

Liechtensteinische Landesverwaltung  
ZOOLOGISCHE SAMMLUNG  
Postfach 417  
FL-9495 Triesen

The Autochthonous North American Musk Oxen  
*Bootherium, Symbos, and Gidleya*  
(Mammalia: Artiodactyla: Bovidae)

*Jerry N. McDonald*  
*and Clayton E. Ray*



SMITHSONIAN INSTITUTION PRESS

Washington, D.C.

1989

# Contents

	<i>Page</i>
Introduction . . . . .	1
Acknowledgments . . . . .	2
History of Taxonomy of the Group . . . . .	3
The Content of <i>Bootherium</i> , <i>Symbos</i> , and <i>Gidleya</i> . . . . .	24
The Relationship between <i>Gidleya</i> and <i>Symbos</i> . . . . .	26
The Relationship between <i>Bootherium</i> and <i>Symbos</i> . . . . .	27
Differences in the Size of <i>Bootherium</i> and <i>Symbos</i> Crania . . . . .	28
Differences in the Characteristics of the Horn Cores . . . . .	31
Differences in the Dorsal Surface of the Cranium . . . . .	40
Differences in the Basioccipital-Basisphenoid Flexion . . . . .	44
Differences in Depth of the Lacrimal Fossae . . . . .	46
Differences in the Number of <i>Bootherium</i> and <i>Symbos</i> Specimens . . . . .	46
Similarities in the Morphology and Distribution of <i>Bootherium</i> and <i>Symbos</i> Specimens . . . . .	47
Conclusions . . . . .	51
Systematic Hierarchy . . . . .	67
<i>Bootherium bombifrons</i> (Harlan, 1825) . . . . .	67
Appendix I: Abbreviations for Institutional, Departmental, and Private Collections Used in This Study . . . . .	70
Appendix II: Chronology of Nominal Species Referable to Musk Oxen in the Genera <i>Bootherium</i> , <i>Symbos</i> , and <i>Gidleya</i> . . . . .	72
Appendix III: Radiocarbon Dates on <i>Bootherium</i> and <i>Symbos</i> Specimens . . . . .	73
Literature Cited . . . . .	74