

**S2 Appendix. Formulae used to compute the standard error and 95% confidence interval of  $N$  (estimate number of both distinct and unmarked individuals)**

The standard error (SE) of the estimate number of all individuals (distinct and unmarked),  $N$ , was computed as follow:

$$SE(N) = \sqrt{N^2 \left( \frac{SE(Nd)^2}{Nd^2} + \frac{1 - \theta}{n \theta} \right)}$$

where  $Nd$  is the estimate number of distinct individuals (output from the model),  $\theta$  is the proportion of distinct individuals in the population and  $n$  is the number of sightings used to estimate  $\theta$ .

The 95% Confidence Interval was calculated with a lower limit of  $N^{\circ}_{low} = N^{\circ} / C$  and an upper limit of  $N^{\circ}_{up} = N^{\circ} \times C$ , where:

$$C = \exp \left( 1.96 \sqrt{\ln \left( 1 + \frac{SE(N)^2}{(N)^2} \right)} \right)$$