

CONTENTS

Chapter I Introduction	6
1. Ecology and population dynamics of rhinoceroses and elephants	6
2. Rhinoceroses and elephants in captivity	10
2.1. Population dynamics and breeding success	10
2.2. Reproductive disorders	12
2.3. Assisted reproductive technology	14
3. Sex-preselection	17
3.1. Historical overview and approaches to sex-preselection	17
3.2. Development and basic principles of sperm sorting technology	18
3.3. Parameters influencing the sortability of spermatozoa	21
3.4. Impact of sex-sorting on spermatozoa	21
3.5. Sperm sex-sorting in domestic animals – the state of the art	23
3.6. Predetermined sex of offspring in wildlife species	24
3.7. Manipulation of offspring sex – why in rhinoceroses and elephants?	24
3.8. Objectives	25
Chapter II Summary of Articles	26
1. Index of sperm sex sortability in elephants and rhinoceroses	26
2. Feasibility of sex-sorting sperm in rhinoceros species	27
3. Sperm sex-sorting in the Asian elephant (<i>Elephas maximus</i>)	28
4. Successful cryopreservation of Asian elephant (<i>Elephas maximus</i>) spermatozoa	29
Chapter III General Discussion and Conclusions	30
Chapter IV Summary	36
Kapitel IV Zusammenfassung	38
Chapter V References	41
Appendix	62
Article I: Index of sperm sex sortability in elephants and rhinoceroses	62
Article II: Feasibility of sex-sorting sperm in rhinoceros species	72
Article III: Sperm sex-sorting in the Asian elephant (<i>Elephas maximus</i>)	94
Article IV: Successful cryopreservation of Asian elephant (<i>Elephas maximus</i>) spermatozoa	103