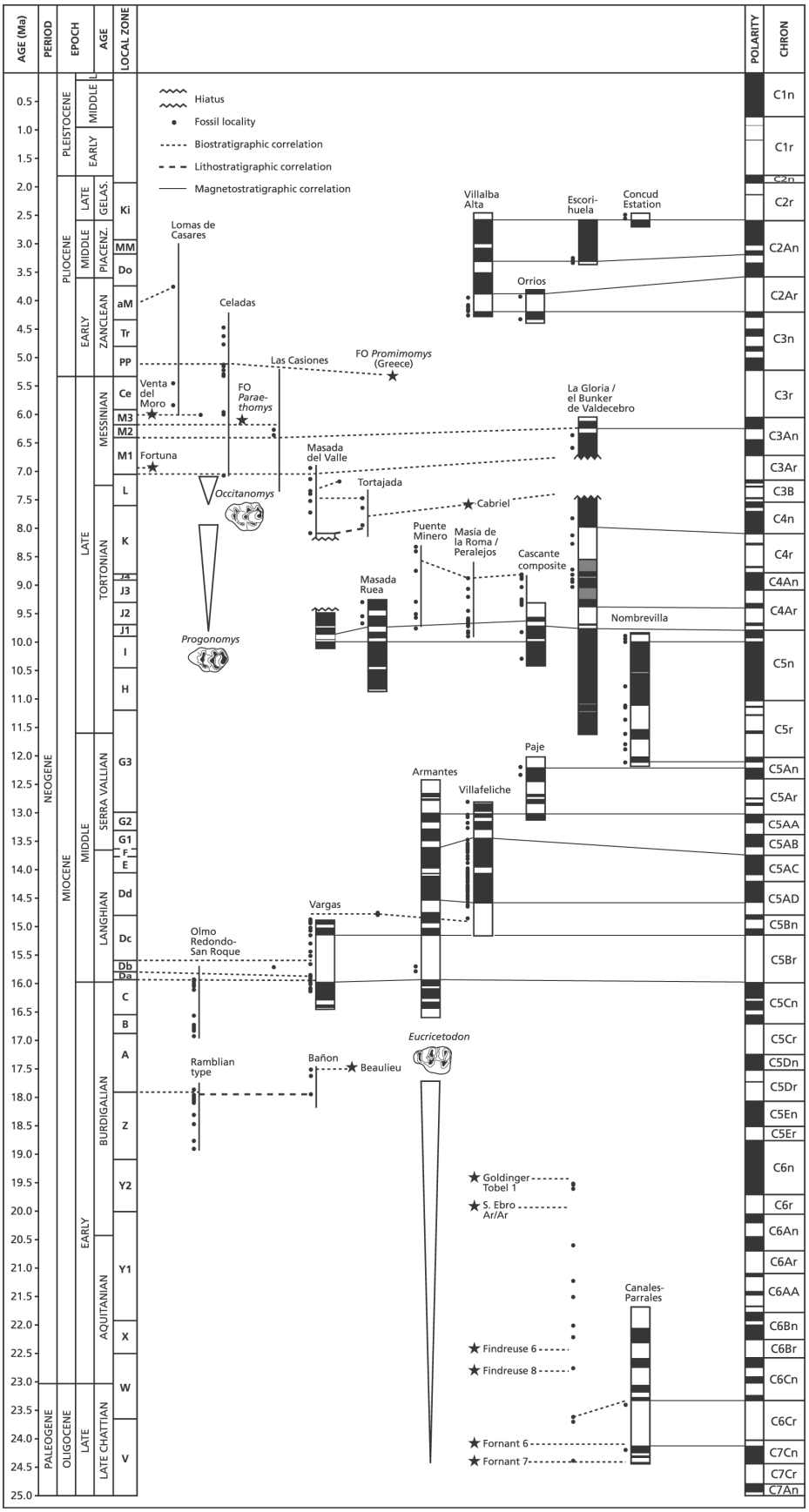
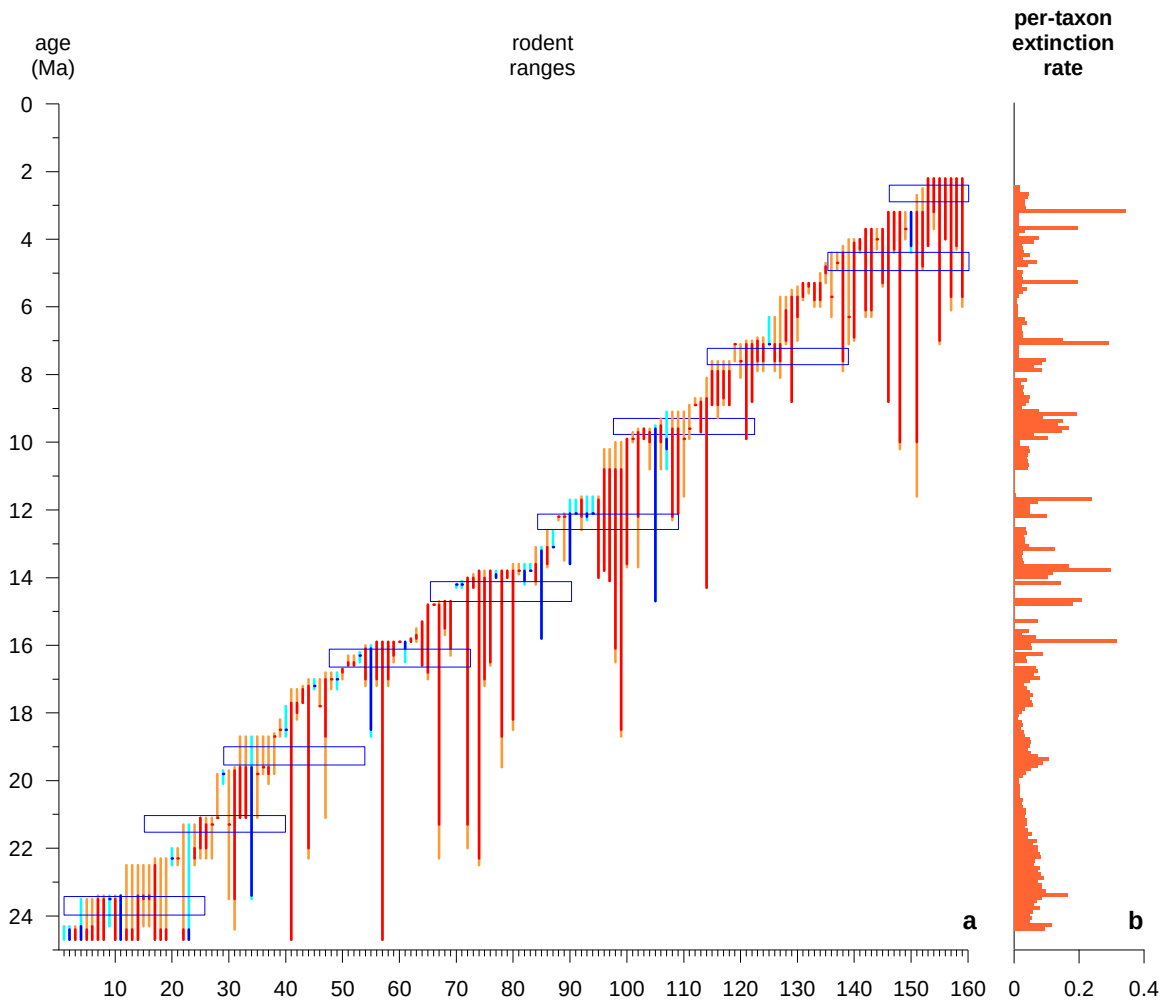
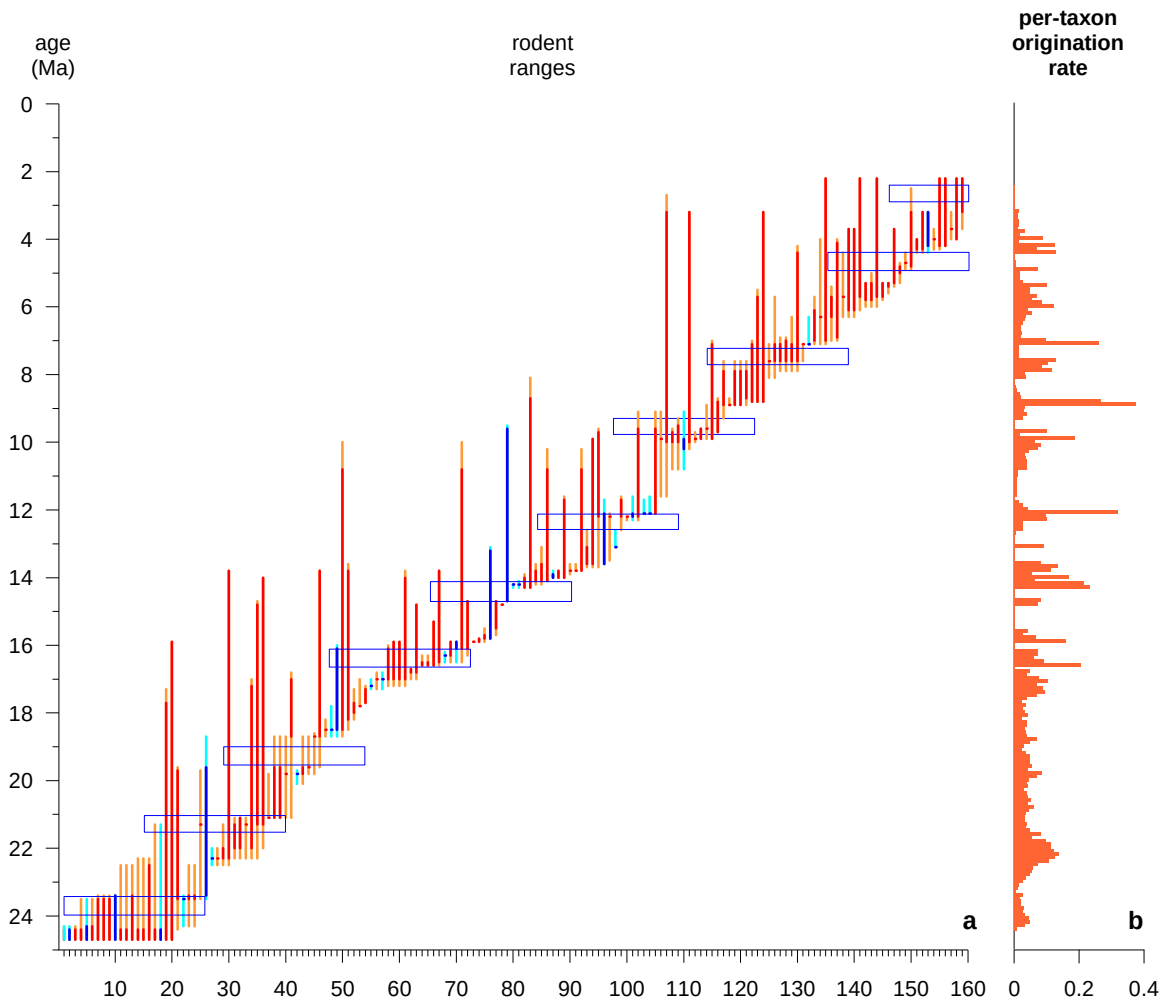

AGE (Ma)
PERIOD
EPOCH
AGE
LOCAL ZONE
POLARITY
CHRON
Hiatus
Fossil locality
Biostratigraphic correlation
Lithostratigraphic correlation
Magnetostratigraphic correlation
Lomas de Casares
Celadas
Las Casiones
FO Promimomys (Greece)
Venta del Moro
FO Paraethomys
Fortuna
Occitanomys
Progonomys
Masada del Valle
Tortajada
Cabriel
Puente Minero
Masía de la Roma / Peralejos
Cascante composite
Masada Ruea
Villalba Alta
Escori-huela
Concud Estation
Orrios
La Gloria / el Bunker de Valdecebro
Nombrevilla
Paje
Armantes
Villafeliche
Vargas
Olmo Redondo-San Roque
Ramblian type
Bañon
Beaulieu
Eucricetodon
Goldinger Tobel 1
S. Ebro Ar/Ar
Canales-Parrales
Findreuse 6
Findreuse 8
Fornant 6
Fornant 7

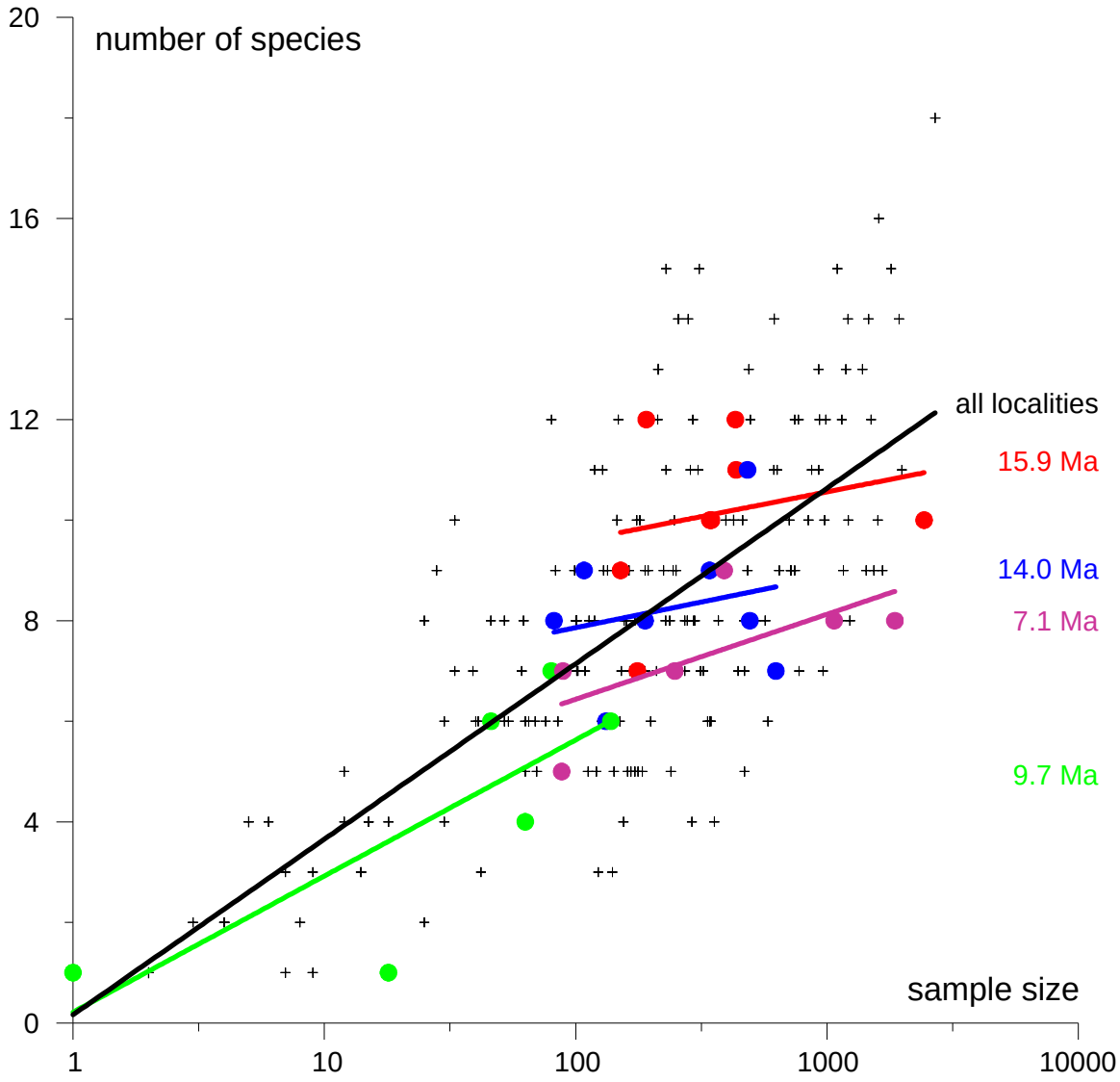
Supplementary Figure 1. Chronological framework with sections and localities. Neogene time scale of Lourens et al. (2004)[35], with a downward extension into the latest Oligocene[35]. Each localities was assigned to a single local biozone (sixth column, see ref. 33 for full names of biozone abbreviations Ce-Ki). Sections are represented by vertical bars with local magnetic polarity patterns or by vertical lines in case no local magnetostratigraphy was available. Unknown polarities are indicated in gray. Biostratigraphic correlation lines are indicated where biostratigraphy is used as the primary correlation tool. Asterisks represent calibration points outside Central Spain (see Supplementary Notes). Triangles indicate the use of biochronological methods (change in size or morphology of dental elements).



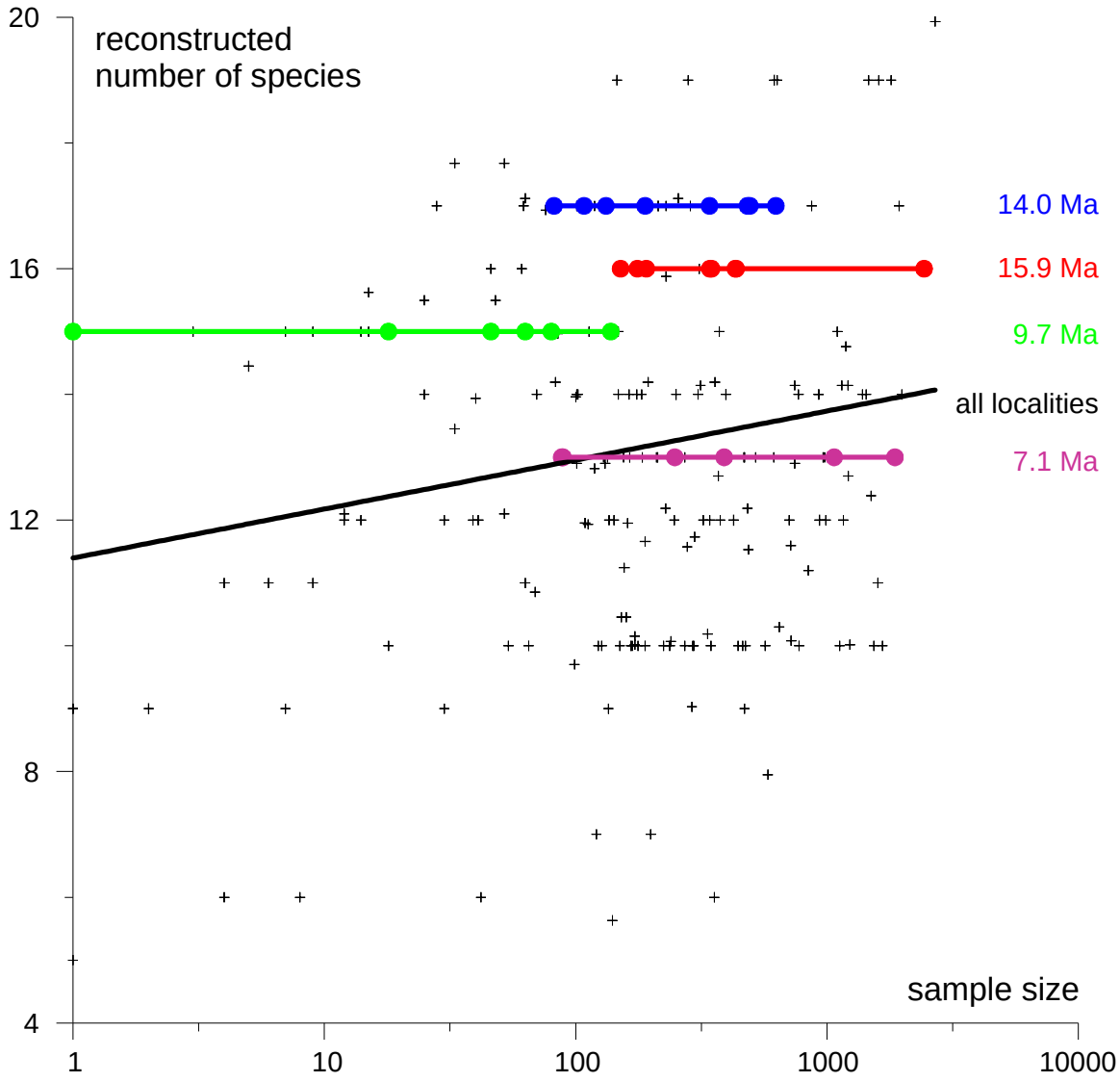
Supplementary Figure 2. Rodent ranges in Central Spain sorted by age of extinction, and per-taxon extinction rates. **a,** Rodent ranges using an age model that yielded the mean number of lineages (159) after gap analysis. Red: observed ranges of terrestrial, non-insectivorous lineages. Orange: uncertainty intervals for terrestrial, non-insectivorous lineages. Dark blue: observed intervals of arboreal and insectivorous lineages. Light blue: uncertainty intervals for arboreal and insectivorous lineages. Blue boxes correspond to (mean) 2.37-myr eccentricity minima. Taxonomy: see Supplementary Notes. **b**, Per-taxon extinction rates (per 0.1 myr).



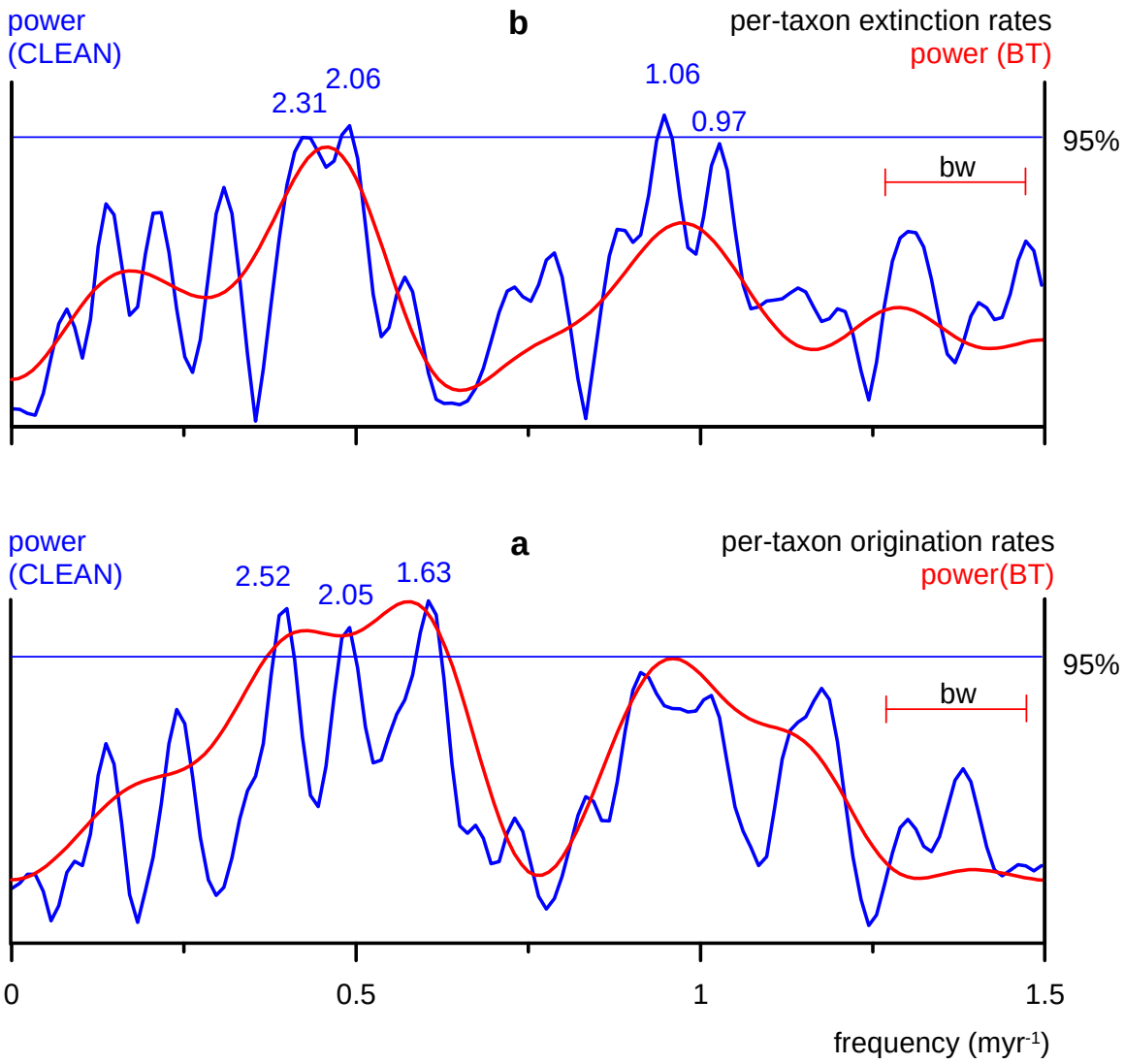
Supplementary Figure 3. Rodent ranges in Central Spain sorted by age of origination, and per-taxon origination rates. Colours: see Supplementary Figure 2. **a,** Rodent lineage ranges. **b**, Per-taxon origination rates (per 0.1 myr).



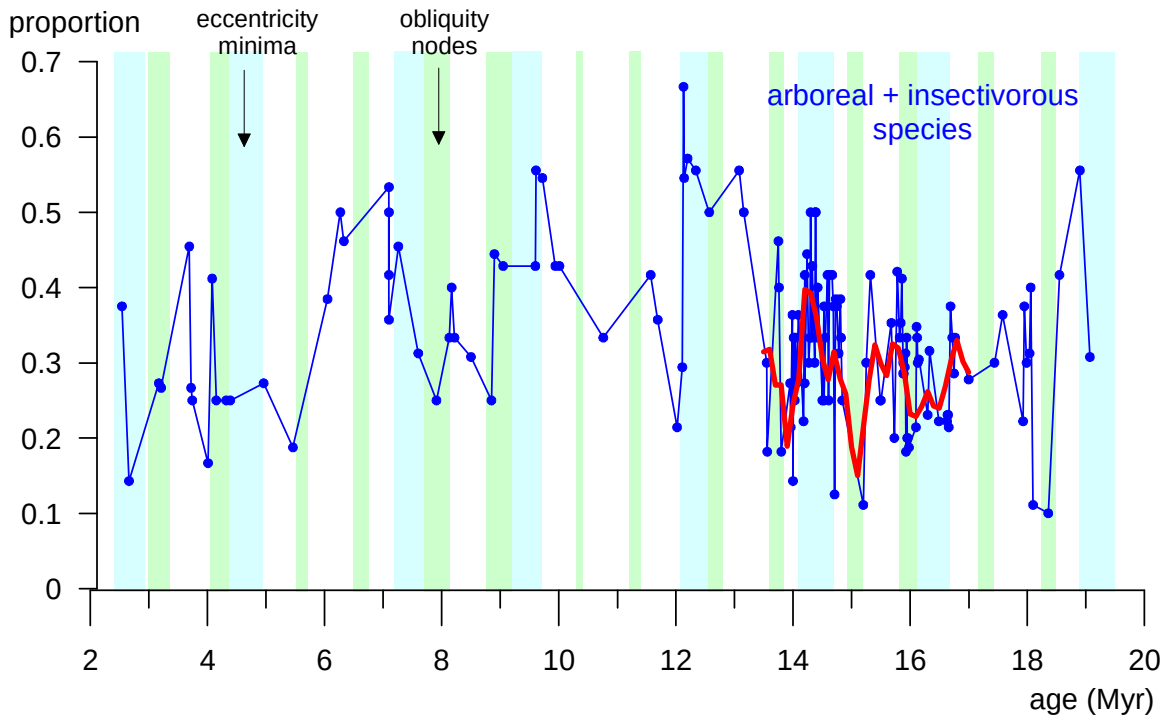
Supplementary Figure 4. Sample size – species richness plots and regression lines. Species richness depends both on abiotic/biotic factors and sample size. Black: all localities. Coloured: 0.1-myr units with the highest locality frequency (6-8). Slopes for 0.1-myr units correspond to an addition of 1.0-1.7 species for a sample size increase from n=100 to n=1000. Lineage-locality occurrences with a proportion < 1/1500 were considered as absence. See Supplementary Table 2 for sample sizes.



Supplementary Figure 5. Sample size – range-through species richness plot. Colours as in Fig. 4. See Supplementary Table 2 for sample sizes.



Supplementary Figure 6. Power spectra of per-taxon origination and extinction rates. In blue: CLEAN method[51], with 95% significance level and significant periods indicated. In red: Blackman Tukey method (BT), with bandwidth (bw) indicated. **a**, Originations. **b**, Extinctions.



Supplementary Figure 7. Proportions of wet-adapted species per locality (total= Rodentia + Lipotyphla, (semi-)aquatic species excluded). Wet-adapted species are arboreal and insectivorous species. Only localities with more than 100 rodent specimens are included. Blue: raw proportions. Red: 3-point moving average of series re-sampled at 0.1 myr. Lipotyphla data are from published[27,52,53] and unpublished lists. See Supplementary Figures 2, 3 for temporal ranges of wet-adapted and other rodent lineages. Lipotyphla from the interval 24.4-19 Myr have not yet been studied. Blue bars: eccentricity minima (mean spacing of 2.37 myr), defined as low-amplitude intervals including two successive strong 405-kyr eccentricity minima. Green bars: obliquity nodes (mean spacing of 1.2 myr), defined as intervals including one or more pairs of successive 41-kyr minima > 0.395 rad.

References

See Supplementary Notes for reference list.