Swarm Robotics in Natural Habitat Reconstruction

# Project Brief

55% of the world’s GDP, an estimated US$58 trillion, is dependent on nature or its services, and yet over the last 50 years we have seen a 73% decline in wildlife populations, mainly due to habitat destruction led by climate change, and the agriculture industry. One biome most heavily affected is the rainforests: 17% of Amazon rainforests have been lost, and a further 17% damaged since 1988. These rainforests are often inaccessible due to ecological complexity, and habitat protection/reconstruction measures by local labour forces and are certainly incapable of meeting the rate of habitat destruction. As a result, we must turn to technological intervention. This project aims to first evaluate existing measures for habitat protection/reconstruction in rainforest environments, identifying key drawbacks. We would then hope to evaluate the utility of swarm robotics in addressing these problem areas, taking practical, technical, environmental and ecological, economic and human (ethical) factors to build a specification and inform a final design.

# Potential Directions

* Manufacturing wildlife corridors in areas largely fragmented by logging and cattle pasteurising
* Repurposing/reconstructing damaged environments following natural disasters to inhabit and preserve local wildlife populations
* Multi-story cattle pasture redesign to prevent/reduce illegal deforestation efforts
* Data collection on biodiversity loss to inform better management of restoration efforts
* Infrastructure design to better facilitate further technological intervention
* Unblocking waterways by removing debris
* Restoration of decommissioned logging or mining sites