



http://app.pan.pl/SOM/app61-Oliver_PelaezCampomanes_SOM.pdf

SUPPLEMENTARY ONLINE MATERIAL FOR

Early Miocene evolution of the rodent *Megacricetodon* in Europe and its palaeobiogeographical implications

Adriana Oliver and Pablo Peláez-Campomanes

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Supplementary Online Material

SOM 1. 3D interactive figure (high resolution) of the holotype of *Megacricetodon hellenicus* from Aliveri North quarry m1 AL-N-2096.

Click the link to open the interactive pdf.

http://app.pan.pl/SOM/app61-Oliver_PelaezCampomanes_SOM/SOM1.pdf

SOM 2. 3D interactive figures (low resolution) of *Megacricetodon hellenicus* from Aliveri North quarry m1 AL-N-2096, m1 AL-N-2097, M1 AL-N-2059.

Click the link to open the interactive pdf.

http://app.pan.pl/SOM/app61-Oliver_PelaezCampomanes_SOM/SOM2.pdf

SOM 3. Distribution of character states. Tables 1–25.

SOM 4. Description of character states.

SOM 3. Distribution of character states

Table 1. Division of the anterocone M1

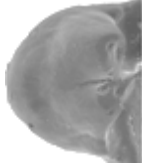

Localities			N
Valtorres	3 (7%)	42 (93%)	45
Aliveri North Quarry	7 (58%)	5 (42%)	12
Aliveri South Quarry		4 (100%)	4

Table 2. Anterior cingulum M1


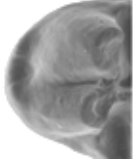

Localities				N
Valtorres	18 (40%)	24 (53%)	3 (7%)	45
Aliveri North Quarry	5 (42%)	6 (50%)	1 (8%)	12
Aliveri South Quarry	1 (25%)	3 (75%)		4

Table 3. Symmetry of the Anterocone M1

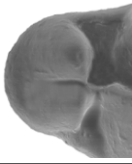
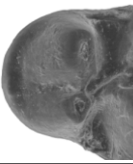
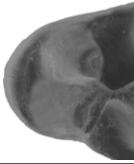
Localities				N
Valtorres	9 (20%)	36 (80%)		45
Aliveri North Quarry	4 (33%)	7 (58%)	1 (8%)	12
Aliveri South Quarry		4 (100%)		4

Table 4. Anterolophule M1

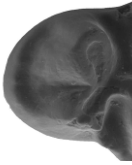
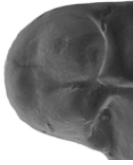
Localities			N
Valtorres	19 (39%)	30 (61%)	49
Aliveri North Quarry	2 (14%)	12 (86%)	14
Aliveri South Quarry	1 (25%)	3 (75%)	4

Table 5. Labial Spur of the Anterolophule M1

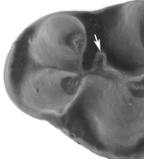
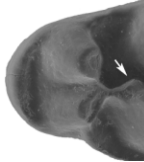
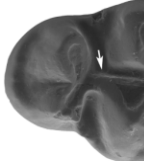
Localities				N
Valtorres	10 (19%)	2 (4%)	41 (77%)	53
Aliveri North Quarry	8 (67%)		4 (33%)	12
Aliveri South Quarry	1 (33%)		2 (67%)	3

Table 6. Protolophule of the M1

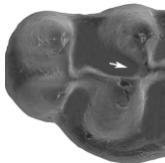
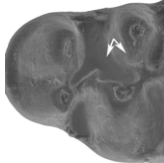
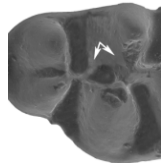
Localities				N
Valtorres	35 (80%)	7 (16%)	2 (5%)	44
Aliveri North Quarry	6 (55%)	4 (36%)	1 (9%)	11
Aliveri South Quarry	3 (75%)	1 (25%)		4

Table 7. Ectoloph M1

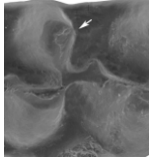
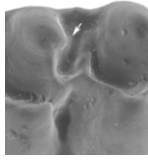
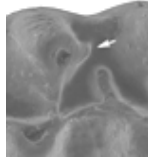
Localities				N
Valtorres	20 (38%)	27 (51%)	6 (11%)	53
Aliveri North Quarry	6 (46%)	6 (46%)	1 (8%)	13
Aliveri South Quarry	1 (25%)	2 (50%)	1 (25%)	4

Table 8. Mesoloph M1

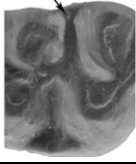
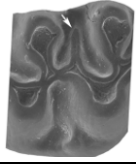
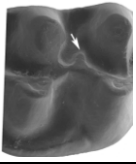
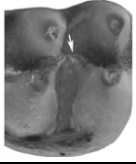
Localities					N
Valtorres	1 (2%)	20 (40%)	25 (50%)	4 (8%)	50
Aliveri North Quarry	2 (15%)	9 (69%)	2 (15%)		13
Aliveri South Quarry		2 (50%)	2 (50%)		4

Table 9. Lingual mesocingulum of the M1.

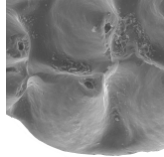
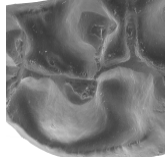
Localities			N
Valtorres	34 (63%)	20 (37%)	54
Aliveri North Quarry	12 (92%)	1 (8%)	13
Aliveri South Quarry	3 (75%)	1 (25%)	4

Table 10. Connection Mesoloph-Ectoloph M1

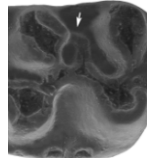
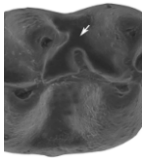
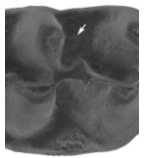
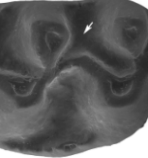
Localities					N
Valtorres	1 (2%)	26 (52%)	18 (36%)	5 (10%)	50
Aliveri North Quarry		7 (54%)	6 (46%)		13
Aliveri South Quarry		3 (75%)	1 (25%)		4

Table 11. Metalophule M1

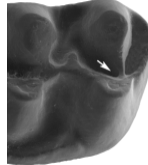
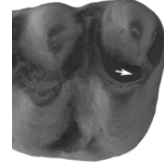
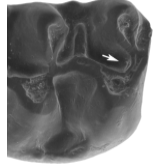
Localities				N
Valtorres	6 (13%)	38 (84%)	1 (2%)	45
Aliveri North Quarry		12 (100%)		12
Aliveri South Quarry	2 (50%)	1 (25%)	1 (25%)	4

Table 12. Protolophule M2

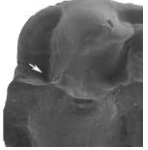
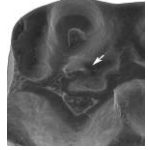
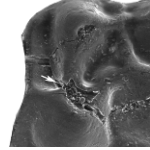
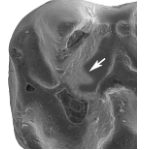
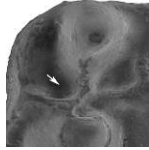
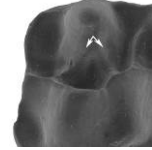
Localities							N
Valtorres	25 (50%)	12 (24%)	6 (12%)	1 (2%)	1 (2%)	5 (10%)	50
Aliveri North Quarry	3 (50%)	3 (50%)					6
Aliveri South Quarry	1 (100%)						1

Table 13. Ectoloph M2

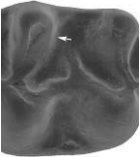
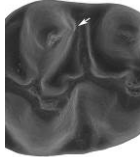
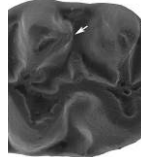
Localities				N
Valtorres	10 (22%)	19 (42%)	16 (36%)	45
Aliveri North Quarry		2 (33%)	4 (67%)	6
Aliveri South Quarry			1 (100%)	1

Table 14. Mesoloph M2

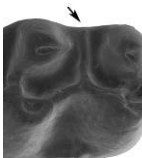
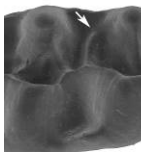
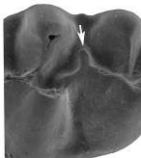
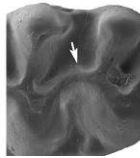
Localities					N
Valtorres	8 (16%)	27 (55%)	12 (24%)	2 (4%)	49
Aliveri North Quarry	1 (17%)	4 (67%)	1 (17%)		6
Aliveri South Quarry			1 (100%)		1

Table 15. Connection Mesoloph-Ectoloph M2

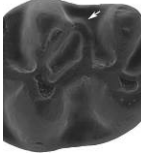
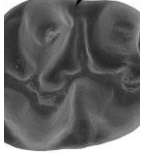
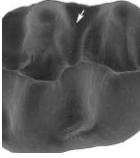
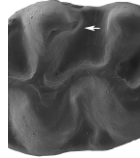
Localities					N
Valtorres	7 (15%)	29 (60%)	10 (21%)	2 (4%)	48
Aliveri North Quarry	3 (50%)	3 (50%)			6
Aliveri South Quarry		1 (100%)			1

Table 16. Metalophule M2

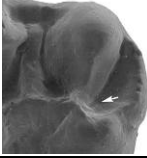
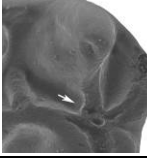
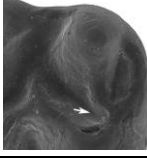
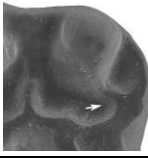
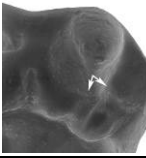
Localities						N
Valtorres	25 (56%)	7 (16%)	9 (20%)	3 (7%)	1 (2%)	45
Aliveri North Quarry	5 (83%)		1 (17%)			6
Aliveri South Quarry	1 (100%)					1

Table 17. Metalophule M3

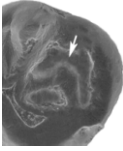
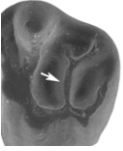
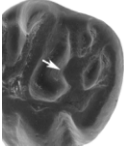
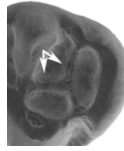
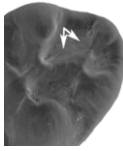
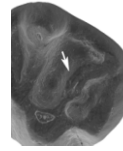
Localities							N
Valtorres	1 (6%)	3 (17%)	8 (44%)	1 (6%)	3 (17%)	2 (11%)	18
Aliveri South Quarry		2 (67%)		1 (33%)			3

Table 18. Anteroconid m1

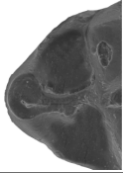
Localities		N
Valtorres	43 (100%)	43
Aliveri North Quarry	5 (100%)	5
Aliveri South Quarry	2 (100%)	2

Table 19. Labial Spur of the Anterolophulid m1

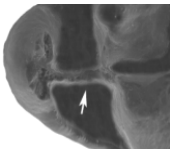
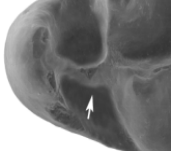
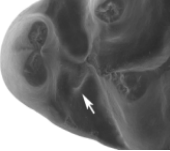
Localities				N
Valtorres	45 (94%)		3 (6%)	48
Aliveri North Quarry	6 (100%)			6
Aliveri South Quarry	1 (50%)	1 (50%)		2

Table 20. Metalophulid m1

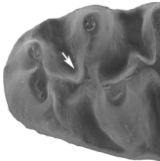
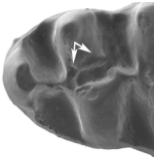
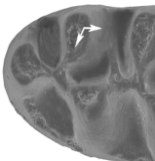
Localities				N
Valtorres	42 (82%)	7 (14%)	2 (4%)	51
Aliveri North Quarry	3 (75%)		1 (25%)	4
Aliveri South Quarry	1 (50%)		1 (50%)	2

Table 21. Mesolophid m1

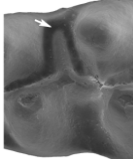
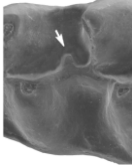
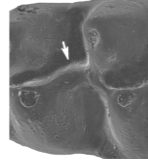
Localities				N
Valtorres	6 (12%)	41 (82%)	3 (6%)	50
Aliveri North Quarry	2 (40%)	3 (60%)		5
Aliveri South Quarry	1 (50%)	1 (50%)		2

Table 22. Ectomesolophid m1

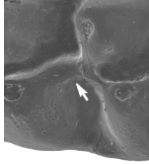
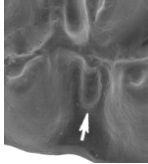
Localities			N
Valtorres	51 (96%)	2 (4%)	53
Aliveri North Quarry	5 (83%)	1 (17%)	6
Aliveri South Quarry	2 (100%)		2

Table 23. Lingual Anterolophid m2

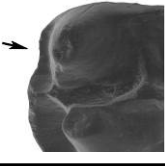
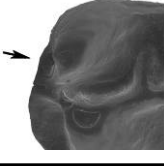
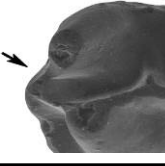
Localities				N
Valtorres	12 (25%)	35 (73%)	1 (2%)	48
Aliveri North Quarry	5 (50%)	5 (50%)		10

Table 24. Mesolophid m2

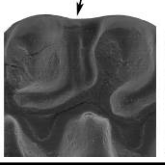
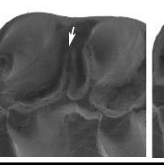
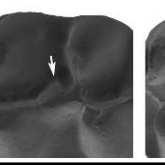
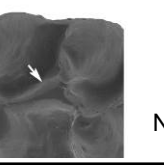
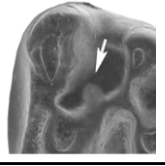
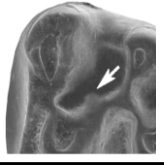
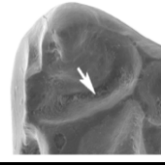
Localities					N
Valtorres		6 (12%)	37 (73%)	8 (16%)	51
Aliveri North Quarry	1 (9%)	4 (36%)	6 (55%)		11

Table 25. Mesolophid m3

Localities				N
Valtorres	4 (20%)	1 (5%)	15 (75%)	20
Aliveri North Quarry			1 (100%)	1
Aliveri South Quarry	3 (100%)			3

SOM 4. Description of character states

Upper Molars

Division of the Anterocone of the M1:

- Anterocone with shallow subdivision.
- Anterocone deeply subdivided. The furrow reaches the crown basis.

Anterior cingulum of the M1:

- There is not a platform or a cingulum in front of the anterocone.
- There is a small platform in front of the anterocone.
- There is a platform and a small cingulum ridge in front of the anterocone.

Symmetry of the Anterocone of the M1:

- The labial and lingual cusps have similar size.
- The labial cusp is larger than the lingual.
- The labial cusp is smaller than the lingual.

Anterolophule of the M1"

- The anterolophule connects to the middle of the two cones forming the anterocone.
- The anterolophule connects to the lingual cusp.

Labial Spur of the Anterolophule of the M1:

- Present: There is a (short, medium or long) labial spur.
- Incipient: There is an incipient labial spur.
- Absent: The labial spur of the anterolophule is absent.

Protolophule of the M1:

- Posterior: The protolophule is posterior to the protocone.
- Almost double: The protolophule is posterior almost double, form by the labial spur of the anterolophule or by the forward paracone spur.
- Double: The protolophule is double.

Protolophule of the M2

- Anterior: The protolophule points forward and it is connected to the anterolophule in front of the protocone.
- Anterior almost double: The anterior protolophule points forward and there is an incomplete posterior protolophule.
- Transverse: The protolophule is transverse and connected to the protocone.
- Transverse almost double: The protolophule is transverse and there is an incomplete posterior protolophule.
- The entoloph is connected to the protocone indirectly through paracone and protolophule.
- Double: There is a double protolophule.

Ectoloph (Paracone Spur) of the M1 and M2

- Absent: The ectolophe is absent.
- Short: The ectolophe is short.
- Long: The ectolophe is well-developed.

Mesoloph of the M1 and M2

- Long: The mesoloph reaches the labial mesocingulum or the labial border of the molar.
- Medium: The mesoloph exceed the half of the length of the mesosinus.
- Short: The mesoloph is as long as half of the length of the mesosinus or shorter.
- Absent: The mesoloph is absent.

Lingual mesocingulum of the M1 and M2

- The lingual mesocingulum could be present or not, but never connects the hypocone and the anterocone.
- There is a strong lingual mesocingulum that connects the hypocone and the anterocone and runs lingual to the protocone.

Connection of the Ectolophe with the Mesoloph of the M1 and M2

- The ectolophe is connected with the mesoloph.
- There is not a connection between the ectolophe and the mesoloph.
- There is a mesoloph but the ectolophe is absent.
- There is neither a mesoloph nor an ectolophe.

Metalophule of the M1

- The metalophule is connected to the posteroloph just behind the hypocone
- Posterior: The metalophule points backwards reducing the posterosinus.
- Posterior: The metalophule points backwards more oblique and disappear the posteroloph and the posterosinus (or is very small).

Metalophule of the M2

- Anterior: The metalophule points forward and it is connected to the entoloph in front of the hypocone.
- Transverse: The metalophule is transverse and connected to the hypocone.
- The metalophule points backwards and it is connected to the posteroloph, just behind the hypocone.
- The metalophule is more oblique reducing the posterosinus.
- Double: The metalophule is double.

Metalophule of the M3

- Absent.
- Connected to the neo-entoloph.
- Connected to the anterior arm of the hypocone.
- Connected to the neo-entoloph (or to the entoloph) and to the protolophule.
- Connected to the anterior arm of the hypocone and the protolophule.
- Connected to the posterior arm of the protocone.

Lower Molars

Anteroconid of the m1

- The anteroconid is simple.

Labial Spur of the Anterolophid of the m1

- The labial spur is absent.
- There is an incipient labial spur.
- There is a short (or large) labial spur.

Metalophid of the m1

- The anterior metalophid points forward.
- The anterior metalophid points forward and there is an incomplete posterior metalophid.
- The metalophid is double.

Mesolophid of the m1 and m2

- Medium: The mesolophid exceed the half of the length of the mesosinusid.
- Short: The length of the mesolophid is half of the length of the mesosinusid or shorter.
- Absent: The mesolophid is absent.

Mesolophid of the m3

- Absent: The mesolophid is absent.
- Incipient: The mesolophid is incipient.
- Present: The mesolophid is well developed.

Ectomesolophid of the m1

- Absent: The ectomesolophid is absent.
- Present: The ectomesolophid is well developed.

Lingual Anterolophid of the m2

- Well-developed: The anterolophid reaches the antero-lingual corner of the metaconid.
- Short: The anterolophid does not reach the antero-lingual corner of the metaconid.
- Absent: The lingual anterolophid is absent.