Sustainable Future for Endangered Species? Predicting the Impacts of the Wilmar Policy on Bornean Orangutan Populations

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The Bornean orangutan is endangered, threatened by illegal poaching and habitat loss, largely caused by land conversion to palm oil plantations. In December 2013, the world's largest palm oil trader published a 'No Deforestation, No Peat, No Exploitation Policy.' This study predicts the effects of the policy on the sustainability of orangutan populations. Using a density dependent logistic simulation written in Python, 36 orangutan habitats and their populations were mathematically modeled in 11 different scenarios. Each scenario had varying levels of logging, reforestation, and poaching, with stochastic insertions of catastrophes and bonanzas, and were used to produce 396 models with 100 replicates each. The sustainability of each scenario was analyzed. With an enhanced Wilmar plan and intervention to reduce poaching to less than 0.5%, the orangutans can be protected from extinction. The only scenarios with sustainable populations are those with poaching reduced from the current 4-12% annual rate to 1%. Sustainability doubles when poaching is further reduced to 0.5%. The plan should be enhanced to include conservation of lowland mosaic, to provide a further increase in population sustainability. Unsustainable populations should be connected to other sustainable areas, or traded to land development industry for the protection of lowland mosaic. The Wilmar plan is necessary for orangutan survival when coupled with poaching management. Without intervention the orangutans may be extinct within 100 years. The urgency of this situation must be made clear so the species can be protected from extinction.

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