Preliminary Examination of Select Arvicolid Rodent Sequences: Recognizing Global and Regional Patterns

Robert A. Martin
Murray State University
Murray, KY, USA
robert.martin@murraystate.edu

Federica Marcolini
Dip. Scienze Geologiche
Università Roma Tre, Italy
federica.marcolini@uniroma3.it

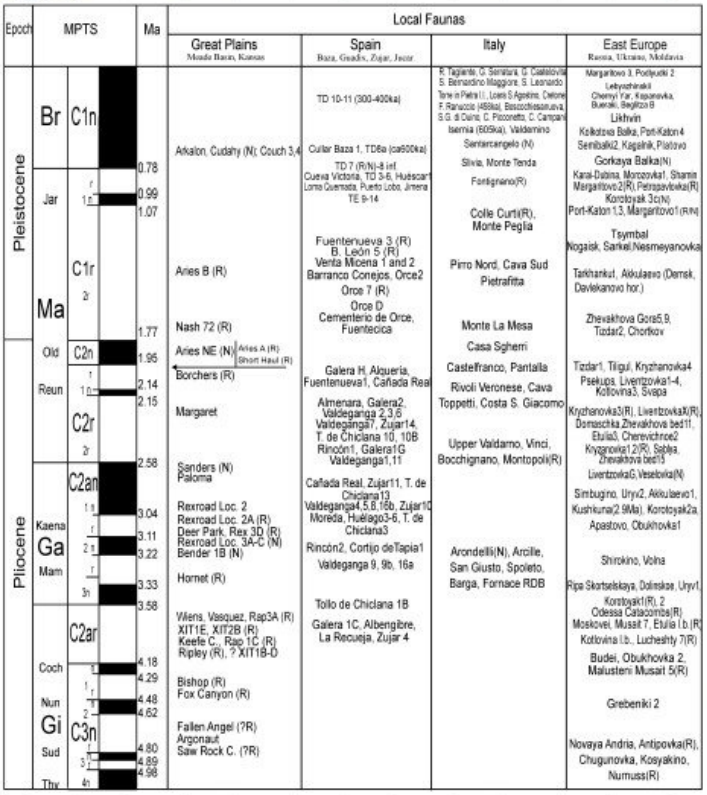
Jordi Agustí
Institute of Human Paleoecology,
University of Tarragona, Spain
jordi.agusti@icrea.es

Alexey S. Tesakov
Geological Institute, Russian Academy
of Sciences, Moscow, Russia
tesak@ginras.ru

Biostratigraphic hypotheses based on the chronological distribution of Pliocene and Pleistocene arvicolid rodents were examined from the Central Great Plains of the USA, various basins of southern Spain (Baza, Guadix, Zujar, Jucar), eastern Europe and various short sections in Italy (Fig. 1).

These sequences were compared to the European Neogene rodent biochronology in an initial attempt to identify global versus regional patterns in arvicolid evolution and dispersal. The correlated appearance of various evolutionary stages on a global scale is astounding, testifying to rapid dispersal of adaptive dental morphotypes and, presumably, behaviors and reproductive strategies.

Fig. 1



One of the most coordinated/synchronous events of the middle latitudes in Old and New World arvicolid record is the decline and extinction of many lineages of voles with molar roots during the Late Pliocene, and the subsequent nearly synchronous appearance of *Microtus* throughout the Holarctic realm. Nevertheless, it is likely that the *Microtus* immigration event occurred later in Spain than elsewhere, testifying to the filtering effect of the Pyrenees Mountains (Fig.2).

Borsodia is more common in steppe belt of western Asia and eastern Europe and only occasionally occurs in Western Europe. *Pliomys* appears in the south of Europe in Late Early Pliocene but its subsequent evolution occurs in Western Europe. The Pliophenacomyinae is an endemic North American group. The systematics of early *Ogmodontomys*, *Ophiomys* and *Mimomys* needs to be reviewed; some of these taxa may be better viewed as slightly advanced *Promimomys* related to *P. antiquus* Zazhigin.

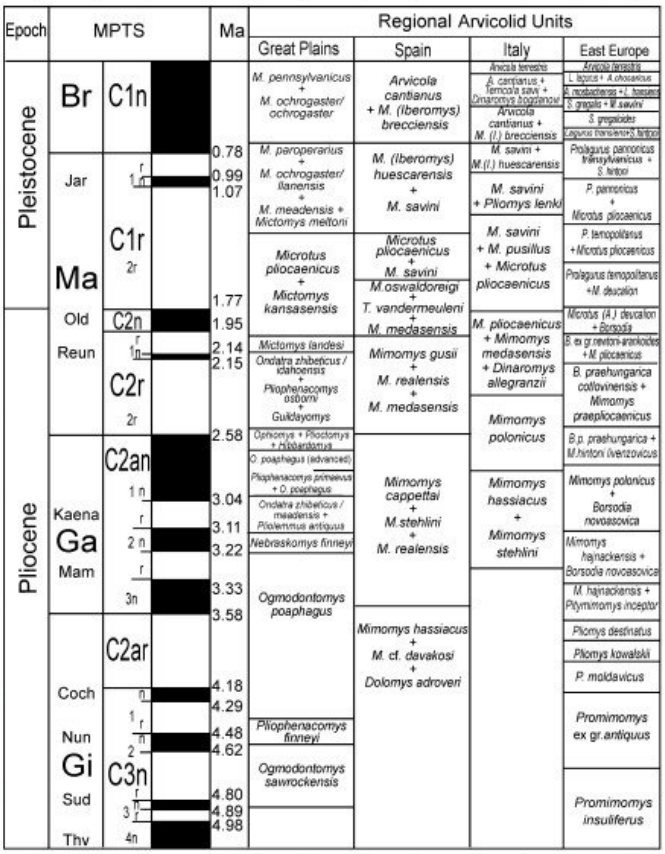



Fig. 2