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Insight into *Leptospira* infection in wild boar (*Sus scrofa*)

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**Scientific meeting announcement of the
European Leptospirosis Society**

May 6th, 2021

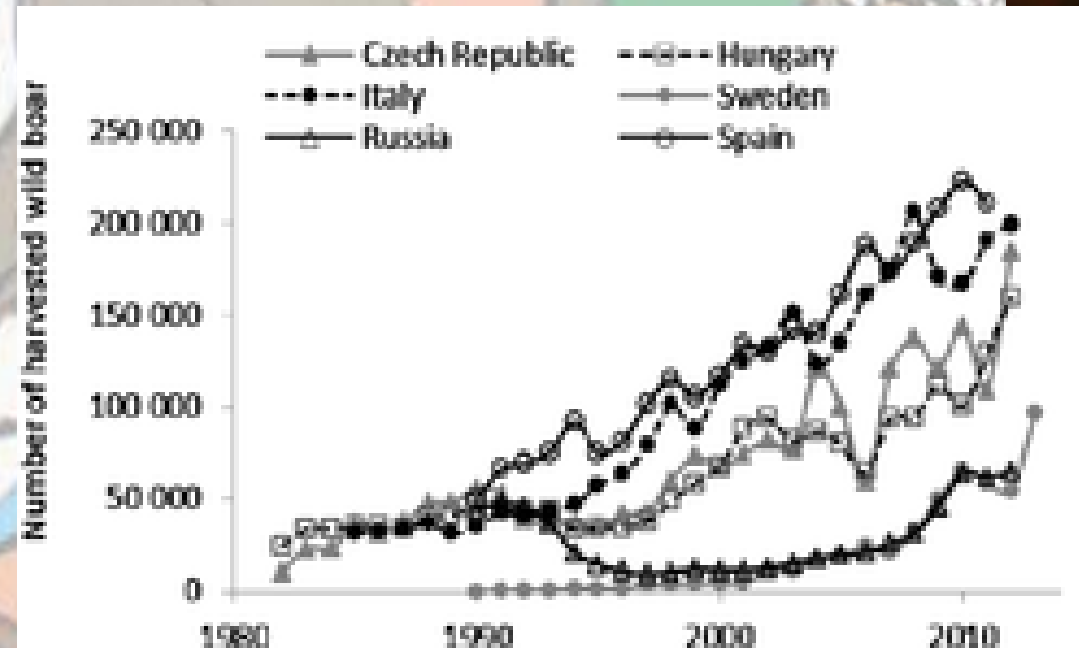
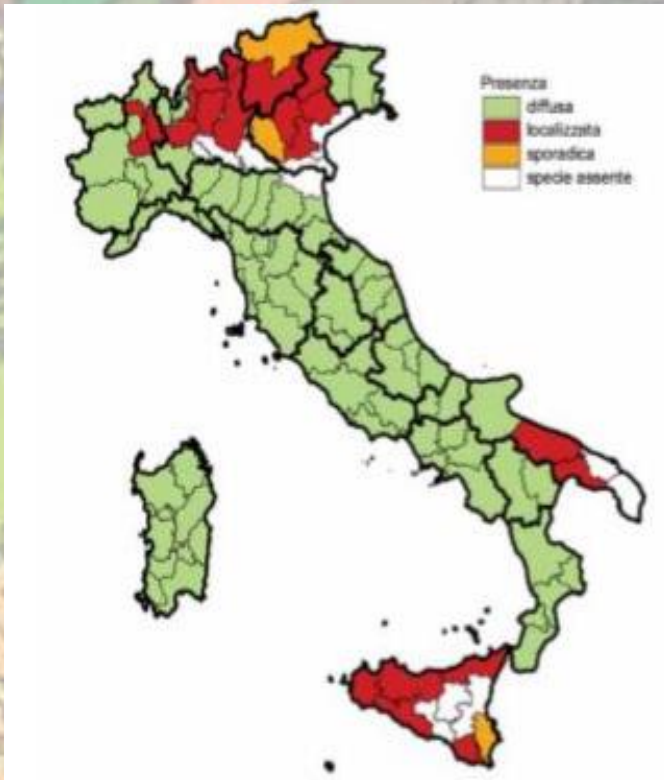
European Leptospirosis Society



WILD BOAR POPULATION

Population of wild boar constantly increased during last years in Europe

Significant presence of hunting activity



ENVIROMENT



- Live near wetlands
- Contact with domestic animals in extensive farm



- Habitat sharing with other wild animals



- Significant hunting pressure



- Reach urban and peri-urban area



Leptospirosis in wild boar was investigated using MAT and PCR.

In Europe, the *Leptospira* prevalence ranging from 6 to 20%.

Brief communication | Open Access | Published: 12 January 2016

First overall report of *Leptospira* infections in wild boars in Poland

Jacek Żmudzki, Artur Jabłoński, Agnieszka Nowak, Sylwia Zębek, Zbigniew Arent, Łukasz Bocian & Zygmunt Pejsak

Acta Veterinaria Scandinavica 58, Article number: 3 (2015) | Cite this article

RESEARCH ARTICLE | APRIL 01 2012

Prevalence of Antibody to Six *Leptospira* Serovars in Swedish Wild Boars

Sofia Boqvist; Karin Bergström; Ulf Magnusson

J Wildl Dis (2012) 48 (2): 492–496.

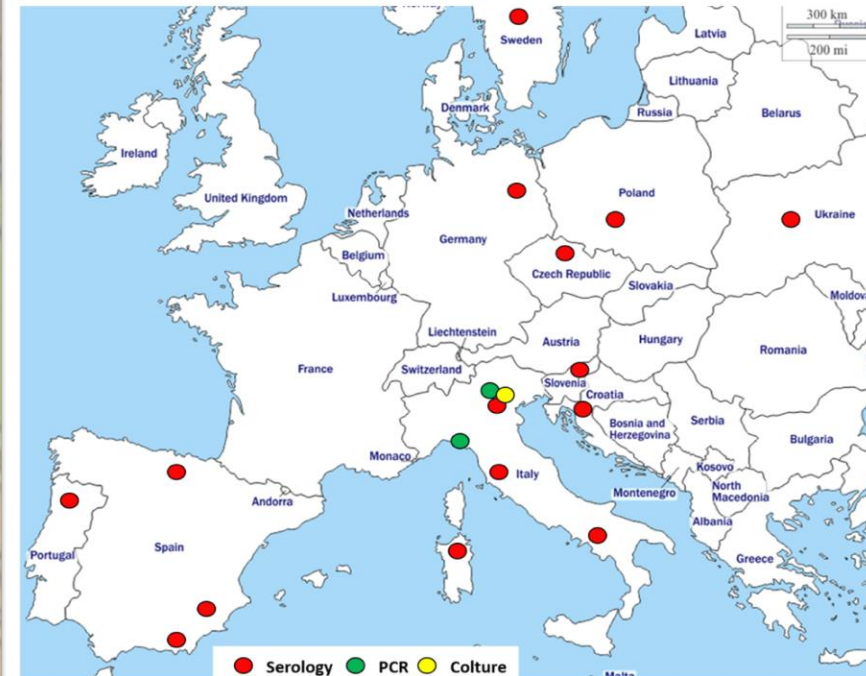
<https://doi.org/10.7589/0090-3558-48.2.492> Article history

Brief Report | Published: 03 August 2006

Wild boars as possible source of hemorrhagic leptospirosis in Berlin, Germany

A. Jansen, K. Nöckler, A. Schönberg, E. Luge, D. Ehler & T. Schneider

European Journal of Clinical Microbiology and Infectious Diseases 25, 544–546(2006) | Cite this article



RESEARCH ARTICLE | JULY 01 2002

Antibodies to Selected Viral and Bacterial Pathogens in European Wild Boars from Southcentral Spain

Joaquín Vicente; Luís León-Vizcaíno; Christian Gortázar; María José Cubero; Mónica González; Pablo Martín-Atance

J Wildl Dis (2002) 38 (3): 649–652.

<https://doi.org/10.7589/0090-3558-38.3.649> Article history

Published by Associazione Teriologica Italiana
Hystrix, the Italian Journal of Mammalogy

Volume 27 (2): 145–149, 2016

OPEN ACCESS

Available online at:
<http://www.italian-journal-of-mammalogy.it>

doi:10.4404/hystrix-0582

Research Article

Seroprevalence and risk factors of leptospirosis in wild boars (*Sus scrofa*) in Northern Italy

Mario Chiari, Bianca Maria Figaroli, Silvia Tagliabue, Giovanni Loris Alborali, Marco Bertoletti, Alice Papetti, Mario D'Incau, Mariagrazia Zanoni, Maria Beatrice Boniotti*

National Reference Center for Animal Leptospirosis (NRCL), Istituto Zooprofilattico Sperimentale della Lombardia ed Emilia Romagna "Bruno Ubertini", via Bianchi 7/9, 25121 Brescia, Italy

RESEARCH ARTICLE | JANUARY 01 2010

Prevalence of Antibodies to Selected Viral and Bacterial Pathogens in Wild Boar (*Sus scrofa*) in Campania Region, Italy

Serena Montagnaro; Simona Sasso; Luisa De Martino; Mariangela Longo; Valentina Iovane; Gianbenedetto Ghiurmino; Giuseppe Pisanelli; Donatella Nava; Loredana Baldi; Ugo Pagnini

J Wildl Dis (2010) 46 (1): 316–319.

<https://doi.org/10.7589/0090-3558-46.1.316> Article history

Original Contribution | Published: 07 February 2020

Serological Survey on Bacterial and Viral Pathogens in Wild Boars Hunted in Tuscany

Fabrizio Bertelloni, Maurizio Mazzei, Giovanni Cilia, Mario Forzan, Antonio Felicioli, Simona Sagona, Patrizia Bandecchi, Barbara Turchi, Domenico Cerri & Filippo Fratini

EcoHealth 17, 85–93(2020) | Cite this article



Comparative Immunology, Microbiology and Infectious Diseases

Volume 65, August 2019, Pages 14–22



Epidemiology of leptospirosis in North-Central Italy: Fifteen years of serological data (2002–2016)

Fabrizio Bertelloni, Giovanni Cilia, Barbara Turchi, Paolo Pinzauti, Domenico Cerri, Filippo Fratini

In Italy, the prevalence is around the 10%.

LEPTOSPIRA IN WILD BOAR

Wild boar is considered as an important *reservoir* for *Leptospira* serogroup Pomona and Bratislava.



Besides, serogroup Tarassovi is linked to this animal species, especially in the ecological niches.



Moreover, *Leptospira* intermediate species were also detected in Italian wild boar.

- 3 kidneys out of 611 (0.49%) scored positive *via* Real-Time PCR in Liguria region
- 9 kidneys out of 287 (3.14%) specie positive *via* Real-Time PCR in Tuscany region

↓
Leptospira fainei



Leptospira Survey in Wild Boar (*Sus scrofa*) Hunted in Tuscany, Central Italy

Giovanni Cilia, Fabrizio Bertelloni,* Marta Angelini, Domenico Cerri, and Filippo Fratini

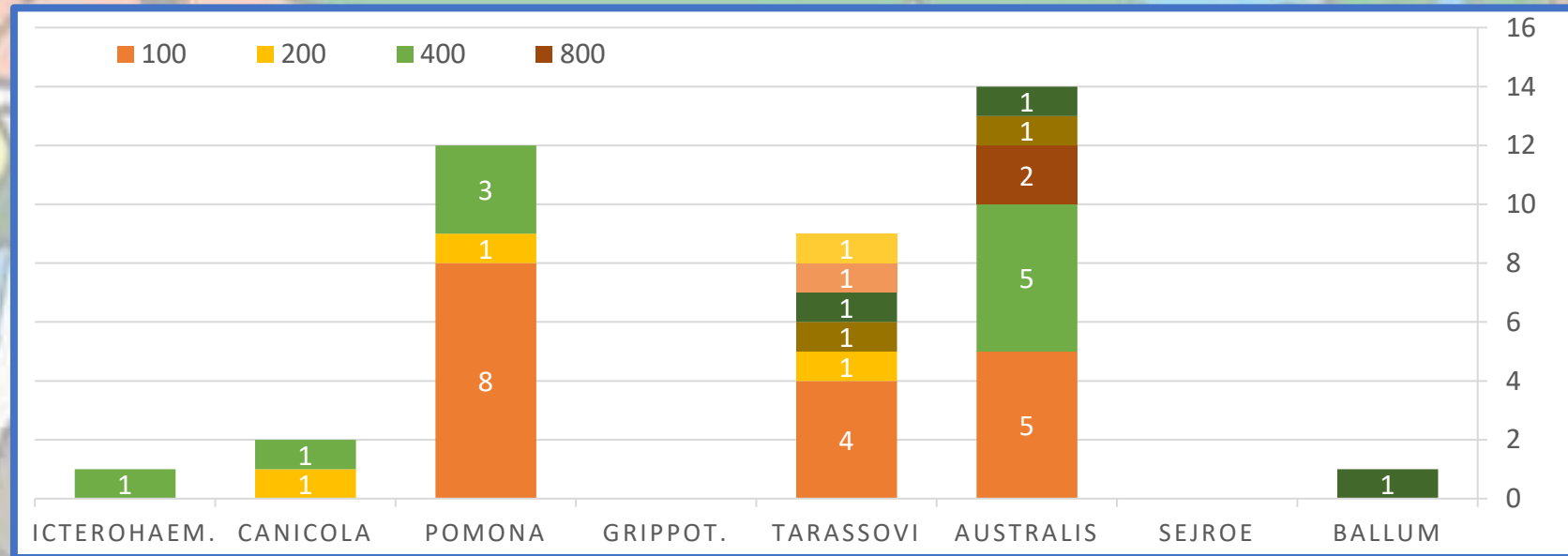
- 39 sera out of 287 (13.59%) were positive – titers until 1:12800

- 41 kidneys out of 287 (14.28%) scored positive:

➤ 32 (11.15%) specie patogene

- 23 *L. interrogans*
- 4 *L. borgpetersenii*
- 1 *L. kirschneri*

- 4 coltures from kidney 287 (1.39%) positive



1 Tarassovi (ST 153) - *L. borgpetersenii*
3 Bratislava (ST 24) - *L. interrogans*

LEPTOSPIRA IN WILD BOAR REPRODUCTIVE SYSTEMS

PLOS NEGLECTED TROPICAL DISEASES

OPEN ACCESS PEER-REVIEWED
RESEARCH ARTICLE

Presence of pathogenic *Leptospira* spp. in the reproductive system and fetuses of wild boars (*Sus scrofa*) in Italy

Giovanni Cilia, Fabrizio Bertelloni, Ivana Piredda, Maria Nicoletta Ponti, Barbara Turchi, Carlo Cantile, Francesca Parisi, Paolo Pinzauti, Andrea Armani, Bruna Palmas, Malgorzata Noworol, Domenico Cerri, Filippo Fratini

Version 2 | Published: December 28, 2020 • <https://doi.org/10.1371/journal.pntd.0008982>

Pathogenic and intermediate *Leptospira* are able to infect the reproductive system of wild boar.

From investigated specimens were isolated:

- One Grippotyphosa strains (ST 78) from both testicles and epididymis of one adult male
- Two Bratislava (ST 24) from both testicles and epididymis of two males

Using Real-Time PCR *Leptospira* DNA was found in:

- 20 testicles and epididymides (21.05%)
 - 11 uterus (8,08%)
 - 3 placenta (6,66%)
 - 13 fetuses pools (28,88%)
- Pathogenic target
- 6 testicles and epididymides (3.00%)
- Intermediate target

↓
Leptospira fainei



Bratislava, swine specific serovar, seems to be able to infect reproductive organs of male wild boars suggesting a possible venereal *Leptospira* transmission, as reported for other animals.



The born of just infected puppies could increase the *Leptospira* incidence in a specific area, intensifying the circulation of swine specific serovar

biology



Communication

***Leptospira fainei* Detected in Testicles and Epididymis of Wild Boar (*Sus scrofa*)**

Giovanni Cilia, Fabrizio Bertelloni, Domenico Cerri and Filippo Fratini

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* Correspondence: fabrizio.bertelloni@unipi.it

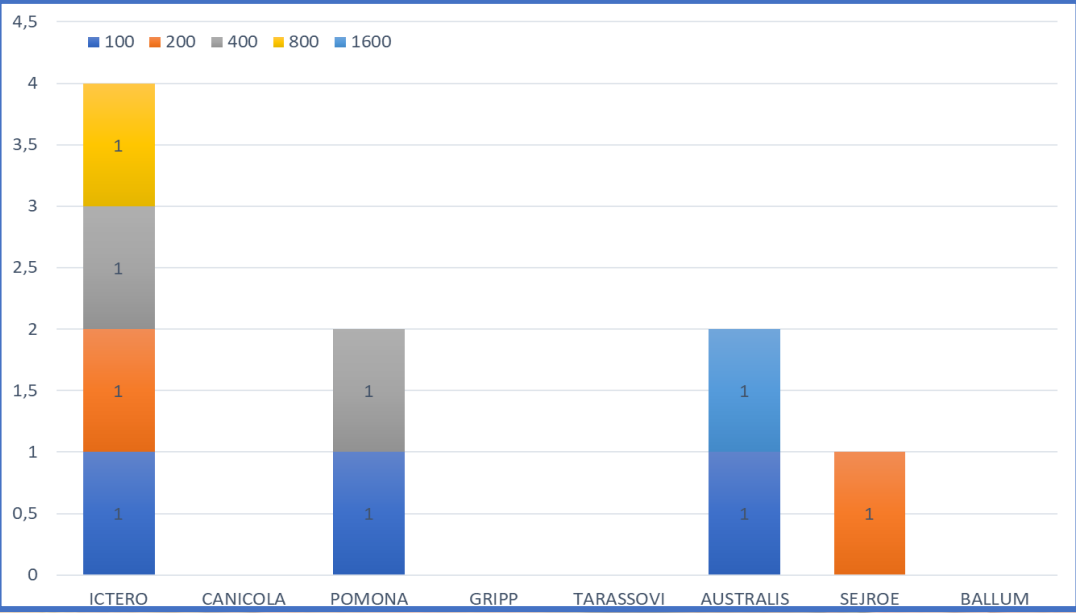
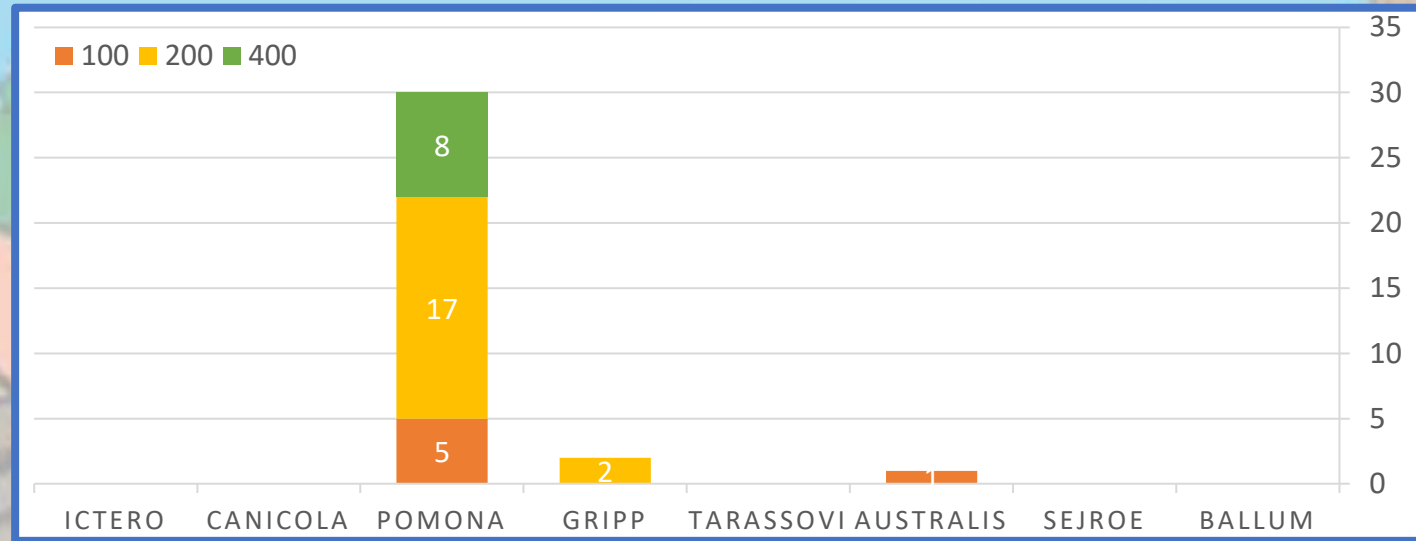
Article
Presence and Characterization of Zoonotic Bacterial Pathogens in Wild Boar Hunting Dogs (*Canis lupus familiaris*) in Tuscany (Italy)

Giovanni Cilia ¹, Filippo Fratini ¹, Barbara Turchi ^{1,*}, Valentina Virginia Ebani ¹, Luca Turini ¹, Stefano Bilei ², Teresa Bossù ², Maria Laura De Marchis ², Domenico Cerri ¹ and Fabrizio Bertelloni ¹

¹ Department of Veterinary Sciences, University of Pisa, Viale delle Piagge 2, 56124 Pisa, Italy; giovanni.cilia@vet.unipi.it (G.C.); filippo.fratini@unipi.it (F.F.); valentina.virginia.ebani@unipi.it (V.V.E.); luca.turini@phd.unipi.it (L.T.); domenico.cerri@unipi.it (D.C.); fabrizio.bertelloni@unipi.it (F.B.)
² Istituto Zooprofilattico Sperimentale del Lazio e della Toscana M. Aleandri, 00178 Rome, Italy; stefano.bilei@izslt.it (S.B.); teresa.bossu@izslt.it (T.B.); marialaura.demarchis@izslt.it (M.L.D.M.)
 * Correspondence: barbara.turchi@unipi.it



31 sera out of 42 (73.8%) scored positive – high prevalence of **Pomona**



L. interrogans
Serovar Pomona (ST 57)

Comparative Immunology, Microbiology and Infectious Diseases
 ELSEVIER
 Volume 70, June 2020, 101472

Crested Porcupine (*Hystrix cristata* L.): A New Potential Host for Pathogenic *Leptospira* Among Semi-Fossorial Mammals

Francesca Coppola ^{*,1}, Giovanni Cilia ^{*,1}, Fabrizio Bertelloni ^{*,1}, Lucia Casini ^{*,1}, Enrico D'Addio ^{*,2}, Filippo Fratini ^{*,2}, Domenico Cerri ^{*,2}, Antonio Felicioli ^{*,2}

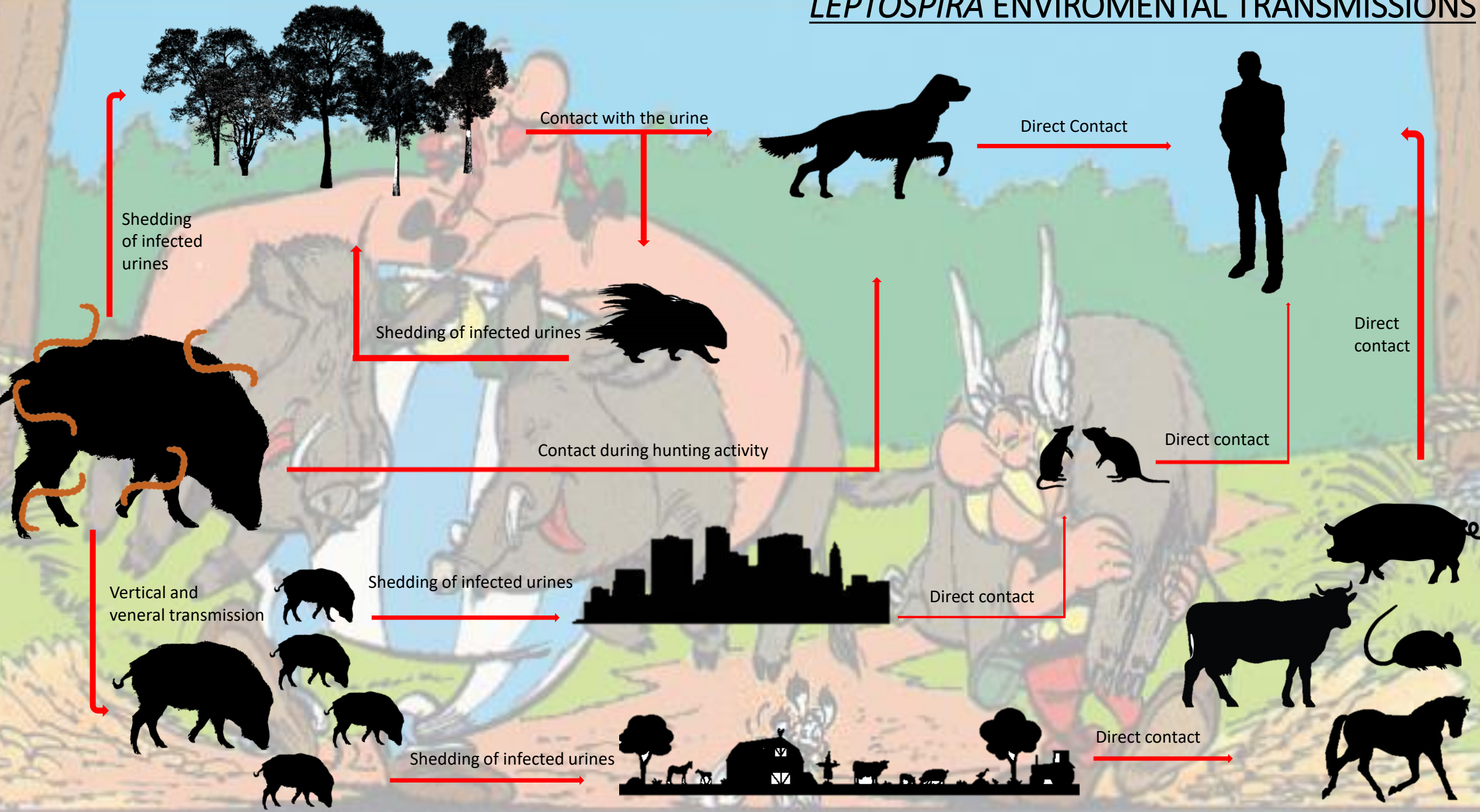
Veterinary Medicine and Science
 Open Access

ORIGINAL ARTICLE | Open Access | © | ⓘ

Isolation of *Leptospira* serovar Pomona from a crested porcupine (*Hystrix cristata*, L., 1758)

Giovanni Cilia, Fabrizio Bertelloni, Francesca Coppola, Barbara Turchi, Claudia Biliotti, Alessandro Poli, Francesca Parisi, Antonio Felicioli, Domenico Cerri, Filippo Fratini

LEPTOSPIRA ENVIRONMENTAL TRANSMISSIONS



CONCLUSION

Wild boar was again demonstrated an important maintenance host involved in *Leptospira* epidemiology

Very interesting aspect related to genital infection

Venereal and/or vertical transmission is possible

Risk associate to distribution of pathogenic and intermediate *Leptospira*

Leptospira fainei may find in wild boar a possible hosts due to the rare European case most often associate to human cases



EMERGING INFECTIOUS DISEASES®

Volume 8, Number 8—August 2002

Human Infection Caused by *Leptospira fainei*

Jean-Pierre Arzouni*, Philippe Parola**, Bernard La Scola*, Danièle Postic‡, Philippe Brouqui**, and Didier Raoult**✉

Author affiliations: *Unité des Rickettsies, Université de la Méditerranée, Marseille, France; †Service des Maladies Infectieuses et Tropicales, Marseille, France; ‡Institut Pasteur, Paris, France;



JOURNAL OF MEDICAL MICROBIOLOGY Volume 50, Issue 1

Other | Free

First isolation of *Leptospira fainei* serovar Hurstbridge from two human patients with Weil's syndrome Ⓞ

ANDREAS M. PETERSEN, KIT BOYE¹, JENS BLOM¹, POUL SCHLICHTING¹, KAREN A. KROGFELT

✉ View Affiliations

First Published: 01 January 2001 | <https://doi.org/10.1099/0022-1317-50-1-96>

Increase the risk to shed *Leptospira* in the environment in contact with domestic animals and humans, especially hunters



Swine-specific serogroup could have an incidence on other mammals, that share the same environments



THANKS FOR YOUR ATTENTION

