

PREVALENCE OF DIFFERENT *SALMONELLA* ENTERICA SUBSPECIES AND SEROTYPES IN WILD CARNIVORES IN EMILIA-ROMAGNA REGION, ITALY

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INTRODUCTION

Wild animals are potential vectors of different *Salmonella enterica* subspecies and serotypes and, in particular wild carnivores, due to their nutrition habits. Predators may interact with livestock, pets and humans, generating accidental *Salmonella* infections; therefore surveillance activities are necessary. In Italy and, in particular in the Apennines area, these interactions are more frequent due to a high population density. This study aims to investigate the presence of different *Salmonella* subspecies and serotypes in wild carnivores in Emilia-Romagna Region.

METHODOLOGY

Carcasses of foxes (*Vulpes vulpes*), badgers (*Meles meles*) and wolves (*Canis lupus*) submitted to the IZSLER diagnostic Laboratory of Forlì between 2016-2021, were included in the present work. Species considered were either found dead (road kills, poisoning, or natural death) or hunted, and subjected to national and regional health monitoring programs. The isolation of *Salmonella* spp. was performed according to ISO 6579-1, while *Salmonella* spp. serogroup identification and serotypization were performed according to ISO/TR 6579-3:2014.

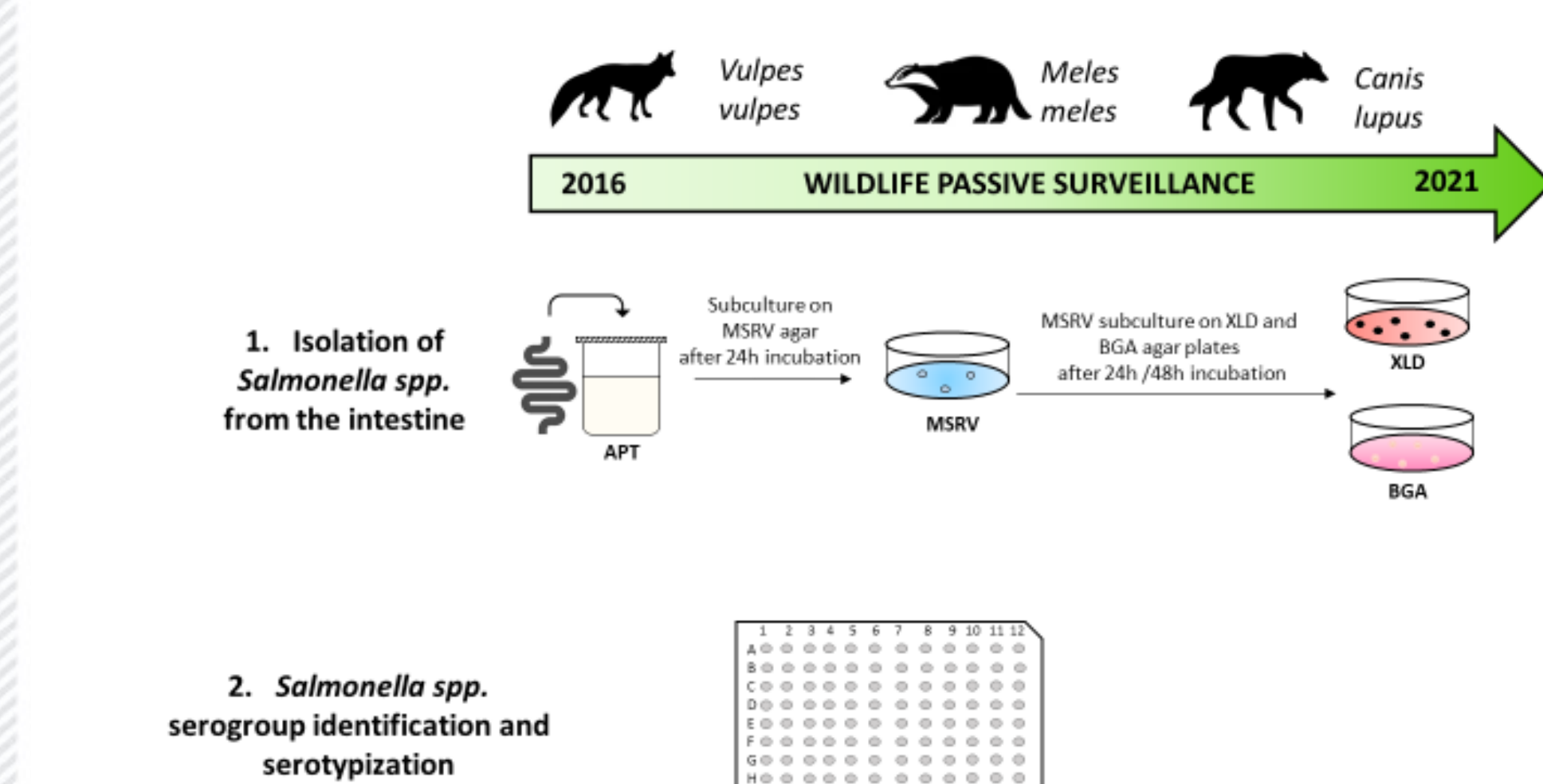


Fig. 1: Graphical representation of *Salmonella* spp. isolation and typization procedure

RESULTS

Isolated *Salmonella enterica* strains belonged to four different subspecies (*enterica*, *salamae*, *houtenae*, *diarizonae*) and 23 different serotypes. Badgers and wolves showed only *S. enterica* subsp. *enterica*, while in foxes samples all four subspecies were observed. Concerning serotypes results in foxes, *S. typhimurium* and *S. veneziana* were the most frequently isolated strains (4/34 each); *S. enterica* subsp. *salamae* was isolated from 3 carcasses. *Salmonella typhimurium* was the most frequent isolated serotype also in badgers (5/19), followed by *S. newport* (4/19) and again *S. veneziana* (4/19). The serotypes isolated from wolves, *S. infantis* (2/3) and *S. stanleyville* (1/3), were identified also in foxes (2/34 and 1/34, respectively).

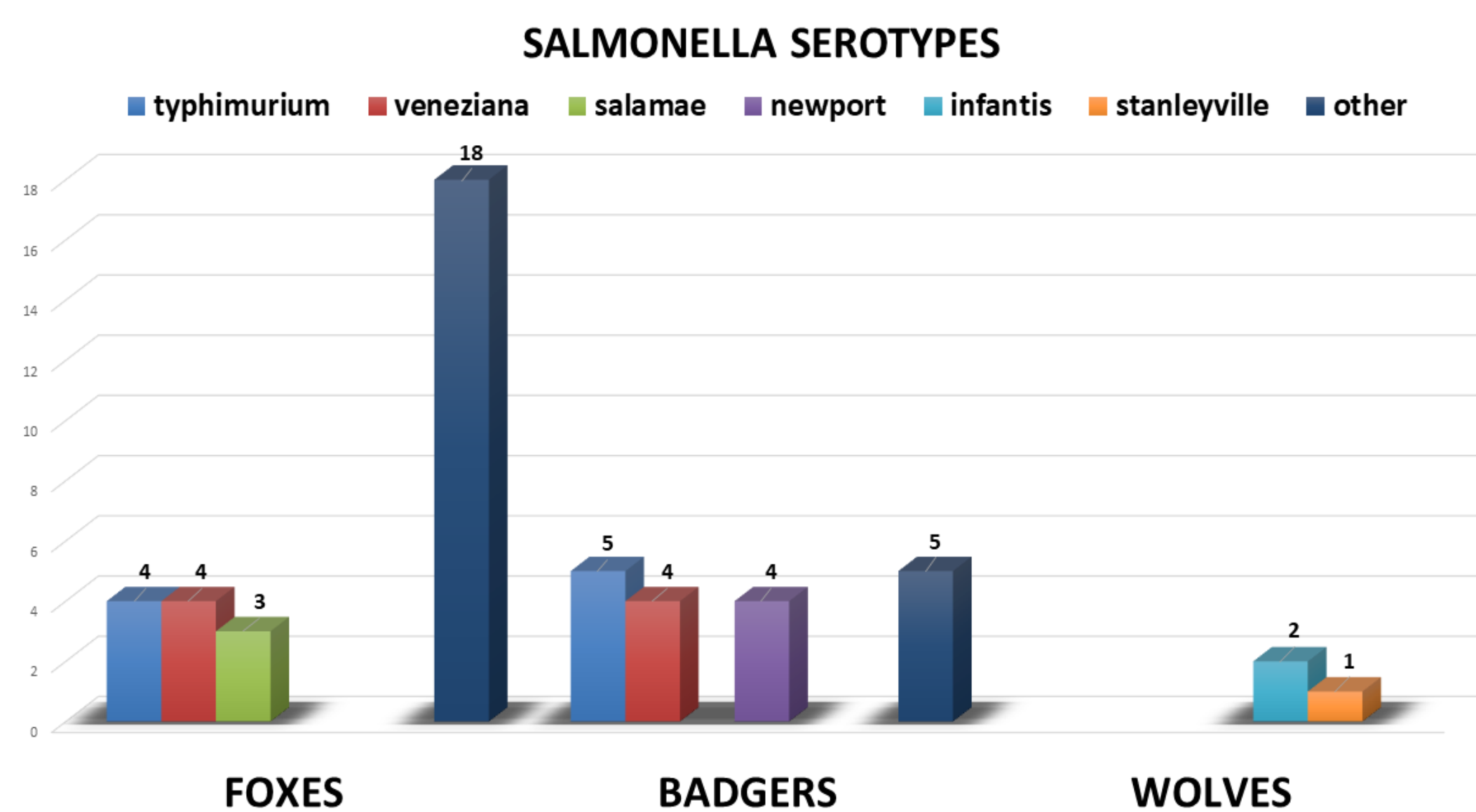


Fig.3: Most frequently isolated strains from carcasses of wild carnivores included in the study.

REFERENCES

- [1] Mario Chiari, Nicola Ferrari, Daniele Giardiello, Paolo Lanfranchi, Mariagrazia Zanoni, Antonio Lavazza, Loris G. Alborali. 2014. Isolation and identification of *Salmonella* spp. from red foxes (*Vulpes vulpes*) and badgers (*Meles meles*) in northern Italy. Acta Vet. Scand. 56(1):86 doi: 10.1186/s13028-014-0086-7;
- [2] Velca Botti, Valérie Navillod, Domenis, Orusa, Pepe, Robetto, Guidetti. 2013. *Salmonella* spp. and antibiotic-resistant strains in wild mammals and birds in north-western Italy from 2002 to 2010. Vet. Ital. 49(2):195-202. doi: 10.12834/VetIt.2013.492.201.208.
- [3] Maria J. H. O'Hagan, Ana V. Pascual-Linaza, Catherine Couzens, Clare Holmes, Colin Bell, Nessie Spence, Robert J. Huey, Julie A. Murphy, Ryan Devaney and Angela Lahuerta-Marin. 2021. Estimation of the Prevalence of Antimicrobial Resistance in Badgers (*Meles meles*) and Foxes (*Vulpes vulpes*) in Northern Ireland. Front. Microbiol. 12:596891. doi: 10.3389/fmicb.2021.596891;

SALMONELLA PREVALENCE IN WILD CARNIVORES

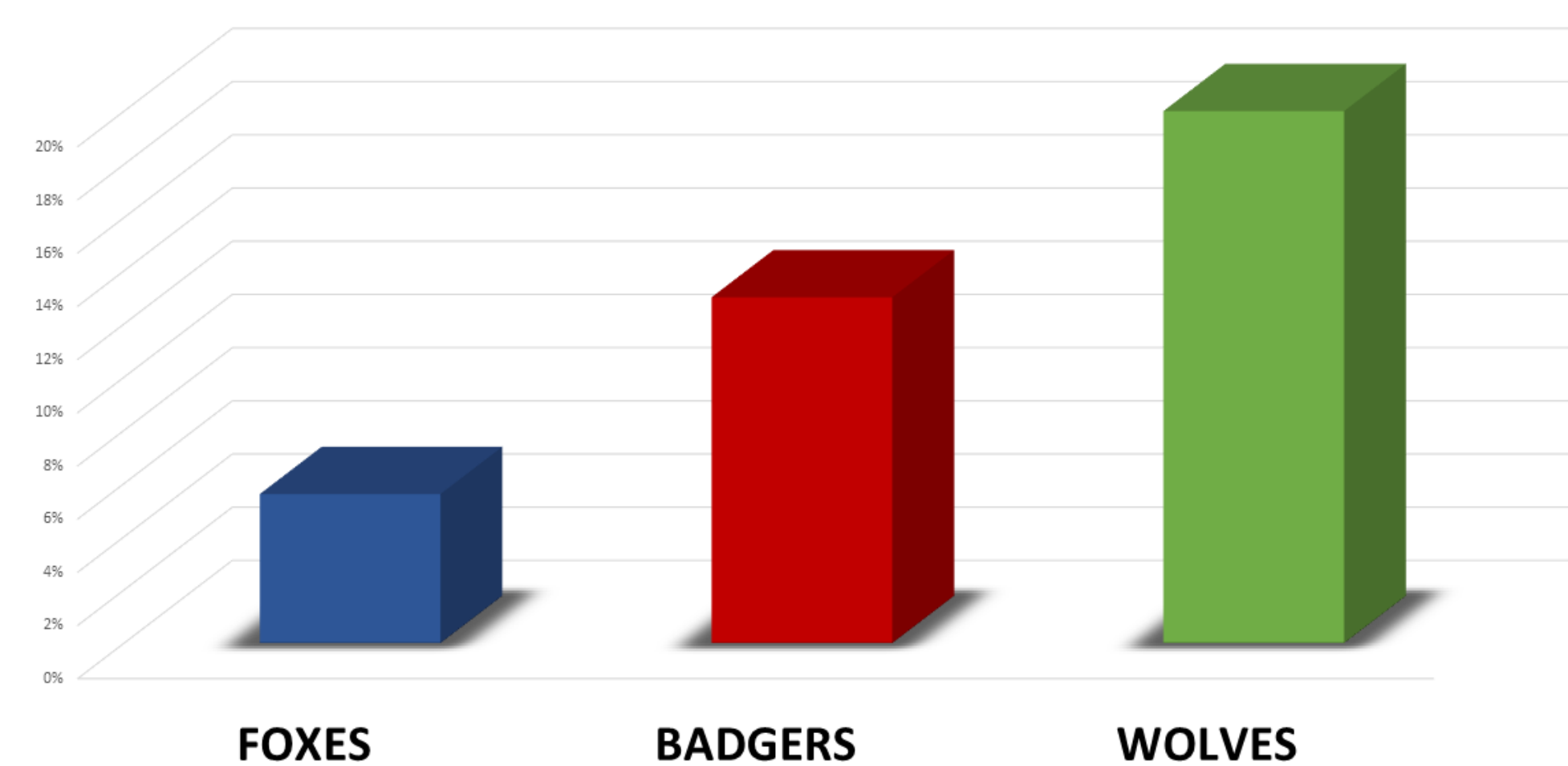


Fig.2: The presence of *Salmonella* was investigated in 602 foxes, 145 badgers and 15 wolves. Positivity was observed in 34/602 (5.6%), 19/145 (13%) and 3/15 (20%) respectively.

DISCUSSION AND CONCLUSION

This study showed the presence of *Salmonella* spp. in wild carnivores in Emilia Romagna. The prevalence in both foxes and badgers was similar to other Italian surveys [1,2]. Nevertheless, the prevalence of 13% found in badgers can be considered higher comparing it to an European study [3]. Moreover, wolves were included in the present work for their importance in the ecology of the Apennines area. Even though only few animals were analysed, a prevalence of 20% was assessed. It also must be pointed out that many of the serotypes isolated are relevant for human, livestock and pets' health. The present work highlighted a relevant prevalence of *S. enterica* in all the investigated wildlife species, therefore suggesting their potential role as reservoirs or dead-end hosts. However, further analysis should be carried out to assess the actual role of *Salmonella* spp. in predators: for instance, by relating strains isolated from wild carnivores with those from other wildlife species, livestock, pets and humans. Moreover, analysis of the antimicrobial resistance of the isolated strains could help to improve our knowledge under a One Health framework.

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