

REVIEW

by **Dr. Plamen Genkov Mitov - professor at SU "St. Kl. Ohridski",
Biological faculty, Department of Zoology and Anthropology**

of the materials submitted for participation in the competition
to occupy the academic position of "associate professor"
at Paisii Hilendarski University of Plovdiv

by: field of higher education 4. Natural sciences, mathematics and informatics, professional direction 4.3.
Biological Sciences (Zoology)

In the competition for "docent", announced in the State Gazette, no. 92 of 18.11.2022 and on the website of Plovdiv University "Paisii Hilendarski" for the needs of the Department of "Zoology" at the Faculty of Biology, as a candidate the Assistant Professor Dr. Petar Boyadzhiev from PU " Paisii Hilendarski", Faculty of Biology, Department of Zoology.

I. General presentation of the materials received

Subject:

By order No. PD-21-334 dated 15.02.2023 of the Rector of Plovdiv University " Paisii Hilendarski" (PU) I have been appointed as a member of the scientific jury of a competition for the academic position of 'associate professor' in the PU in the field of higher education 4. Natural sciences, mathematics and informatics, professional direction 4.3. Biological sciences (Zoology), announced for the needs of the Zoology department at the Faculty of Biology

Only one candidate has submitted documents for participation in the announced competition: chief assistant Dr. Petar Stoykov Boyadzhiev from the Zoology department at the Faculty of Biology of the PU " Paisii Hilendarski". The set of paper/electronic materials presented by Dr. Petar Boyadzhiev is in accordance with the Regulations for the Development of the Academic Staff of the PU, and includes the following documents:

- 1. Application form to the Rector for admission to participate in the competition;
- 2. Resume in European format;
- 3. Diploma for higher education with acquired educational and qualification degree "master" - original with appendix;
- 4. Diploma for educational and scientific degree "doctor" - original;
- 5. List of scientific works: list of scientific works for "associate professor"; list of scientific works for "doctor"; scientific papers (copies of publications)
- 6. List of citations;
- 7. Certificate of compliance with the minimum national requirements and certificate of compliance with the additional faculty requirements;
- 8. Annotations of the materials under Art. 65. from PRASPU (in Bulgarian and English) with extended habilitation certificate;
- 9. Self-assessment of contributions;
- 10. Declaration of originality and authenticity of the attached documents;
- 11. Certificate of work experience;
- 12. Documents for academic work: reference - academic work; reference - study aids; certificate - "Lyuben Karavelov" branch - Kardzhali; certificate - Branch - Smolyan;
- 13. Documents for scientific research work: certificates of participation in a project to the "Scientific Research" fund and "Institute of Biodiversity and Ecosystem Research" (BAS) and certificates of participation in a project to the "Scientific Research" fund and "Institut for the forest" (BAS);

- 14. Documents according to the additional requirements of the Faculty of Biology (PU): reference for defended graduates; report on the scientific projects and report on the administrative activity;
- 15. Other documents, including a diploma for acquired specialization "Nature Protection", at "Free Faculty" (PU); order No. 686/12.12.2018 for participation in the preparation of a candidate-student campaign at the Faculty of Biology at Paisii Hilendarski University

The candidate, Ch. assistant Dr. Petar Boyadzhiev, has submitted a total of 31 scientific papers and three study aids (manual, textbook and study notebook). I accept for review 23 scientific works that are outside the dissertation and are counted in the final evaluation, together with 3 study aids and 2 research projects. For the projects, documents (in the form of official notes) for participation in the two research projects have been presented. The eight scientific works on the dissertation are not reviewed. All 23 scientific papers submitted for this competition have been published in international, renowned and specialized scientific journals (e.g. *Acta zoologica bulgarica*, *Biologia*, *Revue Suisse de Zoologie*, *Spixiana*, *Zootaxa*), included in the respective quartiles, referenced and indexed in Web of Science and Scopus. All scientific articles are published in English and have an overall impact factor of 9.645 – traditionally zoological journals have a low impact factor. The candidate's results received a wide response among the international scientific community – they were cited 40 times, in journals with the corresponding quartiles.

All submitted documents meet the requirements in terms of content and format and are in accordance with the announced competition.

Note: I have no joint publications with the applicant submitted for participation in the contest.

II. Brief biographical data of the applicant

Dr. Petar Boyadzhiev was born in the city of Plovdiv in 1968. In the period 1986-1991, he completed higher education at the Faculty of Biology of the PU "Paisii Hilendarski", majoring in "Biology" with the qualification of *Biologist*, and specializing in "Ecology" and The Free Faculty of the Plovdiv University majoring in "Nature Protection" with the qualification *Specialist-educator in nature protection work*. In 1991, he defended his diploma thesis on the topic "Studies of insects from the order Coleoptera, Hymenoptera, Heteroptera, Orthoptera and Neuroptera in agroecosystems of beans on the territory of IIRR – Sadovo, with scientific supervisor Assoc. Prof. Atanas Donev. After graduating, for a very short period of time (September 1992–February 1993) he was a teacher of Biology, Chemistry and Physics in the village of Manastir. After this period, in 1993, he started as a part-time assistant in Invertebrate Zoology at the PU "Paisii Hilendarski", in the Zoology department, and since 1995 he has been a regular member of the same department. In 2003, he held the academic position of chief assistant in Invertebrate Zoology, in the Zoology department at the Faculty of Biology at the PU, which he has been performing until now. Later, in 2005, he acquired the educational and scientific degree of doctor in scientific specialty 01.06.14 Entomology. The topic of his dissertation is "Eulophid fauna (Hymenoptera, Chalcidoidea, Eulophidae) of the Rhodope Mountains", with scientific supervisor Assoc. Atanas Donev, from the same unit.

The overall creative path of Ch. Assistant Professor Petar Boyadzhiev, Ph.D., is only in the PU and in the department, who stated the necessity of the current competition. Going through all the job titles like 'Assistant', 'Senior Assistant' and 'Ch. assistant', Dr. Petar Boyadzhiev already has nearly 30 years of teaching experience at this institution.

I must emphasize that for his successful development as a zoologist/entomologist during all these years, the fact that he studied, developed and worked in the Department of Zoology among some of our most distinguished specialist entomologists, widely recognized in the world, who created and built a school of Entomology/respectively Hymenopterology. These are Prof. Pavel Angelov, Prof. Blagoi Gruev, Assoc. Prof. Vasil Tomov, Assoc. Atanas Donev, Prof. Dimitar Bechev.

The thematic development of the candidate is primarily related to the study of the Balkan and East Asian entomofauna, with a focus on the faunal composition, taxonomy, distribution, biology, ecology of species of hymenopteran insects from the superfamily Chalcidoidea – family Eulophidae, family Encyrtidae and family Eupelmidae.

The creative biography of the candidate and his thematic development is entirely in the field of Zoology and fully covers the scope of the announced competition.

As a zoologist and university teacher, I follow with interest the publication activity of my colleague Dr. Petar Boyadzhiev, and so far I consider it very successful.

III. General characteristics of the applicant's activity

Compliance with the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB)

The fulfillment of the minimum national requirements in terms of indicators for holding the position of "Associate Professor" is as follows: The indicator from group "A" is covered; According to the group "B" indicator, no points are required for this position; The indicators (out of 4) of group "B" are covered by 124 points (out of 100 required). Here are presented 8 publications from scientific publications falling at the time of publication in the following quartiles: Q2 – 2 items, Q3 – 4 items, Q4 – 2 items; Indicators (from 5 to 10) of group "D" are covered by 210 points (out of 200 required). Here, the candidate has included 15 publications distributed as follows: Q3 – 10, Q4 – 5. Group "D" indicators are covered by 80 points (out of 50 required). Total points by group of indicators A+B+G+D is equal to 464 (out of 400 required). This shows that the candidate fully meets and even exceeds the requirements of ZRASRB.

Compliance with the additional requirements of the Faculty of Biology of the PU

The additional requirements include: Author and co-author of a teaching aid in the field of the competition – 3 teaching aids if 2 copies are required; Guide of successfully defended graduates – 5 successfully defended graduates with required 5; Teaching experience – 27 years with requirements 5; Participation in scientific projects – 2 if 2 are required; Administrative experience in the last 5 years - participation in 1 candidate student campaign, at least one participation is required;

As can be seen from the reference made, Dr. Petar Boyadzhiev meets and exceeds the requirements of the RASRB, as instead of the required 400 points, he presents evidence for 464 points. In addition, he fulfills the additional criteria of the Faculty of Biology of the PU.

Assessment of the educational and pedagogical activity and preparation of the candidate

Teaching and learning work is one of the main activities of the candidate and is entirely within the field of the competition. From the presented report on the educational activity of Ch. Assistant Professor Petar Boyadzhiev, it is clear that during the years of his teaching career, the candidate has not only taught laboratory and field classes in the Bachelor's and Master's Colleges of Education, but also lectures on a wide variety of disciplines in the fields of the announced competition, which is an important certificate of his academic experience and authority. These are: lectures on "Zoology of Invertebrates" of the specializations Ecology of Biotechnological Production (regular study, part-time study, part-time study, part-time study), exercises on "Zoology of Invertebrates" of the specialty Biology (h. o.); lectures and exercises on "Medical Zoology" of the Medical Biology major, lectures on "Zoology" and "Animal Diversity" of the Molecular Biology major (r. o.), "Animal Diversity" of the Bioinformatics specialist (r. o.) , lectures on "Zoology" of the specialty Pharmaceutical Biotechnologies (r. o.) and Teacher "Man and Nature"; lectures on "Ethology" of the specialty Ecology and Environmental Protection (b. o. and z. o.); lectures and exercises on "Ethology" and "Biological control" of the Biology and Environmental Protection and Biology and Natural Resources Management majors; lectures and exercises on "Zoological objects in pharmaceutical

biotechnologies" specialty Pharmaceutical biotechnologies (r. o.). In the Master's program "Biodiversity, Ecology and Conservation" he gives lectures and exercises on the freely optional disciplines "Biological bases of behavior" and "Methods for collecting and processing botanical and zoological materials". In the "Parasitology" master's program, he gives lectures and exercises on "Protozoan parasites of humans and animals", "Medical entomology and acarology", "Field practice in medical entomology, acarology and teriology" and the optional discipline "Ethology of parasites". For all of them, the candidate has developed lecture courses and presentations, presented to students as electronic files for self-training. The candidate also conducts field exercises and practices with the specialties Molecular Biology (b. o.), Pharmaceutical Biotechnologies (b. o.), Biology (b. o.), Medical Biology (b. o.).

In the field of his competences, Dr. Petar Boyadjiev is a co-author of three teaching aids, which are in the direction and specialty of the announced competition, and are attached in the "Reference for teaching aids", to the sets of documents for review. These are: 1) Manual for laboratory exercises in Invertebrate Zoology, which can be used by undergraduate students in universities in related disciplines, as well as by teachers in secondary schools as a reference; 2) textbook and 3) biology and health education notebook for 7th grade.

The average annual workload of the candidate for the last 5 years is 470 hours (over 2352 hours in total), which determines his important place as a lecturer at the PU.

Simultaneously, Ch. Associate Professor Boyadzhiev very actively participates in the training of young personnel. He was the supervisor and co-supervisor of 12 graduates (according to data from his CV), of which he nominated five for the current competition, who successfully defended their bachelor's degrees in Biology and Ecology and Environmental Protection in the period 2010-2018.

Based on the above, I highly appreciate the educational and teaching activities of the candidate, I believe that it is significant in volume and covers important directions in the field of the announced competition. From all that has been stated, it can be summarized that Dr. Boyadzhiev is an established teacher in the field of Zoology and has the necessary experience and qualifications to hold the academic position of "associate professor".

Evaluation of the candidate's scientific and scientific-applied activity

From those presented by Dr. Boyadzhiev 23 publications for the current competition, it can be seen that there are no independent publications among them. According to the number of co-authors, the articles are distributed as follows: with one co-author - 3 articles; with two co-authors – 7 issues; with three co-authors – 7 issues; with four co-authors – 3; with five - 2 and with six co-authors - one. Accordingly, the candidate is first author in 8 publications, second author in 4, third in 5, fourth in 4, fifth and sixth author in one each. These data demonstrate the candidate's ability to work in a team as well - in modern science, joint work is now a natural phenomenon and is highly valued all over the world, especially when developing environmental topics, collecting data for large-scale projects, where the implementation even by a small team researchers is difficult to implement. The distribution of the applicant's articles by journal with quartiles is as follows: Q2 – 2, Q3 – 14, Q4 – 7.

Dr. Petar Boyadzhiev has indicated in his CV that his known citations are 168. For the current competition, the scientific publications that the candidate submitted have been cited a total of 40 times, all of which are in journals referenced by SCOPUS and WEB of SCIENCE, which is proof of the importance of Dr. Petar Boyadzhiev's studies and the interest of the scientific community in them. More than 90% of the citations – 37 – are by foreign authors. None of the quotes are negative in content. The most cited scientific publications are: [№10] Georgiev, G., & Boyadzhiev, P. (2002) and [№18] Todorov, I., Stojanova, A., Parvanov, D., & Boyadzhiev, P. (2012) – cited 5 times; together with [№12] Georgiev, G., Sakalian, V., Ivanov, K., & Boyadzhiev, P. (2004); [№14] Mirchev, P., Georgiev, G., Boyadzhiev, P., & Matova, M. (2012); [№16] Mirchev, P., Dautbašić, M., Mujezinović, O.,

Georgiev, G., Georgieva, M. & Boyadzhiev, P. (2015) and [№22] Yefremova, Z., Civelek, H. , Boyadziyev, P., Dursun, O., & Eskin, A. (2011) – cited 4 times in prestigious international journals.

The results of the research activity of Dr. Boyadzhiev are presented to the scientific community not only through publications in scientific journals, but also through active participation in 12 scientific forums. He noted this in his CV. From the additional data I requested from the candidate (a list of his participation in scientific forums), it became clear that in the period 2008-2019 he participated with a total of 12 poster presentations (on the subject of the competition) in five international scientific forums and two national conferences.

In connection with the competition, the candidate submits information about participation in 2 scientific research projects financed by the "Scientific Research" Fund. In his CV, he mentions another 10 scientific research projects in which he also participated. From the additional information requested from the candidate (a list of all 12 projects in which he was involved in the period 2002-2022) it is clear that they are all in the field of zoology/entomology and concern his main areas of research and teaching. Their number clearly shows that Dr. Boyadzhiev conducts active research activities and is a sought-after partner in research teams as an entomologist specialist.

It makes an excellent impression that Dr. Boyadzhiev works with well-established teams of leading specialist zoologists/entomologists and ecologists from various institutions and uses appropriate methods in his studies that allow him to obtain reliable results and publish in leading scientific journals. The analytical part in the publications presented for review is thorough and sufficiently comprehensive.

Scientific contributions

The candidate has grouped the received contributions and results from the scientific publications presented for the competition in the following three directions: 1) **Taxonomically** – description of new species of the Eulophidae family, supplemented with descriptive tables for distinguishing them from morphologically close representatives; taxonomic notes and redescription of poorly studied species; 2) **Faunistic** – expanding the knowledge of biodiversity of the Eulophidae family and other representatives of the superfamily Chalcidoidea (Hymenoptera) in Bulgaria and neighboring countries and 3) **Methodological** – developing and describing streamlined devices and work methods suitable for research of small insect species and other biological objects.

I accept the reference to the scientific contributions formulated by the candidate, which he has grouped in these three scientific directions. However, I believe that among the contributions indicated by the candidate, those regarding the **Ecology and biology** of the investigated invertebrate groups should be highlighted and emphasized, since the scientific works presented by Dr. Boyadzhiev include valuable and new data on parasite/parasitoid – host relationship – potential agents for biological control, egg parasitoid complexes, host spectrum, gall communities, influence of environmental factors on survival of parasitoids in laboratory conditions and its effect on the host, as well as new trophic relationships of the studied egg parasitoids, supplemented with observations on their biology (publications no. **8, 9, 11, 13, 14, 15, 16, 18, 21**).

In my opinion, the candidate's contributions are significant enough and fully fall within the scope of the announced competition.

1) Taxonomic studies with nomenclature acts:

In the publications of Dr. Boyadzhiev in this direction, 5 new species from the family Eulophidae are described for science, which is an important contribution to the study of the biodiversity of this group of hymenopteran insects in Eurasia. These are: 1) *Entedoomphale bulgarica* Boyadzhiev & Triapitsyn, 2007 (№2); 2) *Stepanovia rosae* Boyadzhiev & Todorov, 2013, derived from galls of the cynipid *Diplolepis rosae* on four types of rosehips (№1); 3) *Stepanovia rosaeformis* Boyadzhiev & Antov 2022, bred from galls of *D. rosae* (№3); 4) *Stepanovia fructirosae*

Boyadzhiev, Yefremova & Tozlu, 2017, bred from galls of the cynipid *D. fructuum* from northeastern Turkey (№6). 5) *Omphale rodopiensis* Yefremova, Yegorenkova & Boyadzhiev, 2017 from the Rhodopes (№23).

The species *Entedonomphale kaulbarsi* (Yoshimoto) was synonymized with *E. carbonaria* and a new combination was presented – *E. postmarginalis* (Shafee, Rizvi & Khan), comb. n. (№20).

The previously unknown males of *Neotrichoporoides bulgaricus* Graham, 1987 collected from the type locality of the species are described. A new diagnosis is presented and the female holotype of *N. bulgaricus* (№22) is redescribed.

Determinative keys for distinguishing the species *O. acuminata*, *O. matrana*, *O. ochra* and *O. rodopiensis* are presented. (№23); of the Palaearctic species of the genus *Entedonomphale* (No. 2); of the species of the genus *Stepanovia* (№1); for the distinction of *Stepanovia fructirosae* from the morphologically close species *S. eurytomae*, *S. rosae* and *S. kubanica* (№6); on the determination of the ten species of *Diglyphus* from Turkey (№21). A definitive table of the species of *Stepanovia* Kostjukov, which are trophically related to the gall-forming Hymenoptera of the family Cynipidae (№3), is included.

This group of contributions can be defined as original, of a fundamental nature, providing "new empirical data in a poorly known scientific field" as well as with elements of "solving a practical question" regarding the determination of individual taxa. These contributions are extremely important because are directly related to the study of the biodiversity of parasitoids and their hosts mainly in Eurasia.

2) Faunal and horological studies:

– Of the family Eulophidae

New taxa established on the territory of:

The Balkans: *Danuviella subplana*, *Diglyphus crassinervis* and *D. albiscapus* are reported as new to the Balkans (№10); A new for the fauna of Bosnia and Herzegovina (Boracko lake area) eulophid *Baryscapus transversalis* was established; SWAsia: *Diglyphus begini* and *D. sabulosus* are reported as new to the fauna of Turkey (№21); Nearctic: The species *Entedonomphale carbonaria* was established for the first time in the USA, in the area of Sandlake Lake (Oregon) (№2).

New taxa established on the territory of Bulgaria:

The genus *Danuviella* is reported for the first time for Bulgaria (№10).

Four species of eulophids *Pediobius metallicus*, *Danuviella subplana*, *Diglyphus crassinervis* and *D. albiscapus* were established as new for the fauna of the country (№10). Also new to our fauna were reported *Aprostocetus metra* and *Euderus caudatus*, brought out by xylophages in the stems and branches of the goat willow *Salix caprea* from the region of Kokalyane and the village of Gorni Lom. In the course of the experiment, *E. caudatus* was bred from the eggs of *Saperda populnea* (Coleoptera: Cerambycidae), and *A. metra* – from the larva of *Rhabdophaga clavifex* (Diptera: Cecidomyiidae) (№12).

Pediobius bruchicida was reported as a new species for the fauna of Bulgaria. The material was derived from eggs of *Thaumetopoea pityocampa* on *Pinus nigra*, from Sredna Gora, Eastern Rhodopes and the valley of the Struma River (№15). The species *Chrysocharis mediana*, *Aprostocetus zoilus*, *Oomyzus tanaceti* and *Tetrastichus clito* are also reported as new for the fauna of Bulgaria (№17).

This group of contributions can be defined as original, of a fundamental nature, providing "new empirical data in a poorly known scientific field". These contributions are also of high value because are directly related to the study of insect biodiversity mainly in the Balkans and European Turkey.

Conducted local faunal surveys, resulting in:

The egg parasitoids *Baryscapus servadeii*, *B. transversalis*, and *Pediobius bruchicida* have been reported for the region of the Eastern Rhodopes on the pine processionary (*Thaumetopoea pityocampa*) (№8). *Baryscapus endemus*, *Chrysocharis pentheus*, *Cirrospilus pictus* and *Pediobius bruchicida*, hatched from the larvae and pupae

of the butterfly *Leucoptera sinuella*, a poplar pest (№ 9), are reported for the area of the Stryama River (South Bulgaria). The species *Pediobius metallicus*, *Danuviella subplana*, *Chrysocharis nephereus*, *C. pubicornis*, *Diglyphus crassinervis*, *D. isaea*, *D. albiscapus*, *Cirrospilus diallus*, *C. pictus* and *Elasmus* sp. are reported for the Sofia area. (Hymenoptera, Eulophidae) hatched from larvae and pupae of *Paraphytomyza populi* (Diptera: Agromyzidae), a poplar pest (№10). *Chrysocharis laomedon*, *C. pentheus*, *Elachertus inunctus*, *Pediobius saulius*, *Pnigalio incompletus*, *Sympiesis acalle*, *S. gordius*, *S. sericeicornis*, *Aprostocetus (Aprostocetus) sp.*, *Minotetrastichus platanellus* and *Oomyzus sokolowskii* hatched from larvae and pupae of *Phyllonorycter issikii* (Lepidoptera: Gracillariidae) on leaves of *Tilia cordata* (Malvaceae) (№19). *Colpoclypeus florus* and *Stepanovia* sp. near *eurytomae* were established as new for the fauna of Vitosha (№18). The species *Baryscapus servadeii*, *B. transversalis*, *Pediobius bruchicida* are reported for the Ivaylovgrad region with notes on their biology and ecology. The parasitoids were hatched from the eggs of the *Thaumetopoea pityocampa* collected from black pine (№14).

This group of contributions can be defined both as original, of a fundamental nature, providing "new empirical data in a poorly known scientific field" in terms of faunal lists, and as confirmatory of the species composition known up to that point for the studied areas.

– On the family Encyrtidae

The parasitoid *Ooencyrtus pityocampae* (Encyrtidae) was reported for the Boracko Lake area in Bosnia and Herzegovina, hatched from the eggs of the *Thaumetopoea pityocampa* from *Pinus nigra* (№16).

New taxa established on the territory of Bulgaria:

The encyrtid *Habrolepis montenegrina* is reported as a new species for the fauna of Bulgaria (№11). *Epidiaspis gennadii* (Hemiptera: Diaspididae) was reported as the only known host of the encyrtid *Habrolepis montenegrina* and as a new species for the fauna of Bulgaria (№11).

Conducted local faunal surveys, resulting in:

The encyrtid species *Ooencyrtus* sp. nr. *indefinitus*, *O. masii* and *O. pityocampae* are reported for the Eastern Rhodope region. The parasitoids were hatched from *Thaumetopoea solitaria* eggs laid on *Pistacia terebinthus* (№5).

The egg parasitoid *Ooencyrtus pityocampae* has been reported for the Eastern Rhodopes, but it was derived from the eggs of the *Thaumetopoea pityocampa* from the area of the village of Fotinovo (№ 8) and Ivaylovgrad (№14); and the species *Habrolepis montenegrina*, bred from larvae of *Epidiaspis gennadii* (Hemiptera: Diaspididae) from *Pistacia terebinthus* was found in the area of the city of Ivaylovgrad (№11).

These groups of contributions can be defined both as original, of a fundamental nature, providing "new empirical data in a poorly known scientific field" in terms of faunal lists, and as confirmatory, for the species composition known up to that point for the studied areas. These contributions are also of high value because are directly related to the study of the biodiversity of insects mainly in the Balkans, respectively in the territory of Bulgaria.

– On the family Eupelmidae

Conducted local faunal surveys, resulting in:

Anastatus bifasciatus (Eupelmidae) was reported from Bosnia and Herzegovina (Boracko Lake area), hatched from the eggs of the *Thaumetopoea pityocampa* from *Pinus nigra* (№16).

Eupelmus vladimiri has been reported for the Eastern Rhodope region, introduced from a new host – the pine processionary *Thaumetopoea pityocampa* (№8). *Anastatus bifasciatus* is reported for the Ivaylovgrad region, also hatched from eggs of the pine beetle *Thaumetopoea pityocampa* collected from black pine (№14).

These groups of contributions can be defined both as original, of a fundamental nature, providing "new empirical data in a poorly known scientific field" in terms of faunal lists, and as confirmatory of the species composition

known up to that point for the studied areas. These contributions are also of high value because are directly related to the study of the biodiversity of insects mainly in the Balkans, respectively in the territory of Bulgaria.

3) Ecological and biological studies:

Six species of eulophids (*Diglyphus crassinervis*, *D. isaea*, *D. albiscapus*, *Cirrospilus diallus*, *C. pictus* and *Elasmus* sp.) were registered as new parasitoids of *Paraphytomyza populi* in the Sofia area (№10).

Data are reported on the survival of the parasitoid *Pediobius bruchicida* in laboratory conditions and its effect on the host *Thaumetopoea pityocampa* (№15). Data on the biology of the eulophid *Baryscapus transversalis* are presented. (№7); For the species *D. chabrias*, *D. crassinervis* and *D. minoens* new associations with *Liriomyza sativae* (Diptera, Agromyzidae) were established, and for *D. chabrias* and *D. crassinervis* new associations with the agromyzid *Chromatomyia horticola* (№21) were established. *B. endemus*, *C. pentheus* and *P. bruchicida* were established for the first time in the parasitoid complex of *Leucoptera sinuella* (№9).

Three new host-parasitoid associations were established for *Phyllonorycter issikii*, with *P. incompletus*, *M. platanellus* and *O. sokolowskii*, respectively. In the samples, *M. platanellus* was found to be the most abundant (76.88%) of the parasitoids, followed by *Sympiesis gordius* (6.53%) and *S. sericeicornis* (6.03%) (№19).

Publication №5 provides additional information on the biology and ecology of the encyrtids *Ooencyrtus* sp. nr. *indefinitus*, *O. masii* and *O. pityocampae*. Publication №14 reports more data on the biology and ecology of the species *Ooencyrtus pityocampae* (Encyrtidae), from the region of Ivaylovgrad. Data on the biology and ecology of the eupelmid *Anastatus bifasciatus* (№№ 14, 16) and *Eupelmus vladimiri* and its close representatives (№ 8) are reported.

Publication №13 reports new trophic relationships of the egg parasitoids *Ooencyrtus pityocampae*, *Ooencyrtus* sp. (Encyrtidae) and *Anastatus bifasciatus* (Hymenoptera: Eupelmidae) with the processionary *Thaumetopoea solitaria* collected on *Pistacia terebinthus* from the Eastern Rhodopes region.

The result of a study of the gall community of the cynipid *Diplolepis rosae* from Vitosha is presented. The work presents an in-depth study of the structure and phenology of this community, as well as the life history and sex ratio of the gall former and inferred parasitoids and inquilines. The correlations between the insects in the community and the influence of some environmental factors on its structure were analyzed and discussed (№ 18).

Three new host-parasitoid associations were established for *Phyllonorycter issikii*, with *P. incompletus*, *M. platanellus* and *O. sokolowskii*, respectively. In the samples, *M. platanellus* was found to be the most abundant (76.88%) of the parasitoids, followed by *Sympiesis gordius* (6.53%) and *S. sericeicornis* (6.03%) (№19).

Publication №5 provides additional information on the biology and ecology of the encyrtids *Ooencyrtus* sp. nr. *indefinitus*, *O. masii* and *O. pityocampae*. Publication №14 reports more data on the biology and ecology of the species *Ooencyrtus pityocampae* (Encyrtidae), from the region of Ivaylovgrad. Data on the biology and ecology of the eupelmid *Anastatus bifasciatus* (№№14,16) and *Eupelmus vladimiri* and its close representatives (№8) are reported.

Publication №13 reports new trophic relationships of the egg parasitoids *Ooencyrtus pityocampae*, *Ooencyrtus* sp. (Encyrtidae) and *Anastatus bifasciatus* (Hymenoptera: Eupelmidae) with the processionary *Thaumetopoea solitaria* collected on *Pistacia terebinthus* from the Eastern Rhodopes region.

It has been suggested that female *Eupelmus vladimiri*, like other parasitoids, may selectively lay fertilized or unfertilized eggs depending on the size and quality of the host, and that the eggs of the *T. pityocampa* are not fully suitable for this parasitoid (№8).

These contributions can be defined both as original, of a fundamental nature, providing "new empirical data in a poorly known scientific field", and as scientific and applied – important from a theoretical, practical and methodological point of view, because are related to the study of biology and parasite/parasitoid-host relationships and the possibility of using established parasitoids for biological control and control of dangerous insect pests.

4) Methodological contributions. Develop and describe streamlined devices and methods of operation:

- A diagram of a modified entomological bag for collecting small insects is presented. This collection method is referred to as “screen sweeping” (№2).
- Three modifications of mechanical manipulators for observation under stereo- and binocular microscopes are presented (№4). With them, a precession deviation at the intersection of the axes of the order of 0.5 mm is easily reached, which, together with the location of two drive knobs next to each other, allows a quick and safe study of the observed objects.
- A new modification of the wing interference pattern study method (№23) is presented. It is used in some insects as an additional argument in the determination process. The new modification allows repeatability of the observation and safety in storing the wings prepared for observation on the same needle on which the examined insect is mounted. These contributions can be defined as scientific-applied and are also of high value from a practical and methodological point of view, because facilitate and complement the study of the morphology of the studied groups of chalcidoidea.

IV. Evaluation of the candidate's personal contribution

In the publications presented by the candidate for the competition, a total of one new genus from the family Eulophidae for the fauna of Bulgaria, 11 species of Eulophidae and 1 species of Encyrtidae new for the fauna of Bulgaria were reported, 5 species new to science from the family Eulophidae were described and 17 were established new host-nick-parasitoid associations. One species of the family Eulophidae was established as new for the Nearctic, two species of Eulophidae as new for Turkey and one species for Bosnia and Herzegovina. Streamlined models of an entomological screen-sweeping bag and a mechanical microscopic manipulator are described, as well as a modification of the wing interference pattern study method.

The personal scientific contributions and merits of Dr. Boyadzhiev for the achievement of the results indicated so far in the co-authored scientific publications submitted for the competition are based on 1) the field collection of chalcidoidea, 2) their specific laboratory processing, 3) their comparison with a predetermined entomological material and/or type series of the relevant species, 4) the determination of the material from parasitoids from the families Eulophidae, Encyrtidae and Eupelmidae, in which Dr. Boyadjiev is a specialist, 5) their description and their 6) illustration; and also 7) experimentation with rationalized mechanical devices and 8) improvement of specific elements of the methodology for the study of small hymenopteran insects; 9) establishing contacts with specialists in the group and 10) active and equal participation in the process of preparation, writing and publication of relevant research.

Research profile of the candidate

Dr. Boyadjiev is a zoologist with a clearly defined scientific profile, a recognizable scientist and specialist in Chalcidoidea, dedicated to his work and with proven scientific and scientific-applied contributions. He is an excellent taxonomist at the European level, one of the few specialist hymenopterists in Bulgaria, a desirable partner for numerous national and international research and scientific projects. The profile of Dr. Boyadzhiev fully corresponds to the thematic profile of the unit for which the competition has been announced, and as an associate professor he will be able to contribute to the successful development of the Department of Zoology.

V. Critical remarks and recommendations

Critical remarks: I have no critical remarks about the candidate's scientific production in general. The candidate's publications are of high quality, have been published in specialized scientific journals and have been subject to peer review. I only have a remark regarding publication №17, in which, however, the candidate is not the first author. The publication is dedicated to Eulophidae and Pteromalidae from Vitosha and includes a list of 4 species of eulophids and 74 of pteromalids. It is noteworthy that in the text of the article there are still markings and notes,

probably from the proofreading, for example on page 497 there are Latinized texts: "njama go v References", "njama gi v references", and on page 498 with an asterisk a female of the species *Tobicobia promulus* is indicated, but the text does not make it clear what it is meant for. Also, the *Reference List* is missing publications that are cited in the text. In the *Results* and *Discussion*, it is not clear that all the specified 78 species of chalcidoidea are new for the Vitosha mountain, and we can only read this in the abstract of the article, and the discussion could have been expanded with more analyses, especially that the presented results allow it. I want to draw the attention of the applicant that *Pistacia terebinthus* L. - turpentine tree or kukuch is not the pistachio, which is another species – *Pistacia vera* Linnaeus, 1753, and not, as we can read in the presented annotations of publications № 5 and 13. In these publications the food plant is *P. terebinthus*.

In my opinion, more and more detailed data about his career development, such as other expert activities, participation in scientific forums, participation in projects, membership in scientific organizations, awards, should have been included in the CV and set of documents submitted by the candidate et cetera.

Recommendations: I would recommend the candidate to continue active publishing, seeking to further increase the visibility of their research through a focus on publishing in WoS/Scopus first and second quartile journals. I am sure that his election as an associate professor will motivate Dr. Boyadzhiev to work even more actively and creatively, especially in terms of his teaching and promotion activities with promising graduates and doctoral students, with which I hope he will motivate and enthrall are young, future zoologists/entomologists both in our country and abroad.

VI. Personal impressions

I have known Petar Boyadzhiev for more than 15 years. Our acquaintance is due to our professional activity as researchers and teachers. These contacts have reinforced in me the impression that Dr. Boyadzhiev is an erudite and consistent researcher, a respected colleague and a motivated teacher who does not hesitate to share his knowledge.

VII. CONCLUSION

The documents and materials presented by Dr. Petar Boyadjiev meet all the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB), the Regulations for the Implementation of the ZRASRB and the relevant Regulations of the PU "Paisii Hilendarski".

In the competition for associate professor, Dr. Petar Boyadzhiev has provided sufficient evidentiary materials that show that he meets the requirements for holding the position of associate professor. The profile of the candidate fully corresponds to the thematic profile of the department for which the competition is announced. The candidate's scientific and scientific-applied results show that he is an established scientist in his field and as an associate professor he will be able to contribute to the successful development of the unit.

My familiarization with the materials and scientific works of Dr. Petar Boyadzhiev submitted for the competition, and my analysis of their significance and the scientific, scientific-applied and applied contributions contained in them, give me reason to convincingly vote "**FOR**" his candidature and to recommend to the respected members of the Scientific Jury to prepare a report-proposal to the Faculty Council of the Faculty of Biology for the election of the Assistant Professor Petar Stoykov Boyadzhiev, Ph.D., in the academic position of "associate professor" at PU "Paisii Hilendarski" in: field of higher education 4. Natural sciences, mathematics and informatics, professional direction 4.3. Biological Sciences (Zoology).

31.03.2023
City of Sofia

Reviewer:
(Prof. Dr. Plamen G. Mitov)