

SPECIAL ISSUE: PROCEEDINGS OF THE 2ND IRANIAN
INTERNATIONAL CONGRESS OF ENTOMOLOGY

**New and little known species of Scopariinae
(Lepidoptera: Crambidae) from Iran**

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Abstract

During the study of the family Cramidae in Iran, the entire material belonging to the subfamily Scopariinae deposited in the Hayk Mirzayans Insect Museum (HMIM), Iranian Research Institute of Plant Protection (IRIPP) which collected from different parts of Iran for more than 70 years were examined and the available literature on the fauna of this subfamily in Iran were revised. Up to 500 specimens were studied and many of them were dissected. Eight species in five genera viz. *Anarpia* Chapman, 1912, *Eudonia* Billberg, 1820, *Iranarpia* P. Leraut, 1982, *Scoparia* Haworth, 1811 and *Syrianarpia* P. Leraut, 1982 were identified based on their external morphology and characteristics of their genitalia. Accordingly, *Scoparia gallica* Peyerimhoff, 1873 is newly reported for the fauna of Iran. An illustrated identification key for the genera occurring in Iran and identification keys of the Scopariinae species known from Iran, including the previously reported species, both based on the male genitalia are newly presented; additional data on the distribution of the identified species in Iran are also given.

Key words: Crambidae, Scopariinae, fauna, new record, identification key, Iran.

یافته‌های جدیدی از زیرخانواده (Lepidoptera: Crambidae) Scopariinae در ایران

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چکیده

در راستای مطالعه خانواده Crambidae در ایران، نمونه‌های متعلق به زیرخانواده Scopariinae موجود در موزه حشرات هایک میرزایانس مؤسسه تحقیقات گیاه‌پزشکی کشور که در طول بیش از ۷۰ سال از قسمت‌های مختلف ایران جمع‌آوری شده‌اند، مورد بررسی قرار گرفتند و منابع موجود درباره گونه‌های گزارش شده از این زیرخانواده در ایران بازبینی شدند. بیش از ۵۰۰ نمونه مورد بررسی قرار گرفت، اندام تناسلی بسیاری از نمونه‌ها تشریح شد و هشت گونه از پنج جنس *Scoparia* Haworth, 1811 *Iranarpia* P. Leraut, 1982 *Eudonia* Billberg, 1820 *Anarpia* Chapman, 1912 و *Syrianarpia* P. Leraut, 1982 بر مبنای صفات ریختی خارجی و ویژگی‌های اندام‌های تناسلی شناسایی شدند. در این ارتباط، گونه *Scoparia gallica* Peyerimhoff, 1873 برای اولین بار از ایران گزارش می‌شود. کلید شناسایی مصور جنس‌های گزارش شده از ایران به همراه کلید شناسایی مصور گونه‌های شناخته شده متعلق به زیرخانواده Scopariinae در ایران، شامل گونه‌هایی که قبلاً از ایران گزارش شده‌اند، بر مبنای ساختار اندام تناسلی نر ارائه شده است. کلیدهای شناسایی گونه‌های ایرانی برای اولین بار ارائه می‌شوند. همچنین اطلاعات مربوط به پراکندگی جغرافیایی گونه‌هایی که در تحقیق حاضر شناسایی شده‌اند ارائه شده است.

واژگان کلیدی: Scopariinae, Crambidae, فون، گزارش جدید، کلید شناسایی، ایران.

دریافت: ۱۳۹۶/۷/۶، پذیرش: ۱۳۹۶/۸/۱۴.

Introduction

The Scopariinae, one of the 14 known subfamilies of the family Crambidae, are characterized by their uniform forewing pattern. This pattern is included of an ante-median line connected with the proximal discoidal stigma and the cubital stigma; an X-shaped distal discoidal stigma at distal end of discoidal cell; a post-median line distal to the latter stigma which has a dent towards the distal discoidal stigma; a subterminal line which often forms an "X" together with the post-median line (Nuss, 2005).

This subfamily comprises 555 described species in the temperate zones of the northern and southern hemispheres, on oceanic islands, and in mountain rain forests of the tropics (Nuss *et al.*, 2003-2017). It embraces 21 genera based on the genitalia morphology, however, phylogenetic relationships of these genera have poorly been studied (Nuss, 1999). As it is mentioned by Nuss (2005), larvae of Scopariinae almost suppose to be moss feeders, although the larval host plant of only 30 species have been known so far, among which there are species feeding on mosses, lichens, lycopods, grasses and flowering plants (Nuss, 2005).

Based on the available literatures, 14 species in five genera of this subfamily namely, *Anarpia* Chapman, 1912, *Eudonia* Billberg, 1820, *Iranarpia* P. Leraut, 1982, *Scoparia* Haworth, 1811 and *Syrianarpia* P. Leraut, 1982 have already been reported from Iran (Lederer, 1871; Zerny, 1914, 1939; Osthelder, 1938; Toll, 1948; Amsel, 1949, 1951, 1954, 1959, 1961; P. Leraut, 1982, 1984; Nuss, 2005; Koçak & Kemal, 2014). In the present study, the Scopariinae material collected by the author from some parts of Iran and those preserved in the Lepidoptera collection of the Hayk Mirzayans Insect Museum (HMIM) of the Iranian Research Institute of Plant Protection (IRIPP) were examined; one species was considered as new for the fauna of Iran and the identification keys of the known Iranian species are provided.

Key to the genera reported from Iran, based on the male genitalia (according to Goater, 2005 and Amsel, 1961; with some modification)

- 1-Valve with ventral process (Fig. 1A); sacculus distinctly sclerotized (Fig. 1A).....*Scoparia*
- Valve without ventral process (Figs 1B, C); sacculus slightly sclerotized (Figs 1B, C).....
-2
- 2-Uncus hook-shaped apically (Fig. 1D).....*Anarpia*
- Uncus spoon-shaped or rounded apically.....3
- 3-Uncus rounded apically (Fig. 1E).....*Eudonia*
- Uncus spoon-shaped apically (Fig. 1F)4
- 4-Phallus without cornuti.....*Iranarpia*
- Phallus with cornuti.....*Syrianarpia*

Material and Methods

The present study is mostly based on the specimens collected from different parts of Iran for more than 70 years and preserved in the Hayk Mirzayans Insect Museum (HMIM) of the Iranian Research Institute of Plant Protection (IRIPP). Further data were extracted from available literatures. Photographs were taken using a digital Still camera DSC-F717 and a Dino-Eye Microscope Eyepiece Camera. Dissecting and staining of genitalia were followed method of Robinson (1976). The terminology follows Kristensen (2003) and Nuss (2005).

Results

Genus *Anarpia* Chapman, 1912

This genus with two known species namely, *A. incertalis* (Duponchel, 1832) and *A. iranella* (Zerny, 1939) is restricted to the Mediterranean area including the Middle East (Nuss, 2005). Both species occurring in Iran, but the latter one was only reported from our country (Zerny, 1939; Toll, 1948; Amsel, 1949, 1961) and it is probable to be native to Iran.

Key to the species reported from Iran, based on the male genitalia

- 1-Cornuti distinctly curved; its length one-third of the length of phallus (Fig. 1G)
*A. incertalis*
 -Cornuti slightly curved; its length one-fifth to one-fourth of the length of phallus
 (Fig. 1H)..... *A. iranella*

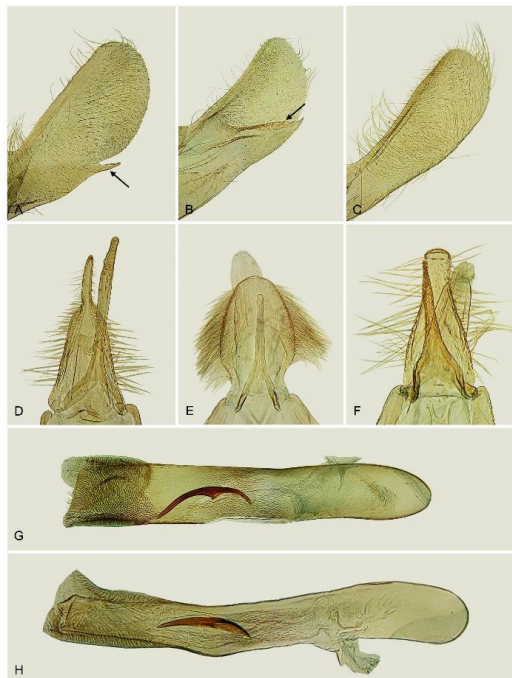


Fig. 1. Different parts of the male genitalia (A-H) in Scopariinae. A-C) valva. A, *Scoparia subfusac*. B, *Eudonia lacustrata*. C, *E. mercurella*. D-F) posterior end of the male genitalia. D, *Anarpia iranella*. E, *Eudonia lacustrata*. F, *Syrianarpia* sp. G-H) phallus. G, *Anarpia incertalis*. H, *A. iranella*. The lower and upper arrows indicate ventral process and horizontal swelling of valvae, respectively.

***Anarpia incertalis* (Duponchel, 1832)**

Material examined. **Alborz Prov.:** 2 ♂♂, 3 ♀♀, T legh n, Kal nak, 1950 m, 26.vi.1994, Ebr himi leg., 8 ♂♂, 4 ♀♀, Karaj, Kalh , 2000 m, 25.-26.viii.1996, Bar ri, Badii, Sarafr zi leg., 7 ♂♂, Karaj, Arangeh, 19.viii.1978, H shemi, Zairi leg., Karaj, 2 ♂♂, Arangeh, 1620 m, 10.ix.1983, H shemi leg., 1 ♂♂, 1 ♀♀, Dizin, 4, 17.viii.1973, Ebert leg.; **zarb ij n-e Gharbi Prov.:** 1 ♂♂, Tak b- Sh hindezh Rd., N 36° 32' 19.7", E 046° 41' 43.9", 1521 m, 2.vii.2013, Afsari n leg.; **zarb ij n-e Sharghi Prov.:** 3 ♂♂, Kaleybar, Arasb r n protected area, Vin gh, T zehkand vill., T zehkand Ranger St., N 38° 58' 56.0", E 46° 53' 23.8", 1204 m, 22.vi.2015, leg. H jiesmaili n, N serz deh, Montreuil; **Bushehr Prov.:** 2 ♂♂, D laki, 130 m, 20.iii.1973, Ab i leg.; **Ch h rmah l va Bakhti ri Prov.:** 1 ♂♂, Gandom n, Sabzkuh, 2450 m, 11.-14.vii.1983, Mirz y ns, Borumand leg., 1 ♂♂, 5 km. SW. Shalamz r, Tang-e Chezgh n, 7.-10.vii.1983, Mirz y ns, Borumand leg., 1 ♂♂, Lordegan (Oak forest), N 31° 32' 33", E 050° 57' 16.92", 2352 m, 15.viii.2010, lipan h, Nemati n leg.; **Esfah n Prov.:** 1 ♂♂, K sh n, Ghohrud, 1800 m, 12.viii.1988, H shemi leg., 2 ♂♂ and two specimens without abdomen, K sh n, Karkas Mt., 2.vi.1970, Ab i leg., 1 ♂♂, K sh n, Ni sar, Saricheh, 1650 m, 8.viii.1988, H shemi leg., 8 ♂♂, 4 ♀♀, Natanz, Targh, 2630 m, 8.vii.2003, Ghayurfar, Ebert, Trusch, Nemati n leg., 1 ♂♂, Natanz- Targh Rd., Mazdeh, N 33° 23' 36.24", E 051° 49' 56.52", 2192 m, 12.viii.2010, lipan h, Nemati n leg., 1 ♂♂, Natanz, T meh, N 33° 27' 43.44", E 051° 50' 52.44", 2283 m, 11.viii.2010, lipan h, Nemati n leg., 1 ♂♂ and four specimens without abdomen, Natanz, Aby neh, 2200 m, 11.viii.1988, H shemi leg., 3 ♂♂, 4 ♀♀ and two specimens without abdomen, Natanz, Aby neh, 2150 m, 6.vi.1988, H shemi, Badii leg., 3 ♂♂, 2 ♀♀, Natanz, Ureh, 2100 m, 21.vi.1988, H shemi, Badii leg., 5 ♂♂, 4 ♀♀ and two specimens without abdomen, Natanz, L kaj, 1550 m, 9.ix.1998, Manzari, Mofidi-Neyest nak leg., 1 ♂♂ and one specimen without abdomen, Natanz, T meh, N 33° 27' 43.44", E 051° 50' 52.44", 2283 m, 11.viii.2010, lipan h, Nemati n leg., 1 ♂♂, 4 ♀♀, Semirom, b Malakh, 1600 m, 7.ix.1971, Ebr himi, Badii leg., 1 ♂♂, Semirom, P den , Tang-e Bijan, 2930 m, 13.viii.1978, P zuki, Borumand leg., 1 ♂♂, 6 ♀♀, Semirom, P den , Tang-e Nevel, 2200 m, 12.-13.ix.1991, Ebr himi, Badii leg., 2 ♂♂, 3 ♀♀, Kh ns r, Golest n-Kuh, 2700 m, 23, 24.vii.1983, Mirz y ns, Borumand leg.; **F rs Prov.:** 2 ♂♂, 2 ♀♀, Tang-e Sorkh, 2200 m, 9.ix.1974, P zuki, H shemi leg., 12 ♂♂, 13 ♀♀ and one specimen without abdomen, K zerun, Dasht-e Arzhan, 1950 m, 13.5.1974, Ab i, P zuki leg., 1 ♂♂, Dasht-e Arzhan, 8.-9.vi.1973, H shemi, Zairi leg., 2 ♂♂, K zerun, Nur b d, 1550 m, 12.ix.1974, P zuki, H shemi leg., 1 ♂♂, 2 ♀♀, K zerun, Kuhmareh, G wkoshak, 1150 m, 18.v.1975, Borumand, P zuki leg., 1 ♂♂, 3 ♀♀, G wkoshak, 110 km S. Shir z, 26.vii.1975, Ab i leg., 1 ♂♂, K zerun, Nowd n, 1250 m, 17.v.1975, Ab i, P zuki leg. 2 ♂♂ and one specimen without abdomen, K zerun, Tang-e Chog n, 900 m, 9.v.1974, Ab i, P zuki leg., 1 ♂♂, 2 ♀♀, K zerun, Cheshmehn ri, 900 m, 6.v.1985, Mirz y ns, H shemi leg., 1 ♂♂, Shir z, 1450 m, 12.x.1975, Ab i, P zuki leg., 1 ♂♂, 2 ♀♀, Shir z, K mfirmuz, 1750 m, 5.ix.1974, P zuki,

H shemi leg., K zerun, 970 m, 10.x.1994, Ab i leg., 2 , Shir z, 10 km. N. Sivand, 1150 m, 15.v.1974, Ab i, P zuki leg., 1 , Shir z, 110 km. Nowd n, 1000 m, 7.vii.1975, Ab i leg., 1 , Shir z, K mfirmuz, Javarg, 1800 m, 3.ix.1974, P zuki, H shemi leg., 1 1 , Fas , Mi njangal, 1.-4.vi.1973, H shemi, Zairi leg., 4 , Mi njangal, 40 km. N. Fas , 1700 m, 20.-21.vi.1993, Mirz y ns, Badii leg., 1 , K zerun, Fr shband, Sarmashhad, 1780 m, 9.iv.1975, Borumand leg., 1 , 58 km. L r- Jahrom Rd., 890 m, 13.iv.1975, Borumand leg., 2 , Jahrom, 1120 m, 11.v.1974, Ab i, P zuki leg., 1 1 , Firuz b d, Ghir, 1160 m, 11.iv.1975, Borumand leg., 1 , Firuz b d, Mahkuyeh Oly , 1950 m, 10.-11.v.1986, Mirz y ns, H shemi leg., 1 1 , K mfirmuz, Tang-e Bost nak, 1750 m, 2.vi.1990, Ebr himi, Badii leg., 1 2 , Tang-e Bost nak, 1700 m, 13.ix.1998, Mofidi-Neyest nak, Manzari leg., 2 , D r b, Rost gh, 1250 m, 21.-23.iv.1992, Mirz y ns, Badii leg., 1 , Sarvest n, Rob t, 1400 m, 5.v.1996, Badii, V. Nazari, Ardeh leg., 7 9 , 50 km. Khonj- L r Rd., 920 m, 12.iv.1975, Borumand leg., 1 , D r b, Hasan b d, 7.v.1969, Kal li leg., 1 and one specimen without abdomen, Dehbid, 2000 m, 15.vi.1996, Sarafr zi, Badii leg., one specimen without abdomen, 9.v.1974, Ab i, P zuki leg., 1 , Eghlid, Basir n, 2000 m, 10.ix.1998, Manzari, Mofidi-Neyest nak leg., 3 2 , Shir z, Bamu, 1700 m, 25.ix.1996, Bar ri, Parchami-Ar ghi, Moghaddam leg., 14 2 , Arsanj n, Ali b d-e Kabir, 1680 m, 25.ix.1996, Bar ri, Parchami-Ar ghi, Moghaddam leg., 1 1 , Far shband, Har t b d, 770 m, 7.v.1985, Mirz y ns, H shemi leg., 1 , Firuz b d, Mehkuyeh, 1450 m, 11.vi.1986, Mirz y ns, H shemi leg., 1 , Dasht-e Arzhan, Chehel-Cheshmeh, Zanganeh, 1700 m, 17.v.1986, Mirz y ns, H shemi leg., 1 , Parish n lake, 790 m, 1.-18.x.1996, Bar ri, Parchami-Ar ghi, Moghaddam leg., 1 , Tang-e Bolhay t, 1100 m, 3.vi.1990, Ebr himi, Badii leg., 1 and one specimen without abdomen, Saf shahr, 2150 m, 19.vi.1986, Mirz y ns, H shemi leg., 1 4 , Kamfiruz, Tang-e Bost nak, 1680 m, 29.ix.1996, Bar ri, Parchami-Ar ghi leg., 5 4 and one specimen without abdomen, Sepid n, Margoon fall, 2020 m, 23-25.vi.1993, Mirz y ns, Badii leg.; **Ghazvin Prov.:** 1 , Rudb r-e Shahrest n, Fal r, 1150 m, 25.vi.1994, Ebr himi leg., 1 , Alamut, 1500 m, 6.iv.1970, leg. P zuki; **Ghom Prov.:** 2 , 8 km. S. Fordu, Vesf, 2320 m, 7.-8.vi.1984, P zuki, H shemi leg., 2 1 and two specimens without abdomen, Ghom, Karam-Chek n, 2050 m, 1.viii.1988, H shemi leg., one specimen without abdomen, vaj, 2080 m, 10.viii.1996, Bar ri, V. Nazari, Parchami-Ar ghi leg.; **Hamed n Prov.:** 1 5 , Nah vand, G m si b, 1750 m, 24.viii.1995, Mirz y ns, Badii leg., 1 , Arzanfud, 2240 m, 29.vii.1987, Mirz y ns, H shemi leg., 1 2 , Mor dbeyk vall., 2200 m, 25.-26.viii.1995, Mirz y ns, Badii leg., 1 , Mal yer, Lashkardar protected area, N 34° 14' 43.4", E 048° 54' 00.9", 1939 m, 10.vii.2014, Afsari n leg., 1 , Sar b-e G m si b, N 34° 05' 56.2", E 48° 25' 20.5", 1813 m, 11.vii.2014, Afsari n leg.; **Hormozg n Prov.:** 8 4 , H ji b d, 1140 m, 25.iv.1996, Ardeh, Badii, V. Nazari leg., 1 1 , Bandar Abb s- Sirj n Rd. (km 70), 500 m, 2.iv.1973, Ab i leg., 2 , Isin, Geno, 750 m, 25.iv.1986, Mirz y ns, Borumand leg.; **Kerm n Prov.:** 8

5 , B ft, Ghan t-e Marv n, 2800 m, 23.v.1977, Safavi, P zuki, Ab i leg., 1 , 53 km. Jiroft, Mohammad b d, 3.-4.v.1973, Borumand leg., 1 , Kerm n- Bam Rd., Dehbakry, 2200 m, 1.-2.v.1973, Borumand leg., 1 , Kerm n, Dehbakry, Bam- Jiroft Rd., 2400-2600 m, 19, 20.v.2004, Raj ei leg., 1 , Jiroft, Dehbakry, 1850 m, 3.-4.x.1993, H shemi, Ebr himi leg., 1 and two specimens without abdomen, Jiroft- Bam Rd. (55 km after Jiroft), Shinger , 2800 m, 24.v.2004, Raj ei leg., 1 , Jeb l-e B rez, 15.vi.1971, H shemi, Naim leg.; **Kerm nsh h Prov.:** 1 4 , Ghall jeh, 1810 m, 18.viii.1996, V. Nazari, Bar ri, Parchami-Ar ghi leg., 1 3 , Kerm nsh h, M hidasht, Ch h rzebar-e Oly , 1550 m, 14, 21.viii.1996, Parchami-Ar ghi, Bar ri, V. Nazari leg., 1 , Esl m b d-e Gharb, 1500 m, 3.vii.1972, Mirz y ns, Ab i leg., 1 , Kerend, 29.vi.1968, Dezfuli n, Ir nshahr leg., 1 1 , Kerend-e Gharb, Nav Mt., N 34° 17 32.7", E 046° 15 15 .6", 1569 m, 14.vii.2014, Afsari n leg., 1 1 , Chalabeh, Bisotun, N 34° 22 57.2", E 47° 16 38.7", 1652, 12.vii.2014, Afsari n leg., 1 , Ghasr-e Shirin, Sarmil, 17.vi.1968, leg. Dezfuli n, Ir nshahr; **Khor s n-e Razavi Prov.:** 21 14 , Mashhad, Zoshk, 1700 m, 14-15.viii.1993, Ebr himi, Badii leg., 8 4 , N. Bin lud Mt., 1800 m, 11.-12.viii.1993, Ebr himi, Badii leg., 1 1 , Zoshk, 10.vii.1971, P zuki, yatoll hi leg., 1 , Sarakhs, Tajan, 250 m, 17.viii.1993, Ebr himi, Badii leg., 1 , Kopet D gh, All hoakbar, 1950 m, 16.vi.1974, Rajabi, P zuki leg., 1 1 , Daregaz, 1.viii.1971, P zuki, yatoll hi leg., 2 , Daregaz, Tandoreh, Shekar b, 2100 m, 11.viii.1993, Ebr himi, Badii leg., 4 5 and two specimens without abdomen, Akhlamad, 13, 16, 18.vii.1971, P zuki, yatoll hi leg., 1 , Torbat Heydariyeh, Fadiheh, 20.vii.1971, P zuki, yatoll hi leg., 6 6 , Ghuch n- Bajgiran Rd., 6 km. N. Ghuch n, near Dorb d m vill., Dorb d m protected area, N 37° 25 25.5", E 058° 31 34.0", 1800 m, 20.vi.2013, lipan h, Falsafi leg., 2 , W. B jgir n, 7 km. W. Ghara Chegheh vill., Ghara Chegheh protected area, N 37° 39 11.8", E 058° 14 32.9", 2036 m, 21.vi.2013, lipan h, Falsafi leg., 1 , N. Tandoreh National Park, Chelmir, N 37° 23 33.69", E 058° 51 23.3", 1018 m, 24.vi.2014, lipan h, Falsafi leg., 1 3 , Daregaz, N. Tandoreh National Park, Chelmir- Bandak Rd., near Bandak, N 37° 23 54.2", E 058° 47 02.0", 1383 m, 25.vi.2014, lipan h, Falsafi leg., 9 7 , N. Tandoreh National Park, 6 km. after Chelmir, Cheshmeh Rajab, N 37° 23 35.9", E 058° 48 35.8", 1206 m, 26.vi.2014, lipan h, Falsafi leg., 1 , Daregaz- Kal t-e N der Rd., L een vill to Kh kestar vill. Rd., before Ch h rr h vill., Hez rmasjed Mts, N 37° 02 39.5", E 059° 26 10.11", 1344 m, 27.vi.2014, lipan h, Falsafi leg., 1 , Daregaz- Kal t-e N der Rd., L een vill to Kh kestar vill. Rd. (2.3 km. after Ch h rr h vill.), Hez rmasjed Mts, N 37° 02 48.3", E 059° 24 54.5", 1485 m, 28.vi.2014, lipan h, Falsafi leg.; **Khor s n-e Shomali Prov.:** 1 and one specimen without abdomen, N Shirv n, Kopet D gh Mts, Sar ni Protected area, Sar ni vill., N 37° 48 22.5", E 057° 56 29.7", 1500 m, 22.vi.2013, lipan h, Falsafi leg.; **Khuzest n Prov.:** 1 , Moll s ni, 40 m, 9.v.1975, P zuki, Borumand leg., 2 , L li, Cheshmeh Tarkh n, 350 m, 8.v.1994, Sarafr zi, H shemi leg., 2 2 , Izeh, Susan, 600 m, 26.iv.1995,

Badii, Ardeh, Parchami-Ar ghi leg., 1 ♂, Dezful, Sh hyun, P men r, 450 m, 6.v.2001, Mofidi-Neyest nak, Gil si n, H jiesmaili n leg., 2 ♂ and one specimen without abdomen, Dezful, Sh hyun, S lenkuh, 1250 m, 8.v.2001, Mofidi-Neyest nak, Gil si n, H jiesmaili n leg., 1 ♂, Andimeshk, Bidrobeh, Amirseyf, 700 m, 2.v.2001, Mofidi-Neyest nak, H jiesmaili n, Gil si n leg., 1 ♂, Behbah n, 350 m 3.v.1995, Parchami-Ar ghi, Ardeh, Badii leg.; **Kohgiluyeh va Boyerahmad Prov.:** one specimen without abdomen, 1700 m, 12.v.1968, Mirz y ns, H shemi leg., 3 ♂ 4 ♀, Sisakht, 2350 m, 13.-16.vi.1973, H shemi, Zairi leg., 7 ♂ 3 ♀ and one specimen without abdomen, Sisakht, 2100 m, 16.vi.1986, Mirz y ns, H shemi leg., 6 ♂ 6 ♀, Sisakht, Tang-e Kuhgol, 2300 m, 9.ix.1991, Ebr himi, Badii leg., 1 ♂, Y suj, Kuhgol, 2300 m, 14.ix.1998, Manzari, Mofidi-Neyest nak leg., 1 ♂, Sisakht, Dena Mt., 2200 m, 11.ix.1974, P zuki, H shemi leg., 2 ♂ 1 ♀, Sisakht, Bizhan Mt. pass, 2700 m, 12.ix.1991, Ebr himi, Badii leg., 11 ♂ 2 ♀ and one specimen without abdomen, Y suj, Tang-e Meymand, 1650 m, 9.ix.1971, Ebr himi, Badii leg., 2 ♂ 4 ♀, Y suj, Dogonbad n, 2000 m, 10.ix.1971, Ebr himi, Badii leg., 1 ♂ 6 ♀, Bizhan, 6 km. N. Sisakht, Den Mt., 2900 m, 19.ix.2001, Gyulai, Gar i leg., 1 ♂, Sisakht, 22.vi.2005, Zahiri, Nemati n, Falsafi leg., 2 ♂ and one specimen without abdomen, 5 km. N. Meymand, NW. Den Mt., 2210 m, 18.-20.viii.1976, P zuki, Borumand leg., 1 ♂ 2 ♀, Nogol, P dena, 2200 m, 15.ix.1998, Manzari, Mofidi-Neyest nak leg.; **Kordest n Prov.:** 1 ♂, Sanandaj, Ariz, 2200 m, 5.vii.1972, Mirz y ns, Ab i leg., 1 ♂, Ghorveh, Badr-o Parish n protected area, Badr-o Parish n Mt., N 35° 02' 41.7", E 47° 48' 22.8", 2374 m, 4.viii.2014, Afsari n leg.; **Lorest n Prov.:** 1 ♂ 1 ♀, 24 km. Khorram b d, 26.viii.1973, Mirz y ns, Zairi leg., 1 ♂ 1 ♀, Oshtor nkuh, Gahar lake, 2350 m, 31.vii.1975, P zuki leg., 3 ♂ 2 ♀, Azn, Oshtor nkuh, Kamand n, 2050 m, 23.viii.1995, Mirz y ns, Badii leg., 4 ♂, Khorram b d, Badr b d, 1200 m, 13.v.1994, Sarafr zi, H shemi leg., 1 ♂ 1 ♀, 65 km. N. Andimeshk, Pol-e Tang, 490 m, 10.iv.1977, P zuki, H shemi leg.; **Markazi Prov.:** 1 ♂, Khomein, Dehno, 2300, 28.-29.vi.1990, H shemi, Ebr himi leg., 1 ♂ 1 ♀, Delij n, J sb, 1900 m, 15.ix.1991, Ebr himi, Badii leg., one specimen without abdomen, hoo, Bidsukhteh vall., 2000 m, 29.vii.1997, Bar ri, Mofidi-Neyest nak leg., 1 ♂, Khomein, N zi vill., N 33° 41' 50.0", E 050° 02.0' 17.7", 1872 m, 7.vi.2013, Afsari n leg., 5 ♂ 1 ♀, Nar gh, Kald r, 2430 m, 7.vii.2003, Ghayurfar, Nemati n leg.; **M zandar n Prov.:** 1 ♂, Mahmud b d, 21.v.1970, leg. Ab i; **Semn n Prov.:** 2 ♂, Sh hrud, SS. Sh v r Mt., 2030 m, 26.-28.viii.1983, Borumand, P zuki leg., one specimen without abdomen, Sh hrud, Negarm n, Shahv r Mt. slopes, 1650 m, 21.viii.1993, Ebr himi, Badii leg.; **Tehr n Prov.:** 2 ♂ 5 ♀, T r lake, Palang Darreh, 2000 m, 16.ix.1987, Mirz y ns, Badii leg., 1 ♂, T r lake, Palang Darreh, 2700 m, 25.vii.1988, Mirz y ns, Badii leg., 3 ♂, Fasham, 1450 m, 5.ix.1987, H shemi leg., 3 ♂ 1 ♀, Dam vand, bsard, 1900 m, 3.-7.vii.1978, P zuki, Sabzev ri leg., one specimen without abdomen, Dam vand, 28.vii.1972, Ebert leg., 1 ♂, Dam vand, 12.viii.1987, Sabzev ri leg., 1 ♂, Dam vand, 21.vi.1966, Anonymous leg., 6 ♂ 1 ♀ and four

specimens without abdomen, Evin, 16, 19, 22, 23, 24, 25.v.1970, 4.vi.1970, 30.viii.1970, 26.ix.1970, Anonymous leg., 2 7 , Evin, 11.viii.1971, 13, 16, 22, 29.ix.1971, 8.x.1971, Anonymous leg., 1 , Evin, 2.x.1973, Anonymous leg., 2 3 , 24.ix.1974, Anonymous leg., 4 , Firuzkuh, H res b d, 1600 m, 5.-6.x.1981, P zuki leg.; **Zanj n Prov.:** 3 and one specimen without abdomen, Tehem, T zehkand, N 36° 55' 25.6", E 048° 42' 51.4", 1433 m, 26.vi.2013, Afsari n leg., 1 and one specimen without abdomen, Solt niyeh, Gheydr, 1950 m, 2.vii.1974, Termeh, Mousavi leg.

Distribution: Mediterranean area: S. Europe, NW. Africa, Turkey, Syria, Jordan, Lebanon, Armenia, Iran (Dezful: Salehabad; Ahwaz: Hamidiyeh; Tarsi and Rineh; N. Iran), Iraq, Afghanistan, Uzbekistan, Kazakhstan; Kyrgyzstan (Zerny, 1939; Toll, 1948; Amsel, 1949; Nuss, 2005).

Anarpia iranella (Zerny, 1939)

Material examined. **Alborz Prov.:** 1 , Karaj, Kandovan, Sarch 1, 2800 m, 4.-8.vii.1977, P zuki, Mortazavih leg.; **Khor s n-e Razavi Prov.:** 2 2 , Mashhad, Zoshk, 1500 m, 10.vii.1971, leg. yatollahi, P zuki; **Ghom Prov.:** 2 1 and one specimen without abdomen, Ghom, Karam Chekan, 2050 m, 1.viii.1988, H shemi leg.; **M zandar n Prov.:** 1 , Elik , 2100 m, 23.ix.1987, H shemi leg.

Distribution: Iran (Alborz Prov.: Karaj, Nesa, Kandovan Rd.; Mazandaran Prov.: Tarsi, Rineh; Semnan Prov.: Shahkuh; Hamedan Prov.: Alvand Mt.; Tehran Prov.: Tehran; Sistan va Baluchestan Prov.: Bam Pasht, Taftan Mt., Chabahar, Sengan; Fars Prov.: Shiraz, Qalat, Pirezan, Muk Rd., Tangab-e Firuzabad, Komehr, Barm Firuz, Sinehsefid, Mian Kotal; Yazd Prov.: Barfkhaneh; Khorasan-e Razavi Prov.: Binalud Mt.; Bushehr Prov.: Bushehr) (Zerny, 1939; Amsel, 1961).

Genus *Eudonia* Billberg, 1820

So far 262 species of this genus are known worldwide occurring on all continents and Subantarctic islands (Nuss, 2005). As far as five species namely *E. lacustrata* (Panzer, 1804), *E. mercurella* (Linnaeus, 1758), *E. pallida* (J. Curtis, 1827), *E. phaeoleuca* (Zeller, 1846) and *E. piroformis* Amsel, 1949 are reported from Iran (Zerny, 1939; Amsel, 1949, 1959, 1961; P. Leraut, 1984; Nuss, 2005). In the present study no specimens of the last three species were found to be studied and their characteristics and photos are derived from Nuss (2005) and Wheeler (2017).

Key to the species reported from Iran, based on the male genitalia

- 1-Ventral surface of the valva with a horizontal swelling near the apex (Fig. 1B)
*E. lacustrata*
 -Ventral surface of the valva without a horizontal swelling near the apex2
 2-Phallus straight; uncus smooth laterally (Fig. 2A)..... *E. pallida*

- Phallus curved; uncus convex laterally (Figs 2B, C).....3
 3-Uncus distinctly convex laterally (Fig. 2B)..... *E. phaeoleuca*
 -Uncus slightly convex laterally (Fig. 2C)4
 4-Uncus with rounded apex (Fig. 1E)*E. piriformis*
 -Uncus with smooth to slightly invaginated apex (Fig. 2C)*E. mercurella*

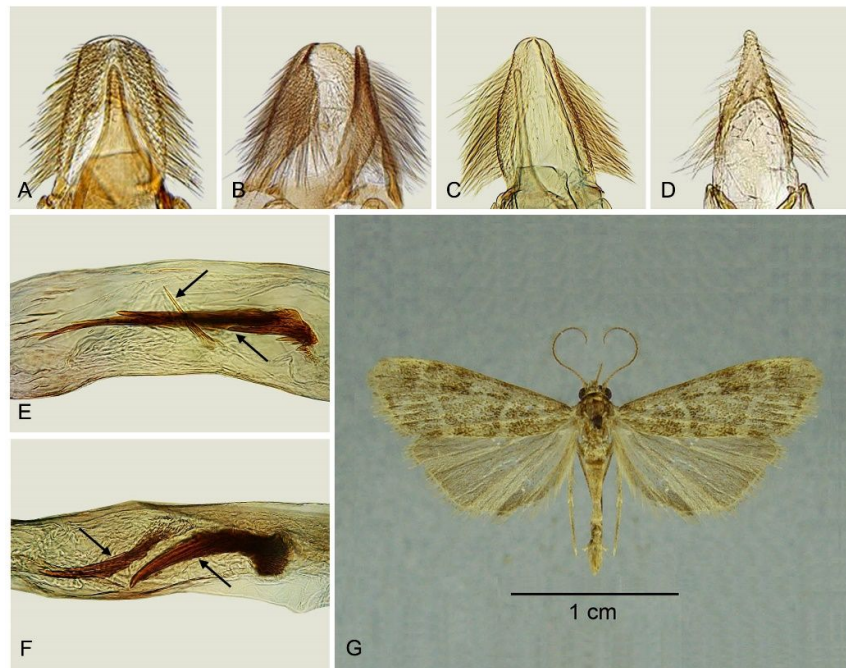


Fig. 2. Different parts of the male genitalia in Scopariinae (A-F) and adult female of *S. gallica* (G). A-D) posterior end of the male genitalia. A, *Eudonia pallida*. B, *E. alpina*. C, *E. mercurella*, D, *Scoparia subfusca*. E-F) cornuti. E, *Scoparia gallica*. F, *S. subfusca*. The upper and lower arrows indicate small and large groups of cornuti, respectively. Since there was no image of the male genitalia of *E. phaeoleuca*, the photo of the uncus of *E. alpina* which is very similar to the former species in this regard is presented. Figures A, B & D after Wheeler (2017).

Eudonia lacustrata (Panzer, 1804)

Material examined. **zarb ij n-e Sharghi Prov.:** 2 , Kaleybar, V yegh n, 1440 m, 5.-6.vii.1992, leg. Parchami-Ar ghi, Badii; **Gil n Prov.:** 2 , Eshkevar, Gil nch k n, 1820 m, 27.vi.1997, leg. Bar ri, Mofidi-Neyest nak, one specimen without abdomen, Si hkal, B l rud, 350 m, 6.-7.vii.2000, leg. Ebr himi, Mofidi-Neyest nak, Bar ri, Deuve, 1 , As lem, Parehsar, 750 m, 13.viii.1974, leg. Mirz y ns, 1 , As lem, Sheykh Mahal, 160 m, 28.-30.vi.1977, leg. P zuki, Mortazavih , 1 , st r - Ardebil Rd., Meshend, Goudi Evlar vill., N 38° 23 32.3", E 048° 35 59.2", 488 m, 1.viii.2008, leg. Nemati n, lipan h, 1 , Fuman, Gashtrudkh n, N 38° 15 15.2", E 47° 23 52.1", 295 m, 29.vi.2008, leg. lipan h, Nemati n, one specimen without abdomen, Bandar Anzali, Punel, 250 m, 30 km. S. As lem, 12.viii.1974, leg. Mirz y ns, Ilkh ni, 1 , Rasht, Sh nderman, Ol m, N 37° 27 9", E 49° 4 39", 223 m, 16.v.2006, leg. Sarafr zi, Nemati n; **Golest n Prov.:** 2 1

, Golest n National Park, Maz rli, 530 m, 19.-20.vi.1977, leg. P zuki, Ab i;
M zandar n Prov.: 2 7 , Tonek bon, Dohez r Rd., N 36° 40 32.12", E 50° 49
 33.64", 422 m, 3.vii.2011, leg. Nemati n, lipan h.

Distribution: Europe, NW. Africa, Syria, Anatolia, Iran, Siberia, W. China (Nuss, 2005).

Remarks: Two subspecies of this species have already been known which as stated by
 Nuss (2005) *E. lacustrata persica* (P. Leraut, 1984) occurs in Iran.

***Eudonia mercurella* (Linnaeus, 1758)**

Material examined. **Khor s n-e Razavi Prov.:** 1 , Daregaz- Kal t-e N der Rd., L een
 vill to Kh kestar vill. Rd., before Ch h rr h vill., Hez rmasjed Mts, N 37° 02 39.5", E
 059° 26 10.11", 1344 m, 27.vi.2014, lipan h, Falsafi leg., 1 , Daregaz- Dorb d m Rd.,
 NW. Tandoreh National Park, near Alibul gh vill., N 37° 32 06.2", E 058° 36 07.3", 1509
 m, 29.vi.2014, lipan h, Falsafi leg.

Distribution: Europe, NW. Africa, Turkey, Lebanon, Iran (Elburz, Sardab valley, Rineh),
 Greece (Zerny, 1939; Nuss, 2005).

Genus *Iranarpia* P. Leraut, 1982

This genus contains two species namely, *Iranarpia albalis* Amsel, 1961 and *I. silacealis*
 Amsel, 1951 all around the world which type series of both species collected in Iran
 (Fars Prov.: Komehr), and are exclusively found in Iran (Amsel, 1951, 1961). In this study
 only the former species was identified and no specimen from the latter one was available.
 The male genitalia of these two species are apparently very similar to each other and only
 differ in few characters. However, they can easily be separated from each other externally.
 In *I. silacealis* ground color of the forewing is yellowish ochreous, with distinct wing
 pattern; while in *I. albalis* it is white with extremely reduced wing pattern (Amsel, 1951,
 1961). We didn't find any detailed information about the genitalia of both species and
 thereby, the identification key mentioned here is based on the simple illustration of Amsel
 (1951) for the male genitalia of *I. silacealis* and the examined *I. albalis* male specimens.

Key to the species reported from Iran, based on male genitalia

1-Phallus straight; valva basally with slight invaginations both in dorsal and ventral
 surfaces.....*I. silacealis*
 -Phallus slightly curved; valva basally smooth both in dorsal and ventral
 surfaces.....*I. albalis*

***Iranarpia albalis* (Amsel, 1961)**

Material examined. **F rs Prov.:** 3 , 50 km. NW. Sepid n, Tang-e Sorkh, 2250 m,
 16.vi.1972, Ebert, P zuki leg.; **Lorest n Prov.:** 3 , Oshtor nkuh, Dorud- Gahar lake

Rd., before Cheshmeh Khorram, N 33° 22' 41", E 049° 11' 13", 2360 m, 22.-24.vi.2009, leg. H. Raj ei, Meineke & Hoffman.

Distribution: Iran (Komehr, Barm Firuz) (Amsel, 1961).

Genus *Scoparia* Haworth, 1811

More than 220 species of this genus are known worldwide which are distributed in all continents except for Antarctica and rarely present in oceanic islands (Nuss, 2005). Based on the available literature, five *Scoparia* species namely, *S. ambigualis* (Treitschke, 1829), *S. subfusca* Haworth, 1811, *S. saerdabella* Osthelder, 1938, *S. basistrigalis* Knaggs, 1866 and *S. manifestella* (Herrich-Schäffer, 1848) have already been reported from Iran (Lederer, 1871; Zerny, 1914, 1939; Osthelder, 1938; Toll, 1948; Amsel, 1954, 1961; Nuss, 2005; Koçak & Kemal, 2014). In the present study only two species namely *S. gallica* Peyerimhoff, 1873 and *S. subfusca* were identified which the former one is new to Iran. The remaining four species were not available to be examined in this study and the presented key characteristics and photos for these species are based on Nuss (2005) and Wheeler (2017).

Key to the *Scoparia* species reported from Iran, based on male genitalia

- 1-Phallus contains one group of cornuti.....2
 - Phallus contains two groups of cornuti3
- 2-Uncus with a narrow extended tip (Fig. 2D)..... *S. manifestella*
 - Uncus without a narrow extended tip.....*S. ambigualis*
- 3-First group of cornuti conspicuously smaller than the second group (Fig.2E)..... *S. gallica*
 - First group of cornuti slightly smaller than the second group (Fig. 2F)..... 4
- 4-Uncus with a narrow and extended tip.....*S. saerdabella*
 - Uncus without a narrow and extended tip.....*S. subfusca*

Scoparia gallica Peyerimhoff, 1873 (Fig. 2G)

Material examined. **Sistan va Baluchestan Prov.:** 1 ♂, Khosh, Taftan Mt., 1800 m, 20.v.1972, Abidi, Ebert leg.

Distribution: Montane, France, Spain, Morocco (Nuss, 2005).

Remarks: In the genitalia of the examined male there are few small thorns at the base of larger group of cornuti (Figs 2E). This species is newly reported for the fauna of Iran.

Scoparia subfusca Haworth, 1811

Material examined. **Alborz Prov.:** 1 ♂, Karaj, Kalh, 2000 m, 25.-26.viii.1996, Barri, Badii, Sarafrizi leg.; **zarb ij n-e Sharghi Prov.:** 1 ♂, Kaleybar, Daresi, 1780 m, 22.vi.2002, leg. H. Jiesmaili, Mofidi-Neyestank, Montreuil, Deuve; **Ghazvin Prov.:** 1 ♂,

Alamut, Kashkdasht, 1470 m, 19.vi.1995, leg. Parchami-Ar ghi, Ardeh, Ebr himi; **Gil n Prov.:** 1 , Rostam b d, Darehdasht, 950 m, 11.vi.2002, Serri, Mofidi-Neyest nak, Deuve, Montreuil; **Golest n Prov.:** 1 1 , Gorg n, Ali b d, Shirin b d, 22.v.2005, Falsafi, Nemati n leg.; **M zandar n Prov.:** 2 8 , Tonek bon, Dohez r, Sh neh Tar sh, N 36° 38' 45.17", E 50° 43' 24.47", 1621, 2.vii.2011, Nemati n, lipan h leg., 1 , Tonek bon, Dohez r, 1000 m, 9.vi.2005, Nemati n, lipan h, Sinaev leg., 1 2 , mol, Chamest n, V z vill., N 36° 24' 46.9", E 052° 06' 03.1", 557 m, 28.vi.2007, lipan h, Nemati n leg., 2 , R msar, Eshkevar t, 1200 m, 28.v.2003, leg. Gil si n, Nemati n, 1 , Kel rdasht, Toydarreh, M zich l, 1400 m, 24.v.2003, leg. Gil si n, Nemati n, 1 , R msar, 6 km. Jav herdeh, N 36° 54' 29.3", E 050° 35' 13.2", 554 m, 23.vii.2007, leg. lipan h, Zahiri; **Zanj n Prov.:** 1 , T rom, Darr m, P vehrud, N 37° 02' 58.2", E 048° 44' 46.4", 497 m, 27.vi.2013, Afsari n leg.

Distribution: Europe, except middle and northern parts of Fennoscandia; Iran (Golestan Prov.: Gorgan; Mazandaran Prov.: Tarsi; Alborz Prov.: Polur, Nesa, Karaj) (Lederer, 1871; Zerny, 1939; Amsel, 1954, 1961; Nuss, 2005).

Genus *Syrianarpia* P. Leraut, 1982

This species is represented by four species all around the world, three in the eastern Mediterranean area, and one (*S. faunieralis* Gianti, 2005) in the western Alps (Nuss, 2005; Gianti, 2005; Alipanah & Gianti, 2017). The eastern Mediterranean species i.e., *S. kasyii* P. Leraute, 1984, *S. mendicalis* (Staudinger, 1879) and *S. elburzalis* Alipanah & Gianti, 2017 occur in Iran (Amsel, 1949; P. Leraut, 1982, 1984; Nuss, 2005; Alipanah & Gianti, 2017). The first and the last one described from Iran and can only be found in Iran. As stated by Nuss (2005), two subspecies of *S. mendicalis* have already been known which *S. mendicalis fuscella* occurs in Iran. It has been collected in Kordestan (28 km Sanandaj) (P. Leraut, 1982). There was no specimen of *S. mendicalis* to be examined in this study. For identification keys of all the known species, see Alipanah & Gianti (2017).

***Syrianarpia elburzalis* Alipanah & Gianti, 2017**

Material examined. Holotype , Iran, M zandar n Prov.: N. Kandov n, Kh kak, 2560 m a.s.l., 9.VII.1977, P zuki, Mortazavii leg., deposited at HMIM, IRIPP, Tehran, Iran.

Distribution: Iran (Mazandaran Prov.: N. Kandovan) (Alipanah & Gianti, 2017).

***Syrianarpia kasyii* P. Leraut, 1984**

Material examined. **Khor s n-e Razavi Prov.:** 2 , Ghuch n- B jgir n Rd., 46 km N. Ghuch n, Dorb d m protected area, N 37° 25' 25.5", E 058° 31' 34.00", 1800 m, 20.vi.2013, lipan h, Falsafi leg.

Distribution: Iran (Tehran Prov.: Darband) (P. Leraut, 1984)

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