

**TYPES OF FRESHWATER GASTROPODS DESCRIBED
BY YA.I. STAROBOGATOV, WITH ADDITIONAL DATA
ON THE SPECIES: FAMILY PHYSIDAE**

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The work aims to illustrate the type specimens of the freshwater physid gastropods described by Ya.I. Starobogatov with coauthors. The data on 14 described species include the history of the name application in literature, the information about type locality, type depository, localities of subsequent findings, ecology, and comments on some species.

**ТИПЫ ПРЕСНОВОДНЫХ БРЮХОНОГИХ МОЛЛЮСКОВ,
ОПИСАННЫЕ Я.И. СТАРОБОГАТОВЫМ,
С ДОПОЛНИТЕЛЬНЫМИ ДАННЫМИ ПО ВИДАМ:
СЕМЕЙСТВО PHYSIDAE**

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Представлены изображения типовых экземпляров пресноводных гастропод семейства Physidae, описанных Я.И. Старобогатовым с соавторами. Сведения о 14 рассматриваемых видах включают историю упоминания видов в научной литературе, информацию о типовом местонахождении, о коллекциях, в которых хранятся типы, местах находок и распространении видов, их экологии, а также краткие замечания к некоторым видам.

INTRODUCTION

The Russian malacological tradition adopts the system of Physidae having been developed by Starobogatov (Starobogatov, 1967; 1970; Starobogatov et al., 1989; Starobogatov et al., 2004), which divides the family into two subfamilies: Physinae Fitzinger, 1833 and Aplexinae Starobogatov, 1967. The same opinion was supported by most Western scholars (e.g., Burch, 1982; Taylor, 2003; Bouchet et al., 2005). Molecular-phylogenetic studies (Wethington, Lydeard, 2007) have shown the monophyly of physids and suggested to return to the simple two-genera classification system favored by Thiele (1931-1935) and Zilch (1959-1960) – *Physa* and *Aplexa* (in North American species).

The currently adopted subdivision into tribes within each subfamily (Bouchet et al., 2005) corresponds to that suggested by Taylor (2003). Physids living in freshwater waterbodies of Russia and adjacent countries were assigned by Taylor to the following tribes: Aplexini – genera *Aplexa* Fleming, 1820, *Amuraplexa* Starobogatov, Prozorova et Zatravkin, 1989, *Paraplexa* Starobogatov, 1989, *Sibirenauta* Starobogatov et Streletskaia, 1967; Physini – genera *Physa* Draparnaud, 1801 and *Beringophysa* Starobogatov et Budnikova, 1976; and Physellini Taylor, 2003 – genera *Physella* Haldeman, 1843 and *Costatella* Dall, 1870.

Starobogatov et al. (2004) assigned two genera to the subfamily Aplexinae: *Sibirenauta* and *Aplexa*, the latter one subdivided into subgenera (*Aplexa*, *Amuraplexa*, *Paraplexa*); the subfamily Physinae includes 3 genera: *Physa*, *Physella* and *Costatella*, the first including 4 subgenera: *Physa*, *Mediterraneanophysa* Starobogatov et Budnikova, 1976, *Ussuriphysa* Starobogatov, Prozorova et Zatravkin, 1989, *Beringophysa* Starobogatov et Budnikova, 1976.

Starobogatov with coauthors described 14 physid species from the territory of the former USSR.

The list of species given below follows Starobogatov et al., 1989; Starobogatov et al., 2004, without additions or corrections.

All the types are stored in the collection of the Zoological Institute, St.-Petersburg (ZIN), unless otherwise indicated. The registration numbers correspond to those in the systematic catalogue, as accepted in the ZIN collection (see also Kantor, Sysoev, 2006: 10).

Abbreviations:

IBSS – Institute of Biology and Soil Science FEB RAS, Vladivostok, Russia

LIN – Limnological Institute SB RAS, Irkutsk, Russia

ZIN – Zoological Institute of Russian Academy of Sciences, St.-Petersburg, Russia

PHYSIDAE Fitzinger, 1833

APLEXINAE Starobogatov, 1967

1. *Aplexa (Amuraplexa) amurensis* Starobogatov et Prozorova in Starobogatov, Prozorova et Zatravkin, 1989

Fig. 1 A.

History of the name application.

- Starobogatov, Prozorova, Zatravkin, 1989: 65, fig. 1 4, 2 4 (description, copulatory organ structure)
 Prozorova, 1991a (record from Khanka Lake, in basins of rivers entering southern and northern Okhotsk Sea)
 Prozorova, 1991b (1992) (egg mass morphology)
 Prozorova, 1992 (living in ephemeric and semipermanent waterbodies)
 Prozorova, Sharyi-Ool, 1999 (findings in Yenisei branch in vicinities of Kyzyl city)
 Prozorova, 2001 (findings in off-road puddle near Karasik River, basin of Tumannaya River)
 Taylor, 2003 (mention)
 Starobogatov et al., 2004 (key to identification, distribution)
 Kantor, Sysoev, 2005; Kantor et al., 2010 (information about types, type locality and general distribution)
 Zasyapkina, 2008 (findings in Tynda River, as *A. amuricus*)
 Prozorova et al., 2009 (mention for Angara River and upper Yenisei River)
 Prozorova, 2013 (mention for malacofauna of Lower Amur River basin and Primorje)

Type locality. Khabarovsk Territory [Far East], swamp near Konstantinovka settlement.

Types. Holotype (in alcohol): No. 1 [from No. 220 of *Ph. hypnorum*, det. Moskvicheva, ZIN].

Additional locations. Paratypes were not designated in the ZIN collection (although, they are probably paratypes as being re-identified by Starobogatov and Prozorova). They are listed in the catalogue as *Ph. hypnorum* det. Moskvicheva: Yakovlevka, Spassk District, Primorye Territory (Nos. 121, 124); Suputinsky Reserve (Nos. 122, 123); Primorye Territory, floodland of Daubikhe River (Nos. 220, 221, 7 spms in alcohol); swamp floodland of Suchan (= Partizanskaya) River near Sergeevka settlement (No. 222); Khanka Lake at Spassk city; floodland of Zavitaya River, Zeya River basin; offroad ditch, Zavitinsky district, Amur Region (No. 229); Tol-kacha River at Nizhniya Poltavka village, Amur Region (No. 231); floodland of the Bolhsoi In River, Amur basin (No. 232); Lefu river moth, Khahka lowland (No. 235); Khabarovsk Territory, silo pit at Petropavlovka village (No. 209); small lake at forest border of Petropavlovka village (No. 207); offroad puddle at the road to Krasnaya Rechka, Khabarovsk City (No. 210); puddle at Ulbinka River, Amur basin (No. 245); puddles at Nizhneya Manoma, Khabarovsk Territory (No. 246); puddle in Komsomolsk-on-Amur City (No. 244); pasture of collective farm “Put Iljicha”, Irkutsk Region (No. 251).

Ecology. Lives in temporary waterbodies (Starobogatov et al., 2004). Based on labels, it lives on

water vegetation and on soft bottom; found together with *A. orientalis* (Nos. 207, 209, 210, 232, 245, 246), *A. moskvichevae* (No. 122), *A. moskvichevae aphyllica* (No. 235), and *S. kultukiana* (No. 251).

2. *Aplexa (Amuraplexa) aphyllica* Starobogatov et Zatravkin in Starobogatov, Prozorova et Zatravkin, 1989

Fig. 1 B.

History of the name application.

Starobogatov, Prozorova, Zatravkin, 1989: 66, fig. 1 7 (description as *A. moskvichevae aphyllica*)

Prozorova, Starobogatov, 1998 (mention as *A. aphyllica*)

Taylor, 2003 (= *Amuraplexa amurensis*)

Starobogatov et al., 2004 (key to identification, distribution as *A. aphyllica*)

Kantor, Sysoev, 2005; Kantor et al., 2010 (information about types, type locality and general distribution)

Prozorova, 2013 (mention for malacofauna of Lower Amur River basin and Primorye)

Type locality. Primorye Territory [Far East], Khanka district, a channel in the rice field in vicinity of Vladimiro-Petrovka village.

Types. Holotype (in alcohol) No. 1 [from No. 203 of *A. hypnorum*, det. Lazareva].

Additional findings. Lefu River mouth, Khanka Lake lowland (Nos. 228, 235 of *A. hypnorum*, re-identified by Prozorova and Starobogatov).

Ecology. Lives in temporary waterbodies (Starobogatov et al., 2004).

Remarks. One lot (No. 203) out of more than 500 spms in the ZIN – *A. hypnorum*, det. Lazareva, has been re-identified by Starobogatov, Prozorova and Zatravkin as *A. moskvichevae*, as indicated by a handwritten label inserted in the tube with this specimen. A separate sheet attached to the catalogue, has a Starobogatov's handwritten note indicating that the specimen from the lot *A. hypnorum* No. 203 is the holotype of *A. moskvichevae aphyllica*. The jar with other specimens contains a label written by M. Zatravkin and indicating that they belong to *A. amurensis*.

3. *Aplexa (Amuraplexa) moskvichevae* Starobogatov et Zatravkin in Starobogatov, Prozorova et Zatravkin, 1989

Fig. 1 C, D.

History of the name application.

Starobogatov, Prozorova, Zatravkin, 1989: 66, fig. 1 (6), 2 (6) (description as *A. moskvichevae moskvichevae*)

Prozorova, 1991a (findings in Khanka Lake, in basins of rivers entering southern and northern Okhotsk Sea, as *A. moskvichevae*)

Prozorova, 1991b (1992) (egg mass morphology, as *A. moskvichevae moskvichevae*)

Prozorova, 1992 (mention for ephemeral and periodic waterbodies)

Taylor, 2003 (= *Amuraplexa amurensis*)

Starobogatov et al., 2004 (key to identification, distribution)

Kantor, Sysoev, 2005; Kantor et al., 2010 (information about types, type locality and general distribution)

Prozorova, 2013 (mention for malacofauna of Lower Amur River basin and Primorje)

Type locality. Artemovka River [Khabarovsk Territory, Far East].

Types. Holotype (in alcohol) No. 1; 2 paratypes (in alcohol): No. 2 [with label: floodland of Maikhe River (old name of Artemovka River), col. Dworiadkin, 1973, det. Moskvicheva as *A. hypnorum*: No. 234].

Additional findings. Paratypes were not designated, initially identified as *A. hypnorum* and then re-identified as *A. moskvichevae* by Ya. Starobogatov: puddle at the road Khabarovsk-Vladivostok, 8 km from Khabarovsk (No. 176); Primorye Territory – Suputinsky Reserve (No. 122); dead channels and bogs at Suputinka River, Suputinsky Reserve (No. 226); bog at Tadushi River, Skobelevo village (No. 233); floodland of Maikhe River (No. 224); Khabarovsk Territory, swamp near settlement Konstantinovka (No. 220).

Ecology. Lives in temporary waterbodies (Starobogatov et al., 2004). Judging from labels, found together with *A. orientalis* (Nos. 220, 226, 233), *A. amurensis* (Nos. 220) and *Ph. hankensis* (No. 176).

4. *Aplexa (Amuraplexa) orientalis* Starobogatov et Prozorova in Starobogatov, Prozorova et Zatravkin, 1989

Fig. 1 E.

History of the name application.

Starobogatov, Prozorova, Zatravkin, 1989: 65, fig. 1 5, 2 5 (description, copulatory organ morphology)

Prozorova, 1991a (record from Khanka Lake, in basins of rivers entering southern and northern Okhotsk Sea)

Prozorova, 1992 (mention for ephemeral and periodic waterbodies)

Prozorova, 2001 (record from shallow waterbodies on the shore of Sivuchiya Bight, Tumannaya River basin)

Taylor, 2003 (= *Amuraplexa amurensis*)

Starobogatov et al., 2004 (key to identification, distribution)

Kantor, Sysoev, 2005; Kantor et al., 2010 (information about types, type locality and general distribution)

Prozorova, 2013 (mention for malacofauna of Lower Amur River basin and Primorye)

Type locality. Khabarovsk Territory [Far East], swamp near settlement Konstantinovka.

Types. Holotype (in alcohol) No. 1 (from No. 220 – *A. hypnorum*).

Additional findings. As *A. hypnorum* – small lake at the forest border at Petropavlovka village, Khabarovsk Territory (No. 207); puddle at a road at the same village (No. 208); puddle at the road to Krasnaya Rechka, Khabarovsk City (No. 210); puddle at Shkotovo railway station, Primorye Territory (No. 125); running bog at Amgun River, P. Osipenko village, Khabarovsk Territory (No. 212); shore

puddle in forest of right bank of Bomnak channel, Upper Zeya basin (No. 217); girts and bogs at Suputinka River, Suputinsky Reserve (No. 226); Utinoe Lake, Suifun (= Razdolnaya) River floodland at Nezhino settlement, Primorye Territory (No. 227); Zeya River floodland, from the river to the Gilyui River mouth (No. 230); Bolshoi In River floodland, Amur basin (No. 232); bog at Tadeushi River, Skobelevo village (No. 233); Lazo village (Vangou) (No. 236);

Ecology. Lives in temporary waterbodies (Starobogatov et al., 2004). Judging from labels, found together with *A. amurensis* (Nos. 207, 210, 232), *A. moskvichevae* (Nos. 226, 233), and *Sibirinauta kultukiana* (B. Dybowski, 1913) (No. 230).

5. *Aplexa (Amuraplexa) japonica* Prozorova et Starobogatov, 1998

Fig. 1 F.

History of the name application.

Prozorova, Starobogatov, 1998: 1068, textfig.

Type locality. Moss “pillows” on the bank of brook entering the Sekigawa River, Sasagamine Mount, 1340 m a.s.l., Niigata Prefecture, Honshu, Japan.

Types. Holotype (initially in alcohol, then dried) No. 1; 3 paratypes (initially in alcohol, one of them subsequently dried) from type locality: No. 2.

Additional findings. No data.

Ecology. No exact data.

6. *Sibirenauta tuwaensis* Starobogatov et Zatravkin in Starobogatov, Prozorova et Zatravkin, 1989

Fig. 2 A.

History of the name application.

Starobogatov, Prozorova, Zatravkin, 1989: 68, figs. 1 9, 2 8 (description, copulatory apparatus structure)

Prozorova, Sharyi-Ool, 1999 (record from puddle at Azas Lake and Khogan-Khel Lake, Tuva)

Taylor, 2003 (as *Aplexinae incertae sedis*)

Starobogatov et al., 2004 (key to identification, distribution)

Kantor, Sysoev, 2005; Kantor et al., 2010 (information about types, type locality and general distribution)

Dolgin, 2012 (mention for Upper Yenisei and Tuva)

Dolgin, 2013 (low-altitude and middle-range mountains of Sayan mountain system)

Type locality. Temporary puddle near Toorakhem settlement, Tuva ASSR [at the border of Mongolia].

Types. Holotype (in alcohol) No. 1 [from No. 248 *A. hypnorum*, det. Gundrizer]; 13 paratypes (in alcohol) from type locality: No. 2; and 2 (dry) paratypes from Eder-Hol (Mongolia): No. 3.

Additional findings. No additional data.

Ecology. Lives in temporary waterbodies (Starobogatov et al., 2004).

PHYSINAE Fitzinger, 1833

7. *Physa (Physa) streletzkajae* Starobogatov et Budnikova, 1976

Fig. 2 B.

History of the name application.

Starobogatov, Budnikova, 1976: 84, fig. 5 II (description, copulatory apparatus structure)

Bogatov, Zatravkin, 1990: (information about types, key to identification, shell morphology, ecology and distribution)

Prozorova, 1998 (record from Kolyma and Anadyr river basins, northwestern shores of the Okhotsk Sea)

Taylor, 2003 (= *Ph. streletzkajae*)

Starobogatov et al., 2004 (key to identification, distribution)

Kantor, Sysoev, 2005; Kantor et al., 2010 (information about types, type locality and general distribution)

Dolgin, 2009 (mention for Yano-Kolym province)

Type locality. Anadyr district, Vakarevo, lake No. 6, station 5 (Chukchi Peninsula).

Types. Holotype (dry, fractured) No. 1; 1 paratype (in alcohol, dissected) from type locality: No. 2.

Additional findings. Penzhina River basin, at Slautnoe settlement (Kamchatka) (ZIN No. 4).

Ecology. Lymnophylic. No exact additional data.

8. *Physa (Mediterraneophysa) arachleica* Starobogatov et Prozorova in Starobogatov, Prozorova et Zatravkin, 1989

Fig. 2 C.

History of the name application.

Starobogatov, Prozorova, Zatravkin, 1989: 72, fig. 3 4, 4 4 (description, copulatory apparatus structure)

Bogatov, Zatravkin, 1990 (information about types, key to identification, shell morphology, ecology, record from Kolyma River delta)

Prozorova, Sharyi-Ool, 1999 (records from Azis Lake and a backwater of Yenisei River at Kyzyl City)

Klishko, 2003 (shell picture from Arakhlei lake)

Taylor, 2003 (= *Ph. arachleica*)

Starobogatov et al., 2004 (key to identification, distribution)

Kantor, Sysoev, 2005; Kantor et al., 2010 (information about types, type locality and general distribution)

Dolgin, 2009 (mention for Lena River province)

Prozorova et al., 2009 (mention for Ivano-Arakhlei lakes)

Dolgin 2012 (record from Tuva)

Dolgin, 2013 (foothills and low-altitude mountains of Sayan mountain system)

Type locality. Arakhlei Lake [Transbaikalia, SE Siberia].

Types. Holotype (in alcohol, currently dried): No. 1; 12 paratypes (in alcohol, 1 dissected, the other with nearly completely destroyed shell) from type locality: No. 2.

Additional findings. No additional data; the record from waterbodies of Tuva is probably erroneous, according to Prozorova et al. (2009).

Ecology. Lives in the zone of water vegetation (Klishko, 2003).

9. *Physa (Ussuriphysa) hankensis* Starobogatov et Prozorova in Starobogatov, Prozorova et Zatravkin, 1989

Fig. 2 D.

History of the name application.

Starobogatov, Prozorova, Zatravkin, 1989: 72, figs. 3 5, 4 5, 6

Bogatov, Zatravkin, 1990 (information about types, key to identification, shell morphology, ecology, records from middle and lower Amur River)

Prozorova, 1991a (egg mass morphology)

Prozorova, 1991b (1992) (record from Khanka Lake, in basins of rivers entering southern and northern Okhotsk Sea)

Prozorova, 2001 (record from Lotos Lake)

Taylor, 2003 (= *Ph. hankensis*)

Starobogatov et al., 2004 (key to identification, distribution)

Kantor, Sysoev, 2005; Kantor et al., 2010 (information about types, type locality and general distribution)

Zasypkina, 2008 (records from Tynda and Tygra rivers)

Prozorova, 2013 (mention for malacofauna of Lower Amur River basin and Primorje)

Type locality. Khabarovsk, swamp near Kaktovskoye Lake [Far East].

Types. Holotype No. 1 [derived from No. 399 of *Ph. fontinalis*]. No paratypes.

Additional findings. Lake Khanka (Starobogatov et al., 1989).

Ecology. Prefers clear lakes with well developed submerged water vegetation (Prozorova, 2001). Found together with *Ph. khabarovskiensis* in Khanka Lake and with *A. moskvichevae* [puddle on the road from Khabarovsk to Vladivostok, 8 km from Khabarovsk (No. 176)].

10. *Physa (Ussuriphysa) jarochnovitschae* Starobogatov et Zatravkin in Starobogatov, Prozorova et Zatravkin, 1989

Fig. 2 E.

History of the name application.

Starobogatov, Prozorova, Zatravkin, 1989: 73, fig. 3 7, 4 7 (description, difference from *Ph. hankensis* in copulatory apparatus structure)

Bogatov, Zatravkin, 1990 (information about types, key to identification, shell morphology, ecology and distribution)

Taylor, 2003 (= *Ph. hankensis*)

Starobogatov et al., 2004 (key to identification, distribution)

Kantor, Sysoev, 2005; Kantor et al., 2010 (information about types, type locality and general distribution)

Prozorova, 2013 (mention for malacofauna of lower Amur River basin and Primorje)

Type locality Delta of the Kolyma River (NE Siberia).

Types. Holotype (in alcohol, presently dried): No. 1 and alcohol-preserved paratypes from type locality: No. 2.

Additional findings. No exact data.

Ecology. Lives in stagnant waterbodies (Starobogatov et al., 2004).

11. *Physa (Ussuriphysa) khabarovskiensis* Starobogatov et Zatravkin in Starobogatov, Prozorova et Zatravkin, 1989

Fig. 2 F.

History of the name application.

Starobogatov et al., 1989: 73, fig. 3 6 (shell description)

Bogatov, Zatravkin, 1990 (information about types, key to identification, shell morphology, ecology and distribution)

Taylor, 2003 (= *Ph. hankensis*)

Starobogatov et al., 2004 (key to identification, distribution)

Kantor, Sysoev, 2005; Kantor et al., 2010 (information about types, type locality and general distribution)

Prozorova, 2013 (mention for malacofauna of Lower Amur River basin and Primorje)

Type locality. Khabarovsk, swamp near Kaktovskoye Lake (Far East).

Types. Holotype (in alcohol): No. 1 [from No. 399 of *Physa fontinalis*]. No paratypes.

Additional findings. No data.

Ecology. Lives in shallow permanent waterbodies (Starobogatov et al., 2004). Found together with *Ph. hankensis* (Starobogatov et al., 1989).

12. *Physa (Beringophysa) chukchensis* Starobogatov et Budnikova, 1976

Fig. 2 G.

History of the name application.

Starobogatov, Budnikova, 1976: 84. fig. 5 I (description as *Ph. (Beringophysa) ampullacea chukchensis*, copulatory apparatus structure)

Starobogatov et al., 1989 (mention as *Ph. chukchensis*)

Bogatov, Zatravkin, 1990 (information about types, key to identification, shell morphology, ecology and distribution)

Prozorova, 1998 (mention for Chaun Lowland, Amguema River basin, north-western Alaska)

Taylor, 2003[(= *Beringophysa jennessii* (Dall, 1919)].

Starobogatov et al., 2004 (key to identification, distribution)

Kantor, Sysoev, 2005; Kantor et al., 2010 (information about types, type locality and general distribution)

Dolgin, 2009 (mention for Yano-Kolym province)

Type locality. Ust-Chaun [Chukchi Peninsula].

Types. Holotype (in alcohol) No. 1; paratypes (in alcohol): 8 spms from type locality (No. 2); 14 spms from lake of Amguema River near 105 km of track Egvekinot-Iultin (Chukchi Peninsula).

Additional findings. Lakes in middle reaches of the Kurupkan River (Chukchi Peninsula, near Providence Bay) (ZIN).

Ecology. Lives in thermokarst waterbodies (Starobogatov et al., 2004).

Remarks. Five paratypes (No. 3) from type locality (originally identified as such by Budnikova and Starobogatov) were reidentified by Starobogatov as a mixture of two species: *Ph. chukchensis* and *Ph. jennessii*. Paratypes No. 5 (lake near airport of Anadyr, Chukchi Peninsula) were also reidentified,

and served as a source for separation of holotypes of *Ph. kuvaevi* and *Ph. tei*.

13. *Physa (Beringophysa) kuvaevi* Starobogatov et Prozorova in Starobogatov, Prozorova et Zatravkin, 1989

Fig. 3 A.

History of the name application.

Starobogatov et al., 1989: 74, fig. 3 8, 4 8 (description, copulatory apparatus structure)

Bogatov, Zatravkin, 1990 (information about types, key to identification, shell morphology, ecology and distribution)

Prozorova, 1998 (mention for Lower Anadyr River basin)

Taylor, 2003 [= *Beringiophysa jennessii* (Dall, 1919)].

Starobogatov et al., 2004 (key to identification, distribution)

Kantor, Sysoev, 2005; Kantor et al., 2010 (information about types, type locality and general distribution)

Type locality. Lake near airport Anadyr (Chukchi Peninsula).

Type series. Three specimens from type locality: No. 1.

Additional findings. No data.

Ecology. Lives in thermokarst waterbodies (Starobogatov et al., 2004).

Remark. There is a problem with the holotype. The lot No. 1 contains 3 spms identified by Starobogatov as *Ph. kuvaevi* and separated from 6 paratypes of *Ph. ampullacea chukchensis* (No. 5). [The other 2 spms were reidentified by Starobogatov as *Ph. sp.*, and one was selected as the holotype of *Ph. tei*.] No other specimens identified as *Ph. kuvaevi* were found in the collection, even though the authors mentioned 5 shells collected in the type locality. Since the label data correspond to the type locality, the 3 spms with authors' identification should be regarded as the type series. Of these 3 spms of *Ph. kuvaevi*, two are represented by fragmented shells, thus the holotype cannot be reliably identified as such based on the shell dimensions. Here we illustrate the only more or less intact shell (H = 4.2 mm vs 10.5 mm in the holotype) which should be treated as paratype.

14. *Physa (Beringophysa) tei* Starobogatov et Prozorova in Starobogatov, Prozorova et Zatravkin, 1989

Fig. 3 B, C.

History of the name application.

Starobogatov et al., 1989: 74–75, fig. 3 9 (description)

Bogatov, Zatravkin, 1990 (information about types, key to identification, shell morphology, ecology and distribution)

Prozorova, 1998 (mention for North-eastern Asia, Lower Anadyr River basin; Canada)

Taylor, 2003 [= *Beringiophysa jennessii* (Dall, 1919)].

Starobogatov et al., 2004 (key to identification, distribution)

Kantor, Sysoev, 2005; Kantor et al., 2010 (information about types, type locality and general distribution)

Dolgin, 2009 (mention for Upper Yenisei, Lena and Yano-Kolym provinces)

Type locality. Lake near airport Anadyr (Chukchi Peninsula).

Types. Holotype (in alcohol): No. 1 [from No. 5 of *Ph. chukchensis*, coll. Budnikova, det. Budnikova & Starobogatov].

Additional findings. Floodland lake in 15 km from the Avtotkuul river mouth, Anadyr liman: No. 2.

Ecology. Lives in thermokarst waterbodies (Starobogatov et al., 2004).

Remark. We illustrate a specimen which does not belong to the type series, because the holotype is heavily damaged whereas there no paratypes. However, this specimen was identified by Starobogatov himself.

CONCLUSION

Taylor (2003) believes that three species (*A. aphallica*, *A. moskvichevae* and *A. orientalis*) are synonyms of *A. amurensis*, 2 species (*Ph. jarochnovitschae* and *Ph. khabarovskiensis*) are synonyms of *Ph. hankensis*, and three species (*Ph. chukchensis*, *Ph. kuvaevi* and *Ph. tei*) are synonyms of *Beringiophysa jennessii*. Therefore, the number of valid species of Starobogatov and coauthors shrinks to 6. The total number of species recorded for waterbodies of Russia can be also decreased if the recently proven data within the family is taken into account: both the molecular analysis (Wethington, Lydeard, 2007) together with anatomical data, and “the growing body of experimental evidence demonstrating little reproductive isolation among many physid populations formerly considered specifically distinct” (Dillon, 2007).

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Figures to the paper
"Types of freshwater gastropods described by Ya.I. Starobogatov, with
additional data on the species: family Physidae"
by T.Ya. Sitnikova, A.V. Sysoev and P.V. Kijashko

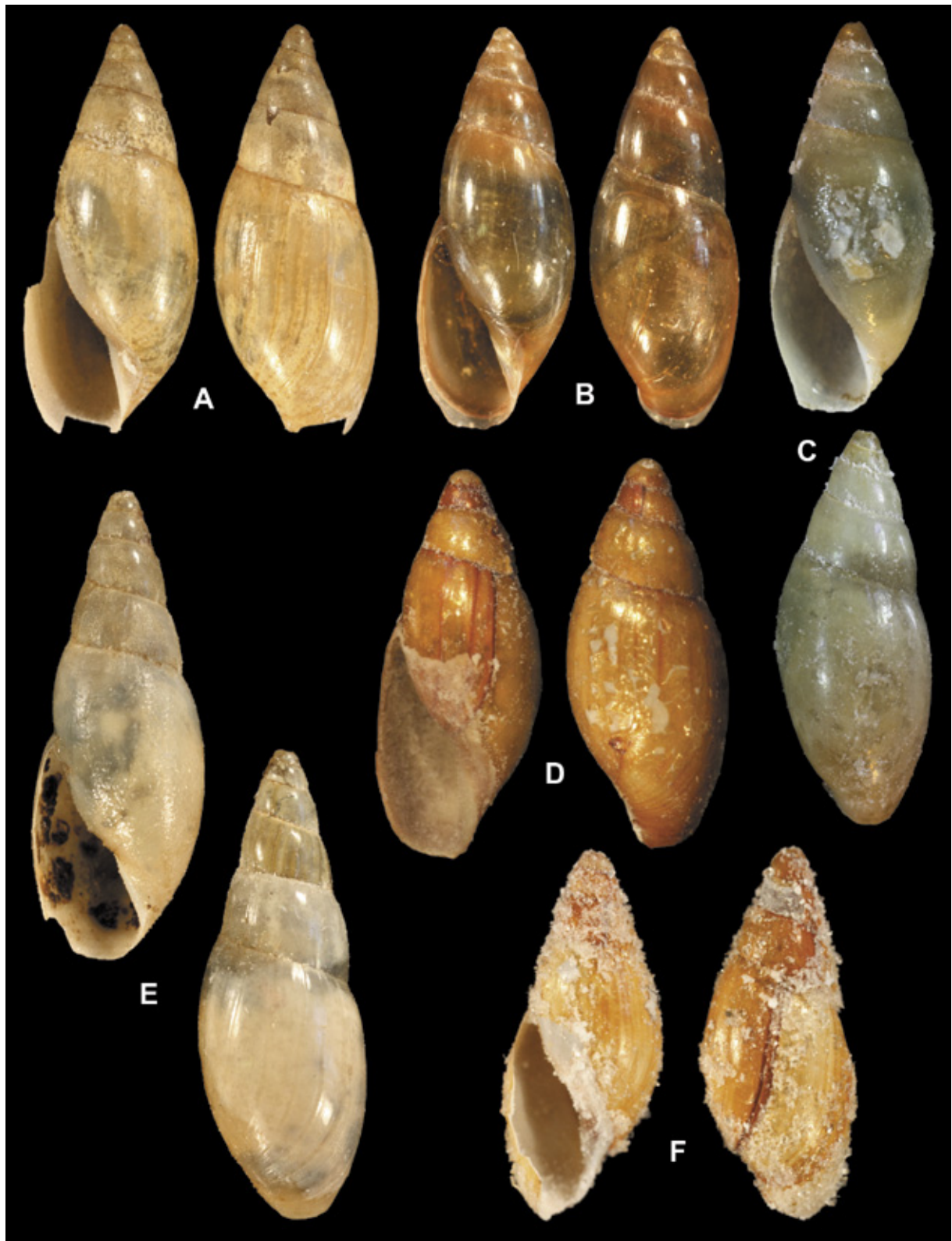


Fig. 1. A – *Aplexa amurensis*, holotype, H = 10.8 mm; B – *Aplexa aphallica*, holotype, H = 9.7 mm; C – *Aplexa moskvichevae*, paratype, H = 9.6 mm; D – *Aplexa moskvichevae*, holotype, H = 6.8 mm; E – *Aplexa orientalis*, holotype, H = 14.2 mm; F – *Aplexa japonica*, holotype, H = 6.0 mm.

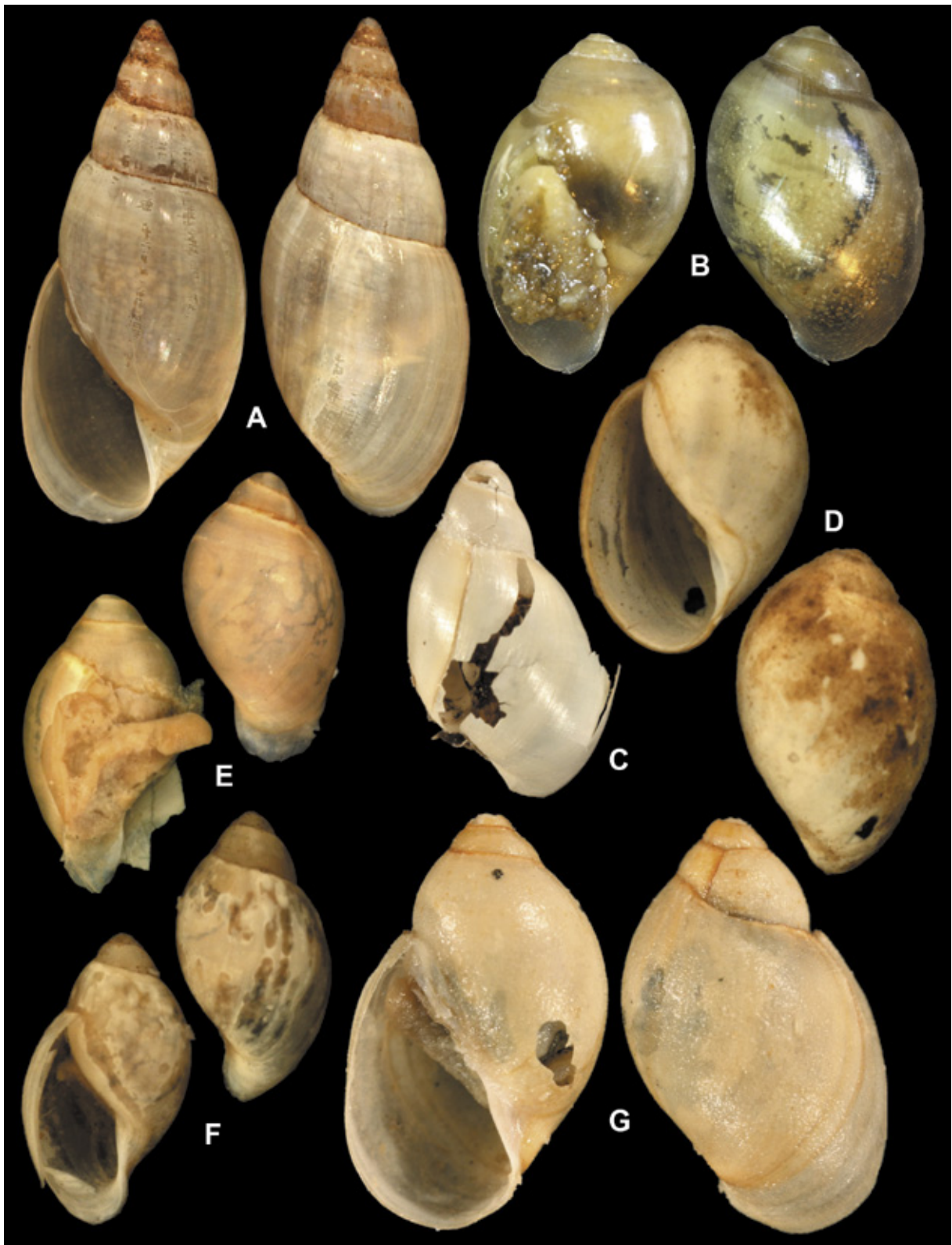


Fig. 2. A – *Siberinauta tuvaensis*, holotype, H = 14.9 mm B – *Physa streletzkaiae* (No. 4, det. Starobogatov), H = 6.6 mm; C – *Physa arachleica*, holotype, H = 5.4 mm; D – *Physa hankensis*, holotype, H = 5.7 mm; E – *Physa jarochnovitschae*, holotype, H = 5.1 mm; F – *Physa khabarovskiensis*, holotype, H = 5.2 mm; G – *Physa chukchensis*, holotype, H = 8.4 mm.

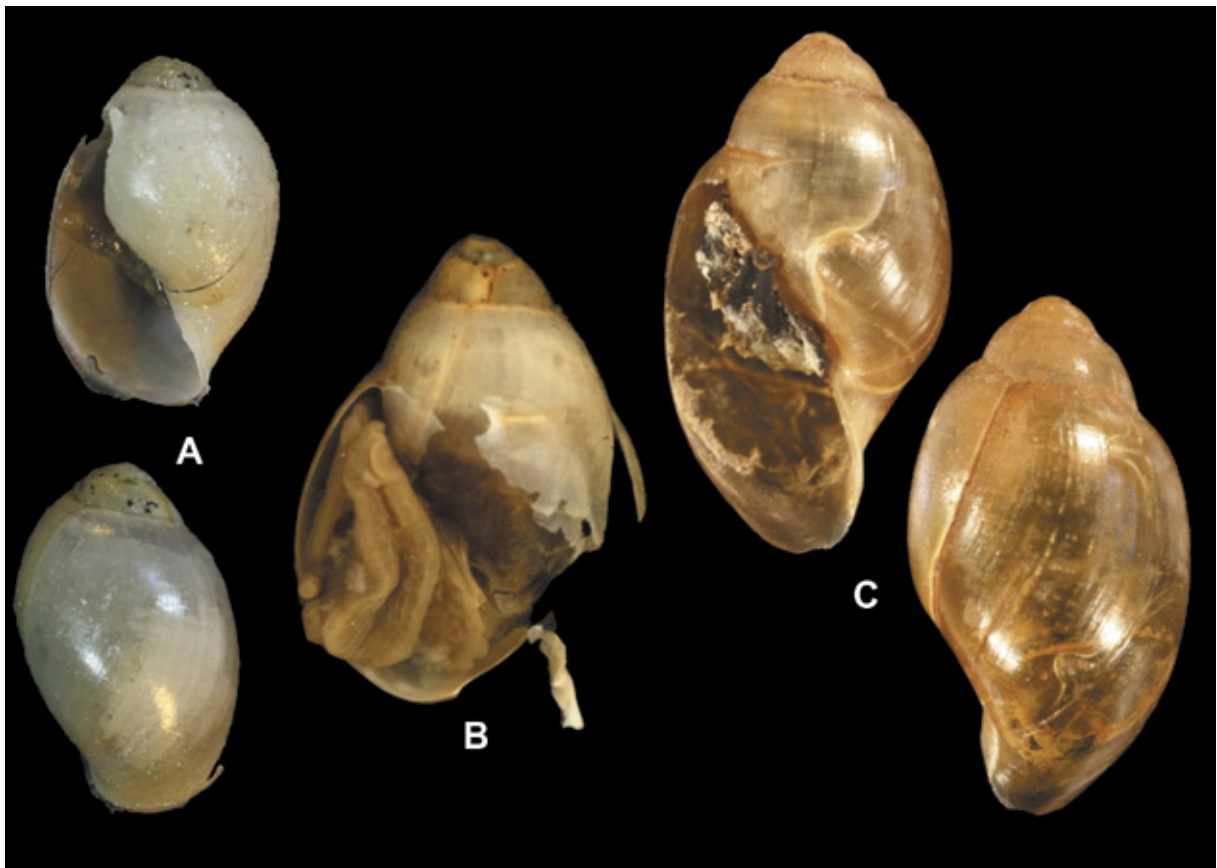


Fig. 3. A – *Physa kuvaevi*, paratype, H = 4.2 mm; B – *Physa tei*, holotype; C – *Physa tei* (No. 2, det. Starobogatov), H = 7.9 mm.