

A new species, a new synonym, and new distribution records in the genus *Agdistis* Hübner, 1825 from Iran (Pterophoridae: Agdistinae)

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Abstract. Sixteen species of *Agdistis* Hübner, 1825 are at present known from Iran. In this paper previous studies are summarised and new data on the distribution of the Iranian species of *Agdistis* are provided. *Agdistis iranica* sp. n. is newly described; *Agdistis caradjai* Arenberger, 1975, *Agdistis karakalensis* Zagulajev, 1990 and *Agdistis sissia* Arenberger, 1987 are newly reported from Iran; the hitherto unknown female of *Agdistis caradjai* Arenberger, 1975 is described, and *Agdistis frankeniae* (Zeller, 1874) and *Agdistis urmijensis* Zagulajev, 1996 are newly synonymized.

Key words. Pterophoridae, Agdistinae, *Agdistis*, taxonomy, new species, new synonymy, new records.

Introduction

Species of the genus *Agdistis* Hübner, 1825 are very difficult to separate on external characters. Their wing pattern is very uniform and rarely provides useful diagnostic characters. However, the male and female genitalia are very characteristic and diagnostic (Gielis 1996). About 100 species of *Agdistis* are recognised to date; these are known from the Palaearctic region, mainly in the Mediterranean area, and from Africa, North America, and South Asia (Gielis 2003).

The study of *Agdistis* species in Iran was initiated back in 1901 with the publication of a catalogue on the Lepidoptera of the Palaearctic region and at that time, *A. tamaricis* (Zeller) was the first record of this genus from Iran (Staudinger & Rebel, 1901). Bigot (1968) published a paper on the Pterophoridae of Iran, which included four new records except *A. tamaricis*. During the last fifteen years, about seven species have been added to the list (Sutter 1991; Arenberger 1990, 1995, 2002).

The current research reveals further data on the pterophorid fauna of Iran based on a total of 100 *Agdistis* specimens collected from different parts of the country. This study was based mostly on material preserved in the Lepidoptera collection of the Hayk Mirzayans Insect Museum (HMIM), Plant Pests and Diseases Research Institute (PPDRI), Iran. Additional material was borrowed from the Zoological Institute of St. Petersburg, Russia.

Agdistis* Hübner, 1825**Agdistis adenensis*-group*****Agdistis adenensis* Amsel, 1961**

Material. 1♂, 1♀ Dālaki, Hormozgān prov., 130 m., 20.iii.1973, leg. Abāi; 2♂, Bruck, 300 m., 21.iii.1973, leg. Abāi; Mināb (km 15), Hormozgān prov., 150 m., 1.iv.1973, leg. Abāi; 4♂, 7♀ Kangān, Bidkhun, Bushehr prov., 0 m., 18.xi.1997, leg. V. Nazari, Mofidi-Neyestānak, Barāri.

Distribution. Yemen, Oman, Iran, Bahrain (Gielis 2003).

Remarks. The specimens collected in Kangan (Bushehr province) are uniformly smaller than the others (wingspan 14.0-15.5 mm, n=11). The species has also been recorded from Kazerun and Semnan (Arenberger 1995)

***Agdistis sissia* Arenberger, 1987**

Material. 1♀. Anārak (8 km N E), Esfahān prov., 33°22'43.5"N 53°43'13.5"E, 1560 m., 31.v.2005, leg. Zahiri, Fibiger.

Distribution. Turkey, Armenia, Turkmenistan (?), Azerbaijan (Gielis 2003).

Remarks. The specimens collected in Iran have the same data as the type series of *A. iranica* sp. n. The males and females differ from *A. iranica* in the shape of the frons and the colour of its scales. This is the first record for this species from Iran.

***Agdistis caradjai* Arenberger, 1975**

Material. 1♂, 1♀ Shāhrud, Kālpush, Semnān prov., 1300 m., 25.–26.viii.1982, leg. Hāshemi.

Description of the female. Wingspan 23 mm. Head smoothly scaled, grey-brown. Thorax and abdomen greyish brown. Very similar to male in grey-brown ground colour of forewing.

Genitalia (Fig. 1). Antrum wider than long, caudal margin convex, lateral margins with two short projections; ductus bursae, bursa copulatrix, and ductus seminalis missing on slide preparation; without anterior apophyses.

Diagnosis. By the shape of the antrum in the female genitalia, *A. caradjai* somewhat resembles *A. karakalensis* Zagulajev, 1990, but differs by the presence of a prominent hole in the centre of the antrum, and by the shapes of the ventral plate and sternum VII. These two species were previously considered to belong to two different groups, but according to their female genitalia they are now placed in the same group, although to confirm this, the male of *A. karakalensis* should be found.

Distribution. Turkey, Russia (Gielis 2003).

Remarks. *Agdistis caradjai* was described from one male specimen collected by Korb in Turkey (Kagizman Kasikoparan in 1901), and hitherto the female remained unknown. Along with a male collected from Shahrud in Semnan province, there was an unidentified female specimen having the same collecting data and features. Since this female specimen did not match any other species and is very similar to the male of *A. caradjai* on external appearance, we considered it to represent the female of this species. This is the first record for this species from Iran.

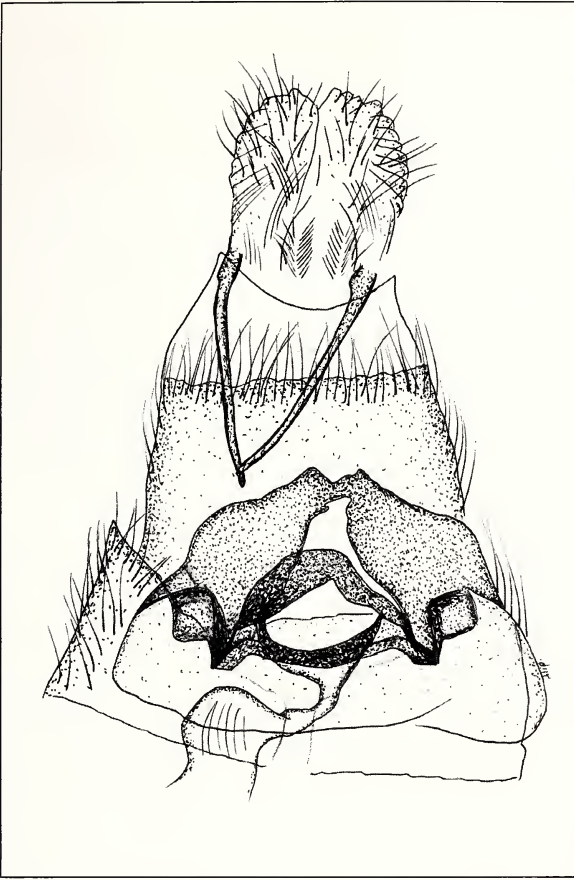


Fig. 1. Female genitalia of *Agdistis caradjai* Arenberger.

Agdistis olei Arenberger, 1976

Material. 1♂, Abādān, Minu Island, Khuzestān prov., 12 m., 11.v.1975, leg. Pāzuki, Borumand; 1♂, Dālaki, Hormozgān prov., 130 m., 20.iii.1973, leg. Amsel, (Coll.Ustjuzhanin).

Distribution. Iran, Oman, Saudi Arabia (Gielis 2003).

Remarks. This species is also recorded from Fars province (Arenberger 1995).

Agdistis iranica sp.n.

Material. Holotype: ♂, Anārak (8 km N E), Esfahān prov., 33°22'43.5"N 53°43'13.5"E, 1560 m., 31.v.2005, leg. Zahiri, Fibiger (gen. prep. N. 230, HMIM); Paratypes: 5♂, same data as the holotype.

Description. A dult (Fig. 2). Wingspan 17–20 mm. Head appressedly scaled, with some brown scales on frontal region, forming prominent brown strip in middle (Fig. 3a); frons conical (Fig. 3b); labial palps directed upward, basal segment with white drooping scales, second and third segments white with some brown scales dorsally; collar with some erect scales. Antenna more or less ringed brown and white; shortly ciliated. Prothorax and mesothorax white with some mixed brown scales. Metathorax white laterally with brown scales. Tegula white, light brown at base of spurs.

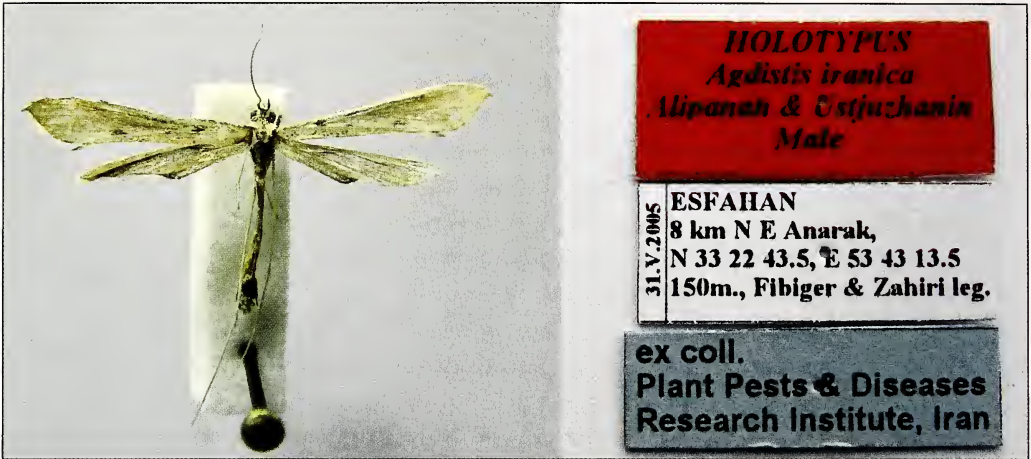


Fig. 2. *Agdistis iranica* sp. n., holotype, male.

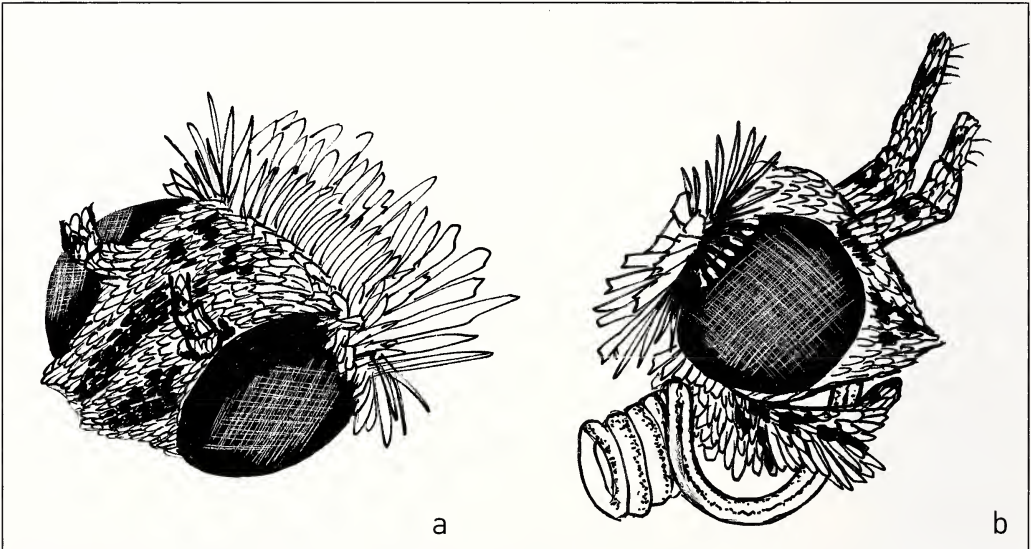


Fig. 3. Head of *Agdistis iranica* sp. n., holotype, male, a. dorsal view, b. lateral view.

Forewing grey-brown with four spots in apical portion of costal edge, more closely spaced distally. Upper margin of lower fold with three spots proximally. Hindwing greyish.

Male genitalia (Figs 4a–c). Valvae symmetrical; costal arms of equal length, bi-furcated apically with curved arms; uncus longer than each projection of costal arms; tegumen wider than long; 8th sternite with V-shaped indentation forming two unequal prongs, the right one more or less longer and more slender than the left; phallus curved, hook-shaped, and wider apically.

Diagnosis. According to the male genitalia, the new species is close to *A. falkovitshi* Zagulajev, 1986 in the shape of the 8th sternite and its V-shaped indentation, and the shape of the valvae and valvulae, but it differs by the following characters: the shape of the tegumen, anellus arms and costal arms. Thus, this species might be considered as a member of the *adenensis*-group based on similarities with *A. falkovitshi* in the shape of the male genitalia.

Remarks. Among the other *Agdistis* specimens collected at the same locality, we found two females with the same collecting data, and one of them was determined as *A. sissia* Arenberger. The other one was very similar to the male of *A. iranica* in wing pattern and shape and pattern of the frons. However, in female genitalia it was very similar to *A. falkovitshi*. So we leave describing the female of *A. iranica* until more specimens are collected, preferably from the type locality.

Agdistis parvella-group

Agdistis insidiatrix Meyrick, 1936

Material. There was no specimen available for study.

Distribution. Iran, Semnan (Arenberger 1995). Yemen (Gielis 2003).

Agdistis parvella Amsel, 1958

Material. 1♂, 1♀, Bandar Abbās (20km N E), Bāghou, Hormozgān prov., 50 m., 30.iv.1986, leg. Mirzāyāns, Borumand.

Distribution. Saudi Arabia, Oman, Iran (Gielis 2003).

Remarks. The specimens collected from Iran are somewhat smaller (with a wingspan of 9.8 mm, n=2) than those reported by Arenberger (1995).

Agdistis tenera Arenberger, 1976

Material. 1♀, S Iran, 30 km E Bandar Abbās, Hormozgān prov., 8.v.1974, Exped. Mus. Vind. (coll. Ustjuzhanin).

Distribution. Iran, Bahrain, Yemen (Gielis 2003). Iran, Hormozgan province, Isin (Arenberger 1995).

Agdistis frankeniae-group

Agdistis frankeniae (Zeller, 1874)

Agdistis urmijensis Zagulajev, 1996: 130–131, fig. 12. **syn. nov.**

Material. 1♀, Moghān, Ardabil prov., 18.ix.1974, leg. Damanābi; 2♂, Dāmghān (20 km N), Cheshmeh Ali, Semnān prov., 35°19'01"N, 054°27'17"E, 1560 m., 23.–24.v.2005, leg. Trusch, Petschenka, Müller.

Distribution. From Siberia in the East, through Central Asia, northern parts of Asia, North Africa along the Mediterranean, and in the west from the Canary Islands to southern France (Gielis 2003).

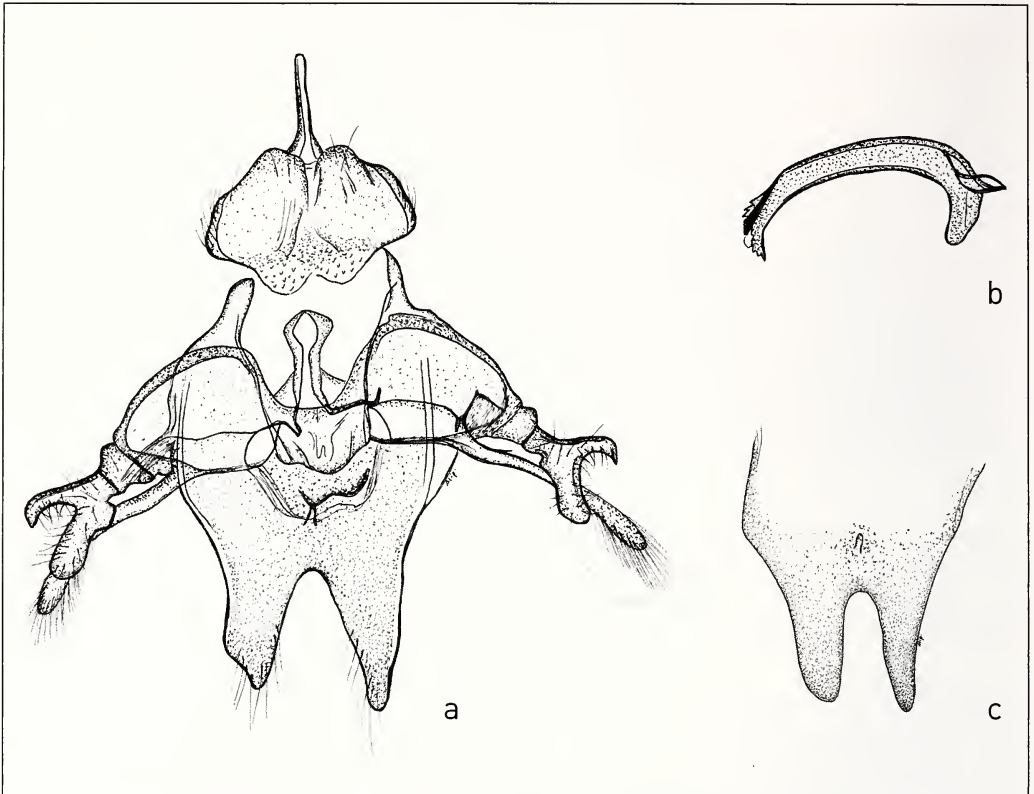


Fig. 4. *Agdistis iranica* sp. n., holotype, male genitalia. **a.** ventral view, **b.** phallus, **c.** 8th sternite of paratype.

Remarks. Wingspan 29 mm. The species has also been recorded from the Caspian region: Mian Kaleh (Arenberger, 1995). Our examination of the holotype of *A. urmi-jensis*, which originated from Iran (Heidar-Abad, Orumieh Lake) and deposited in the Institute of the Russian Academy of Sciences, St. Petersburg, Russia (gen. prep. N. 16623), revealed its conspecificity with *A. frankeniae*.

Agdistis adactyla-group

Agdistis adactyla (Hübner, 1819)

Material. 4♀, Sulgerd, Golestān National Park, Golestān prov., 1100 m., 16.–18.vii.1985, leg. Pāzuki; 1♂, 1150 m., 20.–21.vii.1996, leg. Ebrāhimi, V. Nazari, 3♂, Ālmeh, 1600 m., 19.–20.viii.1985, leg. Pāzuki; 4♂, 1700 m., 25.vii.2001, leg. Gilāsīān, Mofidi-Neyestānak, Ghayurfar; 1♂, Shāhkuh-e Bālā, Gorgān, Golestān prov., 2400 m., 19.vii.2003, leg. Ebrāhimi, Alipanāh.

Distribution. This species is distributed in much of the Palaearctic region (Gielis 2003).

Remarks. This species has also been recorded from Amol (Mazandaran province), Gorgan (Golestan province), and Fars (Bigot 1968; Arenberger 1995).

***Agdistis nanodes* Meyrick, 1906**

Material. 1♂, Alafdun Island (Negin), Bushehr prov., 17.iv.1999, leg. Kalānaki, Mofidi-Neyestānak.

Distribution. Sri Lanka, Bahrain, Saudi Arabia, Oman, Iran, Pakistan, Egypt (Gielis 2003).

Remarks. The species has also been recorded from Bandar Abbas (Hormozgan province) and Chabahar (Sistan & Baluchestan province) (Bigot 1968; Arenberger 1995).

***Agdistis karakalensis* Zagulajev, 1990**

Material. 1♀, Eivānakey, Ahmadābād, Semnān prov., 1450 m., 26.v.1982, leg. Hāshemi.

Distribution. Iran, Turkmenistan, Tadjikistan (Gielis 2003).

Remarks. This is the first record for this species in Iran.

***Agdistis tamaricis*-group**

***Agdistis arabica* Amsel, 1958**

Material. 2♂, Bandar Tāheri, Bushehr prov., 0 m., 8.viii.1996, leg. Ardeh, Badii, V. Nazari; 1♀, Borāzjān, Darvāhi, Bushehr prov., 50 m., 22.–23.xii.1999, leg. Badii, Mofidi-Neyestānak; 1♀, Kangān, Bidkhun, Bushehr prov., 0 m., 18.xi.1997, V. Nazari, Mofidi-Neyestānak, Barāri; 1♀, Harrā Jungle, Bushehr prov., 0 m., 9.i.1996, leg. Ardeh, Badii, V. Nazari; 2♀, Bandar Abbās (20 km N E) Bāghou, Hormozgān prov., 50 m., 30.iv.1986, Mirzāyāns, Borumand; 1♀, Isin, 150 m., 26.iv.1986, leg. Mirzāyāns, Borumand; 2♀, Gheshm Island, Dargāhān, Hormozgān prov., 27.–28.ii.1999, leg. Ghayurfar, Manzari; 1♂, Salakh, 50 m., 6.iii.2002, leg. Hājesmailiān, Mofidi-Neyestānak, Sādeghi; 1♂, Lārak Island, Hormozgān prov., 6.iii.1999, leg. Ghayurfar, Manzari.

Distribution. Tunisia, Egypt, Iran, Pakistan, Saudi Arabia, Yemen, Oman, Somalia (Gielis 2003).

Remarks. The species has also been recorded from Chabahar (Bigot 1968; Arenberger 1995).

***Agdistis tamaricis* (Zeller, 1847)**

Material. 1♂, Marāveh Tappeh, Gāvāndar, Golestān prov., 250 m., 30.ix.1992, leg. Ebrāhimi, Badii; 1♂, Bandar Abbās, Rudān, Hormozgān prov., 400 m., 4.iv.1973, leg. Abāi; 1♂, Gurband, Mināb, Hormozgān prov., 50 m., 1.i.2000, leg. Badii, Mofidi-Neyestānak; 2♂, Ābādān, Hayer, Khuzestān prov., 8.v.2002, leg. Moghaddam, Serri, Nematīān; 1♀, Ahwāz, Hamidiyeh dam, Hormozgān prov., 20 m., 20.–21.xi.1995, leg. Mirzāyāns, Badii; 1♀, Irānshahr (13 km W), Rig Kabud, Sistan & Baluchestān prov., 500 m., 15.v.1972, leg. Abāi, Ebert; 1♂, Firuzkuh, Hesārbon, Tehrān prov., 1600 m., 5.–6.x.1981, leg. Pāzuki.

Distribution. The whole Mediterranean region to Central Asia. From south-west Europe to near the borders of Germany (Gielis 2003).

Remarks. The species has also been recorded from Shadegan (Khuzestan province) and Kashan (Esfahan province) (Arenberger 1995).

***Agdistis huemeri* Arenberger, 2002**

Material. 2♂, Natanz-Targh, Karkas Mt., Mazdeh, Esfahān prov., 2150 m., 15.vi.2005, leg. Zahiri, Nematīān, Falsafi; 5♂, 1♀ Dāmghān (20 km N), Cheschmeh Ali, Semnān prov., 35°19'01"N. 054°27'17"E, 1560 m., 23.–24.v.2005, leg. Trusch, Petschenka, Müller; 2♂, 2♀ N Moallemān, Dāmghān (95 km S), Dārestān Mt., N 35°19'01", E 054°27'17", 1540 m., 15.v.2005, leg. Trusch, Petschenka, Müller; 1♀, Moallemān, Semnān prov., 1070 m., 17.v.2005, leg. Falsafi, Nematīān.

Distribution. Iran, Turkmenistan: Kopet-Dagh (Gielis 2003).

***Agdistis protecta* Arenberger, 1999**

Material. 1♂, Bashāgard Mts., Angohrān vill., Hormozgān prov., 25.iii.–5.iv.2000, leg. Siniaev & Plutenko; 1♀, Bashāgard Mts., Davāri vill., 25.iii.–5.iv.2000, leg. Siniaev & Plutenko, coll. Ustjuzhanin; 8 ex. same locality, coll. Kovtunovich.

Distribution. Turkmenistan, Iran (Gielis 2003).

Remarks. This species was described from Turkmenistan and according to Wieser et al. (2001), it is found in Golestan National Park, Iran.

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