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# CASE STUDY: CANOPY BRIDGES FOR PRIMATE CONSERVATION

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Diani is an international tourist destination located on the south coast of Kenya. It is known for its beautiful white sand beaches, world-class beach hotels and the coral rag forest. The forest forms part of the Coastal Forests of eastern Africa ecosystem, noted as one of the top 25 global biodiversity hotspots by Conservation International. Remarkably, four monkey species (colobus, Sykes', vervet and baboon) – with a combined population of just over 1400 individuals – live within the 7 km<sup>2</sup> suburban setting.

In 1971, the Diani Beach Road was built and sealed to 10 m wide, bisecting the pristine forest. For the first time, the public had vehicle access to the area, and by 1996, noticeable numbers of monkeys were being injured or killed on the road due to wildlife-vehicle collision (WVC) (Fig. 41.1). As a response to a public outcry on this issue, Colobus Conservation (formerly Wakuluzu: Friends of the Colobus Trust), a primate and forest conservation organisation, was established.

To address the issue of primate injury and death caused by WVC, the Colobus Conservation installed the first canopy bridge in 1997 – locally known as a 'colo-bridge' (Fig. 41.2). By 2013, 28 bridges had been erected at mortality hotspots along the 10 km stretch of road, funded by the local community and international donors (35 and 65%, respectively).

A preliminary study in 2011 assessed traffic volume along the Diani Beach Road and rate of use of the canopy bridges (Colobus Conservation, unpublished data). Each of the 28 bridges was monitored continuously from 06:00 to 18:00 h for 2 days over several months. Daily traffic volume was approximately 2600 vehicles with an average of 800 primate crossings per day across the 28 bridges. Sykes' monkeys used the bridges most often (673 crossings per day), followed by the typically ground-foraging vervets (91 crossings per day) and the arboreal colobus (35 crossings per day); baboons were not observed using the bridges (Fig. 41.3). The rate of use of each bridge by different species was also highly variable (Fig. 41.4), with 7, 10 and 25 bridges used over the 2-day survey period by vervets, colobus and Sykes' monkeys, respectively.

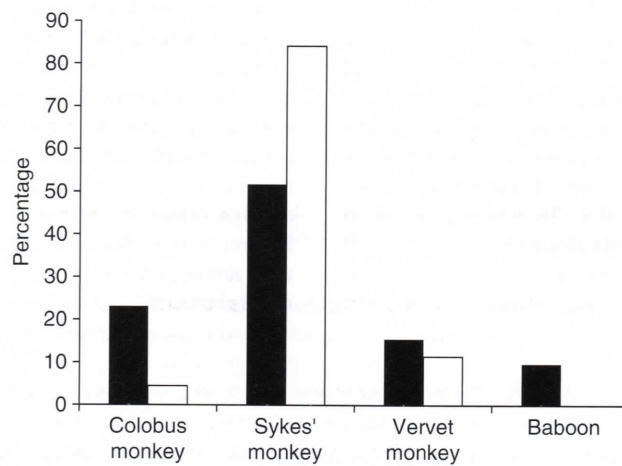
We speculate that bridge location (e.g. adjacent to good habitat or at traditional crossing locations) is critical for attaining high rates of use. Specifically, a route through the tree canopy that funnels animals towards the bridge is important as monkeys do not change direction or climb trees in order to use a bridge. It is important to note that canopy bridges may not be used by larger primates or those of a terrestrial nature.



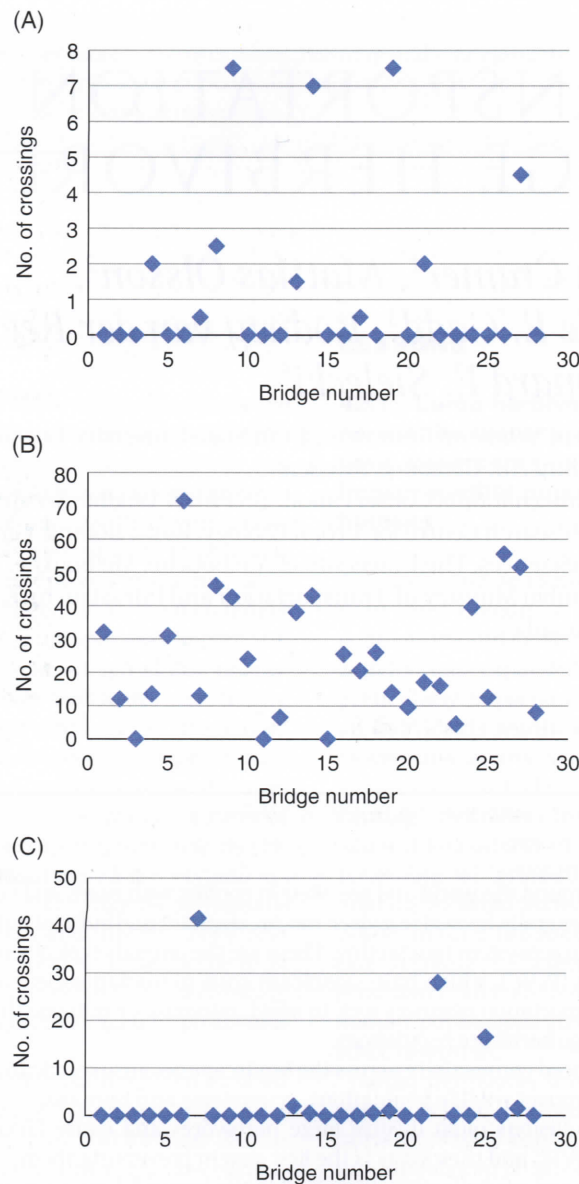
**Figure 41.1** Adult Sykes' female with infant killed by a car on the Diani Beach Road. Source: Photograph by Andrea Donaldson.



**Figure 41.2** Diani Beach Road with Sykes' monkeys on a colobridge. Source: Photograph by Andrea Donaldson.



**Figure 41.3** Population size (as a proportion of the total primate population in Diani ( $n = 1421$ ), black columns) and rate of use of 28 colobridges (as a proportion of total daily crossings ( $n = 800$ ), clear columns), recorded during two days in 2011. Sykes' monkeys used the bridges more than expected, while baboons and colobus used them less than expected ( $X^2 = 292.4$ , 2df,  $p < 0.001$ ).



**Figure 41.4** Average daily crossings on colobridges in 2011 for (A) colobus, (B) Sykes' and (C) vervet. Baboons were not observed using bridges. Note the  $y$ -axis scale differs among graphs.

Between 1999 and 2012, 518 monkeys were injured or killed by vehicles on the Diani Beach Road. This is approximately a 3% loss in the local primate population annually. Though no data is available on primate road injury or mortality prior to our colobridge installations, we believe that bridge use represents a significant reduction in risk of mortality for each crossing event.

For more information on considerations for building a colobridge, please see <http://www.colobusconservation.org/index.php/conservation/151-colobridges>.

For a guide on how to build a colobridge, please see <http://www.colobusconservation.org/index.php/conservation/159-how-to-build-a-colobridge>.