

CHAPTER 7

Present and Future

Almost 200 years of dedicated work by increasing numbers of people has brought us to our present state of knowledge concerning the history of land mammals in southern Africa. This sheer weight of information has made it increasingly difficult to keep track of what is known and to find any piece of information, particularly for non-specialists. For this reason, it seemed useful to begin developing a record of what is known about the taxa involved and where they have been found until now. While such a stock-taking can only ever be backward-looking, it does have the merit not only of reporting the status quo but also of providing a basis for any similar assessments in the future.

7.1 THE CURRENT SITUATION

The number of various taxa recorded so far from southern Africa is considerable (Table 7.1). There is no overall increase with time, but the reasons for this may be somewhat artificial, having to do with not only the number of sites found, which rises from five in the Eocene to 415 in the Holocene, but also with the amount of work done on each epoch. There is, however, a discernible overall pattern in which Orders became essentially stable by the Miocene, families by the Pliocene, genera (though less clearly) by the Pleistocene and species not until the Holocene, when only five species became

Table 7.1 Numbers of Orders, families, genera and species in each epoch, with percentage representation of extinct taxa.

	Number				Percentage extinct			
	Order	Family	Genus	Species	Order	Family	Genus	Species
Eocene	9	19	29	22	33,3	63,2	100	100
Miocene	14	51	108	116	7.1	37.3	85.2	98.3
Pliocene	13	31	114	130	0	3.2	33.3	63.8
Pleistocene	15	38	166	290	0	0	21.7	37.2
Holocene	15	37	130	193	0	0	0	3.1
TOTAL	19	72	314	478	15.8	34.4	53.2	55.6

Table 7.2 Families and genera previously occurring in southern Africa but no longer found in the region. Current distributions after Wilson and Reeder (2005).

Family	Genus	Current Distribution
Tenrecidae		Madagascar; East, Central and West Africa
	<i>Elephas</i>	Southeast Asia
Lorisidae		Southeast Asia, Central Africa
	<i>Cercocebus</i>	East, Central and West Africa
Spalacidae		East Africa; Eastern Europe; Asia Minor
Ochotonidae		North Asia; North America
	<i>Erinaceus</i>	Europe; Asia Minor
	<i>Viverra</i>	Southeast Asia
Chiroptera	<i>Asellia</i>	Pakistan and Afghanistan to Asia Minor; West and North Africa
Ursidae		Europe; Asia; America
Tragulidae		East, Central and West Africa; Southeast Asia; Pacific islands
Bovidae	<i>Beatragus</i>	East Africa
	<i>Gazella</i>	East and North Africa; Asia Minor

extinct. Of these, two springboks and the Cape horse became extinct earlier in the Holocene, but the blue antelope and the quagga were only extirpated during the last century by European settlers. There are also a few families and genera that, although not extinct worldwide, no longer occur in southern Africa (Table 7.2). The family Ursidae, represented by the Pliocene *Agriotherium africanum* from Langebaanweg, tends to be thought of as the most surprising such occurrence but, in fact, the picas (Ochotonidae) are also today restricted to the northern hemisphere (Wilson and Reeder 2005), as is the hedgehog genus *Erinaceus*. However, the absence of *Erinaceus* and of the carnivore genus *Viverra* is effectively an artefact of taxonomy. At one time the extant species *frontalis* and *civetta*, which still occur in southern Africa, were assigned to *Erinaceus* and *Viverra* respectively, whereas they are now considered to belong to *Atelerix* and *Civettictis*. The present absence of *Gazella* is also an artefact of taxonomy. Additionally, there are several taxa that have been introduced by humans, either deliberately as domesticates or accidentally during the Holocene (Table 7.3). The Holocene southern African fauna appears less diverse than that of the Pleistocene, especially in terms of genera and species. When, however, the extinct taxa are removed from consideration, there is very little difference (Table 7.4). In-depth analysis of the temporal relationship between extinct and extant forms will undoubtedly shed light on the relative diversity of the two epochs, but the Pleistocene appears to have been a period of major faunal turnover at the species level.

Table 7.3 Taxa introduced by humans intentionally or accidentally.

Order	Genus and species	Common name
Rodentia	<i>Rattus norvegicus</i>	Black rat
	<i>Rattus rattus</i>	Roof rat
Carnivora	<i>Canis lupus</i>	Domestic dog
Perissodactyla	<i>Equus asinus</i>	Domestic donkey
	<i>Equus caballus</i>	Domestic horse
Artiodactyla	<i>Sus scrofa</i>	Domestic pig
	<i>Bos taurus</i>	Domestic cattle
	<i>Capra hircus</i>	Domestic goat
	<i>Ovis aries</i>	Domestic sheep

Table 7.4 Numbers of genera and species represented in each Order during the Pleistocene and Holocene. PE: Pleistocene. HO: Holocene. All Holocene genera are extant.

	Genus			Species			
	PE all	PE extant	HO all	PE all	PE extant	HO all	HO extant
Cimolesta	0	0	0	0	0	0	0
Afrosoricida	6	5	6	8	6	6	6
Macroscelidea	3	2	2	10	7	5	5
Tubulidentata	1	1	1	1	1	1	1
Embrithopoda	0	0	0	0	0	0	0
Hyracoidea	2	2	2	4	2	2	2
Proboscidea	3	2	1	6	1	1	1
Primates	12	4	6	23	5	6	7
Rodentia	40	37	36	65	53	59	59
Lagomorpha	3	3	4	6	6	7	6
Erinaceomorpha	2	1	1	2	1	1	1
Soricomorpha	3	3	3	13	11	9	9
Chiroptera	12	12	9	18	18	13	13
Pholidota	1	1	1	1	1	1	1
Creodonta	0	0	0	0	0	0	0
Carnivora	36	28	27	56	32	33	33
Perissodactyla	4	3	3	9	4	8	6
Artiodactyla	38	26	28	68	34	41	38
TOTAL	166	130	130	290	182	193	188

7.2 THE WAY FORWARD

There are two potential shortcomings of any compilation that must be acknowledged: it is both effectively a snap-shot in time and almost certainly incomplete even at the time of its publication. This being the case, to increase or, at least, prolong its usefulness some attempt must be made to offset both failings. In the past this was difficult to do and could only be effected by the publication of periodic updates. There are various major examples such as the taxonomic work *Mammal Species of the World*, edited by Don E. Wilson and DeeAnn M. Reeder, of which the third edition has so far been published (Wilson and Reeder 2005) and a fourth edition is imminent (www.mammalsociety.org/uploads/report_files/Checklist%20Committee_0.pdf). This work is also an example of the explosion in knowledge on mammal taxonomy over the 35 years since the first edition was published. Now, online resources have made it much easier to update content and *Mammal Species of the World* has taken increasing advantage of this facility (www.departments.bucknell.edu/biology/resources/msw3).

Of course, it is in no way suggested the current work is comparable to this major exercise, but the principle is the same. For one thing, it is hoped that it will be unnecessary for anyone to begin at the beginning again. Instead, what appears here is very much the starting point to what can most usefully be considered a work in progress. The implication of such an approach is that it is not static but will require ongoing input and correction. To do this effectively it will be essential to establish an online database, such as Fossilworks (www.fossilworks.org), which will allow workers (both taxonomists and excavators) to add and/or correct data and keep information current. Other examples of similar databases are The East African Mammals Dentition Database (<http://humanorigins.si.edu/education/website/east-african-mammals-dentition-database>) and The Copenhagen Database of African Vertebrates (<http://macroecology.ku.dk/resources/african-vertebrates>). None of these examples is directly comparable to what is proposed here, but each has aspects that could be considered and/or included. For instance, the East African database indicates the importance of adding illustrations of the taxa while the Copenhagen site shows that dedicated software can improve maps considerably. Indeed, use of the latest technology can only improve accuracy and presentation in general. It is also to be hoped that the site could include archived copies of as many relevant publications as possible. This, of course, depends on solving any copyright issues, but it should be possible to archive many of the early, hard-to-access papers. At the least, URLs should be provided so that all can benefit from the searches of others. It is to be hoped that a southern African institution will take up the challenge to provide this service to the community.