

ISSN 0425-1016

ENTOMOLOGICA

Open access, DOI-indexed, full digital Journal on Entomology
Department of Soil, Plant and Food Sciences - University of Bari Aldo Moro
www.entomologicabari.org – www.entbari.org

Vol. 47 – 2016



BARI

Editor-in-chief

FRANCESCO PORCELLI

Guest Editor

M. BORA KAYDAN General and Applied Entomology

Technical Board

GIORGIO NUZZACI Editorial procedure supervisor
EUSTACHIO TARASCO Edition control
FRANCA TODISCO Desktop publisher; Editorial procedure advisor
ROBERTA ROBERTO Editorial procedure advisor
LAURA DIANA Editorial procedure advisor
VALENTINA RUSSO Editorial procedure advisor
NICO DE SANTIS Lawyer Protection of copyright and privacy

Topic or Country Editors

ROCCO ADDANTE Beekeeping, IPM for stone fruits and grapevine
ENRICO DE LILLO Acarology
EUSTACHIO TARASCO Insect pathology, urban and forest entomology, faunistic biodiversity and management
ANTONELLA DI PALMA Acari ultrastructure, comparative anatomy and functional morphology, Mesostigmata & Heterostigmata Systematic
SALVATORE GERMINARA Insect semiochemicals, Extraction methods, Chemical analyses (GC, GC-MS, GC-EAD), Electrophysiology, Olfactometer bioassays, Stored-product insects, Integrated Pest Management (IPM)
MARIA SCRASCIA Bacteriology; Bacteria-Insects associations; Uncultivable Bacteria
CARLO PAZZANI Microbiology of Prokaryotes; Mobile Genetic Elements; Bacterial Communities
AGATINO RUSSO Faunistic and systematic of scale insects. Monitoring and control of stored food pests. Applications of biological and integrated control in agriculture and food industries
POMPEO SUMA Integrated Pest Management (IPM) in citrus orchards and vineyards. Insect semiochemicals, Urban entomology, Stored-product insects.
GAETANA MAZZEO Faunistic and systematic of Homoptera Coccoidea. Honeybee, solitary bees and biodiversity in natural and anthropic ecosystems. Insect pests of ornamental plants
SANTI LONGO General and Applied Entomology
ROBERTA ROBERTO Genetist, molecular biologist

Department of Soil, Plant and Food Sciences - UNIBA Aldo Moro DiSSPA - Entomology and Zoology Section, Via Amendola, 165/A - 70126 BARI - ITALY

<http://www.uniba.it/ricerca/dipartimenti/disspa>

Tel. +39/0805442874 - +39/0805442880

E-mail: entomol@uniba.it

www.entomologicabari.org – www.entbari.org

Authorization of the Court of Bari n. 306, 19 April 1966



ENTOMOLOGICA

Open access, DOI-indexed, full digital Journal on Entomology
edited by Department of Soil, Plant and Food Sciences
University of Bari Aldo Moro
www. entomologicabari. org – www. entbari. org

R. ROBERTO¹⁻³, L. DIANA¹, V. RUSSO⁴, F. PORCELLI¹⁻³, G. PELLIZZARI²
¹DiSSPA - UNIBA Via Amendola 165/A, 70126 Bari, Italy, francesco.porcelli@uniba.it; ²DAFNAE - UNIPD,
Viale dell'Università 16, 35020 Legnaro, Italy, giuseppina.pellizzari@unipd.it; ³Selge Network, University of Bari Aldo
Moro Via Amendola 165/A, 70126 Bari, Italy; ⁴CIHEAM - LAMB, via Ceglie, 9 70010 Valenzano (BA), Italy,
vrbio@libero.it.

***Kermes vermilio* Planchon and *Nidularia pulvinata* (Planchon, 1864) (Hemiptera Kermesidae) outbreaks off urban *Quercus ilex* L. (Fagaceae)**

ABSTRACT

Kermes vermilio and *Nidularia pulvinata* severe outbreaks are lethal to young holly oaks and strongly damage adult trees. Such infestations are common in several South Italian urban and peri-urban areas and have been reported for a while. Recently we have been observing in Bari (Apulia region) a new considerable invasion of both *Nidularia* and *Kermes* on *Q. ilex* not scale-infested hitherto. The phenomenon is possibly in connection with the new northward expansion of *Nidularia* that is presently recorded in Italian areas with a continental climate as Veneto and Romagna regions. City surveys and damage estimations revealed the entity of kermesidae impact regarding direct and indirect costs for the maintenance of urban parks, public gardens and leisure areas, avenues and boulevards. Moreover, we discuss the synecology of the two species evaluating the prevalence of mixed infestations on the same plant or the reciprocal competitive displacement. Possible causes of the actual outbreak may lie in ecological disturbance along the rural-urban transition zone, changes in the available range of insecticides, wrong or absent tree maintenance, changes or fluctuation in climatic parameters.

Mixed infestations by *Kermes vermilio* and *Nidularia pulvinata* off *Quercus ilex* are not truly mixed; this is evident as we realise that *K. vermilio* prefers to infest host twigs while *N. pulvinata* mostly sets on the trunk and the main branches. The two species seems to share a single host plant occupying two near but distinct niches.

Damages are similar, being both the Kermesidae capable of inducing die back, but *Nidularia* actively damages the trunk, also.

In a case of infested public greeneries, the officers are usually unable to check the pests, i. e. by an IPM strategy or by chemical control. Possibly because of the extended swarming of crawlers or the missing of effective insecticide authorised for urban area use. Moderate control is given by tree formulate injection but results often less useful than expected. Another phytosanitary “pest cleaning” measure applied by the officers consists of cutting down symptomatic dried twigs as massive pruning every four-five years.

Intense pruning in spring and the consequent plant re-sprouting appears favourable to plant health but for a very short lapse. New sprouts are quickly colonised by wandering crawlers and became intensely infested. Moreover, twigs and small branches cut down leave on the plant much more of the *Nidularia* population while prune down most of the *Kermes* out the plant.

Intense and not timed pruning favours *Nidularia* by displacing *Kermes* from the host plant in such a way that urban *Q. ilex* are heavily infested by the most damaging and lethal of the two pest species.

We classified from 1 to 5 the staging of the die back induced by Kermesidae, as reported in table below.

Roberto R., Diana L., Russo V., Porcelli F., Pellizzari G. (2016); *Kermes vermilio* Planchon and *Nidularia pulvinata* (Planchon, 1864) (Hemiptera Kermesidae) outbreaks off urban *Quercus ilex* L. (Fagaceae); Poster presented at the XIV International Symposium on Scale Insect Studies - ISSIS June, 13th - 16th, 2016 - Catania - Italy; *Entomologica*, Bari, 47: 21-23; doi: dx. doi. org/10. 15162/0425-1016/447

Poster, accepted: September, 2016; ISSN 0425-1016

Part of this study was presented during the ISSIS XIV 13-16 June 2016, Catania - Italy

Staging and estimating the die back induced by *Kermesidae*

Stage	symptoms
1	infested but symptomless
2	scarce die back: 5-10% of twigs
3	moderate die back: 11-50% of twigs
4	serious die back: 50-89% of twigs
5	lethal die back: >90% of twigs

Finally, we consider the differences between two study areas, both in Bari, Italy: the small market square between via G. Salvemini and F. Sorrentino and the area of L. De Laurentis avenue. We scrutinised the trees to estimate the infestation, to stage the symptoms and evaluate the damage. We reported the results of the two study areas as a comparison between a new (Market Square) and an old (De Laurentis avenue) infestations in the table and the pie chart below.

Infestation estimation in two different urban areas

Market square		
Stage	n° of oaks	%
1	4	8, 89
2	3	6, 67
3	8	17, 78
4	30	66, 67
Total	45	100, 01
De Laurentis avenue		
Stage	n° of oaks	%
1	43	30, 50
2	33	23, 40
3	37	26, 24
4	23	16, 31
5	5	3, 55
Total	141	100, 00

ACKNOWLEDGEMENT

We recognize the support of Applied Ecology during this study.


Kermes vermilio Planchon and Nidularia pulvinata (Planchon, 1864) (Hemiptera Kermesidae) outbreaks off urban Quercus ilex L. (Fagaceae)

R. Roberto^{1,3}, L. Diana¹, V. Russo⁴, F. Poicelli^{1,3,4,5}, G. Pellizzari²

¹ DISSPA - UNBA Via Amendola 155/A, 70126 Bari, Italy; francescopoicelli@uniba.it; ² DAFNAE - UNPD, viale dell'Università 16, 35020 Legnaro, Italy; giuseppe.pellizzari@unipd.it; ³ Selge Network, University of Bari Aldo Moro Via Amendola 155/A, 70126 Bari, Italy; ⁴ CIHEAR - IANIG, via Ceglie, 9 70010 Mottola (BA), Italy; vrbio@libero.it; ⁵ CNR-IPSP s.s. Bari Via Amendola 122/D, 70126 Bari - Italy

ABSTRACT. *Kermes vermilio* and *Nidularia pulvinata* in some outbreaks are lethal to young holly oaks and strongly damage adult trees. Such infestations are common in several South Italian urban and peri-urban areas and have been reported for a while. Recently we have been observing in Bari (Apulia region) an ever constant invasion off oak *Nidularia* and *Kermes* on *Q. ilex* not scale infested habitats. The phenomenon is possibly in connection with the new northward expansion of *Nidularia* that is presently recorded in Italian areas with a continental climate as Veneto and Romagna regions. City surveys and damage estimations revealed the entity of kermesidae impact regarding direct and indirect costs for the maintenance of urban parks, public gardens and leisure areas, avenues and boulevards. Moreover, we discuss the synecology of the two species evaluating the prevalence of mixed infestations on the same plant or the reciprocal competitive displacement. Possible causes of the actual outbreak may lie in ecological disturbance along the rural-urban transition zone, changes in the available range of insecticides, wrong or absent tree maintenance, changes or fluctuation in climatic parameters.

ACKNOWLEDGEMENTS: we recognise the support of Applied Ecology during this study



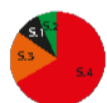
Mixed infestations by *Kermes vermilio* and *Nidularia pulvinata* off *Quercus ilex* are not truly mixed; this is evident as we realise that *K. vermilio* prefers to infest hoar bulgs while *N. pulvinata* mostly sets on the trunk and the main branches. The two species seems to share a single host plant occupying two near but distinct niches. Damages are similar, being both the Kermesidae capable of inducing die back, but *Nidularia* actively damages the trunk, also. In a case of infested public greeneries, the officers are usually unable to check the pests, i.e. by an IPM strategy or by chemical control. Possibly because of the extended spraying of granules or the missing of effective insecticide authorised for urban area use. Moderate control is given by formulae tree injection but results often less useful than expected. Intense pruning in spring and the consequent plant re-sprouting appears favourable to plant health but for a very short lapse. New sprouts are quickly colonised by wandering granules and become intensely infested. Moreover, bulgs and small branches cut down leave on the plant much more of the *Nidularia* population while pruned down most of the *Kermes* out the plant. Intense and not timed pruning favours *Nidularia* by displacing *Kermes* from the host plant in such a way that urban *Q. ilex* are heavily infested by the most damaging and lethal of the two pest species. Finally, we consider the differences (see table) between the two study areas as the results of a new (Market Square) versus an old (De Laurentis avenue) infestations. Left picture shows the mature *Quercus ilex* pruning given every four five years. Pruning is severe (c, d) in conjunction with die back (d, e) because they consider a phytosanitary 'best desiring' measure to cut down symptomatic die twigs.

Staging and estimating the die back induced by Kermesidae

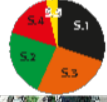
Stage	symptoms
1	infested but symptomless
2	scarce die back: 5-10% of twigs
3	moderate die back: 11-50% of twigs
4	serious die back: 50-89% of twigs
5	lethal die back: >90% of twigs

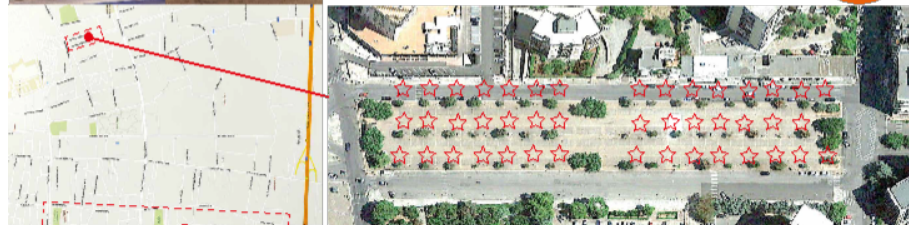
Infestation estimation in two different urban areas:

Market square	n° of oaks	%
1	4	6,69
2	3	6,67
3	6	17,78
4	30	66,67
Total	45	100,01



De Laurentis avenue	n° of oaks	%
1	43	30,50
2	33	23,40
3	37	25,24
4	23	16,31
5	5	3,55
Total	141	100,00





Google Earth views of the two study areas, both in Bari, Italy, show the small market square between via G. Salvemini and F. Serravalle below a view of L. De Laurentis avenue. The red stars mark the trees scrutinised to estimate the infestation, to stage the symptoms and evaluate the damage that we summarise in the table and pie charts.

© 2018 by the author(s). Published by Selge Network. This article is distributed under the terms of the Creative Commons Attribution License (CC BY) which permits unrestricted use, distribution, and reproduction in any medium, provided the original author(s) and source are credited.

