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## INSECTS AND FUNGI ON THE RELICT *ZELKOVA SICULA* (ROSALES, ULMACEAE) IN SICILY (ITALY): NEW RECORDS AND KNOWN SPECIES IN A SHORT REVIEW

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Campo G., Mazzeo G., Nucifora S., Perrotta G., Sidoti A., Bella S. – Insects and fungi on the relict *Zelkova sicula* (Rosales, Ulmaceae) in Sicily (Italy): new records and known species in a short review.

The Authors report the results of a study conducted with the purpose of increasing the knowledge about the insects and fungi living on *Zelkova sicula* Di Pasquale, Garfi & Quézel, 1992 (Rosales, Ulmaceae). The plant is a very rare relict of the Tertiary period, belonging to a genus of trees extinct in continental Europe. Only two small populations are known living in a restricted woodland in the province of Syracuse, Sicily. The results concern both the insects picked up during surveys that were carried out in 2014 and 2015, and the species of fungi and insects already known on *Zelkova sicula* from literature. As a result of surveys, two species of Buprestidae, two species of Cerambycidae, and two of Lepidoptera have been recognized. From literature, seven species of phytophagous insects are reported on *Zelkova sicula*, they belong to Hemiptera: Aphididae (1 sp.), Diaspididae (1 sp.), Coccidae (1 sp.); Coleoptera: Buprestidae (1 sp.), Cerambycidae (2 spp.); and Lepidoptera: Lasiocampidae (1 sp.). Five species of fungi are known from literature and they belong to: Botryosphaerales (3 spp.), Pleosporales (1 sp.), and Diaporthales (1 sp.).

KEY WORDS: endemic plant, Sicilian Zelkova, insect hosts, tree conservation, phytosanitary status.

### INTRODUCTION

As a consequence of paleogeographic events, Sicily is considered one of the most relevant hotspots of biodiversity in the Mediterranean area (BELLA, 2008; MASSA *et al.*, 2011; BELLA, 2014). The island has about 3,000 species of plants and more than 300 endemic taxa (BRULLO *et al.*, 1995; GIARDINA *et al.*, 2007; DOMINA *et al.*, 2012).

*Zelkova* (Rosales, Ulmaceae) is a small relict genus that dates back to the Tertiary period. The six extant species are distributed throughout western and eastern Asia (Caucasus: *Z. carpinifolia* (Pall.) Dippel), East Asia (*Z. serrata* (Thunb.) Makino) and China (*Z. schneideriana* Handel-Mazzetti and *Z. sinica* C.K. Schneider), except the two in the Mediterranean basin (Sicily: *Z. sicula* Di Pasq., Garfi & Quézel and Crete: *Z. abelicea* (Lam.) Boiss.) (GTC, 2017). Habitat loss, logging, increased periods of drought, and limited reproduction represent major threats for these species. The IUCN list evaluates this species as 'Critically Endangered' (KOZŁOWSKI & GRATZFELD, 2013). Some species are threatened with extinction and others are still waiting assessment, so a global action plan 'Project Zelkova' has been developed (FINESCHI *et al.*, 2004; GARFI & BUORD, 2012).

The arthropod fauna living on the Sicilian endemic *Zelkova sicula* have been rarely studied, and only little data are currently available (CAMPO *et al.*, 2015), whereas fungal flora was studied in the past years and the results have been already published (GRANATA *et al.*, 2002; SIDOTI & GRANATA, 2005; TORTA *et al.*, 2008; SIDOTI *et al.*, 2016).

The aim of this study is to improve the knowledge both of the entomofauna and the fungal flora associated with this rare species and to group the currently known data on the phytosanitary issues that affect this plant.

### MATERIALS AND METHOD

#### THE STUDY SITES

Samples were collected in the Iblei Mountains in southeastern Sicily, in the province of Syracuse (Fig. I):

- site ZS1: Buccheri, bosco Pisano, 450-550 m a.s.l., 37°10'18" N - 14°51' 37" E (SIC: ITA 090022 "Bosco Pisano" – Buccheri, Francofonte and Vizzini, 1850,82 ha);
- site ZS2: Melilli, contrada Ciranna, 310-350 m a.s.l., 37°12'40" N - 15°02' 41" E (SIC: ITA 090024 "Cozzo Ogliastrì" – Melilli, 1338,16 ha).



Fig. 1 – Presence of *Zelkova sicula* in southeastern Sicily (Iblei Mts.): sites ZS1 (red), and ZS2 (green).

#### THE PLANT

Endemic to Sicily, *Zelkova sicula* is considered one of the rarest and most endangered trees worldwide. It is a deciduous shrub or tree usually 2-3 m high. It was first discovered in 1991 on the northern slopes of the Iblei Mountains in southeastern Sicily, near the municipality of Buccheri, and was thought to exist only as a single population of 230 individuals over an area of 0.4 ha (DI PASQUALE *et al.*, 1992). A second population was discovered in the same mountain range in 2009, near the municipality of Melilli, and only included 1,200 individuals covering an area of 0.8 ha. The two populations are 17 km apart (GTC, 2017). This species has anomalous pollen, which may explain why all seeds appear to be sterile; propagation is from root suckers. Studies have indicated that the remaining populations of *Zelkova sicula* may be traced to just one individual. This lack of genetic variation reduces the ability of the species to face environmental and/or biological changes (GARFÌ & BUORD, 2012). This species has been classified as “Critically Endangered” by the IUCN Red List because the areas in which it is found are very small, and both the areas and the number of individuals seem to be continuing to decline (MONTMOLLIN & STRAHM, 2005). *Zelkova sicula* has been the object of a conservation project since 2011 (LIFE10NAT/IT/000237).

#### SAMPLING METHODS AND SUMMARY OF THE BIBLIOGRAPHIC DATA

Field surveys were carried out in the years 2014-2015, in the spring-summer every 15 days. In both sites where *Zelkova sicula* grows, direct observations were made on plants for collecting phytophagous insects, meanwhile dead or suffering wooden samples were picked up for the possible presence of saproxylophagous insects. Samples, consisting of portions of green or woody organs, were taken, placed in containers and carried to the laboratory. Wood insects and phyllophagous species, were isolated in cages with standard temperature and relative humidity (25 °C and 65 % RH), and regularly inspected for collecting adults. In the case of phytomize species, they were observed at binoculars and prepared on a slide for species identification. Beetles have been prepared dry and identified by using dichotomous keys or by resorting to specialists.

Bibliographical search has been conducted on insects and fungi found on *Zelkova sicula* from its discovery to date in order to draw up the list of species already known.

#### ACRONYMS AND ABBREVIATIONS USED IN THE TEXT

IUCN: International Union for Conservation of Nature

SIC: site of community importance

ZS: *Zelkova sicula*

leg.: legit

loc.: locality

coll.: collected

emer.: emerged

ex./exx.: specimen/specimens

The following data are given for each species: chorotype, larval host plants, and data of collection. The systematics and nomenclature follow SAMA (2013) with the recent updates by BAVIERA *et al.* (2017) for the Cerambycidae family and KUBAN & BÍLÝ (2013) for the Buprestidae family. The rapid evolution of the taxonomy of fungi has led us to refer exclusively to the classification reported by the ‘Index fungorum bioscience database’ (CABI, 2017). The specimens of insects studied are stored in the collection to the UO S4.04 - Osservatorio per le Malattie delle Piante di Acireale.

#### RESULTS

##### NEW RECORDED TAXA

##### COLEOPTERA

Family BUPRESTIDAE Leach, 1815

Polycestinae Lacordaire, 1857

Acmaeoderini Kerremans, 1893

*Acmaeoderella (Omphalothorax) adspersula adspersula* (Illiger, 1803)

CHOROTYPE: Olomediterranean.

MATERIAL EXAMINED: Buccheri, loc. Bosco Pisano, 1 ex., coll. 27.V.2015, emer. 2016. Melilli, loc. Ciranna, 1 ex., coll. 14.V.2014, emer. 2015.

LARVAL HOST PLANTS: Aceraceae (*Acer*), Anacardiaceae (*Pistacia*, *Rhus*), Celtidaceae (*Celtis*), Cesalpiniaceae (*Ceratonia*), Cistaceae (*Cistus*), Fabaceae (*Acacia*, *Cytisus*, *Genista*, *Retama*, *Spartium*), Fagaceae (*Castanea*, *Quercus*), Ephedraceae (*Ephedra*), Euphorbiaceae (*Euphorbia*), Moraceae (*Ficus*), Rosaceae (*Malus*, *Sorbus*), Salicaceae (*Populus*), Thymelaeaceae (*Thymelaea*), Ulmaceae (*Ulmus*), Vitaceae (*Vitis*), Zygophyllaceae (*Zygophyllum*) (CURLETTI, 1994; MIFSUD & BARTHER, 2005).

REMARKS: the larvae feed on wood of several plants and the adults are anthophilous (Luna, 2013; Ceccolini *et al.*, 2014).

Buprestinae Lacordaire, 1857  
Anthaxiini Gory & Laporte, 1839

*Anthaxia (Haplantaxia) umbellatarum umbellatarum*  
(Fabricius, 1787)

CHOROTYPE: Euro-Mediterranean.

MATERIAL EXAMINED: Melilli, loc. Ciranna, 1 ex., coll. 14.V.2014, emer. 2015; 1 ex., coll. 5.VIII.2014, emer. 2015; 5 exx., coll. 09.VII.2015, emer. 2016; 6 exx., coll. 25.IX.2015, emer. 2016.

LARVAL HOST PLANTS: Anacardiaceae (*Pistacia*), Cesalpiniaceae (*Cercis*, *Ceratonia*), Cupressaceae (*Cupressus*), Fabaceae (*Acacia*, *Cytisus*), Fagaceae (*Castanea*, *Quercus*), Moraceae (*Ficus*), Rosaceae (*Cydonia*, *Prunus*, *Pyrus*, *Rosa*), Salicaceae (*Salix*), Ulmaceae (*Ulmus*) (CURLLETTI, 1994).

REMARKS: the larvae of this polyphagous species feed both on deciduous plants and conifers, unlike the majority of Buprestidae (Curletti, 1981). The adults are anthophilous (Luna, 2013).

Family CERAMBYCIDAE Latreille, 1802

Cerambycinae Latreille, 1802  
Graciliini Mulsant, 1839

*Penichroa fasciata* Dejean, 1839

CHOROTYPE: Turanic-European.

MATERIAL EXAMINED: Melilli, loc. Ciranna, 2 exx., coll. 5.VIII.2014, emer. 2015; 16 exx., coll. 09.VII.2015, emer. 2016; 12 exx. 14.V.2014, emer. 2015.

LARVAL HOST PLANTS: Anacardiaceae (*Pistacia*), Cesalpiniaceae (*Ceratonia*, *Cercis*, *Cytisus*), Cupressaceae (*Thuya*), Fabaceae (*Glycyrrhiza*), Fagaceae (*Fagus*, *Quercus*), Moraceae (*Ficus*, *Morus*), Myrtaceae (*Eucalyptus*), Pinaceae (*Pinus*), Rosaceae (*Prunus*) (BAVIERA *et al.*, 2017).

REMARKS: this species is extremely polyphagous mostly feeding on deciduous trees, sometimes on conifers (Sama *et al.*, 2010).

*Gracilia minuta* (Fabricius, 1781)

CHOROTYPE: Cosmopolitan.

MATERIAL EXAMINED: 24 exx., coll. 27.V.2015, emer. 2016; 18 exx., coll. 09.VII.2015, emer. 2016; 6 exx., coll. 25.IX.2015, emer. 2016.

LARVAL HOST PLANTS: Aceraceae (*Acer*), Anacardiaceae (*Pistacia*), Betulaceae (*Betula*), Celastraceae (*Euonymus*), Cesalpiniaceae (*Ceratonia*), Corylaceae (*Corylus*), Fagaceae (*Castanea*, *Quercus*), Hippocastanaceae (*Aesculus*), Juglandaceae (*Juglans*), Moraceae (*Ficus*), Pinaceae (*Cedrus*, *Pinus*), Rhamnaceae (*Rhamnus*), Rosaceae (*Crataegus*, *Malus*, *Prunus*, *Rosa*, *Rubus*, *Sorbus*), Rutaceae (*Citrus*), Salicaceae (*Salix*), Ulmaceae (*Ulmus*) (BAVIERA *et al.*, 2017).

REMARKS: this species affects thin twigs of deciduous trees and shrubs. Adults are xylophagous (Contarini, 2014).

LEPIDOPTERA

Family SATURNIIDAE Boisduval, 1837

Saturniinae Boisduval, 1837

Saturniini Boisduval, 1837

*Saturnia (Eudia) pavoniella* (Scopoli, 1763)

CHOROTYPE: European.

MATERIAL EXAMINED: Buccheri, loc. Bosco Pisano, 1 ex., VI.2004.

LARVAL HOST PLANTS: Betulaceae (*Carpinus*), Elaeagnaceae (*Hippophae*), Fagaceae (*Quercus*), Betulaceae (*Betula*), Salicaceae (*Salix*), Ericaceae (*Calluna*, *Erica*, *Spiraea*, *Vaccinium*), Lythraceae (*Lythrum*), Rosaceae (*Crataegus*, *Filipendula*, *Potentilla*, *Prunus*, *Pyrus*, *Rosa*, *Rubus*) (Mazzei *et al.*, 2017).

REMARKS: young larvae generally feed on low vegetation and, after a period in which gather, they disperse and larger larvae tend to be found higher up on shrubs (Pittaway, 2018).

Family NYMPHALIDAE

Nymphalinae Swainson (1927)

*Nymphalis polychloros* (Linnaeus, 1758)

CHOROTYPE: Centralasiatic-Euro-Mediterranean.

MATERIAL EXAMINED: Buccheri, loc. Bosco Pisano, 1 ex., VI.2004.

LARVAL HOST PLANTS: Salicaceae (*Salix*), Rosaceae (*Crataegus*, *Prunus*, *Malus*, *Pyrus*, *Sorbus*), Salicaceae (*Populus*), Ulmaceae (*Ulmus*) (Mazzei *et al.*, 2017).

REMARKS: this species, that is widespread in Europe, overwinters as adults which fly from March to April and are most active in summertime (Jurc *et al.*, 2016).

TAXA PREVIOUSLY REPORTED ON *ZELKOVA SICULA*

Hemiptera, Aphididae

*Zelkovaphis trinacriae* Barbagallo, 2002

This Eriosomatine aphid lives exclusively on *Zelkova sicula* protected inside 'clustering type galls' (BARBAGALLO, 2002). The aphid likely performs a dioic lifecycle, with adults from mid-April to early summer, whose secondary host plant remains yet unknown (BARBAGALLO & COCUZZA, 2008).



REMARKS: the aphid has been found in both stations, but is present with a more abundant population in the ZS1 site.

Hemiptera, Coccidae  
***Parthenolecanium* sp.**

Some mature females have been recorded on the twigs of *Z. sicula* in the ZS1 site. The features of these females, characterized by a brown to reddish colour and convex body, seemed to lead to the genus *Parthenolecanium*.

REMARKS: further investigation are needed for the correct identification of the species (MAZZEO *et al.*, 2016).

Hemiptera, Diaspididae  
***Aspidiotus nerii* Bouché, 1833**

The oleander scale, a cosmopolitan species, is highly polyphagous, living on 325 genera in 120 families host plants. It is considered a pest of crops and ornamental plants (García Morales *et al.*, 2016).

REMARKS: the specimens, mostly females, were found in the ZS1 site, on the lower surface of leaves, where the presence of hairs caused a modification of the scale covers that showed an irregular outline (MAZZEO *et al.*, 2016).

Coleoptera, Buprestidae  
***Acmaeodera (Acmaeodera) pilosellae pilosellae***  
(Bonelli, 1812)

LARVAL HOST PLANTS: Aceraceae (*Acer*), Anacardiaceae (*Pistacia*), Corylaceae (*Corylus*), Fabaceae (*Colutea*), Fagaceae (*Quercus*), Juglandaceae (*Juglans*), Rosaceae (*Amygdalus*, *Crataegus*, *Prunus*) (CURLLETTI, 1994).

REMARKS: this species was only found in the ZS1 site (LONGO & CAMPO, 2004).

Coleoptera, Cerambycidae  
***Chlorophorus (Perderomaculatus) sartor* (Müller, 1766)**

LARVAL HOST PLANTS: Anacardiaceae (*Pistacia*), Cesalpiniaceae (*Ceratonia*, *Gleditsia*), Fabaceae (*Cytisus*, *Robinia*), Fagaceae (*Castanea*, *Fagus*, *Quercus*), Corylaceae (*Ostrya*), Moraceae (*Ficus*), Rhamnaceae (*Paliurus*), Rosaceae (*Crataegus*), Salicaceae (*Salix*), Ulmaceae (*Ulmus*) (BAVIERA *et al.*, 2017).

REMARKS: this species was found in the ZS2 site (SIDOTI *et al.*, 2016).

***Niphona picticornis* (Mulsant, 1839)**

LARVAL HOST PLANTS: Anacardiaceae (*Pistacia*), Arecaceae (*Phoenix*), Caprifoliaceae (*Sambucus*), Cesalpiniaceae (*Cercis*), Euphorbiaceae (*Euphorbia*), Fabaceae (*Calycotome*, *Genista*, *Robinia*, *Spartium*), Fagaceae (*Castanea*, *Quercus*), Lauraceae (*Laurus*), Moraceae (*Ficus*, *Morus*), Pinaceae (*Pinus*), Punicaceae (*Punica*), Rhamnaceae (*Rhamnus*), Rosaceae (*Prunus*), Ulmaceae (*Ulmus*) (BAVIERA *et al.*, 2017).

REMARKS: this cerambyx has been found in both stations ZS1 and ZS2 (SIDOTI *et al.*, 2016).

Lepidoptera, Lasiocampidae  
***Lasiocampa (Lasiocampa) quercus sicula***  
(Staudinger, 1861)

LARVAL HOST PLANTS: Betulaceae (*Alnus*, *Betula*), Caprifoliaceae (*Lonicera*), Salicaceae (*Populus*, *Salix*), Grossulariaceae (*Ribes*), Rosaceae (*Rubus*, *Spiraea*, *Malus*, *Sorbus*, *Prunus*), Fabaceae (*Trifolium*), Ericaceae (*Andromeda*, *Calluna*, *Ledum*, *Vaccinium*), Oleaceae (*Syringa*), Pinaceae (*Larix*) (Mazzei *et al.*, 2017).

REMARKS: generically reported as *Lasiocampide* sp. by LONGO & CAMPO (2004) in the ZS1 site.

FUNGI

Botryosphaeraiales, Botryosphaeriaceae  
***Botryosphaeria sarmentorum***  
A.J.L. Phillips, Alves & Luque, 2005

Anamorph: *Dothiorella sarmentorum* (Fr.) Phillips, Alves & Luque, 2005 (= *Diplodia sarmentorum* (Fr.) Fries).

*Botryosphaeria sarmentorum* is common in Europe, where it is found in its anamorphic state on a wide range of woody hosts. It is not known if this species is pathogenic, but it is most likely a saprophyte because it is often seen associated with pathogens (PHILLIPS, 2017).

REMARKS: cankers on the bark of twigs and stems and necrotic woody tissues (pycnidia) in the ZS1 site (GRANATA *et al.*, 2002; SIDOTI & GRANATA, 2005; TORTA *et al.*, 2008).

***Botryosphaeria iberica***  
A.J.L. Phillips, Luque & Alves, 2005

Anamorph: *Dothiorella iberica* A.J.L. Phillips, Luque & Alves, 2005.

This species is similar to *B. sarmentorum*. It is reported associated with the formation of canker on trunks and branches of *Malus* sp., *Quercus* sp., *Persea americana* Mill., *Vitis vinifera* L., and almond (PHILLIPS *et al.*, 2005; ESKALEN & MCDONALD, 2011; PITT *et al.*, 2008; DOLL *et al.*, 2015).

REMARKS: cankers on the bark of twigs and stems, and necrotic woody organs (pycnidia) in the ZS2 site (SIDOTI *et al.*, 2016)

***Neofusicoccum ribis* (Slippers, Crous & M.J. Wingf.)**  
Crous, Slippers & A.J.L. Phillips, 2006  
(= *Fusicoccum aesculi* Corda, 1829)

Taxonomic reviews have given rise to *Neofusicoccum* gen. nov., in which were included *Fusicoccum* and *Diplodia* like synanamorphs as *F. aesculi* (CROUS *et al.*, 2006). More than 250 hosts are listed in FARR & ROSSMAN (2016) but many of the reports were published before the concept of *N. ribis* was clarified by SLIPPERS *et al.* (2004) and are thus not reliable. *N. ribis* was identified as the main cause of leaf blight disease in *Hevea brasiliensis* (Willd. ex A. Juss.) Müll. Arg. in commercial plantations in Malaysia (NGOBISA *et al.*, 2013).

REMARKS: cankers on the bark of twigs and stems and necrotic woody tissues (pycnidia) in the ZS1 site (GRANATA *et al.*, 2002; SIDOTI & GRANATA, 2005; TORTA *et al.*, 2008).

Pleosporales, Didymosphaeriaceae

***Didymosphaeria variabile*** (Riccioni, Damm, Verkley & Crous) Ariyawansa & K.D. Hyde, 2014  
(= *Paraconiothyrium variabile* Riccioni, Damm, Verkley & Crous, 2008)

The Didymosphaeriaceae (= Montagnulaceae) family includes saprobes, endophytes, and pathogens associated with a wide variety of substrates worldwide (ARIYAWANSA *et al.*, 2014). *D. variabile* (*Paraconiothyrium variabile*) has been isolated from discoloured tissues of various decaying woody host plants such as *Prunus persica* L., *P. salicina* Lindl. and *Malus* sp. in South Africa; *Actinidia chinensis* Planch. and *A. deliciosa* (A. Chev.) C.F. Liang & A.R. Ferguson in Italy; *Laurus nobilis* L. in Turkey (DAMM *et al.*, 2008; CLOETE *et al.*, 2011). LIGOXIGAKIS *et al.* (2013) reported severe leaf spot on *Phoenix theophrasti* Greuter caused by *P. variabile* in Greece. This species is also endophytic, and laboratory research focused on secondary metabolites produced by endophytic fungi showed that, when co-cultured with *F. oxysporum*, it had an antagonistic effect on the growth of the phytopathogen and actively suppressed the production of beauvericin, a mycotoxin of *F. oxysporum* involved in virulence (PRADO *et al.*, 2015).

REMARKS: cankers on the bark of twigs and stem, and necrotic woody organs (pycnidia) in the ZS2 site (SIDOTI *et al.*, 2016).

Diaporthales, Diaporthaceae

***Diaporthe neotheicola*** A.J.L. Phillips & J.M. Santos, 2009

Anamorph: *Phomopsis theicola* Curzi 1927.

*Diaporthe neotheicola* has been reported as an agent of

shoot blight and cankers and branch dieback on many cultivated plants such as *Diospyros kaki* L. (GOLZAR *et al.*, 2012), *Olea europaea* L. (FRISULLO *et al.*, 2015), *Actinidia deliciosa* (THOMIDIS *et al.*, 2013) and *Vitis vinifera* (KALITERNA *et al.*, 2012). UDAYANGA *et al.* (2014) recently reviewed the taxonomy, based on molecular studies, of some species of the genus *Diaporthe* and considered *D. neotheicola* a synonym of *Diaporthe foeniculina* (Sacc.), basionym *Phoma foeniculina* Sacc., which includes a wider range of hosts and present in Argentina, USA (California), Europe (Portugal, Spain, Italy and Greece), South Africa, Australia and New Zealand.

REMARKS: cankers on bark of twigs and stems, and necrotic woody organs (pycnidia) in the ZS2 site (SIDOTI *et al.*, 2016).

The results of field surveys and bibliographical search are summarized in Table 1.

### CONCLUDING REMARKS

The relationship between insects and their host plants are very interesting, especially if the plants are endemic and relict and confined to a restricted area (BELLA *et al.*, 2006; BELLA & RAPISARDA, 2014). *Zelkova sicula*, in particular, have to be accurately monitored, due to its reproductive biology, the small number of living individuals and the severe environment where it grows, in order to avoid infestations by insects or diseases that could kill the plants (GARFÌ & BUORD, 2012; CAMPO *et al.*, 2015). The species we recorded in our surveys are apparently not harmful to *Zelkova* plants, but some of the insects collected are known

Table 1 – List of the newly recorded and known insects and fungi species reported on *Zelkova sicula* in Sicily.

ORDER	FAMILY	TAXON	REFERENCES
<b>Insects</b>			
HEMIPTERA	APHIDIDAE	<i>Zelkovaphis trinacriae</i> Barbagallo, 2002	Barbagallo, 2002; Barbagallo & Cocuzza, 2008
	COCCIDAE	<i>Parthenolecanium</i> sp.	Mazzeo <i>et al.</i> , 2016
	DIASPIDIDAE	<i>Aspidiotus nerii</i> Bouché, 1833	Mazzeo <i>et al.</i> , 2016
COLEOPTERA	BUPRESTIDAE	<i>Acmaeodera (Acmaeodera) pilosellae pilosellae</i> (Bonelli, 1812)	Longo & Campo, 2004
		<i>Acmaeoderella (Omphalothorax) adpersula adpersula</i> (Illiger, 1803)	New record
		<i>Anthaxia (Haplantaxia) umbellatarum umbellatarum</i> (Fabricius, 1787)	New record
	CERAMBYCIDAE	<i>Penichroa fasciata</i> Dejean, 1839	New record
		<i>Gracilia minuta</i> (Fabricius, 1781)	New record
		<i>Chlorophorus (Perderomaculatus) sartor</i> (Müller, 1766)	Sidoti <i>et al.</i> , 2016
LEPIDOPTERA	LASIOCAMPIDAE	<i>Lasiocampa (Lasiocampa) quercus sicula</i> (Staudinger, 1861)	Longo & Campo, 2004
	SATURNIIDAE	<i>Saturnia (Eudia) pavoniella</i> (Scopoli, 1763)	New record
	NYMPHALIDAE	<i>Nymphalis polychloros</i> (Linnaeus, 1758)	New record
<b>Fungi</b>			
BOTRYOSPHAERIALES	BOTRYOSPHAERIACEAE	<i>Botryosphaeria sarmentorum</i> A.J.L. Phillips, Alves & Luque, 2005	Granata <i>et al.</i> , 2002; Sidoti & Granata, 2005; Torta <i>et al.</i> , 2008
		<i>Botryosphaeria iberica</i> A.J.L. Phillips, Luque & Alves, 2005	Sidoti <i>et al.</i> , 2016
		<i>Neofusicoccum ribis</i> (Slippers, Crous & M.J. Wingf.) Crous, Slippers & A.J.L. Phillips, 2006	Granata <i>et al.</i> , 2002; Sidoti & Granata, 2005; Torta <i>et al.</i> , 2008
PLEOSPORALES	DIDYMOSSPHAERIACEAE	<i>Didymosphaeria variabile</i> (Riccioni, Damm, Verkley & Crous) Ariyawansa & K.D. Hyde, 2014	Sidoti <i>et al.</i> , 2016
DIAPORTHALES	DIAPORTHACEAE	<i>Diaporthe neotheicola</i> A.J.L. Phillips & J.M. Santos, 2009	Sidoti <i>et al.</i> , 2016

to be harmful, e.g. *Parthenolecanium* species or *Aspidiotus nerii* that are pests of cultivated trees and ornamentals.

Fungal species, that are agents of cankers on the bark of twigs and stems and on necrotic woody tissues are common. The *Botryosphaeriaceae* comprises endophytes, saprobes, and plant pathogens. Some taxa in *Botryosphaeriaceae* have recently undergone nomenclatural changes (DISSANAYAKE *et al.*, 2016). *Botryosphaeria* is a species-rich genus with a cosmopolitan distribution commonly associated with dieback and cankers of woody plants. *Diaporthe* species and their *Phomopsis* anamorphs are endophytes and pathogens on a wide range of plant hosts and are responsible for several diseases, some of which are of economic importance (UDAYANGA *et al.*, 2014).

The highly degraded ecological environment in which *Zelkova sicula* has long developed has undoubtedly represented the determining factor in the state of suffering of the population. In addition, the summer climatic conditions, often characterized by high temperatures and especially low rainfall, cause frequent leaf drop in the warmer months, a phenomenon now contained by rescue irrigation in ZS1. Plants in this weakened state are more prone to attack by fungal species and insects (CRIST & SHÖENEWEISS, 1975; LONGO & CAMPO, 2002; BELLA, 2013). Fungal species living in the plant in a latent endophytic state become under stress conditions favouring the decline of the population.

Our investigation and bibliographic data collection summarise the insect pest status and health issues related to this rare Sicilian tree, and other studies are still ongoing to increase knowledge in various fields for this interesting endemic species, especially, i.e. on the symbiotic relationships between insect and fungi.

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