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REVIEW

FROM PROF. DR. ZDRAVKO HUBENOV – NATIONAL MUSEUM OF NATURAL HISTORY, BULGARIAN ACADEMY OF SCIENCES OF THE MATERIALS, PRESENTED FOR PARTICIPATION IN A COMPETITION FOR THE ACADEMIC POSITION OF **ASSOCIATE PROFESSOR** IN THE FIELD OF HIGHER EDUCATION 6. AGRICULTURAL SCIENCES AND VETERINARY MEDICINE; PROFESSIONAL DIRECTION 6.5. FORESTRY; SCIENTIFIC SPECIALTY – **FOREST MELIORATION, FOREST PROTECTION AND SPECIAL FOREST USAGE** FOR THE NEEDS OF THE DEPARTMENT OF FOREST ENTOMOLOGY, PHYTOPATHOLOGY AND HUNTING FAUNA AT THE FOREST RESEARCH INSTITUTE, BULGARIAN ACADEMY OF SCIENCES, PUBLISHED IN THE SG, ISSUE № 12, 12.02.2021

By order № RD 15-149 from 13.04.2021 of the Director of the Forest Research Institute, Bulgarian Academy of Sciences I was appointed a member of the scientific jury in a competition for the academic position of "Associate Professor" in the field of higher education 6. Agricultural Sciences and veterinary medicine, professional direction 6.5. Forestry (scientific specialty **Forest melioration, forest protection and special forest usage**), announced for the needs of the Department of Forest entomology, phytopathology and hunting fauna at the Forest Research Institute, Bulgarian Academy of Sciences.

Dr. Gergana Ivanova Zaemdzhikova from the Department of Forest entomology, phytopathology and hunting fauna participates in the announced competition as a candidate.

BIOGRAPHICAL DATA

Gergana Zaemdzhikova graduated with a master's degree in Landscape Architecture in 2005 at the University of Forestry - Sofia (with a master's degree in landscape architecture). From 2008 to 2011 she was a landscape architect at the University Botanical Gardens of the Sofia University St. Kliment Ohridski. From 2011 to 2014 she was a full-time doctoral student in the Department of the Forest Entomology, phytopathology and hunting fauna of the at the Forest Research Institute, Bulgarian Academy of Sciences. From 2014 to 2016 she was an entomologist in the same section. In 2015, after the defense of her dissertation "Species composition and bioecological features of the leafhoppers (Lepidoptera: Tortricidae) on Quercus spp. in the Sofia region" she acquired the educational and scientific degree "Doctor" in the scientific specialty Forest melioration, forest protection and special forest usage. Since 2016 she has been a senior assistant in the same specialty at the Department of the Forest Entomology, phytopathology and hunting fauna of the Forest Research Institute. She has worked on 3 national and 2 international research projects and has led one national research and

educational project. She has participated in 13 national and 5 international scientific forums. She is an author of 40 scientific publications (33 for participation in the competition) and one popular article. She conducted classes with students (bachelors and masters) from the University of Forestry, Sofia in the discipline Pests of the cultivated plants.

The presented data show the qualification, research experience and scientific activity, required for participation in the competition for an associate professor.

ACCORDANCE OF THE PRESENTED MATERIALS WITH THE REQUIREMENTS

The set of materials presented by Dr. Gergana Zaemdzhikova (on paper and electronically) is in accordance with the Law for RASRB, the Regulations of the Bulgarian Academy of Sciences for application of the Law for RASRB and the Regulations on the terms and conditions for obtaining scientific degrees and for holding academic positions at the Forest Research Institute, Bulgarian Academy of Sciences. The set includes documents described in the application of the candidate (№ 1-20) to the Director of the Forest Research Institute (№ SB-01-345 from 30.03.2021) for admission to the announced competition for associate professor in field 6.5. Forestry (scientific specialty Forest melioration, forest protection and special forest usage). The documents for the competition are presented in 2 folders. They are prepared precisely and clearly reflect the activities of Dr. Gergana Zaemdzhikova.

Table 1. Minimum number of points required for the scientific position "Associate Professor" and the indicators achieved by the candidate according to the presented documents

Indicators		Number of points	Number of the candidate's points
A	1 – dissertation „Doctor”	50	50
B	4 – monograph or publications in the referenced journals [10]	100	200
G	7 – publication in the referenced journals (Q1, Q2, Q3, Q4) [17]	30	269
	8 – publication in the non-refereed and referenced journals [6]	10	22
	Total required minimum	200	291
D	13 – citations in refereed journals and monographs [10]	15	150
	14 – citations in unrefereed and peer-reviewed monographs [2]	10	20
	15 – citations in unrefereed and peer-reviewed journals [3]	5	15
	Total required minimum	100	185
E	18 – Participation in a national scientific project [3]	15	45
	19 – Participation in an international scientific project [2]	20	40
	20 – Leadership of a national scientific project [1]	30	30
	Total required minimum	50	115
Additional indicators for the Forestry Research Institute	Teaching activity, reviews, participation in scientific forums, etc.	+	68
Total sum of the indicators [exceeded almost 2 times]		500	909

THE REFERENCE OF THE CONTRIBUTIONS correctly and accurately reflects the achievements of the participant in the competition. It contains the most significant results and conclusions from the research.

DESCRIPTION OF THE PRESENTED MATERIALS

The research activity is well reflected in the competition documents. Dr. G. Zaemdzhikova has presented 34 publications beyond those with which she acquired the academic position of senior assistant (5 copies) and has defended her doctoral dissertation (3 copies): 27 articles (referenced - with impact factor or equivalent), 3 articles in magazines and series (without impact factor - in specialized, peer-reviewed and edited editions), 3 articles in an edited collection and 1 popular article). 23 articles have been published in English. 25 of the publications are co-authors. The independent publications include 8 articles in specialized scientific journals. Of the co-authored publications, she is the first author of 11, second - of 2 and third and next - of 12 articles. Dr. G. Zaemdzhikova has published in 10 foreign and international editions. Of the reports and posters of the scientific forums (18 in total), 15 are co-authored, 11 are in English. The publishing activity of Dr. Zaemdzhikova significantly exceeds the minimum requirements.

MAIN DIRECTIONS AND CONTRIBUTIONS

The scientific contributions are significant, original and mostly fundamentally applied. The main part of them are related to entomology (forest pests, their parasitoids and predators) - biology and ecology of the forest pests, regulators of their numbers, damage to trees and shrubs, phytosanitary condition of the forests and biomonitoring. The research work of Dr. G. Zaemdzhikova is in the field of entomology, ecology and fauna. She is not engaged in direct implementation and implementation activities due to the nature of the field in which she works. However, ecological studies of insect pests, elucidation of the role of parasites on important pests, the sanitary monitoring of the forest communities, the impact of the invasive pests and the correction of some traditional ideas are of substantial practical importance. The contributions represent a new direction and prove with new means significant aspects of existing scientific fields. Some of them can be taken as the formulation of a new hypothesis and can contribute to obtaining a number of confirmatory facts. The contributions from the research presented in the publications of Dr. G. Zaemdzhikova are in several directions.

FAUNISTIC CONTRIBUTIONS. New species for the fauna of Bulgaria have been identified of Hymenoptera and Lepidoptera (№ 31). Data were reported for 24 species of the family Ichneumonidae (№ 19) and for 3 species of the superfamily Chalcidoidea (№ 26). There are 15 species of the family Tortricidae, spread in the oak forests (№

21) and 5 species connected with *Carpinus orientalis* and 6 species on *Fraxinus ornus* (№ 33). The distribution of some separate species has been added.

BIOLOGY AND ECOLOGY OF HARMFUL INSECTS. The phenology of *Thaumetopoea pityocampa* in Bulgaria has been studied in detail (№ 20, 22, 27, 36, 41). The difference in the flying period of the winter and summer populations was established (20). The soils preferred by *T. pityocampa* (№ 22) and the degree of intensification of the invasion (up to 50%) in relation to the soil type were established. The fertility of the *T. pityocampa* and the variability of the egg production depending on the area were studied (№ 32). The seasonal dynamics of the summer form of *T. pityocampa* in the Eastern Rhodopes and the rates of expansion in the central parts of the country were studied (№ 27, 37, 41). The flight period of the imago in 12 species of the family Tortricidae was studied (№ 18). For 59 species of the Cerambycidae family, new, unreported from the territory of Bulgaria trophic connections with plants have been established (№ 30).

PARASITES AND PREDATORS ON HARMFUL INSECTS. Eight new ichneumonide parasitoids have been identified in tortricides. The percentage share of ichneumonids in the limitation of the number of 6 types of tortricides was determined and the main regulators of their number were clarified (№ 19). 24 species of the family Ichneumonidae, parasites on tortricides, were found. For the first time 4 species of hosts in Bulgaria have been reported (2 of Ichneumonidae and 2 of Chalcidoidea) and one new host for science. The extent (3-10%) of parasitism is not high (№ 19, 26). For the first time, a carnivorous winged wing attacking the larvae of *T. pityocampa* was found (№ 24). High extensiveness (66.7%) of a braconid parasite was observed on larvae of the family Agromyzidae (№ 28). Parasitoids (from Ichneumonidae, Braconidae and Tachinidae) were isolated in 7 species of the Cerambycidae family, the extent of parasitism was determined (up to 80%) and 3 new trophic connections were established (№ 31).

SANITARY MONITORING OF FORESTS. There has been a lasting reduction (for the last 30 years) in the pine *T. pityocampa* attacks. At the same time, the importance of Scolytidae and leaf wasps as pests on the coniferous forests is increasing (№ 23). In deciduous forests, the importance of Gypsy moth and tortricides as pests has diminished. Significant improvement has been found in the deciduous forests. In the oak communities, pests play an insignificant role (№ 23). For coniferous forests, aging is defined as the main cause of drying (№ 23). The role of *T. pityocampa* is critically accepted as the most dangerous pest (№ 23, 35). The role of Mesophleps on the condition of juniper trees in the Kresna Gorge has been defined as insignificant (№ 29). There is a tendency to reduce the areas provided for the fight against pests (№ 23).

OTHER CONTRIBUTIONS. The significance of the invasive species of the genus *Impatiens* and the influence of *Pristerognatha* on its abundance are considered (№

25). The role of *Hexomyza schineri* on the aspens of the Vitosha Mts. was studied (№ 28). The role of the transport traffic for the distribution of the pine *T. pityocampa* is considered (№ 38). The efficiency of the pheromone traps was studied (№ 40). They have been found not to be completely reliable in predicting forest protection measures, as they attract individuals outside the affected area (№ 34).

SIGNIFICANCE OF THE OBTAINED RESULTS (CITATION RATE)

The achievements of Dr. G. Zaemdzhikova are well accepted by specialists and are cited. Her publications have been cited 15 times and 10 citations are in prestigious refereed editions (with impact factor or equivalent). There are 8 citations by Bulgarian authors. The most cited (with 5 citations) is article № 30, published in "Acta zoologica bulgarica" (concerning the communities of xylophagous Cerambycidae in Bulgaria). The citations are by specialists working in related fields and cover the main part of her articles. In the publications with citations of the works by Dr. G. Zaemdzhikova there are no ones with a critical content. They were used to get acquainted with the biology of some species related to forest communities, to clarify specific issues of monitoring, sanitary problems and forest protection, destruction of insect pests, acquaintance with a number of taxa and others. The number of citations exceeds the accepted requirements by about 55% (Table 1).

LEADERSHIP AND PARTICIPATION IN PROJECTS

The materials of the competition reflect the work of Dr. G. Zaemdzhikova on 6 projects (4 national and 2 international). She was a leader of 1 of the national projects. The projects have scientific and scientific-applied character, international or national funding and concern the monitoring of the insects xylophages, the role of parasitoids, the sanitary condition of forests, aspects of the biology of a number of pests and others. Regarding this indicator, the requirements have been exceeded more than 2 times (Table 1).

EDUCATIONAL AND PEDAGOGICAL ACTIVITY AND SCIENTIFIC FORUMS

PREPARATION OF THE EXERCISE COURSE. Classes were held with students (bachelors and masters) from the University of Forestry in the discipline Pests of the cultivated plants with a total classroom employment of 113 and 126 hours.

SCIENTIFIC FORUMS. Materials of the participation of Dr. G. Zaemdzhikova in the seminars and conferences are presented. She has participated with reports and posters (13 in English) in 18 scientific forums (5 national and 13 international).

EVALUATION OF THE PERSONAL CONTRIBUTION

Research in the forest ecosystems requires teamwork. At the same time, the constant participation of many authors in a large number of common publications

makes it difficult to assess the individual participation of the each one (whether it is methodical, experimental, expert, analytical and synthetical). It should be noted that in some cases it is not easy to establish the real personal contribution of the candidates. From the presented documents under the competition, a clear personal contribution of Dr. G. Zaemdzhikova in the implementation of the research work and the publishing of the materials is established. This contribution is evident in the publications related to the biology of the pests and their parasitoids where its activity is well defined. Her independent publications are 12 (8 - and 4 more out of the competition). The scientific qualification of Dr. G. Zaemdzhikova is indubitable. The results achieved by her in the research activity exceed the requirements of the Forest Research Institute and those of the Bulgarian Academy of Sciences, accepted in connection with the Regulations for application of ZRASRB.

C O N C L U S I O N. The candidate in the competition Dr. G. Zaemdzhikova has presented a sufficient number of scientific works published after the materials used to acquire the academic position of assistant. In the works of the candidate there are original scientific and applied contributions, which have received international recognition as a representative part of them are in journals and scientific series published by international academic publishers. After getting acquainted with the materials and scientific works presented in the competition and analysis of their significance as well as the scientific and applied contributions, **I give a positive assessment and recommend the Scientific Jury and the Scientific Council to vote for the acquisition by Ch. Assistant Dr. Gergana Ivanova Zaemdzhikova to the academic position "Associate Professor" at the of Forest Research Institute, Bulgarian Academy of Sciences in the professional field 6.5. Forestry; scientific specialty Forest melioration, forest protection and special forest usage.**

Sofia,
25.05.2021

Reviewer:

/ Prof. Dr. Zdravko Hubenov /