THE FRESHWATER PROSOBRANCH SNAİLS *FAGOTİA* İN TURKEY

Türkiye'de Tatlısı Prosobranch Salyangozu, *Fagotia*

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Abstract

The three recent species of the Prosobranch freshwater snails Fagotia *(Melanopsinae) live in Turkey. Two of them are of pontian origin. But only one seems to be endemic in the Central Anatolian tableland. The way of immigration is explained by means of the geological development in the Pleistocene and a connection to the other pontian species is pointed out,*

***Key words**: Prosobranchs, Freshwater,* Fagotia, *Turkey.*

Özet

Tatlısı Prosobranch türü Fagotia'nın Türkiye'de günümüzde yaşayan üç türü vardır. Bunlardan iki tanesi pontian kökenlidir. Bir türü ise Anadolu kara parrçası için endemic olduğu düşünülüyor. Pleistosende maydana gelen jeolojik gelişmelere gore göç yolları açıklanmaya çalışılmış ve diğer pontian türlerle bağlantıları ortaya konulmuştur.

***Anahtar kelimeler**: Prrobrnachia, Tatlısu, Fagotia, Türkiye.*

Introduction

The freshwater Prosobranch snails of the genus *Fagotia* BOURGUİGNAT 1884 have a pontian origin. The genus originated comparatively late during the transition stage Miocene to early Pliocene during the Pontian period. It is a part of the subfamily Melanopsinae, which has about 10 other genera whorldwide (Wenz 1938: 690). Initially Ferussac classified the two well known *F. acicularis* (Ferussac 1823) and F.*esperi* (Ferussac 1823) in the genus *Melanopsis,* but Bourguignat (1884) separated *esperi* together with 21 synonymous taxa into a new genus *Fagotia* and *acicularis* with further 18 synonyms into the genus *Microcolpia.* Later Wenz (1938: 690) comprised both as subgenera of *Fagotia.* These both arose simultaneously in the basin of river Danube, and are nowadays distributed in the river systems of Danube, Pruth, Dnjestr, Bug and Dnjepr (Grossu 1986: 310). The European distribution is compiled by (İllies 1967: 100) and (S.Jaeckel 1962: 55), east to Saporoschje in Ukraine.

Therefore arose a gap of survey about the distribution in Turkey, until Schutt (1988: 81) compiled the malacological faunal association of the Sapanca Gölü with several synonyms or forms, which were hidden in the

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literature (Westerlund 1886: 113,114), and recognized the connection with the Danubian fauna.

The way of immigration from the Danube into the Turkish highland became enlightened by the discovery of a third species in Turkey *Fagotia sangarica* Schutt & Bilgin 1974: 60 from the main spring Sakaryabaşi near Çifteler, 60 km SE Eskişehir in the Turkish province of the same name. Sakaryabaşi is possibly the largest of many springs in the north-south trending Sakarya rift valley, with endemic Prosobranchs. It is connected with the mouth into the Black Sea named Sakarya Ağzı near Adapazari. On the other side its waterflow goes to Gökpinar / Akgöl as demonstrated in map 1, and had a connection to the Tuz Gölü in the Pleistocene.

Materail and Method:
Therefore in May 2007 we made a joint excursion to find a connection between Sakarya Ağzı and Sakaryabaşi. But we could not find any of these three *Fagotia* species at an actual or fossil intermediate location of the river Sakarya, besides the villages Adapazari, southern shore; the public bathes of Çakırca; Eşme near Arifye; and Beşköprü suburb of Adapazri. And Çifteler, where they live in huge numbers and can be found also as fossils together with *Melanopsis praemorsa maximalis*.

Result
The genus has only three valid species since its origin in the pontian age:
Fagotia acicularis: Shell elongate, turriculate to high conical, unicoloured dark brown, seldom with a lighter band below suture, never spotted, 8-10 nearly flat whorls with shallow suture, apex pointed, but often corroded, aperture lancet-shaped, not higher than 1/3 of shell hight. Plate 1. Figs. 1 - 4.
Fagotia esperi: Shell conical oval, 7-8 somewhat convex whorls with not much impressed suture, aperture about half of the height of the shell, always light corneous and spotted by regular reddish-brown flecks, the pattern is often covered by a dark brown layer in older animals, columella obliquely cut off below. Plate 1. Figs. 5 - 7.
Fagotia sangarica: Shell oval with turreted protoconch, solid, 5-7 whorls slightly convex with barely impressed suture, sculpture of about 15 knotted ribs on the penultimate whorl, each of them has a stronger, slightly separated knot just below the suture, underneath of which subsutural knots in 5 rows of further tubercles resulting from spiral and longitudinal sculpture elements, weakening below the periphery, aperture slender, acutely angled at the top, columella cut off below; a slight coaxial colour pattern is reddish brown on a dark brown ground colour. Plate 1. Figs. 8 - 10.

Discussion
During the last glacial period, 18 thousand years ago, in the Wurm III ice-age the sea level of the Black Sea has been much higher than nowadays, so that the delta of the Danube got drowned (Pfannenstiel 1950: time table 2) and the

Danubian mollusc fauna could reach the Turkish northern coast for a short time and invade the Sapanca Gölü . The water of the Danube flows partly still today along the shore-line of Romania without mixing with the sea-water of the Black Sea to Bosporus and Marmara Sea (Kobelt 1898: 3). The begin of immigration into the Sakarya rift valley is written in Pfannenstiel (1944: 411). He demonstrated a probable way of immigration through the "Sakarya Bosphorus" which connected only for a short period the Marmara Sea with the gulf of İzmit, the Ova of Adapazari and the Akgöl to Sakarya Ağzı. A second, probably older way was possible along the west-eastern depression Manyas - Uluabat.

The type locality of *Fagotia sangarica:* near Çifteler is one of the large springs of the north-southern directed Sakarya rift valley which is connected with Sakarya ağzı at the shore-line of the Black Sea. But the waters of the Black Sea can no more reach the tableland because of tectonic elevation, so that Sakaryabaşi is an isolated spring since Pleistocene and could develop an own endemic species (map 1).

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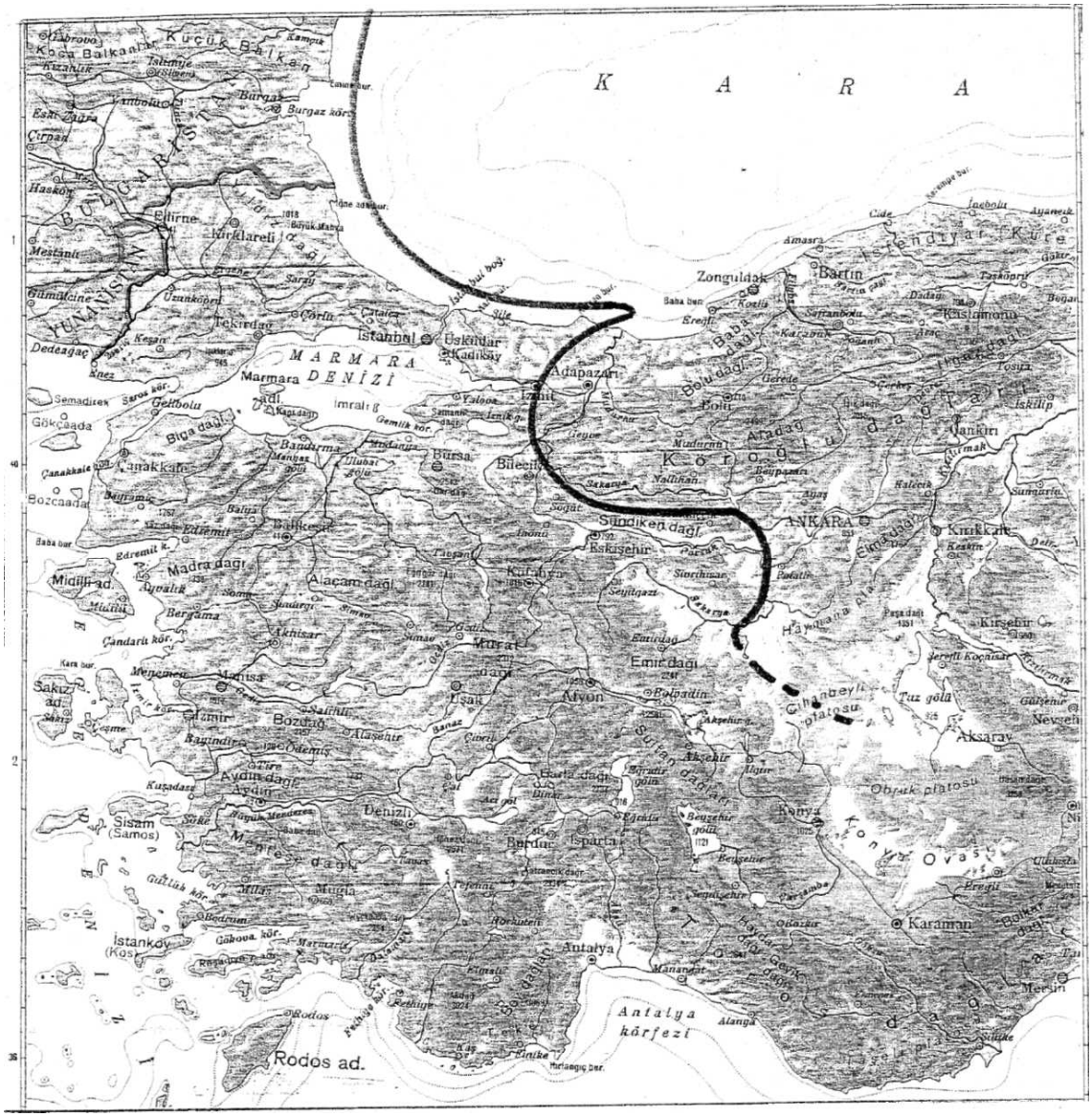

Map. 1.: A suggested immigration way of pontocaspian snails from the Black Sea to Turkish inland lakes along the Sakarya rift valley.

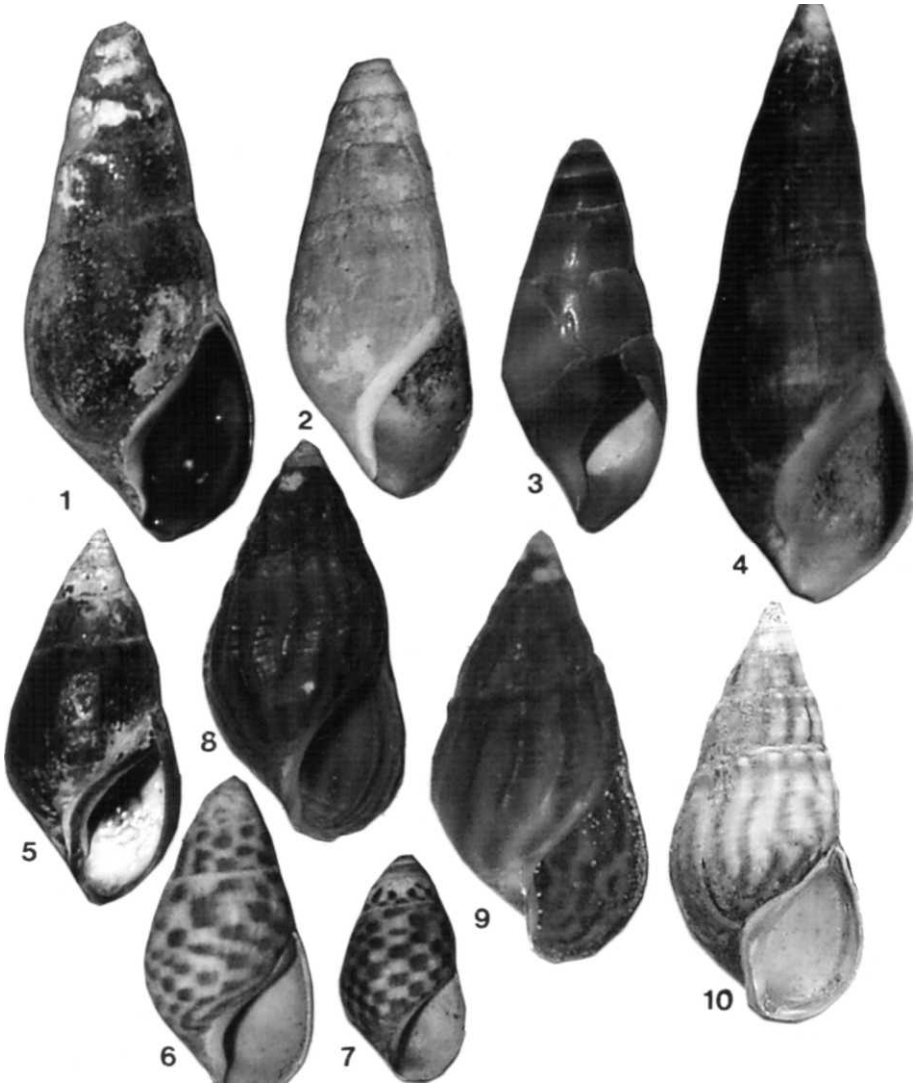

Plate 1. All figures X 4, phot. H. SCHÜTT.

Figs. 1-4: ***Fagotia acicularis*** (FERUSSAC 1823); **1.** Sakarya province, Sapanca Gölü **2.** Bolu province, Karamurat Gölü near Taşkestı. **3.** Sakarya province, Sapanca Gölü near Arifye. **4.** H: Budapest, Danube near Estergom.

Figs 5-7: ***Fagotia esperi*** (FERUSSAC 1823); **5.** Sakarya province, Sapanca Gölü near Arifiye. **6.** Kocaeli province, Gökçeören Gölü near Kazımpaşa. **7.** Sakarya province: Adapazarı Ovası.

Figs. 8-10: ***Fagotia sangarica*** SCHÜTT & BİLGİN 1974; **8. 9.** Paratypes: Sakaryabaşi. **10**.Eskişehir province: Bardak çay tributary to Sakarya near Mahmudiye.