

# ENTOMOLOGIA HELLENICA

Vol 19, No 2 (2010)



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doi: [10.12681/eh.11585](https://doi.org/10.12681/eh.11585)

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### To cite this article:

Williams, D., & Kaydan, M. (2010). Ferenc Kozár – A dedicated and prolific worker on scale insects. *ENTOMOLOGIA HELLENICA*, 19(2), 163–166. <https://doi.org/10.12681/eh.11585>

## Ferenc Kozár – A dedicated and prolific worker on scale insects

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### ABSTRACT

At the XII Meeting of the International Symposium on Scale Insect Studies, delegates and coccidologists worldwide congratulate Dr Ferenc Kozár for his work on scale insects during over 40 years of concentrated study. Ferenc is well known for his contributions to economic and taxonomic work on scale insects. He entered the Agricultural University in Budapest, Hungary, in 1962, and then the University of Leningrad (now St Petersburg) and returned to Hungary where he has been employed as Research Scientist and then Head of the Department of Zoology of the Hungarian Academy of Sciences in Budapest until 1990. He then became Research Consultant, a position he has held since. His list of publications includes nine books and about 220 papers in scientific journals. He has described 13 new family-group names, 32 new genera, and about 175 new species. Much of this work has been done since 1990. We expect a steady flow of publications in the future.

KEYWORDS: Kozár, economic entomology, taxonomy, mealybugs, ensign scales, biography.

### Introduction

Delegates at the XII meeting of the International Symposium on Scale insect Studies (ISSIS) held at Chania, Crete, agree with great pleasure, the decision of the International Advisory Committee, to honour Ferenc Kozár (Fig. 1) for his work on scale insects. Ferenc is widely known for his numerous papers on economic and taxonomic papers, for his generosity in sharing knowledge and for his willingness to co-operate in many aspects of scale insect research.

Ferenc was born in Budapest, Hungary, during the middle of the Second World War, a difficult time to be brought up. At about the age of 10 when living in the country, he

noticed that the apple trees in his mother's garden were dying out because they were infested with San Jose Scale (he learnt this afterwards). Ferenc helped to spray the trees with DNOC (4,6-dinitro-o-cresol). When about 12 years old, he found that *Robinia* trees were covered with *Parthenolecanium corni* (Bouché), which produced great quantities of honeydew. The outbreak was, apparently, the last great one in Europe of this species before the introduction of suitable parasitoids from North America, so he learnt later.

It must have been his encounter with scale insect pests at an early age that indicated his future entomological interests because in 1962 he went to study at the Agricultural University in Hungary. After two

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FIG. 1. Ferenc Kozár.

years he decided to further his studies in the former Soviet Union. At first, it was decided that Ferenc should study at the Horticultural Faculty at the University of Leningrad (now St Petersburg). Ferenc's hands, however, were yellow from spraying with DNOC and so it was decided that Ferenc should study at the Plant Protection Department instead, where he started in 1963. This was a good choice because Ferenc was interested mostly in pests such as the San Jose scale, *Diaspidiotus perniciosus* (Comstock). His Master's thesis was on the subject of scale insects in fruit orchards and other trees. During this time, he studied the biology of the mealybug *Phenacoccus aceris* (Signoret), and the soft scale *Parthenolecanium corni* in the parks of Pushkin, a town about 24 km south of St Petersburg. He also studied other scale insects of fruit orchards. An opportunity arose for him to stay for six months in Pyatigorsk, North Caucasus, where he studied quarantine pests and *D. perniciosus*, *D. ostreaeformis* (Curtis) and an unusual outbreak of the soft scale *Palaeolecanium bituberculatum* (Signoret). He worked afterwards at the university on forecasting outbreaks, population dynamics and faunistic problems of scale insects. By then, Ferenc was able to speak Russian and he profited greatly during his visits to Evelyn Danzig who was working (and still

is) at the Zoological Institute in present-day St Petersburg. Here he also was influenced greatly by Eugenii Sugonyaev, the noteworthy parasitologist. Although Ferenc visited the World Congress of Entomology in Moscow in 1968, he regrets not meeting scale insect taxonomists who were there also. Apparently, Ferenc was still interested in economic entomology at the time. He also regrets never meeting Nicholai Borchsenius who had died in 1965. In 1971, Ferenc started to study for his PhD in both Hungary and Russia and one of his supervisors was Evelyn Danzig, who was an enormous help to him.

Ferenc was employed as a Research Scientist at the Department of Zoology, Research Institute of Plant Protection, Hungarian Academy of Sciences, Budapest, where he has spent most of his working life and where most of us have contacted him since. He was awarded his PhD in 1975. During 1978–1990, Ferenc was Head of the Zoology Department. So much of his early life, qualifications and employment! He has been a Scientific Consultant since 1991.

For over 40 years, there has been a steady stream of scientific papers that have been published with Ferenc as the sole author or under joint authorship. The total now exceeds 219 publications in scientific journals and book chapters and, amazingly, nine books. We have an impression that all his publications are on the subject of scale insects but, surprisingly, his first paper published in 1968 was on the turnip moth and the second, a year later, on the cockchafer beetle. Let us examine some of his papers a little more closely. Most of his early publications are concerned with scale insect pests that are present in his native Hungary. His surveys of national parks, fruit orchards, forests, and different areas of Hungary have probably made his native country one of the most surveyed in the world for scale insects. He

has extended this activity to many neighbouring countries, particularly Turkey, Greece, the former Yugoslavia and Switzerland. Not content with one survey, he has continued to survey the same areas to ascertain any increase in the number of species over a given time. His major studies on economic aspects of scale insects include pheromone extracts, pheromone traps, juvenile hormones and their affects on parasitism, the use of colour traps for monitoring adult males, and developmental biology. Ferenc is deeply interested in global warming. He has studied the northern advance of scale insects and particularly the species *Diaspidiotus perniciosus* and *Pseudaulacaspis pentagona* (Targioni Tozzetti). Ferenc followed up these studies with checking the affects of severe winters when, apparently, some scale insects survived to continue their northern advance.

It is obvious that Ferenc knew the importance of the correct identification of scale insect species and the role of taxonomy for much of the work he was doing. Sometime in 1974 or 1975, he met Michael Kosztarab, a former Hungarian, for the first time. They co-operated fully and made many scale insect surveys in Hungary and this resulted in their joint work of 192 pages published in Hungarian in 1978 and expanded to a book of 456 pages in English on the scale insects of Central Europe, a work widely used since. In the same decade, Ferenc described some of the new species he had collected himself or with other colleagues and he has never stopped.

With access to a large amount of material extracted from soil or litter, Ferenc has shown us what a vast fauna exists underground. He was most generous in handing over all the specimens of mealybugs from southern Asia to DJW to include in his book. Ferenc has described many of the other species

of mealybugs, ensign scales, and that peculiar family, the Caryonemidae with other authors, notably Dug Miller and Imre Foldi, and in his two books on these groups published later. Perhaps it was the study of these insects that gave him a great interest in zoogeography. It is appropriate to mention the name Zsuzsanna Koncncé Benedicty at this point because, apparently, she enjoys preparing scale insects on microscope slides and illustrating them. She has been an enormous help to Ferenc and both have written many papers together. Zsuzsanna was a co-author on the book on subterranean mealybugs of the subfamily Rhizoecinae. Ferenc also spent time working on the family Asterolecaniidae of South Africa with Jan Giliomee.

It gives Ferenc a great pleasure to bring as much information as possible into a large work. He has started to work on the family Eriococcidae with equal vigour and has already written some noteworthy papers on the family. He informs us that there is another book of about 500 pages in preparation on the Palaearctic Eriococcidae which we shall all look forward to seeing in due course. We know that Ferenc has already erected about 13 new family-group names, 32 new genera and about 175 new species, and this is a remarkable achievement. He acknowledges the help given to him by colleagues past and present by naming genera and species after them.

In 1991, Ferenc was awarded with the degree of Doctor of Agriculture for all his achievements in that field. He has been President, Vice President and a member of various Hungarian plant protection, zoological and entomological societies and committees, and has been the invited professor in Italian universities in 1998, 1991, 1994 and 1998, the invited professor in Turkey in 1999 and in Switzerland in 1992, 1993 and

1994, and to research establishments and the Museum in France during 2000, 2001 and 2004. Ferenc is also a member of the International Organization for Biological Control, West Palaearctic Research Section.

Everyone will have noticed his enthusiasm for scale insects. He always seems to look

happy and has an engaging sparkle in his eye. Many of us will remember with great pleasure how he hosted the fourth meeting of ISSIS in Budapest in 1983 and the help given to him by his family. We wish him well.