



National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport

Trichinella in The Netherlands: past, presence and future

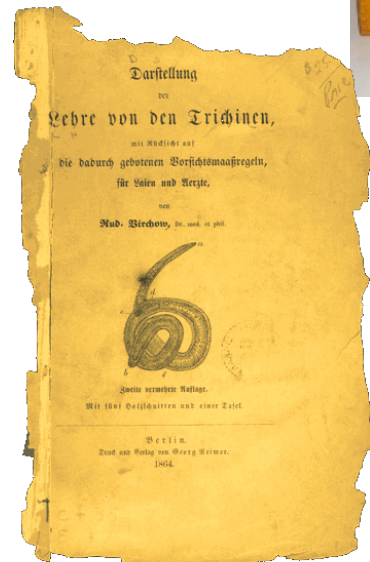
Frits Franssen | 16-11-2023

EURL workshop Rome



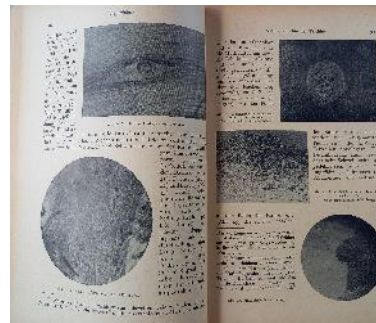
Trichinella testing – past to present day

Trichinoscopy



Rudolf Virchow

First *Trichinella* 'test manual' 1864



1943

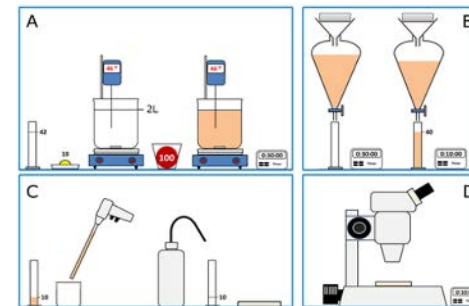


1950

Pooled digestion

COMMISSION IMPLEMENTING REGULATION (EU) 2015/1375
of 10 August 2015
laying down specific rules on official controls for *Trichinella* in meat
(Codification)
(Text with EEA relevance)
(OJ L 212, 11.8.2015, p. 7)

Microbiology of the food chain - Detection of *Trichinella* larvae in meat by artificial digestion method (ISO 18743:2015)



1969

2015



2021



Trichinella in the Netherlands – past, pigs



Tabel 2. Resultaten van het onderzoek op een boerderij met een lichte *T. spiralis* infectie.

Herkomst sera	onderzocht	aantal dieren		
		positief		
		IF*	trichinoskopie	digestiemethode
routine varkenssera	3	1	n.o.**	n.o.
mestvarkens	44	0	0	11
zeugen	9	3	n.o.	n.o.
ratten	29	n.o.	n.o.	3

*IF = immunfluorescentie methode

**n.o. = niet onderzocht

Trichinella in pigs (digestions. pools of 5 or 10 animals, 20g diaphragm + 20g tongue)

1969 - 1970				1971			
# pigs	# pools	pos pools	% pos pools	# pigs	# pools	pos pools	% pos pools
2869	337	23	6,82%	2419	441	23	5,22%

Trichinella spiralis:

Control at pig slaughter: 1 muscle larva in 2002
Clinic: 1 human couple *Trichinella* infected in 2009



Verslag over onderzoekingen naar het voorkomen van *Trichinella spiralis* in Nederland

*Studies on the occurrence of the *Trichinella spiralis* in the Netherlands*

door J. F. SLUITERS*), E. J. RUITENBERG*) en
C. J. VERMEULEN**)

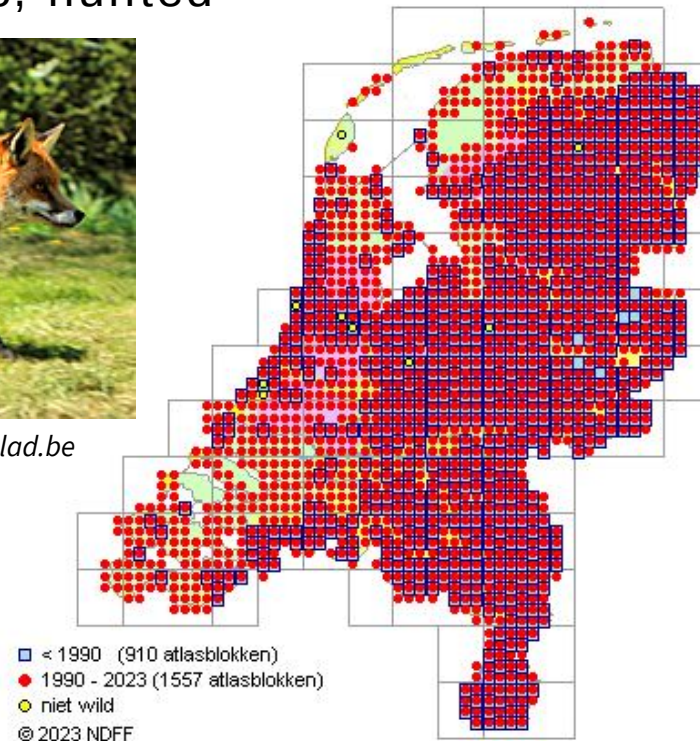
Tijdschr. Diergeneesk., deel 97, afl. 22, 1972

Trichinella in the Netherlands – past, Red fox

Red fox – endemic, hunted



Source: Wikipedia & www.nieuwsblad.be



Red fox – 1969 - 1971

Tabel 5. Voorkomen van *T. spiralis* bij in het wild levende dieren in Nederland van april 1969 t/m 1971.

provincie van herkomst	aantal dieren		positief	
	april '69 t/m 1970	1971	april '69 t/m 1970	1971
Vos				
Groningen	0	2		1
Drente	0	1		0
Overijssel	0	5		0
Gelderland	69	17	2	0
Limburg	0	2		0

3 out of 106 foxes
Trichinella positive



DIAGNOSIS AND EPIDEMIOLOGY OF *TRICHINELLA* INFECTIONS IN WILDLIFE IN THE NETHERLANDS

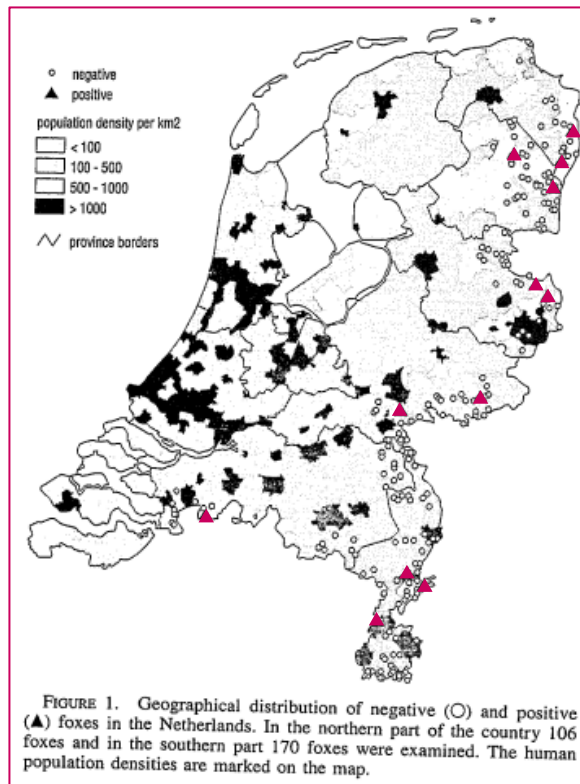
VAN DER GIESSEN J.W.B.*, ROMBOUT Y.*, VAN DER VEEN A.** & POZIO E.***

Trichinella britovi in Foxes in The Netherlands

J. W. B. van der Giessen, Y. Rombout, H. J. Franchimont, G. La Rosa* and E. Pozio*

Trichinella in the Netherlands – past, Red fox

Red fox –1996 - 1997

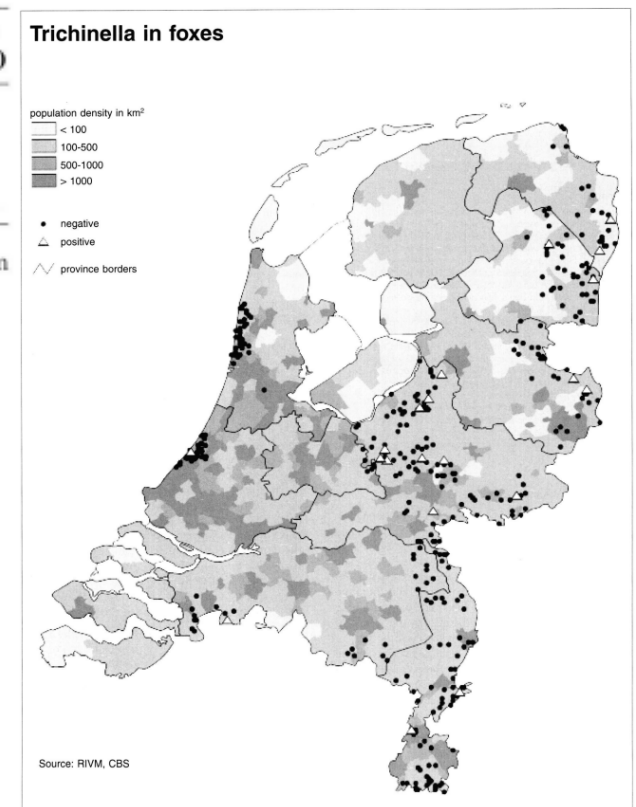


3.9% of 276 foxes
Trichinella positive

Species ID: *T. britovi*

Region investigated	Number of positive foxes by total number tested (%)
Border region	11/276 (3.9)
Veluwe (central part)	10/76 (13.1)
Coastal region	1/77 (1.3)
Total number of foxes	22/429 (5.1)

Table 1. – Prevalence of trichinellosis in vulpine populations from three regions of the Netherlands.





Research Note

Quality Control of *Trichinella* Testing at the Slaughterhouse
Laboratory: Evaluation of the Use of a 400-Micrometer-Mesh-Size
Sieve in the Magnetic Stirrer Method

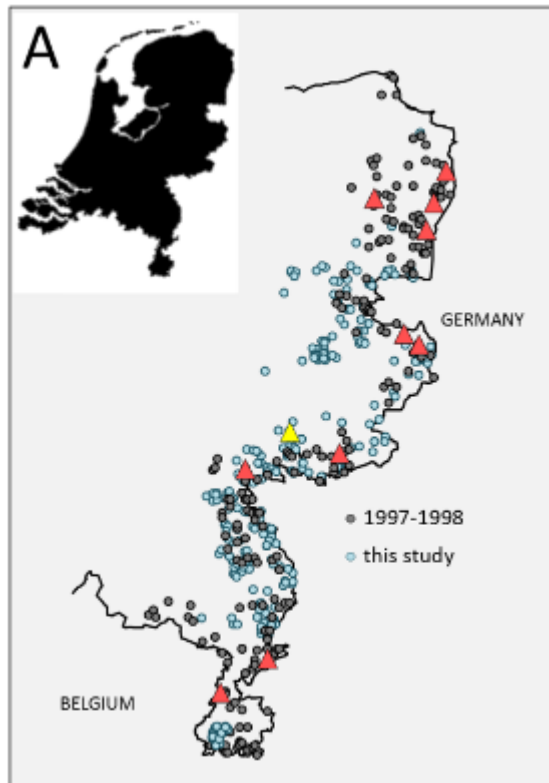
FRIITS FRANSSEN,^{1*} ESTHER VAN ANDEL,² ARNO SWART,² AND JOKE VAN DER GIESSEN¹

> Vet Res. 2014 Nov 28;45(1):120. doi: 10.1186/s13567-014-0120-9.

Trend analysis of *Trichinella* in a red fox population
from a low endemic area using a validated artificial
digestion and sequential sieving technique

Frits Franssen¹, Gunita Deksné, Zanda Esife, Arie Havelaar, Arno Swart, Joke van der Giessen

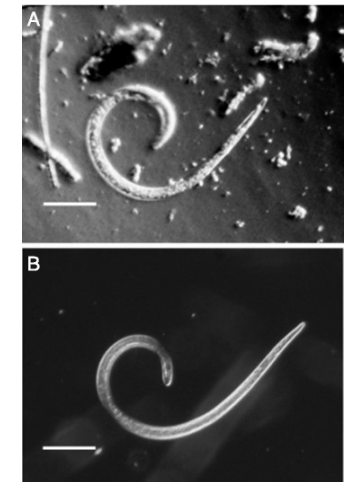
Trichinella in the Netherlands — past, Red fox



Trichinella:

year	n	positive
1969 – 1971	106	3
1997 – 1998	276	11
2010 – 2011	369	1

Geographical origin of Dutch red foxes. At the eastern border of the Netherlands (outline) 369 foxes were collected during the period 2010 – 2013 (blue circles), of which one fox was positive for *Trichinella* (yellow triangle). In contrast, in a similar study in 1997–1998 (grey circles), eleven *Trichinella* positive foxes (red triangles) were found in a collection sample of 276 red foxes, ten of which in the same study area [21].





DIAGNOSIS AND EPIDEMIOLOGY OF *TRICHINELLA* INFECTIONS IN WILDLIFE IN THE NETHERLANDS

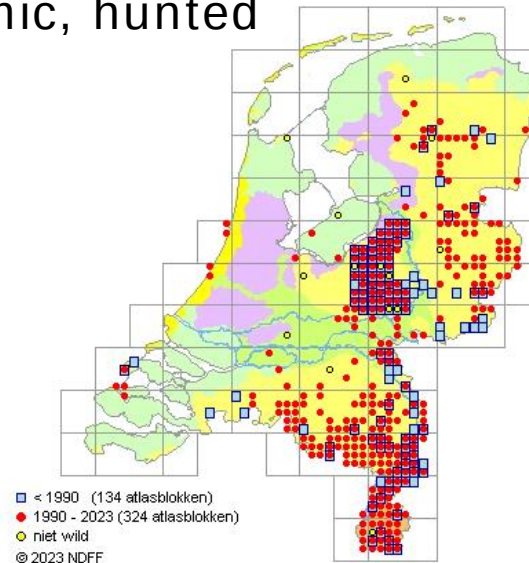
VAN DER GIESSEN J.W.B.*, ROMBOUT Y.*, VAN DER VEEN A.** & POZIO E.***

Analysis of long-term serological *Trichinella* surveillance data of wild boar from a non-endemic area.

Frits Franssen¹⁻³, Arno Swart¹, Maria Angeles Gómez-Morales², Mirosław Rozycki³, Adriana Györke⁴, Marieke Opsteegh¹ and Joke van der Giessen¹

Trichinella in the Netherlands – past, wild boar

Wild boar – endemic, hunted



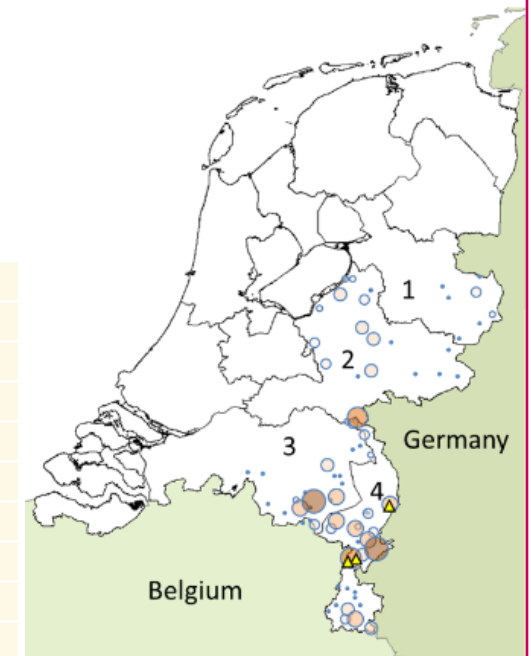
1996 - 1998

A seroprevalence of 6.8 % (31/458) was detected in wild boars. Two diaphragms of 11 wild boars from the Roerstreek region were positive (0.2 and 0.3 LPG) by artificial digestion. Larvae were identified as *T. spiralis*.

Species ID: *T. spiralis*

Trichinella:

Year	Digestion	Serology
2007	0 / 881	0 / 201
2008	0 / 3154	0 / 216
2009	0 / 2010	0 / 599
2010	0 / 2504	0 / 441
2011	0 / 1332	0 / 384
2012	0 / 3238	0 / 518
2013	0 / 1835	0 / 611
2014	0 / 1960	3 / 528
Totals	18088	3 / 3498





Trichinella in the Netherlands – past, wild rats

Endemic – pest controlled

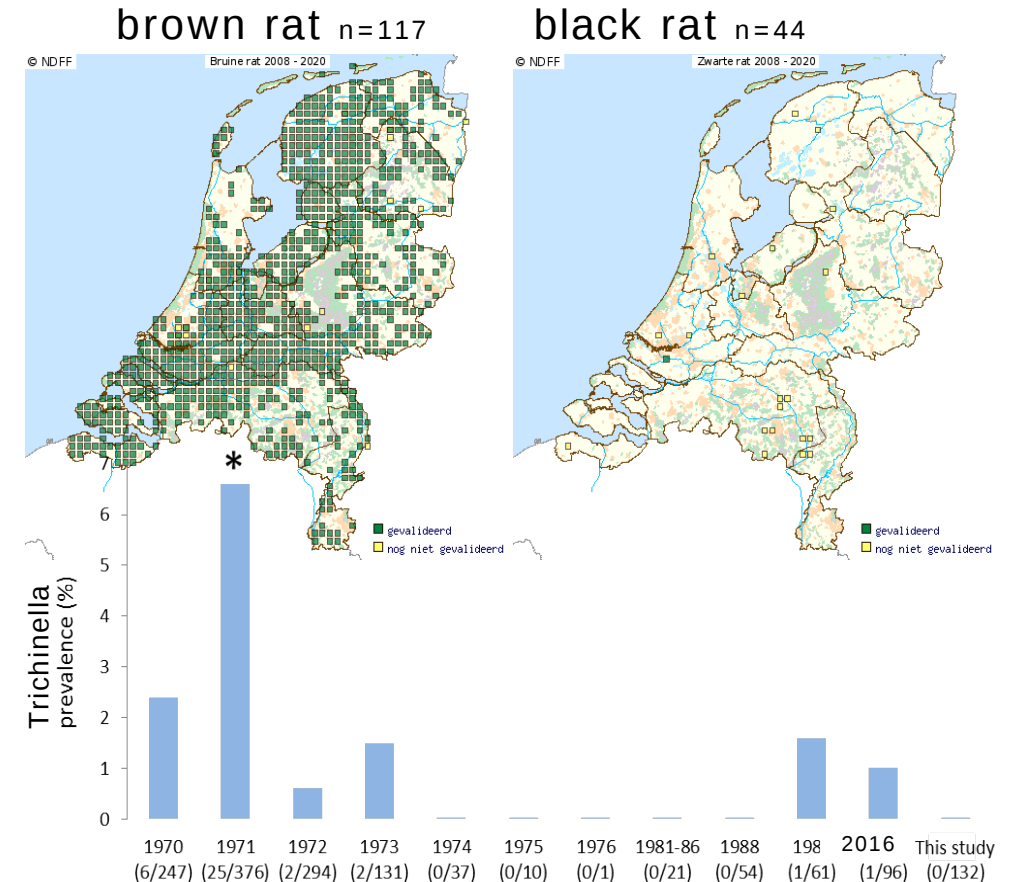


Source: Zoogdierverseniging (www.zoogdierverseniging.nl)

Tabel 5. Voorkomen van *T. spiralis* bij in het wild levende dieren in Nederland van april 1969 t/m 1971.

provincie van herkomst	aantal dieren		positief
	onderzocht*		
	april '69 t/m 1970	1971	april '69 t/m 1970 1971
Zwarte rat**			
Gelderland	0	8	0
Utrecht	0	17	67 larven bij 12 dieren

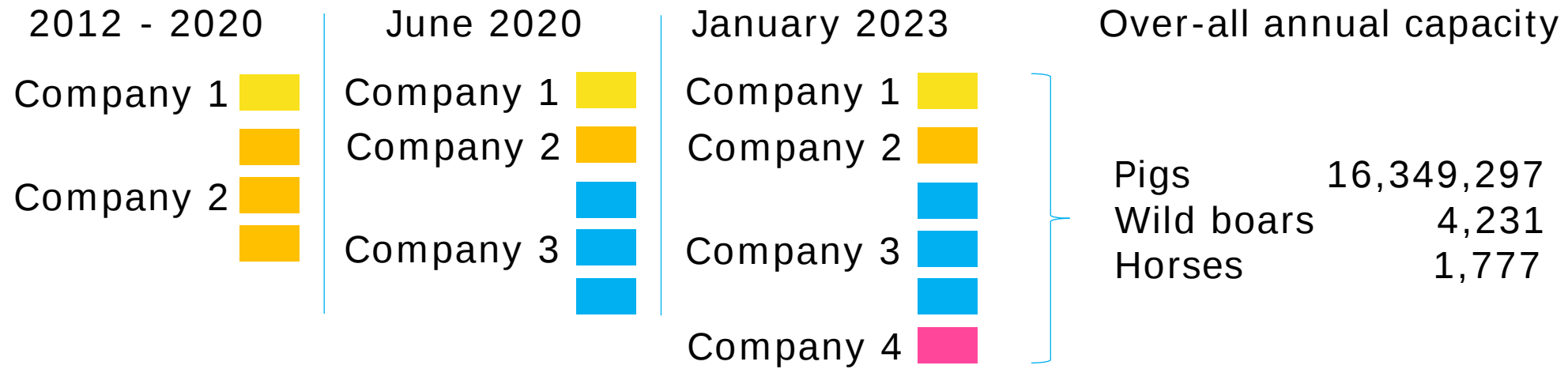
12 out of 25 black rats *Trichinella* positive





Trichinella in the Netherlands – presence

Trichinella control at pig slaughter



Quality control instruments: training, audits, PTs



Trichinella in the Netherlands — presence, wildlife

Raccoondog since 1981

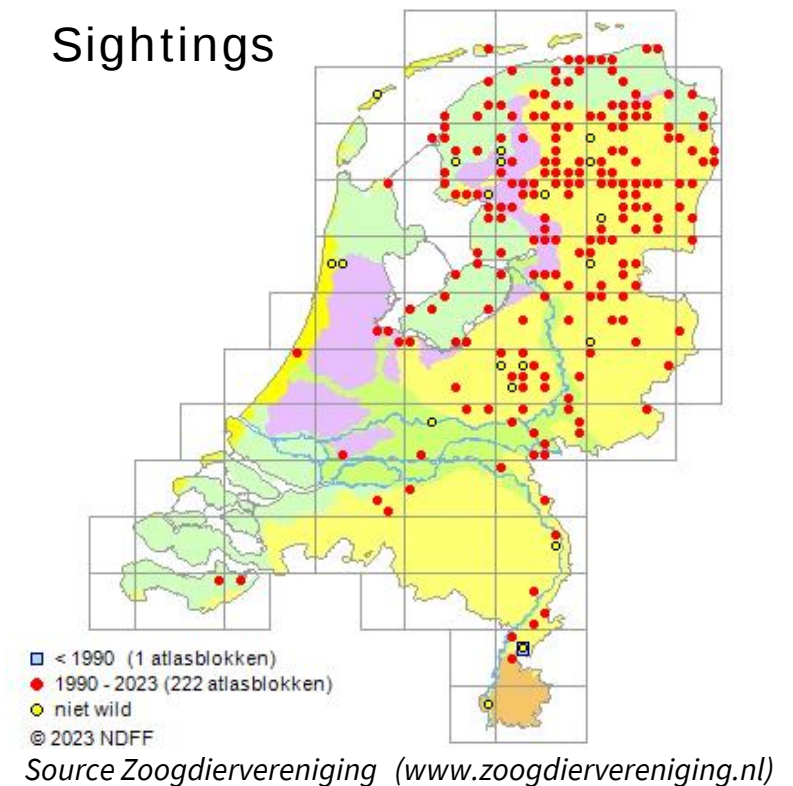


Source: Zoogdierverseniging (www.zoogdierverseniging.nl) & Dagblad van het Noorden

Trichinella:

year	n	positive	LPG
2014	5	2	0.4 - 89.3
2020	21	0	-
2021	11	0	-

Sightings





Trichinella in the Netherlands — presence, wildlife

Raccoon since 2012

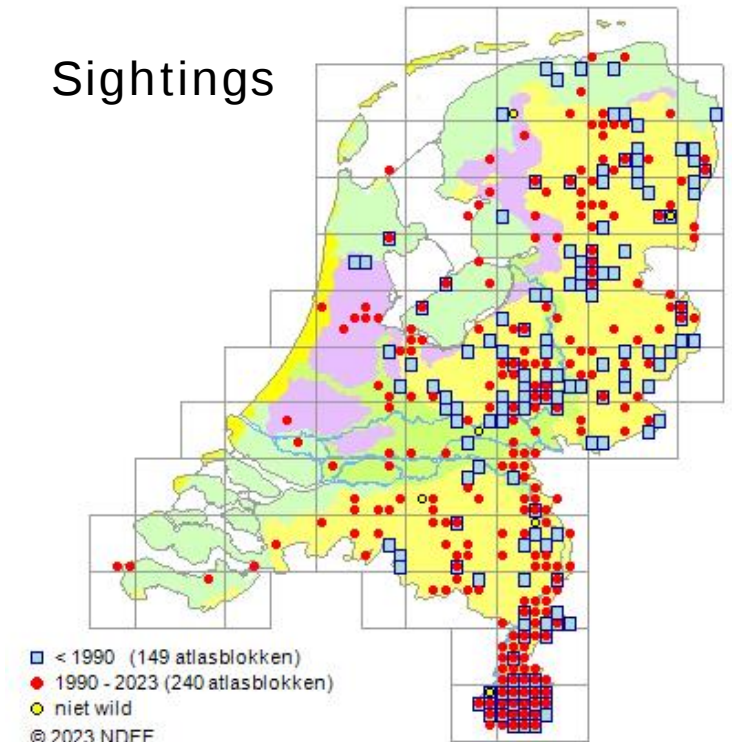


Source: Zoogdierverseniging (www.zoogdierverseniging.nl) & www.stadindex.nl/nieuws/hengelo

Trichinella:

year	n	positive	LPG
2021	1	0	-
2022	2	0	-

Sightings



Source Zoogdierverseniging (www.zoogdierverseniging.nl)



The first wolf found in the Netherlands in 150 years was the victim of a wildlife crime

B. Gravendeel, G.A. de Groot, M. Kik, K. Beentjes, H. Bergman, R. Caniglia, H. Cremers, E. Fabbri, D. Groenenberg, A. Grone, G.W.T.A. Groot Bruinderink, I. Font, J. Hakhof, V. Harms, H.A.H. Jansman, R. Janssen, D.R. Lammertsma, I. Laros, L. Linnartz, D. van der Marel, J.L. Mulder, S. van der Mije, A.M. Nieman, C. Nowak, E. Randi, M. Rijks, A. Speksnijder, H.B. Vonhof [Show less](#)

Trichinella in the Netherlands – presence, wildlife

Wolf since 2011

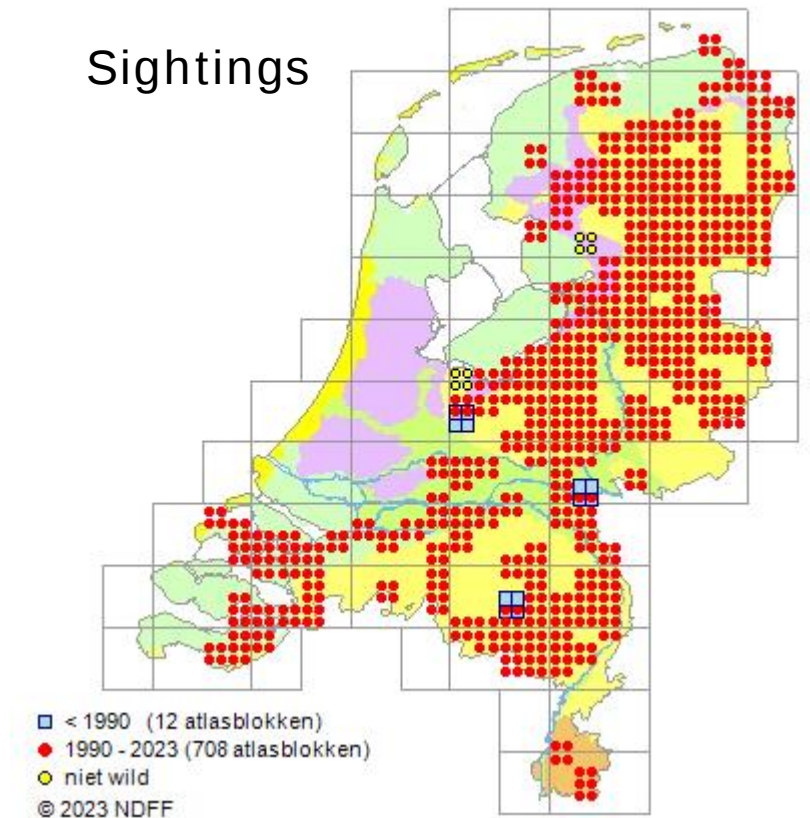


Source: Zoogdiervereniging (www.zoogdiervereniging.nl) & rtl nieuws.nl

Trichinella:

year	n	positive	LPG
2013	1	1	1.3
2020	1	0	-
2021	2	0	-
2022	1	0	-

Sightings





New finding of *Trichinella britovi* in a European beaver (Castor fiber) in Latvia

Zanda Segliņa¹, Eduards Bakasejevs, Gunita Deksnē, Voldemārs Spunģis, Muza Kurjušina

Trichinella in the Netherlands — presence, wildlife

Beaver since 1988

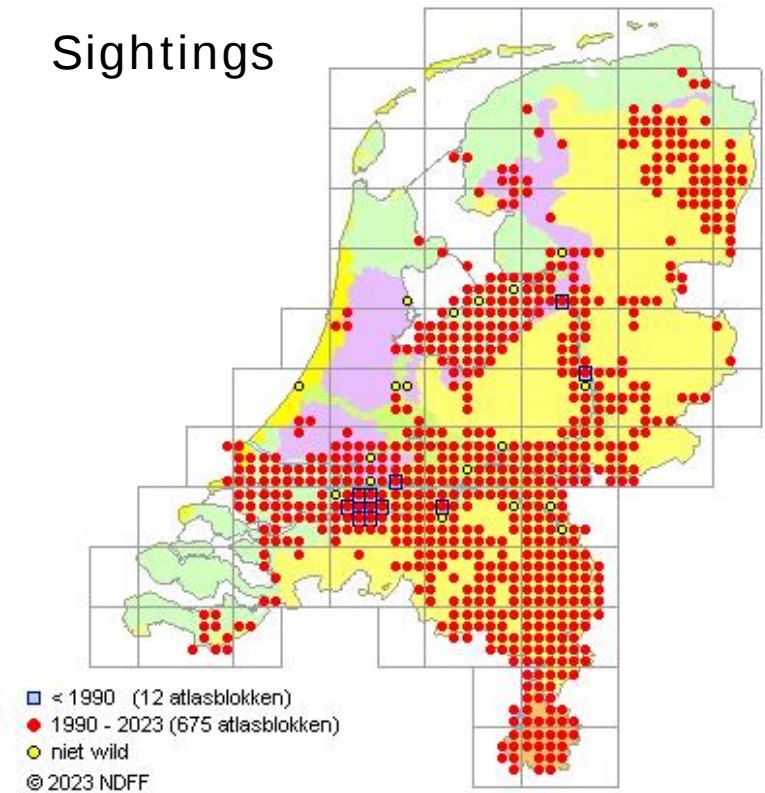


Source: Zoogdierverseniging (www.zoogdierverseniging.nl) & rtl nieuws.nl

Trichinella:

year	n	positive	LPG
2018	2	0	
2019	11	0	
2020	1	0	

Sightings





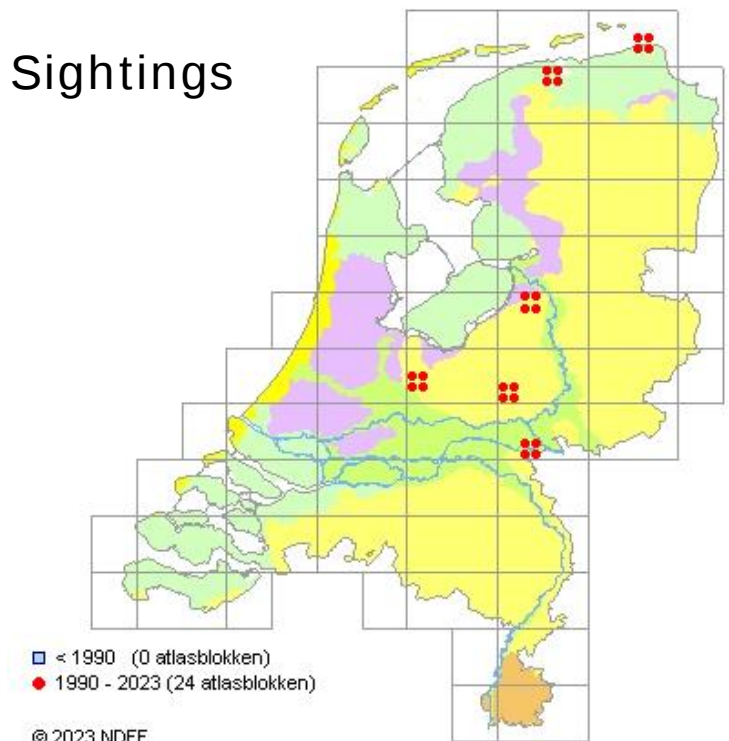
Trichinella in the Netherlands – wildlife

Golden jackal since 2016



Trichinella: no samples

Sightings





Trichinella in the Netherlands – future

Possibly

- Introduction of (new) *Trichinella* spp in the Netherlands
- transmission and circulation of *Trichinella* spp in wildlife

predation



scavenging



Photos: www.onzenatuur.be , www.natuurfotografie.nl, www.fauna4life.nl, www.zoogdiervereniging.nl, Ark Rewilding Nederland



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