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On the Auchenorrhyncha (Homoptera) from Aeolian island (Sicily, Italy)*

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This research is a share of the «Progetto Nazionale Eolie» (Eolie National Project), that is an Italian project of interdisciplinary research. Within this project specialists of different fields (biologists, ecologists, geologists, demographists, sociologists, a.s.o.), carry on their coordinated studies with a common target: the scientific ground for a rational management of the seven small insular environments composing the Aeolian archipelago. In the zoological field Vertebrates, Tardigrades, Nematodes, various Arachnid groups and many Insects (Orthoptera, Blattaria, Coleoptera, Heteroptera, Homoptera Auchenorrhyncha) are being studied. The preliminary data are referred to Salina island.

The Aeolian archipelago, located NE of Sicily in the Tyrrenian Sea, is constituted by seven volcanic islands originated in different Pleistocenic periods. Salina island is the second in width after Lipari, with its 26.8 sq.Km surface. It is constituted by different volcanic buildings among which Monte Fossa delle Felci (962 m) and Monte dei Porri (860 m), facing each other, represent 70% of the total surface of the island. Aeolian climate is roughly similar to the one on the facing coastal area of Sicily: Salina averages 570 mm of yearly rain precipitation, and has a long dry period from April to September. Its vegetation can be distinguished into:

a) Vine and caper cultivations;
b) Abandoned cultivations with *Avena barbata, Dactylis glomerata, Cymbopogon hirtus, Micromeria graeca,* and even *Bromus madritensis, Spartium junceum* and *Euphorbia dendroides* in the oldest ones;
c) Bush, probably resulting from deteriorated old ilex woods, at different stages: sparse and low bush, with various species of *Cistus;* bush of *Euphorbia dendroides,* with *Pistacia lentiscus, Artemisia arborescens, Teucrium flavum, Ceratonia siliqua, Calicotome infesta;* high bush, with *Erica arborea* and *Arbutus unedo*;
d) Halophile vegetation around the salty pond at Punta Lingua, with *Eryngium maritimum, Echinophora spinosa, Crithmum maritimum* and also, at some distance from the pond, *Sueda fruticosa, Inula viscosa, Cynodon dactylon* and *Tamarix africana;*
e) Reafforestations with *Pinus, Castanea, Eucalyptus,* such as on the top of Monte Fossa delle Felci, where different species of *Pinus* are found together with bush components (*Erica arborea* and *Cistus*) and with *Pteridium aquilinum.*

Informations concerning Aeolian Rhynchota are highly incomplete: a rather recent catalogue on Heteroptera (Tamanini, 1973) is available, but only some lonely information on Auchenorrhyncha (D'Urso, 1984) can be found. I am carrying on an investigation on Auchenorrhyncha from Aeolian islands, whithin the «Progetto Nazionale Eolie»; its preliminary results concern Salina island, and show that 57 species belonging to 8 families (Table I.) are represented (Tamanini reports 49 species of Heteroptera). A very large part of them occurs also in Sicily and Calabria (most probably the main part of Aeolian fauna originated

from these regions). The species *Jubrinia distincta* Lnv. found also in Puglia (R. Remane and M. Asche, pers. com.) is a new one in Italy.

Abandoned cultivations are characterized by the constant presence of *Adarrus aeolianus* D'Urso feeding on *Brachypodium ramosum* (a very common species in this environment), and of *Pseudaraeopus lethierryi* (M.R.), *Jubsoda stigmatica* (Melich.), *Jubrinia distincta* Lnv. living on *Cymbopogon hirtus,* plentiful in recently abandoned cultivations. *Eupteryx andalusiaca* Ferr. on *Inula viscosa, Zyginidia serpentina* (Mats.) on *Brachypodium* and on *Inula* are present too.

Exitianus capicola (Stål), *Hecalus glaucescens* (Fieb.) and *Aconurella prolixa* (Leth.) live on the vegetation surrounding the salty pond, mainly on *Cynodon dactylon.* I also collected *Aconurella prolixa* on *Tamarix africana,* where *Opsius stactogalus* Fieb., *Opsius lethierryi* Wag. and *Tamaricella tamaricis* (Puton) can be found as well.

The constant presence of *Taeniocerus ocularis* (M.R.) on *Pistacia lentiscus* and of *Austroasca vittata* (Leth.) on *Artemisia arborescens,* characterizes the bush. It must be noted that this latter plant is largely widespread even out of the bush, therefore *Austroasca vittata* is the most common species in the island, together with *Adarrus aeolianus* D'Urso, *Philaenus spumarius* (L.), *Psammotettix alienus* (Dahlb.) and *Zyginidia serpentina* (Mats.).

Monte Fossa delle Felci top, reafforestated with *Pinus,* is not characterized by particular species connected with this kind of vegetation. This latter is, in any case, tightly mixed with the bush. *Eupteryx filicum* (Newm.) and *Ditropis pteridis* (Spin.) are largely recurrent on *Pteridium aquilinum* fern, so much abundant as to give its name to the mount.

If we consider Salina's Auchenorrhyncha as a whole, the presence of a high quantity of Typhlocybinae (12 species out of 57) must be noted, mainly due to a large diffusion of aromatic Labiatae throughout the island; a massive presence of *Cicada orni* L. must be noted as well, during summer months.

Useful informations on the quality and the origin of Auchenorrhyncha peopling from Salina (and from Eolie in general) can be supplied by analyzing the distribution type of single species, which could be grouped as follows:

a) Species having a very large distribution, viz. holoarctic species: 8.77% (cosmopolitan species are missing);
b) Species with a large distribution through the palaearctic region: 35.08%; they include holopalaearctic species and also the species widespread not only in continental Europe, but even throughout Asia or in a more defined area of the region (central Asia, Turan or Siberia), and they often colonize more or less wide areas in the Mediterranean basin;
c) Species with European distribution: 10.52%. They include species living only in Europe or even throughout the Mediterranean basin;
d) Species with Mediterranean distribution: 45.61%. They live in more or less wide areas of the Mediterranean basin, and sometimes they also reach South Europe or Central and Turanic Asia: the majority of species having Turanic or Centrasiatic distribution are present in Ethiopian region as well. Also species living only in Sicily and in Eolie islands or endemic Aeolian species, are included within those with Mediterranean distribution.

Species belonging to the first three groups have a modest biogeographical meaning, and give poor informations on the origins of Aeolian fauna. In fact these species are widespread and have often a wide ecological valence and an easy adaptation. The presence of one only species, *Thamnotettix dilutior* (Kbm), with Eurosiberian-Maghrebinian distribution, is however meaningful.

Species with Mediterranean diffusion, representing almost a half of all Salina's species, are more significant: they are xerothermical species, which characterize the population of the island. Those with Mediterranean-Centrasiatic or Turanic distribution, also present in the Ethiopian

Table 1. List of Auchenorrhyncha from Salina
In the first three columns the species reported from Italy, from Sicily and from Calabria respectively are indicated (personal reports in brackets). In the others, the species widely widespread (1), widespread in the palaearctic region (2), mainly European (3) and mainly Mediterranean (4) are indicated.

	ITALY	*SICILY*	*CALABRIA*	*1*	*2*	*3*	*4*
CICADIDAE							
Cicada orni L.	+	+	+				+
TETTIGOMETRIDAE							
Tettigometra virescens (Panzer)	+	+	+			+	
Brachyceps brachycephalus (Fieb.)	+	+	+				+
Eurychila brunnea (Sign.)	+	+	–				+
DICTYOPHARIDAE							
Dictyophara europaea (L.)	+	+	+		+		
CIXIIDAE							
Reptalus prope panzeri (Löw)	+	+	–		+		
DELPHACIDAE							
Eurysa lineata (Perr.)	+	(+)	+		+		
Ditropis pteridis (Spin.)	+	(+)	+			+	
Jubsoda stigmatica (Melich.)	+	+	–				+
Pseudaraeopus lethierryi (M.R.)	+	–	+				+
Toya propinqua (Fieb.)	+	+	+		+		
Laodelphax striatellus (Fall.)	+	+	(+)		+		
ISSIDAE							
Agalmatrium grylloides (F.)	+	+	+				+
CERCOPIDAE							
Philaenus spumarius (L.)	+	+	+	+			
CICADELLIDAE							
Megophthalmus scabripennis Edw.	+	(+)	–				+
Hephathus freyi (H.S.)	+	+	+				+
Agallia consobrina Curtis	+	+	+			+	
Anaceratagallia laevis (Rib.)	+	+	+		+		
Anaceratagallia venosa (Fourcr.)	+	+	+		+		
Austroagallia sinuata (M.R.)	+	+	+		+		
Taeniocerus ocularis (M.R.)	+	(+)	+				+
Idiocerus ustulatus (M.R.)	+	(+)	+		+		
Anoscopus prope albifrons (L.)	+	+	+			+	
Aphrodes makarovi Zach.	+	+	+	+			
Eupelix cuspidata (F.)	+	+	+		+		

	ITALY	SICILY	CALABRIA	1	2	3	4
Tamaricella tamaricis (Puton)	+	(+)	+				+
Eupteryx zelleri (Kbm)	+	+	+				+
Eupteryx andalusiaca Ferr.	+	(+)	+				+
Eupteryx filicum (Newm.)	+	(+)	–		+		
Zyginidia serpentina (Mats.)	+	+	–				+
Zygina rhamni Ferr.	+	–	–		+		
Hauptidia provincialis (Rib.)	+	(+)	–				+
Ribautiana tenerrima (H.S.)	+	+	–			+	
Austroasca vittata (Leth.)	+	+	–		+		
Empoasca decipiens Paoli	+	+	+		+		
Empoasca alsiosa Rib.	+	(+)	–				+
Empoasca vitis (Göthe)	+	+	–	+			
Hecalus glaucescens (Fieb.)	+	+	+				+
Goniagnathus guttulinervis (Kbm)	+	+	+				+
Opsius stactogalus Fieb.	+	+	+		+		
Opsius lethierryi Wagner	+	+	+				+
Neoaliturus haematoceps (M.R.)	+	+	+		+		
Neoaliturus fenestratus (H.S.)	+	+	+		+		
Jubrinia distincta Lnv.	–	–	–				+
Recilia schmidtgeni (Wagn.)	+	(+)	–		+		
Aconurella prolixa (Leth.)	+	–	–				+
Exitianus capicola (Stål)	+	+	+				+
Platymetopius ferrarii Haupt	+	+	+				+
Proceps acicularis M.R.	+	+	+				+
Allygus modestus Scott	+	(+)	+			+	
Phlepsius spinulosus Wagner	+	+	+				+
Thamnotettix dilutior (Kbm)	+	+	+		+		
Euscelis lineolatus Brullé	+	+	+		+		
Oxytettigella viridinervis (Kbm)	+	+	+				+
Psammotettix alienus (Dahlb.)	+	+	+	+			
Psammotettix confinis (Dahlb.)	+	+	+	+			
Adarrus aeolianus D'Urso	+	–	–				+

region, did probably enter into the Mediterranean area from East, during interglacial periods, spreading along European and North African coasts (La Greca, 1964, 1984). Species living in South or Atlantic Europe and somehow in the Mediterranean region, in present times probably have a restricted area owing to the climatic vicissitudes during Quaternary age, as well as the species *Proceps acicularis* M.R., living in the regions North of the Mediterranean sea. Among the species with most limited distribution there are two E-Mediterranean (*Jubrinia distincta* Linn., *Platymetopius ferrarii* Haupt) and five W-Mediterranean ones (one of them is also transadriatic). Species with strictly Mediterranean geonemy often represent ancient, prequaternary elements. Some of them, with discontinuous distribution (such as W-Mediterranean *Oxytettigella viridinervis* (Kbm), could be the remains of an ancient prequaternary fauna; they had probably a wider previous distribution through the Mediterranean regions and then were decimated by the quaternary climatic events (La Greca 1964, 1984). *Zyginidia serpentina* (Mats.), living only in Sicily and Eolie islands (according to Vilbaste (1976), Matsumura's report concerning Egypt should be referred to another species), and *Adarrus aeolianus* D'Urso, an endemic Aeolian species, belong to the group with Mediterranean distribution too. *Adarrus aeolianus* is probably a recent endemism: infact it belongs to the *exornatus-multinotatus* group, and is very similar to the Calabrian species *Adarrus calabricus* Dlab. Furthermore it presents greater differences in comparison with the similar species *Adarrus messinicus* Dlab., endemic in Sicily.

These data do coincide with those supplied on Aeolian archipelago as a whole by Tamanini (1973), about Heteroptera, and by Messina (1984) about several groups of Vertebrates and Invertebrates. Therefore the possibility can be foreseen that Salina's situation could be repeated throughout the whole Aeolian archipelago. According to present knowledge about the origin of Salina's peopling, the most probable hypothesis is that the island was invaded by fauna comming mainly from Sicily and Calabria. The presence of species attributable to prequaternary fauna is not in contrast with this hypothesis. Clear examples of Auchenorrhyncha species are not found, whose present distribution could let deem of Tyrrenian relics originated *in loco,* rather than immigrated from surrounding regions, which could supply evidence for a more ancient, prepleistocenic origin of the Aeolian peopling. However it must be noted that Messina (1984) outlines the presence of relics referring to other groups of Invertebrates and Vertebrates.

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