



NEWSLETTER

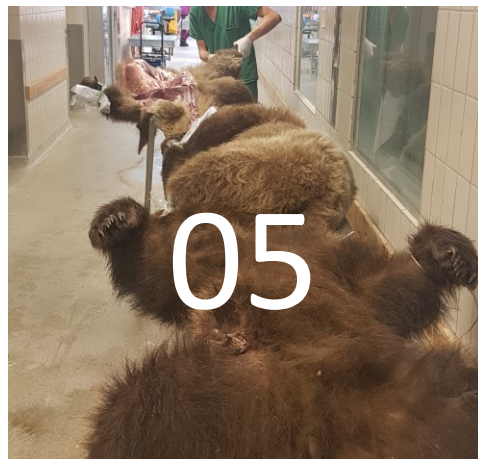
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// SUMMER 2020



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## ON THE COVER

Puffin (*Fratercula arctica*)

Cover photo by **Josh Jaggard**, wildlife photographer

Website: [click here](#)

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### Editors

Anne-Fleur Brand & Erik Ågren

### Disclaimer

The editors have tried to put this non-citable bulletin together as carefully as possible and apologise for any errors or omissions may have been committed.

# President's Corner



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The spring has been a big challenge for many of us, and to have to renounce to our biennial EWDA conference is a big hit for our association. There is certainly much I could write about these COVID-19 times but I will limit myself to telling all students, whether under- or postgraduate, how sorry I have felt all the way that their learning programmes, courses, externships, workshops, research work, exams and celebrations of their achievements have been so much hampered by the confinement and social distancing rules. A PhD defense by Zoom without an aperitive with colleagues, friends and relatives is a very sad end of several years of intensive work. This said, as this is my last piece as an EWDA Chair, I would like to end on a positive note rather than to write about the disasters affecting the Planet.

First of all, I would like to mention the ECZM residents in Wildlife Population Health who passed their examination (under the above-mentioned not-so-nice circumstances and therefore also without a group picture) in April, including two EWDA members, Anja Reckendorf (Germany) and Simone Pisano (Switzerland) - as well as Maya Lukac (Croatia). Congratulations for your hard work and success!



Second, in this era of biodiversity loss, I wish to share a small success story in which my team has had the honour to be involved. This spring, right before the borders closed, we could provide the last two lynx required by our German partners for the EU Life project "Return of the lynx to the Palatinate Forest Biosphere Reserve" that has been conducted since 2015 in the programme "Rewilding Europe" (<https://rewildingeuropa.com/rew-project/reintroduction-of-lynx-in-the-palatinate-forest-biosphere-reserve/>, <https://snu.rlp.de/de/projekte/luchs/>).

This project aimed at the relocation of a total of 20 lynx from Switzerland and Slovakia to the Palatinate Forest, starting with the first releases in 2016. By March 2020 (see picture above), all 20 lynxes could be brought to their new home. Post-release monitoring has documented the birth of at least 10 kittens so far.

Last but not least, I would like to thank you all for trusting my work and for your invaluable support.

It has been a real honour to serve the EWDA as a Chair for these past 4 years. I want to acknowledge all.

Board and Committee members I have collaborated with. They have come along when I proposed new ideas, despite the extra work it has implied, and nothing would have worked without them. Very special thanks go to Karin Lemberger for having been such a supportive collaborator, whether as a Secretary or as a Vice chair, and for being such an incredible friend.

Given the circumstances, the conference in Larissa will remain the only one I will have opened and for this and a number of other reasons it will always hold a very special place in my heart.

I wish you a relaxing, happy summer, wherever you will have the opportunity to spend your holidays, and sincerely hope to see you again at the latest at the postponed joint conference in Cuenca in 2021. Take care!



**Marie-Pierre Ryser**

*FIWI, University of Bern  
Switzerland*



# News from the Board



## “EWDA board - past winter + spring months”

Not only the board was busy with revising various EWDA guidelines as well as the EWDA bylaws also the EWDA members had to engage in polls in the past months. A big “Thank you” goes to all EWDA members who approved the suggested changes of the bylaws and, moreover, to those who took the time to cast their vote in the election for the candidates of open EWDA board positions.



It is incredibly important that an association like the EWDA is carried and supported by its members. So, thank you again.

By the way, the EWDA has currently **250 members** originating from **28 different countries** (as of July 2020). The **new EWDA board members** will be welcomed during the biennial **EWDA business meeting** which will be organized online as a large Zoom-meeting for all EWDA members taking place by the **end of summer 2020**.

With all activities on updating working documents also the **EWDA website** might benefit from a brief revision and any **comments, wishes or amendments** are more than welcome. Particularly **photographs** of wildlife animals you might like to share as well as images of your work in the field of wildlife diseases and management would be very much appreciated. Please send your contributions/suggestions to [EWDA.secretary@gmail.com](mailto:EWDA.secretary@gmail.com).

In 2019 calls went out for **EWDA Small grants** and the project proposals selected by the Small Grants Committee are:

- **Category Wildlife Conservation Research:**

“An ecotoxicological study on the current levels of mercury (Hg) in the Danish population of otter (*Lutra lutra*)” by **Miriam Dibbern**, University of Copenhagen, Denmark.

- **Category Grant for Wildlife Health Activities in Eastern Europe:**

“Are the vector-borne pathogens shared between the endangered European bison and other ruminants? A case study from a re-introduction site in the Carpathian Mountains” by **Andrei Mihalca**, University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca, Romania.



**Gudrun Wibbelt**

*Leibniz Institute for Zoo  
and Wildlife Research,  
Berlin,  
Germany*

**Congratulations to both awardees and a happy summer to you all!**

# Wildlife news from Sweden

*“COVID-19: Trust your authorities!”*

Working at an authority (the National veterinary institute SVA, both an expert authority and a central reference laboratory), it does feel good to have a high percentage of public trust in what we do and communicate. The rather unique coronavirus strategy of Sweden with only recommendations and voluntary self-assessed health status before going out or to the workplace has received both praise and criticism. At SVA the daily work and routines have continued almost at a normal pace, keeping a physical distance in the labs, working from home when possible for some staff, improving hand hygiene routines as well as teleconference abilities. Many days have been vacated in the calendar, as trips and conferences have been cancelled this year. Also, SVA is aiding the human health efforts by using the institute’s high virology test capacity to test human samples from health care staff. The ability to analyse large numbers of samples from production animals is well suited to this task, something many human health labs are not used to. Using the veterinary term “herd health” also for the human population has been an interesting quirk in these times! One health, all the time!



Wildlife disease outbreaks have kindly been absent in Sweden, so far... The ongoing surveillance of CWD continues, with the focus on risk category cervids, such as fallen or sick animals, resulting in low numbers of tested cervids, but a higher chance of finding positive cases. So far, only three old female moose have been found positive, all in 2019, with similar characteristics as the now seven positive moose found in Norway.

Planning for management of African swine fever, ASF, should it be found, continues, as well as awareness campaigns targeting hunters and the general public, to report any dead wild boar on the online reporting form for general wildlife disease surveillance; [rapporteravilt.sva.se](https://rapporteravilt.sva.se) to help us map findings and contact people to collect samples for ASF testing.

Changes in climate affects presence of pathogens and vectors, as does extreme weather conditions. Also for wildlife management, the weather can cause exceptional situations. A very late winter with deep snow in the north of Sweden has forced semi-domesticated reindeer herds to calf in the forested areas rather than in the mountains. At the same time in May, brown bears wake up from hibernation and are hungry. A record number of more than 140 permits to cull brown bears in the reindeer calving areas has been issued, so a large number of bear carcasses are transported, then sampled and processed at SVA in the early summer, in Uppsala. A high number of culled bears in spring will also result in fewer bears allowed to be hunted in the autumn in these areas. The bear population in Sweden is thriving, and regulated by hunting. The large carnivores in Sweden are well studied the past decades, with increasing numbers and lots of data being collected as all dead or culled animals are to be necropsied and sampled at SVA.



**Erik Ågren**

*National Veterinary  
Institute SVA, Uppsala,  
Sweden*

# Disease risk analysis in preparation for beaver translocations

Eurasian beavers (*Castor fiber*) were extinct from Great Britain until the turn of the century and there is growing enthusiasm for further reintroductions due to the environmental benefits that result from their landscape remodelling.

As IUCN guidelines recommend that a disease risk analysis (DRA) is carried out before any translocation, earlier this year Natural England asked the Disease Risk Analysis and Health Surveillance (DRAHS) team at the ZSL Institute of Zoology to prepare a DRA for the potential import of further beavers from Norway, or the translocation of free-living beavers already in Great Britain. Previous unofficial releases and authorised trials have resulted in a number of breeding groups becoming established throughout the country. These beavers have been studied extensively and much is now known about diseases and common parasites of beavers. However, free-living beavers in Great Britain are, for the most part, of unknown origin. They are probably the offspring of beavers previously imported from Germany, Poland and Norway but it is not known whether these lineages were wild-caught or captive-bred, or whether they passed temporarily through captive collections where they may have come into contact with exotic parasites novel to Great Britain.



Photo: Dave Butcher, Wildwood Trust, Kent

Wildlife enthusiasts often worry that the DRA process will slow down vital projects and that vets will insist on numerous additional tests that must be carried out before animals can be moved and released. But sometimes the opposite is true! We are still at an early stage with our beaver analysis but already it is apparent that many of the pathogens that beavers can carry are widespread in other species and the environment. Translocating beavers is therefore unlikely to make a substantive change in the level of risk that already exists from such parasites, and testing and treatment of beavers for many may be unwarranted. We've also seen that at times of stress beavers seem to be susceptible to disease from parasites that normally cause only asymptomatic infection. Translocation is known to be a stressor so it appears that there needs to be extra caution and careful stress minimisation when translocating beavers.

The same probably holds true for many other species and parasites but hard evidence is difficult to come by. Given that many disease outbreaks following translocations arise from previously unknown parasites, we advocate making the most of pathological investigations of beavers across Europe. Detailed understanding of the parasites and pathology of beavers would improve our disease risk analyses, and funding and cooperation for pooled tissue microarrays could be invaluable in identifying translocation hazards in this species and others.

With viruses very much top of mind right now, sadly many other DRAHS projects are currently on hold but, despite the Covid-19 restrictions, DRAHS hopes to be back out in the field in just a few weeks to monitor post-release populations like the pool frog (*Pelophylax lessonae*) and sand lizard (*Lacerta agilis*).

<https://www.zsl.org/science/wildlife-health/disease-risk-analysis-and-health-surveillance>



Helen Donald

DRAHS, Zoological Society of London (ZSL) GB





# ASF-STOP is finalised



The networking project ASF-STOP (Understanding and combating African Swine fever in Europe), financed by COST (European Cooperation in Science and Technology, <https://www.cost.eu/>) reached its end on 30 April 2020 after 4 years of intensive and rewarding work.



ASF-STOP Final Conference, 29-30 January 2020, Brescia, Italy

ASF-STOP had a crucial component of wildlife work and research, represented by the wild boar, which has a key role in the epidemiology of ASF in Europe. ASF virus circulates in wild boar populations. Wild boar are involved in the spread and expansion of the infection, with spill over to domestic pigs. Moreover, carcasses of wild boar that die of ASF are a source of environmental contamination. Unfortunately, commercial vaccines are not yet available and it is difficult to control ASF in wild boar.

ASF-STOP was formed by 32 European COST countries as well as Russia and Ukraine and built a network that extended well beyond Europe and included more than 270 participants. Very much experience and knowledge on ASF were communicated, exchanged and discussed during the many working group meetings and workshops and the two international conferences.

The 22 short term scientific missions and 4 training schools contributed to building capacity in Europe and to enhance trans-national collaboration, the latter was characterized by high participation of the less research-intensive countries in Europe. Scientific outputs included more than 20 peer-reviewed publications, many popular science communications, numerous reports and guidelines and 5 new projects, as well as a book about ASF which is under preparation.

Through ASF-STOP, I had the opportunity to learn much more about ASF and to meet many old and new colleagues, which I very specially enjoyed. Our Science Communications Manager, Laura Iacolina is the moderator of our ASF-STOP google group, which has already more than 100 members. If you like to join please send a request at the link <https://groups.google.com/forum/#!forum/asf-stop>, with a brief explanation of your research interests or email the same information to Laura Iacolina ([lauraiacolina@gmail.com](mailto:lauraiacolina@gmail.com)). Website: <https://www.asf-stop.com/>



**Dolores Gaviera-  
Widén**

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Institute (SVA),  
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# Blue tit disease re-emerges in Finland

*Suttonella ornithocola* found in Finnish Blue tits (*Cyanistes caeruleus*) after three years of absence

Reports of blue tit morbidity and mortality were received from the Southwest coast of Finland near a feeding place in April 2020. Affected birds were lethargic, fluffy and dizzy and would not fly away when approached by people. In addition, bird ringers witnessed unusual deaths of weak blue tits after handling and ringing. Around the same time, news from Germany told that blue tits were dying in large numbers.



© Tarja Vänskä

Five blue tits were received for postmortem examination from a bird ringer in early May. Bacteriological cultures revealed *Suttonella ornithocola* in lungs of two individuals. In histology, necrotic foci with clusters of rod bacteria were observed in lung of these birds. Other organs showed no specific pathology. Three birds were in poor condition, showed no specific pathology and were negative in bacteriology.

A third finding of *S. ornithocola* was made from the intestine of a blue tit found dead in a feeding place ca. 600 km north of the first outbreak. There, symptoms like head shaking and gasping were seen in two diseased blue tits.

Other cases have not been confirmed in 2020 and reports of blue tit mortality have been rare.

Previous incidents of exceptional blue tit mortality were observed in Finland in the spring of 2017, when two separate outbreaks of *S. ornithocola* were confirmed in blue tits and one in coal tits (*Periparus ater*). These outbreaks occurred far apart from each other which indicated a wide geographical spread of the bacterium.

The blue tit is a new-comer in Finnish nature. The first brood was confirmed in 1856. Initially, the species occurred only in the southern part of the country but it has successfully increased its range toward north and breeds now even in some parts of Lapland. Estimated population size is 1,3 million individuals. In Finnish wildlife disease surveillance, epidemics in blue tits are uncommon. *S. ornithocola* seems to be one of the few pathogens affecting our blue tits.



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**RUOKAVIRASTO**  
Livsmedelsverket • Finnish Food Authority



# Student Chapter Netherlands: Online EEHV lecture

One month ago the Zoo and Wildlife Medicine Study Group and the EWDA asked me to organize a lecture. After quite some research, I stumbled upon a very interesting subject: the elephant endotheliotropic herpes virus. Together with a member of the wildlife working group of Archaeopteryx, Savanna Rullens, we made contact with Tabitha Hoornweg (Researcher at Utrecht University). She is involved in a project where a vaccine or a treatment for the elephant herpes virus is trying to be developed. It was awesome to have her as a speaker, not only because of her knowledge on this subject but also because of the fact that she is Dutch too! She first talked about the virus in general and also incorporated some details. After that, she told us everything about her research at Utrecht University.

## Elephant Endotheliotropic Herpes Virus- Virus, Diagnosis, and the Path Towards an Effective Vaccine

Presenter: Dr. Tabitha Hoornweg

Dr. Tabitha Hoornweg is a postdoctoral researcher at the Faculty of Veterinary Medicine, Utrecht University, The Netherlands. Originally trained in Medical Biology and Science Communication, she received her PhD in Experimental Virology from the University of Groningen, the Netherlands, in 2016. Next, she spent 3 years as a postdoc at the Dutch National Institute of Health, where she performed research on rare and emerging viral infections. In 2019, she moved to Utrecht University to study Elephant Endotheliotropic Herpes Virus (EEHV) in the research group of prof. dr. Victor Rutten (Immunology) and dr. Xander de Haan (Virology). Currently, her research focuses on the development of novel and improved diagnostic assays to detect EEHV in elephants, with the eventual aim to develop a vaccine. Additionally, she studies the pathogenesis of EEHV hemorrhagic disease with the ultimate goal to develop improved, evidence-based treatment strategies.

Date: Sunday, May 31st, 2020  
Time: 07:30 New York (UTC -4)

This is an online free event by:



The lecture took place on the 31<sup>st</sup> of May. It was streamed live via the Journal Club and via Facebook Live on the Facebook page of our veterinary study association Archaeopteryx. It was absolutely thrilling to see that 150 people from literally all across the globe participated. After the lecture, loads of participants had good and interesting questions. Eventually, one person even offered to do a collaboration on a research project on the African elephant herpes virus! This is fantastic, because most of the current research is conducted on the virus in the Asian elephant.

It would be awesome if this lecture could contribute to the beginning of a stunning collaboration.

This lecture was organized in collaboration with the Zoo and Wildlife Medicine Study Group (ZWMSG), the European Wildlife Disease Association (EWDA), the Wildlife Disease Association Southern Africa student chapter and the veterinary study association Archaeopteryx. Archaeopteryx is an association organising lectures, workshops, excursions and lots more for veterinary students on the Faculty of Veterinary Medicine in Utrecht.

Currently our study association exists 31 years and we are continuously professionalising and looking for more recognition in the world. This lecture therefore perfectly contributed to our mission. We are all very excited about this! You can follow us on Facebook, Instagram, LinkedIn and you can check our website: <https://en.archaeopteryx-online.com/>.

I am very thankful to all the people who gave me the chance to organize this great event. Special thanks to Andrés Alejandro Castro Cortés from the ZWMSG, Fidu Friedolina from the WDA South Africa student chapter, Mervin of the Journal Club, Tabitha Hoornweg and Victor Rutten. Without you this event would not have been possible, so thank you for this tremendous collaboration.



**Rens Lindeboom**

*Student Representative  
and Board member of  
Archaeopteryx,  
Netherlands*



# Rewilding the world

“An extinction is not definite, and ... our chance to reshape and restore resilient and diverse ecosystems for the future is not lost”

During late Quaternary, a time period comprising the latter 500-1000 thousand years, a wave of extinctions started which have had severe effects on the world's mammalian megafauna, that is species of more than 10 kg. Collectively, these extinctions has been named the “Late Quaternary Extinctions” and they have been ongoing during the latter 130 thousand years. More than 300 mammal species have been lost, and more than 500 bird species.

Before the extinctions, the European and American continents had a mammalian fauna that could compete with the current megafauna in Africa in terms of richness; elephants, rhinoceros, large ungulates and carnivores. There are different explanations for these extinctions, such as changing climate and diseases, but the current consensus is that humans are responsible. The general argument is that the spread of our species, *Homo sapiens*, coincide on continental basis with the extinction of species.

The change in ecosystem composition that follow the loss of megafauna is detrimental to other species of all sorts; animals, plants fungi and surely microorganisms too. This change has likely contributed to the general loss of biodiversity on a global scale, often referred to as the sixth mass extinction. Unfortunately, both the process of losing megafauna as well as general loss of biodiversity is still ongoing in many parts of the world.

These insights might be concerning or even depressing, and its surely a challenge for our coexistence with other organisms that all are so important for us in many ways and, thus, for humanity as a whole. However, there is hope in a growing scientific and public concept called “Rewilding”.

The term rewilding was first formulated in 1998 by Soule and Noss as a positive opportunity for conservation that also opened for the reintroduction of species. It drew attention in a more recent scientific paper in the well renowned scientific journal Nature in 2005 by Josh Donlan and colleagues (2005).

As the title “Re-wilding North America” implies, this was an exposé in the potential of restoring ecosystem function and species composition on the north American subcontinent by actively reintroducing previously occurring species or their preexisting ecosystem equivalents, as for example cheetahs, lions and elephants. The article by Donlan *et al.* kickstarted the interest in this form of progressive nature conservation effort in both the scientific community and among the public. In autumn 2010, the non-governmental organization “Rewilding Europe” was launched during a seminar in Brussels, sponsored by for example the Postcode lottery and with support from the Dutch royal family. ►

*Rewilding Europe is a non-governmental organization, visit [rewildingeurope.com](http://rewildingeurope.com) to learn more.*



American bison, (*Bison bison*) in Badlands National Park, South Dakota, USA. Photo: author.



**Carl-Gustaf Thulin**

Head of Department of  
Anatomy, Physiology and  
Biochemistry, Swedish  
University of Agricultural  
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Uppsala, Sweden

# Rewilding the world

A series of scientific papers followed, and the concept of trophic rewilding was conceptualized by a group of scientists at Aarhus University in Denmark (Svenning *et al.* 2016). It can be understood as processes of bringing back species, their near relatives or even ecoequivalents, with the purpose to restore ecological processes that were lost due to animal species extinctions. Associated with rewilding is the potential to recreate extinct species, either by directed breeding or by different forms of genetic engineering. An interesting book on this topic was written by the Swedish science journalist Torild Kornfeldt in 2018.



My own fascination for this led me to write about the opportunity to study the genetic process of rewilding, formulated as *dedomestication genetics*, in a conceptual paper published in the scientific journal *Restoration Ecology* (Thulin *et al.* 2017). The idea is that, during domestication, the set of genes (the gene-pool) of the wild ancestor species is preserved but scattered amongst the existing, domestic breeds so that, if all were put together for example in nature or in a giant enclosure, an ancestral phenotype as well as genotype may reoccur. This is only possible of course for extinct species that once were domesticated, such as the aurochs and the tarpan, the European wild horse. For species such as the woolly mammoth, the giant deer and the cave lion we need to rely on more fine-tuned genetic engineering.

In practice, however, the rewilding concept is not so novel. The wildlife management of Sweden is an interesting example. In the late 18<sup>th</sup> century, the Swedish king Gustaf III opened for commoners to hunt large mammals (to gain public approval after a *coup d'état*), previously this was reserved for the king and nobility only. Intensified hunting led to a dramatic decline of large herbivores and a subsequent decline of large carnivores because of loss of prey. ▶



European bison, wisent (*Bison bonasus*) in Kraansvlaak, the Netherlands. Photo: Author



# Rewilding the world



European bison, wisent (*Bison bonasus*) in Białowieża NP, Poland.  
Photo: Author

In 1930, The Swedish Association for Hunting and Wildlife Management was formed, in practice to rewild Sweden again, primarily oriented towards the edible game species (*e.g.* large ungulates). In 1909, the Swedish Society for Nature Conservation was formed primarily to restore large carnivore populations. These actions led to an amazing recovery of Swedish wildlife, supported by reintroductions of for example beaver (1930), wild boar (1970-ies), supplementary release of red deer, Eurasian otter, eagle owl and peregrine falcons, and even recent translocations of wolves.

Rewilding in practice has also been done in many other parts of the world. Famous examples include three reintroduction of wolves into Yellowstone National park and other parts of northwestern USA, numerous reintroductions of American bison in the prairie ecosystem and the California condor in western USA. Other well renowned reintroduction programs are the reintroduction of Przewalski's horse into the Asian steppe landscape and the reintroduction of Père David's deer in China. There are also quite spectacular programs that aim to reintroduce tigers to central Asia, Indian rhinoceros to Pakistan and cheetahs to India.

Many questions and challenges arise from all these rewilding activities. First, perhaps how people in the actual areas feel about having large mammals returning; people that have lost the experience of coexisting with for example tigers, elephants and wolves. This is an important aspect for social sciences to work with, and much is done, for example in the research field of Human Dimension of Wildlife (*e.g.* Decker *et al.* 2012). There is also an economic perspective, both in what ways the bringing back of large animals may boost local economies, but also the cover of and responsibility for damages in for example agriculture, forestry, and animal husbandry. Finally, and perhaps of most interest in the current context, is the risk for pathogens and diseases to spread through reintroductions, supplementary releases and translocations. An individual of any species is, as we know, also a biological package of microbes of all sorts.

So, what is rewilding, and what is its value? I find comfort in the idea that an extinction is not definite, and that our chance to reshape and restore resilient and diverse ecosystems for the future is not lost. I am also appealed to the progressive thought of losing control or direction, both from a practical way but also in an evolutionary context. A problem with biological conservation is, simply, the idea of conserving something that is, in reality, in constant change. Species have originated from evolutionary processes, and are continuously affected by evolution, and that process that can only move forward. Thus, rewilding provides hope and opportunity; for species conservation, for biodiversity, and for us.

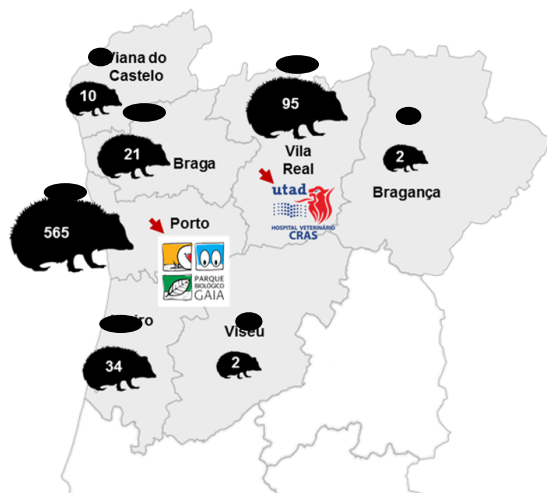
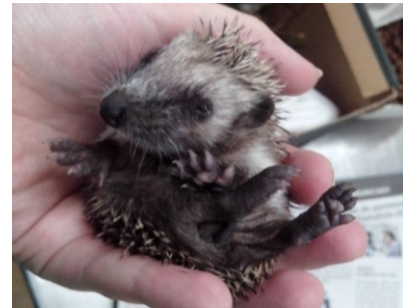
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# Outcomes and mortality causes on hedgehogs (*Erinaceus europaeus*) in North Portugal (2002-2019)

*“The main aim of this study was to collect data from hedgehog admittance records from the main two wildlife rehabilitation centres located at the north of Portugal (Wildlife Rehabilitation Centre of Parque Biológico de Gaia and the Wildlife Rehabilitation Centre of the University of Trás-os-Montes and Alto Douro), describing admissions causes, outcomes, primary causes of death and main lesion observed in the post mortem exam”*

The Western European hedgehog (*Erinaceus europaeus*) is one of the most common and widely distributed mammal by the European continent. Hedgehogs are one of the most common species of mammals that are admitted to wildlife rehabilitation centres or veterinary hospital. The main causes of admission include skin, respiratory, gastrointestinal diseases, malnutrition, hypothermia and traumatic injuries. Due to their preference to habit urban areas hedgehogs are subjected to have the highest risk of traumatic injuries human-related, that can include drowning, injuries inflicted by domestic pets, poisoning, entrapment and roadkill.



Over 17 years (2002-2019) a total of 740 animals were admitted. Most of the animals were adults, with the highest number of admissions during summer (36.8%) and spring (33.2%). Main reasons for admission were casual encounters (41%) and orphaned young (19%). In total, 66.6% of the individuals that arrive at the centres were released successfully to the wild.

The main three cause of death was by the trauma of unknown origin (32.7%), non-traumatic of unknown origin (26.6%) and nutritional disorders (20.2%). The main lesion observed were related to trauma, with skeletal and skin lesions (fractures, haemorrhages, wounds) and organ damage, particularly lungs and liver.



**Andreia Garcês<sup>1\*</sup>,  
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Lóio<sup>2</sup>, Roberto Sargo<sup>3</sup>,  
Luís Sousa<sup>3</sup>, Filipe Silva<sup>3</sup>  
and Isabel Pires<sup>3</sup>**

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*\*andreiamvg@gmail.com*

The hedgehog is high resilient and adaptable animals. It is the first time that such a long study related to outcomes and mortality in perform in this specie. The urban environment has benefits for hedgehogs, offering supplementary sources of food and shelter, yet, the human presence has a negative impact on them. In the future is important that the public become even more involved in the activities of the wildlife centres and similar environmental associations, which will make a positive difference for hedgehog populations.

# Donation by Amanda Hawkswood

In Summer of 2019, the EWDA was contacted through a lawyer regarding a donation of 15'000 Euros to the Association by an English benefactor, Mrs. Amanda Hawkswood. The money was transferred to the EWDA account in Spring 2020 and the Board is still discussing about how to invest this money, with the intention to follow the wishes of Mrs. Hawkswood as best possible. She did not formulate anything specific but wanted it to serve for the direct benefit of wild animals.

Upon request of further information on her person and motivation to donate to the EWDA, her lawyer answered:

*"Amanda sadly passed away with no family whom she kept in touch with and no close friends here in the UK. She passed away at the age of 56 after her battle with stomach cancer.*

*All I do know, as the person who drafted her Will for her, is that she must have been very passionate about wildlife and in particular animal welfare. She included many other similar charities, animal hospitals, animal sanctuaries, etc."*

**The EWDA sincerely  
thanks the late  
Mrs. Hawkswood for  
her generosity**

