

SUPPLEMENTARY INFORMATION

ANALYSIS OF THE SEXUAL VARIABILITY IN THE SHELL OF THE SPANISH UPPER CRETACEOUS TURTLE *DORTOKA VASCONICA* (PAN-PLEURODIRA, DORTOKIDAE)

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S1. List of specimens of *Dortoka vasconica* (Pan-Pleurodira, Dortokidae) included in this study, all of them from the late Campanian–early Maastrichtian of Laño (Burgos, Treviño County, Spain).

MCNA 6315 (Fig. 1I); MCNA 6705 (Fig. 1J); MCNA 6708 (Fig. 1K); MCNA 6847 (Fig. 1L); MCNA 6851 (Fig. D); MCNA 6870 (Fig. 1E); MCNA 6881 (Fig. 1F); MCNA 6909 (Fig. 1P); MCNA 14333 (Fig. 1H); MCNA 14334 (Fig. 1B); MCNA 16660 (Fig. 1A); MCNA 16661 (Fig. 1C); MCNA 16662 (Fig. 1M); MCNA 16663 (Fig. 1N); MCNA 16664 (Fig. 1O); MCNA 16665 (Fig. 1G).

S2. List of specimens analysed here, through the qualitative approach, corresponding to extinct representatives of several clades of Pan-Pleurodira.

Specimens analysed in this study through the literature.

Platychelyidae: *Notoemys zapatocaensis* from Valanginian (Early Cretaceous) of the northeast of Zapatoca (Colombia): MGJRG IPN 15-EAC 150620061, abbreviated as MG61 (Cadena *et al.*, 2013, fig. 8.2); IPN IS-EAC140120031 (Cadena-Rueda & Gaffney, 2005, figs. 9, 10). *Platychelys oberndorferi* from the Kimmeridgian (Late Jurassic) of Solothurn (Switzerland, NMS 8686 (Sullivan & Joyce, 2017, fig. 5); NMS 40901 (Sullivan & Joyce, 2017, fig. 11d).

Araripemydidae: *Araripemys barretoii* from Aptian–Albian (Early Cretaceous) of the Araripe Basin (Northeastern Brazil): BSP 1977 I 1 (Schleich, 1990, fig. 4; Limaverde *et al.*, 2020, fig. S3A-B); BSP 1981 I 38 (Schleich, 1990, fig. 3; Limaverde *et al.*, 2020, figs. 6A, S3C-D); DGM 756-R (Limaverde *et al.*, 2020, fig. S2A-B)LP-UFC 722 (Limaverde *et al.*, 2020, figs. 1, 6B); MN 6637-V (Limaverde *et al.*, 2020, fig. S3I-J); MN 6743-V (Limaverde *et al.*, 2020, fig. S3K-L); MN 6949-V (Limaverde *et al.*, 2020, fig. 4); MPSC R2107 (Limaverde *et al.*, 2020, fig. S1A-B); MPSC R 2308 (Limaverde *et al.*, 2020, fig. S2C-D); MN 6744-V (Limaverde *et al.*, 2020, fig. S2I-J).

Bothremydidae: *Algorachelus peregrina*, from the Cenomanian (Late Cretaceous) of Algora (Guadalajara, Spain): ALG 1 (Pérez-García, 2016, fig. 1C–D); ALG 59 (Pérez-García, 2016, fig. 6U'–W'); ALG 62 (Pérez-García, 2016, fig. 6D''–F''); ALG 63 (Pérez-García, 2016, fig. 6G''–I''); ALG 72 (Pérez-García, 2018, fig. 2d); ALG 75 (Pérez-García, 2018, fig. 3b); ALG 76 (Pérez-García, 2018, fig. 3d); ALG 80 (Pérez-García, 2018, fig. 4e); ALG 127 (Pérez-García, 2018, fig. 7k); ALG 128 (Pérez-García, 2018, fig. 7l); ALG 130 (Pérez-García, 2018, fig. 7n); ALG 132 (Pérez-García, 2018, fig. 7p); ALG 133 (Pérez-García, 2018, fig. 8b).

Podocnemididae: *Neochelys* aff. *salmanticensis*, from the Lutetian (middle Eocene) of Corrales and Casaseca de Campeán (Zamora, Spain): STUS 14.119 (Jiménez-Fuentes, 2007, fig. 1); STUS 14.121 (Jiménez-Fuentes, 2007, fig. 4); STUS 14.122 (Jiménez-Fuentes, 2007, fig. 5); STUS 14.125 (Jiménez-Fuentes, 2007, fig. 8). STUS 2.036 (Jiménez-Fuentes, 2007, fig. 9C); STUS 2.026 (Jiménez-Fuentes, 2007, fig. 9D).

Specimens analysed in this study through direct observation.

Bothremydidae: *Algorachelus peregrina*, from the Cenomanian of Algora (Guadalajara, Spain). ALG 57; ALG 59; ALG 62-63; ALG 72; ALG 80; ALG 82; ALG 91; ALG 127-130; ALG 132-133; ALG 147; ALG 235.

S3. Specimens analysed here, applying a quantitative methodology, corresponding to extant representatives of the clades of Pleurodira that are part of the current biodiversity: Chelidae, Pelomedusidae and Podocnemididae.

Chelidae. *Chelodina longicollis*: MNHN.ZA.AC.1911.181; MNHN.RA.1983.379; MNHN.RA.1985.437. *Emydura krefftii*: MNHN.RA.1983.380; MNHN.RA.2009.217. *Hydromedusa maximiliani*: MNHN.RA.0.9410; MNHN.RA.0.9411; MNHN.RA.0.9415. *Mesoclemmys gibba*: MNHN.RA.0.8752; MNHN.RA.0.8756; MNHN.RA.1985.418; MNHN.RA.1986.418. *Platemys platycephala*: MNHN.ZA.AC.1901-39; MNHN.RA.1986.151; MNHN.RA.0.8753; MNHN.RA.0.8760; MNHN.RA.1985.424; MNHN.RA.1986.429.

Pelomedusidae. *Pelomedusa subrufa*: MNHN.RA.1996.7421; MNHN.RA.1996.7422;
MNHN.RA.2005.3435; MNHN.RA.2005.3436; MNHN.RA.2005.3437;
MNHN.RA.1995.5666; MNHN.RA.1996.7493; MNHN.RA.1996.7494;
MNHN.RA.1996.7496; MNHN.RA.1996.7497; MNHN.RA.0.7870; MNHN.RA.0.9398;
MNHN.REP 42; MNHN.RA.1996.7498; MNHN.RA.1996.7499; MNHN.RA.1996.9396;
MNHN.RA.1995.5667; MNHN.RA.1995.5920; MNHN.RA.1995.9506. *Pelusios adansonii*:
MNHN.RA.1996.7500; MNHN.RA.1890.493; MNHN.RA.1985.189; MNHN.RA.0.8952;
MNHN.RA.0.8953; MNHN.RA.2005.3442; MNHN.RA.1906.470; *Pelusios castaneus*:
MNHN.RA.1978.3011; MNHN.RA.1978.3013; MNHN.ZA.AC.1880-464;
MNHN.RA.0.5367; MNHN.RA.2005.3418; MNHN.RA.2005.3421; MNHN.RA.2009.218;
MNHN.RA.0.8368. *Pelusios castanoides*: MNHN.ZA.AC.1885.395; MNHN.RA.2002.107;
MNHN.RA.2002.112; MNHN.RA.2002.120; MNHN.RA.2002.124; MNHN.RA.1886.200;
MNHN.RA.1891.884a; MNHN.RA.1891.884b. *Pelusios chapini*: MNHN.RA.1995.5671;
MNHN.RA.1995.5675; MNHN.RA.1995.5676; MNHN.RA.1995.5677;
MNHN.RA.1995.5678; MNHN.RA.1995.9622; MNHN.RA.1995.9623. *Pelusios gabonensis*:
MNHN.RA.1996.7499; MNHN.RA.2005.3457; MNHN.RA.2005.3458;
MNHN.RA.2005.3453; MNHN.RA.2005.3454; MNHN.RA.2005.3455: NHN.RA.1934.373.
Pelusios sinuatus: MNHN.RA.1902.302; MNHN.RA.1897.114; MNHN.RA.60.1828.
Pelusios subniger: MNHN.ZA.AC.1883.484; MNHN.ZA.AC.1884.418;
MNHN.RA.1978.22; MNHN.RA.1987.950; MNHN.RA.1987.1104; MNHN.RA.1987.967;
MNHN.RA.0.8366.

Podocnemididae. *Podocnemis unifilis*: MNHN.ZA.AC.1974.59; MNHN.RA.0.8359;
MNHN.RA.1986.403; MNHN.RA.1986.405; MNHN.RA.2011.341; MNHN.RA.1908.219;
MNHN.RA.07893. *Podocnemis expansa*: MNHN.ZA.AC.1876.200; MNHN.RA.0.7997;

specimen without number of the Reptiles collection. *Podocnemys lewyana*:

MNHN.ZA.AC.1944.283; MNHN.ZA.AC.1944.285; MNHN.RA.0.8985.

S4. Definition of the location of the landmarks and semilandmarks for the xiphiplastron of *Dortoka vasconica* (Pan-Pleurodira, Dortokidae), from the late Campanian–early Maastrichtian of Laño (Burgos, Treviño County, Spain).

View	Landmark	Anatomical definition
Ventral	1	Posterior-most point of the right xiphiplastral process
Ventral	2	Posterior-most point of the left xiphiplastral process
Ventral	3-10	Semilandmarks: Plate outline between LM1 and LM2

S5. Definition of the location of the landmarks and semilandmarks for the xiphiplastron of the extant representatives of Pleurodira included in this study.

View	Landmark	Anatomical definition
Ventral	1	Posterior-most point of the right xiphiplastral process
Ventral	2	Posterior-most point of the left xiphiplastral process
Ventral	3-13	Semilandmarks: Plate outline between LM1 and LM2

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