

APPENDIX 2. DESCRIPTION OF THE CHARACTER STATES LISTED IN
APPENDIX 1

Upper molars

P4

Labial anteroloph:

- The labial anteroloph is absent.
- The labial anteroloph is incipient.
- There is a short labial anteroloph.
- The labial anteroloph is connected to the paracone.

Labial crest of the protoloph:

- The labial crest of the protoloph is absent.
- The labial crest of the protoloph is connected to the anteroloph.

Lingual anteroloph

- The lingual anteroloph is absent.
- The lingual anteroloph is incipient.
- There is a short lingual anteroloph.

Lingual crest of the protoloph

- The lingual crest of the protoloph is absent.
- The lingual crest of the protoloph is incipient.
- There is a short lingual crest of the protoloph.

Labial posteroloph

- There is a short labial posteroloph.
- There is a medium labial posteroloph.
- The labial posteroloph is connected to the Paracone.

Labial crest of the metaloph

- The labial crest of the metaloph is absent.
- There is a short labial crest of the metaloph.
- The labial crest of the metaloph is connected to the posteroloph.
- There are two labial crest of the metaloph, one is short and the other one is connected to the posteroloph.

- There are two labial crest of the metaloph, both are connected to the posteroloph.

Lingual posteroloph

- The lingual posteroloph is absent.
- There is an incipient lingual posteroloph.
- There is a short lingual posteroloph.
- There is a medium lingual posteroloph.
- The labial posteroloph is connected to the Paracone.

Lingual crest of the metaloph

- The lingual crest of the metaloph is absent.
- There is a short lingual crest of the metaloph.
- The lingual crest of the metaloph is connected to the posteroloph.

M1

Labial Anteroloph

- The labial anteroloph is incipient.
- There is a medium labial anteroloph.
- The labial anteroloph is connected to the paracone.

Protoloph

- The protoloph is previously connected to the anterocone.
- The protoloph is double, it is connected to the anterocone and to the protocone.

Orientation of the Protoloph

- The protoloph is transversally orientated.
- The protoloph is proverse.

Morphotypes of the metaloph (after Vianey-Liaud et al., 2006 and Schmidh-Kittler et al. 2007)

- A: Metaloph curved forward and directly connected to the protocone; hypocone linked to the metaloph by its anterior arm; short posterloph connected to the posterior arm of the hypocone.
- B: Metaloph curved backward and connected to the posteroloph-anterior arm of the hypocone junction.

Metaloph

- The metaloph is anterior regarding the hypocone and is connected afterwards the protocone.
- The metaloph is transversal regarding the hypocone.
- The metaloph is afterwards connected the posteroloph.
- The protoloph is double, it is connected to the anterocone and to the protocone.

Orientation of the Metaloph

- The metaloph is transversally orientated.
- The metaloph is proverse.

Additional structures and crests

- There are no additional structures, nor crests.
- There is a crochet.
- There is an anticrochet.
- There is a double anticrochet.

M2

Labial Anteroloph

- There is a short labial anteroloph.
- There is a medium labial anteroloph.
- The labial anteroloph is connected to the paracone.

Lingual Anteroloph

- The lingual anteroloph is absent.
- The lingual anteroloph is incipient.

Protoloph

- The protoloph is previously connected to the anterocone.
- The protoloph is double, it is connected to the anterocone and to the protocone.

Orientation of the Protoloph

- The protoloph is transversally orientated.

- The protoloph is proverse.

Morphotypes of the metaloph (after Vianey-Liaud et al., 2006 and Schmidh-Kittler et al. 2007)

- A: Metaloph curved forward and directly connected to the protocone; hypocone linked to the metaloph by its anterior arm; short posteroloph connected to the posterior arm of the hypocone.
- B: Metaloph curved backward and connected to the posteroloph-anterior arm of the hypocone junction.
- C: Metaloph curved backward and the junction between the metaloph and the posteroloph is moved labially.

Metaloph

- The metaloph is anterior regarding the hypocone and is connected afterwards the protocone.
- The metaloph is transversal regarding the hypocone.
- The metaloph is afterwards connected the posteroloph.
- The protoloph is double, it is connected to the anterocone and to the protocone.

Orientation of the Metaloph

- The metaloph is transversally orientated.
- The metaloph is proverse.

Additional structures and crests

- There are no additional structures, nor crests.
- There is an incipient crochet.
- There is a crochet.
- There is an anticrochet.
- There is a double anticrochet.

M3

Labial Anteroloph

- There is a medium labial anteroloph.
- The labial anteroloph is connected to the paracone.

Lingual Anteroloph

- The lingual anteroloph is absent.
- The lingual anteroloph is incipient.
- There is a short lingual anteroloph.
- There is a medium lingual anteroloph.

Protoloph

- The protoloph is previously connected to the anterocone.
- The protoloph is double, it is connected to the anterocone and to the protocone.

Orientation of the Protoloph

- The protoloph is retroverse.
- The protoloph is transversally orientated.
- The protoloph is proverse.

Morphotypes of the metaloph (after Vianey-Liaud et al., 2006 and Schmidh-Kittler et al. 2007)

- A: Metaloph curved forward and directly connected to the protocone; hypocone linked to the metaloph by its anterior arm; short posteroloph connected to the posterior arm of the hypocone.
- B: Metaloph curved backward and connected to the posteroloph-anterior arm of the hypocone junction.
- C: Metaloph curved backward and the junction between the metaloph and the posteroloph is moved labially.

Metaloph

- The metaloph is anterior regarding the hypocone and is connected afterwards the protocone.
- The metaloph is transversal regarding the hypocone.
- The metaloph is afterwards connected the posteroloph.

Orientation of the Metaloph

- The metaloph is retroverse.
- The metaloph is transversally orientated.
- The metaloph is proverse.

Additional structures and crests

- There are no additional structures, nor crests.
- There is an incipient crochet.
- There is a crochet.
- There is an anticrochet.
- There is a crochet and an anticrochet.
- There is a double anticrochet.
- There is a deflexus structure.
- There is a deflexus structure and an anticrochet.

Morphology M3

- The morphology of the M3 is relatively straight, like an M2.
- Swollen and bulky teeth.

Depth of the anterior groove

- There anterior groove is absent.
- There anterior groove is shallow.
- There anterior groove is deep.

Orientation of the anterior groove

- The anterior groove is transversally orientated.
- The anterior groove is retroverse.

Orientation of the sinus

- The sinus is transversally orientated.
- The sinus is retroverse.
- The sinus is proverse.

Lower molars

p4

Spur of the posterior arm of the metaconid

- The spur is absent.
- The spur is incipient.
- There is a spur in the posterior arm of the metaconid.

Hypoconid

- The hypoconid is absent.
- There is an hypoconid.

Hypolophid

- The hypolophid is absent.
- There is an hypolophid.

Hypoconulid

- The hypoconulid is absent.
- There is an hypoconulid.

m1

Anterior cingulid

- The anterior cingulid is short.
- The anterior cingulid is large.

Mesolophid

- Long: The mesolophid reaches the metaconid.
- Medium: The mesolophid exceed the half of the length of the trigonid basin.
- Short: The length of the mesolophid is half of the length of the trigonid basin or shorter.

Hypolophid

Not considered on specimens with strong wear

- The hypolophid is connected to the anterior arm of the hypoconid.
- The hypolophid is double, it is connected to the anterior arm of the hypoconid and to the hypoconulid.
- The hypolophid is connected to the Hypoconid.

m2

Anterior cingulid

- The anterior cingulid is short.
- The anterior cingulid is large.

Mesolophid

- Long: The mesolophid reaches the metaconid.
- Medium: The mesolophid exceed the half of the length of the trigonid basin.
- Short: The length of the mesolophid is half of the length of the trigonid basin or shorter.

Hypolophid

Not considered on specimens with strong wear

- The hypolophid is connected to the anterior arm of the hypoconid.
- The hypolophid is double, it is connected to the anterior arm of the hypoconid and to the hypoconulid.

m3

Anterior cingulid

- The anterior cingulid is short.
- The anterior cingulid is large.

Mesolophid

- Long: The mesolophid reaches the metaconid.
- Medium: The mesolophid exceed the half of the length of the trigonid basin.
- Short: The length of the mesolophid is half of the length of the trigonid basin or shorter.

Hypolophid

Not considered on specimens with strong wear

- The hypolophid is connected to the anterior arm of the hypoconid.
- There is an hypolophid connected to the anterior arm of the hypoconid and there is another incipient hypolophid.

dp4

Anterior cingulid

- The anterior cingulid is short.
- The anterior cingulid is large.

Mesolophid

- Long: The mesolophid reaches the metaconid.
- Medium: The mesolophid exceed the half of the length of the trigonid basin.