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The golden mantella is one of the world's most charismatic frogs but is Critically Endangered and confined to a small area of remnant forest patches in eastern central Madagascar. However, the species has been widely bred in captivity and is popular within the pet trade and in zoos. The golden mantella is therefore a model species for integrating in-situ and ex-situ research to inform conservation management. Measurements of golden mantella microhabitat requirements in Madagascar were used to inform the design of the Froggotron, a unique replicated enclosure system at Paignton Zoo for behavioural research. The Froggotron revealed that golden mantellas display a bimodal daily activity pattern, with the highest levels of surface activity occurring at about 21 C. Field surveys in Madagascar were therefore designed to correspond with the early morning activity peak. A batch-marking method was developed using colour coded VIE tags to mark golden mantellas at different phases of the breeding period. A novel statistical model was then developed to estimate detectability, survival and abundance. Preliminary model outputs for one of the main golden mantella populations suggest a population size of 2000-4000 individuals. Collectively, the research has indicated that golden mantellas prefer habitats with high leaf litter coverage under moderate canopy cover, and that only a small proportion of the population is detectable at any point in time. These findings can be used to identify and manage potential habitats in the wild.