

## ARTIGO / ARTÍCULO / ARTICLE

### A faunistic study on the Pentatomoidea (Heteroptera) from the province of Isfahan, Iran.

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**Abstract:** This paper deals with the faunistic data on the superfamily Pentatomoidea (Heteroptera) from the province of Isfahan, Iran. In total 22 species belonging to the families Acanthosomatidae (1 species, 1 genus), Cydnidae (3 species, 3 genera), Pentatomidae (16 species, 11 genera), and Scutelleridae (2 species, 1 genus) were collected and identified.

**Key words:** Heteroptera, Acanthosomatidae, Cydnidae, Pentatomidae, Scutelleridae, fauna, Isfahan, Iran.

**Resumen:** Estudio faunístico de los Pentatomoidea (Heteroptera) de la provincial de Isfahán, Irán. En este trabajo se tratan los datos faunísticos sobre la superfamilia Pentatomoidea (Heteroptera) de la provincia de Isfahán, Irán. En total se capturaron e identificaron 22 especies pertenecientes a las familias Acanthosomatidae (1 especie, 1 género), Cydnidae (3 especies, 3 géneros), Pentatomidae (16 especies, 11 géneros) y Scutelleridae (2 especies, 1 género).

**Palabras clave:** Heteroptera, Acanthosomatidae, Cydnidae, Pentatomidae, Scutelleridae, fauna, Isfahán, Irán.

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## Introduction

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The Pentatomoidea is one of the most species-rich groups of terrestrial Heteroptera with 15 families, nearly 1,250 genera and approximately 7,200 species worldwide (Henry 2009). The Pentatomoidea are phytophagous, except for the pentatomid subfamily Asopinae which are predators. Some genera attack cereals (e.g. *Aelia* Fabricius, 1803, *Eurygaster* Laporte, 1833, *Mecidea* Dallas, 1851), others may destroy brassicaceous crops (e.g. *Eurydema* Laporte, 1833), while others are pests of fruit trees (e.g. *Mustha* Amyot & Serville, 1843, *Apodiphus* Spinola, 1837) (Grazia *et al.* 2008; Ghahari *et al.* 2014). Fifteen families including Acanthosomatidae, Canopidae, Cydnidae, Dinidoridae, Lestoniidae, Megarididae, Parastrachiidae, Pentatomidae, Phloeidae, Plataspididae, Saileriolidae, Scutelleridae, Tessaratomidae, Thaumastellidae, Thyreocoridae and Urostylididae are classified under the Pentatomoidea (Schuh & Slater 1995; Sweet & Schaefer 2002; Grazia *et al.* 2008), with the taxonomic level of two more families (Aphylidae and Cyrtocoridae) being disputed (Kment *et al.* 2012).

The fauna of Iranian Heteroptera was studied quite well and all the data were catalogued (see Ghahari *et al.* 2009a, b, 2010a, b, 2012a, b, 2013a, b; Ghahari & Moulet 2012, 2013; Ghahari & Heiss 2012; Ghahari & Cherot 2014). About the superfamily Pentatomoidea, a total of 329 species have been reported from Iran so far (Ghahari *et al.* 2014). The aim of this paper is to increase the knowledge of the Pentatomoidea fauna in some regions of the province of Isfahan (32.6577°N 51.6692°E), located in the center of the country and covering an area of approximately 107,027 km<sup>2</sup>.

The province has a moderate and dry climate on the whole, ranging between 40.6°C and 10.6°C on a cold day in the winter season. The average annual temperature has been recorded as 16.7°C and the annual rainfall on an average has been reported as 116.9 mm.

## Material and methods

In this research, the materials were collected by sweeping net during different seasons of 2012 - 2013 from some regions of the province of Isfahan, located in central Iran. Additionally, the materials deposited in the collections of some colleagues and also insect collections of some branches of Islamic Azad University were studied. The classification, nomenclature, synonymies and distribution suggested by Rider (2011), Aukema *et al.* (2013) and Ghahari *et al.* (2014) have been followed.

In total, 22 species of Pentatomoidea within the families Acanthosomatidae, Cydnidae, Pentatomidae, Scutelleridae were collected and identified from the province of Isfahan. The list of species is given below with distributional data.

## Results

### Family Acanthosomatidae Signoret, 1864

#### Subfamily Acanthosomatinae Signoret, 1864

#### Genus *Acanthosoma* Curtis, 1824

#### *Acanthosoma haemorrhoidale haemorrhoidale* (Linnaeus, 1758)

*Cimex haemorrhoidale* Linnaeus, 1758: 444

*Cimex bidens* Sulzer, 1761: 27 (non Linnaeus, 1758)

*Cimex sanguineotuberculatus* Goeze, 1778: 275

*Cimex pabulinus* Harris, 1780: 88

*Cimex pungens* Geoffroy in Fourcroy, 1785: 215

*Cimex carunculus* Gmelin, 1790: 2135

*Cimex retusus* Thunberg, 1822: 5

*Acanthosoma haemorrhoidale* var. *inhabilis* Schumacher in Schirmer, 1911: 673

*Acanthosoma stadleri* Stichel, 1946: 3

**Material examined: Province of Isfahan:** Shahreza, 1828 m, 32°00'N 51°52'E, 2♀♀, April 2013.

**Distribution outside Iran:** Euro-Siberian.

### Family Cydnidae Billberg, 1820

#### Subfamily Amaurocorinae Wagner, 1963

#### Tribe Amaurocorini Wagner, 1963

#### Genus *Amaurocoris* Stål, 1865

#### *Amaurocoris curtus* (Brullé, 1839)

*Cydhus curtus* Brullé, 1839: 81 (as new species)

*Amaurocoris curtus*: Lethierry & Severin 1893: 76 (new combination)

**Material examined: Province of Isfahan:** Isfahan, 1551 m, 32°16'N 52°26'E, 1♀, May 2013.

**Distribution outside Iran:** North and tropical Africa (incl. Cape Verde Islands), Near East, Caucasus, Central Asia, Arabian Peninsula, Pakistan; doubtful in India.

**Subfamily Cydninae Billberg, 1820**

**Tribe Cydnini Billberg, 1820**

**Genus *Cydnus* Fabricius, 1803**

***Cydnus aterrimus* (Forster 1771)**

*Cimex aterrimus* Forster, 1771: 71 (as new species)

*Cydnus aterrimus*: Dallas 1851: 121 (new combination)

*Cydnus infernalis* Kiritschenko 1966: 799 (as new species; the synonymy by Lis 1996: 405)

**Material examined: Province of Isfahan:** Chadegan, 2111 m, 32°46'N 50°38'E, 1♀, May 2012; Khansar, 2241 m, 33°15'N 50°20'E, 1♂, 2♀♀, September 2013.

**Distribution outside Iran:** Euro Siberian (excl. Scandinavia), Indian subcontinent; doubtful in tropical Africa (Congo, Senegal); introduced in South Africa, USA, West Indies.

**Tribe Geotomini Wagner, 1963**

**Genus *Byrsinus* Fieber, 1860**

***Byrsinus pilosulus* (Klug, 1845)**

*Cydnus pilosulus* Klug, 1845: [10] (as new species)

*Byrsinus pilosulus*: Lis 1993b: 90 (new combination)

**Material examined: Province of Isfahan:** Shahreza, 1828 m, 32°00'N 51°52'E, 1♀, April 2013; Khansar, 2241 m, 33°15'N 50°20'E, 1♀, September 2013.

**Distribution outside Iran:** Mediterranean basin, Central Asia, Arabian Peninsula, Indian subcontinent; Mauritania, Senegal, Cape Verde Islands.

**Family Pentatomidae Leach, 1815**

**Subfamily Asopinae Amyot & Serville, 1843**

**Genus *Zicrona* Amyot & Serville, 1843**

***Zicrona caerulea* (Linnaeus, 1758)**

*Cimex caeruleus* Linnaeus, 1758: 445

*Cimex chalybeus* Gmelin, 1790: 2148

*Pentatoma concinna* Westwood, 1837: 39

*Pentatoma violacea* Westwood, 1837: 39

*Zicrona illustris* Amyot & Serville, 1843: 87

*Zicrona cuprea* Dallas, 1851: 108

**Material examined: Province of Isfahan:** Kashan, 933 m, 34°00'N 51°20'E, 1♀, May 2012.

**Distribution outside Iran:** Palearctic, Oriental and Ethiopian regions, North America.

**Subfamily Pentatominae Leach, 1815**

**Tribe Aelini Douglas & Scott, 1865**

**Genus *Aelia* Fabricius, 1803**

***Aelia acuminata* (Linnaeus, 1758)**

*Cimex acuminatus* Linnaeus, 1758: 446

*Cimex rostratus* De Geer, 1773: 271

*Cimex tessarophthalmus* Schrank, 1781: 277

*Aelia neglecta* Dallas, 1851: 223  
*Aelia burmeisteri* Küster, 1852: 393  
*Aelia pallida* Küster, 1852: 394  
*Aelia rostrata* Mulsant & Rey, 1866: 134 (non Boheman, 1852)  
*Aelia turanica* Horváth, 1895: 221  
*Aelia punctiventris* Horváth, 1911: 100  
*Aelia acuminata* var. *annulipes* Zangheri, 1934: 28  
*Aelia acuminata* var. *nigripes* Wagner, 1938: 9  
*Aelia baluchistanensis* Ahmad & Zaidi, 1988: 457

**Material examined: Province of Isfahan:** Semirom, 2457 m, 31°25'N 51°35'E, 2♂♂, 3♀♀, September 2013; Golpayegan, 1814 m, 33°30'N 50°20'E, 1♂, April 2012; Shahreza, 1828 m, 32°00'N 51°52'E, 2♀♀, April 2013.

**Distribution outside Iran:** Euro-Siberian, Pakistan.

#### ***Aelia furcula* Fieber, 1868**

*Aelia furcula* Fieber, 1868: 472  
*Aelia simillima* Reuter, 1900: 233

**Material examined: Province of Isfahan:** Khansar, 2241 m, 33°15'N 50°20'E, 2♀, September 2013; Kashan, 933 m, 34°00'N 51°20'E, 1♂, May 2012.

**Distribution outside Iran:** Ponto-Mediterranean, Central Asia, northwestern China.

#### ***Aelia virgata* (Herrich-Schaeffer, 1841)**

*Cimex virgatus* Herrich-Schaeffer, 1841: 67

**Material examined: Province of Isfahan:** Isfahan, 1551 m, 32°16'N 52°26'E, 2♀♀, May 2013.

**Distribution outside Iran:** Ponto-Mediterranean, Central Asia, Near East.

### **Tribe Carpocorini Mulsant & Rey, 1858**

#### **Genus *Antheminia* Mulsant & Rey, 1866**

#### ***Antheminia lunulata* (Goeze, 1778)**

*Cimex lunulata* Goeze, 1778: 275  
*Cimex lynx* Fabricius, 1794: 110  
*Mormidea pusio* Fieber, 1861: 336 (non Kolenati, 1846)  
*Carpocoris lynx* var. *decolor* Ferrari, 1874: 129  
*Carpocoris* (*Antheminia*) *lunulatus* var. *pallidior* Kirkaldy, 1909: 57  
*Carpocoris lunulatus* var. *nigricornis* Kormilev, 1936: 36  
*Codophila* (*Antheminia*) *lunulata* var. *eckerleini* Tamanini: 598  
*Antheminia lunulata* var. *robusta* Putshkov, 1965: 261

**Material examined: Province of Isfahan:** Ardestan, 1235 m, 33°27'N 52°26'E, 1♀, May 2013.

**Distribution outside Iran:** Euro-Siberian, known in Algeria and Pakistan.

#### **Genus *Carpocoris* Kolenati, 1846**

#### ***Carpocoris* (*Carpocoris*) *coreanus* Distant, 1899**

*Carpocoris coreanus* Distant, 1899: 436  
*Carpocoris iranus* Tamanini, 1958: 169

**Material examined: Province of Isfahan:** Shahin-Shahr, 1662 m, 32°52'N 51°34'E, 1♂, 2♀♀, May 2012; Khansar, 2241 m, 33°15'N 50°20'E, 1♂, September 2013.

**Distribution outside Iran:** Russia, Caucasian Region, Central Asia, Near East, China, Pakistan.

***Carpocoris (Carpocoris) fuscispinus (Boheman, 1849)***

*Cimex fuscispinus* Boheman, 1851: 241  
*Pentatoma hahni* Flor, 1856: 60  
*Carpocoris fuscispinus* var. *rugicollis* Seabra, 1925: 10  
*Carpocoris fuscispinus* var. *subrufus* Seabra, 1925: 10  
*Carpocoris fuscispinus flavescens* Seabra, 1925: 11  
*Carpocoris fuscispinus* var. *infuscatus* Seabra, 1925: 11

**Material examined: Province of Isfahan:** Shahreza, 1828 m, 32°00'N 51°52'E, 1♀, April 2013; Semirrom, 2457 m, 31°25'N 51°35'E, 1♂, 2♀♀, September 2013.

**Distribution outside Iran:** Palaeartic, Indian subcontinent.

***Carpocoris (Carpocoris) purpureipennis (De Geer, 1761)***

*Cimex purpureipennis* De Geer, 1761: 258  
*Cimex nigricornis* Fabricius, 1775: 701  
*Cimex porphyropterus* Gmelin, 1790: 2147  
*Carpocoris (Codophila) tarsata* Mulsant & Rey, 1866: 246  
*Carpocoris nigricornis* var. *pyrosoma* Westhoff, 1884: 44  
*Carpocoris purpureipennis* var. *sexmaculatus* Péneau, 1921: 56  
*Carpocoris pudicus* var. *fumarius* Stichel, 1924: 202  
*Carpocoris purpureipennis* var. *maculata* Tamanini, 1958: 348  
*Carpocoris purpureipennis* var. *japonicus* Tamanini, 1959: 126

**Material examined: Province of Isfahan:** Kashan, 933 m, 34°00'N 51°20'E, 1♂, 1♀, May 2012; Shahreza, 1828 m, 32°00'N 51°52'E, 1♀, April 2013.

**Distribution outside Iran:** Palaeartic, Indian subcontinent (Pakistan).

**Genus *Dolycoris* Mulsant & Rey, 1866*****Dolycoris baccharum (Linnaeus, 1758)***

*Cimex baccharum* Linnaeus, 1758: 445  
*Cimex verbasci* De Geer, 1773: 257  
*Cimex subater* Harris, 1780: 90  
*Cimex albidus* Gmelin, 1790: 2161  
*Aelia depressa* Westwood, 1837: 32  
*Pentatoma confusa* Westwood, 1837: 8  
*Pentatoma inconcisa* Walker, 1867: 301  
*Dolycoris baccharum* var. *brevipilis* Reuter, 1891: 202  
*Dolycoris baccharum* var. *japonicum* Furukawa, 1930: 54

**Material examined: Province of Isfahan:** Semirrom, 2457 m, 31°25'N 51°35'E, 1♂, 2♀♀, September 2013; Chadegan, 2111 m, 32°46'N 50°38'E, 2♂♂, 3♀♀, May 2012; Golpayegan, 1814 m, 33°30'N 50°20'E, 1♂, 1♀, April 2012; Ardestan, 1235 m, 33°27'N 52°26'E, 1♂, 1♀, May 2013; Shahreza, 1828 m, 32°00'N 51°52'E, 2♀♀, April 2013; Isfahan, 1551 m, 32°16'N 52°26'E, 3♂♂, 3♀♀, May 2013.

**Distribution outside Iran:** Palaeartic, Indian subcontinent.

**Genus *Codophila* Mulsant & Rey, 1866*****Codophila varia (Fabricius, 1787)***

*Cimex varius* Fabricius, 1787: 284  
*Cimex lunula* Fabricius, 1794: 94  
*Cimex eryngii* Germar, 1814: 21  
*Carpocoris bilunulata* Kolenati, 1846: 51  
*Carpocoris bilunulata* var. *persica* Kolenati, 1846: 51  
*Carpocoris bilunulata* var. *nubica* Kolenati, 1846: 51  
*Pentatoma laborans* A. Costa, 1847: 21  
*Pentatoma distinguenda* A. Costa, 1847: 21  
*Codophila varia* var. *mancinii* Tamanini, 1961: 600  
*Codophila varia longicornis* Fuente, 1970: 106

**Material examined: Province of Isfahan:** Isfahan, 1551 m, 32°16'N 52°26'E, 2♀♀, May 2013.

**Distribution outside Iran:** Europe (except Great Britain, Scandinavia), North Africa, Near East, Central Asia.

**Tribe Halyini Amyot & Serville, 1843**

**Genus *Apodiphus* Spinola, 1837**

***Apodiphus amygdali* (Germar, 1817)**

*Halys amygdali* Germar, 1817: 284

*Halys hellenica* Lefebvre, 1831: 24

*Halys exsculpta* Burmeister, 1835: 362

**Material examined: Province of Isfahan:** Golpayegan, 1814 m, 33°30'N 50°20'E, 1♀, April 2012; Semrom, 2457 m, 31°25'N 51°35'E, 1♂, 1♀, September 2013.

**Distribution outside Iran:** Northwestern Mediterranean basin from Italy, Caucasus, Central Asia, Near East.

**Genus *Mustha* Amyot & Serville, 1843**

***Mustha spinosula* (Lefebvre, 1831)**

*Halys spinosula* Lefebvre, 1831: 21

*Mustha serrata* Amyot & Serville, 1843: 106 (non Fabricius, 1794)

**Material examined: Province of Isfahan:** Shahin-Shahr, 1662 m, 32°52'N 51°34'E, 1♀, May 2012.

**Distribution outside Iran:** Ponto-Mediterranean from Balkanic Region to Azerbaijan, Iran and Turkmenistan, Near East (Syria, Israel), Sinai and probably elsewhere in Egypt.

**Tribe Pentatomini Leach, 1815**

**Genus *Acrosternum* Fieber, 1860**

***Acrosternum millierei* (Mulsant & Rey, 1866)**

*Nezara millierei* Mulsant & Rey, 1866: 290

*Aethemenes forbesi* Distant, 1884: 460

*Nezara millierei* var. *putoni* Vidal, 1949: 173

*Acrosternum millierei* var. *vidali* Stichel, 1961: 645

**Material examined: Province of Isfahan:** Ardestan, 1235 m, 33°27'N 52°26'E, 1♂, May 2013.

**Distribution outside Iran:** Mediterranean basin (Canary Islands), Near East, Central Asia (Iran, Iraq, Kuwait), Arabian Peninsula extending to tropical Africa.

**Tribe Strachiini Mulsant & Rey, 1866**

**Genus *Eurydema* Laporte, 1833**

***Eurydema (Eurydema) ornata* (Linnaeus, 1758)**

*Cimex ornatus* Linnaeus, 1758: 446

*Cimex festivus* Linnaeus, 1767: 723

*Pentatoma pictum* Herrich-Schaeffer, 1833: 12

*Pentatoma decoratum* Herrich-Schaeffer, 1833: 14

*Strachia herbacea* Hahn, 1835: 13 (non Herrich-Schaeffer, 1833)

*Strachia pustulata* Fieber, 1837: 152

**Material examined: Province of Isfahan:** Kashan, 933 m, 34°00'N 51°20'E, 2♀♀, May 2012; Chadeqan, 2111 m, 32°46'N 50°38'E, 3♀♀, May 2012.

**Distribution outside Iran:** Palaearctic, though not in Scandinavia, Korea, or Japan; Indian subcontinent, Ethiopia.

***Eurydema (Eurydema) putoni* Jakovlev, 1877**

*Strachia putoni* Jakovlev, 1877: 84  
*Strachia adusta* Jakovlev, 1877: 86  
*Strachia distincta* Jakovlev, 1879: 44  
*Strachia colorata* Jakovlev, 1882: 352  
*Eurydema formosum* Puton, 1895: 83  
*Eurydema formosa* var. *superstes* Horváth, 1917: 376  
*Eurydema formosa* var. *hypoleuca* Horváth, 1917: 376  
*Eurydema formosa* var. *gemmata* Kiritschenko, 1922: 11  
*Eurydema putoni* var. *pauperatum* Kiritschenko, 1922: 11  
*Eurydema putoni* var. *zarudnyi* Kiritschenko, 1922: 11

**Material examined: Province of Isfahan:** Isfahan, 1551 m, 32°16'N 52°26'E, 2♀♀, May 2013.

**Distribution outside Iran:** Ponto-Mediterranean, Near East and southern Russia.

**Subfamily Podopinae Amyot & Serville, 1843**

**Tribe Graphosomatini Mulsant & Rey, 1865**

**Genus *Graphosoma* Laporte, 1833**

***Graphosoma (Graphosoma) lineatum lineatum* (Linnaeus, 1758)**

*Cimex lineatus* Linnaeus, 1758: 442  
*Cimex nigrolineatus* Fabricius, 1781: 341  
*Tetyra schangini* Gebler, 1817: 323  
*Scutellera lineata* var. *flavipes* Mulsant & Rey, 1865: 99  
*Graphosoma lineatum* var. *reducta* Horváth, 1901: 470

**Material examined: Province of Isfahan:** Ardestan, 1235 m, 33°27'N 52°26'E, 2♂♂, 1♀, May 2013; Chadegan, 2111 m, 32°46'N 50°38'E, 1♀, May 2012; Shahreza, 1828 m, 32°00'N 51°52'E, 1♂, April 2013; Golpayegan, 1814 m, 33°30'N 50°20'E, 2♀♀, April 2012; Ardestan, 1235 m, 33°27'N 52°26'E, 2♂♂, 2♀♀, May 2013; Shahin-Shahr, 1662 m, 32°52'N 51°34'E, 2♀♀, May 2012.

**Distribution outside Iran:** According to Dusoulier & Lupoli (2006) *G. lineatum* and *G. italicum* are two separate species, but according to Péricart (2010) they are subspecies (i.e. *G. l. italicum* and *G. l. lineatum*). Péricart (2010) states that *G. l. italicum* is an European species (north of Mediterranean basin) while *G. l. lineatum* is a more southern species (north Africa); eastwards it is difficult to separate the distribution areas of the two taxa. According to Aukema & Rieger (2006) and Aukema *et al.* (2013) only one species exists (*G. lineatum*); these last authors also cite an overlooked paper by Wagner (1956) to whom both taxa only differ by the width of the black dorsal stripes (a somatic, not specific character!).

**Family Scutelleridae Leach, 1815**

**Subfamily Eurygastrinae Amyot & Serville, 1843**

**Tribe Eurygastrini Amyot & Serville, 1843**

**Genus *Eurygaster* Laporte, 1833**

***Eurygaster integriceps* Puton, 1881**

*Eurygaster cognatus* Westwood, 1837: 11 (*nomen oblitum*)  
*Eurygaster orientalis* Westwood, 1837: 11 (*nomen oblitum*)  
*Eurygaster hottentota* var. *obliqua* Kolenati, 1846: 12

*Eurygaster maurus* var. *nigra* Fieber, 1861: 370  
*Eurygaster maurus* var. *signata* Fieber, 1861: 370  
*Eurygaster integriceps* Puton, 1881: 119

**Material examined: Province of Isfahan:** Golpayegan, 1814 m, 33°30'N 50°20'E, 2♂♂, 4♀♀, April 2012; Chadegan, 2111 m, 32°46'N 50°38'E, 1♂, 5♀♀, May 2012; Shahin-Shahr, 1662 m, 32°52'N 51°34'E, 2♂♂, 3♀♀, May 2012; Shahreza, 1828 m, 32°00'N 51°52'E, 2♂♂, 3♀♀, April 2013; Ardestan, 1235 m, 33°27'N 52°26'E, 3♂♂, 2♀♀, May 2013; Kashan, 933 m, 34°00'N 51°20'E, 3♀♀, May 2012.

**Distribution outside Iran:** Northeastern Mediterranean basin (from Italy; not in France nor Spain), not in Cyprus, Caucasus, Central Asia extending to China, Near East, Egypt, Pakistan.

### ***Eurygaster maura* (Linnaeus, 1758)**

*Cimex maurus* Linnaeus, 1758: 441  
*Cimex cinereus* Goeze, 1778: 276  
*Tetyra picta* Fabricius, 1803: 136

**Material examined: Province of Isfahan:** Ardestan, 1235 m, 33°27'N 52°26'E, 1♂, 3♀♀, May 2013; Shahin-Shahr, 1662 m, 32°52'N 51°34'E, 4♀♀, May 2012; Golpayegan, 1814 m, 33°30'N 50°20'E, 1♂, 3♀♀, April 2012; Shahreza, 1828 m, 32°00'N 51°52'E, 2♂♂, 2♀♀, April 2013.

**Distribution outside Iran:** European, the Maghreb extending to Central Asia (Kazakhstan, Turkmenistan) and Near East.

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