

Effective policy change to achieve One Health goals



Marijana Vučinić

Faculty of Veterinary Medicine
University of Belgrade, Serbia

4-6 July 2021,
Tuhelj Terme, Croatia



World
Organisation
for Animal
Health

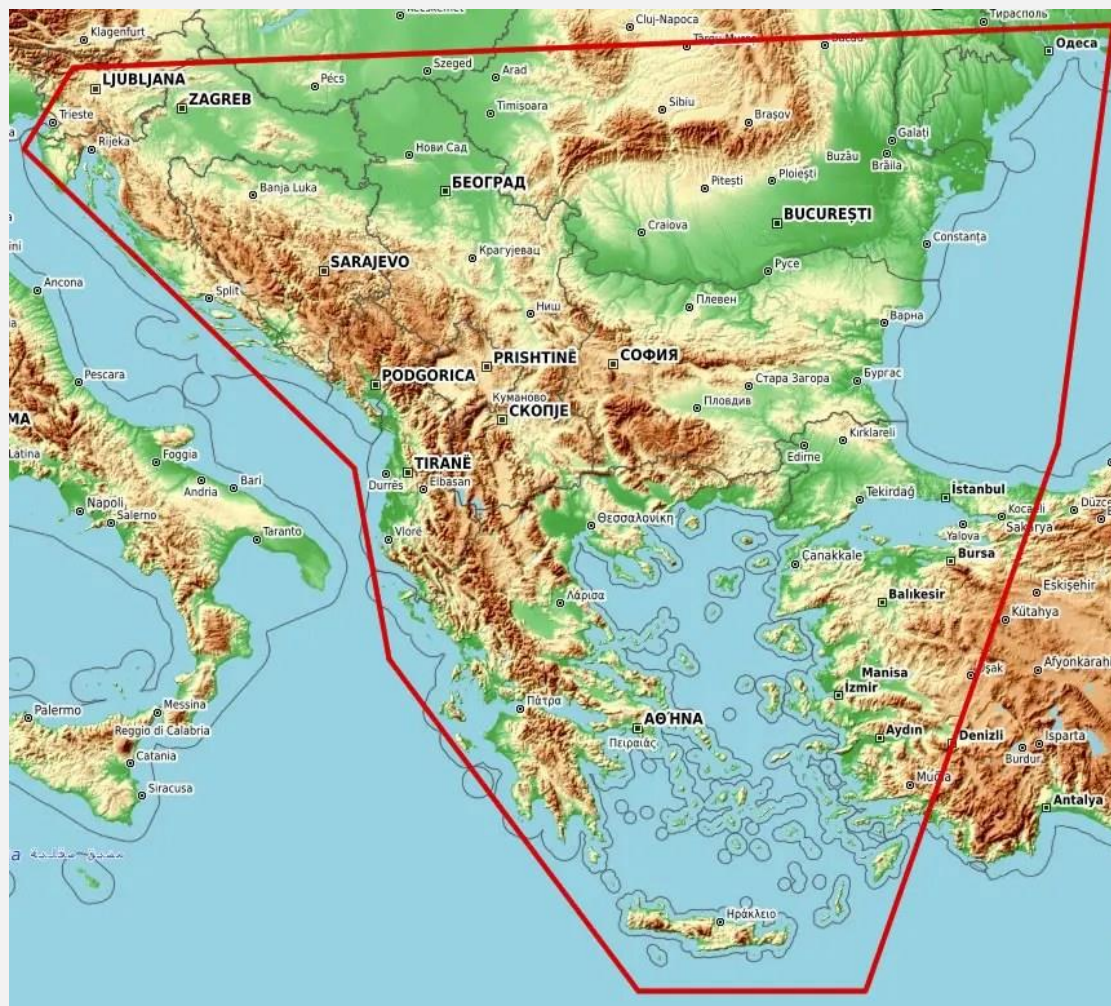
Organisation
mondiale
de la santé
animale

Organización
Mundial
de Sanidad
Animal



- **AIM OF THE PRESENTATION**

An insight into the problems and progress of Balkan countries in relation to the DPM

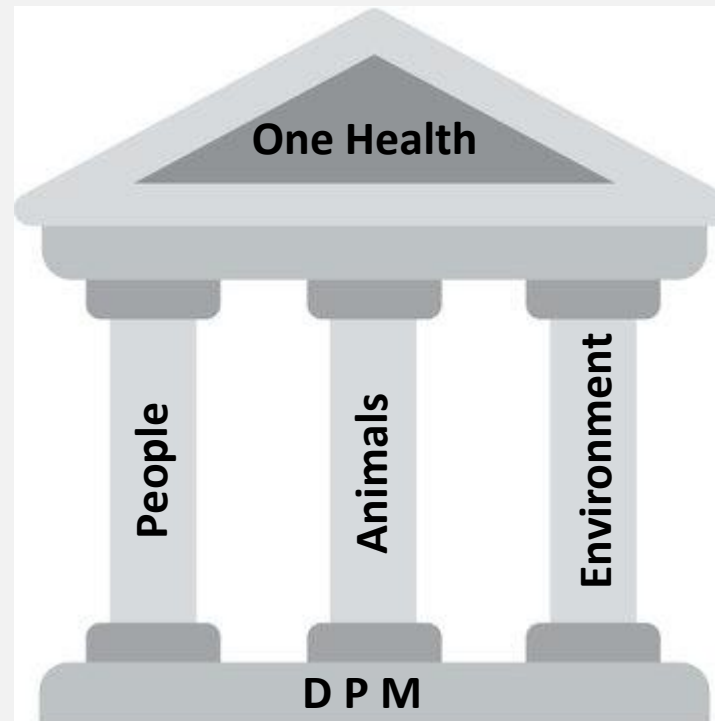




Balkan countries are the best proof that there is a strong connection between the DPM and the concept of "One Health" .

This applies to all three pillars of the "One Health" concept:

- People health
- Animal health
- Environment





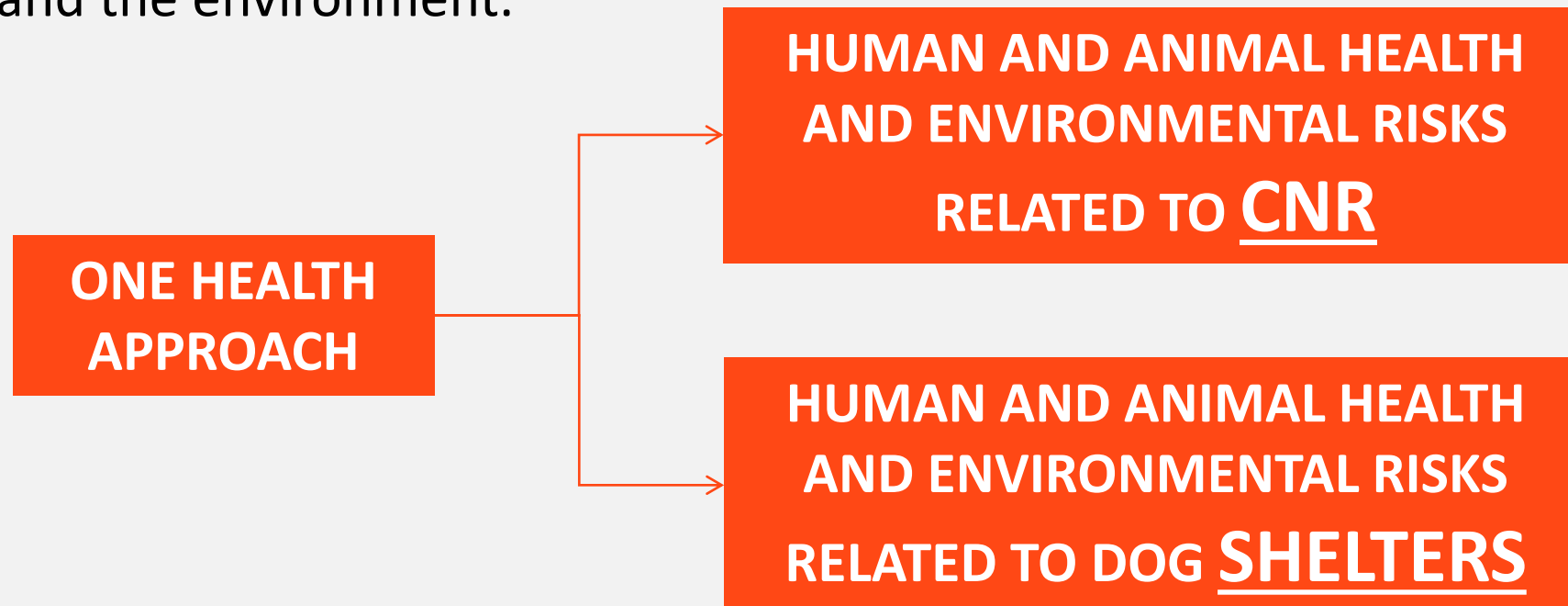
MATERIAL FOR THE PRESENTATION

- Scientific literature 2019/20 - 2023
 - Gray database
 - Newspaper articles
1. Zoonoses in people, domestic animals and free-roaming dogs or dogs in shelters
 2. Contamination of soils and plants with developmental forms of dog parasites
 3. Dog bites
 4. Free-roaming dog poisoning
 5. Professional diseases of dog catchers and shelter workers
 6. Free-roaming and shelter dog diseases/welfare
 7. Environmental impacts of free-roaming dogs ...
 8. One health approach to dog zoonoses, etc.



The two main approaches to DPM in Balkan countries are CNR and keeping unowned dogs in shelters with promotion of responsible dog ownership and dog adoption. **Regions where nothing is done.**

Both of these approaches have their advantages and disadvantages in relation to human health, the health of dogs and other animals (domestic and wild) and the environment.





ONE HEALTH	CNR	DOG SHELTERS
Human health	Zoonoses in human population	Zoonoses in shelter workers, dogs and dog adopters
	Dog bites and attacks	Injuries in shelter workers
	Physical and emotional health of dog catchers	Professional diseases
		Export and adoption of infected dogs to other countries free from certain pathogens
Animal health	Zoonoses in free-roaming dogs	Physical health of confined dogs (zoonoses and injuries)
	Zoonoses in domestic (farm) animals	Emotional health of confined dogs
	Zoonoses in other dogs and pets	Antimicrobial resistance
	Free-roaming dog abusing and poisoning by revolted citizens	
	Injuries in free-roaming dogs	
	Free-roaming dog attacks to farm animals and wildlife	



ONE HEALTH APPROACH TO SHELTER DOG HEALTH: PROOFS

57

ROMANIA

János D, Viorel H, Ionica I, Corina P, Tiana F, Roxana D. Carriage of Multidrug Resistance Staphylococci in Shelter Dogs in Timisoara, Romania. *Antibiotics*. 2021; 10(7):801. <https://doi.org/10.3390/antibiotics10070801>

RESULTS

Authors found the presence of multidrug-resistant zoonotic staphylococci in clinically healthy dogs and dogs with skin lesions - an animal health and human health concern.

Two commendable works thanks to the recognition of importance related to DPM (shelter dogs) and One Health

GREECE

Hofmann, M., Hodžić, A., Pouliou, N. et al. Vector-borne pathogens affecting shelter dogs in eastern Crete, Greece. *Parasitol Res* 118, 1661–1666 (2019). <https://doi.org/10.1007/s00436-019-06284-z>

RESULTS

41.8% dogs were positive to at least one pathogen

Leishmania infantum

Hepatozoon canis

Mycoplasma haemocanis



ONE HEALTH	CNR (vaccination against rabies and treatment against parasites)	DOG SHELTERS
ENVIRONMENTAL HEALTH	Contamination of public surfaces, soil and plants with urine and feces, parasites and microbes	Large consumers of water for dog watering and shelter washing
	Dogs disperse waste from households, catering and food processing establishments	Large producers of fecal matter - how to appropriately remove it from shelters?
	Dogs feed on the carcasses of dead animals whose carcasses have not been properly disposed of - Illegal dumping	Emitters of unpleasant odors and harmful gases
	Negative impact on biodiversity - they disturb and frighten wildlife, kill them or compete with food with wildlife	Noise emitters
	Poisoning of free-roaming dogs also has negative impact on biodiversity	Environmental pollution with residues of veterinary drugs, disinfectants, acaricides, insecticides





MAIN FINDINGS ON ZONOSEs

Published studies were conducted mainly by:

- analyzing different biological materials (blood, serum, feces) sampled from humans, animals and dogs (dogs in shelters)
- inspection of animals at slaughterhouses (cattle, sheep, goats, pigs)
- analyzing soil and plant samples
- interviewing the population
- reviewing hospital records



MAIN FINDINGS ON ZONOSSES

Diseases that are transmitted from dogs to humans and other animals caused by viruses, bacteria and parasites - are present in Balkan countries.

There are in the Balkans:

- zoonoses transmitted from dogs to people and other animals by direct contact or by vectors in owned, free-roaming and dogs in shelters
- food-borne zoonoses

The presence of dog-transmitted zoonoses is favored by:

- ignorance of the population about zoonoses and the way of transmission
- unhygienic/unsanitary living conditions
- inadequate personal hygiene
- inadequate health care
- illegal dumps
- improper disposal of animal carcasses
- presence of vectors (sand fly, tick and mosquitoes)
- collecting food in nature (mushrooms, fallen fruit, vegetables) and eating unwashed plants
- recreation in nature and lying down and resting on grass contaminated with zoonotic agents
- playing of children on contaminated surfaces by dog excrements
- lack of a system for monitoring some zoonoses
- irresponsible dog ownership, etc.



Year	2010		2015		2019		2020		2021		2022		2023	
Species	Dog	<u>Stray</u> <u>dog</u>	Dog	<u>Stray</u> <u>dog</u>	Dog	<u>Stray</u> <u>dog</u>	Dog	<u>Stray</u> <u>dog</u>	Dog	<u>Stray</u> <u>dog</u>	Dog	<u>Stray</u> <u>dog</u>	Dog	<u>Stray</u> <u>dog</u>
Country														
Albania	0	0	0	0										
Bosnia and Herzegovina	1	0	0	0	0	0	1	0	0	0				
Bulgaria	2	0	0	0							0	0		
Croatia	23	0	0	0	0	0	0	0	0	0	0	0		
Greece	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kosovo*	-	-	0	0										
Montenegro	2	0	0	0										
North Macedonia	0	0	0	0										
Romania	49	0	1	0	0	0	2	0	0	0	6	0	1	0
Serbia	2	0	0	0	0	0	0	0	0	0	0	0		
Turkey	70	0	189	0	81	0								
Total	149	0	190	0	81	0	3	0	0	0	6	0	1	0



Country	Total cystic echinococcosis cases, N (1997–2021)
Albania	1529
Bosnia and Herzegovina	624
Bulgaria	9379
Croatia	408
Greece	502
Kosovo*	363
Montenegro	120
North Macedonia	538
Romania	7750
Serbia	1311
Turkey	Not included

Casulli, A., Abela-Ridder, B., Petrone, D., Fabiani, M., Bobić, B., Carmena, D., Šoba, B., Zerem, E., Gargaté, M. J., Kuzmanovska, G., Calomfirescu, C., Rainova, I., Sotiraki, S., Lungu, V., Dezsényi, B., Herrador, Z., Karamon, J., Maksimov, P., Oksanen, A., Millon, L., ... Santolamazza, F. (2023). Unveiling the incidences and trends of the neglected zoonosis cystic echinococcosis in Europe: a systematic review from the MEmE project. *The Lancet. Infectious diseases*, 23(3), e95–e107. [https://doi.org/10.1016/S1473-3099\(22\)00638-7](https://doi.org/10.1016/S1473-3099(22)00638-7)



Scientific and gray data

Finding:

During the **2017–19** period, high endemicity areas for cystic echinococcosis were identified in: **Albania** (2·94 per 100 000), **Bulgaria** (2·93 per 100 000), **North Macedonia** (1·41 per 100 000), and **Romania** (1·63 per 100 000)



MAIN FINDINGS ON ZONOSEs

Illegal export of dogs from Balkan shelters in EU countries

Transmission of exotic pathogens from Balkan countries to EU countries via dogs

Literature source	Finding
Middlemiss, C. (2021), <i>Brucella canis</i> in dogs in the UK. Veterinary Record, 188: 155-155. https://doi.org/10.1002/vetr.227	<i>Brucella canis</i> from rescue dogs imported from Romania <i>B. canis</i> in breeding dogs in UK One Health approach - euthanasia of dogs with clinical manifestation of the disease
<i>Grell, G. (2023). The rise in UK cases of Brucella canis causing concern. CABI News 13 May 2023</i>	Owner does not want to euthanize the dog - Treatment with antibiotics (to reduce shedding, to protect veterinarian), neutering and avoiding contact with other animals and people.
Fisher, MA, Rees, B, Capner, C, Pritchard, S, Holdsworth, PA, Fitzgerald, RA. A survey of gastrointestinal parasites in dogs illegally entering the UK (2015–2017). Vet Rec Open. 2023; 10:e54.	Puppies smuggled from Hungary and Serbia via Romania and Ukraine
Wright, I, Whitfield, V, Hanaghan, R, Upjohn, M, Boyden, P. Analysis of exotic pathogens found in a large group of imported dogs following an animal welfare investigation. Vet Rec. 2023;e2996.	The welfare of some dogs was compromised due to their poor health <i>Hepatozoon canis</i> and <i>Leishmania infantum</i> in dogs imported from Romania No mandatory testing for exotic pathogen in UK

Two possibilities:

Legally imported dogs but not tested for exotic diseases

Illegally imported dogs without treatments against rabies, endo- and exoparasites



MAIN FINDINGS ON OTHER PROBLEMS RELATED TO DPM AND ONE HEALTH

- Dog bites
- Poisoning of free-roaming dogs
- Dog attacks on livestock and wild animals
- Zoonoses in shelter dogs



dailymail.co.uk

<https://www.dailymail.co.uk> › news · Prevedi ovu stranicu

Three British children savaged by wild dogs on holiday as ...

28. 8. 2022. — Three British children and their Greek minder were left traumatised after a vicious attack by up to 15 wild **dogs** on a volcano near Athens.



tiranapost.al

<https://tiranapost.al> › aktualitet › e... · Prevedi ovu stranicu

Serious / Abandoned dog bites the child on the sidewalk, the ...

8. 4. 2021. — Another 11-year-old child was macabrely bitten by a dog which had been abandoned by its owner. · The event took place on "**Llambi Bonata**" street, ...



novinite.com

<https://www.novinite.com> › articles · Prevedi ovu stranicu

Bulgaria: Stray Dogs Have Attacked and Bitten 9 year Old ...

1. 3. 2021. — **Stray dogs** attacked and seriously wounded a 9-year-old child in the town of Dupnitsa, Southwestern **Bulgaria**.. The girl has multiple wounds ...



blackpoolgazette.co.uk

<https://www.blackpoolgazette.co.uk...> · Prevedi ovu stranicu

Blackpool woman mauled and arm partially torn off by beloved ...


21. 6. 2022. — Caz said that Metcho, a former Bulgarian street dog, was usually 'a very big, loving soft lump', who had never **bitten** before. Advertisement.



<https://www.slobodenpecat.mk> > z... · [Prevedi ovu stranicu](#) ⋮

Increased number of people bitten by stray dogs in Tetovo, in ...

23. 4. 2021. — Some of the people who have been **bitten** by **stray dogs** report the cases to the Tetovo police. - This year, as of April 21, 38 bites of **stray dogs** ...

 netpress.com.mk
<https://en.netpress.com.mk> > skop... · [Prevedi ovu stranicu](#) ⋮

Skopje citizens bitten by stray dogs – the authorities do nothing

20. 6. 2021. — **Bitten** citizens have become an everyday image in the capital of **Macedonia**, but no one is reacting to solve this problem.

 todaytimeslive.com
<https://todaytimeslive.com> > world · [Prevedi ovu stranicu](#) ⋮

On the outskirts of Bucharest - jogger bitten to death by stray ...

22. 1. 2023. — **Stray dogs** attacked a woman while she was jogging in a tourist area on the outskirts of Bucharest and bit her to death.

 romaniajournal.ro
<https://www.romaniajournal.ro> > ... · [Prevedi ovu stranicu](#) ⋮

43yo woman killed after being attacked by a pack of 7-8 stray ...

23. 1. 2023. — On Saturday morning, 43-year-old Ana Oros was attacked by a pack of 7-8 **dogs** while running in the Lacul Morii area of Bucharest.

Increased number of people bitten by stray dogs in Tetovo, in the three months of 2021 almost as much as in the whole of 2020

 koha.net
<https://www.koha.net> > metro > th... · [Prevedi ovu stranicu](#) ⋮

The two-year-old boy was bitten in the face by a stray dog ...

18. 6. 2023. — A two-year-old child was attacked in the face by a **stray** dog on Sunday in "Mother Teresa" square in Pristina. The child's parent, who did ...



2012 - 2017 (6 years) - Serbian Municipalities paid to citizens bitten by stray dogs over 25 million Euros

PROOF FOR DOG BITES

2018

Stray Dogs Have Bitten 77,500 Citizens, Municipalities Paid 25 Million Euros

Home - News - Stray Dogs Have Bitten 77,500 Citizens, Municipalities Paid 25 Million Euros

12.04.2018

Stray Dogs Have Bitten 77,500 Citizens, Municipalities Paid 25 Million Euros

In the past six years, cities and municipalities in Serbia have paid out at least EUR 25 million as compensation for stray dog bites, with 77,500 citizens being victims of attacks. Despite the growing number of shelters, as well as caught strays, population control has not been yielding the expected results, demonstrating a need for new measures on the national and local level.

A round table in the Palace of Serbia, organized by NALED and ORCA in cooperation with the Ministry of Agriculture, Forestry and Water Management and Ministry of Public Administration and Local Government, pointed out to a need for developing a national strategy for the control of the stray dog population, as well as local programs for control, since 78,8% of cities and municipalities do not have one.

<https://naled.rs/en/vest-napusteni-psi-ujeli-77500-gradjana-opstine-isplatile-25-miliona-evra-358>

PROOF FOR DOG BITES

Blic • VESTI • DRUŠTVO

UJEDI PASA TEŠKI 50 MILIONA EVRA Revizori utvrdili da je Srbija na ime odšteta isplatila dovoljno novca da se izgradi JEDAN MOST

Državna revizorska institucija (DRI) zaključila je da su lokalne samouprave za poslednje četiri godine na ime odštete zbog ujeđa pasa lutalica isplatile oko 50 miliona evra što je cifra dovoljna, da se primerá radi, izgradi jedan most.

Aleksandra Kresović 02.06.2022 • 22:18 Komentara 6

<https://www.blic.rs/vesti/drustvo/ujedi-pasa-teski-50-miliona-evra-revizori-utvrdili-da-je-srbija-na-ime-odsteta/zv8nrx4>

DOG BITES WEIGH 50 MILLION EUROS Auditors found that Serbia paid enough money to build ONE BRIDGE in the name of compensation (to injured citizens by stray dogs)

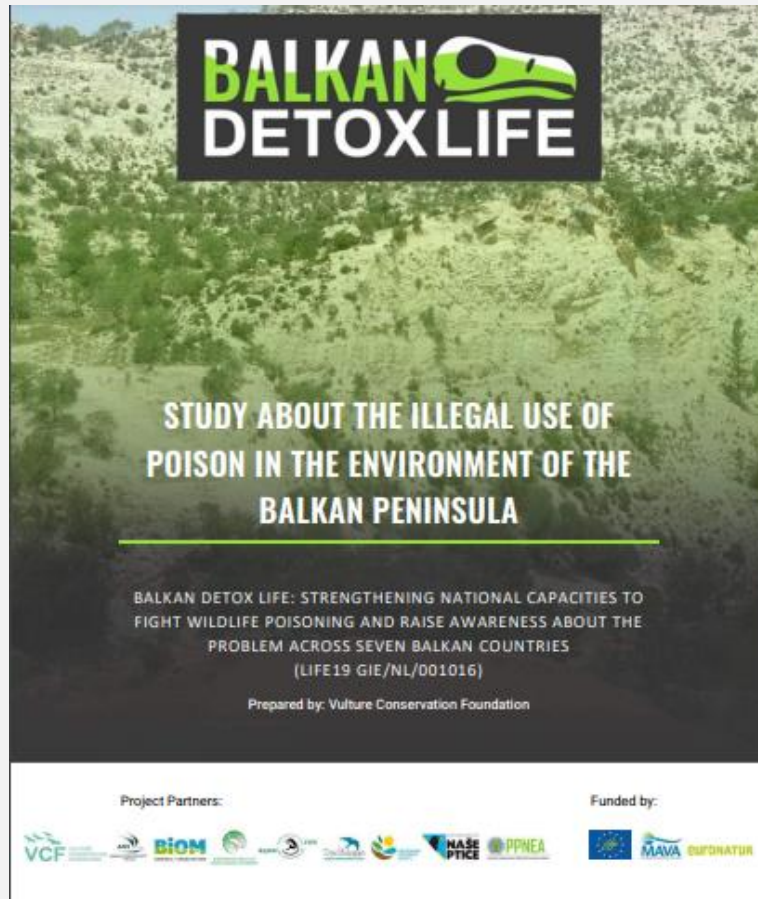
Native language

2018 - 2021 (4 years) - Serbian Municipalities paid to citizens bitten by stray dogs 50 million Euros. 68 000 citizens were bitten It is the prize of a new bridge.



Dog poisoning in rural area - due to conflicts with farmers; attacks on wild animals and free roaming dogs on farm animals

Dog poisoning in urban area - due to noise; due to excrements; due to dispersal of garbage



Actual victims:

- endangered species of wild animals and birds
- farm animals
- owned dogs

Potential victims:

- people/children

Albania,
Bosnia and Herzegovina,
Bulgaria, Croatia,
Greece,
North Macedonia, and
Serbia



In the Balkan countries, it is recognized that there is a strong connection between One Health and DPM.

Experts from medicine, veterinary medicine, and biology are involved in the work at One Health. They provide scientific support to work in the field of DPM.

There is an increasing number of published scientific papers in the area of the impact of dogs on One Health in the region. This means that problems exist, but they are recognized as important.

Increasing number of new shelters in some countries. It have three meanings:

- Growth in the size of the population of free-roaming dogs

- Increasing the responsibility and awareness of citizens and municipalities who want to reduce the number of dogs in public areas (want to help to their community)

- Increasing empathy to stray dogs

Increasing number of courses on dog welfare in shelters, breeding kennels and boarding establishments

Reduction in the incidence of some zoonoses

Reduction in the incidence of dog bites



Progress has been made in some countries.

Zoonosis	Country	Species and organs	Literature source
Cystic echinococcosis *	Bulgaria	Humans High incidence (1998 – 2007) – 5.27 o/oooo - 165 cases In 1999 - 8.14 o/oooo (2008 - 2017) - significant reduction to 3.13 o/oooo 83 cases 2017 - 2.42 o/oooo	Lalev MP, Simeonova JI, Stoyanov LS, Boshnakova ZS, Angelov IA. Incidence of echinococcosis in the Pleven region of Bulgaria in the period 1998-2017. Arch Balk Med Union. 2020;55(1):98-107.

National program for CE control:

raising the level of awareness of the population on the disease, mass immune screening in the places with high incidence, ongoing monitoring (analysis and assessment) of CE incidence in the region, sanitation measures including stricter control on meat processing establishments, and **setting up kennels for stray dogs and places for walking pet dogs.**

Zoonoses

Number of confirmed echinococcosis cases and rates per 100 000 population by country and year, EU/EEA, 2016–2020



Country	2016		2017		2018		2019		2020			
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Confirmed cases	Rate	ASR	Reported cases
Bulgaria	269	3.76	218	3.07	206	2.92	193	2.76	95	1.37	1.46	190
Croatia	9	0.21	15	0.36	4	0.10	3	0.07	3	0.07	0.08	3
Greece	18	0.17	15	0.14	11	0.10	7	0.07	7	0.07	0.07	7
Romania	13	0.07	14	0.07	4	0.02	1	0.01	0	0.00	0.00	0

A considerable reduction in the reported number of confirmed cases was observed in Bulgaria. The reasons for the reduction in reported number are unclear.



Canine Research

Children are victims of dog bites due to irresponsible dog ownership, parenthood, and managers of school institutions in Serbia

Marijana Vučinić^a, Miloš Vučičević^b [Show more](#) [+](#) Add to Mendeley [🔗](#) Share [📄](#) Cite<https://doi.org/10.1016/j.jveb.2018.12.005>[Get rights and content](#) **Table 2. Gender and age class of bitten children and origin of dogs that bit children**

	N (%)	P Value
Gender of children		
Boys	40 (51)	NS
Girls	39 (49)	$\chi^2= 0.063$; DF=1
Age class of children		
Preschool age (2-6 years old)	28 (35)	$P = 0.0002$
School age (7-17 years old)	51 (65)	$\chi^2= 14.13$; DF=1
Ownership patterns of biting dogs		
Stray dogs	32 (41)	$P = 0.0241$
Dogs of known owners	47 (59)	$\chi^2= 5.087$; DF=1



So far we have used indicators for DPM to measure the success of DPM

We need to know exactly where we have progressed and where we are lagging to DPM

DPM and One Health are not the same

DPM is a series of activities that have their own specific goals

The concept of One Health should be the main objective of DPM

From now on, we have to recognize the priorities related to the health of people, animals and the environment in each country of the Balkans and determine the share of each category of dogs in violation of the One Health

At the next meeting, epidemiologists, infectologists and ecologists should sit here together with veterinarians and share the work in the field of DPM and One Health

Until now, we have done education for stakeholders on DPM content, and now we need to do education on One Health



Thank you

12, rue de Prony, 75017 Paris, France
T. +33 (0)1 44 15 19 49
F. +33 (0)1 42 67 09 87

woah@woah.int
www.woah.org

[Facebook](#)
[Twitter](#)
[Instagram](#)
[LinkedIn](#)
[YouTube](#)
[Flickr](#)

