When pigs fly: A new species of suid *Sus alati* endemic to a narrow range in Northeastern USA

Ricky Zhou

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I have neither given nor received any unauthorized aid on this assignment.

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I. Abstract

A new endemic species of pig has been discovered within an extremely narrow habitat range in Northeastern USA. The winged pig (*Sus alati)* is a rare species, and although there have been several unofficial reports regarding their sightings, we have finally been able to observe these extraordinary creatures in relative proximity utilizing latest technology. The discovery is not only exciting in of itself, but it's implications for the future of evolutionary biology and ecology are vast.

II. Introduction

For much of human history, organisms belonging to the family *Suidae*, the even-toed ungulates, have been known to be unanimously terrestrial and ground-based. This family, which includes the peccaries, warthogs, and domestic pigs, has been widely studied due to their biological similarities to *Homo sapiens*, particularly the domestic pig (*Sus scrofa domesticus*). Previously, there had only been evidence pointing towards eight living species in the genus *Sus*, with the most recent having been discovered over 20 years ago in 1997. None of these species have ever been reported as being capable of flight, so the discovery of one that aerially proficient is quite perplexing and unusual.

III. Methods

Ethics Statement

No living nor dead specimens have been collected for study. All observations were made either in person, with Camera Remote Detection (CRD), or via genetic analysis of DNA present in fecal matter. This investigation was done with permission from Laurie Patton herself as well as the Middlebury College Biology Department.

Observations and CRD

The study was conducted on the Middlebury College Campus in Middlebury, Vermont for 72 hours starting at 13:00 EST on January 24, 2069. A team of researchers staked out a large gently sloping greenspace dotted with a number of various native hardwoods (known colloquially as "Battell Beach").

Genetic Analysis

DNA was extracted from various droppings left in the snow. Using an animal tissue DNA extraction kit according to the maker's protocol, we followed each step of the PCR process until we got enough to perform a full genomic analysis.

IV. Results

Etymology

The genus name, *Sus*, originates from Latin "sus" meaning swine. *Alati* is also derived from Latin, from *ala* meaning wing, or winged.

Type Locality

The species was discovered by a team of student researchers attending Middlebury College in January 2069 soaring above them at nighttime or trotting across empty plots of land in or around the urban locality named Battell Beach (latitude 44.011680 N, longitude -73.179089 W). Battell Beach, as seen in Figure 1, is a grassy field located in the heart of the Middlebury College campus. The climate, as is typical of Northeast USA, is temperate, with cold winters and warm summers. The landscape is patchy and fragmented, with several acres of farmland, meadow, deciduous hardwood forest, and coniferous forest surrounding.

Genome Analysis

The DNA of *Sus alati* is almost identical to that of the domestic pig, with only about 1,000 differing genes and 10,000 different base pairs.

Diagnosis

Sus alati, the winged pig, is a large even toed ungulate closely resembling the domestic pig, *Sus scrofa domesticus*, in terms of the main body's shape, size, and muscle structure. Very few anatomical differences were observed comparing the torso, appendages, and head of this new species to *Sus scrofa domesticus*. Even the fur seemed to be the same texture, pallor, and length as that of the domestic pig. Figure 2 shows that the footprints are extraordinarily similar, almost indifferentiable between the two species.

However, the major difference seen was the species impressive wingspan of almost 10m from wingtip to wingtip. The feathers are long, white, and incredibly aerodynamic, allowing the winged pig the ability to fly at speeds of over 30km/hr.

Winged pigs are sexually dimorphic, with the females being significantly larger in overall size, but the males have much shinier, shimmery feathers.

Behavior

Sus alati is an omnivore, and an excellent forager, much like it's other suid relatives. This species tends to prefer anthropogenic food, with the specimens we followed having been scouring several trash cans and dumpsters.

Winged pigs tend to stay in groups of 3 to 4, and these groups have been deemed *commons*. They are usually led by one Female Youth Caretaker (FYC) that help to guide the younger pigs in the commons in foraging, hiding, and locating home.

The species is rarely ever seen near humans as they seem to have a natural sense to avoid them, for a yet unknown reason. However, they seem to have significant ecological relationships with the Brainerd owl (*Strix brainerdia)*, the Wonnacott grey squirrel (*Sciurus wonnacottensis)*, the Ross rhino (*Ceratotherium rossio)*, and the Atwater frog (*Lithobates atwatum)* – all also endemic species to the Middlebury, Vermont region. The former two species are extremely active competitors against the winged pig, often fighting over food and territory.

On the other hand, the latter two species have more mutualistic relationships. The winged pigs burrow underground in Battell Beach, providing shelter for the Atwater frog in return for the frogs' service in shepherding food through the heated water pipes. And with the Ross rhinos, the *Sus alati* tend to share larger meals with these mammals in return for extra defense, especially for their young.

V. Discussion

Phylogenetics

Considering that *Sus alati* has extremely similar DNA in comparison to *Sus scrofa domesticus),* there is almost no doubt that the two are very closely related species. The winged pig is more likely to evolved later, but it is quite unusual to see such drastic divergence in evolutionary pathways. It's wings seemed to have convergently evolved with a similar structure to the wings of the albino common pigeon (*Columba livia),* except much larger.

Comparison with other Suids

This species tends to be far more shy of humans, and is part of an extremely complex ecosystem rife with a large web of competition, mutualisms, and commensalisms.

VI. Conclusion

Sus alati is still a mystery for the greater scientific community, but further study should prove to be quite exciting given the unusual nature of this organism. Not only does it perplex on an aerodynamic scale, but it does so too in terms of genetics, evolution, and ecology.

VII. Acknowledgements

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VIII. Figures

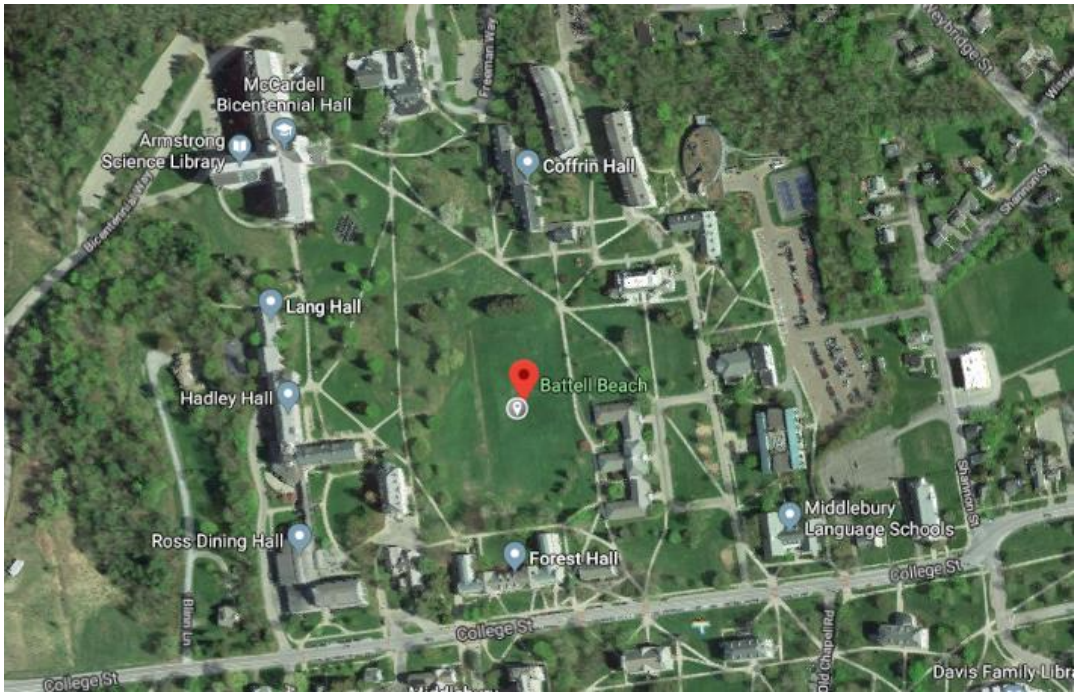

Figure 1. Map of the regional locality in which we first discovered *Sus alati*.

Figure 2. Photographs depicting the footprints of *Sus alati*. On the left are the complete set of tracks found, and on the right is a zoomed in photo of two of the prints.