# Predicting, Monitoring and Verification of Brown Hyena (*Parahyaena brunnea*) Home Ranges at Pocket Beaches

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This project aims to intensively investigate the effects of diamond mining activities on the brown hyena population in the coastal southern Namib Desert. We survey home range sizes, habitat use and activity patterns through GPS telemetry and monitor brown hyena activity at Cape fur seal colonies for abundance estimates. The coastal areas, which are mined, are of major importance as brown hyenas spend most of their time foraging along these beaches and at the mainland seal colonies. The first brown hyena (BBHb9m) was fitted with a GPS collar in the Pocket Beach study area in 2004 and the analysis of the data allowed us to predict brown hyena activity and movement around the new Pocket Beach Mining site near Bogenfels.

Prediction
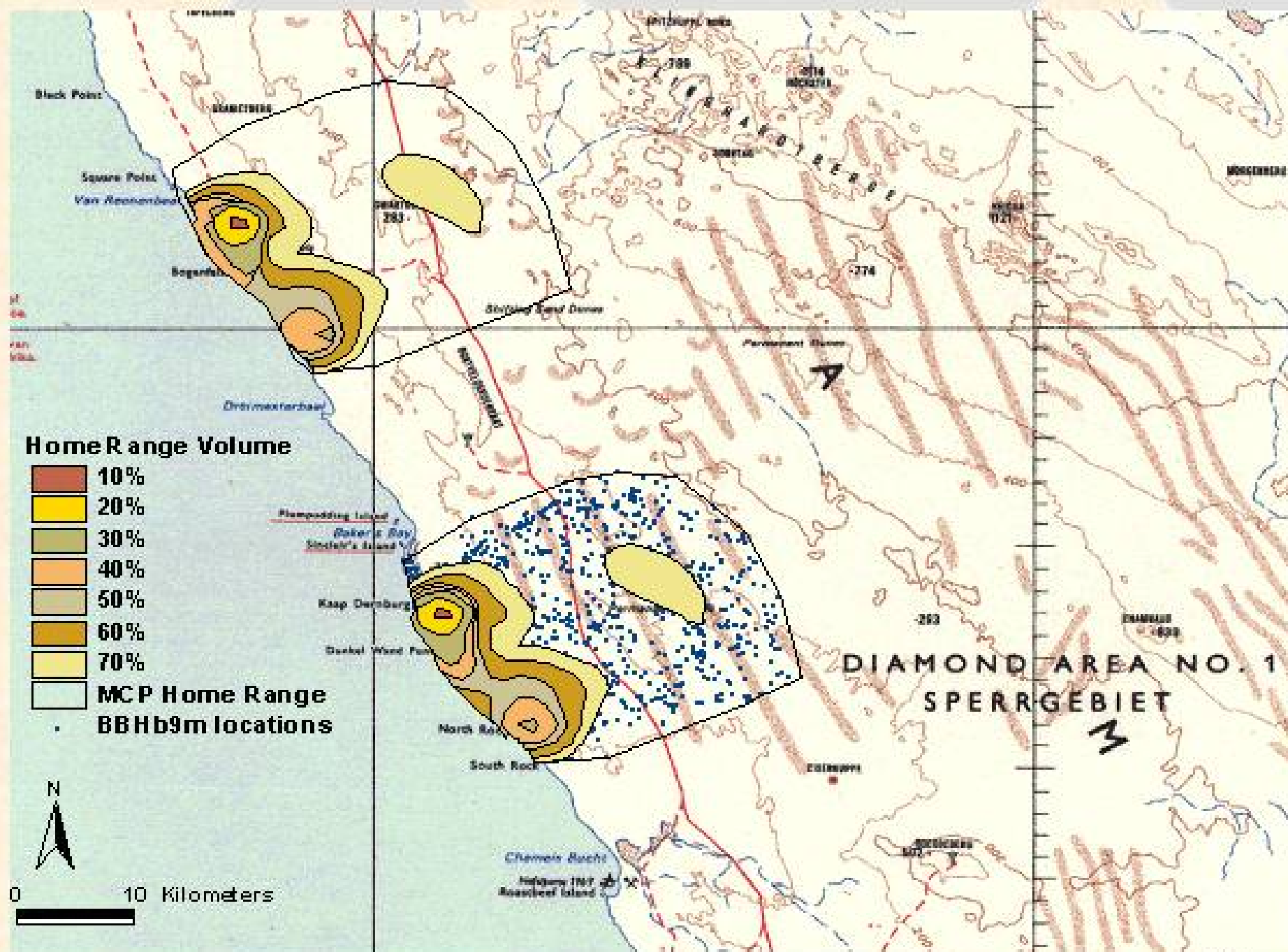
BBHb9m was fitted with a GPS collar at Baker's Bay in March 2004. The collar dropped off in March 2005 and 2500 data points were analysed.

1. Result: Foraging activity is greatest at beaches and around the Baker's Bay seal colony

⇒ 1. Prediction for Bogenfels: Foraging activity will concentrate at Bogenfels beach and the Van Reenen Bay seal colony

2. Result: Activity is greatest at night and dusk and dawn

⇒ 2. Prediction for Bogenfels: Human-brown hyena encounters will predominately happen between sunset and sunrise.
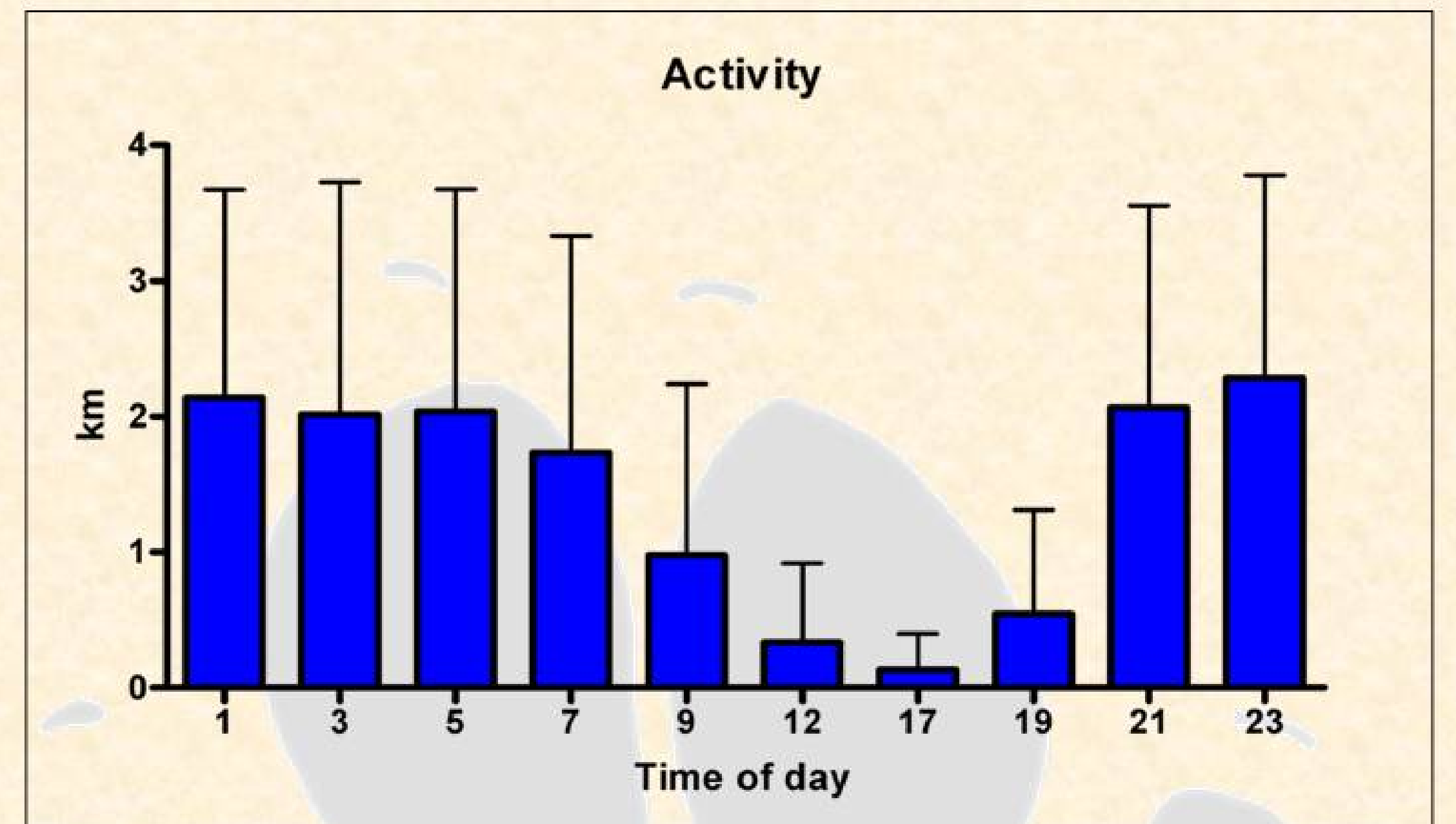

Monitoring

Three brown hyenas have been fitted with GPS collars in the Bogenfels area. The collars are equipped with a remote download option, so that data can be retrieved on a regular basis. The collars take 17 to 20 GPS positions per day and data has to be downloaded every 7 weeks.

The seal colony at Van Reenen Bay will be monitored for brown hyena foraging activity to establish a photo-identification catalogue between November 2006 and February 2007 during the seal pupping season. The ratio between sightings of known versus unknown animals will allow us to obtain abundance estimates over time.


Verification
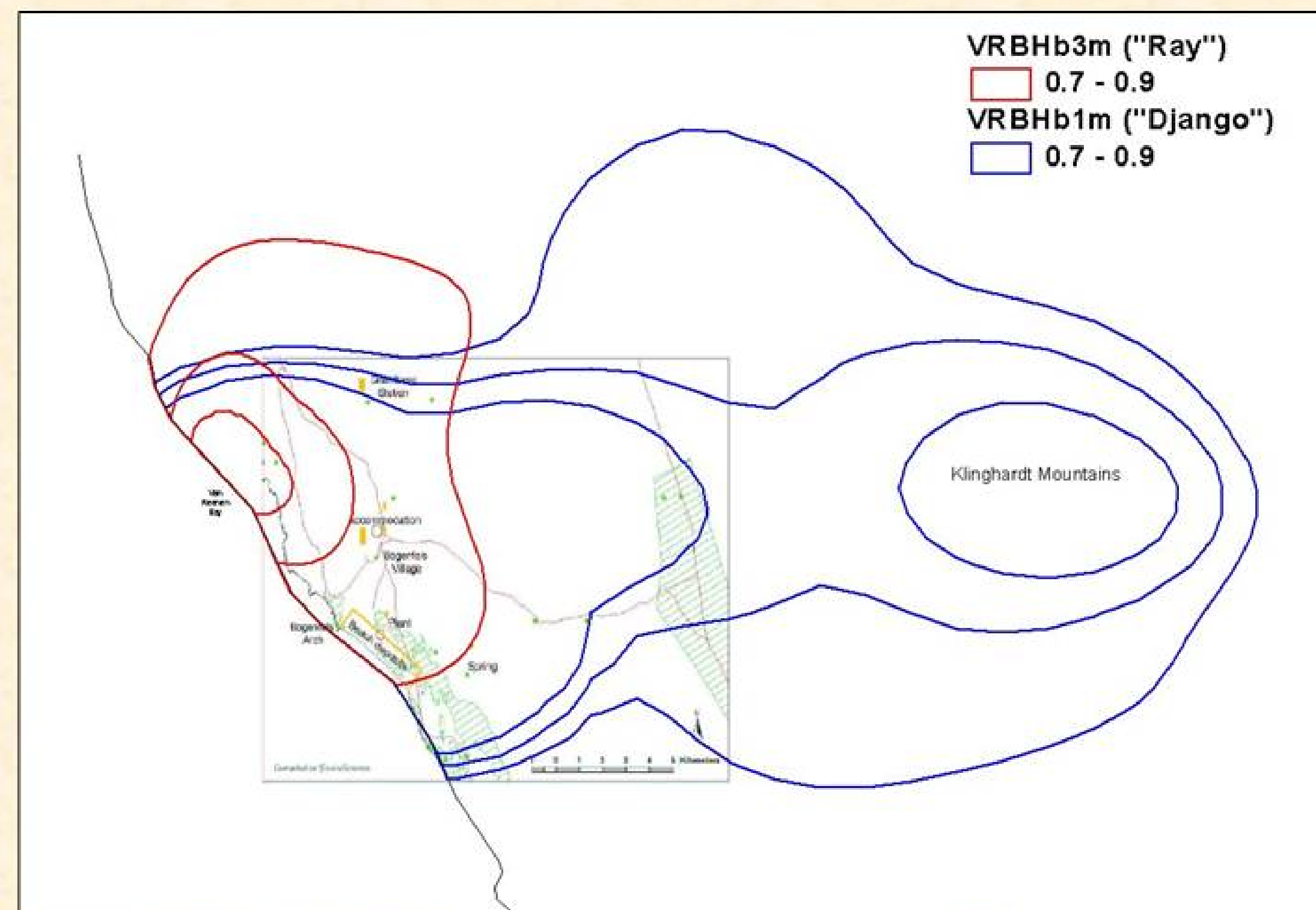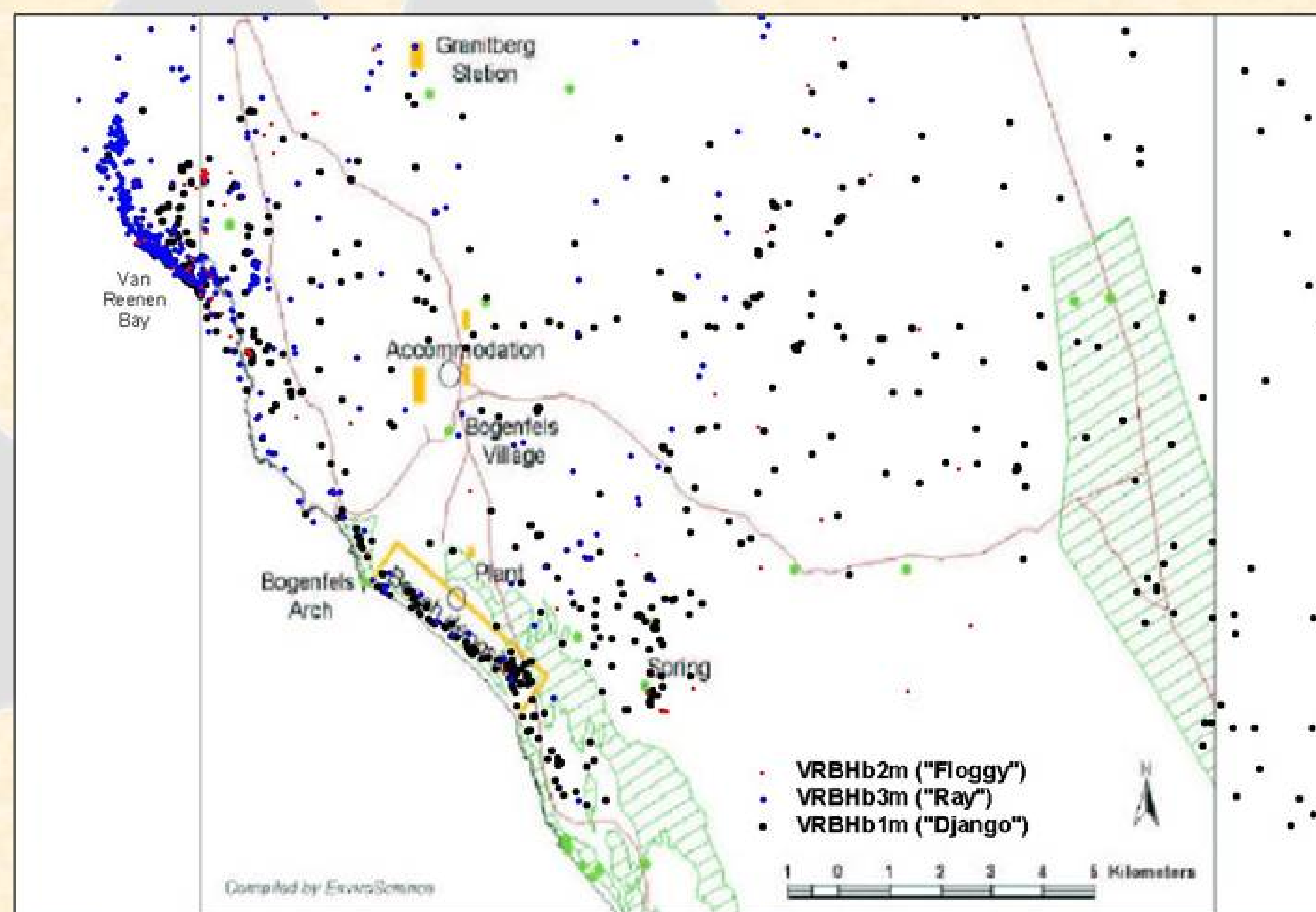
Two of the brown hyenas that were fitted with GPS collars are resident animals, whereas the third hyena (VRBHb2m) is a nomadic living male and therefore excluded for this analysis. Our predictions regarding home range size and movement from BBHb9m's data were met as follows:
• Bogenfels beach, which will be mined in future, forms the main foraging ground for resident brown hyenas
• The Van Reenen Bay seal colony to the north is the major food source for resident and non-resident brown hyenas

Additionally it was discovered that the fresh water spring to the east of the mining site is visited by resident and non-resident brown hyenas on a regular basis, and access to fresh water therefore seems to be more important than previously thought.
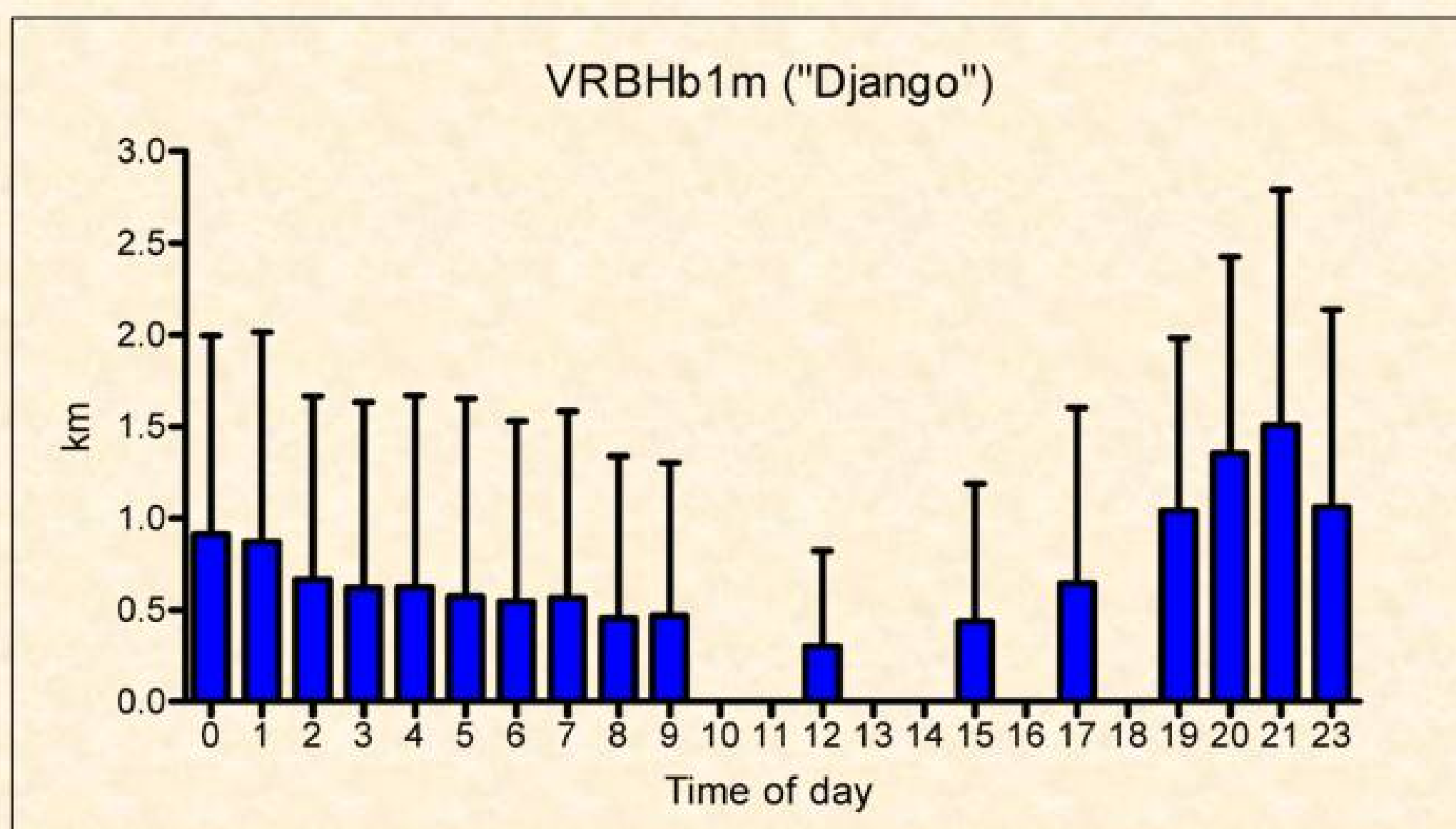
Resident Bogenfels hyenas were predominately active at night. VRBHb3m shows a less distinct activity pattern. Its data has only been collected during the winter months and lower air temperatures during this time might allow increased activity during the day.
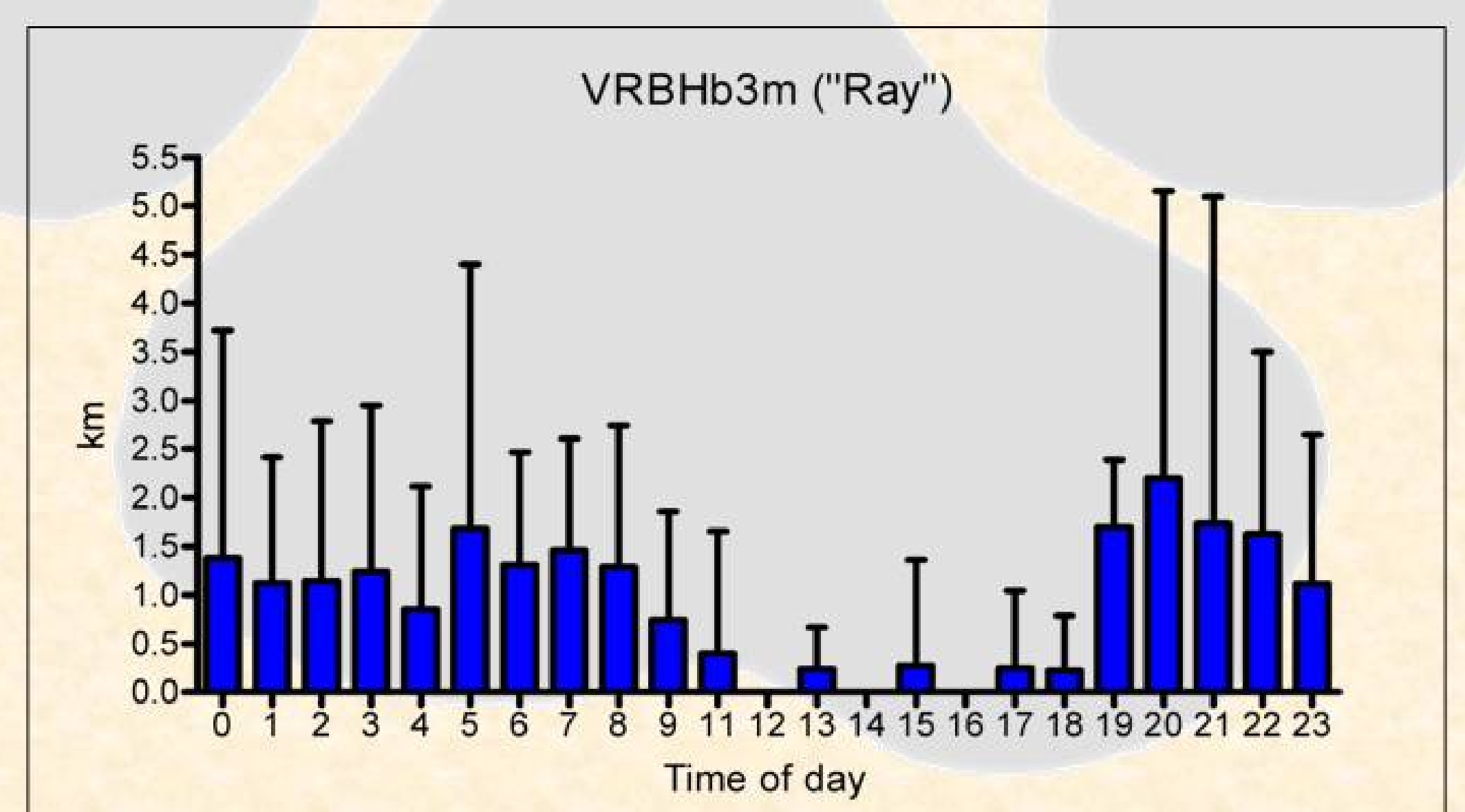
Implications

1. Mining disturbance at Bogenfels beach will have an influence on brown hyena foraging activity, but enough food can be found at the Van Reenen Bay seal colony.
2. Brown hyenas are predominately active at night and cross the future haul-out road to reach other parts of their home range and also the fresh water spring, therefore mitigation measures to avoid road accidents are necessary.
3. Fresh water seems to be important and brown hyenas have to cross the future haul-out road to reach the spring to the east of the mining site.