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| **Taxa** | **Lifestyle** | **Anatomical and ecological justification** | **References** |
| *Hesperotestudo* sp*.* | Terrestrial | - very high-domed shell- stout limbs- skull with triturating surfaces indicating herbivory - presence of osteoderms on the tail and limbs  | Meyland and Sterrer 2000 |
| *Dorkota vasconica* | Freshwater | presence of large fontanelles which remain open throughout ontogeny | Pérez-García et al. 2012 |
| *Solemys* sp. | Terrestrial | presence of limb osteoderms | Joyce et al. 2011 |
| Trionychidae *indet.*  | Freshwater | presence of a flat, flexible, and de-scaled shell | Nakajima et al. 2017 |
| *Bothremys barberi*  | Marine | - found in marine sediments- forelimb morphology indicating a shallow sea bottom walker  | Gaffney et al. 2006Hirayama and Hoshida 2018 |
| *Archelon ischyros* | Marine | giant turtle with digits elongated in flippers | Wieland 1896Williston 1914 |
| *Plesiochelys* sp*.* | Marine | - large foramina interorbitale for accommodation of hypertrophied salt glands in the skull - forelimbs modified into paddles- found in marine sediments | Anquetin et al. 2014 |
| *Taphrosphys sulcatus* | Marine | found in marine sediments | Lapparent and Werner 1998 |
| *Ctenochelys stenoporus* | Marine | - carapace with large lateral fontanelles between costals as in modern sea turtles- found in marine sediments | Karl and Nyhuis 2012 |
| *Hesperotestudo crassiscuta* | Terrestrial | - very high-domed shell - stout limbs- skull with triturating surfaces indicating herbivory - presence of osteoderms on the tail and limbs | Meylan and Sterrer 2000 |

Supplementary file 1: Category affiliation of the sampled extinct testudinatans.

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