

Updating and classification of the family crambidae (Pyraloidea: Lepidoptera) of Egypt

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Received 12 Mar 2023; Accepted 19 Apr 2023; Published 27 Apr 2023

Abstract

The Crambidae family of moths is a massive, diversified, and widespread group of moths that now includes 15 subfamilies and 11500 species over more than 1,000 genera. Only 7 subfamilies, 39 species, and 33 genera are known to exist in Egypt. Crambid larvae are covert feeders with a wide variety of feeding strategies, habitats, and hosts. They typically invade the grass family as stem borers. Larvae of this family are significant economic pests of many important economic crops as well as crops like sugarcane, maize and rice. Diagnostic characters and notes of the family and the subfamilies represented in Egypt are presented. Updates of the names and categories of the species are provided.

Introduction

The Crambidae (grass moths) family of moths is a huge, various, and widely dispersed group of insects including insects that display brightly coloured and patterned appearance with wingspread manner. Family Crambidae consists of 15 subfamilies and 11,500 species in over 1,000 genera. (Léger *et al.* 2020) [16]. Only six subfamilies with 33 genera and 47 species are represented in Egypt. These subfamilies are Crambinae, Evergestinae, Glaphyrinae, Odontiinae, Pyraustinae and Spilomelinae. Grass plants frequently have stem borers called crambid larvae; some species of the crambidae family are considered pests.

Several species, including those from rice, maize, sugar cane, and turf, are pests of grasses. The most well-known is probably *Ostrinia nubilalis*, the European Corn Borer. Various classifications have included crambidae as a subfamily of the Pyralidae (snout moths). The fundamental difference in the tympanal organs is the praecinctorium, which joins two tympanic membranes in the crambidae but is absent in the Pyralidae. Munroe and Solis maintain the crambidae as a full family in their most current review, which was reported in Kristensen (1999) [26].

Materials and methods

Examination of museum specimens and published data is the basis of the present work. We have compiled an extensive and insightful list of moths in the family Pyraloididae (Lepidoptera: Pyraloidea). A total of 39 species, 33 genera and 6 subfamilies were identified. Crambinae, Evergestinae, Glaphyrinae, Odontiinae, Pyraustinae and Spilomelinae are subfamilies.

Collection of the Plant Protection Research Institute (PPRI), Ministry of Agriculture, Cairo University Faculty of Science Collection (CUC), Ain Shams University Faculty of Science Collection (ESUC), Alfieri, Al Azhar Collection University, Faculty of Agriculture (ALUC) and the Egyptian Entomological Society (EESC) collections are among the top five reference collections for Egyptian studies. A scientific description of the subfamily is provided. The taxonomic

classification and scientific name of this species were revised. Synonyms are given for each species.

Results and discussion

Superfamily Pyraloidea

Group: Crambinae

Family: Crambidae Latreille, 1810 (Crambid Snout Moths)

Subfamily: Acentropinae Stephens 1836

Paraponyx Hubner 1825

1. *Nymphula fuscomarginata* Bethune-Baker 1894 =
Paraponyx affinalis Guenée 1854

Oligostigma incommoda Butler, 1881, *Nymphula fuscomarginata* Bethune-Baker, 1894, *Nymphula alaicalis* Caradja, 1917.

Subfamily: Crambinae (Crambine Snout Moths)

Tribe Ancylolemiini

Ancylolomia Hubner 1825.

2. *Ancylolomia palpella* (Denis & Schiffermüller, 1775)

Ancylolomia affinis Rothschild, 1921, *Ancylolomia mesopotamica* Rebel, 1918, *Ancylolomia palpigeralis* Hübner, 1825, *Ancylolomia sovinskyi* Krulikowsky, 1909
Tinea palpella Denis & Schiffermüller, 1775.

3. *Ancylolomia paraetoniella* Turati 1924

Tribe Chilonini

4. *Chilo agamemnon* Bleszynski

5. *Chilo luteellus* (Motschulsky, 1866)

Schoenobius luteellus Motschulsky 1866, *Chilo boxanus* E. Hering 1903, *Chilo concolorellus* Christoph 1885, *Chilo dubia* Bethune-Baker 1894, *Chilo gensanellus* Leech 1889, *Chilo molydellus* Zerny in Osthelder 1935, *Chilo plumbosellus* Chrétien 1910, *Chilo pseudoplumbellus* Caradja 1932, *Chilo luteellus* Hampson 1896, *Chilo molybdellus* Osthelder 1941.

6. *Crambus numidella* Rebel 1903 = *Pediasia numidella* (Rebel 1903)**7. *Crambus pallidellus* Duponchel, 1836 = *Metacrambus pallidellus* (Duponchel, 1836)****Tribe: Crambini****8. *Orocrambus simplex* (Butler, 1877)***Chilo simplex* Butler, 1877**Tribe: Euchromiini Léger, Landry & Buss, 2019****9. *Euchromius cambridgei* (Zeller, 1867)***Argyria prototypa* Meyrick, 1935; *Eromene cambridgei* Zeller, 1867; *Eromene luciella* Chrétien, 1907; *Euchromius congruentella* (Amsel, 1958); *Euchromius ilkui* (Gozmány, 1959); *Euchromius luciella* (Chrétien, 1907); *Euchromius prototypa* (Meyrick, 1935); *Euchromius szijjartoi* (Gozmány, 1959); *Ommatopteryx congruentella* Amsel, 1958; *Ommatopteryx ilkui* Gozmány, 1959; *Ommatopteryx szijjartoi* Gozmány, 1959.**10. *Euchromius ocellus* (Haworth, 1811)***Euchromius ocellus* Hubner; *Palparia ocellus* Haworth, 1811; *Crambus cyrilli* Costa, 1829; *Phycis funiculella* Treitschke, 1832; *Eromene texana* Robinson, 1870; *Eromene gigantea* Turati, 1924; *Pseudoancylolomia qadrii* Ahmad, Zaidi & Kamaluddin, 1982.**11. *Euchromius ramburiellus* (Duponchel, 1836)***Crambus ramburiellus* Duponchel, 1836. *Crambus zonellus* Zeller, 1847; *Eromene islamella* Amsel, 1949; *Eromene ramburiella* var. *luteella* Caradja, 1910.**Subfamily: Evergestinae Marion, 1952****12. *Noctuella desertalis* Hubner, 1813 = *Evergestis desertalis* (Hubner 1813)***Pyrallis desertalis* Hubner, 1813; *Botys vandalusialis* Herrich-Schäffer, 1855; *Noctuella avicennae* Tams, 1925**13. *Cornifrons ulceratalis* Lederer, 1858***Scoparia seriziatalis* Oberthür, 1876; *Cornifrons argillacealis* Turati, 1924; *Cornifrons benignalis* Schawerda, 1918; *Cornifrons cretacealis* Turati, 1924; *Cornifrons intensioralis* Turati, 1924; *Cornifrons malignalis* Schawerda, 1918; *Cornifrons unicoloralis* Dumont, 1929.**Subfamily: Glaphyriinae Forbes, 1923****Tribe: Glaphyriini Forbes, 1923****14. *Hellula undalis* Fabricius, 1794***Phalaena undalis* Fabricius, 1794; *Pionea geyri* Rothschild, 1915; *Pyrallis lunulalis* Costa, 1836; *Scoparia alconalis* Walker, 1859; *Leucinodes exemptalis* Walker, 1866; *Evergestis occidentalis* Joannis, 1930; *Ashwania reniculus* Pajni & Rose, 1977; *Hellula undulalis* Hübner, 1825; *Crypsotidia parva* Rothschild, 1921; *Hellula reniculus* (Pajni & Rose, 1977).**Subfamily: Odontiinae Guenée, 1854****Tribe: Odontiini Guenée, 1854****15. *Cynaeda allardalis* Oberthür, 1876***Noctuella allardalis* Oberthür, 1876; *Orobena allardalis*

Oberthür, 1876.

16. *Cynaeda dentalis* (Denis & Schiffermüller, 1775)*Cynaeda dilutalis* de Lattin, 1959; *Cynaeda fulminans* (Fabricius, 1794); *Cynaeda occidentalis* Viette, 1958, *Cynaeda radiata* (Esper, 1796); *Cynaeda ramalis* (Fabricius, 1794); *Odontia dentalis* (Denis & Schiffermüller, 1775); *Pyrallis dentalis* Denis & Schiffermüller, 1775.**17. *Noctuella floralis* Hubner, 1809 = *Aporodes floralis* (Hübner, 1809)***Pyrallis floralis* Hübner, 1809; *Noctuella floralis* Hubner, 1809; *Eudorea transversalis* Moore, 1878; *Herbula meleagrisalis* Walker, 1859; *Pyrausta conversalis* Duponchel, 1834; *Pyrausta siculalis* Duponchel, 1833; *Noctuella floralis* var. *stygalis* Treitschke, 1829**18. *Tegostoma baphialis* Staudinger, 1871***Anthophilodes plumbiferalis* Christoph, 1877; *Tegostoma baphialis* f. *oleaginalis* Amsel, 1970; *Anthophilodes baphialis* Staudinger, 1871.**19. *Tegostoma kabylalis* Rebel, 1902 = *Aeschremon kabylalis* Rebel, 1902***Euschraemon nigronaevalis* Mabilite, 1906.**Subfamily: Pyraustinae****Tribe: Pyraustini Meyrick, 1890****20. *Achyra nudalis* (Hubner, 1796)***Achyra bipunctalis* (Duponchel, 1831); *Achyra interpunctalis* (Hübner, 1796); *Achyra ochromorpha* (Lower, 1901); *Achyra pauciferalis* (Walker, 1866); *Achyra unipunctalis* (Duponchel, 1831); *Achyra xanthalis* (Fawcett, 1916); *Phlyctenodes ochromorpha* Lower, 1902; *Pyrallis nudalis* Hübner, 1796; *Pionea xanthalis* Fawcett, 1917.**21. *Loxostege sticticalis* (Linnaeus, 1761)***Phalaena Pyralis sticticalis* Linnaeus, 1761; *Pyrallis fuscalis* Hübner, 1796; *Pyrallis lupulina* Clerck, 1764; *Botys lupulinalis* Guenée, 1854; *Phalaena Tortrix miana* O. F. Müller, 1764; *Pyrallis tetragonalis* Haworth, 1811; *Pyrallis sylvata* Panzer, 1804; *Loxostege sticticalis tenebrosa* Caradja, 1939; *Loxostege fuscalis* Hübner, 1796; *Loxostege lupulina* Clerck, 1759; *Loxostege tetragonalis* Haworth, 1811; *Eurycreon sticticalis* (Linnaeus, 1761); *Margaritia sticticalis* (Linnaeus, 1761); *Phalaena sticticalis* Linnaeus, 1761.**22. *Ostrinia erythralis* Hubner***Pionea erythralis* Hampson, 1913; *Eupolemarcha incensa* Meyrick, 1937; *Mecyna endochlora* Meyrick, 1935**23. *Ostrinia nubilalis* (Hubner, 1796)***Botys nubilalis* (Hübner, 1796); *Ostrinia glabralis* (Haworth, 1803); *Ostrinia mauretanica* Mutuura & Munroe, 1970; *Ostrinia persica* Mutuura & Munroe, 1970; *Ostrinia rubescens* (Krulikovsky, 1928); *Ostrinia silacealis* (Hübner, 1796); *Pyrallis nubilalis* Hübner, 1796; *Pyrausta nubilalis* (Hübner, 1796); *Uresiphita polygonalis* (Denis & Schiffermüller, 1775); *Pyrallis polygonalis* Denis and

Schiffermüller, 1775; *Mecyna polygonalis*; *Pyralis limbalis* Denis and Schiffermüller, 1775; *Uresiphita limbalis*; *Mecyna virescens* Butler, 1881; *Uresiphita aversalis* (Guenée, 1854); *Uresiphita consanguinalis* (Guenée, 1854); *Uresiphita deprivalis* (Walker, 1859); *Uresiphita diversalis* (Hübner, 1796); *Uresiphita extinctalis* Caradja, 1916; *Uresiphita gilvata* (Fabricius, 1794); *Uresiphita ochrocrossa* Clarke, 1971; *Uresiphita orientalis* (Fabricius, 1794); *Uresiphita teriadalis* (Guenée, 1854); *Uresiphita villicalis* (Hübner, 1826).

24. *Phlyctaenodes ustrinalis* (Christoph, 1894) = *Palepicorsia ustrinalis* (Christoph, 1877)

Botys ustrinalis Christoph, 1877; *Metasia emiralis* Oberthur, 1888; *Metasia excavatalis* Ragonot, 1892; *Palepicorsia palmalis* (Swinhoe, 1884); *Phlyctaenodes ustrinalis* (Christoph, 1877).

25. *Pyrausta aurata* (Scopoli, 1763)

Pyrausta deficiens Dufrene, 1957; *Pyrausta inciae* Koçak, 1981; *Botys purpuralis* var. *meridionalis* Staudinger, 1879.

26. *Pyrausta sanguinalis* (Linnaeus, 1767)

Phalaena sanguinalis Linnaeus, 1767; *Pyrausta sanguinalis priscalis* Caradja in Caradja & Meyrick, 1935; *Pyralis haematalis* Hübner, 1796; *Pyrausta auroralis* Zeller, 1847; *Pyrausta contigualis* Walker, 1901; *Pyrausta simplicialis* Bremer, 1864; *Pyrausta tristriatalis* Szent-Ivany & Uhrik-Mészáros, 1942; *Rhodaria sanguinalis* (Linnaeus, 1767).

27. *Pyrausta incoloralis* Guenee, 1854 = *Pyrausta testalis* (Fabricius, 1794) = *Hodebertia testalis* (Fabricius, 1794)

Botys incoloralis Guenee, 1854; *Botys perpendiculalis* Duponchel, 1833; *Hodebertia albidalis* (Walker, 1866); *Hodebertia incoloralis* (Guenée, 1854); *Hodebertia melonalis* (Walker, 1859); *Hodebertia nitetisalis* (Walker, 1859); *Hodebertia perpendiculalis* (Duponchel, 1833); *Hodebertia phyllidialis* Schaus, 1940; *Hodebertia putrescens* (Meyrick, 1934); *Hodebertia ruficostalis* (Lederer, 1855); *Margaronia putrescens* Meyrick, 1934; *Phalaena testalis* Fabricius, 1794; *Pyrausta incoloralis* (Guenée, 1854); *Botys melonalis* Walker, 1859; *Botys ruficostalis* Lederer, 1855; *Hodebertia testalis* (Fabricius, 1794); *Pyrausta odontogrammalis* Caradja, 1925; *Spilodes nitetisalis* Walker, 1859; *Botys perpendiculalis* Duponchel, 1833; *Pyrausta testalis* (Fabricius, 1794); *Uresiphita* Hubner (1825).

28. *Uresiphita polygonalis* Fabricius 1794 = *Uresiphita gilvata* (Fabricius 1794)

Uresiphita polygonalis ochrocrossa Clarke, 1971; *Uresiphita polygonalis* (Hübner, 1796); *Mecyna polygonalis* (Hübner, 1796); *Phalaena gilvata* Fabricius, 1794; *Pyralis diversalis* Hübner, 1796; *Pyralis limbalis* Denis & Schiffermüller, 1775; *Pyralis polygonalis* Hübner, 1796; *Pyralis rusticalis* Hübner, 1796; *Uresiphita gilvata ochrocrossa* (Clarke, 1971).

Subfamily: Spilomelinae Guenée, 1854

Tribe: Margaroniini Swinhoe & Cotes, 1889

29. *Synclera traducalis* Zeller 1852

Eudiotis traducalis Zeller, 1852; *Salbia achatinalis* Guenée, 1862; *Spilomela retinalis* Lederer, 1857.

30. *Antigastra catalaunalis* (Duponchel 1833)

Botys catalaunalis Duponchel, 1833; *Antigastra catalaunalis* ab. *sionensis* Caradja, 1929; *Botys venosalis* Walker, 1866.

31. *Diaphania indica* Saunders, 1851

Glyphodes (Phacellura) indica (lapsus); *Glyphodes (Phakellula) indica (lapsus)*; *Botys hyalinalis* Boisduval, 1833; *Diaphana indica (lapsus)*; *Diaphana (Phacellura) indica (lapsus)*; *iaphania (Margaronia) indica* (Saunders, 1851); *Endiotis hyalinata (lapsus)*; *Eudiotis indica* Saunders, 1851; *Eudiotis indica (lapsus)*; *Eudiotis capensis* Zeller, 1852; *Glyphodes intermedialis* Dognin, 1904; *Glyphodes indica* (Saunders, 1851); *Glyphodes (Phakellura) indica* (Saunders, 1851); *Margaronia hyalinata* Wolcott, 1936 (Linnaeus, 1767); *Margaronia indica* (Saunders, 1851); *Margaronia (Diaphania) indica* (Saunders, 1851); *Margaronia (Glyphodes) indica* (Saunders, 1851); *Margonna indica (lapsus)*; *Palpita indica* (Saunders, 1851); *Phacellura capensis (lapsus)*; *Phacellura gazorialis (lapsus)*; *Phacellura indica (lapsus)*; *Phakellura cepensis (lapsus)*; *Phakellura curcubitalis* Guenée, 1862; *Phakellura gazorialis* Guenée, 1854; *Phakellura indica* (Saunders, 1851); *Phakellura indicialis* Moore, 1867; *Phakellura zygaenalis* Guenée, 1854.

32. *Palpita unionalis* (Hubner 1796) = *Palpita vitrealis* (Rossi, 1794)

Palpita unionalis (Hübner, 1796); *Botys jucundalis* Lederer, 1863; *Botys quinquepunctalis* Boisduval, 1833; *Margarodes septempunctalis* Mabilie, 1880; *Margarodes transvisalis* Guenée, 1854; *Orphanostigma versicolor* Warren, 1896; *Phalaena vitrealis* Rossi, 1794; *Pyralis unionalis* Hübner, 1796; *Syngamia latimarginalis* (Walker, 1859).

Tribe: Steniini Guenée, 1854

33. *Metasia hymenalis* Guenee 1854

Tribe: Hydririni Minet, 1982

34. *Hydriris ornatalis* (Duponchel, 1832)

Asopia ornatalis Duponchel, 1832; *Antiercta ornatalis*; *Nymphula saturnalis* Treitschke, 1835; *Pyralis deciusalis* Walker, 1859; *Botys invenustalis* Walker, 1866; *Cataclysta fraterna* Butler, 1875; *Stenia pulchellalis* Mabilie, 1880; *Ercta orientalis* Yamanaka, 1972; *Nymphula bifascialis* Heeger, 1838.

Tribe: Spilomelini Guenée, 1854

35. *Bradina andresi* Rebel 1912 = *Cnaphalocrocis trapezalis* (Guenée, 1854) = *Marasmia trapezalis* (Guenée, 1854)

Salbia trapezalis Guenée, 1854; *Bradina andresi* Rebel, 1912;

Cnaphalocrocis bifurcalis Snellen, 1880; *Cnaphalocrocis trapezalis* (Guenée, 1854); *Botys convectalis* Walker, 1866; *Botys creonalis* Walker, 1859; *Botys neoclesalis* Walker, 1859; *Dolichosticha perinephes* Meyrick, 1886; *Botys suspicalis* Walker, 1859.

Tribe: Nomophilini Kuznetsov & Stekolnikov, 1979

Nomophila Hübner, 1825

36. *Nomophila noctuella* (Denis & Schiffermüller, 1775)

Pyralis hybridalis Hübner, 1796; *Stenopteryx hybridalis* (Hübner, 1796); *Stenopteryx noctuella* (Denis & Schiffermüller, 1775); *Tinea noctuella* Denis & Schiffermüller, 1775.

Tribe: Herpetogrammatini Mally, Hayden, Neinhuis, Jordal & Nuss, 2019

37. *Herpetogramma licarsisalis* Walker, 1859

Botys licarsisalis Walker, 1859; *Botys pharaxalis* Walker, 1859; *Botys immundalis* Walker, 1866; *Entephria fumidalis* Walker, 1866; *Botys serotinalis* De Joannis, 1889; *Botys abstrusalis* Walker, 1859.

Tribe: Hymeniini Swinhoe, 1900

38. *Hymenia recurvalis* (F., 1775) = *Spoladea recurvalis* (Fabricius, 1775)

Hymenia exodias Meyrick, 1904); *Hymenia recurvalis* Fabricius, 1775); *Nacoleia ancylosema* Dognin, 1909); *Phalaena fascialis* Stoll, 1782); *Phalaena recurvalis* Fabricius, 1775); *Spoladea albifacialis* (Boisduval, 1833); *Spoladea ancylosema* (Dognin, 1909); *Spoladea angustalis* (Fabricius, 1787); *Spoladea animalis* Guenée, 1854; *Spoladea diffascialis* (Hübner, 1825); *Spoladea exodias* (Meyrick, 1904); *Spoladea fascialis* (Cramer, 1782); *Spoladea formosana* (Shiraki, 1910); *Spoladea recurvella* (Zincken, 1918).

Tribe Udeaini

39. *Udea ferrugalis* (Hubner 1796)

Oeobia ferrugalis (Hübner, 1796); *Udea hypatialis* (Walker, 1859); *Udea martialis* (Guenée, 1854); *Udea obsoleta* (Costantini, 1923); *Pyralis ferrugalis* (Hübner, 1796); *Pyralis ferruginalis* (Rossi, 1794); *Pionea granjalis* Chrétien, 1925); *Pionea maculata* Costantini, 1923); *Pionea obsoleta* Costantini, 1923); *Scopula hypatialis* Walker, 1859); *Scopula martialis* Guenée, 1854); *Udea martialis f. fusca* Dufrane, 1960); *Udea martialis f. pallida* Dufrane, 1960).

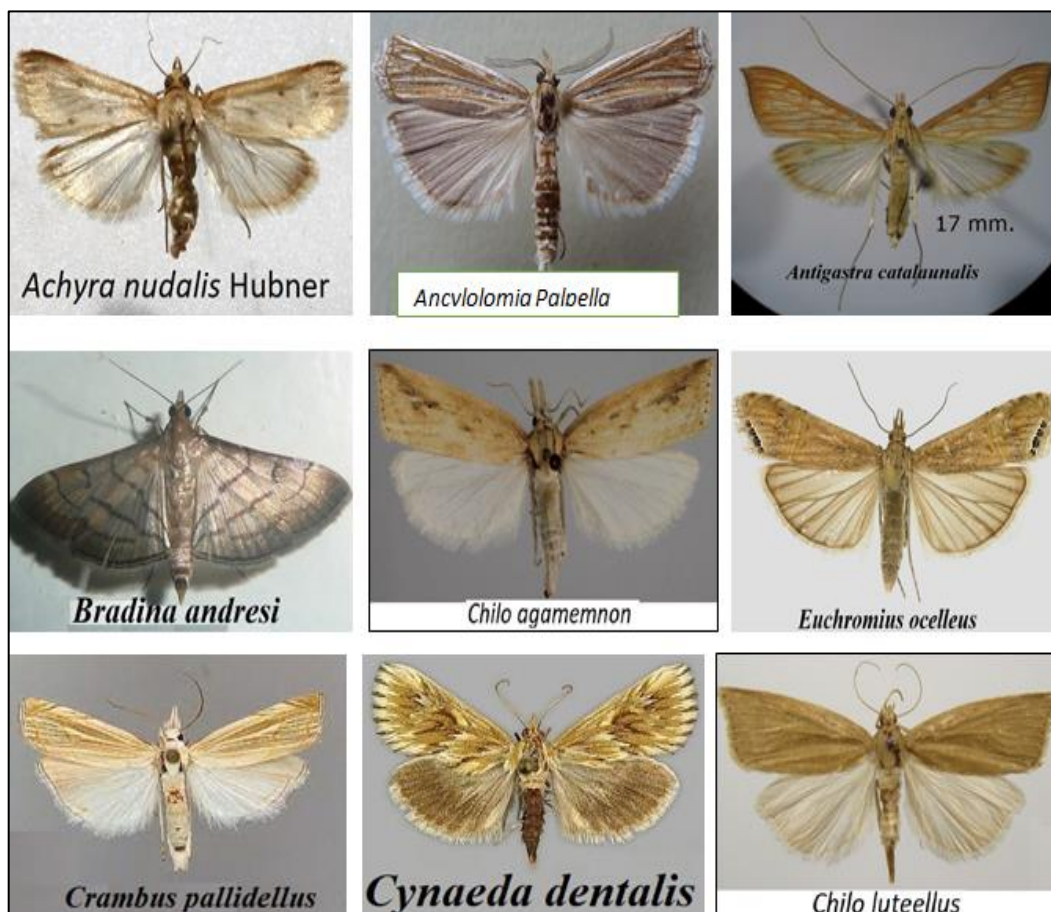


Fig 1

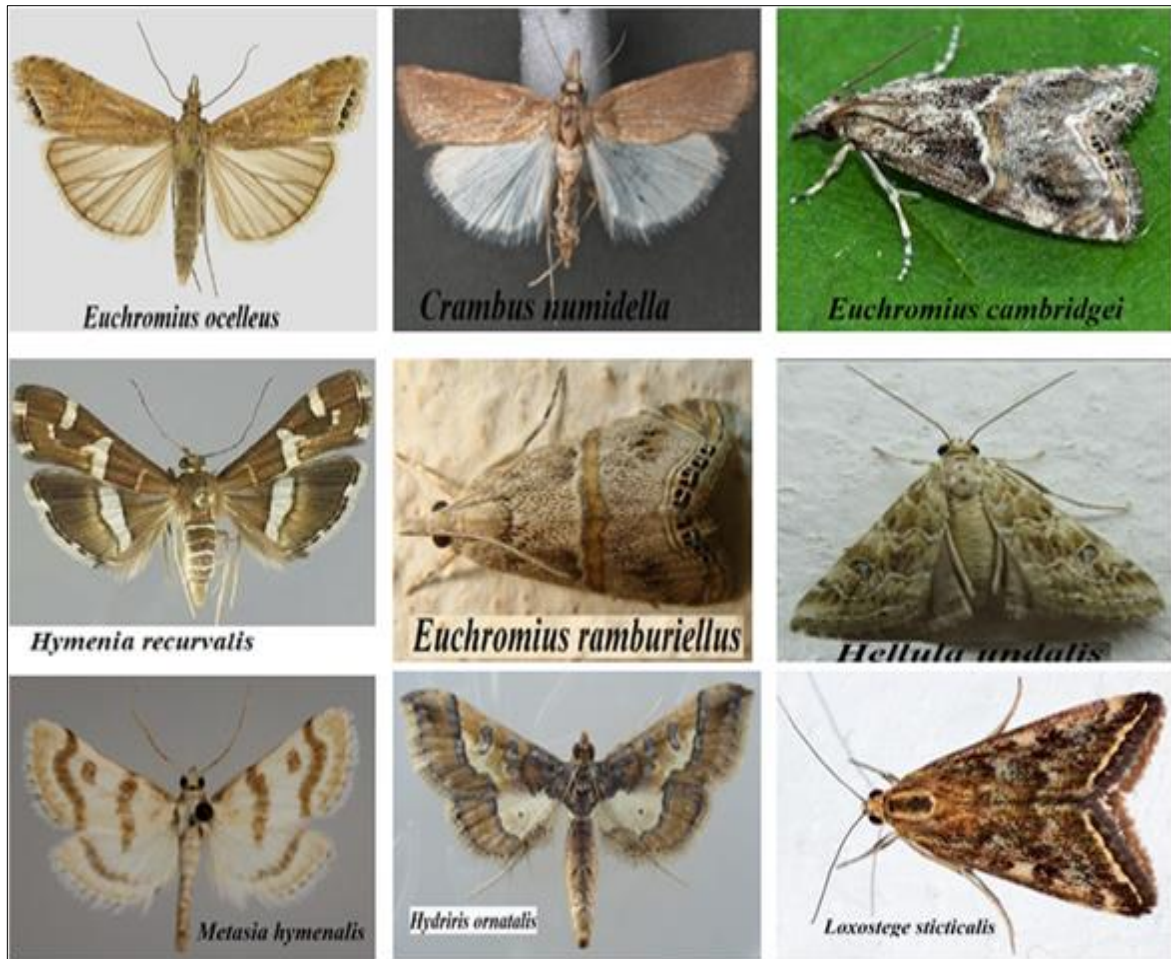


Fig 2

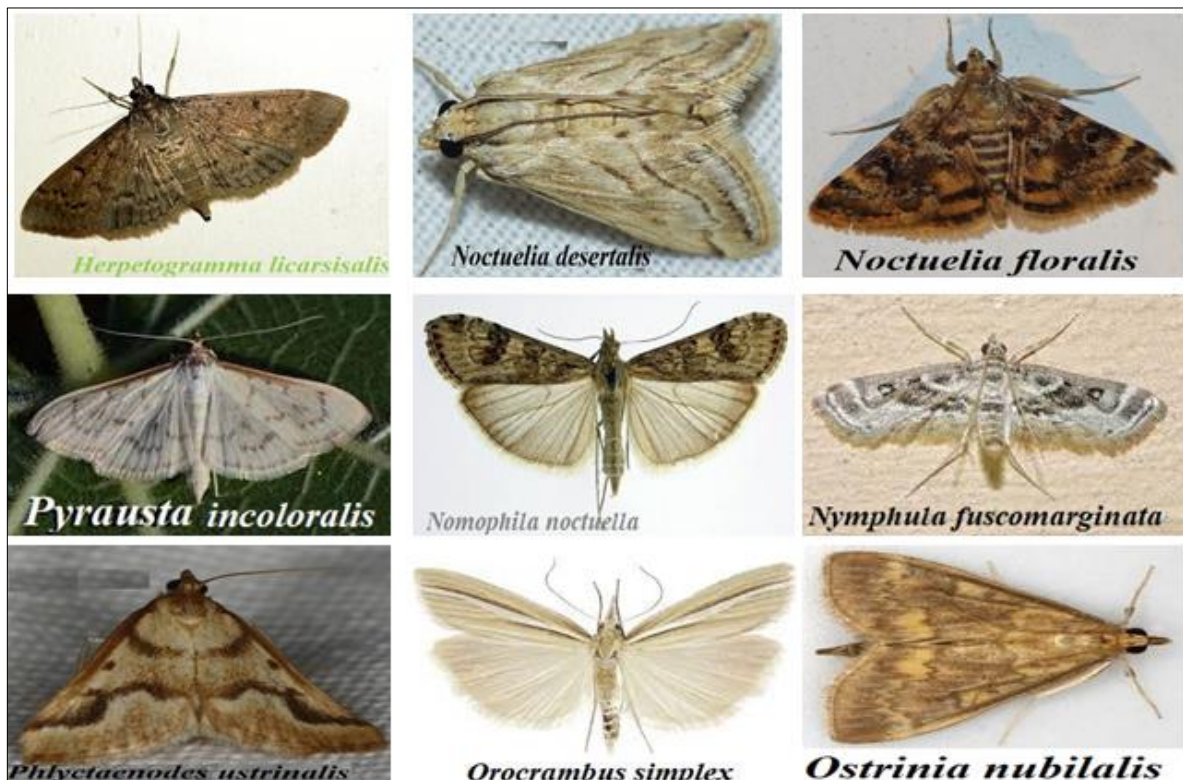


Fig 3

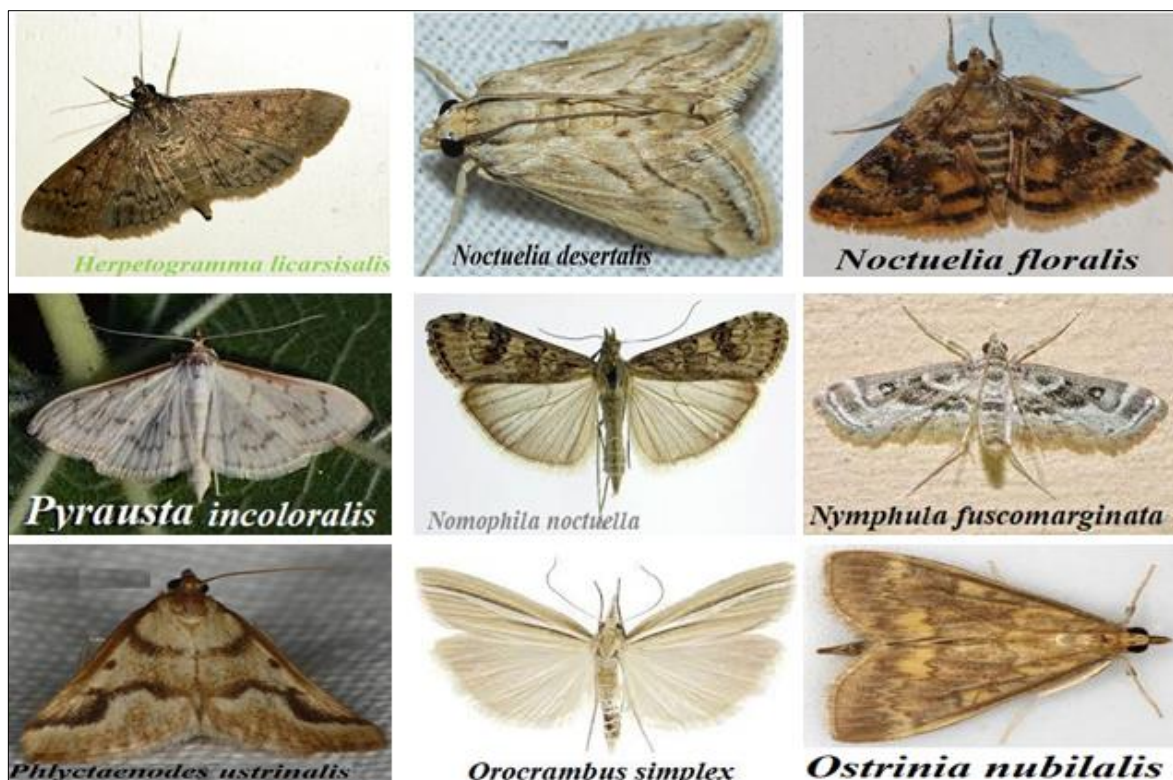


Fig 4

Conclusion

Family Crambidae (grass moths) consists of Only six subfamilies with 33 genera and 39 species are represented in Egypt. These subfamilies are Crambinae, Evergestinae, Glaphyrinae, Odontiinae, Pyraustinae and Spilomelinae. Scientific names of species have been updated by contacting the Collection of the Plant Protection Research Institute (PPRI), Ministry of Agriculture, Cairo University Faculty of Science Collection (CUC), Ain Shams University Faculty of Science Collection (ESUC), Alfieri, Al Azhar Collection University, Faculty of Agriculture (ALUC) and the Egyptian Entomological Society (EESC) collections are among the top five reference collections for Egyptian studies and museum taxonomists. The World of Natural History in Europe and America, also a research review and taxonomic reviews published on the World Scientific Web pages.

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