	1,12	1,23	0,049	18	1,36	1,53	1,78	0,128	16	1,08	1,23	1,33	0,062	16	*D. moralesi*
FTE2	1,36	1,42	1,47	0,040	7	1,10	1,15	1,20	0,037	6	1,57	1,64	1,75	0,067	6	1,16	1,23	1,30	0,056	6	*D. moralesi*
OR9	1,25	1,34	1,52	0,074	15	0,99	1,10	1,22	0,072	14	1,25	1,48	1,85	0,165	14	1,08	1,22	1,34	0,062	14	*D. moralesi*
VR2B	1,20	1,35	1,49	0,072	22	0,98	1,11	1,23	0,057	22	1,18	1,50	1,80	0,154	21	1,17	1,22	1,28	0,028	21	*D. moralesi*
COL-A	1,27	1,35	1,45	0,045	11	1,03	1,10	1,27	0,069	12	1,31	1,46	1,68	0,093	11	1,15	1,25	1,32	0,049	11	*D. moralesi*
VR2A	1,32	1,37	1,42	0,038	5	1,08	1,14	1,20		3	1,49	1,57	1,62		3	1,13	1,21	1,28		3	*D. moralesi*
OR8	1,28	1,36	1,43		4	1,05	1,11	1,18		4	1,40	1,51	1,69		4	1,15	1,22	1,27		4	*D. moralesi*
OR5	1,29	1,34	1,43		4	1,10	1,13	1,19	0,045	6	1,42	1,54	1,70		4	1,09	1,17	1,23		4	*D. moralesi*
VR3	1,17	1,29	1,42	0,066	30	0,93	1,05	1,17	0,058	34	1,12	1,36	1,60	0,124	30	1,09	1,22	1,34	0,060	30	*D. moralesi*
VR1A	1,12	1,31	1,45	0,072	90	0,90	1,06	1,23	0,056	91	1,13	1,39	1,71	0,129	88	1,05	1,24	1,39	0,065	88	*D. moralesi*
VR4BB	1,07	1,29	1,50	0,081	64	0,89	1,03	1,16	0,063	66	1,01	1,34	1,68	0,152	64	1,08	1,25	1,39	0,062	64	*D. moralesi*
VR4B	1,22	1,28	1,40	0,065	8	1,00	1,05	1,08	0,024	9	1,24	1,34	1,48	0,074	8	1,14	1,22	1,32	0,070	8	*D. moralesi*
VR4A	1,11	1,29	1,45	0,076	70	0,86	1,05	1,17	0,062	76	0,95	1,36	1,70	0,148	68	1,08	1,23	1,39	0,058	68	*D. moralesi*
BU	1,07	1,20	1,34	0,071	27	0,90	1,01	1,24	0,084	26	1,01	1,21	1,61	1,640	26	1,05	1,19	1,34	0,063	26	*D. decipiens*
OR4A	1,13	1,19	1,27	0,066	5	0,91	0,98	1,02	0,042	5	1,05	1,17	1,29	0,105	5	1,16	1,22	1,27	0,050	5	*D. decipiens*
SR3	1,16	1,21	1,25	0,041	6	0,91	0,96	1,04	0,050	7	1,07	1,16	1,29	0,097	6	1,19	1,26	1,35	0,054	6	*D. decipiens*
ART1	1,11	1,17	1,23	0,039	9	0,93	0,99	1,05	0,042	9	1,06	1,16	1,26	0,065	9	1,10	1,18	1,26	0,059	9	*D. decipiens*
VL2A		1,05			1		0,98			1		1,03			1		1,07			1	*D. hispanicus*
OR3	1,16		1,19		2	0,95		0,97		2	1,13		1,13		2	1,20		1,25		2	*D. hispanicus*
SR5	1,05	1,14	1,23		3	0,97	1,00	1,03		3	1,02	1,14	1,27		3	1,08	1,14	1,19		3	*D. hispanicus*
SR2	0,96	1,04	1,12	0,046	14	0,83	0,87	0,93	0,033	15	0,80	0,91	1,01	0,061	14	1,11	1,20	1,28	0,051	14	*D. hispanicus*
SAM	1,08	1,10	1,14	0,025	5	0,88	0,93	0,99	0,040	5	0,96	1,02	1,13	0,065	5	1,15	1,19	1,24	0,034	5	*D. hispanicus*
OR2	0,98	1,02	1,05		3	0,87	0,89	0,91		3	0,85	0,91	0,96		3	1,13	1,14	1,15		3	*D. hispanicus*
OR1	0,98	1,02	1,05	0,029	5	0,80	0,86	0,93	0,052	5	0,82	0,88	0,95	0,053	5	1,10	1,19	1,28	0,087	5	*D. hispanicus*
SR1	0,92	1,05	1,18	0,060	20	0,79	0,89	0,98	0,059	20	0,73	0,94	1,12	0,098	20	1,03	1,19	1,33	0,072	20	*D. hispanicus*
SR4A		1,16			1		0,97			1		1,13			1		1,20			1	*D. hispanicus*

Table 7.- Descriptive statistics for the lower third molars of the *D. hispanicus-D. lacombai* lineage. For abbreviations see table 2.
Tabla 7.- Estadísticos descriptivos del tercer molar inferior en la línea D. hispanicus-D. lacombai. *Abreviaturas en Tabla 2.*

Following pages:
Tables 8-13.- Descriptive statistics for the molars of the D. franconicus-D. crusafonti lineage. For abbreviations see table 2.
Tablas 8-13.- Estadísticos descriptivos de los molares en la línea D. franconicus-D. crusafonti. *Abreviaturas en la Tabla 2.*

M1	LENGTH					WIDTH					LxW					L/W					SPECIES
	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	
CAR1	2,98		2,98		2	1,54	1,70	1,79		3	5,27		5,33		2	1,66		1,68		2	*D. crusafonti*
MOL	2,55	2,73	2,85	0,081	16	1,50	1,67	1,80	0,075	15	4,08	4,56	4,95	0,280	15	1,53	1,64	1,83	0,079	15	*D. crusafonti*
MOL(M)	2,58	2,75	2,91	0,106	11	1,61	1,68	1,78	0,055	12	4,15	4,64	5,18	0,322	10	1,57	1,63	1,71	0,045	10	*D. crusafonti*
NOM1		2,73			1		1,65			1		4,50			1		1,65			1	*D. crusafonti*
NOM2	2,53	2,73	2,89	0,108	19	1,58	1,70	1,88	0,074	23	4,12	4,68	5,41	0,368	19	1,53	1,60	1,66	0,037	19	*D. crusafonti*
ESC		2,65			1		1,66			1		4,40			1		1,60			1	*D. crusafonti*
ESC(M)	2,55	2,82	2,94		4	1,66	1,74	1,86	0,084	5	4,26	4,98	5,34		4	1,53	1,59	1,67		4	*D. crusafonti*
SOL	2,45	2,69	2,92	0,133	11	1,59	1,69	1,78	0,062	15	3,90	4,55	5,02	0,374	11	1,51	1,59	1,70	0,051	11	*D. crusafonti*
PJE1							1,64			1											*D. crusafonti*
TOR3B	2,23	2,54	2,79	0,182	11	1,55	1,62	1,82	0,078	12	3,46	4,13	5,08	0,470	11	1,44	1,57	1,70	0,081	11	*D. larteti*
TOR3A	2,34	2,47	2,65	0,114	5	1,50	1,60	1,66	0,062	8	3,65	3,96	4,40	0,292	5	1,48	1,55	1,63	0,061	5	*D. larteti*
TOR2	2,39	2,58	2,73	0,091	9	1,50	1,66	1,72	0,066	9	3,59	4,28	4,70	0,325	8	1,52	1,56	1,60	0,032	8	*D. larteti*
TOR1	2,29	2,48	2,70	0,106	13	1,40	1,58	1,64	0,065	14	3,21	3,93	4,35	0,305	13	1,51	1,57	1,68	0,047	13	*D. larteti*
AC2						1,59		1,65		2											*D. larteti*
VL9		2,54			1																*D. larteti*
BOR	2,33	2,47	2,63	0,073	31	1,28	1,54	1,64	0,061	35	3,01	3,82	4,21	0,229	30	1,48	1,60	1,84	0,064	30	*D. larteti*
MAN	2,25	2,43	2,67	0,087	98	1,46	1,57	1,69	0,053	98	3,32	3,81	4,49	0,230	98	1,41	1,55	1,67	0,054	98	*D. larteti*
VT1B		1,95			1		1,34			1		2,61			1		1,46			1	*D. larteti*
VT1A	2,30		2,36		2	1,48		1,49		2	3,40		3,52		2	1,55		1,58		2	*D. larteti*
LP5C	2,31		2,33		2	1,57		1,61		2	3,63		3,75		2	1,45		1,47		2	*D. larteti*
LP5B	1,89	2,10	2,22		3	1,17	1,36	1,49		3	2,21	2,86	3,25		3	1,46	1,55	1,62		3	*D. larteti*
VT2C	2,24	2,37	2,54	0,104	9	1,47	1,55	1,70	0,071	10	3,31	3,64	4,06	0,251	9	1,46	1,55	1,64	0,054	9	*D. larteti*
LUM21		2,28			1	1,47		1,54		2		3,35			1		1,55			1	*D. larteti*
LUM22		2,23			1		1,46			1		3,26			1		1,53			1	*D. larteti*
LUM20	2,28		2,40		2	1,51		1,55		2	3,53		3,62		2	1,47		1,59		2	*D. larteti*
LP4B	2,08	2,35	2,56	0,115	16	1,37	1,52	1,58	0,053	19	2,85	3,59	4,04	0,273	16	1,46	1,54	1,63	0,057	16	*D. larteti*
LP4A	2,29	2,42	2,52	0,078	13	1,47	1,60	1,73	0,073	15	3,37	3,85	4,36	0,281	13	1,45	1,52	1,62	0,052	13	*D. larteti*
LUM14	2,14	2,37	2,56	0,085	36	1,41	1,53	1,72	0,056	50	3,19	3,65	4,40	0,226	36	1,39	1,54	1,69	0,062	36	*D. larteti*
LUM18	2,29	2,36	2,44	0,062	5	1,49	1,55	1,61	0,030	13	3,53	3,67	3,88	0,148	5	1,49	1,52	1,54	0,022	5	*D. larteti*
LUM17	2,40	2,44	2,46		4	1,56	1,59	1,62	0,023	7	3,84	3,88	3,96		4	1,50	1,53	1,58		4	*D. larteti*
LUM16	2,27	2,32	2,39	0,052	7	1,46	1,54	1,65	0,061	12	3,34	3,50	3,76	0,171	7	1,43	1,53	1,60	0,053	7	*D. larteti*
LUM12	2,28	2,38	2,49		4	1,47	1,55	1,65	0,077	8	3,35	3,63	3,96		4	1,53	1,57	1,64		4	*D. larteti*
LUM11	2,01	2,31	2,48	0,128	24	1,41	1,55	1,67	0,056	29	2,83	3,60	4,11	0,308	23	1,39	1,49	1,61	0,056	23	*D. larteti*
LUM10						1,51		1,53		2											*D. larteti*
LUM9	2,26	2,33	2,41	0,057	5	1,48	1,55	1,58	0,038	7	3,40	3,59	3,76	0,137	5	1,43	1,52	1,55	0,052	5	*D. larteti*
RG2	2,11	2,32	2,52	0,098	64	1,31	1,50	1,63	0,058	75	2,92	3,48	4,11	0,255	64	1,45	1,55	1,66	0,046	64	*D. larteti*
LUM8	2,17	2,33	2,51	0,090	30	1,42	1,54	1,67	0,058	39	3,18	3,59	4,19	0,257	30	1,45	1,51	1,64	0,046	30	*D. larteti*
LUM7	2,21	2,31	2,45		3	1,41	1,52	1,62		3	3,12	3,51	3,97		3	1,49	1,52	1,57		3	*D. larteti*
VA7G	2,11	2,24	2,48	0,098	20	1,42	1,50	1,58	0,049	25	3,02	3,36	3,92	0,254	20	1,43	1,50	1,58	0,040	20	*D. koenigswaldi*
VA7F	2,11	2,27	2,38	0,066	22	1,45	1,52	1,61	0,042	24	3,12	3,45	3,82	0,189	20	1,43	1,50	1,58	0,037	20	*D. koenigswaldi*
VA7E	2,02	2,23	2,46	0,089	73	1,34	1,48	1,64	0,058	102	2,71	3,31	3,94	0,244	73	1,38	1,50	1,59	0,044	73	*D. koenigswaldi*
LUM5	2,01	2,22	2,31	0,080	13	1,31	1,47	1,59	0,077	17	2,63	3,25	3,56	0,283	13	1,41	1,52	1,59	0,061	13	*D. koenigswaldi*
LUM4	1,99	2,21	2,42	0,087	39	1,35	1,47	1,66	0,058	58	2,69	3,22	4,02	0,235	39	1,45	1,52	1,65	0,047	39	*D. koenigswaldi*
VA7D	1,94	2,21	2,41	0,109	17	1,35	1,47	1,62	0,069	22	2,72	3,24	3,78	0,283	17	1,39	1,50	1,57	0,055	17	*D. koenigswaldi*
LUM3	1,96	2,18	2,43	0,082	158	1,31	1,44	1,55	0,048	193	2,61	3,14	3,77	0,202	158	1,42	1,52	1,64	0,046	158	*D. koenigswaldi*
VR11	1,87	2,07	2,24	0,096	32	1,22	1,38	1,52	0,064	47	2,32	2,87	3,34	0,254	31	1,40	1,50	1,66	0,060	31	*D. koenigswaldi*
VA6B	1,96	2,10	2,17	0,069	18	1,30	1,40	1,50	0,054	27	2,55	2,93	3,26	0,201	18	1,43	1,51	1,61	0,053	18	*D. koenigswaldi*
LUM2	2,03	2,14	2,23	0,062	10	1,31	1,40	1,49	0,051	17	2,74	2,99	3,23	0,154	10	1,45	1,53	1,60	0,048	10	*D. koenigswaldi*
LUM1	1,92	2,07	2,21	0,104	11	1,22	1,37	1,54	0,077	20	2,34	2,83	3,40	0,311	11	1,44	1,52	1,62	0,068	11	*D. koenigswaldi*
VA3F	1,88	2,08	2,21	0,105	10	1,31	1,41	1,51	0,067	15	2,46	2,94	3,29	0,282	10	1,42	1,47	1,53	0,036	10	*D. koenigswaldi*
VA3E	2,03	2,10	2,24	0,069	15	1,34	1,41	1,48	0,043	16	2,72	2,97	3,26	0,167	15	1,42	1,49	1,59	0,045	15	*D. koenigswaldi*
VA6A	1,93	2,05	2,21	0,064	30	1,27	1,37	1,45	0,043	49	2,46	2,79	3,16	0,143	30	1,38	1,50	1,61	0,062	30	*D. koenigswaldi*
VA7C	1,89	2,15	2,35	0,079	167	1,26	1,42	1,54	0,051	217	2,44	3,06	3,60	0,198	163	1,40	1,52	1,65	0,042	163	*D. koenigswaldi*
VA7B	1,93	2,05	2,18	0,072	45	1,25	1,37	1,50	0,048	76	2,50	2,80	3,26	0,175	45	1,42	1,51	1,66	0,053	45	*D. koenigswaldi*
VA1A	1,97	2,06	2,21	0,058	24	1,26	1,36	1,46	0,048	25	2,48	2,80	3,09	0,163	24	1,42	1,52	1,58	0,042	24	*D. koenigswaldi*
VA7A	1,88	2,04	2,14	0,089	11	1,28	1,36	1,42	0,041	13	2,41	2,76	3,04	0,182	11	1,45	1,51	1,60	0,052	11	*D. koenigswaldi*
VA8B	1,92	2,05	2,16	0,062	18	1,29	1,36	1,47	0,048	27	2,48	2,80	3,12	0,193	16	1,44	1,50	1,56	0,030	16	*D. koenigswaldi*
VA8C	1,86	2,01	2,07	0,075	8	1,27	1,34	1,41	0,042	12	2,42	2,69	2,92	0,185	8	1,43	1,51	1,55	0,044	8	*D. koenigswaldi*
VR8C	1,94	2,06	2,18	0,060	24	1,33	1,37	1,42	0,031	28	2,58	2,84	3,07	0,133	24	1,45	1,50	1,55	0,031	24	*D. koenigswaldi*
VR8B	1,85	1,93	2,03	0,064	12	1,18	1,28	1,38	0,044	19	2,18	2,50	2,79	0,156	11	1,41	1,51	1,57	0,047	11	*D. koenigswaldi*
CS2B	1,81	2,02	2,17	0,079	47	1,20	1,34	1,41	0,052	52	2,26	2,70	3,04	0,196	45	1,43	1,51	1,61	0,044	45	*D. koenigswaldi*
CS1A	1,73	1,96	2,15	0,090	55	1,11	1,29	1,40	0,054	61	2,04	2,55	2,97	0,197	55	1,41	1,52	1,62	0,052	58	*D. koenigswaldi*
VR7	1,75	1,90	2,09	0,072	59	1,18	1,27	1,39	0,046	69	2,09	2,41	2,91	0,160	59	1,41	1,51	1,66	0,055	59	*D. koenigswaldi*
VA3B		1,94			1		1,32			1		2,56			1		1,47			1	*D. franconicus*
VA11	1,70	1,76	1,87		4	1,14	1,20	1,25	0,054	5	1,94	2,01	2,14		3	1,43	1,48	1,50		3	*D. franconicus*
VR6	1,60	1,76	1,91	0,070	21	1,15	1,22	1,30	0,034	26	1,87	2,14	2,48	0,139	21	1,37	1,45	1,49	0,034	21	*D. franconicus*
VR5	1,67	1,77	1,83	0,052	12	1,11	1,22	1,33	0,055	30	1,94	2,18	2,43	0,148	12	1,37	1,43	1,49	0,044	12	*D. franconicus*
VA8A	1,56	1,67	1,83	0,057	27	1,05	1,14	1,22	0,041	41	1,68	1,91	2,23	0,119	27	1,41	1,46	1,54	0,032	27	*D. franconicus*
MUE	1,59	1,67	1,74	0,048	15	1,08	1,14	1,20	0,033	16	1,73	1,90	2,09	0,100	14	1,38	1,47	1,54	0,045	14	*D. franconicus*
MOR3		1,72			1		1,17			1		2,01			1		1,47			1	*D. franconicus*
MOR2	1,53	1,70	1,87	0,064	162	1,01	1,14	1,24	0,043	160	1,55	1,94	2,28	0,126	158	1,37	1,49	1,64	0,054	158	*D. franconicus*
FTE4	1,58	1,69	1,80		4	1,05	1,12	1,25	0,065	9	1,67	1,91	2,18		4	1,49	1,50	1,53		4	*D. franconicus*
COL-D	1,46	1,65	1,77	0,070	40	0,96	1,09	1,26	0,058	59	1,42	1,78	2,05	0,152	39	1,44	1,53	1,63	0,040	39	*D. franconicus*
COL-C	1,63	1,64	1,65	0,010	6	1,03	1,06	1,08	0,018	6	1,70	1,73	1,78	0,030	6	1,52	1,55	1,60	0,028	6	*D. franconicus*
FTE3						1,08	1,10	1,12		3											*D. franconicus*
FTE2		1,70			1		1,17			1		1,99			1		1,45			1	*D. franconicus*
OR9						1,05		1,14		2											*D. franconicus*
VR2B	1,65	1,70	1,73		3	1,10	1,13	1,15		4	1,82	1,90	1,96		3	1,50	1,52	1,54		3	*D. franconicus*
FTE1							0,98			1											*D. franconicus*
OR5	1,56	1,62	1,71	0,050	6	1,03	1,06	1,11	0,034	6	1,61	1,72	1,90	0,106	6	1,50	1,53	1,56	0,022	6	*D. franconicus*
VR1A	1,60	1,67	1,74		3	1,09	1,14	1,20		3	1,81	1,91	2,09		3	1,40	1,46	1,52		3	*D. franconicus*
VR4BB	1,76		1,80		2	1,13		1,18		2	1,99		2,12		2	1,53		1,56		2	*D. franconicus*

Table 8

M2	LENGTH					WIDTH					LxW					L/W					SPECIES
	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	
CAR1	1,98	2,17	2,41	0,180	5	1,49	1,67	1,81	0,135	5	2,95	3,66	4,36	0,585	5	1,27	1,30	1,33	0,029	5	*D. crusafonti*
MOL	1,95	2,12	2,30	0,090	19	1,50	1,62	1,75	0,075	19	3,08	3,43	3,94	0,214	19	1,18	1,31	1,44	0,083	19	*D. crusafonti*
MOL(M)	1,86	2,01	2,08	0,091	7	1,47	1,60	1,67	0,061	8	2,92	3,19	3,38	0,190	7	1,18	1,26	1,40	0,081	7	*D. crusafonti*
NOM1		2,10			1		1,60			1		3,36			1		1,31			1	*D. crusafonti*
NOM2	1,89	2,02	2,23	0,095	15	1,52	1,63	1,72	0,064	15	2,97	3,30	3,81	0,252	15	1,18	1,24	1,35	0,049	15	*D. crusafonti*
ESC		1,76			1		1,73			1		3,04			1		1,02			1	*D. crusafonti*
ESC(M)	1,81	2,00	2,26	0,136	12	1,55	1,63	1,72	0,063	10	2,82	3,27	3,89	0,336	10	1,09	1,23	1,32	0,073	10	*D. crusafonti*
SOL	1,79	1,96	2,10	0,093	12	1,52	1,64	1,74	0,068	14	2,72	3,25	3,65	0,255	12	1,11	1,18	1,22	0,036	12	*D. crusafonti*
LP5H	1,95		2,02		2	1,67		1,67		2	3,26		3,37		2	1,17		1,21		2	*D. crusafonti*
TOR3B	1,79	1,89	2,05	0,062	23	1,52	1,60	1,72	0,058	20	2,72	3,02	3,26	0,169	20	1,08	1,18	1,29	0,050	20	*D. larteti*
TOR3A	1,71	1,87	2,01	0,137	7	1,46	1,57	1,70	0,085	7	2,56	2,94	3,42	0,323	7	1,08	1,19	1,34	0,083	7	*D. larteti*
TOR2	1,83		1,91		2	1,61		1,62		2	2,96		3,08		2	1,13		1,19		2	*D. larteti*
TOR1	1,70	1,83	1,92	0,068	13	1,42	1,53	1,64	0,060	15	2,53	2,82	3,05	0,170	13	1,13	1,19	1,27	0,048	13	*D. larteti*
AC2	1,98		1,98		2	1,52		1,58		2	3,01		3,13		2	1,25		1,30		2	*D. larteti*
BOR	1,62	1,78	1,90	0,071	41	1,39	1,52	1,64	0,056	39	2,36	2,70	3,07	0,165	39	1,07	1,18	1,29	0,051	39	*D. larteti*
MAN	1,53	1,71	1,93	0,076	74	1,40	1,55	1,72	0,068	74	2,25	2,66	3,15	0,213	74	1,02	1,10	1,19	0,042	74	*D. larteti*
LP5C	1,58	1,64	1,71		4	1,42	1,50	1,55		3	2,36	2,42	2,45		3	1,02	1,08	1,17		3	*D. larteti*
LP5B		1,87			1		1,53			1		2,86			1		1,22			1	*D. larteti*
VT2C	1,65	1,77	1,85	0,066	10	1,39	1,53	1,67	0,082	9	2,35	2,72	3,01	0,220	9	1,08	1,16	1,23	0,054	9	*D. larteti*
VT2B		1,85			1		1,49			1		2,76			1		1,24			1	*D. larteti*
LUM21	1,61	1,70	1,76		3	1,49	1,55	1,61		4	2,59	2,61	2,63		3	1,00	1,11	1,18		3	*D. larteti*
LUM22	1,69	1,77	1,87		3	1,45	1,50	1,60		3	2,45	2,67	2,99		3	1,17	1,18	1,21		3	*D. larteti*
LUM20		1,77			1	1,47		1,63		2		2,60			1		1,20			1	*D. larteti*
LP4C		1,73			1																*D. larteti*
LP4B	1,59	1,75	1,96	0,101	22	1,46	1,55	1,69	0,064	22	2,37	2,68	3,01	0,199	19	1,06	1,13	1,20	0,046	19	*D. larteti*
LP4A	1,65	1,83	1,93	0,090	12	1,54	1,59	1,72	0,054	11	2,54	2,91	3,14	0,186	11	1,03	1,15	1,23	0,066	11	*D. larteti*
LUM14	1,50	1,72	1,83	0,066	59	1,40	1,51	1,64	0,052	56	2,21	2,61	2,97	0,157	50	1,06	1,14	1,24	0,036	50	*D. larteti*
LUM18	1,62	1,72	1,83	0,078	8	1,46	1,52	1,61	0,043	8	2,44	2,62	2,88	0,168	7	1,06	1,12	1,20	0,049	7	*D. larteti*
LUM17	1,66	1,76	1,85		3	1,46	1,52	1,62		3	2,42	2,68	3,00		3	1,14	1,15	1,18		3	*D. larteti*
LUM16	1,55	1,71	1,79	0,071	13	1,38	1,51	1,58	0,052	14	2,14	2,58	2,79	0,197	11	1,10	1,13	1,17	0,020	11	*D. larteti*
LUM12	1,64	1,75	1,84	0,069	10	1,47	1,53	1,64	0,059	11	2,43	2,66	2,94	0,164	9	1,09	1,15	1,22	0,049	9	*D. larteti*
LUM11	1,58	1,72	1,90	0,078	34	1,40	1,51	1,60	0,052	32	2,30	2,61	2,94	0,196	30	1,04	1,14	1,23	0,038	30	*D. larteti*
LUM10	1,59		1,64		2	1,43	1,46	1,52		3	2,29		2,35		2	1,10		1,15		2	*D. larteti*
LUM9	1,57	1,72	1,88	0,080	13	1,47	1,54	1,64	0,058	13	2,35	2,66	3,08	0,205	13	1,05	1,11	1,16	0,039	13	*D. larteti*
RG2	1,55	1,72	1,86	0,063	78	1,37	1,49	1,66	0,056	79	2,19	2,56	3,05	0,169	78	1,07	1,15	1,24	0,039	78	*D. larteti*
LUM8	1,59	1,70	1,83	0,069	34	1,40	1,50	1,60	0,053	39	2,30	2,55	2,86	0,163	34	1,01	1,13	1,21	0,050	34	*D. larteti*
LUM7	1,59		1,71		3	1,44	1,52	1,62	0,064	6	2,35	2,59	2,77		3	1,06	1,07	1,09		3	*D. larteti*
VA7G	1,52	1,68	1,75	0,053	17	1,40	1,48	1,58	0,048	15	2,23	2,48	2,65	0,123	15	1,03	1,13	1,21	0,049	15	*D. koenigswaldi*
VA7F	1,54	1,65	1,74	0,050	29	1,36	1,46	1,55	0,055	28	2,18	2,42	2,58	0,134	27	1,05	1,13	1,21	0,039	27	*D. koenigswaldi*
VA7E	1,48	1,63	1,87	0,060	87	1,30	1,44	1,59	0,059	86	1,98	2,36	2,97	0,168	80	1,03	1,13	1,24	0,041	80	*D. koenigswaldi*
LUM5	1,58	1,66	1,72	0,044	19	1,37	1,44	1,57	0,049	19	2,18	2,40	2,70	0,131	18	1,10	1,14	1,22	0,028	18	*D. koenigswaldi*
LUM4	1,51	1,62	1,76	0,063	54	1,32	1,43	1,55	0,049	56	2,03	2,33	2,66	0,143	50	1,02	1,13	1,19	0,037	50	*D. koenigswaldi*
VA7D	1,43	1,63	1,77	0,077	15	1,33	1,43	1,51	0,052	20	1,92	2,33	2,66	0,178	15	1,07	1,15	1,21	0,041	15	*D. koenigswaldi*
LUM3	1,43	1,60	1,77	0,063	172	1,28	1,41	1,57	0,053	176	1,93	2,27	2,70	0,156	168	1,03	1,13	1,28	0,039	168	*D. koenigswaldi*
VR11	1,35	1,55	1,71	0,072	50	1,28	1,37	1,51	0,056	46	1,73	2,13	2,51	0,163	45	1,05	1,13	1,24	0,042	45	*D. koenigswaldi*
VA6B	1,45	1,57	1,70	0,056	30	1,29	1,39	1,49	0,053	32	1,87	2,18	2,50	0,135	29	1,04	1,13	1,21	0,046	29	*D. koenigswaldi*
LUM2	1,46	1,56	1,64	0,062	13	1,31	1,37	1,46	0,043	14	1,91	2,13	2,38	0,133	12	1,07	1,14	1,21	0,047	12	*D. koenigswaldi*
LUM1	1,43	1,54	1,68	0,069	19	1,25	1,35	1,46	0,048	19	1,87	2,06	2,29	0,134	17	1,05	1,13	1,22	0,042	17	*D. koenigswaldi*
VA3F	1,49	1,59	1,75	0,084	12	1,33	1,40	1,47	0,046	14	1,98	2,23	2,54	0,170	12	1,08	1,13	1,24	0,046	12	*D. koenigswaldi*
VA3E	1,52	1,62	1,72	0,059	17	1,23	1,38	1,51	0,066	21	1,96	2,23	2,57	0,170	17	1,09	1,17	1,29	0,061	17	*D. koenigswaldi*
VA6A	1,39	1,51	1,66	0,060	52	1,22	1,33	1,47	0,057	52	1,70	2,03	2,32	0,138	49	1,04	1,14	1,23	0,050	49	*D. koenigswaldi*
VA7C	1,42	1,58	1,74	0,059	216	1,27	1,39	1,53	0,048	216	1,86	2,20	2,52	0,135	216	1,04	1,13	1,24	0,042	216	*D. koenigswaldi*
VA7B	1,33	1,51	1,63	0,058	89	1,18	1,34	1,51	0,050	98	1,65	2,03	2,30	0,133	81	1,01	1,12	1,23	0,043	81	*D. koenigswaldi*
VA1A	1,37	1,48	1,58	0,053	25	1,20	1,34	1,44	0,053	25	1,69	1,99	2,18	0,133	25	1,04	1,10	1,19	0,039	25	*D. koenigswaldi*
VA7A	1,42	1,56	1,65	0,063	11	1,32	1,35	1,41	0,033	6	2,01	2,12	2,19	0,065	6	1,10	1,16	1,23	0,046	6	*D. koenigswaldi*
VA8B	1,40	1,52	1,62	0,062	28	1,26	1,36	1,43	0,042	25	1,81	2,06	2,24	0,129	24	1,02	1,12	1,19	0,041	24	*D. koenigswaldi*
VA8C	1,45	1,51	1,60	0,044	9	1,19	1,31	1,39	0,063	8	1,73	1,99	2,22	0,157	7	1,13	1,16	1,22	0,030	7	*D. koenigswaldi*
VR8C	1,44	1,57	1,66	0,055	24	1,23	1,39	1,51	0,064	24	1,77	2,19	2,48	0,149	23	1,06	1,14	1,28	0,054	23	*D. koenigswaldi*
VR8B	1,36	1,47	1,57	0,058	22	1,19	1,31	1,40	0,050	20	1,67	1,92	2,12	0,131	20	1,05	1,12	1,20	0,043	20	*D. koenigswaldi*
CS2B	1,43	1,54	1,65	0,053	47	1,22	1,32	1,40	0,044	48	1,79	2,04	2,29	0,113	45	1,04	1,16	1,26	0,043	45	*D. koenigswaldi*
CS1A	1,37	1,51	1,62	0,064	67	1,11	1,29	1,40	0,057	67	1,53	1,95	2,24	0,156	65	1,09	1,18	1,27	0,040	68	*D. koenigswaldi*
VR7	1,32	1,42	1,55	0,053	72	1,19	1,27	1,38	0,041	67	1,61	1,80	2,04	0,111	65	1,04	1,12	1,23	0,037	65	*D. koenigswaldi*
VA3B	1,17	1,38	1,51	0,109	7	1,07	1,23	1,33	0,081	7	1,25	1,71	2,01	0,235	7	1,07	1,12	1,16	0,033	7	*D. franconicus*
VA11	1,22	1,33	1,41	0,055	10	1,16	1,21	1,27	0,035	8	1,48	1,61	1,79	0,093	8	1,01	1,09	1,15	0,056	8	*D. franconicus*
VR6	1,24	1,34	1,48	0,054	34	1,14	1,21	1,30	0,042	31	1,46	1,63	1,88	0,110	30	1,02	1,12	1,18	0,037	30	*D. franconicus*
VR5	1,22	1,33	1,46	0,058	26	1,08	1,21	1,32	0,055	29	1,40	1,62	1,90	0,133	23	1,02	1,08	1,16	0,038	23	*D. franconicus*
VA8A	1,23	1,29	1,41	0,051	31	1,10	1,15	1,24	0,039	29	1,37	1,49	1,67	0,090	27	1,04	1,12	1,19	0,043	27	*D. franconicus*
MUE	1,22	1,28	1,38	0,049	12	1,08	1,14	1,22	0,043	14	1,34	1,45	1,68	0,102	12	1,09	1,14	1,22	0,034	12	*D. franconicus*
MOR2	1,22	1,31	1,45	0,044	125	1,04	1,16	1,25	0,044	126	1,32	1,52	1,77	0,094	117	1,06	1,13	1,22	0,038	117	*D. franconicus*
FTE4	1,21	1,27	1,34	0,033	15	1,05	1,12	1,19	0,036	18	1,34	1,42	1,53	0,055	15	1,06	1,14	1,18	0,041	15	*D. franconicus*
COL-D	1,21	1,30	1,39	0,043	40	0,99	1,12	1,22	0,043	64	1,27	1,47	1,67	0,084	38	1,10	1,16	1,24	0,033	38	*D. franconicus*
COL-C	1,21		1,25		2	1,03		1,11		2	1,25		1,39		2	1,13		1,17		2	*D. franconicus*
FTE3	1,20	1,24	1,28	0,033	9	1,07	1,12	1,15	0,031	9	1,30	1,39	1,47	0,070	9	1,08	1,11	1,15	0,023	9	*D. franconicus*
FTE2	1,15		1,22		2		1,04			1		1,27			1		1,17			1	*D. franconicus*
OR9		1,29			1		1,04			1		1,34			1		1,24			1	*D. franconicus*
VR2B	1,22	1,26	1,32	0,033	11	1,08	1,13	1,16	0,029	11	1,35	1,44	1,52	0,061	9	1,09	1,12	1,17	0,025	9	*D. franconicus*
FTE1	1,16		1,21		2	1,00		1,09		2	1,16		1,32		2	1,11		1,16		2	*D. franconicus*
OR5		1,22			1	1,06		1,07		2		1,29			1		1,15			1	*D. franconicus*
VR1A		1,19			1		1,05			1		1,25			1		1,13			1	*D. franconicus*
VR4BB	1,23		1,24		2	1,00		1,17		2	1,23		1,45		2	1,06		1,23		2	*D. franconicus*
VR4A	1,18	1,28	1,34		4	1,18	1,19	1,21		3	1,51	1,56	1,62		3	1,08	1,10	1,12		3	*D. franconicus*

Table 9

M3	LENGTH					WIDTH					LxW					L/W					SPECIES
	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	
CAR1		1,39			1																*D. crusafonti*
MOL	1,25	1,43	1,60	0,141	9	1,25	1,36	1,45	0,096	9	1,56	1,96	2,32	0,317	9	1,00	1,05	1,14	0,050	9	*D. crusafonti*
MOL(M)	1,38		1,47		2	1,36		1,41		2	1,95		2,00		2	0,98		1,08		2	*D. crusafonti*
NOM2	1,35	1,42	1,54	0,065	7	1,37	1,40	1,44	0,027	7	1,90	1,99	2,19	0,098	7	0,94	1,01	1,08	0,050	7	*D. crusafonti*
ESC	1,43	1,45	1,47		3	1,39		1,52		3	2,00	2,13	2,21		3	0,94	0,99	1,04		3	*D. crusafonti*
SOL	1,20	1,34	1,41	0,051	16	1,36	1,46	1,54	0,053	16	1,76	1,96	2,17	0,112	16	0,82	0,92	1,01	0,045	16	*D. crusafonti*
LP5H		1,37			1		1,50			1		2,06			1		0,91			1	*D. crusafonti*
TOR3B	1,23	1,28	1,34	0,046	12	1,33	1,38	1,44	0,038	12	1,64	1,78	1,93	0,101	12	0,90	0,93	0,98	0,027	12	*D. larteti*
TOR3A	1,19	1,33	1,45	0,086	8	1,32	1,40	1,50	0,071	7	1,74	1,90	2,18	0,138	7	0,88	0,97	1,09	0,072	7	*D. larteti*
TOR1	1,11	1,20	1,26	0,055	7	1,28	1,33	1,45	0,059	7	1,42	1,60	1,83	0,132	7	0,87	0,90	0,96	0,032	7	*D. larteti*
AC2		1,25			1		1,35			1		1,69			1		0,93			1	*D. larteti*
VL9		1,09			1																*D. larteti*
BOR	1,15	1,22	1,38	0,058	24	1,22	1,32	1,38	0,042	24	1,42	1,61	1,89	0,106	24	0,85	0,93	1,02	0,043	24	*D. larteti*
VT1B		1,17			1		1,22			1		1,43			1		0,96			1	*D. larteti*
LP5C	1,24		1,28		2	1,24		1,37		2	1,54		1,75		2	0,93		1,00		2	*D. larteti*
LP5B	1,08		1,23		2	1,14		1,28		2	1,23		1,57		2	0,95		0,96		2	*D. larteti*
VT2C	1,15	1,24	1,32	0,065	12	1,26	1,35	1,42	0,055	12	1,45	1,67	1,85	0,133	12	0,85	0,92	0,99	0,043	12	*D. larteti*
VT2B		1,10			1		1,22			1		1,34			1		0,90			1	*D. larteti*
LUM22	1,19	1,24	1,34		3	1,27	1,32	1,39		3	1,52	1,65	1,86		3	0,91	0,94	0,96		3	*D. larteti*
LP4C		1,11			1		1,23			1		1,37			1		0,90			1	*D. larteti*
LUM19		1,36			1		1,37			1		1,86			1		0,99			1	*D. larteti*
LP4B	1,08	1,23	1,38	0,093	17	1,18	1,37	1,57	0,104	18	1,27	1,70	2,17	0,253	17	0,82	0,90	0,97	0,036	17	*D. larteti*
LP4A	1,19	1,31	1,44	0,089	10	1,32	1,40	1,53	0,071	12	1,58	1,84	2,20	0,218	10	0,89	0,94	1,00	0,038	10	*D. larteti*
LUM14	1,08	1,24	1,37	0,060	49	1,15	1,29	1,41	0,053	48	1,27	1,60	1,88	0,131	47	0,86	0,96	1,06	0,038	47	*D. larteti*
LUM18	1,08	1,23	1,32	0,081	7	1,22	1,31	1,38	0,061	8	1,32	1,61	1,81	0,162	7	0,89	0,95	1,03	0,048	7	*D. larteti*
LUM17	1,19	1,24	1,29		4	1,28	1,36	1,43		4	1,52	1,68	1,84		4	0,88	0,92	0,95		4	*D. larteti*
LUM12	1,13	1,25	1,38	0,062	13	1,26	1,32	1,44	0,046	13	1,46	1,65	1,99	0,132	13	0,88	0,94	1,00	0,032	13	*D. larteti*
LUM16	1,20	1,24	1,32	0,042	12	1,29	1,33	1,37	0,028	12	1,55	1,65	1,80	0,078	11	0,90	0,94	0,99	0,028	11	*D. larteti*
LUM11	1,11	1,20	1,34	0,064	34	1,20	1,30	1,40	0,049	33	1,38	1,56	1,85	0,133	33	0,83	0,93	1,01	0,037	33	*D. larteti*
LUM9	1,07	1,22	1,33	0,083	12	1,25	1,32	1,41	0,055	11	1,37	1,60	1,85	0,154	11	0,84	0,92	1,01	0,050	11	*D. larteti*
RG2	1,09	1,21	1,36	0,066	80	1,15	1,27	1,40	0,059	79	1,27	1,54	1,86	0,143	79	0,86	0,95	1,03	0,038	79	*D. larteti*
LUM8	1,08	1,20	1,34	0,076	24	1,15	1,29	1,41	0,068	25	1,30	1,55	1,85	0,163	24	0,84	0,93	1,00	0,042	24	*D. larteti*
LUM7	1,09	1,19	1,29	0,071	7	1,16	1,27	1,36	0,073	7	1,31	1,52	1,73	0,170	7	0,90	0,94	0,97	0,031	7	*D. larteti*
VA7G	1,09	1,20	1,30	0,072	10	1,18	1,24	1,28	0,034	10	1,30	1,49	1,66	0,116	10	0,89	0,97	1,03	0,050	10	*D. koenigswaldi*
VA7F	1,08	1,21	1,34	0,076	18	1,14	1,23	1,35	0,057	17	1,24	1,49	1,73	0,145	17	0,88	0,98	1,09	0,054	17	*D. koenigswaldi*
VA7E	1,00	1,19	1,40	0,079	71	1,08	1,23	1,38	0,059	70	1,08	1,46	1,86	0,155	70	0,88	0,97	1,11	0,046	70	*D. koenigswaldi*
LUM5	1,08	1,16	1,27	0,058	15	1,09	1,22	1,35	0,077	15	1,19	1,42	1,66	0,152	15	0,88	0,95	1,00	0,036	15	*D. koenigswaldi*
LUM4	1,03	1,16	1,26	0,059	47	1,08	1,20	1,30	0,048	46	1,14	1,39	1,61	0,116	46	0,90	0,96	1,06	0,036	46	*D. koenigswaldi*
VA7D	1,07	1,14	1,25	0,050	18	1,08	1,20	1,30	0,053	18	1,16	1,37	1,56	0,096	18	0,83	0,95	1,01	0,049	18	*D. koenigswaldi*
LUM3	1,02	1,16	1,32	0,063	103	1,08	1,20	1,34	0,052	103	1,11	1,39	1,69	0,121	103	0,85	0,96	1,06	0,043	103	*D. koenigswaldi*
VR11	0,95	1,09	1,22	0,057	34	1,05	1,15	1,27	0,052	35	1,02	1,26	1,43	0,104	33	0,87	0,95	1,05	0,048	33	*D. koenigswaldi*
VA6B	1,07	1,16	1,29	0,054	21	1,10	1,18	1,31	0,048	20	1,18	1,37	1,69	0,112	20	0,87	0,98	1,03	0,036	20	*D. koenigswaldi*
LUM2	1,05	1,10	1,19	0,046	8	1,07	1,14	1,20	0,045	7	1,13	1,25	1,37	0,090	7	0,92	0,97	1,03	0,041	7	*D. koenigswaldi*
LUM1	1,05	1,11	1,20	0,041	10	1,11	1,15	1,19	0,026	10	1,17	1,28	1,42	0,074	9	0,94	0,97	1,02	0,023	9	*D. koenigswaldi*
VA3F	1,05	1,15	1,23	0,062	8	1,14	1,20	1,29	0,049	8	1,20	1,38	1,59	0,127	8	0,92	0,96	0,99	0,026	8	*D. koenigswaldi*
VA3E	1,03	1,18	1,31	0,078	15	1,12	1,21	1,35	0,056	15	1,24	1,43	1,77	0,145	15	0,86	0,97	1,03	0,054	15	*D. koenigswaldi*
VA6A	0,98	1,10	1,27	0,071	48	1,05	1,14	1,31	0,059	46	1,06	1,25	1,60	0,134	46	0,84	0,97	1,05	0,049	46	*D. koenigswaldi*
VA7C	0,92	1,12	1,27	0,059	151	1,04	1,17	1,29	0,051	154	0,98	1,31	1,60	0,115	151	0,86	0,96	1,07	0,040	151	*D. koenigswaldi*
VA7B	0,97	1,11	1,23	0,066	56	1,01	1,14	1,25	0,051	57	1,02	1,26	1,51	0,119	56	0,89	0,98	1,11	0,046	56	*D. koenigswaldi*
VA1A	1,03	1,11	1,19	0,049	21	1,03	1,15	1,23	0,045	21	1,06	1,27	1,44	0,097	21	0,91	0,96	1,03	0,030	21	*D. koenigswaldi*
VA7A	1,05	1,12	1,20	0,055	7	1,12	1,18	1,34	0,082	6	1,19	1,31	1,54	0,133	6	0,86	0,94	1,00	0,048	6	*D. koenigswaldi*
VA8B	1,02	1,11	1,22	0,050	27	1,02	1,14	1,21	0,044	26	1,11	1,27	1,43	0,091	25	0,90	0,97	1,07	0,034	25	*D. koenigswaldi*
VA8C	1,02	1,08	1,19	0,055	9	1,05	1,11	1,22	0,061	10	1,07	1,20	1,45	0,129	9	0,96	0,97	1,00	0,014	9	*D. koenigswaldi*
VR8C	1,01	1,17	1,31	0,066	14	1,12	1,18	1,27	0,042	14	1,13	1,38	1,62	0,120	14	0,90	0,99	1,06	0,038	14	*D. koenigswaldi*
VR8B	1,02	1,11	1,22	0,063	12	1,12	1,19	1,26	0,047	11	1,21	1,33	1,51	0,108	10	0,89	0,95	1,03	0,043	10	*D. koenigswaldi*
CS2B	0,92	1,08	1,21	0,064	37	0,99	1,10	1,19	0,051	38	0,95	1,20	1,43	0,114	36	0,89	0,97	1,05	0,038	36	*D. koenigswaldi*
CS1A	0,94	1,08	1,22	0,066	70	0,99	1,12	1,22	0,049	68	0,96	1,21	1,49	0,116	67	0,83	0,96	1,04	0,041	67	*D. koenigswaldi*
VR7	0,90	1,03	1,14	0,051	56	0,97	1,10	1,21	0,057	53	0,87	1,14	1,36	0,105	53	0,85	0,93	1,02	0,035	53	*D. koenigswaldi*
VA3B		1,01			1		1,03			1		1,04			1		0,98			1	*D. franconicus*
VA11	0,88	0,95	1,01	0,044	7	0,96	1,04	1,09	0,045	6	0,84	0,99	1,08	0,088	6	0,88	0,91	0,94	0,023	6	*D. franconicus*
VR6	0,90	0,98	1,07	0,067	7	0,99	1,06	1,10	0,039	7	0,93	1,05	1,18	0,104	7	0,87	0,93	0,97	0,042	7	*D. franconicus*
VR5	0,88	0,96	1,09	0,063	9	0,92	1,01	1,11	0,055	9	0,81	0,98	1,21	0,109	9	0,87	0,95	1,00	0,044	9	*D. franconicus*
VA8A	0,76	0,91	1,04	0,064	27	0,82	0,96	1,05	0,055	27	0,62	0,88	1,07	0,103	27	0,87	0,94	1,02	0,041	27	*D. franconicus*
MUE	0,89	0,94	0,98	0,039	5	0,93	0,96	0,98	0,021	5	0,86	0,89	0,94	0,035	5	0,92	0,98	1,04	0,053	5	*D. franconicus*
FTE4	0,84	0,94	1,04	0,065	11	0,97	1,01	1,06	0,031	7	0,88	0,96	1,10	0,076	7	0,89	0,94	0,98	0,040	7	*D. franconicus*
COL-D	0,80	0,93	1,02	0,042	76	0,84	0,96	1,05	0,046	75	0,70	0,89	1,05	0,078	74	0,91	0,97	1,04	0,032	74	*D. franconicus*
FTE3	0,88	0,89	0,89		3	0,91	0,96	0,99		3	0,80	0,85	0,88		3	0,90	0,93	0,97		3	*D. franconicus*
FTE2	0,76		0,92		2	0,89		1,00		2	0,68		0,92		2	0,85		0,92		2	*D. franconicus*
VR2B	0,88		0,88		2	0,95		0,95		2	0,84		0,84		2	0,93		0,93		2	*D. franconicus*
OR5	0,86		0,88		2	0,92		0,96		2	0,79		0,84		2	0,92		0,93		2	*D. franconicus*
VR1A	0,86	0,87	0,89		3	0,92	0,94	0,96		3	0,79	0,82	0,85		3	0,92	0,93	0,93		3	*D. franconicus*

Table 10

m1	LENGTH					WIDTH					LxW					L/W					SPECIES
	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	
CAR1	2,23	2,39	2,57		3	1,44	1,56	1,62		3	3,21	3,73	4,14		3	1,46	1,54	1,60		3	*D. crusafonti*
MOL	2,10	2,31	2,50	0,122	23	1,35	1,47	1,70	0,072	23	2,90	3,41	4,25	0,314	23	1,40	1,57	1,79	0,071	23	*D. crusafonti*
MOL(M)	2,14	2,29	2,40	0,093	9	1,33	1,44	1,54	0,063	10	2,85	3,29	3,70	0,267	9	1,54	1,59	1,67	0,050	9	*D. crusafonti*
NOM1	2,19	2,24	2,27	0,034	5	1,43	1,47	1,50	0,032	5	3,18	3,30	3,39	0,097	5	1,47	1,52	1,57	0,036	5	*D. crusafonti*
NOM2	2,15	2,27	2,43	0,071	17	1,39	1,50	1,62	0,074	17	2,99	3,41	3,79	0,251	17	1,42	1,51	1,60	0,058	17	*D. crusafonti*
ESC	2,15		2,41		2	1,42		1,48		2	3,05		3,57		2	1,51		1,63		2	*D. crusafonti*
ESC(M)	2,38	2,46	2,53		4	1,42	1,50	1,57		4	3,38	3,69	3,97		4	1,61	1,64	1,68		4	*D. crusafonti*
SOL	1,97	2,13	2,27	0,096	12	1,35	1,41	1,55	0,051	18	2,66	3,01	3,29	0,190	12	1,44	1,51	1,63	0,060	12	*D. crusafonti*
LP5H	1,96	2,15	2,27		3	1,38	1,41	1,44		3	2,70	3,04	3,27		3	1,42	1,52	1,58		3	*D. crusafonti*
TOR3B	1,93	2,07	2,36	0,130	10	1,33	1,41	1,51	0,051	18	2,61	2,93	3,56	0,299	10	1,41	1,47	1,56	0,043	10	*D. larteti*
TOR3A	2,00	2,12	2,37	0,123	7	1,31	1,39	1,52	0,062	9	2,68	2,96	3,60	0,303	7	1,43	1,53	1,65	0,071	7	*D. larteti*
TOR2	1,80	1,98	2,07		4	1,27	1,36	1,44		4	2,29	2,70	2,98		4	1,42	1,45	1,52		4	*D. larteti*
TOR1	1,84	1,99	2,25	0,102	16	1,21	1,35	1,47	0,062	20	2,39	2,68	3,31	0,219	16	1,32	1,48	1,66	0,093	16	*D. larteti*
AC2		2,09			1	1,27		1,41		2		2,95			1		1,48			1	*D. larteti*
VL9	1,94		2,09		2	1,29	1,35	1,45		3	2,50		3,03		2	1,44		1,50		2	*D. larteti*
BOR	1,86	2,04	2,24	0,080	37	1,25	1,36	1,53	0,065	39	2,34	2,77	3,32	0,213	37	1,38	1,51	1,65	0,066	37	*D. larteti*
MAN	1,79	2,02	2,29	0,092	75	1,18	1,35	1,54	0,063	74	2,24	2,73	3,24	0,217	74	1,28	1,49	1,70	0,072	74	*D. larteti*
VT1B	1,87		1,95		2	1,17		1,36		2	2,28		2,54		2	1,38		1,67		2	*D. larteti*
VT1A		1,99			1		1,30			1		2,59			1		1,53			1	*D. larteti*
LP5C		2,05			1	1,33		1,40		2		2,87			1		1,46			1	*D. larteti*
LP5B	1,90		1,96		2	1,30		1,30		2	2,47		2,55		2	1,46		1,51		2	*D. larteti*
VT2C	1,89	2,03	2,11	0,078	10	1,27	1,37	1,48	0,065	14	2,42	2,77	3,06	0,233	10	1,40	1,49	1,57	0,056	10	*D. larteti*
LUM21	1,93	1,98	2,03		4	1,32	1,38	1,47	0,048	8	2,55	2,75	2,98		4	1,38	1,43	1,46		4	*D. larteti*
LUM22		1,93			1	1,37		1,41		2		2,64			1		1,41			1	*D. larteti*
LUM20	1,90	1,95	2,01		4	1,27	1,31	1,35		4	2,57	2,58	2,59		3	1,41	1,48	1,56		3	*D. larteti*
LP4C							1,36			1											*D. larteti*
LP4B	1,77	1,94	2,11	0,075	28	1,26	1,37	1,47	0,054	29	2,39	2,65	3,02	0,168	27	1,35	1,43	1,56	0,052	27	*D. larteti*
LP4A	1,90	2,03	2,21	0,098	9	1,37	1,43	1,48	0,037	10	2,70	2,90	3,10	0,140	9	1,32	1,42	1,58	0,086	9	*D. larteti*
LUM14	1,87	1,98	2,10	0,071	27	1,24	1,35	1,44	0,047	37	2,41	2,67	2,96	0,158	26	1,40	1,48	1,60	0,054	26	*D. larteti*
LUM18	1,87	2,03	2,17	0,108	10	1,28	1,40	1,59	0,091	11	2,39	2,85	3,40	0,333	10	1,35	1,45	1,53	0,049	10	*D. larteti*
LUM17	1,94	2,01	2,09	0,064	6	1,35	1,41	1,45	0,034	10	2,68	2,82	3,00	0,124	6	1,41	1,44	1,55	0,055	6	*D. larteti*
LUM16	1,82	1,94	2,03	0,060	12	1,27	1,34	1,41	0,037	15	2,39	2,60	2,82	0,138	11	1,34	1,45	1,52	0,051	11	*D. larteti*
LUM12	1,95	2,02	2,06	0,040	5	1,30	1,38	1,44	0,047	6	2,54	2,78	2,92	0,151	5	1,41	1,46	1,50	0,033	5	*D. larteti*
LUM11	1,81	1,97	2,22	0,084	25	1,23	1,35	1,50	0,054	33	2,23	2,67	3,33	0,208	25	1,37	1,45	1,54	0,047	25	*D. larteti*
LUM10	1,79	1,84	1,90		3	1,27	1,31	1,37		3	2,27		2,43		2	1,41		1,48		2	*D. larteti*
LUM9	1,84	1,94	2,04	0,057	11	1,27	1,39	1,52	0,063	14	2,40	2,69	3,10	0,185	11	1,32	1,41	1,49	0,055	11	*D. larteti*
RG2	1,73	1,92	2,14	0,085	87	1,15	1,35	1,46	0,057	86	2,07	2,59	3,06	0,199	86	1,28	1,42	1,57	0,056	86	*D. larteti*
LUM8	1,78	1,95	2,13	0,097	22	1,28	1,36	1,50	0,058	25	2,28	2,62	2,95	0,198	20	1,37	1,45	1,57	0,053	20	*D. larteti*
LUM7	1,89		1,98		2	1,28	1,32	1,39	0,048	5	2,53		2,53		2	1,41		1,55		2	*D. larteti*
VA7G	1,69	1,86	2,01	0,112	11	1,20	1,29	1,38	0,062	13	2,10	2,40	2,75	0,241	11	1,34	1,45	1,53	0,052	11	*D. koenigswaldi*
VA7F	1,70	1,83	1,97	0,078	15	1,24	1,32	1,45	0,046	18	2,19	2,43	2,77	0,147	14	1,32	1,40	1,54	0,059	14	*D. koenigswaldi*
VA7E	1,70	1,86	2,01	0,073	100	1,14	1,29	1,43	0,058	109	2,00	2,40	2,78	0,178	98	1,31	1,44	1,59	0,062	98	*D. koenigswaldi*
LUM5	1,78	1,90	2,01	0,093	7	1,29	1,35	1,44	0,054	7	2,30	2,57	2,89	0,215	7	1,37	1,42	1,48	0,044	7	*D. koenigswaldi*
LUM4	1,63	1,83	1,98	0,076	26	1,18	1,30	1,43	0,061	38	1,97	2,37	2,62	0,189	26	1,35	1,42	1,55	0,047	26	*D. koenigswaldi*
VA7D	1,68	1,87	2,01	0,080	21	1,23	1,31	1,37	0,040	23	2,07	2,45	2,65	0,164	20	1,36	1,44	1,56	0,049	20	*D. koenigswaldi*
LUM3	1,59	1,81	1,99	0,072	171	1,14	1,26	1,38	0,050	183	1,89	2,29	2,69	0,153	164	1,31	1,44	1,61	0,057	164	*D. koenigswaldi*
VR11	1,65	1,79	1,92	0,071	27	1,10	1,24	1,37	0,058	38	1,85	2,21	2,62	0,176	27	1,38	1,45	1,61	0,061	27	*D. koenigswaldi*
VA6B	1,68	1,79	1,90	0,062	18	1,16	1,25	1,33	0,051	23	2,03	2,25	2,49	0,130	18	1,30	1,43	1,60	0,074	18	*D. koenigswaldi*
LUM2	1,71	1,78	1,90	0,063	10	1,16	1,26	1,31	0,049	12	2,11	2,23	2,49	0,115	9	1,32	1,43	1,57	0,085	9	*D. koenigswaldi*
LUM1	1,61	1,69	1,78	0,057	8	1,09	1,21	1,31	0,058	10	1,80	2,02	2,18	0,126	8	1,35	1,42	1,51	0,061	8	*D. koenigswaldi*
VA3F	1,65	1,79	1,91	0,084	9	1,21	1,29	1,36	0,055	12	2,00	2,30	2,60	0,190	9	1,32	1,39	1,50	0,058	9	*D. koenigswaldi*
VA3E	1,71	1,80	1,97	0,069	26	1,14	1,26	1,35	0,055	31	1,98	2,27	2,61	0,170	26	1,35	1,43	1,54	0,051	26	*D. koenigswaldi*
VA6A	1,59	1,72	1,85	0,065	53	1,06	1,19	1,34	0,058	59	1,76	2,04	2,37	0,144	50	1,29	1,45	1,62	0,069	50	*D. koenigswaldi*
VA7C	1,62	1,80	1,95	0,075	209	1,12	1,24	1,40	0,053	216	1,81	2,24	2,72	0,167	205	1,27	1,45	1,60	0,058	205	*D. koenigswaldi*
VA7B	1,58	1,74	1,96	0,079	72	1,05	1,21	1,35	0,054	89	1,69	2,11	2,61	0,180	70	1,32	1,44	1,58	0,051	70	*D. koenigswaldi*
VA1A	1,47	1,70	1,83	0,074	27	1,02	1,20	1,33	0,062	26	1,50	2,05	2,38	0,178	26	1,33	1,43	1,54	0,050	26	*D. koenigswaldi*
VA7A	1,60	1,70	1,79	0,062	11	1,12	1,19	1,30	0,051	10	1,84	2,02	2,31	0,139	10	1,37	1,43	1,52	0,055	10	*D. koenigswaldi*
VA8B	1,54	1,70	1,81	0,061	22	1,11	1,20	1,28	0,047	30	1,77	2,04	2,24	0,128	22	1,34	1,42	1,57	0,058	22	*D. koenigswaldi*
VA8C	1,66	1,70	1,77	0,046	5	1,13	1,18	1,27	0,051	6	1,89	2,04	2,14		4	1,31	1,42	1,47		4	*D. koenigswaldi*
VR8C	1,72	1,80	1,99	0,065	30	1,14	1,25	1,37	0,049	32	1,96	2,26	2,73	0,165	30	1,37	1,44	1,51	0,035	30	*D. koenigswaldi*
VR8B	1,47	1,64	1,78	0,081	18	1,02	1,11	1,25	0,053	18	1,53	1,83	2,23	0,157	18	1,39	1,48	1,60	0,069	18	*D. koenigswaldi*
CS2B	1,57	1,70	1,85	0,063	41	1,01	1,16	1,26	0,057	39	1,71	1,98	2,30	0,148	38	1,35	1,47	1,60	0,054	38	*D. koenigswaldi*
CS1A	1,54	1,68	1,83	0,063	52	0,96	1,14	1,25	0,054	51	1,48	1,90	2,29	0,149	49	1,31	1,47	1,60	0,054	49	*D. koenigswaldi*
VR7	1,53	1,64	1,77	0,051	39	1,00	1,12	1,19	0,040	46	1,57	1,82	2,07	0,106	38	1,34	1,47	1,61	0,051	38	*D. koenigswaldi*
VA3B	1,53		1,64		2	1,08	1,09	1,11		3	1,65		1,79		2	1,42		1,50		2	*D. franconicus*
VA11	1,42	1,54	1,64	0,066	8	0,97	1,07	1,12	0,039	11	1,45	1,63	1,77	0,115	8	1,34	1,45	1,54	0,066	8	*D. franconicus*
VR6	1,36	1,52	1,61	0,069	31	0,99	1,07	1,19	0,045	41	1,38	1,62	1,84	0,122	31	1,28	1,44	1,55	0,056	31	*D. franconicus*
VR5	1,36	1,47	1,57	0,057	14	0,98	1,07	1,20	0,050	18	1,33	1,55	1,74	0,098	14	1,34	1,40	1,47	0,044	14	*D. franconicus*
VA8A	1,33	1,44	1,55	0,060	17	0,91	1,00	1,08	0,044	22	1,24	1,44	1,58	0,101	16	1,28	1,44	1,52	0,068	16	*D. franconicus*
MUE	1,36	1,46	1,53	0,052	15	0,96	1,00	1,05	0,031	15	1,36	1,47	1,61	0,080	13	1,35	1,47	1,54	0,052	13	*D. franconicus*
MOR2	1,28	1,47	1,64	0,071	150	0,86	1,02	1,12	0,047	156	1,16	1,49	1,79	0,124	148	1,29	1,44	1,62	0,066	148	*D. franconicus*
FTE4	1,44	1,48	1,58	0,054	8	0,96	1,01	1,04	0,025	11	1,41	1,50	1,64	0,079	8	1,40	1,46	1,52	0,043	8	*D. franconicus*
COL-D	1,20	1,39	1,49	0,056	25	0,91	1,00	1,08	0,041	44	1,09	1,38	1,59	0,105	24	1,32	1,40	1,47	0,040	24	*D. franconicus*
COL-C	1,29	1,38	1,50	0,093	5	0,88	0,92	0,96	0,026	6	1,14	1,27	1,44	0,120	5	1,41	1,49	1,56	0,069	5	*D. franconicus*
FTE3	1,36	1,41	1,44	0,030	5	0,93	1,01	1,05	0,047	6	1,32	1,42	1,51	0,070	5	1,30	1,40	1,53	0,087	5	*D. franconicus*
OR9		1,41			1		0,96			1		1,35			1		1,47			1	*D. franconicus*
VR2B	1,26	1,41	1,53	0,088	10	0,84	1,00	1,10	0,071	11	1,06	1,42	1,68	0,179	10	1,29	1,40	1,50	0,067	10	*D. franconicus*
COL-A							1,04			1											*D. franconicus*
OR5	1,35		1,37		2	0,94		0,94		2	1,27		1,29		2	1,44		1,46		2	*D. franconicus*
VR4BB		1,41			1		1,02			1		1,44			1		1,38			1	*D. franconicus*

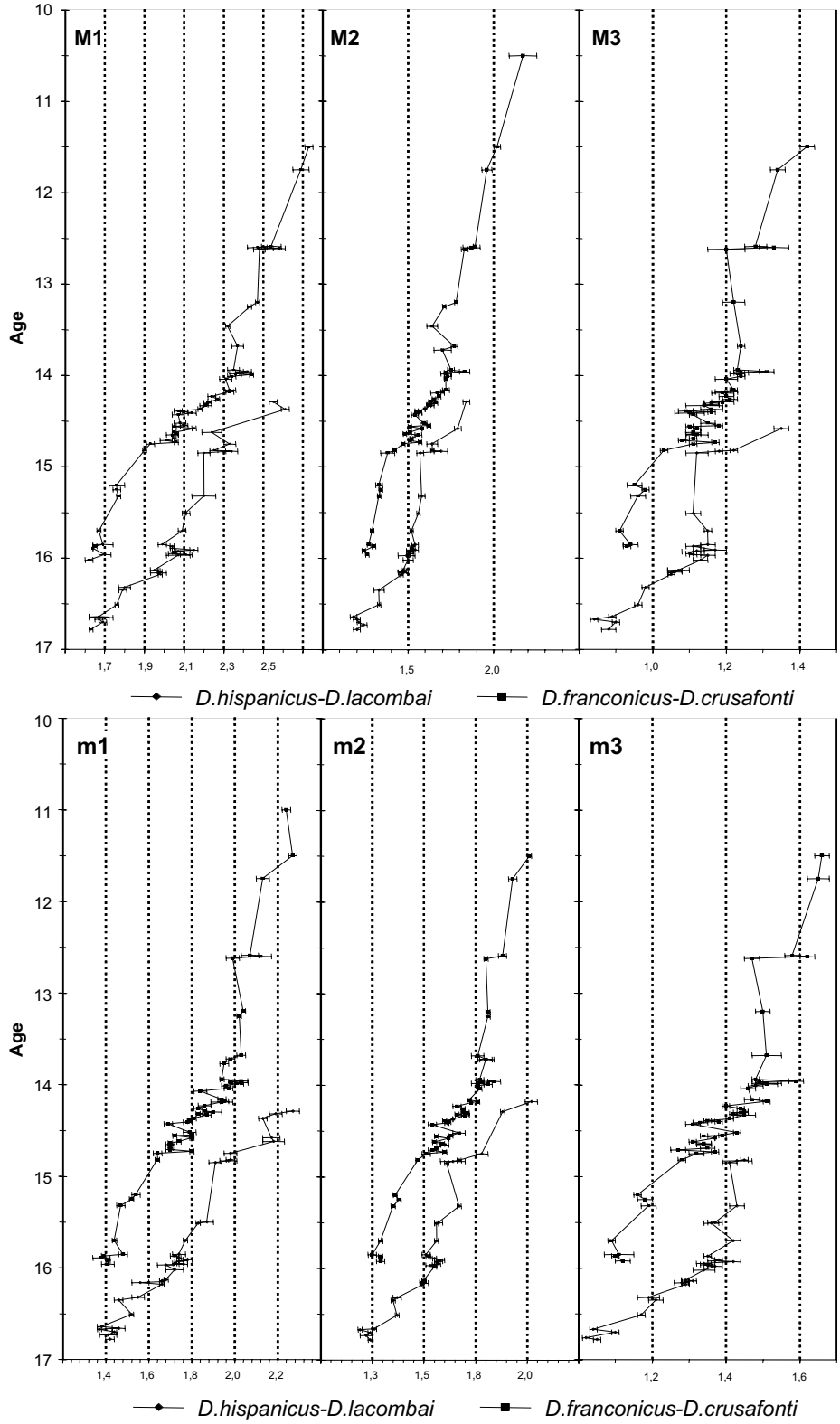
Table 11

m2	LENGTH					WIDTH					LxW					L/W					SPECIES
	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	
CAR1	2,11		2,22		2	1,68		1,74		2	3,54		3,86		2	1,26		1,28		2	*D. crusafonti*
MOL	1,90	2,06	2,30	0,101	21	1,50	1,59	1,75	0,070	21	2,85	3,28	4,03	0,282	21	1,22	1,30	1,40	0,051	21	*D. crusafonti*
MOL(M)	2,00	2,08	2,15	0,054	6	1,53	1,60	1,68	0,062	5	3,06	3,34	3,61	0,218	5	1,27	1,30	1,34	0,027	5	*D. crusafonti*
NOM1	2,06		2,11		2	1,59		1,62		2	3,28		3,42		2	1,30		1,30		2	*D. crusafonti*
NOM2	1,94	2,01	2,12	0,051	16	1,54	1,62	1,75	0,061	15	3,06	3,27	3,59	0,178	14	1,16	1,24	1,33	0,047	14	*D. crusafonti*
ESC	1,93	1,97	2,05		3	1,56	1,59	1,63		3	3,01	3,13	3,34		3	1,23	1,24	1,26		3	*D. crusafonti*
ESC(M)	1,86	1,99	2,10	0,088	9	1,48	1,58	1,67	0,059	9	2,80	3,14	3,51	0,237	9	1,21	1,26	1,32	0,038	9	*D. crusafonti*
SOL	1,79	1,93	2,07	0,092	15	1,36	1,58	1,70	0,094	16	2,43	3,00	3,49	0,305	13	1,14	1,23	1,32	0,048	13	*D. crusafonti*
PJE1		1,74			1		1,40			1		2,44			1		1,24			1	*D. crusafonti*
LP5H	1,89		1,97		2	1,53		1,59		2	3,01		3,01		2	1,19		1,29		2	*D. crusafonti*
TOR3B	1,76	1,88	1,96	0,063	8	1,47	1,52	1,56	0,032	9	2,59	2,85	3,06	0,152	8	1,20	1,24	1,26	0,022	8	*D. larteti*
TOR3A	1,84	1,98	2,09		4	1,55	1,65	1,76		4	2,85	3,26	3,61		4	1,16	1,20	1,24		4	*D. larteti*
TOR2	1,84	1,94	1,99		3	1,52	1,56	1,58		4	2,80	3,00	3,14		3	1,21	1,25	1,28		3	*D. larteti*
TOR1	1,71	1,80	1,91	0,062	22	1,35	1,48	1,58	0,065	24	2,32	2,66	3,02	0,186	22	1,12	1,22	1,31	0,043	22	*D. larteti*
AC2		1,94			1		1,51			1		2,93			1		1,28			1	*D. larteti*
VL9	1,76		1,92		2	1,45		1,51		2	2,55		2,90		2	1,21		1,27		2	*D. larteti*
BOR	1,72	1,81	1,91	0,053	29	1,39	1,48	1,55	0,039	29	2,44	2,67	2,96	0,127	29	1,16	1,22	1,31	0,036	29	*D. larteti*
MAN	1,68	1,81	1,97	0,065	109	1,33	1,48	1,69	0,069	109	2,23	2,69	3,21	0,199	109	1,12	1,22	1,36	0,049	109	*D. larteti*
VT1B		1,83			1		1,43			1		2,62			1		1,28			1	*D. larteti*
VT1A							1,56			1											*D. larteti*
LP5B	1,69		1,84		2	1,36		1,45		2	2,30		2,67		2	1,24		1,27		2	*D. larteti*
VT2C	1,69	1,76	1,81		4	1,37	1,44	1,48		4	2,50	2,57	2,62		3	1,14	1,20	1,26		3	*D. larteti*
LUM21	1,70	1,80	1,87	0,067	5	1,42	1,44	1,49	0,026	6	2,43	2,59	2,70		4	1,19	1,24	1,30		4	*D. larteti*
LUM22	1,71	1,80	1,89		4	1,32	1,47	1,54	0,088	5	2,26	2,61	2,86		4	1,19	1,24	1,30		4	*D. larteti*
LUM20	1,78		1,81		2		1,44			1		2,56			1		1,24			1	*D. larteti*
LP4C						1,46		1,47		2											*D. larteti*
LP4B	1,54	1,77	1,94	0,092	29	1,12	1,46	1,62	0,094	34	1,79	2,57	3,14	0,275	28	1,13	1,23	1,43	0,058	28	*D. larteti*
LP4A	1,61	1,84	1,93	0,103	11	1,37	1,51	1,60	0,069	11	2,21	2,78	3,04	0,269	10	1,17	1,21	1,28	0,036	10	*D. larteti*
LUM14	1,66	1,78	1,90	0,056	36	1,33	1,42	1,53	0,048	39	2,24	2,54	2,89	0,150	33	1,13	1,25	1,34	0,045	33	*D. larteti*
LUM18	1,65	1,76	1,84	0,087	7	1,32	1,45	1,59	0,089	9	2,20	2,51	2,91	0,239	7	1,12	1,23	1,32	0,073	7	*D. larteti*
LUM17	1,73	1,81	1,86	0,050	7	1,33	1,46	1,57	0,064	9	2,30	2,63	2,75	0,157	7	1,20	1,25	1,30	0,038	7	*D. larteti*
LUM16	1,66	1,76	1,83	0,050	13	1,36	1,43	1,56	0,053	15	2,32	2,53	2,82	0,140	12	1,16	1,24	1,31	0,039	12	*D. larteti*
LUM12	1,66	1,76	1,86	0,076	8	1,33	1,46	1,57	0,069	12	2,21	2,51	2,75	0,209	7	1,17	1,23	1,26	0,027	7	*D. larteti*
LUM11	1,60	1,77	1,92	0,076	27	1,31	1,44	1,59	0,068	34	2,23	2,55	3,00	0,217	26	1,13	1,23	1,30	0,040	26	*D. larteti*
LUM10	1,80	1,87	1,94	0,099	2	1,36	1,49	1,63		3	2,45		3,16		2	1,19		1,32		2	*D. larteti*
LUM9	1,65	1,72	1,79	0,039	11	1,35	1,42	1,48	0,039	11	2,24	2,44	2,60	0,091	10	1,15	1,22	1,30	0,045	10	*D. larteti*
RG2	1,51	1,75	1,90	0,069	97	1,25	1,44	1,62	0,060	97	1,89	2,53	3,00	0,188	97	1,14	1,22	1,29	0,035	97	*D. larteti*
LUM8	1,67	1,76	1,85	0,049	23	1,30	1,42	1,52	0,051	31	2,17	2,49	2,79	0,144	22	1,19	1,25	1,34	0,037	22	*D. larteti*
LUM7		1,73			1	1,36	1,44	1,54	0,068	5											*D. larteti*
VA7G	1,55	1,66	1,78	0,068	15	1,25	1,35	1,48	0,058	19	1,94	2,24	2,63	0,163	15	1,20	1,24	1,36	0,048	15	*D. koenigswaldi*
VA7F	1,60	1,69	1,79	0,053	18	1,27	1,38	1,50	0,067	16	2,07	2,32	2,69	0,164	14	1,16	1,24	1,30	0,040	14	*D. koenigswaldi*
VA7E	1,57	1,69	1,82	0,056	95	1,24	1,38	1,52	0,051	102	2,01	2,33	2,75	0,143	93	1,14	1,23	1,34	0,042	93	*D. koenigswaldi*
LUM5	1,54	1,71	1,80	0,057	16	1,34	1,42	1,50	0,044	19	2,08	2,40	2,68	0,141	15	1,14	1,21	1,25	0,031	15	*D. koenigswaldi*
LUM4	1,52	1,66	1,75	0,049	44	1,19	1,35	1,45	0,053	59	1,81	2,23	2,52	0,129	43	1,17	1,23	1,31	0,035	43	*D. koenigswaldi*
VA7D	1,57	1,70	1,78	0,064	18	1,27	1,38	1,45	0,046	18	2,04	2,33	2,57	0,152	17	1,19	1,23	1,28	0,028	17	*D. koenigswaldi*
LUM3	1,48	1,64	1,78	0,057	151	1,20	1,34	1,47	0,057	161	1,81	2,21	2,55	0,152	147	1,12	1,23	1,35	0,042	147	*D. koenigswaldi*
VR11	1,48	1,60	1,71	0,054	43	1,20	1,31	1,44	0,051	50	1,86	2,10	2,43	0,128	42	1,11	1,21	1,30	0,043	42	*D. koenigswaldi*
VA6B	1,52	1,62	1,76	0,055	29	1,21	1,32	1,41	0,051	28	1,93	2,13	2,41	0,133	28	1,16	1,23	1,32	0,048	28	*D. koenigswaldi*
LUM2	1,53	1,61	1,67	0,048	13	1,18	1,30	1,37	0,053	17	1,81	2,09	2,26	0,129	13	1,15	1,24	1,31	0,053	13	*D. koenigswaldi*
LUM1	1,46	1,54	1,65	0,065	9	1,24	1,30	1,37	0,040	12	1,83	2,00	2,17	0,128	8	1,15	1,19	1,28	0,042	8	*D. koenigswaldi*
VA3F	1,55	1,67	1,80	0,078	7	1,28	1,36	1,47	0,062	8	2,10	2,29	2,65	0,177	7	1,12	1,22	1,28	0,056	7	*D. koenigswaldi*
VA3E	1,48	1,63	1,81	0,069	26	1,18	1,34	1,48	0,069	30	1,85	2,20	2,68	0,176	26	1,05	1,20	1,26	0,045	26	*D. koenigswaldi*
VA6A	1,41	1,56	1,72	0,066	50	1,15	1,28	1,40	0,062	56	1,69	2,00	2,39	0,172	47	1,12	1,23	1,35	0,047	47	*D. koenigswaldi*
VA7C	1,48	1,62	1,79	0,058	184	1,13	1,32	1,49	0,055	183	1,70	2,14	2,55	0,147	181	1,12	1,23	1,35	0,044	181	*D. koenigswaldi*
VA7B	1,37	1,55	1,69	0,066	103	1,07	1,27	1,40	0,058	109	1,47	1,97	2,28	0,157	96	1,15	1,22	1,33	0,039	96	*D. koenigswaldi*
VA1A	1,46	1,59	1,69	0,064	30	1,23	1,32	1,46	0,057	31	1,84	2,11	2,47	0,163	30	1,11	1,20	1,28	0,040	30	*D. koenigswaldi*
VA7A	1,45	1,60	1,75	0,086	16	1,23	1,33	1,41	0,055	13	1,80	2,17	2,47	0,189	12	1,17	1,23	1,27	0,029	12	*D. koenigswaldi*
VA8B	1,43	1,56	1,66	0,056	27	1,18	1,28	1,41	0,053	31	1,73	1,99	2,24	0,132	26	1,13	1,22	1,29	0,039	26	*D. koenigswaldi*
VA8C	1,46	1,54	1,60	0,046	7	1,18	1,25	1,40	0,072	10	1,72	1,91	2,24	0,160	7	1,14	1,24	1,32	0,061	7	*D. koenigswaldi*
VR8C	1,50	1,60	1,69	0,044	26	1,21	1,31	1,42	0,049	28	1,82	2,10	2,37	0,121	25	1,17	1,22	1,30	0,030	25	*D. koenigswaldi*
VR8B	1,43	1,51	1,68	0,071	15	1,17	1,24	1,39	0,058	18	1,70	1,88	2,14	0,154	15	1,11	1,21	1,37	0,065	15	*D. koenigswaldi*
CS2B	1,41	1,55	1,72	0,070	46	1,16	1,25	1,42	0,061	40	1,68	1,94	2,37	0,172	40	1,11	1,23	1,32	0,044	40	*D. koenigswaldi*
CS1A	1,38	1,50	1,64	0,065	52	1,10	1,24	1,37	0,059	51	1,54	1,87	2,18	0,157	50	1,15	1,21	1,32	0,042	50	*D. koenigswaldi*
VR7	1,39	1,47	1,58	0,044	42	1,13	1,21	1,33	0,052	46	1,58	1,78	2,01	0,114	42	1,14	1,22	1,30	0,043	42	*D. koenigswaldi*
VA3B		1,50			1		1,12			1		1,68			1		1,34			1	*D. franconicus*
VA11	1,29	1,36	1,44	0,036	12	1,04	1,11	1,16	0,038	13	1,40	1,52	1,66	0,082	11	1,17	1,22	1,31	0,045	11	*D. franconicus*
VR6	1,26	1,38	1,47	0,065	31	1,04	1,15	1,28	0,051	39	1,31	1,59	1,86	0,139	30	1,13	1,21	1,31	0,042	30	*D. franconicus*
VR5	1,28	1,35	1,43	0,049	17	1,04	1,11	1,17	0,033	26	1,39	1,48	1,63	0,073	17	1,16	1,23	1,34	0,052	17	*D. franconicus*
VA8A	1,17	1,29	1,38	0,065	27	0,97	1,08	1,20	0,052	30	1,16	1,38	1,58	0,124	26	1,13	1,21	1,32	0,042	26	*D. franconicus*
MUE	1,21	1,32	1,41	0,058	13	1,03	1,07	1,18	0,042	13	1,27	1,41	1,66	0,111	12	1,15	1,23	1,32	0,045	12	*D. franconicus*
MOR3		1,26			1		1,09			1		1,37			1		1,16			1	*D. franconicus*
MOR2	1,14	1,33	1,61	0,081	142	0,94	1,08	1,36	0,058	142	1,09	1,44	2,19	0,155	133	1,10	1,24	1,40	0,049	133	*D. franconicus*
FTE4	1,15	1,25	1,35	0,066	13	0,95	1,02	1,09	0,047	17	1,10	1,28	1,42	0,115	13	1,16	1,23	1,30	0,043	13	*D. franconicus*
COL-D	1,19	1,29	1,40	0,055	40	0,94	1,03	1,10	0,037	65	1,15	1,33	1,50	0,096	36	1,21	1,27	1,31	0,025	36	*D. franconicus*
COL-C	1,22	1,28	1,37		4	0,98	1,04	1,13		4	1,22	1,33	1,55		4	1,20	1,23	1,27		4	*D. franconicus*
FTE3	1,22	1,29	1,38	0,057	8	0,98	1,05	1,08	0,031	8	1,23	1,35	1,49	0,091	8	1,18	1,23	1,29	0,043	8	*D. franconicus*
OR9	1,25	1,29	1,35		3	1,08	1,10	1,12		3	1,35	1,42	1,51		3	1,16	1,18	1,21		3	*D. franconicus*
VR2B	1,31	1,33	1,37		3	1,06	1,09	1,12		4	1,40	1,44	1,48		3	1,18	1,23	1,29		3	*D. franconicus*
OR5	1,24	1,27	1,31		4	0,97	1,03	1,08		4	1,23	1,30	1,39		4	1,18	1,24	1,31		4	*D. franconicus*
VR4BB	1,27	1,33	1,36		3	1,07	1,10	1,15		3	1,38	1,47	1,56		3	1,17	1,21	1,27		3	*D. franconicus*
VR4A		1,22			1		0,95			1		1,16			1		1,28			1	*D. franconicus*

Table 12

m3	LENGTH					WIDTH					LxW					L/W					SPECIES
	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	Min.	Mean	Max.	s. d.	N	
CAR1	1,45		1,79		2	1,25		1,53		2	1,81		2,74		2	1,16		1,17		2	*D. crusafonti*
MOL	1,50	1,63	1,90	0,090	21	1,20	1,38	1,65	0,097	21	1,95	2,25	2,95	0,258	21	1,06	1,18	1,38	0,074	21	*D. crusafonti*
NOM1	1,53	1,65	1,79		4	1,35	1,45	1,65		4	2,07	2,40	2,95		4	1,08	1,13	1,20		4	*D. crusafonti*
NOM2	1,52	1,66	1,75	0,067	14	1,29	1,38	1,45	0,048	13	1,96	2,29	2,45	0,157	13	1,13	1,21	1,27	0,037	13	*D. crusafonti*
ESC	1,63		1,74		2	1,40		1,44		2	2,35		2,44		2	1,13		1,24		2	*D. crusafonti*
SOL	1,48	1,65	1,78	0,093	13	1,28	1,37	1,44	0,054	13	1,89	2,27	2,56	0,186	13	1,09	1,20	1,31	0,062	13	*D. crusafonti*
PJE1		1,67			1		1,29			1		2,15			1		1,29			1	*D. crusafonti*
LP5H	1,57		1,63		2	1,38	1,43	1,46		3	2,17		2,36		2	1,12		1,14		2	*D. crusafonti*
TOR3B	1,49	1,58	1,72	0,062	11	1,23	1,32	1,41	0,064	11	1,89	2,09	2,27	0,145	11	1,11	1,19	1,30	0,064	11	*D. larteti*
TOR3A	1,52	1,62	1,70	0,054	12	1,30	1,36	1,48	0,053	13	2,02	2,21	2,52	0,151	12	1,14	1,19	1,23	0,032	12	*D. larteti*
TOR2	1,53		1,60		2	1,31		1,35		2	2,07		2,10		2	1,13		1,22		2	*D. larteti*
TOR1	1,31	1,47	1,53	0,061	12	1,15	1,26	1,37	0,056	13	1,64	1,83	1,97	0,113	12	1,05	1,18	1,31	0,062	12	*D. larteti*
AC2		1,57			1		1,41			1		2,21			1		1,11			1	*D. larteti*
VL9	1,57		1,59		2	1,23		1,24		2	1,93		1,97		2	1,28		1,28		2	*D. larteti*
BOR	1,34	1,50	1,65	0,082	22	1,19	1,29	1,36	0,043	23	1,65	1,94	2,19	0,148	22	1,07	1,16	1,26	0,053	22	*D. larteti*
LP5B		1,60			1	1,23		1,23		2		1,97			1		1,30			1	*D. larteti*
VT2C	1,41	1,51	1,62	0,081	5	1,10	1,19	1,26		4	1,55	1,80	2,04		4	1,27	1,28	1,29		4	*D. larteti*
LUM22	1,36		1,55		2	1,21		1,32		2	1,65		2,05		2	1,12		1,17		2	*D. larteti*
LUM19		1,45			1		1,29			1		1,87			1		1,12			1	*D. larteti*
LP4B	1,33	1,48	1,57	0,057	15	1,11	1,28	1,39	0,071	16	1,48	1,90	2,18	0,165	15	1,09	1,16	1,23	0,045	15	*D. larteti*
LP4A	1,54	1,59	1,65	0,050	6	1,24	1,35	1,41	0,065	6	1,92	2,15	2,33	0,143	6	1,09	1,18	1,25	0,056	6	*D. larteti*
LUM14	1,37	1,49	1,65	0,063	32	1,15	1,26	1,39	0,062	38	1,59	1,87	2,23	0,152	32	1,07	1,19	1,30	0,057	32	*D. larteti*
LUM18	1,42	1,51	1,61	0,084	5	1,21	1,29	1,33	0,051	6	1,73	1,91	2,14		4	1,15	1,17	1,21		4	*D. larteti*
LUM17	1,45	1,51	1,62	0,070	5	1,23	1,28	1,36	0,053	5	1,80	1,93	2,20	0,172	5	1,17	1,18	1,20	0,013	5	*D. larteti*
LUM12	1,43	1,52	1,59		4	1,18	1,22	1,33	0,064	5	1,70	1,86	2,11		4	1,20	1,24	1,31		4	*D. larteti*
LUM16	1,39	1,47	1,59	0,060	12	1,16	1,24	1,41	0,073	13	1,67	1,83	2,20	0,151	11	1,11	1,19	1,30	0,054	11	*D. larteti*
LUM11	1,31	1,46	1,61	0,080	17	1,16	1,24	1,40	0,063	19	1,54	1,83	2,23	0,184	16	1,09	1,18	1,29	0,053	16	*D. larteti*
LUM10		1,51			1		1,26			1		1,90			1		1,20			1	*D. larteti*
LUM9	1,37	1,47	1,54	0,051	11	1,16	1,25	1,35	0,050	10	1,59	1,83	2,04	0,125	10	1,12	1,18	1,24	0,039	10	*D. larteti*
RG2	1,33	1,51	1,76	0,080	87	1,16	1,28	1,47	0,066	87	1,56	1,93	2,50	0,193	87	1,09	1,19	1,29	0,041	87	*D. larteti*
LUM8	1,38	1,51	1,71	0,071	30	1,13	1,25	1,45	0,069	29	1,65	1,88	2,48	0,184	28	1,07	1,21	1,29	0,050	28	*D. larteti*
LUM7	1,47		1,54		2	1,21	1,26	1,32		3	1,78		2,03		2	1,17		1,21		2	*D. larteti*
VA7G	1,33	1,40	1,45	0,036	7	1,06	1,15	1,24	0,065	8	1,49	1,59	1,74	0,095	7	1,16	1,23	1,33	0,071	7	*D. koenigswaldi*
VA7F	1,34	1,44	1,51	0,051	15	1,13	1,21	1,33	0,063	19	1,54	1,74	1,99	0,130	15	1,09	1,19	1,30	0,057	15	*D. koenigswaldi*
VA7E	1,28	1,45	1,67	0,069	63	1,08	1,20	1,37	0,065	61	1,42	1,75	2,20	0,163	61	1,08	1,21	1,34	0,054	61	*D. koenigswaldi*
LUM5	1,33	1,44	1,54	0,067	12	1,08	1,19	1,31	0,061	14	1,44	1,72	1,97	0,150	12	1,10	1,21	1,32	0,059	12	*D. koenigswaldi*
LUM4	1,30	1,42	1,58	0,072	40	1,08	1,18	1,28	0,050	42	1,43	1,67	1,96	0,138	39	1,12	1,21	1,33	0,053	39	*D. koenigswaldi*
VA7D	1,35	1,45	1,57	0,076	8	1,12	1,17	1,20	0,028	10	1,54	1,66	1,88	0,118	6	1,18	1,23	1,31	0,048	6	*D. koenigswaldi*
LUM3	1,22	1,41	1,61	0,056	110	1,06	1,17	1,29	0,054	110	1,32	1,65	2,01	0,123	110	1,07	1,20	1,33	0,052	110	*D. koenigswaldi*
VR11	1,17	1,35	1,48	0,068	41	1,00	1,14	1,32	0,066	44	1,21	1,54	1,81	0,146	40	1,04	1,18	1,32	0,064	40	*D. koenigswaldi*
VA6B	1,23	1,38	1,44	0,052	17	1,08	1,15	1,22	0,042	23	1,33	1,60	1,73	0,106	17	1,13	1,20	1,27	0,047	17	*D. koenigswaldi*
LUM2	1,24	1,33	1,46	0,067	9	1,06	1,14	1,21	0,043	9	1,36	1,52	1,72	0,120	8	1,12	1,18	1,24	0,044	8	*D. koenigswaldi*
LUM1	1,28		1,29		2	1,08	1,12	1,15	0,029	5	1,41		1,47		2	1,13		1,16		2	*D. koenigswaldi*
VA3F	1,34	1,43	1,52	0,048	13	1,12	1,18	1,27	0,048	14	1,50	1,69	1,84	0,104	13	1,14	1,21	1,29	0,050	13	*D. koenigswaldi*
VA3E	1,32	1,39	1,47	0,047	15	1,13	1,19	1,27	0,038	17	1,54	1,65	1,78	0,079	15	1,11	1,18	1,28	0,042	15	*D. koenigswaldi*
VA6A	1,19	1,34	1,45	0,062	42	0,99	1,12	1,23	0,057	41	1,18	1,50	1,71	0,129	41	1,10	1,19	1,29	0,053	41	*D. koenigswaldi*
VA7C	1,16	1,37	1,51	0,053	143	1,00	1,16	1,29	0,053	143	1,21	1,59	1,92	0,116	142	1,07	1,18	1,33	0,049	142	*D. koenigswaldi*
VA7B	1,21	1,31	1,43	0,052	51	0,98	1,11	1,25	0,055	51	1,21	1,46	1,73	0,112	50	1,07	1,19	1,31	0,057	50	*D. koenigswaldi*
VA1A	1,20	1,34	1,47	0,072	16	0,98	1,16	1,28	0,074	16	1,22	1,56	1,82	0,168	16	1,09	1,16	1,27	0,051	16	*D. koenigswaldi*
VA7A	1,21	1,34	1,43	0,068	14	1,05	1,13	1,36	0,076	17	1,27	1,49	1,72	0,125	14	1,12	1,20	1,31	0,062	14	*D. koenigswaldi*
VA8B	1,20	1,34	1,48	0,077	19	1,00	1,13	1,26	0,065	25	1,24	1,50	1,81	0,164	18	1,12	1,20	1,31	0,053	18	*D. koenigswaldi*
VA8C	1,17	1,27	1,33	0,050	7	1,01	1,04	1,08	0,027	7	1,25	1,32	1,39	0,045	7	1,09	1,22	1,30	0,071	7	*D. koenigswaldi*
VR8C	1,30	1,37	1,51	0,050	19	1,11	1,18	1,25	0,043	21	1,47	1,63	1,79	0,090	18	1,08	1,17	1,31	0,053	18	*D. koenigswaldi*
VR8B	1,20	1,32	1,40	0,069	11	0,99	1,12	1,36	0,088	16	1,19	1,45	1,62	0,148	10	1,12	1,20	1,26	0,040	10	*D. koenigswaldi*
CS2B	1,20	1,32	1,41	0,059	30	1,02	1,10	1,20	0,050	28	1,25	1,44	1,62	0,109	28	1,08	1,20	1,33	0,059	28	*D. koenigswaldi*
CS1A	1,15	1,30	1,43	0,061	61	1,00	1,10	1,22	0,052	60	1,20	1,43	1,70	0,119	59	1,05	1,18	1,32	0,049	59	*D. koenigswaldi*
VR7	1,14	1,28	1,37	0,056	52	0,92	1,08	1,21	0,055	55	1,05	1,37	1,56	0,107	50	1,08	1,19	1,33	0,051	50	*D. koenigswaldi*
VA11	1,10	1,16	1,27	0,055	15	0,94	0,99	1,04	0,035	19	1,06	1,15	1,27	0,086	15	1,12	1,17	1,27	0,042	15	*D. franconicus*
VR6	1,11	1,18	1,26	0,056	9	0,91	1,00	1,08	0,053	9	1,03	1,19	1,36	0,103	9	1,08	1,18	1,28	0,059	9	*D. franconicus*
VR5	1,11	1,20	1,32	0,060	8	0,93	1,00	1,06	0,043	9	1,04	1,20	1,40	0,105	8	1,14	1,19	1,27	0,043	8	*D. franconicus*
VA8A	0,99	1,09	1,20	0,057	26	0,81	0,91	1,06	0,064	27	0,82	1,00	1,27	0,119	25	1,11	1,19	1,31	0,051	25	*D. franconicus*
MUE	1,14	1,18	1,24	0,034	10	0,89	0,96	1,03	0,035	10	1,02	1,13	1,28	0,073	9	1,20	1,24	1,29	0,038	9	*D. franconicus*
FTE4	0,82	1,11	1,23	0,121	9	0,71	0,91	1,00	0,086	9	0,58	1,01	1,23	0,186	9	1,11	1,22	1,30	0,060	9	*D. franconicus*
COL-D	0,96	1,10	1,20	0,049	55	0,78	0,89	0,96	0,047	52	0,76	0,97	1,15	0,092	49	1,15	1,24	1,31	0,036	49	*D. franconicus*
FTE3	1,05	1,12	1,18	0,047	7	0,89	0,92	0,96	0,033	7	0,93	1,03	1,13	0,078	7	1,18	1,22	1,26	0,028	7	*D. franconicus*
OR9	1,12		1,12		2	0,92		0,97		2	1,03		1,09		2	1,15		1,22		2	*D. franconicus*
VR2B		1,02			1		0,89			1		0,91			1		1,15			1	*D. franconicus*
COL-A		1,14			1		0,94			1		1,07			1		1,21			1	*D. franconicus*
OR5	1,04	1,09	1,14		3	0,88	0,89	0,90		3	0,93	0,97	1,03		3	1,17	1,22	1,27		3	*D. franconicus*
VR3		1,06			1		0,96			1		1,02			1		1,10			1	*D. franconicus*
VR1A		1,07			1		0,97			1		1,04			1		1,10			1	*D. franconicus*
VR4A	1,06	1,13	1,17		3	0,89	0,94	1,00		3	0,94	1,07	1,16		3	1,16	1,20	1,24		3	*D. franconicus*

Table 13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16
17
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1,9
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2,5
1,5
2,0
1,0
1,2
1,4
D.hispanicus-D.lacombai
D.franconicus-D.crusafonti
m1
m2
m3
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1,6
1,8
2,0
2,2
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1,8
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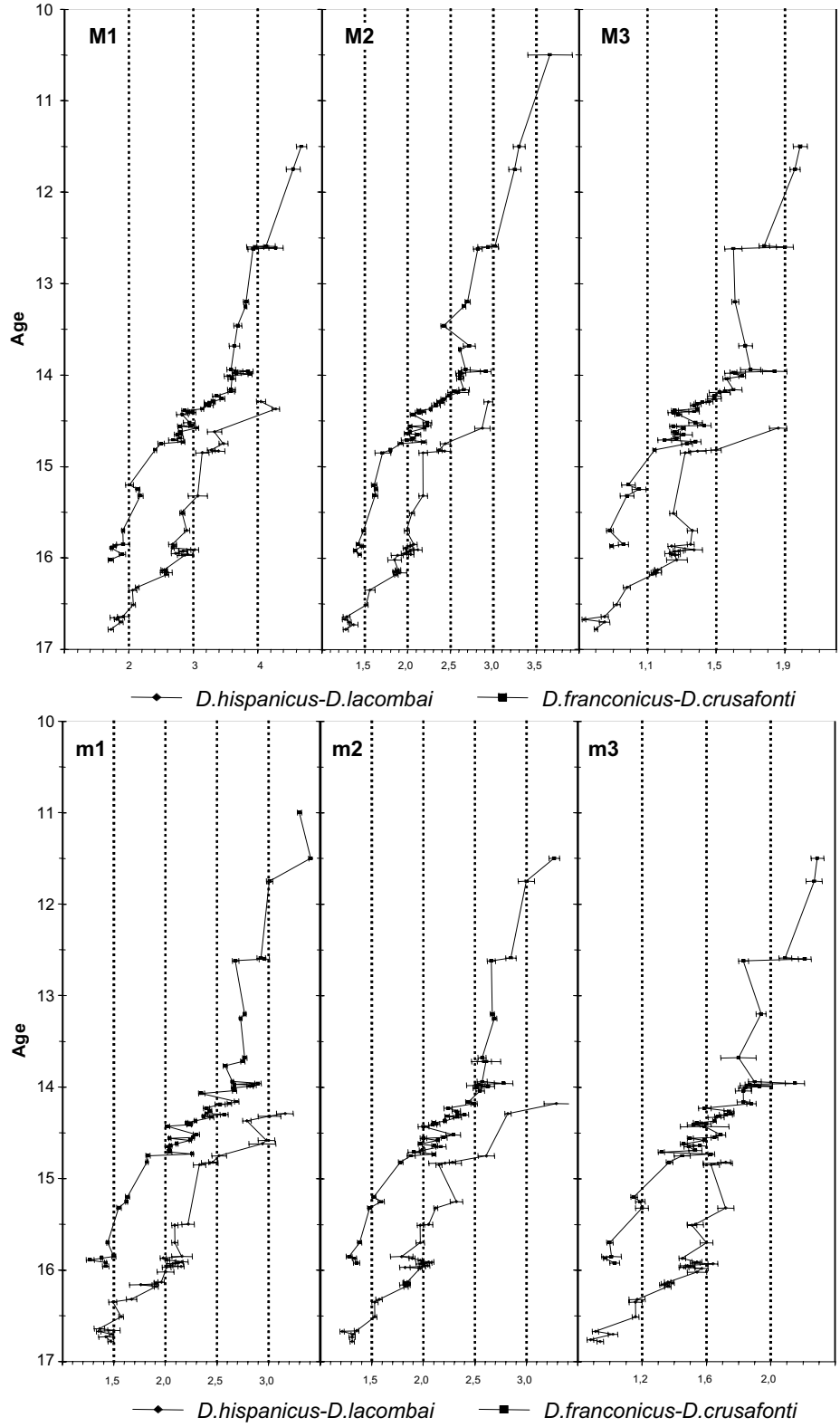
1,6
D.hispanicus-D.lacombai
D.franconicus-D.crusafonti

Figures 2 & 3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D.hispanicus-D.lacombai
D.franconicus-D.crusafonti
m1
m2
m3
Age
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2,5
3,0
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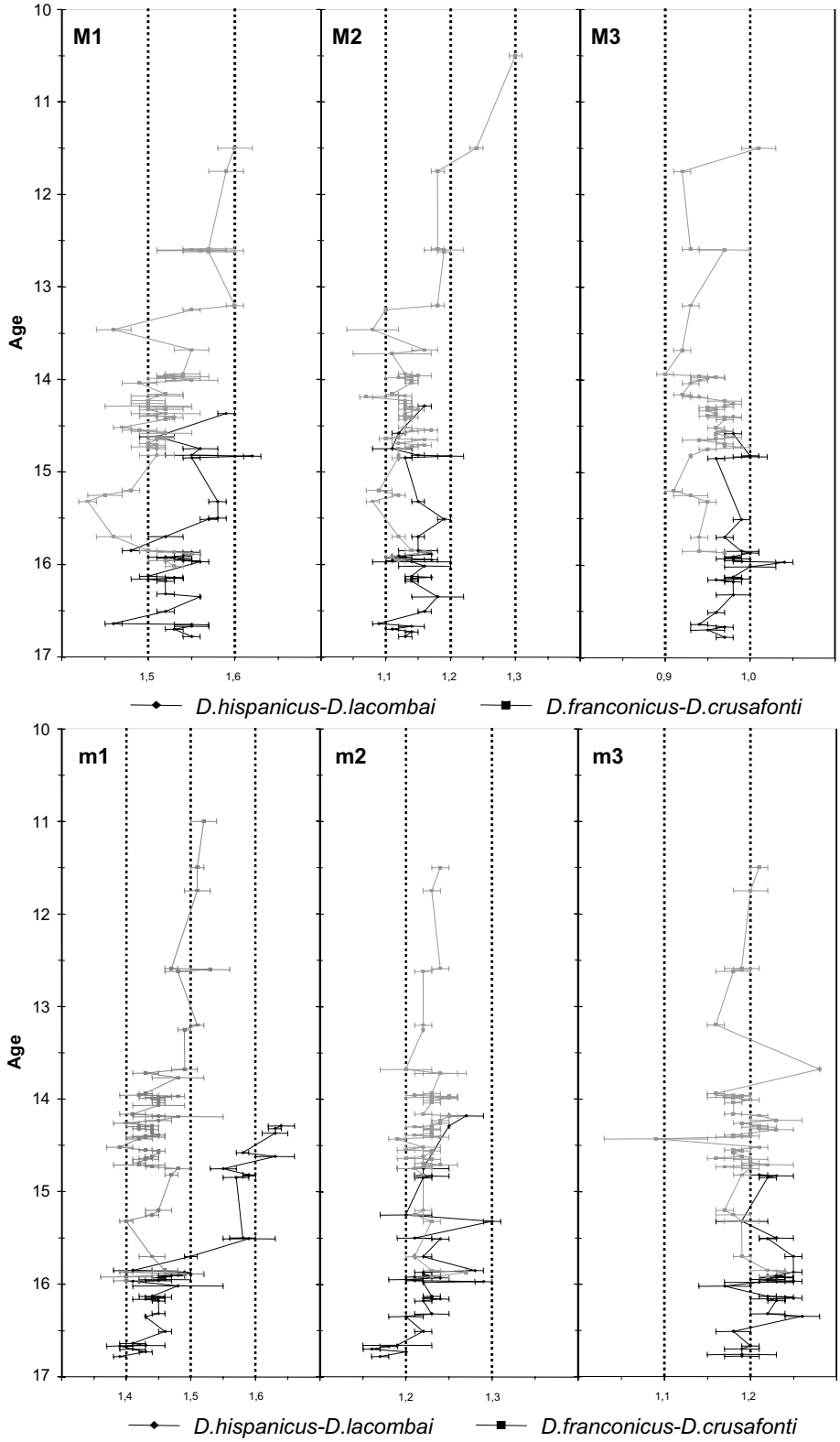
2,0
D.hispanicus-D.lacombai
D.franconicus-D.crusafonti

Figures 4 & 5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D.hispanicus-D.lacombai
D.franconicus-D.crusafonti
m1
m2
m3
Age
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1,2
D.hispanicus-D.lacombai
D.franconicus-D.crusafonti

Figures 6 & 7

Figure 2.- Temporal distribution of average lengths of the upper molars in the *D. hispanicus-D. lacombai* and D. franconicus-D. crusafonti lineages. Horizontal bars represent two standard errors of the mean.
Figura 2.- Distribución temporal de las medias de la longitud de los molares superiores de las líneas D. hispanicus-D. lacombai *y* D. franconicus-D. crusafonti. *Las barras horizontales representan dos errores estandar de la media.*

Figure 3.- Temporal distribution of average lengths of the lower molars in the *D. hispanicus-D. lacombai* and *D. franconicus-D. crusafonti* lineages. Horizontal bars represent two standard errors of the mean.
Figura 3.- Distribución temporal de las medias de la longitud de los molares inferiores de las líneas D. hispanicus-D. lacombai y D. franconicus-D. crusafonti. Las barras horizontales representan dos errores estandar de la media.

Figure 4.- Temporal distribution of average surfaces of the upper molars in the *D. hispanicus-D. lacombai* and *D. franconicus-D. crusafonti* lineages. Horizontal bars represent two standard errors of the mean.
Figura 4.- Distribución temporal de las medias de la superficie de los molares superiores de las líneas D. hispanicus-D. lacombai *y* D. franconicus-D. crusafonti. *Las barras horizontales representan dos errores estandar de la media.*

Figure 5.- Temporal distribution of average surfaces of the lower molars in the *D. hispanicus-D. lacombai* and *D. franconicus-D. crusafonti* lineages. Horizontal bars represent two standard errors of the mean.
Figura 5.- Distribución temporal de las medias de la superficie de los molares inferiores de las líneas D. hispanicus-D. lacombai *y* D. franconicus-D. crusafonti. *Las barras horizontales representan dos errores estandar de la media.*

Figure 6.- Temporal distribution of average Length/Width ratios of the upper molars in the *D. hispanicus-D. lacombai* and *D. franconicus-D. crusafonti* lineages. Horizontal bars represent two standard errors of the mean.
Figura 6.- Distribución temporal de las medias de la Longitud/Anchura de los molares superiores de las líneas D. hispanicus-D. lacombai *y* D. franconicus-D. crusafonti. *Las barras horizontales representan dos errores estandar de la media.*

Figure 7.- Temporal distribution of average Length/Width ratios of the lower molars in the *D. hispanicus-D. lacombai* and *D. franconicus-D. crusafonti* lineages. Horizontal bars represent two standard errors of the mean.
Figura 7.- Distribución temporal de las medias de la Longitud/Anchura de los molares inferiores de las líneas D. hispanicus-D. lacombai *y* D. franconicus-D. crusafonti. *Las barras horizontales representan dos errores estandar de la media*.

Dental proportions		Length			Surface			Length			Surface		
Locality	Species	M1	M2	M3	M1	M2	M3	m1	m2	m3	m1	m2	m3
RG2	*D.lacombai*	44,4	32,4	23,1	46,0	33,2	20,8	37,2	32,9	29,9	35,4	35,7	28,9
VR7	*D.jordensi*	44,0	32,1	23,9	45,8	33,2	21,0	38,8	32,8	28,4	38,1	35,3	26,7
VA3D	*D.jordensi*	44,9	32,4	22,7	47,0	33,7	19,3	39,0	32,6	28,4	38,5	35,0	26,4
VA3B	*D.jordensi*	44,9	32,1	23,0	47,3	32,9	19,9	38,7	32,8	28,5	38,1	35,2	26,7
VL4B	*D.jordensi*							38,9	32,7	28,5	38,3	35,3	26,4
VL4A	*D.jordensi*	44,2	32,6	23,2	46,2	33,4	20,4	38,5	32,8	28,6	37,5	35,3	27,2
VA8A	*D.moralesi*	44,0	31,9	24,1	46,4	31,8	21,8	37,2	32,8	30,0	36,9	34,8	28,3
MOR3	*D.moralesi*	43,0	33,3	23,6	45,7	33,2	21,1	37,9	32,7	29,3	37,7	34,5	27,7
COL-D	*D.moralesi*	43,6	32,7	23,6	45,3	34,0	20,7	37,5	33,2	29,3	37,2	35,6	27,2
COL-B	*D.moralesi*	44,3	31,7	24,0	46,3	32,6	21,1	37,6	33,3	29,1	37,6	35,6	26,8
FTE3	*D.moralesi*	44,0	32,2	23,8	46,2	33,0	20,8	37,5	33,4	29,1	37,4	35,7	26,9
FTE2	*D.moralesi*	44,4	31,9	23,7	46,4	32,9	20,7	36,9	33,1	30,0	36,4	34,7	28,9
OR9	*D.moralesi*	43,9	32,5	23,6	46,0	33,2	20,8	37,2	33,8	28,9	36,7	36,7	26,6
VR2B	*D.moralesi*	44,7	31,8	23,5	46,9	32,8	20,3	37,8	33,3	28,9	38,1	35,2	26,6
VR3	*D.moralesi*	43,5	32,8	23,7	45,5	33,8	20,7	37,6	33,6	28,8	38,0	35,6	26,4
VR1A	*D.moralesi*	43,7	32,9	23,4	45,7	33,8	20,5	37,2	33,5	29,3	37,3	35,6	27,1
VR4BB	*D.moralesi*	44,1	32,3	23,6	46,2	33,3	20,5	37,4	33,6	29,0	37,6	36,1	26,3
VR4B	*D.moralesi*	43,8	32,8	23,4	45,7	33,9	20,4	37,3	33,6	29,1	37,4	35,9	26,7
VR4A	*D.moralesi*	44,1	32,5	23,4	46,3	33,4	20,3	36,7	33,8	29,5	36,0	36,4	27,6
BU	*D.decipiens*	43,4	32,9	23,7	45,0	34,0	21,0	37,7	33,3	29,0	37,9	35,6	26,5
ART1	*D.decipiens*	43,6	32,8	23,6	45,9	33,7	20,5	36,3	33,6	30,0	35,7	36,6	27,7
VL2A	*D.hispanicus*	44,6	31,5	23,8	47,2	31,8	20,9	37,4	33,8	28,8	36,9	35,8	27,3
SR2	*D.hispanicus*	45,0	32,3	22,7	47,5	33,3	19,3	38,0	33,1	29,0	38,9	34,8	26,3
SAM	*D.hispanicus*	44,5	31,9	23,6	46,4	32,7	20,9	38,1	32,8	29,1	38,7	34,7	26,7
SR1	*D.hispanicus*	44,0	32,3	23,8	45,3	33,6	21,1	38,3	33,3	28,4	39,5	35,2	25,3

Table 14.- Proportions of length and surface of each dental elements relative to the total tooth row in *D. hispanicus-D. lacombai* lineage.
Tabla 14.- Proporción relativa de la longitud y superficie de cada uno de los elementos dentales frente al total de la hilera dentaria en la línea D. hispanicus-D. lacombai.

Dental proportions		Length			Surface			Length			Surface		
Locality	Species	M1	M2	M3	M1	M2	M3	m1	m2	m3	m1	m2	m3
MOL	*D.crusafonti*	43,5	33,7	22,8	45,8	34,5	19,7	38,5	34,3	27,1	38,2	36,7	25,2
NOM2	*D.crusafonti*	44,3	32,7	23,0	47,0	33,1	19,9	38,2	33,9	27,9	38,0	36,4	25,5
SOL	*D.crusafonti*	44,9	32,7	22,4	46,6	33,3	20,1	37,3	33,8	28,9	36,3	36,3	27,4
TOR3B	*D.larteti*	44,5	33,0	22,5	46,2	33,9	19,9	37,5	34,0	28,5	37,2	36,3	26,5
TOR3A	*D.larteti*	43,6	32,9	23,5	45,0	33,4	21,6						
TOR1	*D.larteti*	45,1	33,2	21,7	47,1	33,8	19,1	37,8	34,3	27,9	37,3	37,1	25,6
BOR	*D.larteti*	45,1	32,5	22,4	47,0	33,2	19,8	38,1	33,8	28,0	37,5	36,2	26,3
VT2C	*D.larteti*	44,1	32,9	23,0	45,4	33,9	20,8						
LP4B	*D.larteti*	44,1	32,8	23,1	45,1	33,6	21,3	37,4	34,1	28,5	37,3	36,1	26,6
LP4A	*D.larteti*	43,5	32,8	23,6	44,8	33,8	21,4	37,2	33,7	29,1	37,0	35,5	27,4
LUM14	*D.larteti*	44,6	32,2	23,2	46,5	33,2	20,3	37,7	33,9	28,3	37,8	35,9	26,4
LUM18	*D.larteti*	44,4	32,4	23,2	46,5	33,2	20,4	37,7	34,0	28,3	38,1	35,7	26,2
LUM16	*D.larteti*	44,0	32,4	23,6	45,3	33,3	21,4	37,5	34,1	28,4	37,4	36,3	26,3
LUM11	*D.larteti*	44,1	32,8	23,0	46,3	33,6	20,1	37,9	34,0	28,1	37,9	36,1	25,9
LUM9	*D.larteti*	44,2	32,6	23,2	45,7	33,9	20,4	37,9	33,6	28,6	38,6	35,1	26,3
RG2	*D.larteti*	44,2	32,8	23,0	45,9	33,8	20,3	37,0	33,8	29,2	36,7	35,9	27,4
LUM8	*D.larteti*	44,5	32,5	23,0	46,7	33,2	20,2	37,4	33,7	28,9	37,5	35,6	26,9
VA7G	*D.koenigswaldi*	43,8	32,8	23,4	45,9	33,9	20,3	37,8	33,8	28,4	38,6	35,9	25,5
VA7F	*D.koenigswaldi*	44,3	32,2	23,5	46,9	32,8	20,3	36,9	34,1	29,0	37,4	35,8	26,8
VA7E	*D.koenigswaldi*	44,1	32,3	23,6	46,4	33,1	20,5	37,1	33,8	29,0	37,0	36,0	27,0
LUM5	*D.koenigswaldi*	44,0	32,9	23,0	46,0	33,9	20,1	37,7	33,8	28,6	38,4	36,0	25,7
LUM4	*D.koenigswaldi*	44,3	32,6	23,2	46,5	33,5	20,0	37,3	33,8	28,8	37,8	35,6	26,6
VA7D	*D.koenigswaldi*	44,3	32,8	22,9	46,7	33,6	19,7	37,3	33,8	28,9	38,0	36,1	25,8
VR11	*D.koenigswaldi*	43,9	32,9	23,2	45,9	34,0	20,1	37,8	33,7	28,5	37,8	35,9	26,3
VA6B	*D.koenigswaldi*	43,5	32,5	24,0	45,2	33,6	21,2	37,4	33,7	28,8	37,7	35,6	26,7
LUM2	*D.koenigswaldi*	44,5	32,4	23,0	46,9	33,4	19,7	37,7	34,1	28,2	38,1	35,8	26,1
LUM1	*D.koenigswaldi*	43,9	32,6	23,5	45,9	33,3	20,8						
VA3F	*D.koenigswaldi*	43,2	33,0	23,9	44,9	34,0	21,1	36,5	34,2	29,3	36,6	36,5	26,9
VA3E	*D.koenigswaldi*	42,9	33,0	24,1	44,8	33,6	21,6	37,3	33,7	28,9	37,1	36,0	26,9
VA6A	*D.koenigswaldi*	43,9	32,5	23,6	46,0	33,4	20,6	37,2	33,9	28,9	36,9	36,0	27,1
VA7C	*D.koenigswaldi*	44,4	32,5	23,1	46,6	33,5	19,9	37,6	33,8	28,5	37,5	35,9	26,6
VA7B	*D.koenigswaldi*	43,9	32,3	23,7	45,9	33,3	20,7	37,8	33,7	28,5	38,1	35,6	26,3
VA1A	*D.koenigswaldi*	44,3	31,9	23,8	46,1	32,9	21,0	36,8	34,3	29,0	35,8	36,9	27,3
VA7A	*D.koenigswaldi*	43,2	33,0	23,8	44,6	34,2	21,2						
VA8B	*D.koenigswaldi*	43,8	32,5	23,7	45,7	33,7	20,7	37,0	33,9	29,1	36,8	36,0	27,2
VA8C	*D.koenigswaldi*	43,7	32,8	23,4	45,7	33,8	20,4	37,7	33,5	28,8	37,8	35,0	27,2
VR8C	*D.koenigswaldi*	42,9	32,8	24,3	44,3	34,1	21,6						
VR8B	*D.koenigswaldi*	42,8	32,6	24,6	43,5	33,3	23,2	36,8	33,8	29,4	35,4	36,4	28,1
CS2B	*D.koenigswaldi*	43,5	33,2	23,3	45,5	34,3	20,2	37,3	33,9	28,9	36,9	36,2	26,9
CS1A	*D.koenigswaldi*	43,1	33,3	23,6	44,6	34,2	21,2	37,4	33,6	29,1	36,6	35,9	27,5
VR7	*D.koenigswaldi*	43,7	32,6	23,7	45,1	33,7	21,2	37,3	33,6	29,1	36,6	35,7	27,6
VA11	*D.franconicus*							37,9	33,5	28,7	37,9	35,3	26,8
VR6	*D.franconicus*	43,0	32,9	24,1	44,4	33,8	21,7	37,2	33,8	28,9	36,8	36,1	27,0
VR5	*D.franconicus*	43,6	32,7	23,7	45,7	33,9	20,4	36,7	33,5	29,8	36,6	35,1	28,3
VA8A	*D.franconicus*	43,1	33,4	23,5	44,6	34,9	20,5	37,7	33,7	28,5	37,7	36,2	26,1
MUE	*D.franconicus*	42,9	33,0	24,1	44,7	34,2	21,1	36,9	33,2	29,8	36,8	35,1	28,1
FTE4	*D.franconicus*							38,5	32,6	28,9	39,5	33,8	26,7
COL-D	*D.franconicus*	42,5	33,6	23,9	43,1	35,4	21,5	36,8	34,2	29,0	37,6	36,1	26,3
FTE3	*D.franconicus*							36,95	33,7	29,35	37,43	35,41	27,16

Table 15.- Proportions of length and surface of each of the dental elements relative to the total tooth row in the lineage D. franconicus-D. crusafonti.

Tabla 15.- Proporción relativa de la longitud y superficie de cada uno de los elementos dentales frente al total de la hilera dentaria en la línea D. franconicus-D. crusafonti.

Following pages

Table 16.- Percentages of the character states of anterocone, anterolophule, protolophule and paracone spur of the first upper molars of the *D. hispanicus- D. lacombai* lineage.
Tabla 16.- Porcentajes de los differentes estados de carácter del anterocono, anterolófulo, protolófulo y espolón del paracónulo en el primer molar superior de la línea D. hispanicus- D. lacombai.

Table 17.- Percentages and morphological values (MV) of the mesoloph character states of the first and second upper molars of the *D. hispanicus- D. lacombai* lineage.
Tabla 17.- Porcentaje y valore morfológicos (MV) de los estados de carácter en el mesolofo del primer y segundo molar superior en la línea D. hispanicus- D. lacombai.

Table 18.- Percentages and morphological values (MV) of the character states of paracone spur, protolophule and metalophule of the second upper molars of the *D. hispanicus- D. lacombai* lineage.
Tabla 18.- Porcentaje y valore morfológicos (MV) de los estados de carácter en el espolón del paracono, protolófulo y metalófulo del segundo molar superior en la línea D. hispanicus- D. lacombai.

Table 19.- Percentages of the character states of lingual anterosinusid, metalophulid, metaconid ridge and lingula anterolophulid of the first and second lower molars of the *D. hispanicus- D. lacombai* lineage.
Tabla 19.- Porcentaje del estado de carácter en el anterosinúsido lingual, metalófido, cresta del metacónido y anterolófido lingual del primer y segundo molar superior en la línea D. hispanicus- D. lacombai.

Table 20.- Percentages and morphological values (MV) of the mesolophid character states of first and second lower molars of the *D. hispanicus- D. lacombai* lineage.
Tabla 20.- Porcentaje y valore morfológicos (MV) de los estados de carácter del mesolófido del primer y segundo molar inferior en la línea D. hispanicus- D. lacombai.

Table 21.- Percentages of the character states of anterocone, anterolophule, protolophule and paracone spur of the first upper molars of the *D. franconicus-D. crusafonti* lineage.
Tabla 21.- Porcentajes de los differentes estados de carácter del anterocono, anterolófulo, protolófulo y espolón del paracónulo del primer molar superior en la línea D. franconicus-D. crusafonti.

Table 22.- Percentages and morphological values (MV) of the mesoloph character states of the first and second upper molars of the *D. franconicus-D. crusafonti* lineage.
Tabla 22.- Porcentaje y valore morfológicos (MV) de los estados de carácter en el mesolofo del primer y segundo molar superior en la línea D. franconicus-D. crusafonti.

Table 23.- Percentages and morphological values (MV) of the character states of paracone spur, protolophule and metalophule of the second upper molars of the *D. franconicus-D. crusafonti* lineage.
Tabla 23.- Porcentaje y valore morfológicos (MV) de los estados de carácter en el espolón del paracono, protolófulo y metalófulo del segundo molar superior en la línea D. franconicus-D. crusafonti.

Table 24.- Percentages of the character states of lingual anterosinusid, metalophulid, metaconid ridge and lingula anterolophulid of the first and second lower molars of the *D. franconicus-D. crusafonti* lineage.
Tabla 24.- Porcentaje del estado de carácter en el anterosinúsido lingual, metalófido, cresta del metacónido y anterolófido lingual del primer y segundo molar superior en la línea D. franconicus-D. crusafonti.

Table 25.- Percentages and morphological values (MV) of the mesolophid character states of first and second lower molars of the *D. franconicus-D. crusafonti* lineage.
Tabla 25.- Porcentaje y valore morfológicos (MV) de los estados de carácter del mesolófido del primer y segundo molar inferior en la línea D. franconicus-D. crusafonti.

M1	Anterocone			Forked antlphle.			Protolophule			Paracone spur			SPECIES
	smpl.	split	N	no	yes	N	dble.	post.	N	no	yes	N	
LUM9		100	1		100	1		100	1		100	1	*D.lacombai*
RG2	10	90	10	9	91	11	5	95	20		100	17	*D.lacombai*
LUM8		100	1		100	1		100	1	100		1	*D.lacombai*
LUM7		100	1		100	1							*D.lacombai*
VA7F								100	2				*D.lacombai*
VA7E	11	89	9		100	11		100	11	9	91	11	*D.lacombai*
LUM4		100	1		100	1		100	1		100	1	*D.lacombai*
VA7D	100		1		100	1		100	1		100	2	*D.lacombai*
LUM3		100	1	75	25	4		100	5		100	1	*D.lacombai*
LUM1	100		1					100	1	100		1	*D.lacombai*
VA7C	100		2	100		2		100	3	67	33	3	*D.lacombai*
VA7B	67	33	3	67	33	3		100	6	40	60	5	*D.jordensi*
VA1A	100		1	50	50	2		100	2		100	2	*D.jordensi*
VA7A	50	50	2		100	2		100	3	33	67	3	*D.jordensi*
VA8B	100		1					100	2	100		1	*D.jordensi*
VA8C		100	1	100		1		100	1	100		1	*D.jordensi*
VR8B	83	17	6	33	67	6		100	7	86	14	7	*D.jordensi*
CS2B	100		1		100	2		100	2		100	1	*D.jordensi*
CS1A	50	50	4	20	80	5		100	5		100	4	*D.jordensi*
VR7	95	5	21	63	37	27		100	24	76	24	21	*D.jordensi*
VA3D	100		6	100		3		100	12	13	88	8	*D.jordensi*
VA3B	100		5	67	33	6	11	89	19	7	93	14	*D.jordensi*
VR6	100		2	100		2		100	2	100		2	*D.jordensi*
VR5	86	14	7	86	14	7		100	7	86	14	7	*D.jordensi*
VL4A	92	8	13	22	78	9		100	30	25	75	12	*D.jordensi*
VA8A	100		18	69	31	16		100	29	81	19	32	*D.moralesi*
MUE	100		1	100		1		100	1				*D.moralesi*
MOR3	100		4	67	33	3	11	89	9	50	50	2	*D.moralesi*
MOR2	100		9	100		9		100	16	25	75	12	*D.moralesi*
FTE4	100		8	100		6		100	8	100		7	*D.moralesi*
COLD	100		31	97	3	36	4	96	75	15	85	20	*D.moralesi*
COLC	98	2	66	89	11	66	4	96	131	31	69	48	*D.moralesi*
COLB	100		23	100		24		100	34	87	13	31	*D.moralesi*
FTE3	100		11	100		11		100	14	83	17	12	*D.moralesi*
FTE2	100		25	86	14	28	6	94	34	79	21	29	*D.moralesi*
OR9	100		9	100		11		100	16	20	80	5	*D.moralesi*
VR2B	100		17	94	6	17		100	20	71	29	21	*D.moralesi*
COLA	100		6	100		5		100	9	75	25	8	*D.moralesi*
VR2A	100		4	100		4		100	5	80	20	5	*D.moralesi*
OR8				67	33	3		100	2				*D.moralesi*
OR5	100		1	100		1		100	2	100		2	*D.moralesi*
VR3	100		24	100		25	2	98	41	84	16	25	*D.moralesi*
VR1A	96	4	48	100		60	5	95	91	79	21	52	*D.moralesi*
VR4BB	100		77	100		78	3	97	91	79	21	58	*D.moralesi*
VR4B	100		7	100		7		100	7	67	33	9	*D.moralesi*
VR4A	100		63	100		51		100	68	70	30	60	*D.moralesi*
BU	100		15	100		17	21	79	29	69	31	13	*D.decipiens*
OR4A	100		5	100		6		100	6		100	1	*D.decipiens*
SR3	100		15	100		18	17	83	23	50	50	2	*D.decipiens*
COR	100		16	94	6	17	11	89	18	92	8	13	*D.decipiens*
ART1	100		17	95	5	19	12	88	26	64	36	11	*D.decipiens*
VL2A	100		16	100		13	26	74	31	88	13	8	*D.hispanicus*
OR3	100		2	100		3		100	4		100	1	*D.hispanicus*
SR5	100		4	100		4	25	75	4	75	25	4	*D.hispanicus*
SR2	100		12	100		14	16	84	19	83	17	6	*D.hispanicus*
SAM	100		24	100		21	21	79	24	86	14	21	*D.hispanicus*
OR2	100		2	100		2	100		1				*D.hispanicus*
OR1	100		1	100		1		100	1				*D.hispanicus*
SR1	100		19	100		17	5	95	21	89	11	9	*D.hispanicus*

Table 16

	M1						M2						SPECIES
	long	med.	short	no	N	MV	long	med.	short	no	N	MV	
LUM9				100	1	4,00				100	1	4,00	*D.lacombai*
RG2			11	89	19	3,89			11	89	19	3,89	*D.lacombai*
LUM8				100	1	4,00				100	1	4,00	*D.lacombai*
LUM7										100	1	4,00	*D.lacombai*
VA7G										100	2	4,00	*D.lacombai*
VA7F				100	2	4,00				100	1	4,00	*D.lacombai*
VA7E				100	11	4,00		6		94	16	3,88	*D.lacombai*
LUM4				100	1	4,00				100	3	4,00	*D.lacombai*
VA7D				100	2	4,00							*D.lacombai*
LUM3				100	5	4,00				100	2	4,00	*D.lacombai*
LUM1				100	1	4,00				100	1	4,00	*D.lacombai*
VA7C				100	2	4,00				100	8	4,00	*D.lacombai*
VA7B			17	83	6	3,83				100	2	4,00	*D.jordensi*
VA1A			100		2	3,00			25	75	4	3,75	*D.jordensi*
VA7A				100	3	4,00							*D.jordensi*
VA8B				100	2	4,00			100		1	3,00	*D.jordensi*
VA8C				100	1	4,00		50		50	2	3,00	*D.jordensi*
VR8B			13	88	8	3,88			14	86	7	3,86	*D.jordensi*
CS2B				100	2	4,00				100	2	4,00	*D.jordensi*
CS1A			40	60	5	3,60			33	67	3	3,67	*D.jordensi*
VR7		4	4	92	24	3,88		17	8	75	24	3,58	*D.jordensi*
VA3D			18	82	11	3,82			56	44	9	3,44	*D.jordensi*
VA3B			47	53	17	3,53			46	54	13	3,54	*D.jordensi*
VA11			100		1	3,00			100		1	3,00	*D.jordensi*
VR6			50	50	2	3,50			100		2	3,00	*D.jordensi*
VR5			67	33	6	3,33		11	56	33	9	3,22	*D.jordensi*
VL4A			50	50	26	3,50			53	47	36	3,47	*D.jordensi*
VA8A		20	23	57	30	3,37			76	24	21	3,24	*D.moralesi*
MUE				100	1	4,00							*D.moralesi*
MOR3			75	25	8	3,25		20	70	10	10	2,90	*D.moralesi*
MOR2		5	74	21	19	3,16		30	55	15	20	2,85	*D.moralesi*
FTE4		25	25	50	8	3,25		80	20		10	2,20	*D.moralesi*
COLD		15	72	13	71	2,97		31	60	9	77	2,78	*D.moralesi*
COLC	1	18	65	16	127	2,96	1	36	54	10	135	2,73	*D.moralesi*
COLB		30	52	18	33	2,88		37	48	15	27	2,78	*D.moralesi*
FTE3			62	38	13	3,38	6	56	28	11	18	2,44	*D.moralesi*
FTE2		15	48	37	27	3,22		50	46	4	24	2,54	*D.moralesi*
OR9		7	71	21	14	3,14	6	24	65	6	17	2,71	*D.moralesi*
VR2B		28	56	17	18	2,89		15	63	22	27	3,07	*D.moralesi*
COLA		40	30	30	10	2,90		56	44		9	2,44	*D.moralesi*
VR2A		25	25	50	4	3,25		33	67		3	2,67	*D.moralesi*
OR8			50	50	2	3,50							*D.moralesi*
FTE1								100			1	2,00	*D.moralesi*
OR5			100		3	3,00		17	67	17	6	3,00	*D.moralesi*
VR3		40	30	30	30	2,90	6	42	39	14	36	2,61	*D.moralesi*
VR1A	6	24	59	11	87	2,76	8	33	56	3	97	2,54	*D.moralesi*
VR4BB	5	38	37	20	92	2,71	5	48	37	10	83	2,52	*D.moralesi*
VR4B		29	57	14	7	2,86		29	57	14	7	2,86	*D.moralesi*
VR4A	3	44	31	22	68	2,72	4	61	29	7	76	2,38	*D.moralesi*
BU	17	52	28	3	29	2,17	20	70	10		20	1,90	*D.decipiens*
OR4A			83	17	6	3,17		33	67		3	2,67	*D.decipiens*
SR3	4	60	24	12	25	2,44	12	71	18		17	2,06	*D.decipiens*
COR		44	50	6	18	2,61		56	44		18	2,44	*D.decipiens*
ART1	7	52	34	7	29	2,41	16	65	14	5	43	2,07	*D.decipiens*
VL2A	15	63	19	4	27	2,11	18	73	9		22	1,91	*D.hispanicus*
OR3		67	33		3	2,33		100			5	2,00	*D.hispanicus*
SR5	25	75			4	1,75	33	67			3	1,67	*D.hispanicus*
SR2		58	42		12	2,42	20	60	20		10	2,00	*D.hispanicus*
SAM	46	42	13		24	1,67	56	22	22		9	1,67	*D.hispanicus*
OR2		100			1	2,00	75	25			8	1,25	*D.hispanicus*
OR1		100			1	2,00	33	67			3	1,67	*D.hispanicus*
SR1		75	25		20	2,25	33	67			18	1,67	*D.hispanicus*

Table 17

M2	Paracone spur			Protolophule							Metalophule							SPECIES
	no	yes	N	ant	da	ds	dp	post.	N	MV	ant.	trans.	dble.	post.	no	N	MV	
LUM9		100	1					100	1	5,00				100		1	4,00	*D.lacombai*
RG2		100	21			11	11	78	18	4,67	24		29	47		17	3,00	*D.lacombai*
LUM8	100		1					100	1	5,00				100		1	4,00	*D.lacombai*
LUM7		100	1					100	1	5,00	100					1	1,00	*D.lacombai*
VA7G	100		2					100	2	5,00			50	50		2	3,50	*D.lacombai*
VA7F		100	1					100	1	5,00			100			1	3,00	*D.lacombai*
VA7E	6	94	16		7		29	64	14	4,50	43	21		29	7	14	2,15	*D.lacombai*
LUM4		100	3				33	67	3	4,67	33	33			33	3	1,50	*D.lacombai*
LUM3		100	1					100	1	5,00	50		50			2	2,00	*D.lacombai*
LUM1		100	1					100	1	5,00			100			1	3,00	*D.lacombai*
VA7C	29	71	7			29	29	43	7	4,14	57		14	29		7	2,14	*D.lacombai*
VA7B		100	2					100	2	5,00			33	33	33	3	3,50	*D.jordensi*
VA1A		100	4		25	25	25	25	4	3,50		25	50	25		4	3,00	*D.jordensi*
VA7A		100	1				100		1	4,00								*D.jordensi*
VA8B		100	1					100	1	5,00		100				1	2,00	*D.jordensi*
VA8C		100	2				50	50	2	4,50	50			50		2	2,50	*D.jordensi*
VR8B	57	43	7			13	13	75	8	4,63	50		17		33	6	1,50	*D.jordensi*
CS2B		100	1			50		50	2	4,00								*D.jordensi*
CS1A		100	2	67				33	3	2,33	33	17			50	6	1,33	*D.jordensi*
VR7	64	36	22	4	4	13	4	74	23	4,39	9	26	17	43	4	23	3,00	*D.jordensi*
VA3D		100	8	10		20	30	40	10	3,90	55	27	9	9		11	1,73	*D.jordensi*
VA3B		100	14					100	14	5,00	73	18	9			11	1,36	*D.jordensi*
VA11								100	1	5,00	100					1	1,00	*D.jordensi*
VR6	50	50	2				100		2	4,00				100		2	4,00	*D.jordensi*
VR5	89	11	9					100	9	5,00	44	22		22	11	9	2,00	*D.jordensi*
VL4A	29	71	17	3		3	18	76	33	4,64	50	12	4	19	15	26	1,91	*D.jordensi*
VA8A	55	45	29	11	5	11	11	63	19	4,11	28	39		33		18	2,39	*D.moralesi*
MOR3	50	50	2		40	10	30	20	10	3,30	44	11		44		9	2,44	*D.moralesi*
MOR2	50	50	10			19	24	57	21	4,38	56	19		25		16	1,94	*D.moralesi*
FTE4	90	10	10		50	20	20	10	10	2,90	44	11		44		9	2,44	*D.moralesi*
COLD	63	37	27	7	28	24	29	13	76	3,14	56	16	8	17	4	77	1,85	*D.moralesi*
COLC	36	64	50	14	26	35	13	13	133	2,86	47	20	3	24	5	132	2,05	*D.moralesi*
COLB	84	16	25	15	42	27	4	12	26	2,54	58	27	12	4		26	1,62	*D.moralesi*
FTE3	88	12	17	12	53	12	6	18	17	2,65	41	6		29	24	17	2,23	*D.moralesi*
FTE2	90	10	20	33	33	17		17	24	2,33	52	12		36		25	2,20	*D.moralesi*
OR9	75	25	4	12	29	41	6	12	17	2,76	67		20	13		15	1,80	*D.moralesi*
VR2B	100		28	20	40	20	12	8	25	2,48	63	8		21	8	24	1,77	*D.moralesi*
COLA	83	17	6	38	50		13		8	1,88	25	50		25		8	2,25	*D.moralesi*
VR2A	100		3	33	33		33		3	2,33	33	33			33	3	1,50	*D.moralesi*
OR8						80		20	5	3,40								*D.moralesi*
OR5	100		2	33	17		33	17	6	2,83	83	17				6	1,17	*D.moralesi*
VR3	83	17	29	23	37	17	11	11	35	2,51	43	26		31		35	2,20	*D.moralesi*
VR1A	93	7	41	20	45	21	9	4	98	2,32	54	13	5	24	4	82	2,00	*D.moralesi*
VR4BB	88	13	64	32	36	14	6	10	77	2,26	51	16	3	23	8	80	1,96	*D.moralesi*
VR4B	86	14	7		71		29		7	2,57	57	14		14	14	7	1,67	*D.moralesi*
VR4A	89	11	63	25	51	15	3	6	72	2,13	55	23	1	13	7	69	1,70	*D.moralesi*
BU	71	29	7	5	55	35	5		20	2,40	45	15	5	35		20	2,30	*D.decipiens*
OR4A		100	1	33	67				3	1,67	100					2	1,00	*D.decipiens*
SR3	67	33	3	37	42	11	11		19	1,95	59	35			6	17	1,38	*D.decipiens*
COR	64	36	14	35	55		10		20	1,85	74	5		16	5	19	1,56	*D.decipiens*
ART1	100		10	24	52	10	14		42	2,14	71	20		7	2	41	1,43	*D.decipiens*
VL2A	100		7	23	45	23	5	5	22	2,23	63	37				19	1,37	*D.hispanicus*
OR3					33	33	17	17	6	3,17	50			33	17	6	2,20	*D.hispanicus*
SR5	100		2		100				3	2,00	67	33				3	1,33	*D.hispanicus*
SR2	100		4	30	50	20			10	1,90	63		38			8	1,75	*D.hispanicus*
SAM	100		8	11	67	22			9	2,11	44	22	33			9	1,89	*D.hispanicus*
OR2	100		3	11	67	22			9	2,11	63	25	13			8	1,50	*D.hispanicus*
OR1	100		1		33	33		33	3	3,33	33	33		33		3	2,33	*D.hispanicus*
SR1	100		7	11	56	33			18	2,22	93	7				14	1,07	*D.hispanicus*

Table 18

	m1										m2						SPECIES
	Lingual antsd.			Metalophulid				Metaconid ridge			Metaconid ridge			Ling. antlophd.			
	open	closd.	N	forw.	trans.	no	N	yes	no	N	yes	no	N	yes	no	N	
LUM8	100		2	50	50		2		100	2		100	7	40	60	5	*D.lacombai*
LUM7												100	2	50	50	2	*D.lacombai*
VA7G												100	1		100	1	*D.lacombai*
VA7F		100	2	100			2		100	2		100	2				*D.lacombai*
VA7E	100		10	9	82	9	11		100	13		100	10		100	8	*D.lacombai*
LUM4	100		4		100		4		100	5		100	1				*D.lacombai*
VA7D	100		1		100		1	100		1							*D.lacombai*
LUM3	100		4		100		4		100	5							*D.lacombai*
VR11												100	2		100	2	*D.lacombai*
VA6A	100		1	100			1	100		1							*D.lacombai*
VA7C	100		4		100		5	25	75	8		100	1		100	1	*D.lacombai*
VA7B	100		4		100		3		100	4		100	3		100	3	*D.jordensi*
VA7A	100		2		100		2		100	2		100	2				*D.jordensi*
VA8B	100		4		100		4		100	4		100	4		100	4	*D.jordensi*
VA8C	100		2		100		1		100	2		100	3	33	67	3	*D.jordensi*
VR8C												100	1		100	1	*D.jordensi*
VR8B	17	83	6	29	71		7	14	86	7		100	6	80	20	5	*D.jordensi*
CS1A	100		3	100			3		100	3		100	3	100		1	*D.jordensi*
VR7	96	4	26	16	84		25		100	29		100	29	38	62	26	*D.jordensi*
VA3D	56	44	9	100			9		100	5	20	80	5	100		2	*D.jordensi*
VA3B	69	31	13	91	9		11	9	91	11	5	95	21	54	46	13	*D.jordensi*
VA11		100	1		100		1		100	1							*D.jordensi*
VR6	100		4	25	50	25	4		100	4		100	2	50	50	2	*D.jordensi*
VR5	80	20	5	20	60	20	5		100	6		100	7	40	60	5	*D.jordensi*
VL4A	77	23	35	77	23		31	3	97	30	9	91	34	33	67	15	*D.jordensi*
VA8A												100	13	36	64	11	*D.moralesi*
MUE												100	1				*D.moralesi*
MOR3	50	50	10	92	8		13	36	64	11	27	73	11	88	13	8	*D.moralesi*
MOR2	33	67	24	82	9	9	22	14	86	21	29	71	17	82	18	11	*D.moralesi*
FTE4	86	14	7	50	17	33	6		100	7		100	4		100	3	*D.moralesi*
COLD	61	39	57	95	5		60	9	91	55	8	92	50	74	26	38	*D.moralesi*
COLC	29	71	112	86	2	12	103	45	55	83	28	72	108	79	21	80	*D.moralesi*
COLB	75	25	20	48	33	19	21		100	21	4	96	26	70	30	23	*D.moralesi*
FTE3	80	20	10	42	50	8	12		100	14		100	10	73	27	11	*D.moralesi*
FTE2	96	4	26	23	47	30	30		100	5		100	5	67	33	3	*D.moralesi*
OR9	41	59	22	100			23	16	84	19	14	86	14	100		9	*D.moralesi*
VR2B	55	45	20	30	65	4	23	4	96	26	7	93	29	39	61	23	*D.moralesi*
COLA	88	13	8	80	20		10	10	90	10		100	5	50	50	4	*D.moralesi*
VR2A		100	2	50		50	2		100	2		100	4	75	25	4	*D.moralesi*
OR5	86	14	7	100			8		100	6		100	2	100		1	*D.moralesi*
VR3	89	11	36	20	63	17	41		100	39		100	34	59	41	27	*D.moralesi*
VR1A	61	39	90	87	3	10	103	10	90	93	4	96	81	91	9	68	*D.moralesi*
VR4BB	81	19	75	55	29	17	77	28	72	76	6	94	88	64	36	74	*D.moralesi*
VR4B	50	50	4	40	40	20	5	20	80	5	11	89	9	44	56	9	*D.moralesi*
VR4A	91	9	23	13	75	13	24	7	93	28		100	14	23	77	13	*D.moralesi*
BU	39	61	18	94		6	18	71	29	17	23	77	26	96	4	25	*D.decipiens*
OR4A	50	50	6	83		17	6	33	67	6	33	67	9	86	14	7	*D.decipiens*
SR3	76	24	17	47	53		17	24	76	17	4	96	26	36	64	22	*D.decipiens*
COR	50	50	20	86	10	5	21	52	48	21	30	70	20	93	7	15	*D.decipiens*
ART1	44	56	25	78	4	17	23	70	30	27	100	233	6	94	6	17	*D.decipiens*
VL2A	44	56	16	94	6		17	54	46	13		100	14	100		13	*D.hispanicus*
OR3	100		1	100			2					100	1	100		3	*D.hispanicus*
SR5	100		6	40	60		5	20	80	5		100	7	40	60	5	*D.hispanicus*
SR2	94	6	16	88	6	6	17	36	64	14	11	89	18	100		18	*D.hispanicus*
SAM	93	7	15	56	19	25	16	25	75	16	10	90	10	44	56	9	*D.hispanicus*
OR2	100		5	100			5	50	50	4		100	1	100		2	*D.hispanicus*
OR1	100		3	100			3		100	3		100	3	100		2	*D.hispanicus*
SR1	82	18	11	93	7		15	33	67	9	13	88	8	89	11	9	*D.hispanicus*
SR4A												100	2	100		2	*D.hispanicus*

Table 19

	m1						m2						SPECIES
	long	med.	short	no	N	MV	long	med.	short	no	N	MV	
LUM8				100	2	4,00			29	71	7	3,71	*D.lacombai*
LUM7									50	50	2	3,50	*D.lacombai*
VA7G										100	1	4,00	*D.lacombai*
VA7F				100	3	4,00				100	3	4,00	*D.lacombai*
VA7E			7	93	15	3,93				100	11	4,00	*D.lacombai*
LUM4				100	5	4,00				100	1	4,00	*D.lacombai*
VA7D				100	2	4,00							*D.lacombai*
LUM3				100	5	4,00			33	67	6	3,67	*D.lacombai*
VR11								100			1	2,00	*D.lacombai*
VA7C		13	25	63	8	3,50				100	2	4,00	*D.lacombai*
VA7B				100	4	4,00				100	3	4,00	*D.jordensi*
VA7A			50	50	2	3,50			100		1	3,00	*D.jordensi*
VA8B				100	4	4,00			25	75	4	3,75	*D.jordensi*
VA8C				100	2	4,00				100	4	4,00	*D.jordensi*
VR8C										100	1	4,00	*D.jordensi*
VR8B			13	88	8	3,88				100	6	4,00	*D.jordensi*
CS1A			33	67	3	3,67			100		2	3,00	*D.jordensi*
VR7		3	3	93	30	3,90			20	80	30	3,80	*D.jordensi*
VA3D			38	63	8	3,63			33	67	6	3,67	*D.jordensi*
VA3B			33	67	15	3,67			9	91	23	3,91	*D.jordensi*
VA11			50	50	2	3,50							*D.jordensi*
VR6		25	50	25	4	3,00				100	3	4,00	*D.jordensi*
VR5				100	7	4,00				100	9	4,00	*D.jordensi*
VL4A		3	3	94	36	3,92			14	86	37	3,86	*D.jordensi*
VA8A		3	6	91	32	3,88		8	15	77	13	3,69	*D.moralesi*
MUE										100	1	4,00	*D.moralesi*
MOR3		15	46	38	13	3,23			36	64	11	3,64	*D.moralesi*
MOR2			20	80	25	3,80			25	75	24	3,75	*D.moralesi*
FTE4			43	57	7	3,57			40	60	10	3,60	*D.moralesi*
COLD		13	50	37	60	3,23	4	7	41	48	56	3,34	*D.moralesi*
COLC	1	7	54	38	112	3,29	1	1	11	87	136	3,83	*D.moralesi*
COLB		12	32	56	25	3,44		14	21	64	28	3,50	*D.moralesi*
FTE3		8	19	73	26	3,65			47	53	15	3,53	*D.moralesi*
FTE2		10	21	69	42	3,60			15	85	33	3,85	*D.moralesi*
OR9	4	19	35	42	26	3,15			38	62	13	3,62	*D.moralesi*
VR2B			34	66	29	3,66		3	30	67	30	3,63	*D.moralesi*
COLA		9	45	45	11	3,36		17	17	67	6	3,50	*D.moralesi*
VR2A			50	50	2	3,50			33	67	6	3,67	*D.moralesi*
OR8										100	1	4,00	*D.moralesi*
OR5	13	38	50		8	2,38			100		3	3,00	*D.moralesi*
VR3		20	41	39	44	3,18		3	11	86	36	3,83	*D.moralesi*
VR1A	2	17	72	9	110	2,88	2	5	62	31	100	3,22	*D.moralesi*
VR4BB	7	23	36	33	81	2,95		12	27	62	94	3,50	*D.moralesi*
VR4B		33	17	50	6	3,17	10		60	30	10	3,10	*D.moralesi*
VR4A		19	37	44	27	3,26	6		35	59	17	3,47	*D.moralesi*
BU	10	29	43	19	21	2,71		32	45	23	31	2,90	*D.decipiens*
OR4A			57	43	7	3,43		11	33	56	9	3,44	*D.decipiens*
SR3		30	45	25	20	2,95			43	57	37	3,57	*D.decipiens*
COR		19	57	24	21	3,05		9	55	36	22	3,27	*D.decipiens*
ART1	6	35	39	19	31	2,71	4	4	58	35	26	3,23	*D.decipiens*
VL2A	35	39	22	4	23	1,96	5	32	42	21	19	2,79	*D.hispanicus*
OR3			100		1	3,00			100		4	3,00	*D.hispanicus*
SR5	71	14	14		7	1,43		25	63	13	8	2,88	*D.hispanicus*
SR2	16	58	26		19	2,11		27	73		22	2,73	*D.hispanicus*
SAM	25	44	19	13	16	2,19	8	25	58	8	12	2,67	*D.hispanicus*
OR2		40	60		5	2,60		25	50	25	4	3,00	*D.hispanicus*
OR1	33	33	33		3	2,00			100		4	3,00	*D.hispanicus*
SR1	13	63	25		16	2,13		25	50	25	12	3,00	*D.hispanicus*
SR4A								33	67		3	2,67	*D.hispanicus*

Table 20

M1	Anterocone			Forked antlphle.			Protolophule			Paracone spur			SPECIES
	smpl.	split	N	yes	no	N	dble.	post.	N	no	yes	N	
CAR1							33	67	3				*D.crusafonti*
MOL(M)	13	88	8	75	25	8		100	11	91	9	11	*D.crusafonti*
NOM1				100		1		100	1				*D.crusafonti*
NOM2	83	17	18	33	67	21		100	26	72	28	25	*D.crusafonti*
ESC								100	1				*D.crusafonti*
ESC(M)	100		3	60	40	5		100	4	100		4	*D.crusafonti*
SOL	100		3	100		5	25	75	16		100	2	*D.crusafonti*
PJE1								100	1	100		1	*D.crusafonti*
TOR3B	100		6	80	20	5		100	7	57	43	7	*D.larteti*
TOR3A	83	17	6	83	17	6	13	88	8	57	43	7	*D.larteti*
TOR2	100		7	75	25	8		100	9	71	29	7	*D.larteti*
TOR1	71	29	7	100		12	17	83	12	40	60	5	*D.larteti*
AC2				100		1	100		1				*D.larteti*
VL9								100	1		100	1	*D.larteti*
BOR	100		18	71	29	17		100	36	50	50	8	*D.larteti*
MAN	100		43	63	37	30	2	98	98	69	31	26	*D.larteti*
VT1A	100		2		100	2	100		2	50	50	2	*D.larteti*
LP5C	67	33	3	100		2		100	5	33	67	3	*D.larteti*
LP5B								100	2		100	1	*D.larteti*
VT2C	67	33	3	75	25	4		100	10	25	75	4	*D.larteti*
LUM21	100		1		100	2	50	50	2	100		2	*D.larteti*
LUM22	100		1		100	1		100	1		100	1	*D.larteti*
LUM20	100		1		100	2	50	50	2	100		2	*D.larteti*
LP4B	100		16	63	37	19		100	16	24	77	17	*D.larteti*
LUM18	100		9	40	60	10		100	14	89	11	9	*D.larteti*
LUM17	100		6	17	83	6		100	7	50	50	6	*D.larteti*
LUM12	100		6	60	40	10	40	60	10	50	50	6	*D.larteti*
LUM16	100		7	20	80	10	19	81	16	80	20	10	*D.larteti*
LUM11	100		19	28	72	29	12	88	34	46	54	26	*D.larteti*
LUM10	100		2	100		2		100	3	50	50	2	*D.larteti*
LUM9	83	17	6	11	89	9		100	10	50	50	6	*D.larteti*
RG2	94	6	34	4	96	46	18	82	74	50	50	30	*D.larteti*
LUM8	96	4	24	14	86	28		100	35	50	50	32	*D.larteti*
LUM7	100		2	50	50	4		100	5	67	33	3	*D.larteti*
VA7G	100		16	6	94	16		100	20	61	39	18	*D.koenigswaldi*
VA7F	100		23	20	80	25		100	27	93	7	27	*D.koenigswaldi*
VA7E	99	1	72	18	82	92	12	88	102	75	25	92	*D.koenigswaldi*
LUM5	89	11	9	20	80	15	6	94	17	73	27	15	*D.koenigswaldi*
LUM4	100		30	13	88	48	2	98	59	76	24	42	*D.koenigswaldi*
VA7D	100		14	15	85	27	4	96	27	62	38	26	*D.koenigswaldi*
LUM3	99	1	136	22	78	183	10	90	197	74	26	160	*D.koenigswaldi*
VR11	96	4	24	9	91	43	6	94	51	84	16	50	*D.koenigswaldi*
VA6B	100		11	4	96	23	10	90	29	74	26	19	*D.koenigswaldi*
LUM2	94	6	16	15	85	13		100	18	89	11	18	*D.koenigswaldi*
LUM1	100		15	13	88	16		100	18	86	14	22	*D.koenigswaldi*
VA3F	100		11		100	12	36	64	14	91	9	11	*D.koenigswaldi*
VA3E	100		11		100	6	35	65	17	64	36	14	*D.koenigswaldi*
VA6A	100		29	6	94	48	4	96	53	88	13	48	*D.koenigswaldi*
VA7C	99	1	152	22	78	188	5	95	222	81	19	181	*D.koenigswaldi*
VA7B	92	8	39	28	72	54	13	87	82	78	22	55	*D.koenigswaldi*
VA1A	94	6	18	21	79	14	9	91	22	50	50	12	*D.koenigswaldi*
VA7A	100		12	10	90	20	14	86	21	87	13	15	*D.koenigswaldi*
VA8B	100		16		100	24	6	94	34	100		21	*D.koenigswaldi*
VA8C	90	10	10		100	17	6	94	17	92	8	12	*D.koenigswaldi*
VR8C	93	7	15		100	27	15	85	27	78	22	23	*D.koenigswaldi*
VR8B	100		13		100	15	58	42	19	89	11	19	*D.koenigswaldi*
CS2B	100		39	100		32	17	83	60	54	46	26	*D.koenigswaldi*
CS1A	97	3	29	12	88	25	53	47	60	15	85	13	*D.koenigswaldi*
VR7	100		54		100	71	39	61	69	85	15	54	*D.koenigswaldi*
VA3B							100		1				*D.franconicus*
VA11	100		3		100	9	40	60	10	100		5	*D.franconicus*
VR6	100		21		100	33	16	84	32	100		23	*D.franconicus*
VR5	100		11	10	90	21	50	50	32	100		17	*D.franconicus*
VA8A	97	3	33	3	97	34	41	59	46	95	5	38	*D.franconicus*
MUE	100		8	13	88	8	45	55	20	78	22	9	*D.franconicus*
MOR3							100		1				*D.franconicus*
MOR2	96	4	94	6	94	108	48	52	188	86	14	136	*D.franconicus*
FTE4	100		6		100	6	38	63	8	75	25	8	*D.franconicus*
COLD	97	3	39	2	98	47	32	68	74	32	68	22	*D.franconicus*
COLC	100		5		100	3	57	43	7	100		4	*D.franconicus*
FTE3	100		2		100	2	50	50	4	100		4	*D.franconicus*
FTE2	100		1		100	1	100		1	100		1	*D.franconicus*
VR2B	100		4		100	4	100		5	100		5	*D.franconicus*
OR5	100		3		100	5	50	50	6	100		2	*D.franconicus*
VR1A	100		1	100		1		100	2				*D.franconicus*
VR4BB	100		2		100	2	50	50	2	100		2	*D.franconicus*

Table 21

	M1						M2						SPECIES
	long	med.	short	no	N	MV	long	med.	short	no	N	MV	
CAR1			100		1	3,00			80	20	5	3,20	*D.crusafonti*
MOL(M)				100	9	4,00				100	6	4,00	*D.crusafonti*
NOM1			100		1	3,00				100	1	4,00	*D.crusafonti*
NOM2			52	48	23	3,48			35	65	17	3,65	*D.crusafonti*
ESC			100		1	3,00				100	3	4,00	*D.crusafonti*
ESC(M)			43	57	7	3,57			38	62	13	3,62	*D.crusafonti*
SOL			50	50	10	3,50			54	46	13	3,46	*D.crusafonti*
PJE1				100	1	4,00							*D.crusafonti*
LP5H									100		2	3,00	*D.crusafonti*
TOR3B			29	71	7	3,71			21	79	14	3,79	*D.larteti*
TOR3A			14	86	7	3,86				100	7	4,00	*D.larteti*
TOR2			11	89	9	3,89				100	2	4,00	*D.larteti*
TOR1			43	57	14	3,57			20	80	15	3,80	*D.larteti*
AC2			100		1	3,00		50	50		2	2,50	*D.larteti*
BOR			21	79	29	3,79			30	70	30	3,70	*D.larteti*
MAN			48	52	63	3,52			37	63	67	3,63	*D.larteti*
VT1B			100		1	3,00							*D.larteti*
VT1A			50	50	2	3,50				100	1	4,00	*D.larteti*
LP5C				100	5	4,00			40	60	5	3,60	*D.larteti*
LP5B			100		1	3,00				100	1	4,00	*D.larteti*
VT2C			30	70	10	3,70			27	73	11	3,73	*D.larteti*
VT2B										100	1	4,00	*D.larteti*
LUM21				100	2	4,00			20	80	5	3,80	*D.larteti*
LUM22				100	1	4,00				100	3	4,00	*D.larteti*
LP4A		14	43	43	7	3,29		13	38	50	8	3,38	*D.larteti*
LUM14		10	49	41	49	3,31	2	10	40	48	60	3,35	*D.larteti*
LUM18			50	50	14	3,50		10	40	50	10	3,40	*D.larteti*
LUM17		17	50	33	6	3,17			75	25	4	3,25	*D.larteti*
LUM12		44	44	11	9	2,67		23	31	46	13	3,23	*D.larteti*
LUM16		6	69	25	16	3,19		15	25	60	20	3,45	*D.larteti*
LUM11			64	36	33	3,36		36	39	25	36	2,89	*D.larteti*
LUM10			33	67	3	3,67		50	50		2	2,50	*D.larteti*
LUM9		10	30	60	10	3,50		7	21	71	14	3,64	*D.larteti*
RG2		3	60	37	70	3,34		9	61	30	79	3,22	*D.larteti*
LUM8		12	32	56	34	3,44		22	22	56	41	3,34	*D.larteti*
LUM7		25	25	50	4	3,25			14	86	7	3,86	*D.larteti*
VA7G	5	5	42	47	19	3,32		47	47	7	15	2,60	*D.koenigswaldi*
VA7F		12	58	31	26	3,19	4	43	36	18	28	2,68	*D.koenigswaldi*
VA7E		4	31	65	102	3,61	1	20	38	41	92	3,20	*D.koenigswaldi*
LUM5		47	35	18	17	2,71	4	39	35	22	23	2,74	*D.koenigswaldi*
LUM4		9	32	60	57	3,51		27	24	48	62	3,21	*D.koenigswaldi*
VA7D		15	38	46	26	3,31		15	45	40	20	3,25	*D.koenigswaldi*
LUM3		21	51	29	185	3,08	2	48	31	19	187	2,67	*D.koenigswaldi*
VR11		8	41	51	51	3,43	10	31	39	20	49	2,69	*D.koenigswaldi*
VA6B		18	50	32	28	3,14		31	47	22	32	2,91	*D.koenigswaldi*
LUM2		6	56	39	18	3,33	6	47	18	29	17	2,71	*D.koenigswaldi*
LUM1			35	65	20	3,65		38	48	14	21	2,76	*D.koenigswaldi*
VA3F		21	50	29	14	3,07		8	69	23	13	3,15	*D.koenigswaldi*
VA3E		6	88	6	16	3,00		31	69		13	2,69	*D.koenigswaldi*
VA6A		35	38	27	52	2,92	4	63	23	11	56	2,41	*D.koenigswaldi*
VA7C	0	11	49	40	218	3,28	1	19	48	32	214	3,11	*D.koenigswaldi*
VA7B		6	41	53	79	3,47	4	19	39	38	109	3,11	*D.koenigswaldi*
VA1A		19	67	14	21	2,95	9	43	39	9	23	2,48	*D.koenigswaldi*
VA7A		14	48	38	21	3,24		67	22	11	9	2,44	*D.koenigswaldi*
VA8B		15	42	42	33	3,27		43	30	27	30	2,83	*D.koenigswaldi*
VA8C		13	50	38	16	3,25		40	10	50	10	3,10	*D.koenigswaldi*
VR8C		11	56	33	27	3,22	12	24	40	24	25	2,76	*D.koenigswaldi*
VR8B	5	55	30	10	20	2,45		50	22	28	18	2,78	*D.koenigswaldi*
CS2B		4	67	29	55	3,25		27	51	22	51	2,94	*D.koenigswaldi*
CS1A	2	33	57	9	58	2,72	1	33	60	6	67	2,70	*D.koenigswaldi*
VR7	4	60	35	1	72	2,33	8	48	25	19	75	2,55	*D.koenigswaldi*
VA3B		100			1	2,00	50	50			6	1,50	*D.franconicus*
VA11		89	11		9	2,11	20	80			10	1,80	*D.franconicus*
VR6		94	6		32	2,06	33	64	3		33	1,70	*D.franconicus*
VR5	28	72			29	1,72	70	27	3		37	1,32	*D.franconicus*
VA8A	40	60			40	1,60	69	31			39	1,31	*D.franconicus*
MUE	13	88			16	1,88	85	15			13	1,15	*D.franconicus*
MOR3		100			1	2,00							*D.franconicus*
MOR2	27	71	2		179	1,74	66	32	2		128	1,35	*D.franconicus*
FTE4	63	38			8	1,38	83	17			12	1,17	*D.franconicus*
COLD	22	78			68	1,78	61	33	6		83	1,45	*D.franconicus*
COLC	71	29			7	1,29	100				2	1,00	*D.franconicus*
FTE2	100				1	1,00	100				1	1,00	*D.franconicus*
OR9		100			2	2,00		100			1	2,00	*D.franconicus*
VR2B	60	40			5	1,40	83	17			12	1,17	*D.franconicus*
OR5	50	50			6	1,50	100				1	1,00	*D.franconicus*
VR1A		100			2	2,00	100				1	1,00	*D.franconicus*
VR4BB	50	50			2	1,50	50	50			2	1,50	*D.franconicus*
VR4A							75	25			4	1,25	*D.franconicus*

Table 22

M2	Paracone spur			Protolophule							Metalophule							SPECIES
	no	yes	N	ant	da	ds	dp	post.	N	MV	ant.	trans.	dble.	post.	no	N	MV	
CAR1	100		1				20	80	5	4,80				100		5	4,00	*D.crusafonti*
MOL(M)	80	20	5					100	6	5,00				100		6	4,00	*D.crusafonti*
NOM1	100		1					100	1	5,00				100		1	4,00	*D.crusafonti*
NOM2	79	21	14			6	53	41	17	4,35				81	19	16	4,00	*D.crusafonti*
ESC							67	33	3	4,33				100		3	4,00	*D.crusafonti*
ESC(M)	100		3				62	38	13	4,38			10	80	10	10	3,89	*D.crusafonti*
SOL	100		4		35	24	35	6	17	3,12			55	45		11	3,45	*D.crusafonti*
LP5H							100		2	4,00			100			2	3,00	*D.crusafonti*
TOR3B	62	38	13			47	27	27	15	3,80	8		15	77		13	3,62	*D.larteti*
TOR3A	83	17	6			29	71		7	3,71			14	86		7	3,86	*D.larteti*
TOR2	100		2				100		2	4,00			50	50		2	3,50	*D.larteti*
TOR1	67	33	3			21	43	36	14	4,14			14	86		14	3,86	*D.larteti*
AC2						100			2	3,00			100			2	3,00	*D.larteti*
BOR	46	54	13		6	24	39	30	33	3,94	7	3	47	43		30	3,27	*D.larteti*
MAN	58	42	36			24	41	36	76	4,12	1		20	79		71	3,76	*D.larteti*
VT1A	100		1				100		1	4,00				100		1	4,00	*D.larteti*
LP5C	50	50	4				60	40	5	4,40				100		4	4,00	*D.larteti*
LP5B	100		1					100	1	5,00				100		1	4,00	*D.larteti*
VT2C	50	50	4			20	10	70	10	4,50	64			36		11	2,09	*D.larteti*
VT2B		100	1				100		1	4,00								*D.larteti*
LUM21	50	50	2				100		5	4,00	33		33	33		3	2,67	*D.larteti*
LUM22		100	3				33	67	3	4,67	33		33	33		3	2,67	*D.larteti*
LUM20	100		2				50	50	2	4,50				100		2	4,00	*D.larteti*
LP4B	55	45	20		4	11	39	46	28	4,29	15	4	22	59		27	3,26	*D.larteti*
LP4A		100	3				50	50	8	4,50	13		38	50		8	3,25	*D.larteti*
LUM14	66	34	53		2	5	49	45	65	4,37	26	7	25	42		57	2,82	*D.larteti*
LUM18	25	75	8			10	50	40	10	4,30	11		44	33	11	9	3,13	*D.larteti*
LUM17	100		3				67	33	3	4,33	25	25		50		4	2,75	*D.larteti*
LUM12	63	38	8			23	54	23	13	4,00	44		22	33		9	2,44	*D.larteti*
LUM16	77	23	13			35	35	30	20	3,95	5	16	21	58		19	3,32	*D.larteti*
LUM11	52	48	29			11	69	19	36	4,08	15		29	56		34	3,26	*D.larteti*
LUM10	67	33	3				50	50	2	4,50			50	50		2	3,50	*D.larteti*
LUM9	69	31	13	7			50	43	14	4,21	7		14	79		14	3,64	*D.larteti*
RG2	57	43	30		6	28	52	14	79	3,73	9	5	23	62	1	78	3,39	*D.larteti*
LUM8	57	43	35		2	22	51	24	41	3,98	13	5	8	69	5	39	3,41	*D.larteti*
LUM7	60	40	5				100		4	4,00	20		20	40	20	5	3,00	*D.larteti*
VA7G	94	6	16			60	33	7	15	3,47	7	7	7	79		14	3,57	*D.koenigswaldi*
VA7F	81	19	27	4	7	25	57	7	28	3,57	4		33	63		27	3,56	*D.koenigswaldi*
VA7E	75	25	79		5	28	43	24	109	3,86	15	3	34	43	6	89	3,11	*D.koenigswaldi*
LUM5	76	24	17			43	39	17	23	3,74	9	9	14	59	9	22	3,35	*D.koenigswaldi*
LUM4	79	21	53		6	32	53	8	62	3,63	12	7	34	46	2	59	3,16	*D.koenigswaldi*
VA7D	80	20	20			18	73	9	22	3,91			53	47		17	3,47	*D.koenigswaldi*
LUM3	84	16	180		4	44	38	13	180	3,59	16	15	32	30	6	177	2,81	*D.koenigswaldi*
VR11	70	30	46		6	50	33	10	48	3,48	16	19	28	30	7	43	2,78	*D.koenigswaldi*
VA6B	61	39	28		3	48	39	9	33	3,55	14	10	31	45		29	3,07	*D.koenigswaldi*
LUM2	86	14	14		6	33	56	6	18	3,61	6	6	25	50	13	16	3,36	*D.koenigswaldi*
LUM1	74	26	19		10	29	57	5	21	3,57	17		22	56	6	18	3,24	*D.koenigswaldi*
VA3F	91	9	11			79	21		14	3,21	9		45	36	9	11	3,20	*D.koenigswaldi*
VA3E	75	25	12		14	64	21		14	3,07	8	17	58	17		12	2,83	*D.koenigswaldi*
VA6A	81	19	43		2	62	28	9	58	3,43	20		38	38	4	50	2,98	*D.koenigswaldi*
VA7C	87	13	204	0	6	28	43	23	245	3,82	18	8	24	42	8	212	2,98	*D.koenigswaldi*
VA7B	79	21	84		5	37	46	12	108	3,66	14	7	35	42	2	102	3,08	*D.koenigswaldi*
VA1A	38	62	21		8	42	46	4	24	3,46	13	4	26	52	4	23	3,23	*D.koenigswaldi*
VA7A	57	43	7		10	50	30	10	10	3,40	11		22	67		9	3,44	*D.koenigswaldi*
VA8B	76	24	25			67	27	7	30	3,40	37	10	27	20	7	30	2,32	*D.koenigswaldi*
VA8C	75	25	8		11	67	22		9	3,11	25	13	50	13		8	2,50	*D.koenigswaldi*
VR8C	91	9	23		8	92			25	2,92	22		39	22	17	23	2,74	*D.koenigswaldi*
VR8B	63	37	19		44	50	6		18	2,61	41		47	12		17	2,29	*D.koenigswaldi*
CS2B	45	55	22		24	34	40	2	50	3,20	20	4	24	46	7	46	3,02	*D.koenigswaldi*
CS1A	13	88	32	7	42	46	4		67	2,48	57	2	24	18		51	2,02	*D.koenigswaldi*
VR7	61	39	54	4	23	59	9	4	74	2,86	40	17	21	22		72	2,25	*D.koenigswaldi*
VA3B	100		6		33	33	33		6	3,00	100					6	1,00	*D.franconicus*
VA11	100		9		30	50	20		10	2,90	30	50	10		10	10	1,78	*D.franconicus*
VR6	96	4	27		25	59	13	3	32	2,94	73	21	3	3		33	1,36	*D.franconicus*
VR5	100		26		15	71	15		34	3,00	47	21	3	18	12	34	1,90	*D.franconicus*
VA8A	91	9	11	3	22	72	3		36	2,75	73	11		8	8	37	1,38	*D.franconicus*
MUE	82	18	11	6	6	50	31	6	16	3,25	53	12	6	24	6	17	2,00	*D.franconicus*
MOR3		100	1															*D.franconicus*
MOR2	76	24	78		5	56	32	7	136	3,40	67	11	4	15	4	130	1,65	*D.franconicus*
FTE4	86	14	14		25	75			12	2,75	90		10			10	1,20	*D.franconicus*
COLD	73	27	26	2	35	60	2	1	84	2,65	62	13	11	13	1	79	1,74	*D.franconicus*
FTE3	100		10		9	82	9		11	3,00	89				11	9	1,00	*D.franconicus*
FTE2	100		1			100			1	3,00	100					1	1,00	*D.franconicus*
OR9						100			1	3,00	100					1	1,00	*D.franconicus*
VR2B	83	17	12		8	92			13	2,92	82				18	11	1,00	*D.franconicus*
OR5						100			1	3,00	100					1	1,00	*D.franconicus*
VR1A	100		1		100				1	2,00	100					1	1,00	*D.franconicus*
VR4BB	100		2		100				2	2,00	50	25	25			4	1,75	*D.franconicus*
VR4A	67	33	3		50	25	25		4	2,75	25	75				4	1,75	*D.franconicus*

Table 23

	m1												m2						SPECIES
	Lingual antsd.			Metalophulid						Metaconid ridge			Metaconid ridge			Ling. antlophd.			
	open	closd.	N	forw.	trans.	dbl.	no	N	MV	yes	no	N	yes	no	N	yes	no	N	
CAR1																	100	2	*D.crusafonti*
MOL(M)	100		9	63	38			8	1,38										*D.crusafonti*
NOM1				100				4	1,00		100	4		4	4				*D.crusafonti*
NOM2	100		20		100			20	2,00		100	18		1	19		100	18	*D.crusafonti*
ESC														1	2		100	2	*D.crusafonti*
ESC(M)	75	25	4	50	50			4	1,50		100	4		100	9		100	9	*D.crusafonti*
SOL	78	22	9	75	17	8		12	1,33		100	11		100	15	33	67	6	*D.crusafonti*
PJE1														100	1		100	1	*D.crusafonti*
LP5H	33	67	3	100				1	1,00		100	3		100	2		100	2	*D.crusafonti*
TOR3B	63	38	8	63	38			8	1,38										*D.larteti*
TOR3A	60	40	10	20	60	10	10	10	1,89		100	12		100	4		100	4	*D.larteti*
TOR2	33	67	3		67		33	3	2,00		100	2		100	3		100	3	*D.larteti*
TOR1	46	54	13	92	8			13	1,08	20	80	10		100	17	77	23	13	*D.larteti*
AC2	100		1	100				2	1,00		100	2		100	1				*D.larteti*
VL9	50	50	2	100				1	1,00		100	1		100	2				*D.larteti*
BOR	43	57	30	90		10		20	1,20	18	82	28		100	19	77	23	13	*D.larteti*
MAN	48	52	64	81	11		8	73	1,12	9	91	64	3	97	76	51	49	35	*D.larteti*
VT1B	100		1	100				1	1,00		100	1		100	1	100		1	*D.larteti*
VT1A	100		1	100				1	1,00		100	1							*D.larteti*
LP5C		100	1	100				1	1,00	100		2							*D.larteti*
LP5B		100	2	100				1	1,00		100	2	50	50	2	100		1	*D.larteti*
VT2C	11	89	9	100				10	1,00	13	88	8		100	1	100		1	*D.larteti*
LUM20		100	3	33	67			3	1,67		100	3	50	50	2	100		1	*D.larteti*
LP4B	16	84	31	34	59	6		32	1,72	37	63	30	3	97	29	75	25	24	*D.larteti*
LP4A		100	4	100				2	1,00		100	3	25	75	4	100		4	*D.larteti*
LUM14	33	67	36	19	76	3	3	37	1,83	15	85	39	2	98	48	74	26	34	*D.larteti*
LUM18	58	42	12	18	45	9	27	11	1,88	33	67	12	9	91	11	43	57	7	*D.larteti*
LUM17	33	67	6	33	50		17	6	1,60	25	75	8	11	89	9	83	17	6	*D.larteti*
LUM12	29	71	7		86	14		7	2,14		100	10		100	12	40	60	5	*D.larteti*
LUM16	8	92	12	8	75		17	12	1,90	6	94	16		100	15	38	62	13	*D.larteti*
LUM11	11	89	19	23	42	6	29	31	1,77	12	88	34		100	33	35	65	26	*D.larteti*
LUM10	25	75	4	25	75			4	1,75		100	16		100	3	100		2	*D.larteti*
LUM9	27	73	11	57	14	14	14	7	1,50		100	13		100	14	100		3	*D.larteti*
RG2	100		19	94	2	4		82	1,10	50	50	70	17	83	86	93	7	60	*D.larteti*
LUM8		100	28	10	72		17	29	1,88	48	52	33		100	30	48	52	23	*D.larteti*
LUM7	25	75	4	67	33			6	1,33	75	25	4		100	2	100		1	*D.larteti*
VA7G	46	54	13	46	46		8	13	1,50	43	57	14		100	15	70	30	10	*D.koenigswaldi*
VA7F	35	65	17	39	61			18	1,61	56	44	18	8	92	25	69	31	16	*D.koenigswaldi*
VA7E	39	61	101	43	39		18	107	1,48	45	55	109	17	83	102	75	25	85	*D.koenigswaldi*
LUM5	55	45	11	45	55			11	1,55		100	10	17	83	18	62	38	13	*D.koenigswaldi*
LUM4	26	74	27	58	26	3	13	38	1,36	20	80	45	25	75	63	78	22	45	*D.koenigswaldi*
VA7D	43	57	21	46	54			24	1,54	50	50	24	21	79	19	78	22	18	*D.koenigswaldi*
LUM3	3	97	100	31	59	1	10	187	1,66	63	37	169	25	75	160	58	42	127	*D.koenigswaldi*
VR11	47	53	30	64	25	7	4	28	1,41	78	22	36	27	73	51	48	52	42	*D.koenigswaldi*
VA6B	45	55	20	68	26		5	19	1,28				16	84	31	40	60	25	*D.koenigswaldi*
LUM2	27	73	11	33	58	8		12	1,75	7	93	15	6	94	18	79	21	14	*D.koenigswaldi*
LUM1	20	80	10	11	78	11		9	2,00	50	50	10	10	90	10	43	57	7	*D.koenigswaldi*
VA3F	25	75	8	50	50			8	1,50	22	78	9		100	6	40	60	5	*D.koenigswaldi*
VA3E	17	83	23	71	29			21	1,29	100		18	75	25	12	100		10	*D.koenigswaldi*
VA6A	28	72	57	48	34	2	16	56	1,45	46	54	57	23	77	56	51	49	41	*D.koenigswaldi*
VA7C	55	45	211	39	54		7	213	1,58	55	45	221	4	96	182	59	41	152	*D.koenigswaldi*
VA7B	51	49	81	41	53		6	80	1,56	43	57	95	20	80	115	51	49	97	*D.koenigswaldi*
VA1A	25	75	24	96	4			25	1,04	96	4	24	82	18	22	85	15	20	*D.koenigswaldi*
VA7A	20	80	10	40	60			10	1,60	30	70	10	15	85	13	45	55	11	*D.koenigswaldi*
VA8B	61	39	28	20	77		3	30	1,79	62	38	34	13	87	31	14	86	29	*D.koenigswaldi*
VA8C	25	75	8	100				8	1,00	25	75	8	27	73	11	25	75	8	*D.koenigswaldi*
VR8C	38	62	29	35	43		22	23	1,56	37	63	30	7	93	27	35	65	26	*D.koenigswaldi*
VR8B	100		21	68	16		16	19	1,19	44	56	18	6	94	16	19	81	16	*D.koenigswaldi*
CS2B	42	58	33	83	3	3	11	36	1,09	66	34	29	26	74	34	84	16	25	*D.koenigswaldi*
CS1A	19	81	48	98		2		52	1,04	65	35	46	23	77	39	71	29	14	*D.koenigswaldi*
VR7	82	18	39	51	44		5	39	1,46	35	65	46		100	42	27	73	41	*D.koenigswaldi*
VA3B		100	2	100				2	1,00	100		1	100		1	100		1	*D.franconicus*
VA11	57	43	7	29	71			7	1,71	29	71	7	38	62	13	36	64	11	*D.franconicus*
VR6	77	23	31	31	44	25		32	1,94	11	89	37	9	91	32	24	76	25	*D.franconicus*
VR5	61	39	18	24	71	6		17	1,82	37	63	19	4	96	24	42	58	19	*D.franconicus*
VA8A	55	45	22	13	70	17		23	2,04	16	84	25	4	96	27	74	26	23	*D.franconicus*
MUE	18	82	11	86	7	7		14	1,21	90	10	10	31	69	13	100		7	*D.franconicus*
MOR2	18	82	130	61	4		34	135	1,07	81	19	98	52	48	94	96	4	94	*D.franconicus*
FTE4														100	6	33	67	3	*D.franconicus*
COLD	29	71	58	90	2		8	61	1,02	31	69	39	35	65	54	86	14	44	*D.franconicus*
COLC	17	83	6	67	17		17	6	1,20	50	50	4	50	50	2	100		2	*D.franconicus*
FTE3	83	17	6	33	50		17	6	1,60		100	6	14	86	7	71	29	7	*D.franconicus*
VR2B	78	22	9	33	44		22	9	1,57	38	63	8		100	3	33	67	3	*D.franconicus*
OR5	100		3	67			33	3	1,00		100	2		100	4	50	50	4	*D.franconicus*
VR4BB		100	1	100				1	1,00		100	1		100	3	100		3	*D.franconicus*

Table 24

	m1						m2						SPECIES
	long	med.	short	no	N	MV	long	med.	short	no	N	MV	
CAR1				100	3	4,00		50		50	2	3,00	*D.crusafonti*
MOL(M)				100	9	4,00				100	6	4,00	*D.crusafonti*
NOM1				100	4	4,00			100		1	3,00	*D.crusafonti*
NOM2				100	18	4,00			5	95	19	3,95	*D.crusafonti*
ESC										100	2	4,00	*D.crusafonti*
ESC(M)				100	4	4,00			33	67	9	3,67	*D.crusafonti*
SOL			69	31	13	3,31		6	53	41	17	3,35	*D.crusafonti*
PJE1										100	1	4,00	*D.crusafonti*
LP5H			100		3	3,00			100		2	3,00	*D.crusafonti*
TOR3B			9	91	11	3,91			43	57	7	3,57	*D.larteti*
TOR3A				100	12	4,00				100	4	4,00	*D.larteti*
TOR2				100	3	4,00			67	33	3	3,33	*D.larteti*
TOR1			33	67	15	3,67			28	72	25	3,72	*D.larteti*
AC2			50	50	2	3,50		100			1	2,00	*D.larteti*
VL9				100	1	4,00				100	2	4,00	*D.larteti*
BOR			15	85	34	3,85			32	68	28	3,68	*D.larteti*
MAN		1	36	62	74	3,61	2	2	33	63	92	3,57	*D.larteti*
VT1B			100		2	3,00				100	1	4,00	*D.larteti*
VT1A				100	1	4,00							*D.larteti*
LP5C				100	2	4,00							*D.larteti*
LP5B				100	2	4,00			50	50	2	3,50	*D.larteti*
VT2C			50	50	12	3,50			80	20	5	3,20	*D.larteti*
LUM20		40	20	40	5	3,00			100		2	3,00	*D.larteti*
LP4B		3	31	66	32	3,63		9	17	74	35	3,66	*D.larteti*
LP4A		25	50	25	4	3,00			40	60	5	3,60	*D.larteti*
LUM14		8	45	48	40	3,40	2		42	56	43	3,51	*D.larteti*
LUM18		8	75	17	12	3,08		10	60	30	10	3,20	*D.larteti*
LUM17		11	56	33	9	3,22		29	50	21	14	2,93	*D.larteti*
LUM12		22	67	11	9	2,89	10	20	20	50	10	3,10	*D.larteti*
LUM16		11	33	56	18	3,44		24	24	52	21	3,29	*D.larteti*
LUM11		28	50	22	36	2,94			53	47	30	3,47	*D.larteti*
LUM10	17		50	33	6	3,00			50	50	4	3,50	*D.larteti*
LUM9		36	36	29	14	2,93		67	17	17	42	2,50	*D.larteti*
RG2		12	59	29	83	3,17	1	9	72	18	96	3,06	*D.larteti*
LUM8		23	43	34	35	3,11		3	38	59	29	3,55	*D.larteti*
LUM7			43	57	7	3,57		17	17	67	6	3,50	*D.larteti*
VA7G		14	36	50	14	3,36		6	12	82	17	3,76	*D.koenigswaldi*
VA7F		29	48	24	21	2,95	4		24	72	25	3,64	*D.koenigswaldi*
VA7E	3	5	46	47	111	3,37	1		16	83	105	3,81	*D.koenigswaldi*
LUM5	17	17	33	33	12	2,83			48	52	21	3,52	*D.koenigswaldi*
LUM4		12	48	40	52	3,29		1	12	87	67	3,85	*D.koenigswaldi*
VA7D		8	40	52	25	3,44		42	16	42	38	3,00	*D.koenigswaldi*
LUM3	4	14	53	28	197	3,06	1	2	39	59	157	3,55	*D.koenigswaldi*
VR11	3	15	64	18	33	2,97			37	63	51	3,63	*D.koenigswaldi*
VA6B		30	61	9	23	2,78	3	21	45	32	38	3,05	*D.koenigswaldi*
LUM2	7	20	60	13	15	2,80			26	74	19	3,74	*D.koenigswaldi*
LUM1		8	58	33	12	3,25			64	36	11	3,36	*D.koenigswaldi*
VA3F			36	64	11	3,64		14	29	57	7	3,43	*D.koenigswaldi*
VA3E		4	72	24	25	3,20			67	33	21	3,33	*D.koenigswaldi*
VA6A	11	25	44	19	63	2,71	3	5	38	53	60	3,42	*D.koenigswaldi*
VA7C	1	13	56	30	219	3,15		1	35	64	181	3,63	*D.koenigswaldi*
VA7B	1	16	57	26	98	3,07			48	52	120	3,52	*D.koenigswaldi*
VA1A		19	73	8	26	2,88	3	6	66	25	32	3,13	*D.koenigswaldi*
VA7A	10	10	40	40	10	3,10		7	57	36	14	3,29	*D.koenigswaldi*
VA8B		6	47	47	36	3,42		6	21	74	34	3,68	*D.koenigswaldi*
VA8C			60	40	10	3,40			33	67	12	3,67	*D.koenigswaldi*
VR8C		7	37	57	30	3,50			50	50	28	3,50	*D.koenigswaldi*
VR8B	6	24	53	18	17	2,82		6	53	41	17	3,35	*D.koenigswaldi*
CS2B		5	73	23	40	3,18			77	23	44	3,23	*D.koenigswaldi*
CS1A	6	20	71	2	49	2,69		10	76	14	50	3,04	*D.koenigswaldi*
VR7	4	42	38	17	48	2,67		7	51	42	45	3,36	*D.koenigswaldi*
VA3B			100		3	3,00			100		1	3,00	*D.franconicus*
VA11		71	29		7	2,29		70	20	10	10	2,40	*D.franconicus*
VR6	3	59	35	3	37	2,38	6	30	48	15	33	2,73	*D.franconicus*
VR5	16	68	16		19	2,00	4	33	33	30	27	2,89	*D.franconicus*
VA8A		68	25	7	28	2,39	4	32	32	32	28	2,93	*D.franconicus*
MUE		87	13		15	2,13		69	31		13	2,31	*D.franconicus*
MOR2	5	62	33	1	147	2,29	2	37	58	3	125	2,63	*D.franconicus*
FTE4	7	64	14	14	14	2,36		63	38		8	2,38	*D.franconicus*
COLD	7	28	62	3	60	2,62	4	31	61	4	74	2,65	*D.franconicus*
COLC		83	17		6	2,17		67	33		3	2,33	*D.franconicus*
FTE3		71	29		7	2,29		13	63	25	8	3,13	*D.franconicus*
OR9			100		1	3,00			50	50	4	3,50	*D.franconicus*
VR2B	10	30	50	10	10	2,60	50	25		25	4	2,00	*D.franconicus*
COLA													*D.franconicus*
OR5		33	33	33	3	3,00		50	50		4	2,50	*D.franconicus*
VR4BB	100				1	1,00		67	33		3	2,33	*D.franconicus*

Table 25

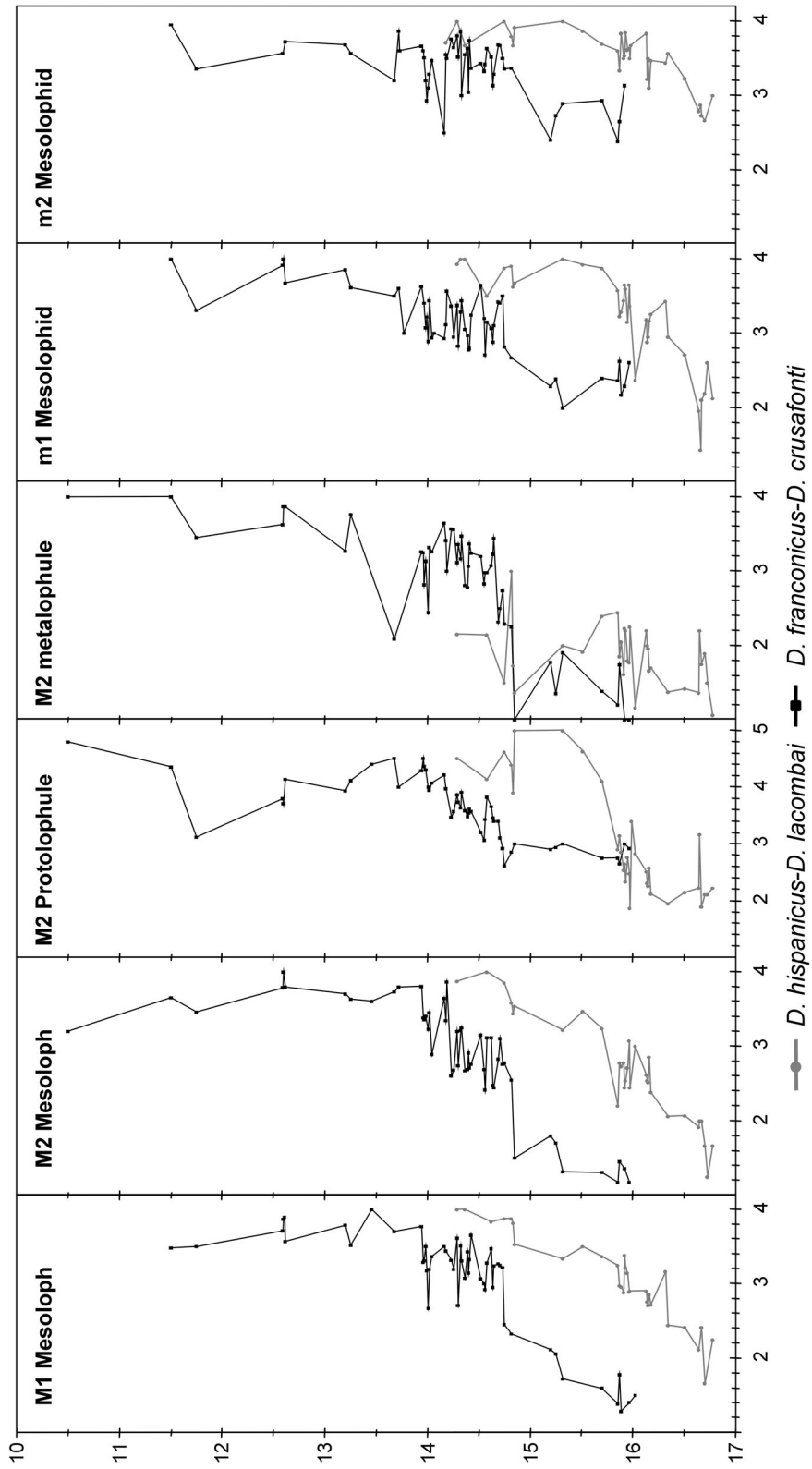


Figure 8.- Temporal distribution of all Morphology Values in the two studied Democricetodon lineages (See tables 16-25).
Figura 8.- Distribución temporal de los valores morfológicos en las dos líneas de Democricetodon *estudiadas (ver Tablas 16-25).*

TAXONOMY

Democricetodon FAHLBUSCH, 1964

Type Species: *Democricetodon crassus* FREUDENTHAL 1969 [= *D. minor* (LARTET 1851) *sensu* FAHLBUSCH (1964)]

Synonymy: *Fahlbuschia* MEIN & FREUDENTHAL, 1971; *Renzimys* LACOMBA, 1983; *Pseudofahlbuschia* FREUDENTHAL & DAAMS, 1988.

Diagnosis: see the original diagnosis of FAHLBUSCH (1964).

Remarks: FAHLBUSCH (1964) split *Cricetodon* LARTET, 1851 into three different genera, *Cricetodon* (genotype *C. sansaniensis* LARTET 1851), *Cotimus* BLACK, 1961 (genotype *C. aliciae* BLACK, 1961), and *Democricetodon* FAHLBUSCH, 1964 (genotype *D. (Democricetodon) minor* (LARTET, 1851). FAHLBUSCH (1966) and later authors follow FREUDENTHAL (1965) considering *D. (Democricetodon)* and *D. (Megacricetodon)* as genera. FREUDENTHAL in FREUDENTHAL & FAHLBUSCH (1969) disagreed with FAHLBUSCH's interpretation of *Cricetodon minus* LARTET, 1851 from the middle Miocene of Sansan (France), and named it *Democricetodon crassus*, which was subsequently ruled to be the valid name for the type species of the genus *Democricetodon* (TUBBS, 1986).

With the inclusion of the oldest species from Anatolia (THEOCHAROPOULOS, 2000) and the Spanish genera, one might considering emending the original diagnosis of *Democricetodon*. However, we refrain from doing so, because FAHLBUSCH' diagnosis has the great advantage of being general (as generic diagnoses should be), and more specifically because it allows for the inclusion of *Fahlbuschia, Pseudofahlbuschia* and *Renzimys*. For this reason we prefer it above the emended diagnosis of MEIN & FREUDENTHAL (1971).

By the inclusion of the Anatolian species *D. anatolicus* and *D. doukasi* (THEOCHAROPOULOS, 2000) the variation of *Democricetodon* in the wideness of the valleys, and degree of voluminosity of the cusps, as well as in the length and shape of the longitudinal crests, is somewhat increased. With the inclusion of *D. jordensi, D. lacombai* and *D. crusafonti* (including *R. bilobatus*) the variation in elongation of m1 is enlarged and the presence double anterocones is increased. The main dental characteristics of *Democricetodon* according to FAHLBUSCH (1964) are the voluminous cusps, narrow valleys, and the short longitudinal crests define a coherent group of species which a wide geographic range, from China (*D. lindsayi* and *D. tongi*, QIU, 1996) and Pakistan (*D. kohatensis*, WESSELS *et al.,* 1982) to the Iberian Peninsula. On the other hand, they allow its distinction from *Spanocricetodon*, *Protarsomys* and *Karydomys* (THEOCHAROPOULOS, 2000).

Democricetodon hispanicus FREUDENTHAL, 1967

Type locality: Villafeliche 2A.

Type level: Early Aragonian (Zone B), MN 4

Emended diagnosis: Small sized *Democricetodon*. Protolophules are mostly posterior in M1, and anterior or double anterior in M2. Metalophules of M2 are mostly anterior or transverse.

Democricetodon decipiens (FREUDENTHAL & DAAMS, 1988)

Synonymy: *Fahlbuschia* cf. *koenigswaldi* in DAAMS & FREUDENTHal, 1974

Democricetodon aff. *hispanicus* from Buñol DAAMS & FREUDENTHAL, 1974

Democricetodon aff. *hispanicus* from Buñol FREUDENTHAL & DAAMS, 1988

Fahlbuschia corcolesi FREUDENTHAL & DAAMS, 1988

Original reference: *Fahlbuschia decipiens*

Type locality: Buñol,

Type level: Early Aragonian (Zone C), MN 4.

Emended diagnosis: Small sized Democricetodon. M1 with simple anterocone, mostly single anterolophule and posterior protolophule rarely double. Mesolophs of M1 and M2 predominantly of medium length. M2 with protolophule predominantly double, sometimes anterior, metalophule mostly anterior or transverse. Metalophulid of m1 mostly forward directed. Mesolophids of m1 and m2 predominantly short.

Differential diagnosis: *D. decipiens* differs from *D. hispanicus* by its larger tooth size, and its shorter mesolophs and mesolophids.

Discussion: The material from Buñol was originally described as *Democricetodon* aff. *hispanicus* and *Fahlbuschia* cf. *koenigswaldi* by DAAMS & FREUDENTHAL (1974). The two specimens of *F*. cf. *koenigswaldi* (1 m1 and 1 m3) are here considered to form part of a single homogeneous assemblage together with *D*. aff. *hispanicus*. According to DAAMS & FREUDENTHAL (1974) the m1 could be distinguished from *D*. aff. *hispanicus* by its smaller length/width ratio (1,38 against

1,41). It appears however that this value falls within the range of variation of the material assigned to *D*. aff. *hispanicus*.

According to FREUDENTHAL & DAAMS (1988), *D. corcolesi* is the smallest *Fahlbuschia* species, it appears that it is approximately of the same size as *D. decipiens* from Buñol (loc. cit. pp. 200-201, and own observations). M1 and m1 of *D. corcolesi* are even larger than those of *D. decipiens* from Buñol. Another characteristic included in the diagnosis of *D. corcolesi* is the length of the mesolophids, which are poorly developed in lower molars. In this character, the material of *D. corcolesi* is similar to that of *D. decipiens* from Buñol and Artesilla where the mesolophids are predominantly short. Finally FREUDENTHAL & DAAMS (1988) pointed out, that the protolophule of M2 of *D. corcolesi* is mostly anterior, while in the M1 it never is. The anterior protolophule is never present in the M1 of *Democricetodon* from the Spanish Aragonian, while it is more or less frequent in M2 of assemblages of *D. hispanicus*, *D. decipiens*, *D. moralesi* and *D. jordensi*. Hence, it is quite a persistent feature in the *D. hispanicus*-*D. lacombai* lineage.

The length/width scatterdiagrams of *D. corcolesi* FREUDENTHAL & DAAMS (1988, p. 252) indicate the presence of two *Democricetodon* species of different size although this feature is not discussed in the text. The description of *D. corcolesi* clearly refers to the small-sized teeth, but the holotype belongs to the large-sized group (Pl. 13, fig. 1). This could imply that *D. corcolesi* is only represented by some teeth of larger size, and the small-sized teeth would represent a new species. In order to determine the homogeneity of the Córcoles material we calculated the variation coefficient of FREUDENTHAL & CUENCA (1985), applying it to the large and small specimens of Córcoles together. From the resulting value (V' =15,2; n=17) we conclude that the population is homogeneous.

In our opinion the small morphological differences between the materials from Córcoles and Buñol do not warrant their specific separation, and consequently we consider *D. corcolesi* as a junior synonym of *D. decipiens*, applying the priority rules.

Democricetodon moralesi n. sp.

Synonymy: *Fahlbuschia koenigswaldi* (FREUDENTHAL, 1963) from VR1A, OR5, OR8 and OR9 in FREUDENTHAL & DAAMS, 1988.

Type locality: La Col D

Type level: Middle Aragonian (Zone D), MN5.

Holotype: M2 (COL D 2188), Plate I , Fig. 14.

Derivatio nominis: After Dr. Jorge Morales, MNCN, CSIC, Madrid.

Diagnosis: medium-sized *Democricetodon*. Simple anterocone and anterolophule mostly simple. Protolophule of M1 mostly posterior. Short paracone spur of M1 and M2 frequently present. All character states of the protolophule are present in the M2, the anterior and double anterior ones being well represented. Metalophule of M2 mostly anterior or transverse. Mesolophs of M1 and M2 predominantly short to medium. Mesolophids of m1 and m2 short to absent.

Differential diagnosis: *D. moralesi* n. sp. differs from *D. hispanicus* by its larger tooth size, its protolophule of M2 with higher frequencies of double posterior and posterior morphotypes, and its shorter mesolophs and mesolophids.

D. moralesi differs from *D. decipiens* by its larger size and by the configuration of the protolophule of M2 with higher frequencies of double posterior and posterior morphotypes.

D. moralesi is similar in size to *D. mutilus* Fahlbusch, 1964, but differs in having predominantly single metalophules of M2, and shorter mesoloph(id)s.

Remarks: The material from Vargas 1A, Olmo Redondo 5, 8 and 9 was hitherto considered to belong to *D. koenigswaldi* by FREUDENTHAL & DAAMS (1988) neglecting the different configurations of protolophule and metalophule of M2. These assemblages are here assigned to *D. moralesi.*

Democricetodon jordensi (FREUDENTHAL & DAAMS, 1988)

Synonymy: Cricetidae gen. et sp. indet. in FREUDENTHAL & DAAMS (1988) from Villafeliche 4A.

Type species: *Pseudofahlbuschia jordensi* FREUDENTHAL & DAAMS, 1988

Type locality: Villafeliche 4A

Type level: Middle Aragonian (Zone Dc), MN5.

Emended diagnosis: *Democricetodon* of medium size. M1 rarely having split anterocone, forked anterolophule well represented, and mostly posterior protolophule. M2 with protolophule mostly posterior. Mesolophs of M1 and M2 predominantly short or absent. Lower m1 slender (L/W in average higher than 1,5). Mesolophids of m1 and m2 predominantly absent.

Differential diagnosis: *D. jordensi* differs from *D. hispanicus*, *D. decipiens* and *D. moralesi* n. sp. by its larger tooth size, its more frequent forked anterolophule of M1, its shorter mesolophs and mesolophids, and its, on average, slender m1s.

Remarks: The few teeth from Villafeliche 4A, determined as Cricetidae gen. et sp. indet. by FREUDENTHAL & DAAMS (1988, p. 216) can easily be assigned to *D. jordensi*. According to the previous authors these three teeth (1 M1, 1 M2, 1 m1) draw the attention by their very slender appearance. Considering the length/width scatterdiagrams of Fig. 17, the M2 and m1 fall within the size ranges of *D. jordensi*, and are here considered to fall within the normal variation in slenderness. The M1 is gracile indeed, but not to a degree to suggest that it represents an unknown genus. In our opinion it is a somewhat aberrant variant, since morphologically the tooth is very similar to *D. jordensi*.

Democricetodon lacombai (FREUDENTHAL & DAAMS, 1988)

Original reference: *Renzimys lacombai*
Type locality: Regajo 2, Teruel
Type level: Middle Aragonian (Zone Dd), MN 5
Emended diagnosis: Large-sized *Democricetodon*. M1 with predominantly split anterocone, forked anterolophules, and posterior protolophule. Paracone of upper molars frequently having a posterior spur. Mesolophs of M1 and M2 mostly absent. Lower m1 slender. Mesolophids of m1 and m2 mostly absent.
Differential diagnosis: *D. lacombai* differs from *D. hispanicus*, *D. decipiens* and *D. moralesi* n. sp. by its larger tooth size.
D. lacombai differs from *D. jordensi* by its larger size and its higher frequency of split anterocone and forked anterolophule.

Democricetodon franconicus FAHLBUSCH, 1966

Synonymy: *Democricetodon hispanicus* FREUDENTHAL, 1967 in FREUDENTHAL & DAAMS (1988) from OR5 (pag. 150), VR1A (pag. 155) and OR9 (pag. 155).
Democricetodon cf. *affinis* (Schaub, 1925) from VA3B in FREUDENTHAL & DAAMS, 1988.
Type locality: Erkertshofen 1, Germany
Type level : Early Aragonian, MN 4
Emended diagnosis: Small sized *Democricetodon*. Mesolophid of the two first lower molars and mesoloph of the two first upper molars mostly medium to long. Anteroconid weakly developed. m3 without posteriorly bent branch of the metalophulid or mesolophid. Protolophule of M1 double or posterior. Metalophule of M1 is posteriorly directed. M2 with mainly double protolophule and mostly anterior or transverse metalophule. M3 with rounded outline, its posterior part strongly reduced.
Differential diagnosis: *D. franconicus* differs from *D. hispanicus* by its slightly larger M2, M3, m2 and m3; its higher L/W ratio of the M2 (L/W<2); its lower frequency of posterior protolophule in the M1; and by its lower frequency of anterior and double anterior protolophule in the M2.
D. franconicus differs from *D. decipiens* by its lower frequency of anterior and double anterior protolophules, and by its longer mesolophsand mesolophids.
D. franconicus differs from *D. moralesi* n. sp. by its smaller tooth size, its longer mesolophsand mesolophids, and its predominantly double protolophule in the upper second molar.
D. franconicus differs from *D. jordensi* and *D. lacombai* by its smaller size, its higher frequency of double protolophule in M1 and M2 and its longer mesolophs and mesolophids.

Remarks: *D. franconicus* FAHLBUSCH, 1966 from Erkertshofen, resembles *D. hispanicus* closely (FAHLBUSCH, 1966; FREUDENTHAL, 1967). FAHLBUSCH (op. cit.) mentions that the only difference are the longer mesoloph(id)s of *D. franconicus*. Another difference is the presence in Erkertshofen of a labial spur of the anterolophule, in 20 % of M1.
FREUDENTHAL & DAAMS (1988) assigned the material of a small *Democricetodon* from Valdemoros 3B to *D*. cf. *affinis* (SCHAUB, 1925). From the discussion of the material it is clear that the assignation is based mainly on size, since they do note morphological differences of the M2 with the type material of *D. affinis*. The smaller sized material from VR1A, OR5, OR8 and OR9 was assigned to *D. hispanicus,* despite the morphology of all these samples being similar to that of VA3B and significantly different from *D. hispanicus*. *D.* cf. *affinis* from VA3B is here also assigned to *D. franconicus*.

PLATE I
Figs. 1-6.- *Democricetodon franconicus* from La Col D. 1.- M1 COL D 2104 (reversed), 2.- M2 COL D 2211, 3.- M3 COL D 2438 (reversed), 4.- M1 COL D 2106 (reversed), 5.- M2 COL D 2225, 6.- M3 COL D 2444 (reversed).
Figs. 7-15.- *Democricetodon moralesi* n. sp. from La Col D. 7.- M1 COL D 2001, 8.- M2 COL D 2170, 9.- M3 COL D 2333, 10.- M1 COL D 2018, 11.- M2 COL D 2183, 12.- M3 COL D 2334, 13.- M1 COL D 2028, 14.- M2 COL D 2188 (Holotype), 15.- M3 COL D 2335.

LÁMINA I
Figs. 1-6.- Democricetodon franconicus *de La Col D. 1.- M1 COL D 2104 (invertido), 2.- M2 COL D 2211, 3.- M3 COL D 2438 (invertido), 4.- M1 COL D 2106 (invertido), 5.- M2 COL D 2225, 6.- M3 COL D 2444 (invertido).*
Figs. 7-15.- Democricetodon moralesi *n. sp. de La Col D. 7.- M1 COL D 2001, 8.- M2 COL D 2170, 9.- M3 COL D 2333, 10.- M1 COL D 2018, 11.- M2 COL D 2183, 12.- M3 COL D 2334, 13.- M1 COL D 2028, 14.- M2 COL D 2188 (Holotipo), 15.- M3 COL D 2335.*

PLATE II
Figs. 1-6.- *Democricetodon franconicus* from La Col D. 1.- m3 COL D 2904, 2.- m2 COL D 2724, 3.- m1 COL D 2572 (reversed), 4.- m3 COL D 2906, 5.- m2 COL D 2728, 6.- m1 COL D 2586 (reversed).
Figs. 7-15.- *Democricetodon moralesi* n. sp. from la Col D. 7.- m3 COL D 2816, 8.- m2 COL D 2641 (reversed), 9.- m1 COL D 2511, 10.- m3 COL D 2828 (reversed), 11.- m2 COL D 2653 (reversed), 12.- m1 COL D 2520, 13.- m3 COL D 2830, 14.- m2 COL D 2669, 15.- m1 COL D 2575 (reversed).

LÁMINA II
Figs. 1-6.- Democricetodon franconicus *de La Col D. 1.- m3 COL D 2904, 2.- m2 COL D 2724, 3.- m1 COL D 2572 (invertido), 4.- m3 COL D 2906, 5.- m2 COL D 2728, 6.- m1 COL D 2586 (invertido).*
Figs. 7-15.- Democricetodon moralesi *n. sp. de la Col D. 7.- m3 COL D 2816, 8.- m2 COL D 2641 (invertido), 9.- m1 COL D 2511, 10.- m3 COL D 2828 (invertido), 11.- m2 COL D 2653 (invertido), 12.- m1 COL D 2520, 13.- m3 COL D 2830, 14.- m2 COL D 2669, 15.- m1 COL D 2575 (invertido).*

PLATE III
Figs. 1-12.- *Democricetodon moralesi* n. sp. from la Vargas 4BB. 1.- M1 VR4BB 673, 2.- M2 VR4BB 764, 3.- M3 VR4BB 849, 4.- M1 VR4BB 684, 5.- M2 VR4BB 773, 6.- M3 VR4BB 888 (reversed), 7.- m1 VR4BB 933, 8.- m2 VR4BB 1024, 9.- m3 VR4BB 1103, 10.- m1 VR4BB 925, 11.- m2 VR4BB 1007, 12.- m3 VR4BB 1106.

LÁMINA III
Figs. 1-12.- Democricetodon moralesi *n. sp. de Vargas 4BB. 1.- M1 VR4BB 673, 2.- M2 VR4BB 764, 3.- M3 VR4BB 849, 4.- M1 VR4BB 684, 5.- M2 VR4BB 773, 6.- M3 VR4BB 888 (invertido), 7.- m1 VR4BB 933, 8.- m2 VR4BB 1024, 9.- m3 VR4BB 1103, 10.- m1 VR4BB 925, 11.- m2 VR4BB 1007, 12.- m3 VR4BB 1106.*

PLATE I / LÁMINA I

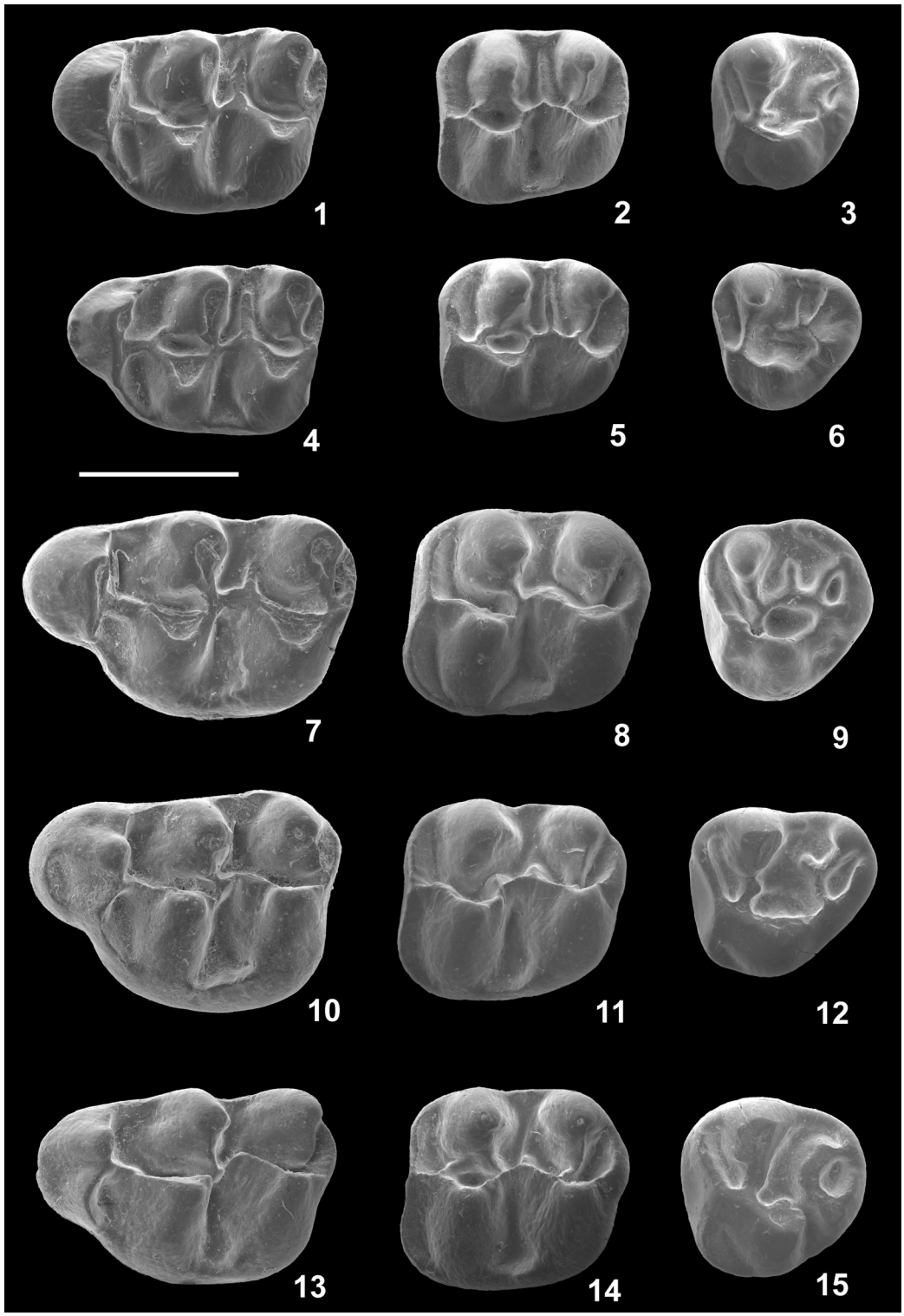


PLATE II / LÁMINA II

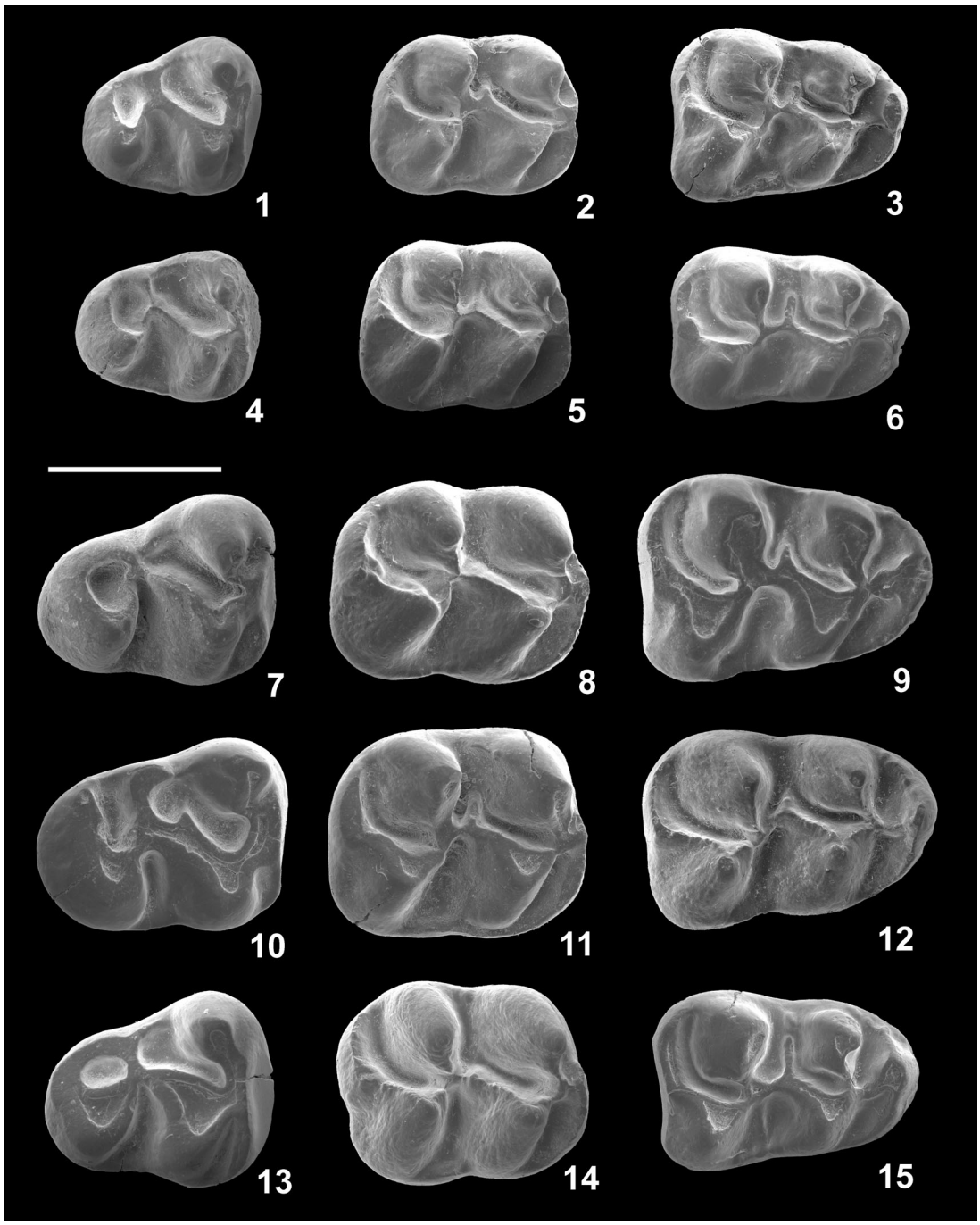
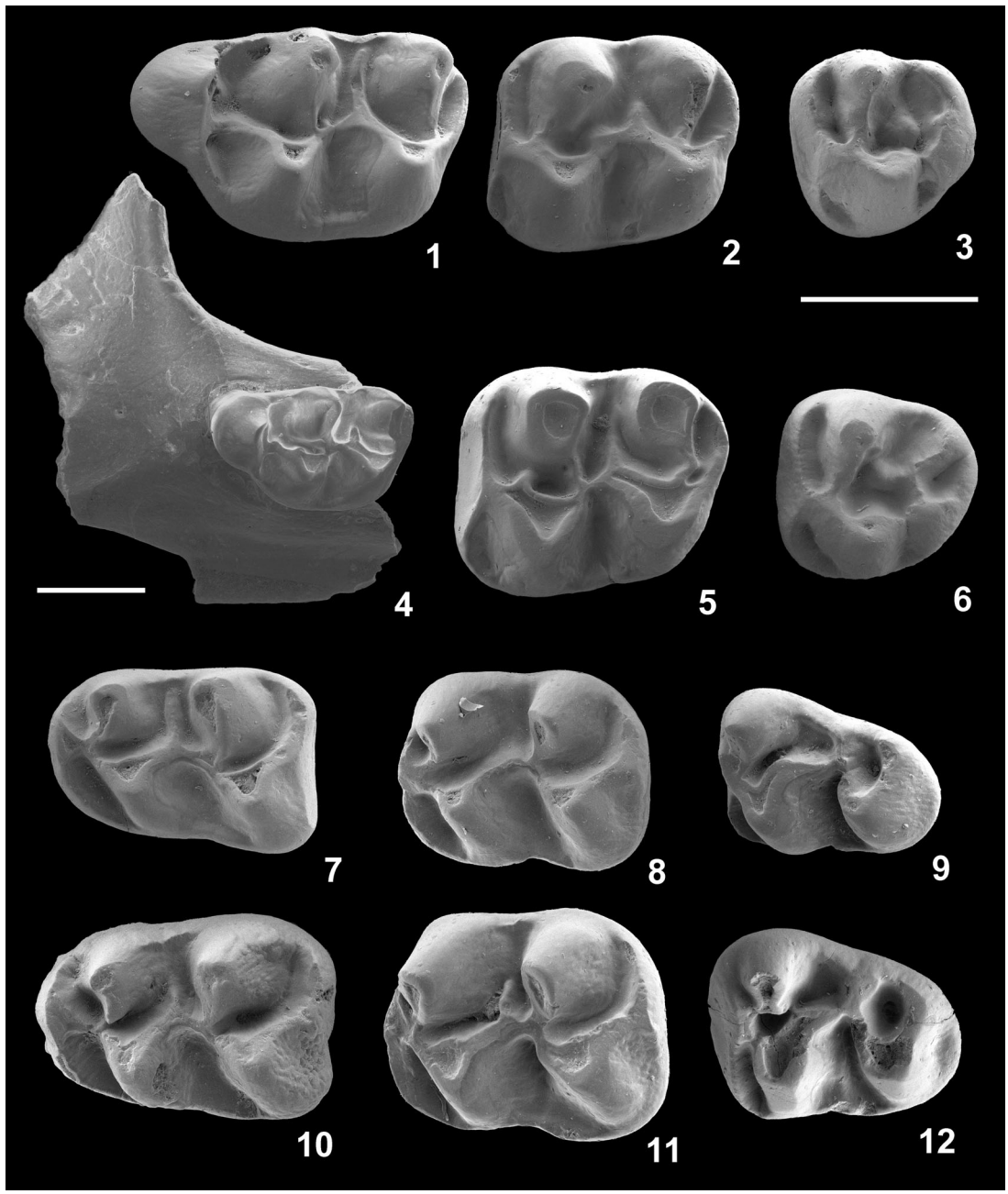


PLATE III / LÁMINA III



Democricetodon koenigswaldi (FREUDENTHAL, 1963)

Synonymy: *Fahlbuschia freudenthali* ANTUNES & MEIN (1981) form VA3E in FREUDENTHAL & DAAMS (1988)

Original reference: *Cricetodon koenigswaldi*

Type locality: Valdemoros 1A

Type level : Middle Aragonian (Zone Dd), MN 5.

Emended diagnosis: Medium-sized *Democricetodon* in which the protolophule of M2 is predominantly symmetrically double and double with the posterior arm better developed. Metalophule of M2 variable, but predominant are the double and the posterior types.

Differential diagnosis: *D. koenigswaldi* differs from *D. franconicus* by its larger size, its shorter mesolophs, and its predominantly double or posterior metalophules.

D. koenigswaldi differs from *D. hispanicus* and *D. decipiens* by its larger size and more advanced protolophule and metalophule in the M2.

D. koenigswaldi differs from *D. moralesi* by having more frequent forked anterolophules, by the configuration of the protolophule of M2 (see diagnosis) and by its higher frequency of double and posterior metalophules in M2.

D. koenigswaldi differs from *D. jordensi* and *D. lacombai* by its broader m1, and its metalophule predominantly double or posterior.

D. koenigswaldi is similar in size to *D. mutilus* Fahlbusch, 1964, but differs by its higher frequency of double metalophules in M2, and shorter mesoloph(id)s.

Democricetodon larteti (SCHAUB, 1925)

Synonymy: *Cricetodon darocensis* FREUDENTHAL, 1963

Fahlbuschia darocensis (FREUDENTHAL, 1963) in FREUDENTHAL & DAAMS (1988)

Fahlbuschia sp. nov. cf. *crusafonti* from Toril 1 in FREUDENTHAL & DAAMS (1988)

Fahlbuschia freudenthali ANTUNES & MEIN (1981) form RG2 in FREUDENTHAL & DAAMS (1988)

Pseudofahlbuschia sp. from Borjas in FREUDENTHAL & DAAMS (1988; p. 209)

Original reference: *Cricetodon larteti*

Type locality: La Grive-St. Alban, France

Type level : Late Aragonian, MN 7+8

Emended diagnosis: Medium-sized *Democricetodon*. Upper molars having protolophule and metalophule predominantly posterior, mesolophs short or absent, rarely medium. M1 having frequently forked anterolophules. Mesolophids predominantly short or absent, rarely medium.

Differential diagnosis: *D. larteti* differs from *D. franconicus* by its larger size, its shorter mesolophs and its metalophule predominantly double or posterior.

D. larteti differs from *D. koenigswaldi* by its slightly larger size and its more advanced protolophule configuration.

D. larteti differs from *D. hispanicus* and *D. decipiens* by its larger size and more advanced protolophule and metalophule in the M2.

D. larteti differs from *D. moralesi* by its larger tooth size, by the forked anterolophule being better represented, by the configuration of the protolophule of M2, being mostly double posterior or posterior, and by its higher frequency of double and posterior metalophules in M2.

D. larteti differs from *D. jordensi* and *D. lacombai* by its broader m1, and its metalophule of M2 predominantly double or posterior.

Discussion: According to FREUDENTHAL & DAAMS (1988, p. 189) *D. larteti* may be distinguished from *D. darocensis* by: "its better developed anteroconid-metaconid connection in m1; more reduced lingual anterolophid in m2; more reduced m3; absence of a cingulum on the anterior wall of the anteroloph of M1; more reduced anterior protolophule of M2". Furthermore the mesolophids of m2 seem to be more reduced than they are in m1, whereas in *D. darocensis* this would be the opposite.

As pointed out in the discussion of the morphological results, the anteroconid-metaconid connection, and the lingual anterolophid of the m2 are structures only visible in unworn teeth, thus, their proportions may be affected by the age distribution of specimens in the sample and not be representative of the actual proportions. It is, therefore, quite hazardous to base specific differences on this structure. The third criterion is puzzling since the m3 of *D. larteti* is of similar size as that of *D. darocensis* from its type locality Manchones, which goes for the other dental elements as well.

The protolophule of M2 in *D. darocensis from* Manchones described by FREUDENTHAL & DAAMS (1988) is double in 21 specimens, posterior in 25 and posterior with a trace of anterior connection in 9.

FREUDENTHAL & MEIN (1989) made a revised description of *D. larteti* based on abundant material from La Grive M. In this description they gave counts for the protolophule morphotypes being double in 21 specimens, posterior in 19 and posterior with a trace of anterior connection in 10. According to these counts there is no significant difference in the frequency of anterior protolophule in M2 between *D. darocensis* and *D. larteti*.

Finally, the observation on the differences in reduction of the mesoloph(id)s between first and second molars in Manchones could not be repeated by us (Tables 22 and 25). We find in Manchones more reduced mesolophids in both upper and lower second than in first molars.

Resuming there are only small differences to be observed between *D. larteti* and *D. darocensis*. Consequently we consider *D. darocensis* as a junior synonym of *D. larteti*.

FREUDENTHAL & DAAMS (1988; p. 195) assigned one M1 and m1 from Toril 1 to *Fahlbuschia* sp. nov. cf. *crusafonti*. They base their determination on large size and L/W ratios. However, the two teeth fall within the ranges of variation of samples such as BOR and MAN, and are, therefore, considered here to form part of the *D. larteti* assemblage from Toril 1.

The M1 from Borjas (FREUDENTHAL & DAAMS, 1988; p. 209) assigned to *Pseudofahlbuschia* sp. is considered by us to form part of the *D. larteti* assemblage from the same locality, although the specimen is rather gracile.

Democricetodon crusafonti (AGUSTÍ, 1978)

Synonymy: *Fahlbuschia ultima* ANTUNES, GINSBURG & MEIN, 1983

Renzimys bilobatus LACOMBA, 1988

Fahlbuschia sp. nov. cf. *crusafonti* in FREUDENTHAL & DAAMS (1988)

Fahlbuschia darocensis (FREUDENTHAL, 1963) from Solera and Las Planas 5H in FREUDENTHAL & DAAMS (1988)

Type locality: St. Quirze Trinxeira,

Type level :Upper Aragonian, MN 7+8

Emended diagnosis: Large-sized *Democricetodon*. Upper molars having protolophule and metalophule predominantly posterior, mesolophs short or absent. M1 having frequently double anterocone and forked anterolophule. Mesolophids predominantly short or absent.

Differential diagnosis: *D. crusafonti* differs from *D. franconicus* by its larger size, its shorter mesolophs and its metalophule predominantly double or posterior.

D. crusafonti differs from *D. koenigswaldi* by its larger size and its more advanced protolophule configuration.

D. crusafonti differs from *D. larteti* by its larger size.

D. crusafonti differs from *D. hispanicus* and *D. decipiens* by its larger size and more advanced protolophule and metalophule in the M2.

D. crusafonti differs from *D. moralesi* by its larger tooth size, by the forked anterolophule better represented, by the configuration of the protolophule of M2, being mostly double posterior or posterior, and by its higher frequency of double and posterior metalophules in M2.

D. crusafonti differs from *D. jordensi* and *D. lacombai* by its broader m1, and its metalophule predominantly double or posterior.

Discussion: FREUDENTHAL & DAAMS (1988) are inconsistent when referring to *D. crusafonti*. In the text (p. 192) they refer to *F*. sp. nov. cf. *crusafonti* from Toril 1, Las Planas 5H and Solera. The specimens from Nombrevilla are referred to as *F*. cf. *crusafonti*. In the distribution chart of DAAMS & FREUDENTHAL (1988, p. 14), in a table at p. 195, and in the histograms of Figs. 5 and 6 the mentioned assemblages are called *F*. cf. *crusafonti*. In Figs. 5 and 6 *Democricetodon* (former *Fahlbuschia*) from Solera the presence of two different species is indicated, but in the description of this assemblage no distinction in two species is made. In the scatterdiagrams of the various elements of *Democricetodon* from Solera (p. 250 and 251) only one *Democricetodon* species is indicated which bears the name *F*. aff. *crusafonti*. FREUDENTHAL & DAAMS (1988, p. 197) suggest that two large-sized *Democricetodon* species are present in Solera because of the different length/width ratios of m1. The four smallest specimens would have a length/width ratio of 1.45 and in the remaining, larger, specimens this ratio would be 1.54. A ratio of 1.45 would be normal for *D. darocensis* and 1.54 would be indicative for *D*. sp. nov. cf. *crusafonti*. Table 11 shows however that the variability of the length/width ratio is larger than supposed by DAAMS & FREUDENTHAL (1988), who have not studied the variability of this feature per assemblage. The assemblages of *D. darocensis* from Las Umbrías

11 and 14, for instance, show length/width ratios from 1.37 to 1.54 and 1.4 to 1.6 respectively. FREUDENTHAL & DAAMS (1988, p. 188) assigned one m1 from LP5H to *D. darocensis* on the basis of its small size and the remaining material to *D.* cf. *crusafonti*. The size range observed in LP5H is similar to that in SOL and comparable to that of earlier and later assemblages and, therefore, we determine all specimens from LP5H as *D. crusafonti*.

Democricetodon crusafonti from its type locality Sant Quirze may be considered as the direct descendant of *D. larteti* as far as the morphology of the dental pattern is concerned. Peculiarities of the Sant Quirze material are the relatively long m1, m2 and m3 in comparison to upper molars. On the other hand, the m2 and m3 of *D. crusafonti* from Hostalets de Pierola (levels without *Hipparion*) have normal sizes. Own observations showed that the anterocone of M1 is split, contrary to the assertion in the original description that it is simple. In *D. crusafonti* from Escobosa the m1 also has a relatively large size compared to the other dental elements from the same locality.

Fahlbuschia ultima (= *Renzimys ultima* in FREUDENTHAL & DAAMS, 1988, p. 211) is regarded as a junior synonym of *D. crusafonti.* The size of the few teeth fall within the size ranges of this species, and there are neither morphological differences.

New material sampled at Molina de Aragón, the type locality of *R. bilobatus*, revealed that the anterocone may be simple too. The split anterocone was the only specific distinction between *R. bilobatus* and all other *Democricetodon* species (op. cit. p. 211). Since this feature is variable in *D. crusafonti, R. bilobatus* is synonymized with *D. crusafonti.*

In this paper the large-sized *Democricetodon* assemblages from Las Planas 5H, Paje 1, Solera, Nombrevilla 1 and 2, Escobosa, Molina de Aragón and Carrilanga are all allocated to *D. crusafonti*.

PHYLOGENY

In the previous chapters we have presented the taxonomical history and our taxonomical interpretations proposed on the basis of the largely expanded *Democricetodon* material from the Aragonian of the Daroca-Villafeliche area. We have summarized the phylogenetic scheme of FREUDENTHAL & DAAMS (1988) in the introduction and in Fig. 1, and explained the differences between their biostratigraphy and our stratigraphical framework. In stead of their five or six lineages, we have referred to only two lineages throughout this paper. The evidence for the existence of only two lineages will be presented and discussed now. Then we will discuss the discrepancies between our interpretations and those of FREUDENTHAL & DAAMS (1988).

TWO LINEAGES

The main argument for the existence of the two lineages is derived from the stratigraphical distribution of the revised species. The faunas of Zone B and the lower part of Zone C contain a single *Democricetodon* species (*D. hispanicus* and *D. decipiens*); in the upper part of Zone C, Zone Da-Dd, and in LP4A of Zone E two species are present; from the latest localities of Zone E, through Zones F to H again a single species of *Democricetodon* (not counting *D.* cf. *gaillardi*) is present. *Democricetodon franconicus* co-occurs with *D. moralesi* and the early representatives of *D. jordensi*; *D. koenigswaldi* co-occurs with later representatives of *D. jordensi* and early *D. lacombai*; *D. larteti* co-occurs with the later representatives of *D. lacombai*. In our discussions on morphology and on taxonomy we have shown that, on the one hand, there gradual differences between the successive assemblages of *D. franconicus, D. koenigswaldi*, and *D. larteti*, and, on the other hand, between the successive assemblages of *D. moralesi* n.sp., *D. jordensi* and *D. lacombai*. Therefore, we conclude that the presence of two lineages is established.

Democricetodon hispanicus is an immigrant in the area arriving at the end of the Ramblian (SR4A). The changes in successive *D. hispanicus* assemblages of Zone B logically lead to *D. decipiens*. The two species show strong similarities in dental morphology, only differing in the larger size and the shorter mesolophs and mesolophids of *D. decipiens*, which are common trends in all studied taxa. These trends continue in *D. moralesi* but not in *D. franconicus* of Zone C. *D. hispanicus* possesses already a set of characters more advanced than in the *D. franconicus* assemblages, such as the posterior protolophule in the M1 making it an unlikely ancestor. Therefore, in our opinion, *D. franconicus* represents a new *Democricetodon* immigration in the area, occupying a niche besides the larger *D. moralesi* which descended from *D. decipiens*.

After the extinction of *D. lacombai*, *D. larteti* remains in the area and continues the trends of the lineage, that started with *D. franconicus*, leading to

the anagenetic evolution of *D. crusafonti*. The main differences between the two lineages are: a) in size, when they co-occur the species of (first) *D. hispanicus-D. lacombai* lineage are always larger than those of the (second) *D. franconicus-D. crusafonti* lineage; b) in the protolophule of M1, rarely double in the first lineage (except for the oldest assemblages), commonly double in the second lineage; c) in the metalophule of M2, mostly single in the first lineage, mostly double in the second. It should be realised, however, that the trends of most characters in the two lineages are parallel (see below).

Comparisons with Freudenthal & Daams

There is no disagreement about the immigration in the studied area of *Democricetodon hispanicus*, although we found the species in new localities (SR4A and SR4B, late Ramblian) which are somewhat older then the previously oldest known occurrences (basal Aragonian). We think, however, that it derived from a *D. franconicus* stock, or that *D. hispanicus* and *D. franconicus* shared a common ancestor. The oldest *Democricetodon* are known from MN1 in Turkey (Theocharopoulos, 2000). His *Democricetodon doukasi* from Keseköy (MN3) might fit as ancestor of both oldest European species, but we have not studied this possibility. Fahlbusch (1966) considers *D. franconicus* and *D. hispanicus* to be closely related. As argued above in our taxonomical discussions, the few occurrences of *D. hispanicus* in Zone C according to Freudenthal & Daams have been referred to *D. franconicus*. According to Freudenthal & Daams (1988) *D. hispanicus* got extinct without leaving any descendant, while we consider *D. decipiens* (= *Fahlbuschia decipiens*) as such a descendant. Since we, furthermore, have synonymized *D. corcolesi* (= *Fahlbuschia corcolesi*) with *D. decipiens* it is clear that, in addition to our morphological arguments above, the distinction between *Democricetodon* and *Fahlbuschia* is not tenable on evolutionary considerations, since the oldest *Fahlbuschia* species can directly be derived from *Democricetodon hispanicus*. It is remarkable that Freudenthal & Daams (1988, p. 223) suppose that Córcoles and Buñol represent the time interval between Villafeliche 2A and Vargas 1A, exactly where we encountered *Democricetodon decipiens* in the studied area (lower part of Zone C).

Contrary to Freudenthal & Daams (1988, p.221), who proposed a direct phylogenetic relationship between *D. decipiens* and *D. koenigswaldi*, we place these two species in different lineages. Firstly, we argue that the very arguments they give in favour of the relationship should be used against it. According to the mentioned authors the double protolophule of M1 is frequent in *D. decipiens* and rare in *D. koenigswaldi*. In *D. decipiens* the double protolophule in the M1 is not very frequent (<22%), while in the early samples of *D. koenigswaldi*, such as VR 7 and CS1A, higher frequencies of double protolophule (close to 40%) are present. It is generally accepted that these higher frequencies represent the more primitive character state. The frequencies of double protolophule in early *D. koenigswaldi* assemblages are similar to those of *D. franconicus*, which we consider the ancestor of *D. koenigswaldi*. Another argument supporting our relationship is the continuous stratigra-phical record of the two taxa. The occurrences of *D. decipiens* and *D. koenigswaldi*, on the other hand, are separated by a gap in time of 1.4 my. Finally, we have placed the oldest (Zone C) assemblages of *Fahlbuschia koenigswaldi* according to Freudenthal & Daams (1988) in *D. moralesi* n.sp.. This species, the oldest representatives of which are very similar to *D. decipiens*, is regarded as the anagenetic descendant of the latter from which it evolves gradually. In fact, size is the main character used to split the *D. hispanicus-D. decipiens-D. moralesi* n.sp. set of assemblages into three different species. This rather arbitrary procedure is thought to be necessary, because the range in morphology and size of the set is deemed too large for a single species.

D. moralesi n.sp. is the logical ancestor of *D. jordensi*. The continuous increase in size shown by the first continues in the last. In the succession of *D. jordensi* assemblages a rapid increase in size takes place. Freudenthal & Daams (1988, p. 210) noted considerable size variation in the various assemblages of what they called *Pseudofahlbuschia*, possibly indicating the existence of another species in addition to *D. jordensi*. They probably referred to, for instance, the material from Valdemoros 1A, which is indeed larger than that from the type locality Villafeliche 4A. There is also a gradual change in morphology from *D. moralesi* n.sp. to *D. jordensi*, continuing the trends (e.g. towards posteriorly directed protolophules in the upper molars) which started from the beginning of the lineage. The difference in slenderness of the m1 is here interpreted as an interspecific difference, not a generic one. The end of the lineage is *D. lacombai*.

As discussed before there are no major differences between the latter and *D. jordensi*, the differences being the result from anagenetic evolution.

In contrast to FREUDENTHAL & DAAMS (1988) we do not consider *D. jordensi* (= *Pseudofahlbuschia jordensi*) and *D. lacombai* (= *Renzimys lacombai*) as two different immigrants of unknown origin, but rather as two successive, closely related species evolving from *D. moralesi* n.sp.. *Democricetodon jordensi* and *D. lacombai* have not been found together despite claims that they are contemporaneous (op. cit. p. 210). Our phylogenetic reconstruction makes the establishment of *Pseudofahlbuschia* and *Renzimys* redundant, even though the evolution in the *D. hispanicus-D. lacombai* lineage has produced an impressively large and robust end member.

Turning now to the second lineage proposed here, *D. franconicus-D. crusafonti*, we discussed before that there is a continuity in size and morphology between *D. franconicus* and *D. koenigswaldi*. They share the anterior protolophules in the M1 being fairly well represented, contrary to what we found in the first lineage. Morphological differences between the two species may be explained as the result of anagenetic evolution.

We agree with FREUDENTHAL (1963) and FREUDENTHAL & DAAMS (1988) on the phylogenetic relationships of *D. koenigswaldi* and *D. larteti* (including *Fahlbuschia darocensis*). In the latter paper they removed that the so-called '*Cricetodon* Übergang *koenigswaldi – darocensis*' (FREUDENTHAL, 1963) from the lineage, correctly claiming that this species, which was referred to *Pseudofahlbuschia jordensi*, represented a separate lineage (see Fig. 1). Our revised stratigraphy and inclusion of *Fahlbuschia freudenthali* and *F. darocensis* assemblages from the studied area in *D. larteti*, results into a continuous anagenetic succession from *D. koenigswaldi* to *D. larteti*. Additionally we propose a continuation of this lineage to *D. crusafonti*. From our study it is clear that the arguments used by FREUDENTHAL & DAAMS (1988) do not support their phylogenetic hypothesis of a separate *freudenthali* – cf. *crusafonti* lineage. Their main argument is that the anterior protolophule of M1 in *D. crusafonti* is better developed than in *D. larteti* (=*D. darocensis*). This character is more or less frequently present in *D. larteti* assemblages (MAN, BOR, TOR1) as well as in *D. crusafonti* assemblages (SOL, CAR) and, therefore, does support rather than exclude a direct phylogenetic relationship between them. Another argument supporting this relationship is the configuration of the metalophule of the M2, since in the *D. franconicus – D. crusafonti* lineage there is a clear trend towards the increase of posterior connections. This trend is not observed in the *D. hispanicus-D. lacombai* one, in which the frequency of posterior metalophules is always low.

Summarising, we distinguish two parallel lineages in the medium-sized *Democricetodon* assemblages from the type area of the Aragonian in North Central Spain. If *D. hispanicus* is a descendant of *D. franconicus* the lineages provide an example of iterative evolution. *D. gaillardi*, which has not been studied, is an occasional immigrant during the late Aragonian and is not directly related to studied species. The two lineages share a set of anagenetic trends:

- Towards size increase.
- Towards decrease in the presence of anterior protolophule in first and second molars.
- Towards reduction of mesolophs and mesolophids.
- Towards forked anterolophule in M1
- Towards decrease in presence of the metaconid ridge in m1 and m2.

Although these changes are parallel, their timing is different in the two lineages.

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