REVIEW

on the materials submitted for participation in a competition for "Associated Professor" in the field of higher education 6. Agricultural sciences and veterinary medicine, Professional field 6.5. Forestry, scientific specialty "Game Management" in the discipline "Game Management", published in the State Gazette, No. 27/02.04.2021 and on the site of the University of Forestry on 23.03.2021.

Code FOR-Asp-0321-55.

Applicant: Dr. Stoyan Ivanov Stoyanov, Chief Assist. Professor at the University of Forestry - Sofia.

Reviewer: Assoc. Prof. Dr. Ivan Krastev Petrov, Associate Professor in Professional field 6.5. Forestry, scientific specialty "Game Management" at the Forest Research Institute – Bulgarian Academy of Sciences – retired.

1. Brief biographic data of the candidate:

Dr. Stoyan Ivanov Stoyanov was born on 11.11.1972 in Yambol.

Education and training

In 1990-1995 he studied and completed the full course of education at the University of Forestry, Sofia (Bulgaria). In 1995 he graduated and received master's degree in Forestry. He has professional skills in the scope of Game Management, Population Ecology of Carnivores, Game Birds and Mammals, Urban Parks Wildlife, Distance Methods, Statistics, GIS, Ecological Modeling, Applying Mathematical models and methods in Ecology. His digital competences include GIS software: ArcGIS, GRASS, QGIS, Statistical software - R, Statistica, SPSS, software applications in ecology: Canoco, MARK, Distance, USER. Software development skills - Java, ability to use R code for performing statistical tasks.

In 2013 he received PhD in Game Management at the University of Forestry – Sofia.

Language skills

26.03.1999–02.07.1999. Sofia University "St. Kliment Ohridski" – Department for Language Teaching and International Students, Sofia (Bulgaria). English Language, III degree.

07.04.2010–12.06.2010. New Bulgarian University - Foreign Language Teaching Department, Sofia (Bulgaria). English Language, CEFR - B2.

Work experience

28.04.2004 – Present. Chief Assistant Professor at the University of Forestry, 10 St. Kliment Ohridski Blvd., 1797 Sofia (Bulgaria). Lecturer in Game Management,

Hunting Touristic Resources, Park Fauna. Leads lab exercises in Game Management, Park Fauna, and Wildlife Management.

08.02.2000–27.04.2004. Senior Assist. Professor at the University of Forestry. Teaching Game Management, Wildlife Conservation, Park Fauna, and Game Biology and Breeding.

10.07.1997–07.02.2000. Assist. Professor at the University of Forestry. Teaching Game Management, Wildlife Conservation, Park Fauna, and Game Biology and Breeding.

01.10.1996–09.07.1997. State Forestry Enterprise "Tundzha", 11 V. Karagyozov Str., 8600 Yambol (Bulgaria). In charge of Game Management activities.

01.07.1995–27.09.1995. State Forestry Enterprise "Tundzha", 11 V. Karagyozov Str., 8600 Yambol (Bulgaria). In charge of Game Management activities.

2. Correspondence of the submitted documents and materials of the applicant according to the Regulation for the Development of academic staff at the University of Forestry.

For participation in the competition for Associate Professor at the University of Forestry Dr. Stoyan Stoyanov has submitted an application for admission No. 3007 / 31.05.2021, accompanied by documents and materials. The documents and materials submitted by the candidate fully comply with the Law for Development of Academic Staff in the Republic of Bulgaria, the Rules for its implementation, and the Regulation for the Development of Academic Staff in the University of Forestry – Sofia. In accordance with the science metrics indicators for Associate Professor, the candidate presented 22 publications, of which one monograph, 8 articles and reports in scientific journals, peer-reviewed and indexed in world databases (Web of Science and/or Scopus), 12 articles and reports published in non-indexed journals with peer-review or published in edited collective volumes, and one study published in a scientific journal, peer-reviewed and indexed in Web of Science and Scopus. All publications of the candidate are published in the Register of Scientific Activity at the National Centre for Information and Documentation. A Reference to the cited publications is attached showing for 12 publications a total of 108 citations.

There was no evidence found (publications etc.) for the presence in the submitted documents and materials, according to the specific requirements and indicators, of scientific research already submitted by the candidate for obtaining the PhD.

3. Assessment of the candidate's teaching activities

Assist. Prof. Dr. Stoyan Stoyanov has submitted an Official Note No. 2763 / 21.05.2021 issued by the University of Forestry that he is a lecturer in the Wildlife Management Department. He has held the academic position since July 10, 1997, until

now. He has 25 years of work experience in the specialty of the competition, of which 24 - a lecturer at the University of Forestry.

The total planned teaching employment of the candidate for the academic year 2020/2021 is 361 hours, including: classroom employment - 315 hours. The reported employment for the last 5 years - the period 2015-2020, is a total of 1995 hours. Teaching in Game Biology and Breeding in English in 2014-2017 includes a total of 298 academic hours.

For three consecutive years, from the 2018/2019 academic year, Dr. Stoyan Stoyanov has been lecturer in Game Management course for extramural students in Forestry, Bachelor's degree.

For three successive academic years, from 2014 to 2017 he had taught the lecture course and labs in Game Biology and Breeding to Veterinary Medicine students with training in English.

From the 2017/2018 to 2020/2021 academic year, he has given a lecture course on Park Fauna for students majoring in Landscape Architecture.

For the last two academic years he has taught a lecture course on the subject Hunting Tourist Resources for students majoring in Alternative Tourism, Bachelor's degree.

Dr. Stoyan Stoyanov is the author of the Course syllabus "Park Fauna" under the current curriculum from 2017 of students majoring in Landscape Architecture, Master's degree, full-time study, discipline code FOR 420, II course, IV semester, with a total schedule of 30 hours lectures and 30 hours labs, updated in 2017.

He co-authored the syllabus of the following courses:

„Game Biology and Diseases", according to the curriculum until 2017 of the students in the specialty "Veterinary Medicine", Master's degree, full-time education, discipline code FOR 432, III year, VI semester, with 15 hours lectures and 15 hours labs in Game Biology and Breeding.

"Wildlife Management", according to the current curriculum from 2017 of the students in Forestry, Master's degree, full-time and part-time education, discipline code FOR 416, I course, I semester, with 30 hours lectures and 30 hours labs, updated in 2011, 2015 and 2019.

In the period from 2014 to 2021, Dr. Stoyanov has supervised 11 successfully graduated students, and since the beginning of his teaching career at the University of Forestry until now he has been a reviewer of over 120 diploma theses.

4. Assessment of the applicant's scientific, applied and publication activities

It is evident from the submitted "Self-assessment report for compliance with the minimum national requirements" that the applicant fully covers them. The minimum required points by groups of indicators for the academic position "Associate Professor" in the field of higher education 6. Agricultural sciences and veterinary medicine by "indicators" are given in column 4, and the corresponding points of the candidate are in column 6.

Indicator	Subject	Required points on the indicator	Required points by group of indicators	Points of the candidate on the indicator	Total number of points of the candidate by groups of indicators
1	2	3	4	5	6
А1	PhD dissertation	50	50	50	50
Total points by group of indicators А			**50**		**50**
В3	Habilitation work - Monograph			100	100
Total points by group of indicators В			**100**		**100**
Г7	Articles and reports published in scientific journals, peer-reviewed and indexed in worldwide databases of scientific information	30/n	200		131.23
Г8	Articles and reports published in non-indexed journals with peer-review or published in edited collective volumes	10/n			40.48
Г9	Scientific studies published in scientific journals, peer-reviewed and indexed in worldwide databases of scientific information	45/n			45
Total points by group of indicators Г			**200**		**216.71**
Д13	Citations or reviews in scientific journals, peer-reviewed and indexed in worldwide databases of scientific information or in monographs and collective volumes	15	50	1470	1470
Д14	Citations in monographs and collective volumes with peer-review	10		40	40
Д15	Citations or reviews in non-indexed journals with peer-review	5		30	30

Total points by group of indicators Д			**50**		**1540**
E18	Participation in a national scientific or educational project	15		45	45
E19	Participation in international scientific or educational project	20		40	40
E23	Published university textbook or textbook used in the school network	20/n		10	10
Total points by group of indicators E					95

The minimum required points by groups of indicators for the academic position "Associate Professor" are a total of 400 (column 4). From the presented "Self-assessment report for compliance with the minimum national requirements" it is evident that according to the groups of indicators A, B, Г and Д the candidate has a total of 1906.71 points (column 6), or he covers the minimum requirements more than 4 times (476.68 %).

In addition to the required indicators for the academic position "Associate Professor", the applicant has submitted contributions from group E, which are not required, but provide additional information about his work: "E18 - participation in a national research or educational project" - 3 projects, "E19 - participation in an international scientific or educational project" - 2 projects and "E23 - published university textbook or textbook used in the school network" (co-author).

The total assessment of the applicant's scientific, applied and publication activities by the science metric groups of indicators A, B, Г, Д and E is 2001.71 points.

5. Reflection of the candidate's scientific activity in the literature (Citations)

The great interest of the world scientific community in the publications of Dr. Stoyan Stoyanov and their citation in subsequent works is especially impressive. Twelve articles, of which the candidate is an author or co-author, are cited a total of 108 times: 98 - in scientific journals, peer-reviewed and indexed in worldwide databases of scientific information, 4 - in monographs and collective volumes with peer-review, and 6 - in non-indexed journals with peer-review.

6. Contributions to the applicant's work (scientific and applied)

The contributions in the presented works are in the following eight directions:

1. Application of population models for analysis and assessment of the impact of hunting on game populations.

2. Studies on the grey partridge population ecology.

3. Studies on the population ecology of grey wolf, golden jackal and red fox.

4. Taxonomic and morphometric studies on jackals in Europe, Asia and North Africa.

5. Anatomical and histological research on the wolf and golden jackal.

6. The ungulate game impact on the tree vegetation.

7. Research on brown hare density and on survival rate and dispersion after release of farm reared common pheasants, chukar partridges, and grey partridges.

8. Wildlife monitoring and development of a model of an information system for hunting statistics.

Depending on the content of the publications, the contributions can be classified into scientific, scientific-applied and applied.

1. *Scientific contributions*

1.1. Application of population models for assessment of harvest strategies and their impact on demographic structure, population dynamics and viability of wildlife populations.

1.2. The red deer population was taken as an example of applying matrix population models and adaptive harvest management. The proposed matrix population model for red deer population was applied to simulate short and long-term population dynamics. The model structure and parameters could be changed for simulating different scenarios. The model could be applied for other game species, as well. The author aims to address the adaptive harvest-management approaches applied in modern wildlife management. Although biological insights and models, coupled with ever-improving data from the field, can inform guide harvest management decisions, such knowledge is still poorly developed and applied in our modern game management practice.

1.3. The population ecology of the grey partridge (*Perdix perdix* L.) and the influence of the climate and the presence of insect food on the population dynamics were studied. It has been proven that insect food significantly affects the dynamics of partridge stocks. The results are consistent with the hypothesis that the new chemicals used are not themselves mortally toxic to the grey partridge or its chicks, but it is that their use in modern farming methodology still has the same significant effect of breaking the crucial early chick nutrition. The influence of some climatic factors on the partridge stocks in Southeastern Bulgaria has been studied. The temperature, precipitation, duration of sundial, air humidity and snow cover were the most highly correlated with the partridge population size.

1.4. Extensive morphometric data of jackal skulls from Europe (including a very large Bulgarian sample), Asia Minor, and North Africa were analysed in the first comprehensive analysis on a wide scale of golden jackal skull morphometry. The study confirmed morphometrically that all jackals included so far in the taxon *Canis aureus* sensu lato may represent three taxa and supports the hypothesis that at least two different taxa (species?) of *Canis* occur in North Africa.

1.5. The population dynamics of the grey wolf (*Canis lupus*) and the golden jackal (*Canis aureus*) in space and time have been studied in co-authorship with a research team. There was tested the hypothesis that the range expansion of golden jackals was triggered by intensive persecution and resulting decline of the apex predator, the grey wolf. It was suggested that wolf extermination could be the key driver that enabled the expansion of jackals throughout Europe.

1.6. In co-authorship with a research team was proposed the Enemy Constraint Hypothesis (ECH), which predicts weakened top-down effects on meso-predators towards the edge of top predators' ranges.

1.7. In co-authorship with a research team, based on a comparison of the population dynamics of the golden jackal and the red fox in Bulgaria, Romania, Serbia, Croatia, Austria, and Hungary, referring to the conditions of jackal range expansion in Europe, the hypothesis of the existence of the golden jackal competitive exclusion or suppression effect on red foxes was rejected.

1.8. An overview of the state and dynamics of the wolf population in Bulgaria for more than 50 years has been made. It is hypothesized that the changes in forests and their structure for more than 50 years favored the wolf population by extending habitats and creating natural links between different locations.

1.9. Extensive morphometric data of jackal skulls were analysed by applying recently developed statistical tools. Craniometric and morphometric characteristics of the golden jackal in Bulgaria and Europe were presented. Geographic variation and sexual dimorphism in skull and body size and shape among golden jackal population in Bulgaria was studied.

1.10. In co-authorship with a research team the microscopic anatomy and histological structure of the grey wolf and the golden jackal stomach wall were studied. The similarity with the other members of the Canidae family was shown.

1.11. A new high altitude nesting site of white stork (*Ciconia ciconia* Linnaeus, 1758) in 2014-2019 in Yundola village at 1390 m a.s.l. was found. This is one of the highest nesting sites of the species in Bulgaria.

2. *Scientific-applied contributions*

2.1. An original method for estimating the population size of jackals and other game species by comparing the data from the hunting statistics and the population demographic structure is proposed.

2.2. In co-authorship with a research team the brown hare population density in the plain habitats in Bulgaria, located below 600 m above sea level, has been estimated for the period 2010 - 2013. It was shown that the average population density was extremely low compared to the 3-4 decades ago. Recommendations for improving the census

methods, proper management, harvest plans and protection of the brown hare population in Bulgaria were proposed.

2.3. In co-authorship with a research team the survival rate and dispersion after release of farm reared common pheasants, chukar partridges and grey partridges were studied by applying radiotelemetry. It was found that the highest mortality rates of pheasants and chukar partridges occurred in the first 2 weeks after release and exceeded 80 %, regardless of the method of releasing. It has been shown that spring release must not be a preferred method for releasing of farm reared game birds.

2.4. In co-authorship with a research team survival rate and dispersion of released rock partridges (*Alectoris graeca* (Meisner, 1804)) in typical habitats in "Vrachanski Balkan" Nature Park were studied during the reintroduction program. It has been found that the highest mortality in the first month after release was due to predation by mammalian predators.

2.5. In co-authorship with a research team the ungulate game impact on the tree vegetation in the plain deciduous forests of Northeastern Bulgaria was studied. It has been found that the large ungulate game species did not cause significant damage to the undergrowth and young saplings, despite their high density.

3. *Applied contributions*

3.1. A model of an information system for hunting statistics has been developed. An analysis of the environment in which the proposed model will function in structural and hierarchical terms has been made. The problems related to the growth of information in quantitative and qualitative terms in its transition from one layer to another along the vertical of the model, the formation of separate levels of access and priorities, and appropriate management mechanisms were considered. The tasks necessary for the realization of the model were defined as well. Based on the model, an information system for the Union of Hunters and Fishermen in Bulgaria has been developed, as well as a user guide.

3.2. New criteria for awarding medals to golden jackal trophies were suggested and justified based on analysis of an extensive morphometric data of jackal skulls from Bulgaria and Romania.

4. *Participation in scientific, applied, and educational projects*

The candidate has participated in two international and three national scientific or scientific-educational projects. He is a co-author of a published university textbook.

7. Assessment of the applicant's personal contribution

Dr. Stoyanov submitted a list of 22 publications. Of these, he is a single author of one monograph, three of presented 8 articles and reports in scientific journals, peer-

reviewed and indexed in world databases, and one of 12 articles and reports, published in non-indexed journals with peer-review. He is also a single author of one scientific study published in a peer-reviewed journal, indexed in the Web of Science and Scopus. I am convinced of his personal contribution to the mentioned scientific works.

8. Critical notes and recommendations

I have no critical remarks or recommendations on the candidate's work.

9. Personal impressions

I know the scientific work of Dr. Stoyan Stoyanov since 2013, when I wrote an opinion on his PhD dissertation. We are members of the National Hunting Council at the Ministry of Agriculture, Food and Forestry, Executive Forestry Agency and we participated together in meetings as members of the Game Management Commission at the Managers Board of the National Hunting Association "Union of Hunters and Fishermen in Bulgaria".

10. Conclusion

Based on the submitted documents and the analysis of the scientific and teaching work of the candidate, I believe that it covers all the requirements of the Law for Development of Academic Staff in the Republic of Bulgaria, the Rules for its implementation, and the Regulation for the Development of Academic Staff in the University of Forestry – Sofia. This gives me a ground to suggest to the Scientific Council of the University of Forestry the candidate Dr. Stoyan Ivanov Stoyanov to be elected as an Associate Professor in the Wildlife Management Department at the University of Forestry, field of the higher education 6. Agricultural sciences and veterinary medicine, professional field 6.5. Forestry, scientific specialty "Game Management".

Submitted on 04.08.2021

Sofia

Reviewer:

(Assoc. Prof. Dr. Ivan Petrov)