Routine surveillance data from the National Animal Disease Diagnostics and Epidemiology Centre (NADDEC) were utilized to spatio-temporally map African swine fever (ASF) outbreaks and identify associated risk factors. A total of 368 samples were analyzed at NADDEC for ASF using either PCR or ELISA. Both prevalence and potential risk factors were assessed. Odds ratios (ORs) were calculated using

From national parks to international borders: Unveiling the silent threats, high-risk zones and seasons of African swine fever in Uganda

Emmanuel Hasahya[1,2], Robert Mwebe[2], Peter Wanyama[2], Paul Lumu[2], Frank Mayanja[2], Eugene Arinaitwe[2], Maria Nanfuka[2], Doheon Kwon[1], Lee Hu Suk[1]

1. College of Veterinary Medicine, Chungnam National University, Daejeon, Republic of Korea
2. Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Uganda

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1 Introduction

African swine fever (ASF) is a highly contagious viral disease that poses a major threat to Uganda's pig sector, which is predominantly sustained by smallholder farmers[1]. The disease remains endemic, with reported seroprevalence rates as high as 53% and PCR-confirmed prevalence around 11% in slaughter pigs[2]. ASF outbreaks result in substantial economic losses due to high mortality, trade disruptions, and stringent control measures such as quarantines[3]. Understanding the prevalence and key drivers of ASF is essential to inform targeted, evidence-based interventions and safeguard the livelihoods of pig farmers. and protect farmer livelihoods.

Summary/Key Points

African swine fever Uganda
Seasonal variations
National parks
International borders

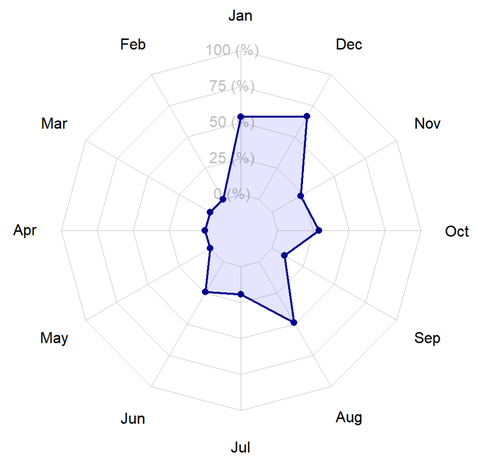

Fig.1. Seasonality of the African swine fever prevalence in Uganda for time period 2019-2022.

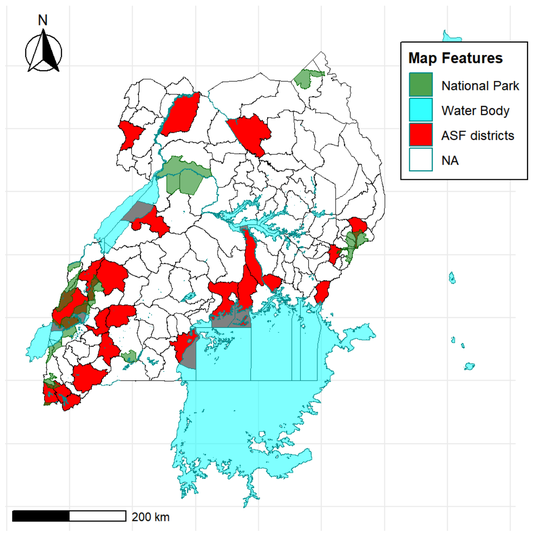

Fig.2. Spatial distribution of districts that registered African swine fever cases in Uganda for time period 2019-2022.

2 Methods/Approach

Routine surveillance data from the National Animal Disease Diagnostics and Epidemiology Centre (NADDEC) were utilized to spatio-temporally map African swine fever (ASF) outbreaks and identify associated risk factors. A total of 368 samples were analyzed at NADDEC for ASF using either PCR or ELISA. Both prevalence and potential risk factors were assessed. Odds ratios (ORs) were calculated using binomial regression to determine significant predictors of ASF outbreaks.

3 Results (Graphs, Tables, Figures)

The overall prevalence of African swine fever (ASF) was 25.54%. Among regions, the Northern region had the lowest prevalence (9.6%), while the Western region recorded the highest (36.4%). Seasonal variation was notable, with prevalence higher in the dry season (37.4%) compared to the wet season (14.9%). Districts neighboring national parks had a significantly higher prevalence (46.6%) compared to those without park proximity (17.4%). Similarly, border districts reported a prevalence of 41.2%, whereas non-border districts showed a prevalence of 22%.

Outbreaks were 3.4 times more likely during the dry season than the wet season. Districts adjacent to national parks had 4.1 times greater odds of reporting ASF, while those at international borders had 2.5 times higher odds than districts away from both parks and borders.

Table 1: Unadjusted Odds Ratios for the predictors of the African swine fever in Uganda by season and locations

	Predictor	ORs	conf.low	conf.high
Region				
	North	Ref	Ref	Ref
	Central	2.14	0.773	5.724
	Eastern	4.54	1.937	11.015
	Western	5.364	2.76	11.308
Season				
	Wet season	Ref	Ref	Ref
	Dry season	3.393	2.075	5.658
Proximity to a NP				
	No	Ref	Ref	Ref
	Yes	4.155	2.524	6.886
Proximity to a border				
	No	Ref	Ref	Ref
	Yes	2.482	1.417	4.315

NP; National Park

4 Discussion

ASF outbreaks in Uganda are significantly influenced by both seasonality and geographic location. The odds of outbreaks were higher during the dry seasons, likely due to increased pig movements associated with scavenging behavior. Border districts exhibited elevated odds ratios (ORs), possibly reflecting cross-border pig and pork trade under limited biosecurity conditions. Additionally, districts located near national parks showed higher ORs, which may be attributed to interactions with wild suids or the presence of shared ecosystems.

5 Conclusion

Heightened surveillance should be implemented during the dry seasons and in identified risk zones. Similarly, control measures should focus on these areas and periods by sensitizing small holder farmers to adhere to effective biosecurity protocols and promptly report any sick pigs.

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Contact: hs.lee@cnu.ac.kr
Email | Phone | Website

Email: ehasahya@gmail.com
Phone: +256780348862