# Research request: Habitat evaluation and best-practice habitat management for Cape Mountain Zebra in the Western Cape Province

## Background

Cape mountain zebra naturally inhabit rugged, broken mountainous and escarpment areas and are dependent on the presence of grass and perennial water. Remaining, untransformed natural areas representing these habitats are largely confined to protected areas. Cape mountain zebra seasonally migrate, where possible, between habitat types and predominantly select areas with high grass cover and limited population growth may be the result of confinement to upland areas with restricted access to year-round grass-rich habitats and drinking water.

Cape mountain zebra is regarded as a partial refugee species, as some populations have been confined to suboptimal areas of its historic range contributing to poor population performance (Lea *et al.* in press). Estimates of potential suitable biomass production in some reserves indicate that populations may have reached their optimum stocking potential. These reserves are inadequate in size or densely stocked with other game species and cannot accommodate higher densities of Cape mountain zebra (Birss and Schutte-Vlok 2015 pers comm.). Using inadequate assessments of habitat suitability may grossly over-estimate the conservation potential of existing protected areas where current populations are confined to marginal habitats. As habitats shift with land use and climate change, the current distribution of protected areas may be inappropriate to meet future conservation goals (Lea *et al.* in press). Additional protected areas within the NDR have suitable habitat, but it is essential to apply appropriate stocking models considerate of the forage production potential, climate, total game stocking, size of suitable habitat, accessibility to water and areas of high grass cover. It has also been suggested that environments transformed by agriculture may be suitable for Cape mountain zebra (Smith *et al.* 2011).

A large proportion of research conducted on Cape mountain zebra focus on habitat suitability for the species. Habitat suitability studies were conducted for Bontebok NP (Kraaij and Novellie 2010; Watson *et al.* 2011; Strauss 2015), De Hoop NR (Smith *et al.* 2007;

Hurzuk 2009; Smith *et al.* 2011), Gamkaberg NR (Watson *et al.* 2005), Mountain Zebra NP (Winkler and Owen-Smith 1995) and Kammanassie NR (Watson and Chadwick 2007). All studies showed that Cape mountain zebra prefer habitat with a high grassy component, and that only small portions of these reserves have suitable habitat for the species (Hurzuk 2009; Strauss 2015). Winkler and Owen-Smith (1995) suggested that seasonal variations in vegetation communities utilised by zebra were not only influenced by changes in grass quality, but also by variations in grass quantity. It was also highlighted that habitat selection (including availability) must not be viewed in isolation since water, mineral licks, shelter, as well as social factors, are also known to influence habitat use in large herbivore species (Winkler and Owen-Smith 1995). Penzhorn and Novellie (1991) suggested that ideally conservation areas should be large with sufficient varied habitats to sustain populations throughout summer and winter. The existence of large populations of antelope could be detrimental to zebras due to interspecific competition (Hurzuk 2009). Strauss (2015) suggests that Cape mountain zebra have season-specific and site-specific feeding strategies to ensure adequate quantity and quality of forage throughout the year.

There appears to be considerable scope, >935,191 ha, for increasing the area and number of sub-populations of Cape mountain zebra (Hrabar and Kerley 2013). An assessment of the CapeNature protected areas consolidated with mountain catchment areas in the Western Cape indicates that potential habitat of <855,940 ha could be available for the reintroduction and reinforcement of a number of viable Cape mountain zebra populations, (populations >100 individuals), (Birss *et al.* 2016). However, a careful and systematic evaluation of potential sites for habitat suitability, area of suitable habitat, stocking potential, security and manageability will have to be carried out. Several Nature Reserves (some are clusters of several protected areas) have the potential to contribute significantly to new sub-populations of Cape mountain zebra including Bokkeriviere NR, Cederberg NR, Matjiesrivier NR, Groot Winterhoek NR, Outeniqua NR, Rooiberg NR and Swartberg NR. Although these areas have suitable habitat, some will need additional and/or improved fencing to facilitate management of Cape mountain zebra and other species which may influence Cape mountain zebra population health.

The Biodiversity Management Plan for Cape mountain zebra in South Africa (Draft) identifies the implementation of research on habitat management (including improvement and rehabilitation) for Cape mountain zebra as priority research to inform the management of

currently occupied Cape mountain zebra habitat as well as to assist in the assessment of priority reintroduction sites in the NDR.

| **5.2.1.2 ACTION:** | **IMPLEMENT RESEARCH ON HABITAT MANAGEMENT (INCLUDING IMPROVEMENT AND REHABILITATION) FOR CAPE MOUNTAIN ZEBRA.** | |
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| **Lead agencies:** | CN, SANParks, ECPTA | |
| **Implementing agencies:** | SANParks; CN; ECPTA; FS DESTEA; NC DENC | |
| **Collaborators:** | Manchester University, EWT | |
| **Essential activities:** | 1) Facilitate research to inform appropriate Cape mountain zebra habitat management, (incorporate fire, alien vegetation, predation and game stocking where applicable).<br>2) Implement best-practice and research findings for integrated fire-alien vegetation-game stocking-predation for Cape mountain zebra habitat management. | |
| **Expected Outcome in 5 yrs.:** | 1) Applied research informing management actions for Cape mountain zebra sub-populations. | |
| **Monitoring and Evaluation:** | 1) Research publications, draft publications and reports. | |
| Funding / Resources | Timeframe | Measurable Indicators / Outputs |
| Research funding to be sourced. | Initiate within 1 year of gazetting BMP-S. | Applied research on habitat management conducted, informs adaptive management of Cape mountain zebra sub-population sites. |
| Challenges: NC DENC has capacity constraints. | | |

To this end CapeNature requests that research be undertaken to formally evaluate habitat that may be suitable for the long-term survival of Cape mountain zebra and to make management recommendations for each of the different habitat types within the NDR e.g. , habitat condition, stocking potential, water provision, habitat management and habitat improvement.

## Research questions

Test Hypotheses: There appears to be considerable scope, >935,191 ha, for increasing the area and number of sub-populations of Cape mountain zebra (Hrabar and Kerley 2013). In the Western Cape potential habitat of <855,940 ha on CapeNature protected areas consolidated with mountain catchment areas could be available for the reintroduction and reinforcement of a number of viable Cape mountain zebra populations.

Provide research results indicating:

The extent of available, suitable habitat in the Western Cape, on protected areas and mountain catchment areas;

The stocking potential of available suitable habitat for Cape mountain zebra.

Recommendation on habitat management and improvement for Cape mountain zebra both for occupied and unoccupied habitats.

## Equipment and support

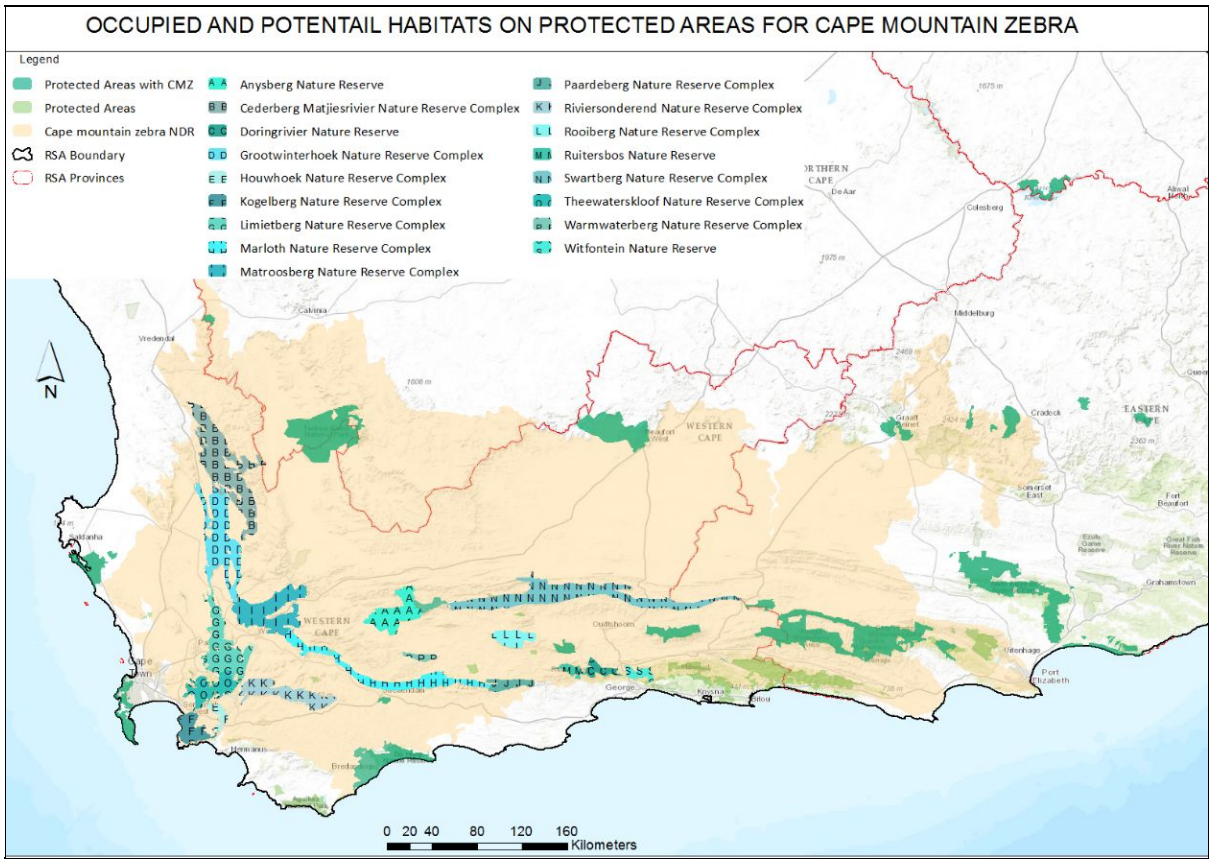
The following equipment and services will be supplied by CapeNature: Access to provincial nature reserves and Cape mountain zebra distribution data.

## Funding

There is no specific funding available from CapeNature. CapeNature will assist in drafting funding proposals. There are several opportunities for sourcing external funding for this research.

## Sample sites

There are several different habitat types which need evaluation in the WCP. Review the map below indicating the consolidate habitats consisting of provincial nature reserves and mountain catchment areas in the Western Cape Province.




## Time lines

This work should commence as soon as possible and aim for completion within the next five years.

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