STAGNICOLA RECORDS FROM TURKEY WITH THE DESCRIPTION OF TWO NEW SPECIES, *STAGNICOLA TEKECUS* N. SP. AND *S. KAYSERIS* N. SP. (GASTROPODA: LYMNAEIDAE)

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Abstract *Malacological investigations in the counties of Antalya and Isparta (Turkey) have provided new information on the distribution and status of Stagnicola species in Asia Minor. By comparing the anatomy of the material collected, two previously undescribed species where recognised.*

Keywords Stagnicola tekecus *n. sp.*, Stagnicola kayseris *n. sp.*, Stagnicola, *Lymnaeidae, Turkey*

INTRODUCTION

However, very few segregate *Stagnicola* records exist for southern and eastern Europe, or for Asia Minor. In southern Europe it is believed that the genus *Stagnicola* is represented principally by *S. fuscus* (C. Pfeiffer, 1821), and additionally Bank (Fauna Europaea: www.faunaeur.org) lists *S. corvus* (Gmelin, 1791) for Greece. The only *Stagnicola* species hitherto recorded from Turkey is *S. palustris* (O.F. Müller, 1774) recorded in western Anatolia by Bilgin (1967, 1980) and Yıldırım & Atayeter (2003). Assignation to this taxon is based upon the conchological characters of a specimen illustrated in Bilgin (1967, p. 17, fig. 4).
Examination of *Stagnicola* material from Turkey has provided new information on the status and distribution of the species present in that country. In this paper we describe two new species, *Stagnicola tekecus* n. sp. and *S. kayseris* n. sp. and make comparisons with other *Stagnicola* species mentioned from the region.

MATERIAL AND METHODS

The snails where gathered with a sieve from the banks of the waters. The samples were frozen down to -20 °C over night and after that put in ethanol (75%). This procedure turned out to be as successful as the relaxing technique according to Meier-Brook (in 1976), using pentobarbital. The animals were stretched out completely and could therefore be dissected without any problems. The tissue is a little more tender through the freezing, as compared to processing with pentobarbital, but still well to handle, however.
The dissections and measurements of the genital organs were carried out using a stereo microscope (Stemi SV 6, Carl Zeiss, Germany), the photographs were made with a digital camera (Nikon D70), and the shell height and shell width were measured using a vernier caliper.

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THE SAMPLING SITES

The sampling sites of *Stagnicola tekecus* n. sp. known up to now are in the counties Antalya and Isparta (Fig. 1), *S. kayseris* n. sp. is only known from the region Kayseri.

Stagnicola tekecus n. sp.

Holotype Shell 26 mm high, 11.5 mm wide. Zoologisches Museum Hamburg, ZMH 4823 (Fig. 2.1).

Material examined We dissected 25 adult specimens of *Stagnicola tekecus* n. sp. and measured 50 shells, which had 5.5 whorls.

Type locality Konne, Isparta (37° 52.33′ N, 30° 50.38′ E, Turkey), IX. 2004 leg. M. Z. Yıldırım.
Paratypes: Zoologisches Museum Hamburg, ZMH 4824, Hungarian Natural History Museum, HNHM 94804, Süleyman Demirel Üniv. Burdur Eğitim Fak., Burdur (Turkey), collection of the senior author.

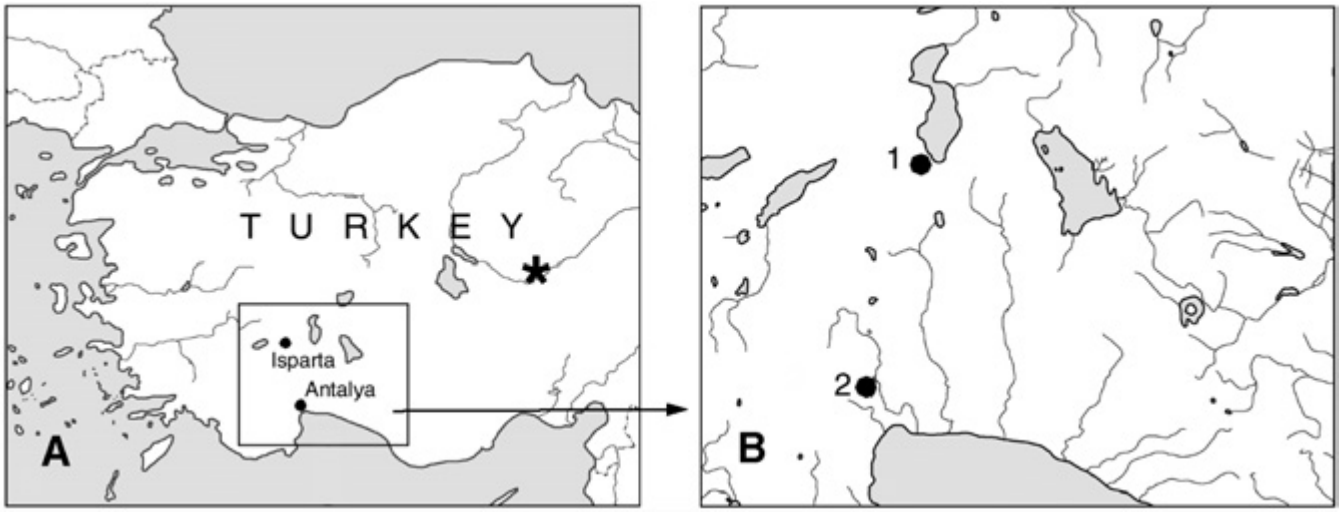

Figure 1 Sampling sites of *Stagnicola tekecus* n. sp. and *S. kayseris* n. sp. **A:** star: *S. kayseris* n. sp., Kayseri, **B:** *S. tekecus* n. sp. **1**: Konne (loc. typ.), **2**: Döşemaltı.

Habitat Calcareous source lake; *S. tekecus* lives there in the muddy shallow water of the lake.

Derivation of name The name is given after the region of the locus typicus, Teke.

Diagnosis The shell is elongated, conical, light brown to dark brown with 5.5 whorls. It is 23-32 mm high and 11-15 mm wide, the aperture is oval, red brown inside, with a height of 12-16 mm and a width of 8-11 mm (fig. 2.1-2.5).
The mantle is unicoloured grey, the head is sprinkled in an irregularly yellowish way (fig. 2.6).

Anatomy The ratio of praeputium to phallotheca is 0.38 to 1.78 with the average of 0.81, and it therefore is very variable (fig. 2.7, 2.10). The bursa copulatrix (spermatheca) is spherical, and the spermatheca duct is long and thin (fig. 4.5). The prostata has one fold with two, rarely three, subfolds, which are usually well developed, seldom appearing only as swellings at the basis of the fold (fig. 2.8, 2.9).

Stagnicola kayseris n. sp.

Holotype Shell 16.0 mm high, 7.0 mm wide. Zoologisches Museum Hamburg, ZMH 37564.

Paratypes Zoologisches Museum Hamburg, ZMH 37565, Süleyman Demirel Üniv. Burdur Eğitim Fak., Burdur (Turkey), and collection of the senior author.

Material examined We dissected and measured the shells of 8 adult specimens from Kayseri-Karpuz Sekisi Basin Gelbula village (38° 40.66′ N, 35° 21.34′ E, leg. XII. 2002 M. Akman) and 7 adult specimen from Kayseri-Pastirmacilar Park Garden (leg. XII. 2001 M. Z. Yildirim).

Type locality Kayseri-Pastirmacilar Park Garden (38° 43.79′ N, 35° 29.56′ E).

Habitat small spring and surroundings.

Derivation of name The name is given after the region of the type locality, Kayseri.

Diagnosis The shell is elongated, conical, slim, light brown with 5.5 whorls. It is 16-18 mm high and 8-9 mm wide, the aperture is oval, with a height of 0.70-0.75 mm and a width of 4.5 mm. The columellar fold is strong (Fig. 3). The head and the mantle are unicoloured grey.

Anatomy The proportion between the praeputium and the phallotheca is ca. 1.0 (n = 15), the bursa copulatrix is spherical, and the spematheca duct is long and thin, a little widened at the distal end. The prostata has one fold (Fig. 3).

DISCUSSION

Direct comparison between *Stagnicola tekecus* n. sp., *S. kayseris n. sp.* and the previously mentioned *Stagnicola* species from S-Europe (*S. palus-*

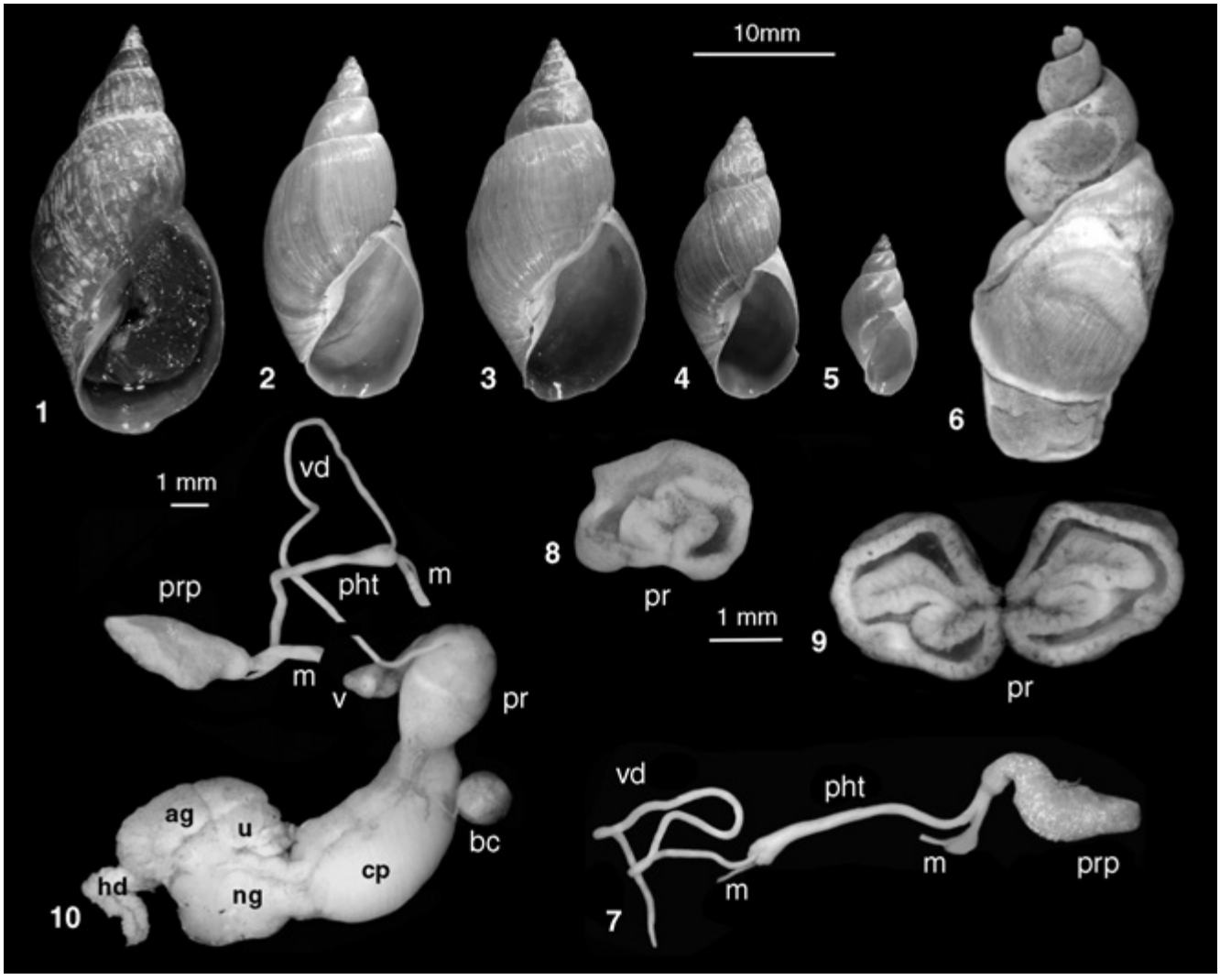

Figure 2 Shells and anatomy of *Stagnicola tekecus* n. sp. 1-5: Konne (Isparta, Turkey); 6: Mantle; 7: Praeputium and phalloteca; 8-9: Prostata; 10: Genital organs. ag = albumin gland; bc = bursa copulatrix; bd = bursa duct; cp = corpus pyriforme; hd = hermaphroditic duct; m = muscle; ng = nidamental gland; pht = phallotheca; prp = praeputium; u = uterus; v = vagina; vd = vas deferens.

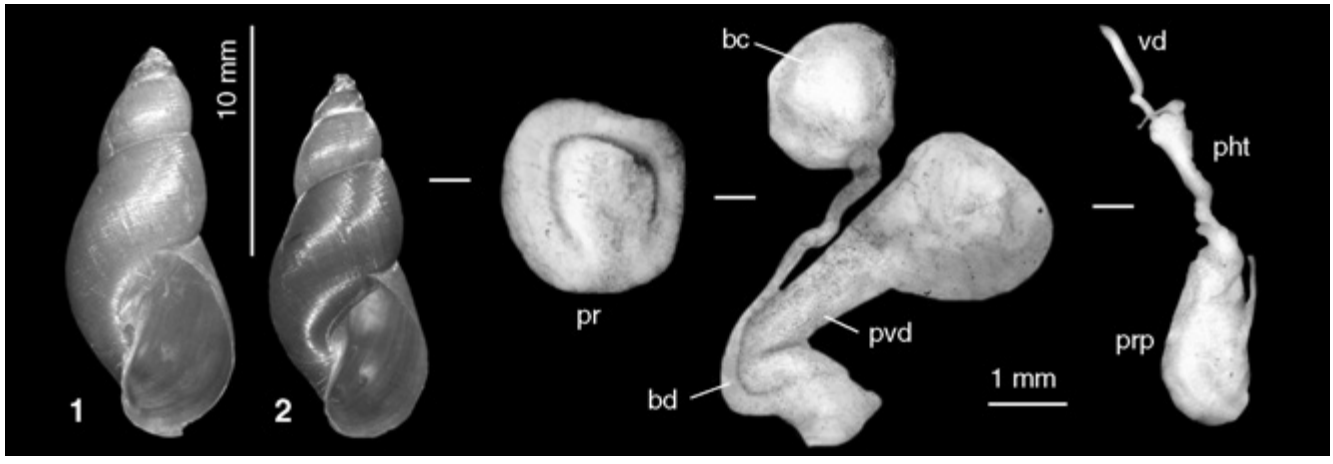

Figure 3 *Stagnicola kayseris* n. sp. – bc = bursa copulatrix, bd = bursa duct, pht = phallotheca, prp = praeputium, pvd = provaginal duct, pr = prostata, prp = praeputium, vd = vas deferens.

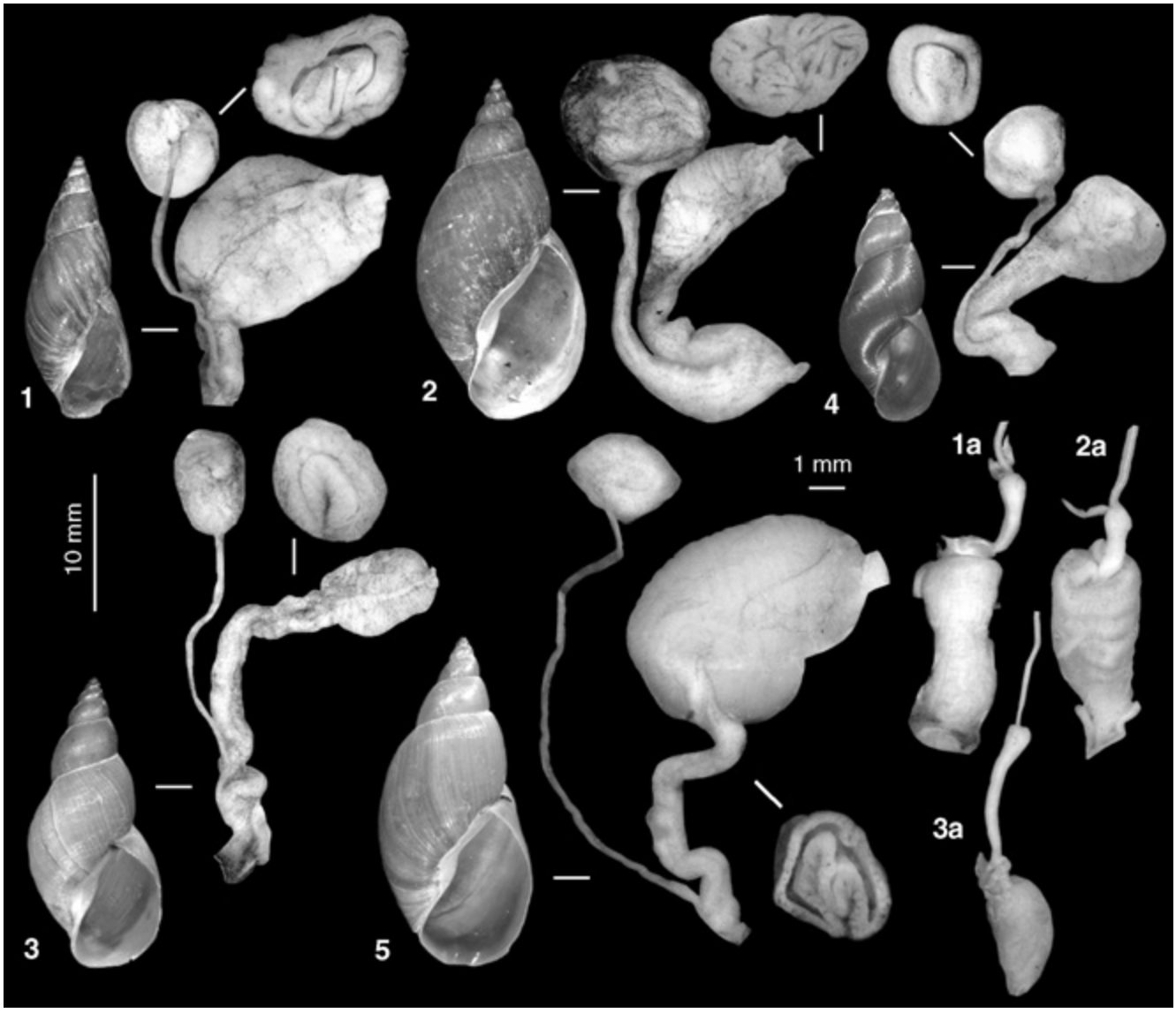

Figure 4 *Stagnicola* species: **1, 1a** *S. fuscus* (Mórfion, Thesprotia, Greece), **2, 2a** *S. corvus* (Trebeltal, N-Germany), **3, 3a** *S. palustris* (Peenetal, N-Germany), **4** *S. kayseris* (Kayseri, Turkey), **5** *S. tekecus* (Konne, Turkey). Magnification: shells 2x, all others 10x.

tris, *S. fuscus*, *S. corvus*) reveals the difference of the morphology of the shells as well as the male and female sex tract (see fig. 4). While the shells of the species living in Central Europe have a large phenotypical plasticity (Jackiewicz 1998, Glöer 2002), the shells of the newly described species do not.

DIFFERENTIAL DIAGNOSIS

While *Stagnicola corvus* differs from all other known species in the number of prostata folds, the anatomies of *S. palustris*/*S. kayseris* respectively *S. fuscus*/*S. tekecus* in some respect look smiliar. But *S. fuscus* has a short phallotheca and so this feature is in significant contrast to *S. tekecus* n. sp.

S. kayseris has a broad provaginal duct, which is shorter than in *S. palustris*, and the spermathecal duct is a little widened at the distal end. The shells of *S. kayseris* differ significantly from the other species mentioned, e. g. the strong columellar fold.

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