**260**

## FRAGMENTATION IN LARGE FOREST MAMMALS OF BORNEO: THE EXAMPLES OF BORNEAN ELEPHANTS AND ORANG-UTANS

B. Goossens[1,2], L. Chikhi[3,4], N. Othman[1,2], Fairus Jalil[1,†], M. Ancrenaz[5], L. Ambu[6], M.W. Bruford[1]

*[1]Cardiff School of Biosciences, Cardiff University, Biomedical Sciences Building, Museum Avenue, Cardiff CF10 3AX, UK, [2]Danau Girang Field Centre, c/o Sabah Wildlife Department, Wisma Muis, 88100 Kota Kinabalu, Sabah, Malaysia, [3]Instituto Gulbenkian de Ciência, Rua da Quinta Grande, 6 Portugal, 2780-156 Oeiras, Portugal, [4]UMR CNRS 5174, Evolution et Diversité Biologique, Université Paul Sabatier, 118 route de Narbonne, 31062 Toulouse Cedex 04, France, [5]Kinabatangan Orangutan Conservation Project, PO Box 3109, 90734 Sandakan, Sabah, Malaysia, [6]Sabah Wildlife Department, Wisma Muis, 88100 Kota Kinabalu, Sabah, Malaysia, [†]Deceased, to whom this presentation is dedicated.*

*Presenter's email: goossensbr@cardiff.ac.uk*

Abstract: Tropical rainforests are the most species-rich terrestrial ecosystems on earth, but these forests are rapidly disappearing as land is cleared for timber, agriculture and other uses; and highly fragmented and degraded forests are becoming common. Forest fragmentation can then have a dramatic effect on landscape connectivity and the dispersal of animals, potentially reducing gene flow within populations, which will lead to greater inbreeding and loss of genetic diversity within fragments. The consequences of fragmentation can even lead to the extinction of species. Borneo harbours several species of large mammals, all being listed as Appendix I by the CITES. We will describe how recent fragmentation can affect large mammals in the degraded forests of Borneo by taking the example of the orang-utan in the Lower Kinabatangan Wildlife Sanctuary, Sabah, Malaysia and the Bornean elephant in Sabah. We clearly show the importance of rivers in shaping the genetic structure of orang-utan populations. Moreover, we show strong evidence for a recent demographic collapse in orang-utan populations in Northern Borneo, and demonstrate the effect of human-induced deforestation and habitat fragmentation on these populations. For the Bornean elephant, we found extremely low genetic diversity and low levels of expected heterozygosity that could be due to a succession of historical bottlenecks.

Keywords: Fragmentation, Genetic differentiation, Gene flow, Borneo