Endemism, allopatry and passive transport: the case of two *Proserpinicaris* (Crustacea, Copepoda, Harpacticoida) from Sardinia

Cottarelli V.[1,*], Bruno M.C.[2], Spena M.T.[3], Grasso R.[3]

[1]Department for Innovation in Biological, Agro-food and Forest systems, Tuscia University, Viterbo, Italy; [2]Edmund Mach Foundation, Research and Innovation Centre, S. Michele all'Adige (TN), Italy; [3]Department of Biological, Geological and Environmental Sciences, Catania University, Catania, Italy;

* vezio.cottarelli@gmail.com

Proserpinicaris is a genus of Parastenocarididaewith wide geonemy,it includes specialized taxaliving exclusively in phreatic and interstitial continental groundwater. The only speciesknown for Italy are:*P. proserpina* (Chappuis 1938) from Southern and Central Italy,*P. amalasuntae* (Bruno and Cottarelli 1988) from Latium and Tuscany in Central Italy, *P.kalypso* (Pesce et al., 1988) from Sicily. In Sardinia,*P.admète* (Cottarelli et al., 1980) was collected from the hyporheic habitat of several streams in the island, and *P.ima* (Cottarelli 1989) from phreatic waters in the island of La Maddalena; a third species was collected in the Asinara island from the hyporheos at the estuary of the creek "BaddeLonga".This *Proserpinicaris* is new for Science and its complex of morphological characters highlight its remarkable affinity with *P. admète*.The Asinarawas the terminal portion of the Stintino Peninsula, separating from the mainland at the end of the Würm, when melting of the ice caps caused the rise of the sea level (Flandrian or Versiliantransgression).These geological phenomena are recent (the transgression peak occurred about 6500 years ago), but the time span seems to have been sufficient to allow the ancestor populations to undergo allopatricspeciation, resulting in the two strongly relatedspeciesResearch on species of Italian Parastenocarididaeat the molecular levelis currently in progress andone species of *Proserpinicaris* was already sequenced andmore molecular data will allow to clarify the framework outlined here.Although this speciation scenario seems very likely, other hypothesis such as passive anthropic dispersion can not be ruled out. In fact, Parastenocarididaedo not tolerate marine waters and are strongly linked to narrow environmental conditions. Laboratory experiments in progress at the University of Catania show that these harpacticoids can survive for several months, in small sealed containers with a small amount of water and without food or oxygen input.A possible transport through wet sands or containers containing water could explain the presence of a *Proserpinicaris*in Asinara, and of otherParastenocarididae in oceanic islands (Schabetsberger, 2009). Moreover, a newParastenocarididae was collected inSablayan, a volcanic island of the Philippines which hasnever been in contact with other mainland (Cottarelli, pers.com).