

Saltcedar scale insects (Homoptera: Coccoidea) and their parasitoids (Hymenoptera, Chalcidoidea) in Middle Asia

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According to published data (Sinadsky,1968; Bazarov and Shmelev, 1968; Myartseva, 1986,1995; Danzig, 1993; Kovalev, 1995), the world fauna of oligophagous scale insects on saltcedar (*Tamarix* spp.) includes 18 species. The Middle Asian fauna on *Tamarix* actually comprises 14 species of phytophagous insects belonging to four families of Coccoidea (Table 1).

Table 1. Scale insects on saltcedar known in Middle Asia

Families and species	Turkmenistan	Tajikistan	Uzbekistan	Kyrgyzstan	Kazakhstan
Fam. Pseudococcidae					
<i>Trabutina minor</i> Green	-	+	+	-	-
<i>T. serpentina</i> Green	+	+	+	+	+
<i>T. bogdanovicatkovi</i> Borchs.	-	-	+	-	-
<i>T. crassispinosa</i> Borchs.	+	-	-	-	-
<i>T. mannipara</i> Ehr.	+	+	+	-	-
<i>Trabutinella tenax</i> Borchs.	-	+	-	-	-
Fam. Eriococcidae					
<i>Acanthococcus orbiculus</i> Mat.	-	-	-	-	+
<i>A. gracilispinus</i> Borchs.et Mat.	-	-	-	-	+
<i>Neoacanthococcus tamaricicola</i> Borchs.	+	-	-	-	-
Fam. Asterolecaniidae					
<i>Trachycoccus tenax</i> Borchs.	-	+	-	-	-
Fam. Diaspididae					
<i>Adiscodiaspis tamaricicola</i> Mal.	+	+	+	+	+
<i>Chionaspis etrusca</i> Leon.	+	+	+	+	+
<i>Cryptoparlatoareopsis halli</i> Bod.	+	+	+	-	-
<i>Nilotaspis isis</i> Hall	+	+	-	-	-

All these species have specific trophic connections as they are oligophagous insects living on the closely related species of *Tamarix*. *Adiscodiaspis tamaricicola* was found to live on the plants from two other genera of Tamaricaceae only. Evidently, this list of phytophagous scale insects on saltcedar in Middle Asia was rather complete as there were no reports on the new Coccoidea on *Tamarix* during the last 30 years. In Turkmenistan the mealybug *Trabutina crassispinosa* together with the scales *Adiscodiaspis tamaricicola* and *Chionaspis etrusca* were found to be the more noticeable and constant phytophagous Coccoidea species on *Tamarix ramosissima*. *T. crassispinosa* is the most perspective for practical and testing breeding. For the introduction and acclimatization of phytophagous insects against the weed plant *Tamarix ramosissima* it is necessary to take into consideration the local fauna of their natural enemies,especially parasitoids, to avoid catching them in the new locations together with their host (DeLoach, Gerling , Fornasari et al., 1996). The list of parasitoid species reared from saltcedar scale insects as well as their distribution is represented in the Table 2.

As shown in the Table 2, parasitoids reared from 8 species of saltcedar scale insects in Middle Asia belong to families Encyrtidae and Aphelinidae: 14 and 5 species, accordingly. Similar to the fauna of their hosts, the species composition of parasitic Hymenoptera was turned out to be extremely specific. Its analysis has shown that 13 species of chalcid wasps belonged to primary parasitoids and 6 species to the secondary ones, or hyperparasitoids. Primary parasitoids are represented by the monophagous insects (10) and oligophagous ones (3) parasitizing the closely related congeneric host species. They comprise 68.4% of parasitoid fauna. Alternative hosts of these parasitoids are hitherto unknown. Thus, the fauna of encyrtids and aphelinids with the similar very high specificity level of parasitism was originated on scale insects as the specific phytophages of saltcedar.

Table 2. Fauna of parasitoids reared from saltcedar scale insects in Middle Asia

Families and species	Distribution
Family Encyrtidae	
<i>Anagyrus tamaricicola</i> Trjapitzin	Turkmenistan, Daghestan, Georgia
<i>Leptomastidea bereketi</i> Myartseva	Turkmenistan
<i>L.turkmenica</i> (Myartseva)	Turkmenistan
<i>L.enigmatica</i> (Trjapitzin)	Turkmenistan, Algeria
<i>Aschitus naiacocci</i> Trjapitzin	Turkmenistan
<i>A.neocanthococci</i> Myartseva	Turkmenistan
<i>Aphyculus trabutinae</i> Myartseva	Turkmenistan, Uzbekistan
<i>A.tamaricicola</i> Myarts. et Trjapitzin	Turkmenistan
<i>Discodes tugaiensis</i> Myartseva	Turkmenistan, Uzbekistan
<i>D.tamaricicola</i> Sugonjaev et Babaev	Tadjikistan
<i>Echthroplexiella tobiassi</i> Myartseva	Turkmenistan
<i>Prochiloneurus bolivari</i> Mercet	Palaeartic
<i>P.pulchellus</i> Silvestri	Palaeartic, Africa
<i>Cheiloneurus claviger</i> Thomson	Palaeartic
Family Aphelinidae	
<i>Coccobius curbani</i> Myartseva	Turkmenistan
<i>C.sumbarensis</i> Myartseva	Turkmenistan
<i>Marietta picta</i> (Andre)	Palaeartcis, Nearctic
<i>M.karakalensis</i> Myartseva	Turkmenistan
<i>Ablerus chrysomphali</i> Ghesquiere	Turkmenistan, Georgia, Armenia, Africa

According to the analysis of certain places where parasitoids of saltcedar scale insects are discovered, it is possible to make conclusion about still insufficient attention to the problem of parasitoids. The present situation with their study in different regions is far from complication, excluding Turkmenistan. They are undoubtedly distributed in the natural sites of their hosts in other regions as well; thus, their fauna in other habitations of scale insects on *Tamarix* is probably composed by the same or other local chalcid species.

References

- Bazarov B.B., Shmelev G.P., 1968.** The fauna of scales inhabiting the tamarisk of Middle Asia. *Izvestia Akad. Nauk Tadj.SSR.Otdelenie biol nauk.* 1(30), pp.44-48.
- Danzig E.M., 1993.** Fauna Rossii. Rhynchota. Scale insects (Coccinea). Fam. Phoenococcidae and Diaspididae. *Leningrad, Nauka, Nov.Ser., v. 10, n.144.* 452 p.
- DeLoach C.J., Gerling D., Fornasari L. et al., 1996.** Biological control programme against saltcedar (*Tamarix* spp.) in the United States of America: progress and problems. *Proc. IX. Intern. Sympos. Biol. Control weeds. Stellenbosch, South Africa*, pp. 253-260.
- Kovalev O.V., 1995.** Co-evolution of the tamarisks (*Tamaricaceae*) and pest Arthropods (Insecta; Arachnida: Acarina), with special reference to biological control prospects. *Pentsoft*, 109 p.
- Myartseva S.N., 1986.** Encyrtidae (Hymenoptera, Chalcidoidea) of deserts and semideserts of Middle Asia (Fauna, ecology, biology, distribution, practical importance). *Ashkhabad, Ylym*, 303 p.
- Myartseva S.N., 1995.** New species of parasitoids from scales on tamarisks in Turkmenistan (Hymenoptera, Aphelinidae). *Entomol. Obozrenie*, v. 74, n.2, pp. 432-440.
- Sinadsky Y.V., 1968.** Dendrophilous insects of deserts of Middle Asia and Kazakhstan and measures of their control. *Moscow, Nauka*, 126 p.

Summary

Мярцева С.Н. Кокциды (Homoptera: Coccoidea) тамариска и их паразитоиды (Hymenoptera: Chalcidoidea) в Средней Азии.

В статье приводятся сведения по 14 видам кокцид обитающим на тамариске и их паразитоидам в Средней Азии.