Researchers use AI datasets to track feral pigs, minimize disease risk

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Feral pigs [cost the agriculture industry at least $1.5 billion in damage, disease and control costs around the United States annually](#), running rampant on large swaths of grazing lands. The [swine root in soil and eat most everything in sight](#).

Farmers and ranchers will benefit from research by University of Florida scientists who are using artificial intelligence to gather data on feral hog reproduction and movement.

As they roam grazing land, feral swine carry pathogens that cause multiple diseases in cattle, like Brucella. Other pathogens, like foot-and-mouth disease, are not present in the United States, but wild pigs have the ability to transmit these foreign animal diseases.

"If a foreign animal disease became established in wild pigs in the United States, it would devastate the commercial swine and cattle industry. These foreign diseases are pathogens not found in the United States, but because of the severity of disease and high contagiousness, infected cattle or swine are culled. It would be nearly impossible to rid ourselves of a foreign animal disease if it became established in wild pigs," said Samantha Wisely, a UF/IFAS professor of wildlife ecology and conservation. "Wild pigs also cause millions of dollars a year to cattlemen in lost forage and degraded pastures."

Wisely will conduct her latest feral pig research at Archbold's Buck Island Ranch, in southeastern Highlands County. There, she'll collaborate with station researcher Raoul Boughton, who used AI to identify pigs from millions of pictures taken by remotely triggered wildlife cameras. Using these techniques, Wisely and others will further use this AI-generated dataset of pictures to track the movements of groups of pigs, called sounders, to predict how pathogens spread from pig to pig in Florida grazing lands.

"The camera array on Buck Island Ranch allows us to monitor many animals over a large area to truly understand population level responses to animal control, disease transmission and cattle management," she said.

With this project, Wisely plans to expand on research already done by

Tyler Buckley, a master's student in wildlife ecology and conservation in the UF/IFAS College of Agricultural and Life Sciences. For his thesis, Buckley used the large array of wildlife cameras to estimate reproduction in wild pigs.

Buckley used an AI-generated dataset that identified images of the wild pigs at Buck Island Ranch to learn more about how quickly they can reproduce. Machine learning algorithms allowed a computer to sort through millions of photographs from dozens of cameras to identify the pictures that contained wild pigs, said Wisely, who is co-supervising Buckley's thesis with Boughton.

Buckley studied the number of piglets associated with a sow and compared that number before and after a large wild pig-removal event. Landowners use several methods to reduce the number of pigs on their property, including hunting and trapping.

Buckley found that sows increased the number of piglets they produce once the population size began to decrease due to culling.

"We need to understand how to manage pig populations without creating an influx of young piglets. When young pigs make up the majority of a population, diseases transmit among individuals more efficiently because those young pigs are more likely to become infected than older individuals," Wisely said. "If we track the population's response to different types of removal plans—perhaps we can find one that doesn't increase disease risk."

Buckley conducted his research while a graduate student at the UF/IFAS Range Cattle Research and Education Center in Ona, in Hardee County. He will defend his thesis this summer.