

Dr. Aelan Syvongsa can still remember the aroma of the native orchids mixed with the tall pine forests and the clear blue skies as she tracked the saola roaming grounds in the Annamite Mountains in her native Laos. Discovered in 1992, saola, or Asian unicorn, are recognized by two parallel horns with sharp ends, which can reach 20 inches in length. Saola have striking white markings on the face and large maxillary glands on the muzzle. In 2022, soon after the native orchids population decreased, leading to a collapse in the delicate ecosystem, the last known saola died. Before long, the Annamite striped rabbit, kha-nyou, and the large-antlered muntjac also became extinct.

The Annamite Mountain region was among the most biodiverse in the world, with thousands of plant and animal species sharing their home with human communities that have inhabited the mountain range for generations. Known as the “Green Corridor,” the ancient tropical forests boasted unique species, including the white-lipped keelback, nine orchids, two butterflies, and nine other plants, all exclusive to the Annamites. Little explored by scientists, in part because of decades of political conflict, scientists discovered many new species during the 2015 expedition, revealing incredible biodiversity.

That all changed with the encroachment of humans and rampant hunting. By 2020, all of these species were at risk from illegal logging, poaching, unsustainable extraction of natural resources, and conflicting development interests. The tropical forests of the Annamites are also important water catchments, supplying thousands of people who depend on the region's rivers. In conjunction with the World Wildlife Fund and the Thua Thien Hue Provincial Forest Protection Department, resurrection biologists at the National University of Laos (NUOL), worked tirelessly to preserve the cells of three animal species (the saola, the Annamite striped rabbit, and the muntjac), two butterflies, and three leafless orchid species for potential future reanimation. The decade-long program, code named De-Extinction of Annamite Species, or DEAS, has been plagued by funding shortages, delays, and even controversy within the scientific community.

The government of Laos has been hesitant to endorse the program. While much of the funding has been through non-governmental organizations, the National University of Laos (NUOL) and Thua Thien Hue Provincial Forest Protection Department have committed significant resources to DEAS, in terms of both human capital and financial backing.

As a professor of resurrection biology at NUOL, Aelan sits at her holo-comp reviewing the data and proposed timeline. She shivers with excitement as the team begins the 10-year three-phase process of resurrection: **Phase 1**: re-animation of the orchids, **Phase 2**: resurrection of the butterflies, and **Phase 3**: resurrection of native animal species. Since all these species were formerly native to the region, scientists have shown little concern that there could be negative environmental consequences to the region.

As problem solvers, your team has been selected to work with the NUOL, World Wildlife Fund, and Thua Thien Hue Provincial Forest Protection Department to analyze the issues involving the DEAS Program and their 3-phase resurrection plan. Identify *challenges relating to the program to resurrect the unique species and create possible solutions and recommend an Action Plan.*



Species unique to the Annamites:

(clockwise from top left)

The Saola, Annamite Striped Rabbit,

Kha-nyou, and the Large-antlered Muntjac



Gastrodia theana -- A very rare leafless orchid discovered in Vietnam in Annamite Mountains.

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