EAZA and its Members contribute to vital research on African Swine Fever (ASF)

September 2023

At the request of the IUCN Species Survival Commission's Wild Pig Specialist Group, EAZA and its Members are contributing to an international research project on the African Swine Fever (ASF). This fast-spreading virus is threatening pig species in the wild and in human care, due to the lack of a vaccine or an effective treatment.

The disease

ASF is currently posing the greatest risk to pig conservation, both *in situ* and *ex situ*[i]. It is caused by a DNA virus that is lethal for many pig species but is harmless to people and other animals. When infected, some pig species show no apparent signs, while others develop a viral hemorrhagic illness with almost 100% case fatality.

Human activity brought ASF out of Africa in 2007 (to Georgia), and the virus has since been spreading in Europe and Asia. It threatens many wild pig species as well as domestic pigs, with further knock-on effects for their ecosystems as well as for human livelihoods.

In May 2023, ASF reached Negros Island in the Philippines, home to the Critically Endangered Visayan warty pig. This also reminded the world how acutely vulnerable the 12 Southeast Asian endemic pig species are when facing the virus. All of them have small populations and small ranges[ii].

ASF has already killed all Visayan warty pigs kept in human care in a breeding station in the Philippines as well as babirusa housed in an Asian zoo. In zoos across EAZA, the virus is a threat to all pig species in EAZA Ex-situ Programmes (EEPs): Visayan warty pig, babirusa, red river hog, and warthog.

The research

Currently, there is no vaccine or effective treatment for the disease.

An EU-funded research project (ASF-RASH: "African Swine Fever pathogenesis and immune responses in Resistant And Susceptible Hosts") aims to understand ASF disease development. Its main goal is to gather information about factors related to the pathogen (such as its evolution and severity), the host species, and the immune cells involved in determining susceptibility and protection. This knowledge is essential for the development of treatments and vaccines.

The project is coordinated by the Friedrich-Loeffler-Institute (FLI) which is Germany's Federal Research Institute for Animal Health, with involvement of five other research institutions: Statens Serum Institut (Denmark), Institute of Virology and Immunology (Switzerland), Wageningen Bioveterinary Research (the Netherlands) and Ghent University and Sciensano (both Belgium).

The project is further integrated into the ASF research network involving several other institutions such as the Pirbright Institute (UK) and CIRAD (France).

EAZA's contribution

Understanding the complexity of the infection and immune responses requires studying entire living organisms – of both resistant and susceptible species. To this end, FLI will receive six red river hogs *Potamochoerus porcus* and six warthogs *Phacochoerus africanus* from the EEP populations in EAZA Member zoos over the next five months.

EAZA is contributing to the project at the request of the IUCN SSC Wild Pig Specialist Group, alongside the European Association of Zoo and Wildlife Veterinarians (EAZWV). EAZA's support was approved by EAZA Council in April 2023 and is overseen by the EAZA Tapir and Suiform Taxon Advisory Group (TAG).

The two species were selected because they are susceptible to ASF but do not show severe clinical signs when infected with the virus. Identifying the mechanism behind their resistance could provide crucial information for the development of a vaccine against ASF.

The animals will be housed at FLI in a comfortable and secure environment, with species-appropriate diet and enrichment. After inoculation with ASF virus, they will stay in the care of qualified keepers, veterinarians and biologists. Blood samples and swabs will be taken from the animals under immobilization several times during the study. At the end of the 100-day trial, they will be euthanized using standard, humane approaches which minimize pain and stress. A full necropsy will be performed.

Ethical safeguards

Before taking the exceptional decision to support the project, EAZA Council carefully considered the ethics of sentience, animal welfare and scientific advancement. It was concluded that the conservation benefits in the fight against ASF significantly outweigh possible ethical concerns.

FLI has a strong reputation for ethical animal research. In addition, the animals will be carefully monitored to assure positive welfare at all stages.

The project adheres to the German Animal Welfare Act, the Animal Welfare – Experimental Animal Ordinance and strict biosecurity rules. This is certified by a permit issued by the competent authority for the state of Mecklenburg-Western Pomerania where FLI is based: the State Office for Agriculture, Food Safety and Fisheries (LALLF).

Transferring the animals will not have a negative impact on the robust EEP populations of the two species, nor will it jeopardize other conservation efforts undertaken by these EEPs.

A note of thanks

EAZA and its Members thank the European Union and national governments for supporting these vital research efforts. We thank the IUCN SSC Wild Pig Specialist Group for seeing the benefit of involving our community. Once hopefully developed, we strongly advocate for the vaccine against ASF to be made available for wild pig species affected by the disease.

For more information about EAZA's contribution, please contact info@eaza.net.

[i] FAO, IUCN SSC and OIE warn of African swine fever impact on wildlife conservation, https://www.iucn.org/news/species-survival-commission/202108/fao-iucn-ssc-and-oie-warn-african-swine-fever-impact-wildlife-conservation

[ii] Luskin, MS, Meijaard, E, Surya, S, Ssheherazade, S, Walzer, C, Linkie, M. African Swine Fever threatens Southeast Asia's 11 endemic wild pig species. *Conservation Letters*. 2021; 14:e12784. https://doi.org/10.1111/conl.12784