



Wallonie
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SPW



Passive surveillance in the management of ASF in wild boar

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on behalf of the
 Walloon ASF Management Committee

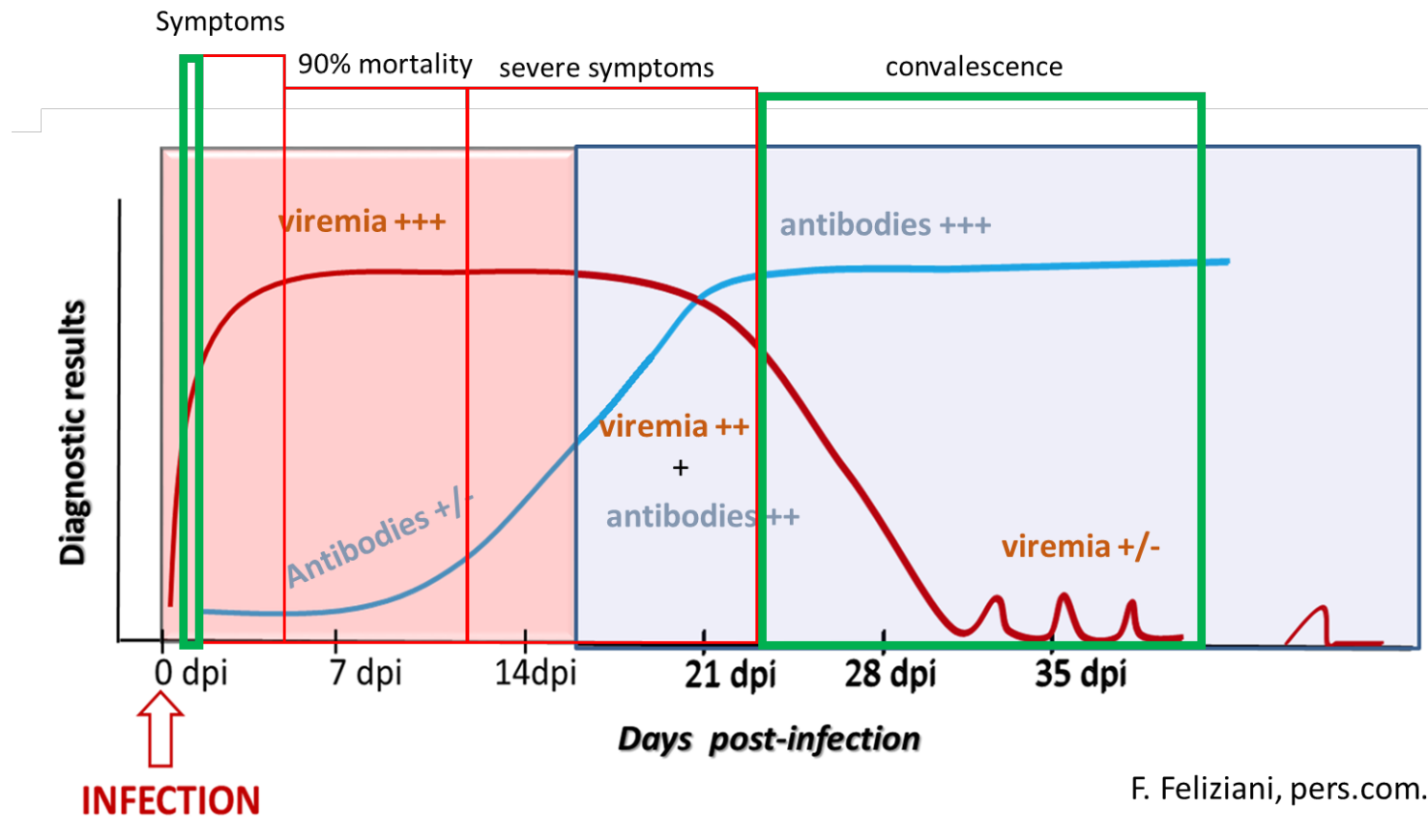


Agence Fédérale pour la Sécurité de la Chaîne Alimentaire
 Federaal Agentschap voor de Veiligheid van de Voedselketen

.be



Persistence of ASF-V and transmission routes



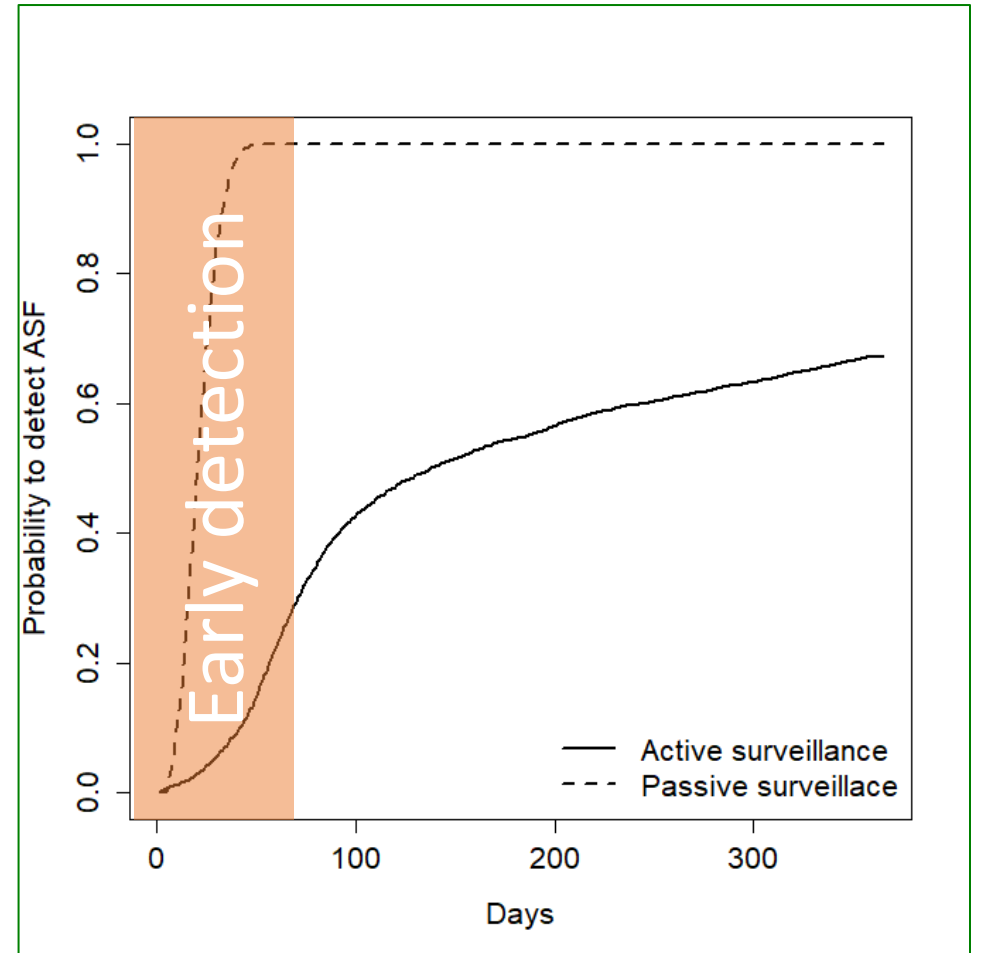
Transmission routes



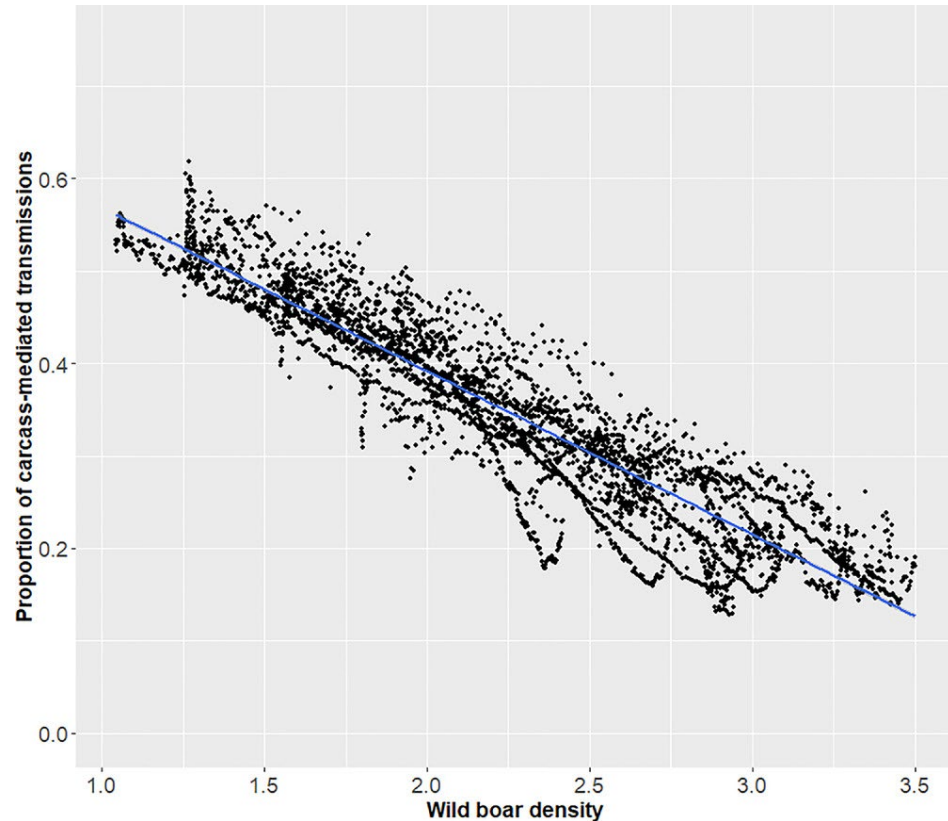
Passive vs active surveillance

ASF-V **early** detection is only possible by passive surveillance

Probability to detect an African Swine Fever (ASF) outbreak with passive and active surveillance in a simulated wild boar population of 100 individuals, as resulting from a compartmental model of the disease. The plot refers to the first year after the initial disease outbreak. (Gervasi et al 2020)



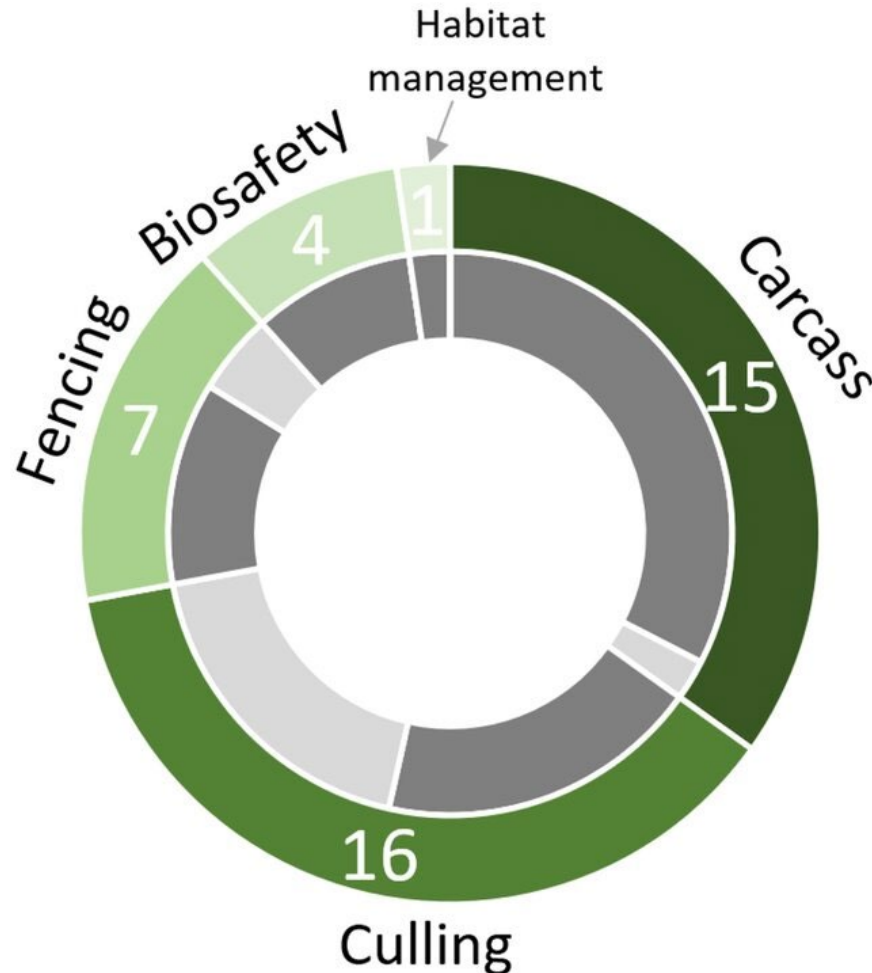
The role of carcasses in the transmission according to density



ASF reduces the population size by 80% if not hunted (Morelle et al 2020)

Functional relationship between wild boar population density and the proportion of ASF infections occurring through infected carcasses (Gervasi & Guberti 2021)

Passive surveillance among other tools



Palencia et al. 2023 - Tools and opportunities for African swine fever control in wild boar and feral pigs: a review

Intervention actions tested in published studies to control the spread of the African swine fever virus in wild boar populations. The external ring length is proportional to the frequency of each type of intervention, and labels indicate the number of studies, while the internal ring represents perceived success (dark gray) or failure (light gray). Intervention options included in the plot represent: carcass (carcass search and destruction), culling (depopulation measures), fencing (fencing and barriers), biosafety (wild boar hunting and manipulation biosafety), and habitat management (wild boar habitat management)

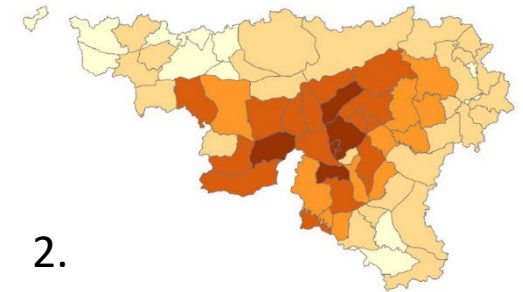
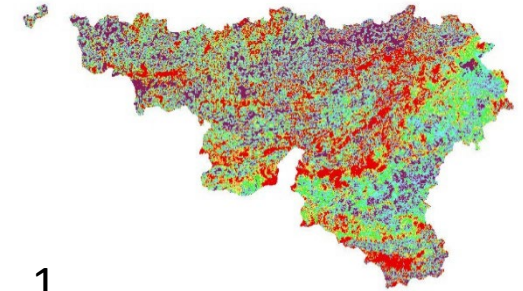
Passive surveillance in peace time :

Early detection

- The largest the infected area, the most difficult to eradicate and the most expensive to manage (BE +/-300 €/ha within 2 years)
- Take benefit from each opportunity
 - All found dead wild boar (including > 20 m from a road)
 - Sanitary shots (animals showing special behaviour)
- Awareness of all forest users
 - Hunters, forestry services, fishermen, farmers, tourists,... -> unique phone number (toll-free hotline)
- Clear procedure for sampling and fast transmitting to NRL

Increase the opportunity of early detection

- Special focus on interfaces wild boar x possible ways of introduction
 - Human-mediated introduction
 - Highways through forested areas
 - Military camps
 - Neighboring infected forests
- Risk map (Wallonia-BE)
 1. ASF deathbed model (to be adapted by landscape and climate) Morelle et al 2019
 2. Wild boar density (distribution of the hunting bags)
 3. Highway parkings



Measures implemented to limit the ASF-V spread and eradicate the disease in Belgium (2018-2020)

#1 Complete **standstill** in the infected forest, including hunting

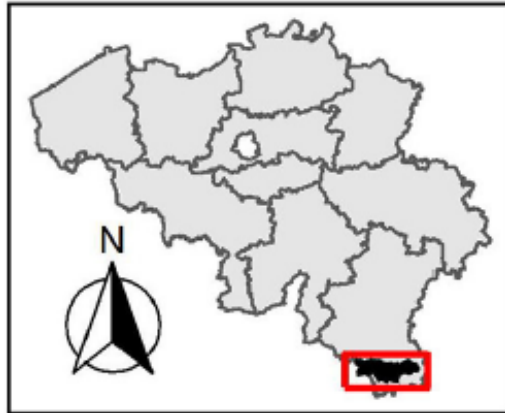
#2 Active **search** and complete **removal** of the **carcasses** under bio-security control

#3 Containment of the virus with wild boar-proof **fences**

#4 Quick and complete **depopulation** in the area surrounding the infected zone

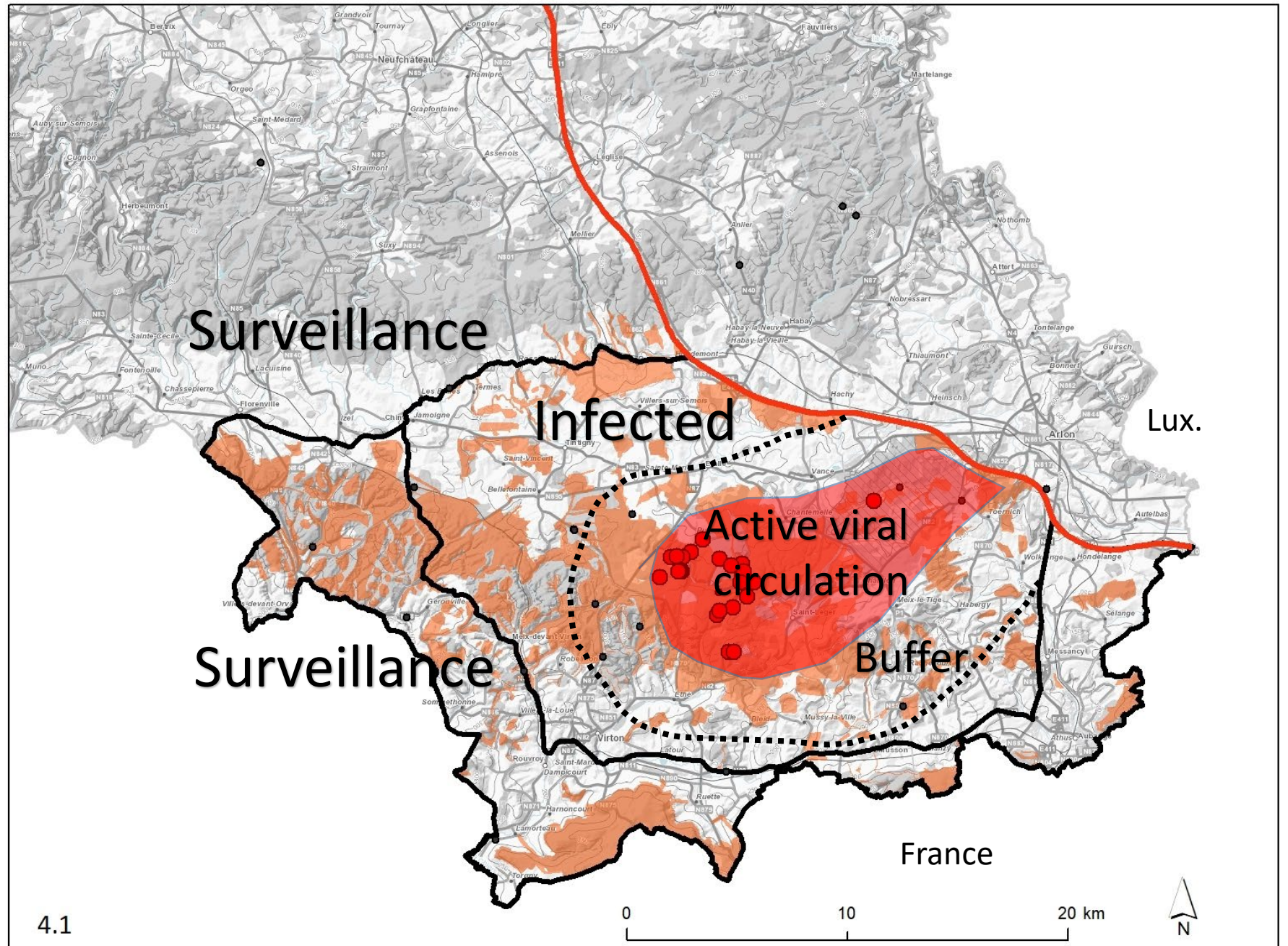
Prerequisite for any measure: full compliance with **biosecurity measures**

Point
introduction
Sept 2018



Affected 1100 km²
Infected 630 km²
Infected forest >300 km²

First month
« Emergency
search »



Passive surveillance: Main Strategy in BE

Why ?

In the infected area, active search, removal and analysis of the carcasses :

- to decrease the viral load in the environment
- to delimit the real infected zone
- to monitor the epidemic phase

In the surveillance area : for early detection of ASFV positive cases outside the infected zone or outside the ASF fences

Passive surveillance: Main Strategy in BE

Where ?

After the first detection:

1. cover as much area as possible around the first detection inside the infected zone delineated in accordance with the Directive 2002/60/CE

During the epidemic, once the management zoning is set up:

1. Neighbourhood of the positive cases (1.5 km buffer)
2. External limits of the infected zone
3. Systematic coverage of the whole infected area + min 10% effort outside
4. Research driven by the « carcass model » in summer

After the epidemic :

1. Places where alive wild boar are detected
2. Systematic coverage of the whole area + min 10% effort outside

Passive surveillance: Main Strategy in BE

When ?

Permanent effort required (cycle = 7 days)

Intensive operations to be organized when vegetation is down

Passive surveillance: Main Strategy in BE

How ?

Organized and implemented by the Authorities (>90% professionals)

- Groups of 4 to 8 (10) people (compromise between efficiency and quiet) : in line on a very systematic way
- In case of dead WB discovered : GPS location, beaconing and call for removal (by Civil Protection)
- According to the landscape and vegetation : from 15 to 30 ha / day / pers
- Biosecurity procedures

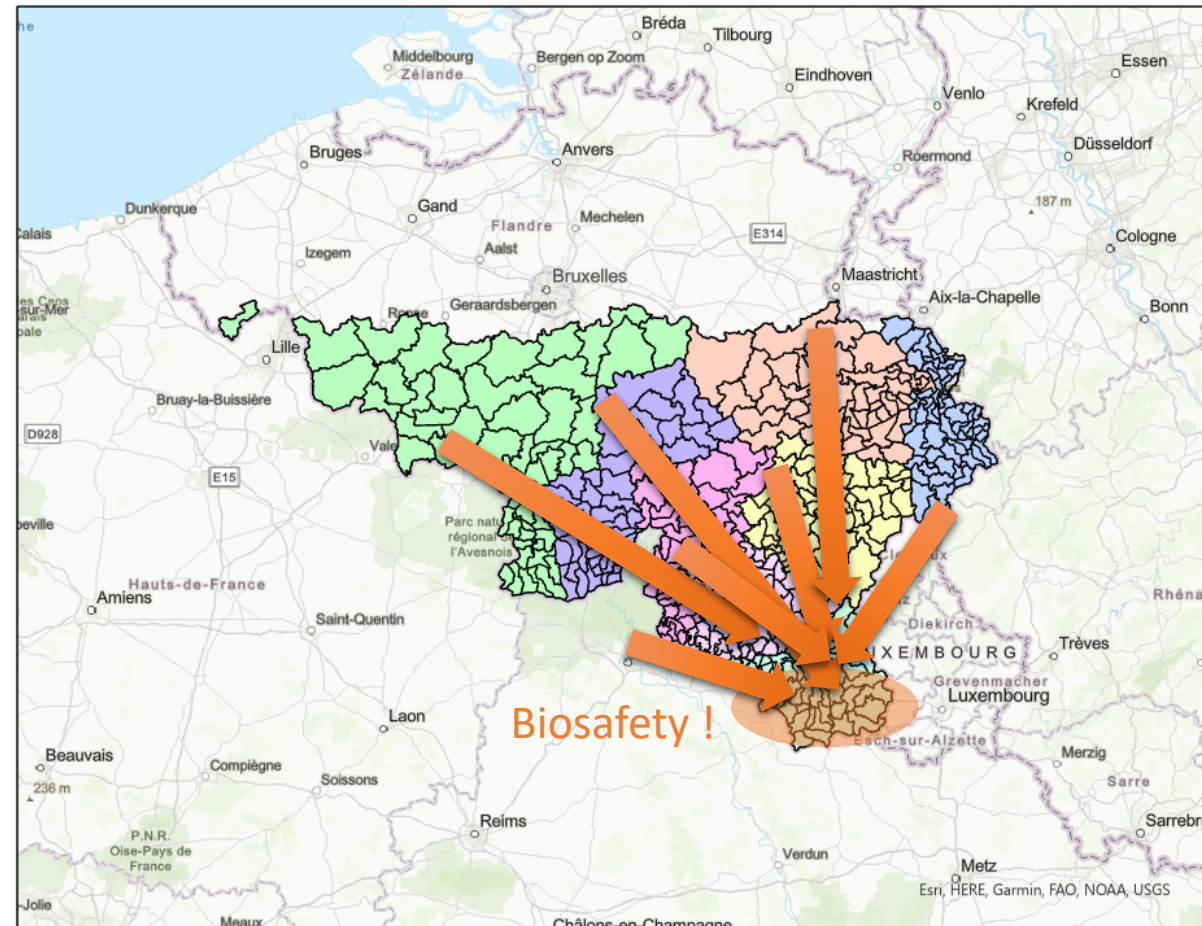
Support

- 1 team of sniffing dogs
- 25 workers hired in Sept 2019 to support extra-work (mainly searching)
- Intermittent support of the Army

Passive surveillance: Main Strategy in BE

Walloon public Forest Services:

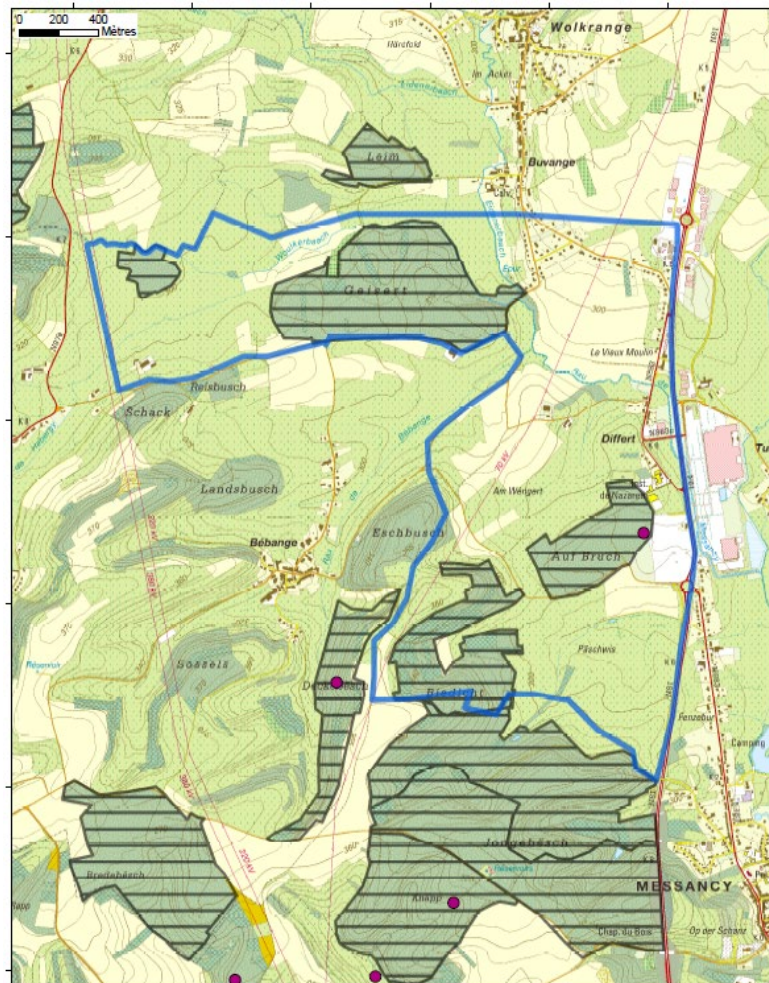
- 8 directorates (1 infected)
- >300 forest officers
- Routinely: 7 teams of 6 officers during one week every 2 weeks + 7 local supervisors



Organised search

Map of the searching sectors :
1 sector = 100 ha of forest





Secteur n°35

Légende

- Sangliers positifs PPA
- Prospection effectuée depuis le 13/05/20

Merci d'indiquer sur la carte les zones parcourues et de compléter le tableau au verso

Agent DNF à contacter en cas de découverte de carcasse :
 TERWEDUWE Stéfan
 0474.92.08.20
 En cas d'absence, contacter le véhicule de surveillance :
 0477 91 10 01



Secteur 35 : 911_6_MESSANCY_5

En rouge : modèle de découverte de carcasse : zones dans lesquelles la probabilité de trouver une carcasse est élevée

Agent DNF à contacter en cas de découverte de carcasse :

TERWEDUWE Stéfan

0474.92.08.20

En cas d'absence, contacter le véhicule de surveillance :

0477 91 10 01 ou Vincent Guesse : 0471/086225

Pour vous aider à vous orienter, les longitude et latitude se trouvent au bord de la carte

Avant votre départ, merci de contacter l'agent local !

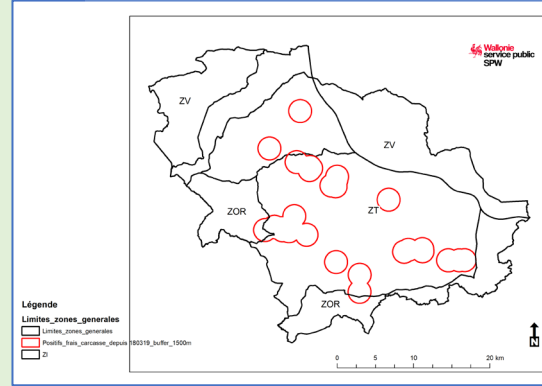
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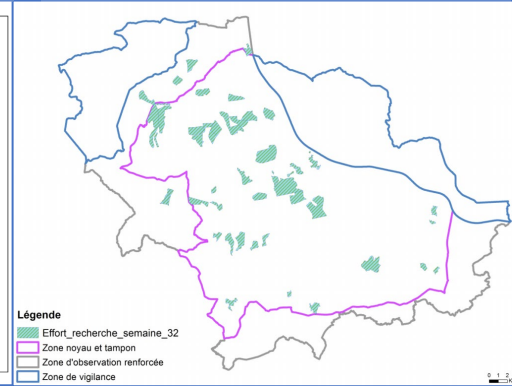
Organized search
(2 weeks cycle)
process during the
epidemic

Selection criteria

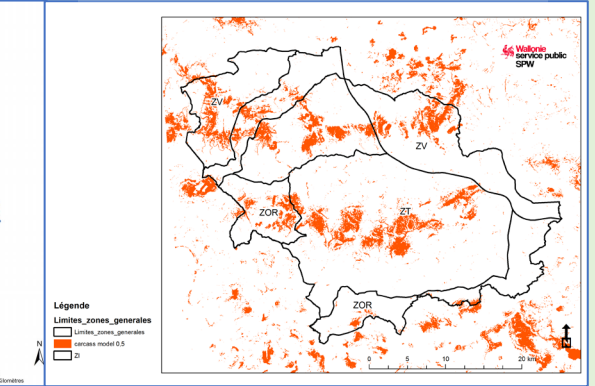
ASF+ fresh
previous month



Area covered
previous weeks



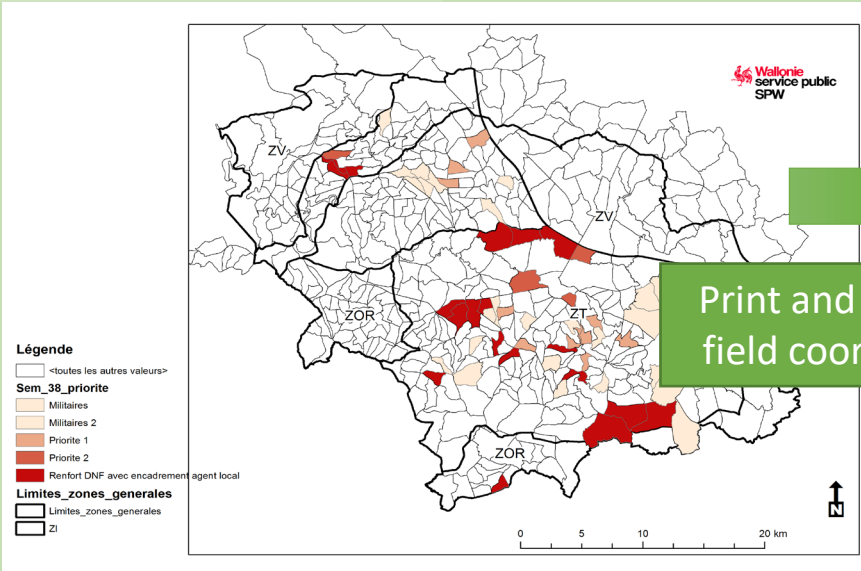
ASF Carcass
model



Analysis

Data entry and update

Map of Priorities



Print and send to
field coordinator



RAPPORT DE PROSPECTION DU CANTONNEMENT DE FLORENVILLE

Secteurs	Dates	Noms et qualité observateurs	Durée	Cadavres retrouvés		Indices de présence
				Nombre	Coordonnées	
272	20/05/2019	ADF: Motch JM et Baudé C. Armée: 8 personnes	3 heures	0		Aucun indice frais.
268-271	21/05/2019	ADF: Gosseye J, T'Serstevens A, Baudé Armée: 8 personnes	3 h 1/4	0		Traces fraîches le long de la route et autour du piège.
267	23/05/2019	ADF: Gosseye J et Baudé C. Armée: 8 personnes	3 h 30	0		Traces fraîches dans les Rolliets.
375-377	22/05/2019	ADF local: Cachard J DNF extérieur: 5 agents	5 h 30	0		Vu 1 bande de sangliers (+/- 15) dans zone: N 49,4626 - E 5,2641
376	24/05/2019	ADF local: Cachard J DNF extérieur: 4 agents	3 h	0		Traces de la bande du 22/05.

Passive surveillance Field map and form



Google
Piège photo
Appui long pour glisser et déplacer le marqueur

Voulez-vous cliquer ici ? ^



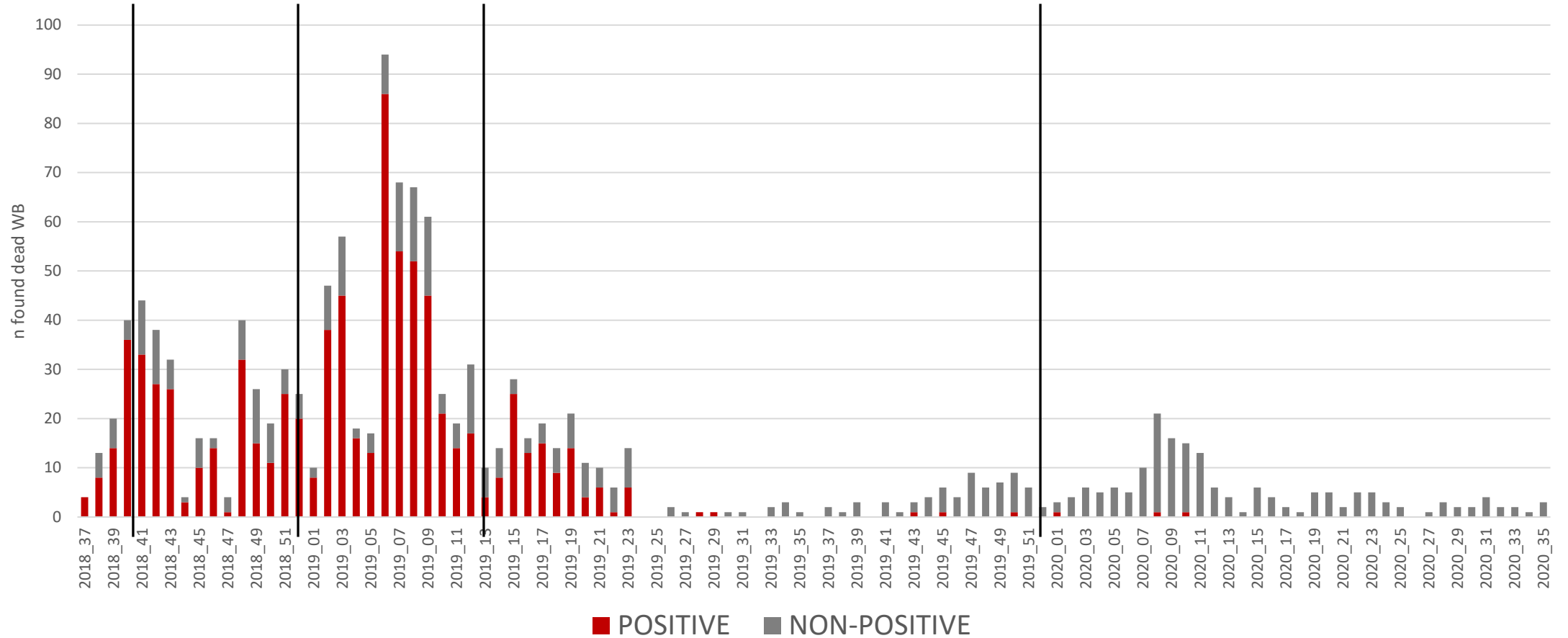


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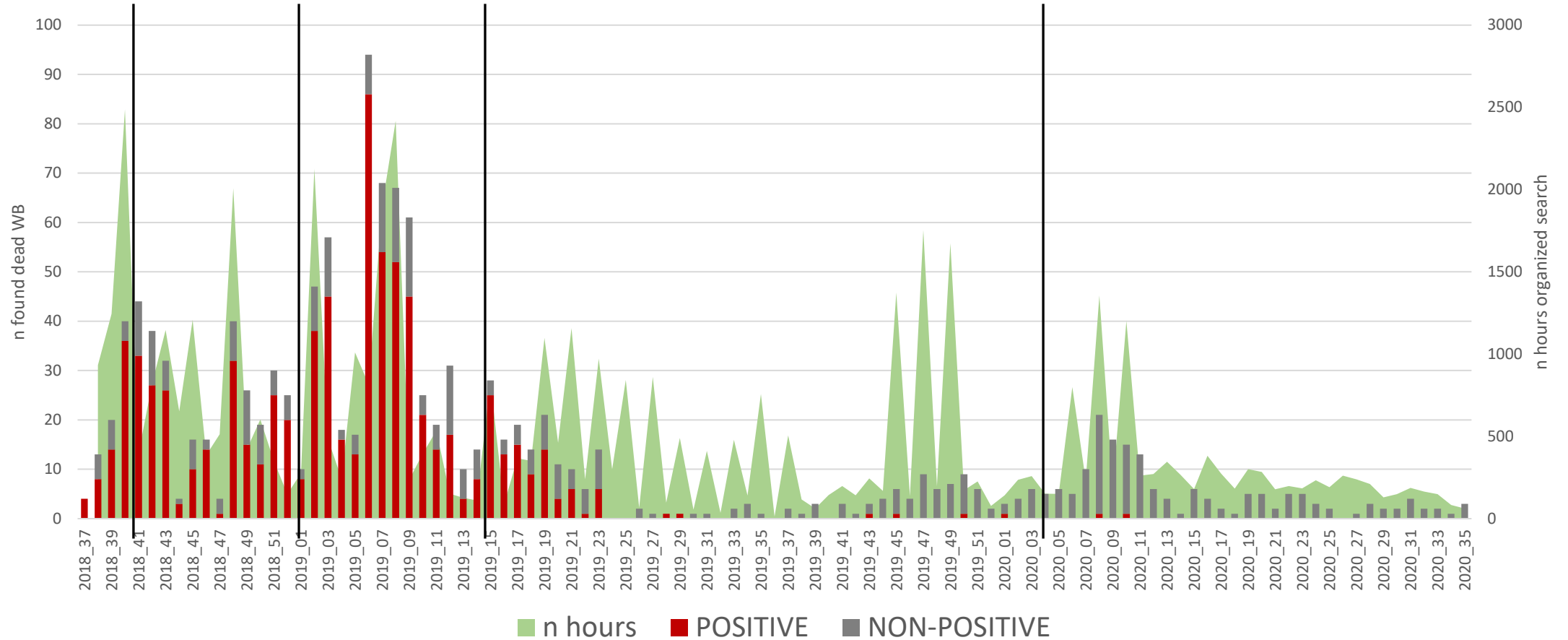
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P1	P2	P3	P4	P5	P6	
First month "Emergency"	"Epidemic" " low spread	"Epidemic" quick spread	"Post-epidemic"		"Till free status"	"Cleaning"



Weekly evolution of the number of found dead WB, positive to ASFV or not

P1	P2	P3	P4	P5	P6	
First month "Emergency"	"Epidemic" " low spread	"Epidemic" quick spread	"Post-epidemic"		"Till free status"	"Cleaning"



Weekly evolution of the effort of organized search of carcasse (hours) together with the number of found dead WB, positive to ASFV or not

Results of organized search of carcasses according to the epidemiological status

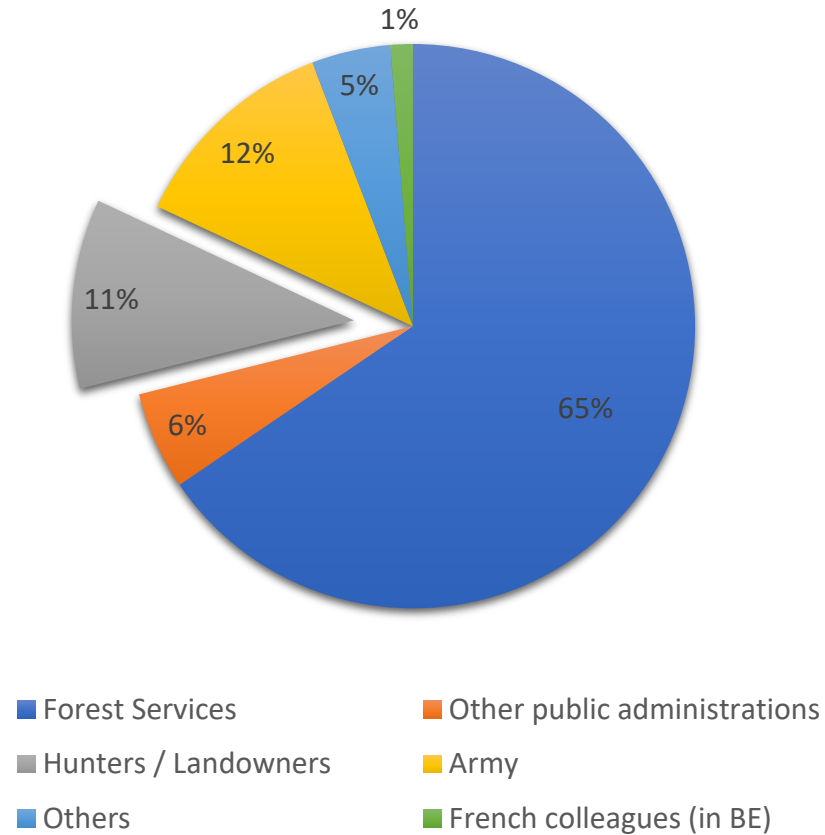
	P1	P2	P3	P4	P5	P6
	First month "Emergency"	"Epidemic" low spread	"Epidemic" quick spread	"Post- epidemic"	"Till free status"	"Cleaning"
duration (month)	1	3	3	9	11	4
n found dead	134	266	516	241	201	12
n qPCR + found dead	98	202	408	109	4	0
%	73%	76%	79%	45%	2%	0%
% bones	31%	31%	28%	60%	92%	75%

Results of organized search of carcasses according to the epidemiological status

	P1	P2	P3	P4	P5	P6
	First month "Emergency"	"Epidemic" low spread	"Epidemic" quick spread	"Post- epidemic"	"Till free status"	"Cleaning"
duration (month)	1	3	3	9	11	4
n found dead	134	266	516	241	201	12
n qPCR + found dead	98	202	408	109	4	0
%	73%	76%	79%	45%	2%	0%
% bones	31%	31%	28%	60%	92%	75%
Search speed (ha/hour/man)	9,2	7,9	5,7	3,6	4,1	5,2
Hours searching/ carcass	37	32	22	72	59	141

At the end: 60,000 hours to cover 320,000 ha
The infected forest has been covered 9 times

Provided effort during the 22 first weeks



The main effort has been provided by the Authorities

Conclusions

- The only chance for early detection is passive surveillance
- During an outbreak:
 - Passive surveillance must be planned and organized (GIS) through active search
 - The results of this search will drive the other measures: zoning, fencing,...
 - Searching will be adapted according the epidemiological status, season and landscape
 - Search must be sustainable over time -> 90 % professionals in BE
 - More information: <https://doi.org/10.3390/pathogens12020152>