Available online at www.sciencedirect.com
ScienceDirect
ELSEVIER
Palaeogeography, Palaeoclimatology, Palaeoecology 245 (2007) 332–352
PALAEO
www.elsevier.com/locate/palaeo

Community evolution of Neogene micromammals from Langebaanweg 'E' Quarry and other west coast fossil sites, south-western Cape, South Africa

Thalassa Matthews [a,*], Christiane Denys [b], John E. Parkington [a]

[a] *Department of Archaeology, University of Cape Town, Rondebosch, 7701, South Africa*
[b] *M.N.H.N. Department Systematic and Evolution-CP51-FRE CNRS 2695 "Origin, structure and evolution of biodiversity" 55, rue Buffon-F-75005 Paris, France*

Received 15 July 2005; received in revised form 26 July 2006; accepted 28 August 2006

Abstract

This paper provides an overview of the micromammalian palaeocommunities found in fossil bearing palaeontological and archaeological west coast sites dating from the Mio-Pliocene, as represented by the site of Langebaanweg 'E' Quarry, and other sites dating from the late Middle Pleistocene, until the late Holocene. Recent excavations at Langebaanweg have resulted in the addition of more murid genera to previously compiled faunal lists. An updated faunal list is presented, and a comparison is made on a generic level between the micromammals from Langebaanweg, and the considerably younger west coast fossil sites of Elands Bay Cave, Steenbokfontein Cave, the Saldanha Bay Yacht Club site and Hoedjiespunt 1, and some modern owl pellet collections. The palaeobiogeographical and palaeoenvironmental significance of the different west coast micromammal communities, and the evolution of the west coast rodent community is examined. Nine of the micromammal genera found at LBW are present in some, or all, of the west coast fossil sites dating from the late Middle Pleistocene until the Holocene. This indicates the endurance of many of the genera present at LBW, and in the Kalahari South West Arid and Namib Regions, from the Mio-Pliocene, up until the present.

Keywords: Langebaanweg; Micromammals; Mio-Pliocene; Cape Province; South Africa; West coast

1. Introduction

The site of Langebaanweg 'E' Quarry (LBW) was discovered during phosphate mining in the Langebaanweg area, which began in 1943. Langebaanweg's importance as a fossil site was, however, realised by local and international scientists only in 1958 (Singer, 1961; Hendey, 1982). LBW offers one of the largest collections of Mio-Pliocene fossils in Africa, and contains an extremely rich and diverse range of over 230 vertebrate and invertebrate taxa, including numerous micromammal bones and teeth (Hendey, 1974, 1981). The site provides an insight into the transitional fauna which inhabited the southwestern Cape in the Mio-Pliocene, a period when many relict Miocene taxa are found together with genera which inhabit the southwestern Cape, and southern Africa, today. LBW is also the site where the earliest recorded fynbos pollen has been recovered (Scott, 1995), and Cowling and

* Corresponding author. Fax: +27 21 789 2814.
E-mail address: tmatthews@absamail.co.za (T. Matthews).

0031-0182/$ - see front matter © 2006 Elsevier B.V. All rights reserved.
doi:10.1016/j.palaeo.2006.08.015

Richardson (1995) note that the abundance of fynbos forms at this time suggests the start of the rise to predominance of the fynbos flora in the Cape Province. The fossils found within the LBW sediments enable us to ascertain how the environmental and climatic changes taking places during the Mio-Pliocene affected the evolution of fauna in the area.

LBW is the only site in the western Cape Province representing the Mio-Pliocene transition, a slice of time when modern murid genera were emerging, as indicated by both palaeontological and molecular phylogeny studies (Denys, 1996, 1999). LBW is therefore a crucial site for our understanding of the evolution and dispersion of modern rodent taxa from southern Africa. Similarities in terms of genera held in common between the Laetoli Bed rodent faunas with those from Makapansgat and Jägersquelle have been noted (Denys et al., 1987, 1999). A comparison of rodent genera common to LBW and other southern African sites is presented further on, and provides information on the evolution of genera in Southern Africa.

A comparison between various west coast fossil sites including Langebaanweg and several other sites from the west coast area dating from the terminal Pleistocene and into the Holocene was undertaken in order to trace changes in west coast micromammal communities, and in changing palaeoenvironmental and biogeographical conditions on the west coast, from the Mio-Pliocene, until the present day. The study also provided insight into the development of endemism in southern Africa and the evolution of typically southern African murid and bathyergid species.

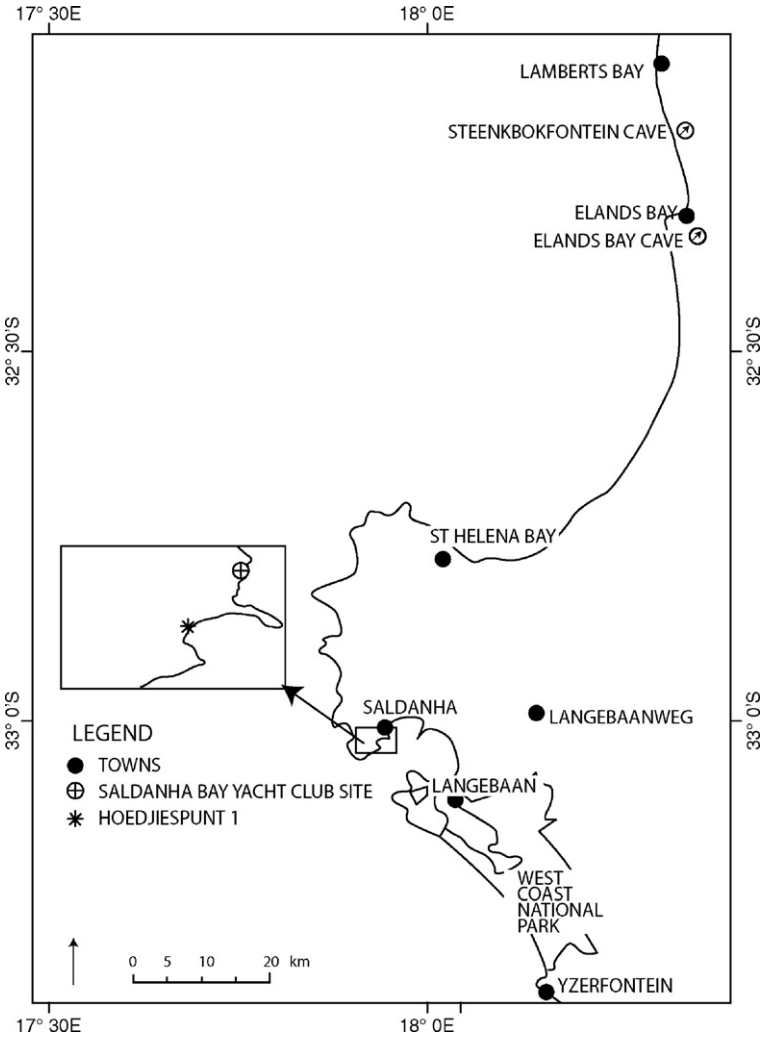

Fig. 1. The locality of the west coast fossil sites.