

May 21st – 22nd, 2021

Raccoon dog (*Nyctereutes procyonoides*), an invasive species - first record in the Plitvice Lakes National Park

Josip Kusak¹, Maja Popović¹, Tomislav Gomerčić¹, Daniel Špoljarić¹,
Ira Topličanec¹, Luka Pajurin¹, Slaven Reljić¹, Ana Kolarić¹ i Ksenija Vlahović¹

Department of Veterinary Biology, Faculty of Veterinary Medicine, University in Zagreb,
Heinzelova 55, Zagreb

Abstract

Raccoon dog (*Nyctereutes procyonoides*, *Carnivora*, *Canidae*; Gray, 1834) was recorded for the first time in the protected area of Croatia - Plitvice Lakes National Park (PLNP) on 16th January 2015, and on five more occasions until March 2020, at the total of four different locations in the PLNP. Its presence was recorded by automatic cameras, each time during the night at places in the forest, at least 2 km or more away from the nearest settlement. The emergence of this species is a consequence of illegal introduction or natural spread of the species, as is the case in other northern parts of Europe. Raccoon dog is a new and invasive species in Europe, which managed to spread from the European parts of the former Soviet Union, where it was introduced from East Asia, for the purpose of captive breeding for fur production. In Croatia, specimens of raccoon dog were recorded in the early 1980s in the eastern part of the country. After that, no presence was recorded in Croatia, although the characteristics of the species include adaptability, hibernation, high reproductive potential, spread to new areas, as well as efficient gene flow among populations. The presence of raccoon dog has not yet been confirmed in the area between eastern (Pannonian) Croatia and the Dinarids, which is probably a consequence of insufficient monitoring and not the actual absence of the species in this area. Evidence of the existence of raccoon dog in PLNP is an important first step toward understanding the extent of the invasion and its potential effects. Without a proper scientific information, management plans and other actions cannot be taken.

Key words: raccoon dog, invasive alien species, Plitvice lakes national park, Croatia

2. MEĐUNARODNI ZNANSTVENO – STRUČNI
SKUP O GMAZOVIMA I EGZOTIČNIM
ŽIVOTINJAMA „REPTILIA“



REPTILIA

Zbornik radova



Veterinarski fakultet Sveučilišta u Zagrebu

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Zagreb, Hrvatska

2nd INTERNATIONAL SCIENTIFIC AND
PROFESSIONAL MEETING ON REPTILES AND
EXOTIC ANIMALS “REPTILIA”



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REPTILIA

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Estella Prukner-Radovčić i Srebrenka Nejedli

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All papers published in this Proceedings have been reviewed.



REPTILIA

As exotic species are becoming nowadays more and more present in veterinary practice, it has become necessary to know their morphology, physiology, pathology, treatment of diseases and so on.

The purpose of this meeting is to provide as much information as possible about reptiles and exotic animals, which would certainly contribute to a better understanding and exchange of experience among veterinary medicine practitioners as well as education of future doctors of veterinary medicine.

A large number of scientists and specialists gathered at this meeting to study and discuss exotic animals. We were pleasantly surprised by the response from participants, they are coming from 11 countries. The program is carefully prepared to emphasise the latest advancements, appropriately interspersed with up-to-date information about exotic species. This event would not have been possible without the tenacious persistence and long-term hard work of all of the committee members and the generous contributions of our sponsors. We would like to take this opportunity to thank our invited speakers for accepting our invitation, and all the speakers of oral and poster presentations who have contributed to this meeting.

Editors of the Proceedings



PROGRAM

FRIDAY May 21th, 2021

- 07:30 – 08:55 Registration (Adobe Connect)
09:00 – 09:20 Opening ceremony, introductory word

SECTION Basic preclinical sciences

Chairpersons: Maja Belić (HR), Duje Lisičić (HR), Maja Popović (HR) and
Ana Shek Vugrovečki (HR)

Invited lectures

- 09:25 – 09:55 **Why is reptile skin covering so similar, but then again so different from mammals?**
Valentina Kubale (SI)
- 10:00 – 10:30 **To be or not to be aggressive – the importance of agonistic behaviour and reptiles as an animal's models for aggressivity**
Duje Lisičić (HR)

Oral presentations

- 10:35 – 10:45 **Morphological characteristics of lizard skin (Lacertilia, Squamata)**
Lucija Bastiančić (HR), Nikolina Škvorc, Snježana Kužir
- 10:50 – 11:00 **Comparison of new digital morphometric method with traditional method in lizards**
Tomislav Gojak (HR), Marko Glogoški, Dunja Šikić, Duje Lisičić, Sofia Ana Blažević
- 11:05 – 11:15 **Impacts of climate changes on marine turtles nesting behaviour and hatching**
Arthur Bracq-Bouveau (F), Ivona Žura Žaja, Ana Shek Vugrovečki, Srebrenka Nejedli
- 11:20 – 11:30 **Blood fatty acid composition of corn snakes (*Pantherophis guttatus*) - a preliminary study**
Lana Pađen (HR), Ivančica Delaš, Josip Miljković, Ivona Žura Žaja, Ana Shek Vugrovečki, Danijela Horvatek Tomić, Laura Čakić, Jasna Aladrović

11:35-11:50 BREAK



- 11:55 – 12:05 **Haematological parameters of marginated tortoise (*Testudo marginata*)**
Ana Komadina (HR), Maja Belić, Maja Lukač, Fran Barac, Ivan Cizelj, Marjan Benić, Mirna Robić
- 12:10 – 12:20 **Selected blood analytes in captive South American tortoises (*Chelonoidis* sp.) obtained from two different puncture sites**
Elizabeth Moreira dos Santos Schmidt (BR), Rogério Ribas Lange, Manuel Lucas Javorouski, Rita Maria Venâncio Mangrich-Rocha

12:25 – 13:10 LUNCH BREAK

13:10 – 15:10 // POSTER SECTION// 5 min presentations

Chairpersons: Miloš Halan (SK), Amina Hrković Porobija (BA), Nino Maćešić and Marko Samardžija (HR)

1. Mysterious turtles' evolution

Katja Čadež (SI), Tanita Ostrožnik, Anja Repše, Karmen Grubelić, Alenka Dovč

2. The morphological characteristics of certain tissues and organs in the turtle

Ana Rebac (HR), Slaven Mlinarić, Srebrenka Nejedli

3. Do different types of semi-aquatic turtles have morphometrically different erythrocytes?

Ana Shek Vugrovečki, Josip Miljković, Silvijo Vince, Nina Poljičak Milas, Petra Prgomet (HR), Laura Rodman, Danijela Horvatek Tomić, Marinko Vilić, Marta Radin, Snježana Čipčić, Anamaria Sluganović, Ivona Žura Žaja

4. The hippocampus of turtles and lizards

Ena Krajina (HR), Iva Kuzman, Srebrenka Nejedli, Kim Korpes

5. Reptiles as model organisms used in high throughput behavioral setup in neuroscience

Neven Marković (HR), Marko Glogoški, Tomislav Gojak, Dunja Šikić, Sofia Ana Blažević, Duje Lisičić

6. Leopard gecko morphs – the genetic background

Aneta Piplica (HR), Ivan Vlahek, Ivana Sabolek, Velimir Sušić, Anamaria Ekert Kabalin

7. Locomotor system adaptations of some lizard species

Mihovil Matković, David Mihaljević (HR), Magdalena Kolenc, Srebrenka Nejedli

8. Morphological specifications of the integumentary and locomotor system in lizards

Marta Jazbec (HR), Srebrenka Nejedli



9. Lateral coloration in two neighbouring populations of Italian wall lizard *Podarcis siculus*

Nika Jurković (HR), Leonarda Zečević (HR), Mihaela Marceljak Ilić, Ksenija Hocenski, Iva Pintarić, Diana Hews, Marko Glogoški, Duje Lisičić

10. Gender differences in red blood cell morphometry parameters in corn snakes (*Pantherophis guttatus*)

Ivona Žura Žaja, Josip Miljković, Silvijo Vince, Nina Poljičak Milas, Petra Prgomet, Laura Rodman (HR), Danijela Horvatek Tomić, Jasna Aladrović, Lana Pađen, Marinko Vilić, Suzana Milinković Tur, Ingo Ralph Albin Lobpreis, Ana Shek Vugrovečki

11. Biosecurity for snakes and lizards

Žan Štokar (SI), Danijela Zorko, Julija Herman, Lenka Jerele, Alenka Dovč

12. The injuries and irregularity on the Albanian's tortoise shell - a field study

Sokol Duro (AL), Bektaş Sönmez, Laurent Bardhaj, Ozan Gündemir, Joni Alushi

13. The most venomous snake in Bosnia and Herzegovina – the nose-horned viper (*Vipera ammodytes*)

Amina Hrković-Porobija, Lejla Velić, Izmir Kovčić (BA), Toni Eterović

14. Prevalence of parasitic helminths in snakes imported to Slovakia

Miloš Halán (SK), Lenka Rečičárová

15. Computed tomography in chelonians

Ana Gross (HR), Ema Dojčinović, Maja Lukač, Hrvoje Capak

16. Computed tomography in lizards

Ema Dojčinović (HR), Ana Gross, Maja Lukač, Hrvoje Capak

17. Mineral profile of the Green iguana semen collected by electroejaculator

Ján Kováč (SK), Róbert Kirchner, Eva Tvrďá

15:10 – 15:25 BREAK

SECTION Veterinary public health and clinical sciences

Chairpersons: Hrvoje Capak (HR), Andrea Gudan Kurilj (HR), Danijela Horvatek Tomić (HR)
and Maja Lukač (HR)

Invited lectures

15:30 – 16:00 **Anaesthesia and analgesia in reptiles**

Eva Cermakova (CZ)



16:05 – 16:50 **Soft tissue surgery in reptiles**
Zdenek Knotek (CZ)

16:55 – 17:25 **A revolution in reptile husbandry: onan example of Chameleoculture, based on interdisciplinary approach from field science to captive propagation and veterinary medicine.**
Petr Necas (CZ)

Oral presentations

17:30 – 17:40 **Comparison of the protein profile of snake venom of different species of the genus *Bitis***
Magdaléna Polláková (SK), Zuzana Andrejčáková, Vladimír Petrilla, Barbora Bekešová, Radoslava Vlčková, Monika Petrillová, Drahomíra Sopková

17:45 – 17:55 **Is there any intraspecific variability in snake venom?**
Josip Miljković (HR), Ana Shek Vugrovečki, Ivona Žura Žaja, Mirela Pavić

18:00 – 18:10 **Metastatic iridophoroma in two leopard geckos (*Eublepharis macularius*)**
Henrieta Zborilova (CZ), Eva Cermakova, Janosch Dietz, Kim Oliver Heckers, Zdenek Knotek

18:15 – 18:25 **The most common injuries of free – living chelonians and their treatment**
Anamarija Nevistić (HR), Tvrtko Mataušić, Maja Belić, Hrvoje Capak, Danijela Horvatek Tomić, Manuela Belajsa, Maja Lukač

18:30 – 18:40 **Surgical approach of wound management in reptiles**
Siniša Faraguna, Iva Novak (HR), Srebrenka Nejedli, Ozen Smolec

18:45 – 18:55 **The value of clinical haematology in avian/reptile clinical ractice – why, what and how?**
Michaela Valašťanová (CZ), Zora Knotková, Zdeněk Knotek

19:00 – 19:05 Conclusions of the REPTILIA meeting



SATURDAY May 22th, 2021

09:00 – 09:05 Introduction

SECTION Basic preclinical sciences

Chairpersons: Valentina Kubale (SI), Ksenija Vlahović (HR) and Ivona Žura Žaja (HR)

Introductory oral presentation

09:05 – 09:25 **Special senses of phocid seals.**

Hrvoje Smodlaka (USA), Weal A. Khamas, Roman Pan, Ilana Galex, Hali Jungers, Mohammed Al-Tikriti, Josip A. Borovac, Brian A. Cohn, Lars Schmitz, Lauren Palmer, Marina Bukac

Oral presentations

09:30 – 9:40 **Internal carotid circulation of the African green monkey (*Cercopithecus aethiops sabeus*)**

Miloš Blagojević (RS), Ivana Nešić, Milena Đorđević, Dejana Čupić Miladinović, Damir Mihelić, Srebrenka Nejedli, Mirela Pavić

09:45 – 09:55 **Comparative anatomical and histological study between budgerigar (*Melopsittacus undulatus*) and lovebird (*Agapornis personata*) digestive system**

Miroslav Vlašić (HR), Srebrenka Nejedli, Danijela Horvatek Tomić

10:00 – 10:10 **Limb regeneration in axolotl (*Ambystoma mexicanum*)**

Tvrtko Mataušić (HR), Josip Miljković, Ana Shek Vugrovečki, Marinko Vilić, Mario Ostović, Marko Ružić, Ivona Žura Žaja

10:15 – 10:25 **Role of GLUT2 in amphibian freeze tolerance**

Mirela Pavić (HR), Snježana Čurković, Ivana Prakatur

10:40 – 12:20 // POSTER SECTION// 5 min presentations

Chairpersons: Miloš Blagojević (RS), Gordana Gregurić Gračner (HR), Lana Pađen (HR) and Danijel Špoljarić (HR)

1. Differences between amphibians and reptiles

Iva Šumonja (SI), Nuša Poklukar, Eva Pretnar, Korina Oblak Trkov, Alenka Dovč

2. *Salamandra salamandra* – spots salamander

Lejla Velić (BA), Amina Hrković Porobija, Toni Eterović



3. Some characteristics of the herpetofauna of the Plitvice lakes national park

Eduard Kletečki (HR), Martina Podnar Lešić (HR), Srećko Leiner, Kate Šešelja, Denis Leiner

4. Raccoon dog (*Nyctereutes procyonoides*), an invasive species - first record in the Plitvice Lakes National Park

Josip Kusak (HR), Maja Popović, Tomislav Gomerčić, Daniel Špoljarić, Ira Topličanec, Luka Pajurin, Slaven Reljić, Ana Kolarić, Ksenija Vlahović

5. Determination of sex in some pet birds by morphological features

Vlatka Makovec (HR), Danijela Horvatek Tomić, Srebrenka Nejedli

6. Students' attitudes towards exotic pets

Tina Bobić (HR), Pero Mijić, Mirjana Baban, Maja Gregić

7. Experience of bearded dragon (*Pogona vitticeps*) owners in Eastern Croatia

Maja Gregić (HR), Pero Mijić, Tina Bobić

8. Alternative forage preparation in the feeding of some exotic browsers

Nikica Jukić, Zvonimir Steiner (HR), Mirjana Baban, Maja Gregić, Tina Bobić, Pero Mijić

9. Risks to environment and native animals posed by exotic alien species

Ivana Sabolek (HR), Kristina Matković, Željko Pavičić, Srebrenka Nejedli, Aneta Piplica, Mario Ostović

10. Social structure and spawning pattern in clownfish

Antun Sačer (HR), Ivana Sabolek, Kristina Matković, Željko Pavičić, Mario Ostović

11. Radiofrequency electromagnetic radiation and reptiles/amphibians

Marinko Vilić (HR), Ivona Žura Žaja, Ana Shek Vugrovečki, Josip Miljković

12. The common causes and indicators of poor welfare in pet rodents

Gordana Gregurić Gračner (HR), Gabrijela Jurkić, Marija Lipar, Alenka Dovč, Ksenija Vlahović, Slavko Žužul, Damjan Gračner

13. Comparative radiographic anatomy of pet rodents' teeth

Tomislav Bureš (HR), Magdalena Kolenc, Kim Korpes, Zoran Vrbanac, Hrvoje Capak

14. *Encephalitozoon cuniculi* in rabbits: review of clinical cases (2016 – 2021)

Magdalena Bogović, Elizabeta Pongrac (HR), Gabrijela Jurkić Krsteska, Nada Kučer

12:20 – 13:00 LUNCH BREAK



SECTION Veterinary public health and clinical sciences

Chairpersons: Sokol Duro (AL), Gabrijela Jurkić Krsteska (HR), Albert Marinculić (HR)
and Ivana Tlak Gajger (HR)

Invited lectures

- 13:05 – 13:35 **A survey study on opinions and knowledge of veterinary students in Croatia about pet reptile species and their welfare**
Mario Ostović (HR), Ivana Sabolek, Aneta Piplica, Ivona Žura Žaja, Sven Menčik, Srebrenka Nejedli, Željka Mesić
- 13:40 – 14:10 **Distribution and impacts of an invasive species *Vespa velutina nigrithorax* in Europe**
Ivana Tlak Gajger (HR)
- 14:15 – 14:45 **Challenges for the vet at modern zoos focusing on exotic mammals**
Ingeborg Bata (HR)

15:00 – 15:20 THE WILD HEART OF ZAGREB (Zoo Zagreb)

Oral presentations

- 15:25 – 15:35 **SLOEXO1 and SLOEXO2: Two interdisciplinary projects involving students, professors and corporate sector partners to make scientific and practical advances for exotic and other small animal pets**
Peter Omejc (SI), Zlatko Golob, Miha Dvojmoč, Valentina Kubale
- 15:40 – 15:50 **Neonatal care of llamas and alpacas - a review**
Dražen Đuričić (HR), Marko Samardžija
- 15:55 – 16:05 **Digesta passage rate in small herbivorous mammal as a model: A review**
Maja Damjanović (HR), Vibor Roje, Nives Marčina, Dijana Beneta, Maja Lukač, Duje Lisičić
- 16:10 – 16:20 **Gastrointestinal stasis syndrome in rabbits**
Gabrijela Jurkić (HR), Mirna Brkljačić, Ivana Kiš, Iva Šmit, Nada Kučer
- 16:25 – 16:35 **Some new perspectives on ferret husbandry and medicine**
Maja Čonč (SI), Jožko Račnik



16:45 – 18:25 Free communications

Chairpersons: Josip Miljković (HR) and Mirela Pavić (HR)

Oral presentations

16:50 – 17:10 **"Welt der Gifte" (World of Toxins) – an unique educational experience**
Nils Kley (A)

17:15 – 17:35 **Keeping and breeding venomous snakes in captivity**
Neven Vrbanić (HR)

17:40 – 18:00 **Reptile breeder from Slovenia**
Aleš Mlinar (SI), Alenka Dovč

18:05 – 18:20 **A brief overview of the educational exhibition "Reptilomania +" from 2013 to 2021**
Jasna Kusanović, Tvrtko Mataušić, Maja Kaniški, Yasmin I. Yeoman (HR),
Anamarija Jurašinović, Katarina Borić

18:25 – 18:30 Conclusions and closing of the REPTILIA meeting

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