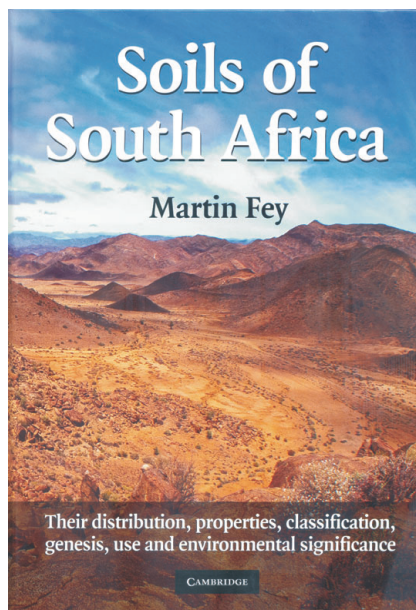


Soils of South Africa by Martin Fey. Cambridge University Press, Cape Town (<http://cambridge.org>). 2010. Pp. 287. Price R225. Hardback, ISBN 978 1107 000 506.

This is the first book in 70 years on soils of South Africa and is a significant scientific contribution on the understanding of South African soils. As the title suggests, this book's main objective is to give the reader a comprehensive view on the unique soils of South Africa, their distribution, properties, classification, genesis and land use. The author has developed his own grouping system with which all the soils from the South African soil classification system are grouped into fourteen distinctive soil groups. This totally new concept for South African soils and the key on how to do this is well thought out. This book compares well with any book written in the U.S.A. or Europe and is quite unique in the way the author strikes a relationship between animals and soils. There have been no previous attempts in the literature to illustrate the contribution of animals to soil formation so clearly as this book.

The contents are well constructed and the book is divided in four chapters (with invited contributors). Chapter one explains the core of the book and how to use the key for the fourteen groups. The chapter is logically and simply put together which will make it suitable to use as text book by tertiary students. The qualifiers used by Fey are his own new idea and easy to use in practice. The meticulous detail in which each group is discussed and the cross-referencing of the South African soils with the WRB (IUSS Working Group, 2006) and the USDA classification system (Soil Survey Staff, 2003) is done with text boxes and is a very useful feature of the book. The distribution maps of the different soils are of high quality, although a bit small in the format of this book. A full page in this book format would have been better.

Chapter two gives an overview of the properties, classification, genesis and land use of all the soil groups with excellent photographs of the different soils in that respective group. The photographs are from several contributors, but mainly from a lifelong collection of the main author. The vast number of different examples taken over the whole of southern Africa shows the love that the main author has for soils and his keen eye to recognize all these different interesting examples. The author used text boxes to highlight special features, interesting facts, etc., in the soil groups which



make the book very interesting to read. In one of the text boxes the author philosophizes over laterite which emphasizes his love for soils. Some of the statements in the text boxes can even be used as research topics for students and researchers.

In Chapter three the interaction between animals and soils is highlighted with interesting examples. The authors emphasize the fact that although soil scientists recognize the important role of animals more attention is generally given to factors such as geology and climate when understanding how soils are shaped over time. The importance of animal–soil interaction is discussed. At the outset the authors remind readers that they have not attempted to present an extensive range of examples exemplifying the animal–soil interaction phenomenon. Rather, they selected a few examples to rejuvenate the awareness of the importance and significance of such interactions. Did they succeed in doing this? Yes, I (JHW) immediately thought of the association of the large burrowing sungazer lizard, *Cordylus giganteus*, and the arable land of the South African Highveld. The two invertebrate examples they chose, very much at the base of the food-chain, largely being preyed on by burrowing predators, are termites and earthworms. The section on termites includes some review of different termite species including several photographs of mounds seen all over Africa. The 'heuweltjie' phenomena in South Africa built by termites over decades is quite

unique and is discussed in some detail as well as being highlighted in a text box. High quality photographs taken at different locations illustrate the variation in mound form that is found in arid and wetter climatic regions. Although termite-eating animals span all the vertebrate classes, the authors selected to show this interaction, but also highlight their contribution to the soil, by including selected mammalian examples, the aardvark, aardwolf and bat-eared foxes. Apart from the substantial turnover and soil movement, through burrowing and den making, these animals may also contribute faeces into the system. The next section deals with the earthmoving and cultivational role of earthworms, recognizing the contributions made by the evolutionary biologist, Charles Darwin. Similar to the discussion on 'heuweltjies' they give attention to the giant earthworms and the 'kommetjies' phenomenon (the hollows between the mounds) well-known in the Eastern Cape. This section includes some discussion on the contribution of earthworms as part of the extensive soil ecosystem to soil structure. However, they also refer to a Brazilian example where the introduction of an exotic species is said to have negative effects on soil structure, emphasizing the importance of understanding the soil ecosystem before manipulating faunal composition to alter soil structure. Since earthworms are extensively preyed on by other burrowers, the narrative shifts to the soil tilling of moles and the authors underline the potential financial importance to South African farmers of golden mole populations. In addition to moles, the role of other subterranean rodents including the Cape dune mole-rat and porcupines are also discussed. The mammal section is concluded by referring to the honey badger as an energetic digger with excavations known to penetrate deep into the soil. The role of burrowing insects and spiders receive attention in a next section before returning to mammals, focusing on the large herbivores and ending the road by referring to soil-breaking activity of elephants when pushing trees over for foraging. A small section on birds is included and the authors recognize that as this

topic of animal–soil interaction is explored, other examples including amphibians and reptiles should not be forgotten.

In the concluding remarks of Chapter three, the authors elude to the practical importance of understanding soil–animal relationships, not only from a conservation perspective but also when doing rehabilitation of land destroyed by human activity. Research needs are also included and these suggestions will hopefully catch the eye of future researchers and wildlife managers. Knowing that the conservation status of many animal species is directly affected by habitat destruction because of the conflict of humans and animals for certain soil-types, the authors are correct when underlining the importance of understanding the soil–animal interaction in edaphology.

Well-chosen data sets from the land-type data are included in Chapter four. A soil description accompanies the data set and a text box highlight points of interest and interpret the data. This will be a very useful tool in teaching and for research students. The appendix contains all the relevant methods of soil description and analysis.

This book can easily be used as a reference source without knowing the South African soil classification system. The terminology is well defined in the Glossary. The comprehensive glossary also includes the complete definitions of the diagnostic horizons and materials. The criteria used for the distribution of the different soil groups are summarized in the appendix.

This excellent academic text book for students succeeds in its purpose and the authors must be congratulated on their contribution to the knowledge base of understanding the soils of southern Africa.

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