

## Contents

<b>Section I Introduction .....</b>	<b>1</b>
<b>1 Disease and epizootiology—basic principles .....</b>	<b>3</b>
1.1 Disease and diseases .....	3
1.2 A definition of disease .....	5
1.3 Disease causation .....	6
1.4 Disease investigation .....	9
1.5 Basic epizootiological terms .....	10
1.6 Summary .....	16
<b>2 Special problems in working with free-living animals .....</b>	<b>17</b>
2.1 Problems in detecting diseased animals .....	18
2.2 Problems in determining numbers and identifying individuals .....	20
2.3 Problems related to lack of knowledge about the animals .....	23
2.4 Problems related to the diversity and intractable nature of wild animals .....	24
2.5 Fitness, trade-offs, and predators .....	26
2.6 Problems related to people .....	27
2.7 Summary .....	28
<b>Section II Disease investigation .....</b>	<b>31</b>
<b>3 Identifying and defining a disease .....</b>	<b>33</b>
3.1 Temporal distribution of disease .....	34
3.2 Spatial distribution of disease .....	39
3.3 Identification of the disease .....	43
3.4 Avian vacuolar myelinopathy—an example of defining a disease .....	49
3.5 Summary .....	51
<b>4 Collecting population data .....</b>	<b>53</b>
4.1 Basic features .....	53
4.2 Choosing a method .....	55
4.3 Basic methods for determining animal numbers .....	56
4.4 Population distribution .....	67
4.5 Vital statistics .....	69
4.6 Summary .....	82

<b>5 Defining environmental factors .....</b>	83
5.1 Characteristics of the physical environment .....	85
5.2 Characteristics of the biotic environment .....	91
5.3 Human effects on disease .....	97
5.4 Summary .....	101
<b>6 Formulating and testing hypotheses .....</b>	103
6.1 Hypotheses .....	103
6.2 Collecting information .....	105
6.3 Use of indicator or sentinel species .....	121
6.4 Summary .....	122
<b>7 Samples, sampling and sample collection .....</b>	123
7.1 Error .....	124
7.2 Collection and analysis of biological specimens .....	128
7.3 Sampling and data collection .....	134
7.4 Is disease present? .....	142
7.5 Summary .....	145
<b>8 Investigation of disease outbreaks and chronic or inapparent disease .....</b>	147
8.1 Investigation of outbreaks .....	147
8.2 Investigation of chronic or inapparent disease .....	155
8.3 Summary .....	162
<b>9 Records and recordkeeping .....</b>	165
9.1 Designing a record system .....	166
9.2 Logging information for retrieval .....	171
9.3 Collecting information .....	172
9.4 Filing and storing information .....	175
9.5 Specimen collections .....	178
9.6 Summary .....	182
<b>Section III Disease management .....</b>	183
<b>10 Disease management—general principles .....</b>	185
10.1 Is management desirable? .....	185
10.2 Is management feasible? .....	187
10.3 Who is management for? .....	188
10.4 Costs and benefits of management .....	190
10.5 How will management be done? .....	191
10.6 A management matrix .....	194
10.7 How far will the program be taken? .....	196
10.8 How will success be measured? .....	197
10.9 Summary .....	198

<b>11</b>	<b>Management of the causative agent/factor or its vector</b>	199
11.1	Elimination of the cause of non-infectious diseases	200
11.2	Attacking the cause of infectious diseases	205
11.3	Management of invertebrates involved in disease transmission	211
11.4	Summary	216
<b>12</b>	<b>Disease management through manipulation of the host population</b>	217
12.1	Defining the population(s) of interest	218
12.2	Manipulation of animal distribution	218
12.3	Selective removal of diseased animals from the population	224
12.4	Reduction of population density	227
12.5	Summary	244
<b>13</b>	<b>Disease management through treatment and immunization</b>	247
13.1	Therapy of diseased animals	248
13.2	Immunization	254
13.3	Summary	268
<b>14</b>	<b>Disease management through environmental modification</b>	271
14.1	General considerations	271
14.2	Abiotic elements	273
14.3	Biotic factors	277
14.4	Predicting, preventing, and mitigating	286
14.5	Summary	289
<b>15</b>	<b>Disease management through influencing human activities</b>	291
15.1	Movement of animals and disease	292
15.2	Modifying human activities by regulation and legislation	302
15.3	Modifying human activities through education	304
15.4	Integrating disease management in planning	306
15.5	Disease transmitted from humans to wildlife	307
15.6	Summary	308
<b>16</b>	<b>Emergency and integrated management programs</b>	309
16.1	Emergency disease control	309
16.2	Integrated disease management	320
16.3	Summary	324
<b>17</b>	<b>Assessing the effectiveness of a disease-management program</b>	325
17.1	Choosing suitable parameters to measure	326
17.2	Collecting the data	329
17.3	The method of assessment	331
17.4	The time frame for assessing effectiveness	335
17.5	Assessing the economics of disease management	336
17.6	Using models to predict and assess effectiveness of programs	338
17.7	Summary	339

<b>Common and scientific names of animals .....</b>	<b>341</b>
<b>References .....</b>	<b>347</b>
<b>Subject Index .....</b>	<b>389</b>