Contents

Acknowledgments	ix
Conventions and Abbreviations	xi
Recommendation (hittawandistrictor)	
1: Analyzing Social Structure	I
I.I: Introduction	I
1.2: What Is Social Structure?	3
1.3: Why Social Structure Is Important	4
1.4: Conceptualizing Animal Societies:	
A Brief History	4
1.5: Ethology and Behavioral Ecology	10
1.6: Hinde's Ethological Conceptual Framework	
of Social Structure	II
1.7: Other Definitions and Concepts of Social	
Structure	15
1.8: Elements and Measures of Social Structure	16
1.9: The Functional Why Questions, and Ecology	20
1.10: Examples of Social Analyses	21
1.11: Problems with Analyzing Social Structure	23
2: Technical Matters	25
2.1: Modes of Scientific Enquiry	25
2.2: Basic Descriptive Statistics	28
2.3: Precision of Statistics: Bootstraps and	
Jackknives	30
2.4: Hypothesis Testing	33

2.5: Data Matrices	35
2.6: Ordination	38
2.7: Classification	41
2.8: Model Fitting and Selection: the Method of	7.7-
Likelihood and the Akaike Information Criteri	on 44
2.9: Computer Programs	46
•	-
3: Observing Interactions and Associations:	
Collecting Data	53
3.1: Types of Behavior	53
3.2: Interactions	55
3.3: Associations	56
3.4: Groups	58
3.5: Identifying Individuals	61
3.6: Class Data	63
3.7: Collecting Social Data	64
3.8: Data Formats	71
3.9: Sampling Periods	79
3.10: Attributes of Data Sets	80
3.11: How Large a Data Set Is Needed for Social	
Analysis?	81
BOX 3.1: Precision and Power of Social Analysis	86
	-
4: Describing Relationships	87
4.1: Relationships	87
4.2: Nonsocial Measures of Relationship	88
4.3: Social Attributes of Individuals, Including	
Gregariousness	90
4.4: Rates of Interaction	95
4.5: Association Indices	97
BOX 4.1: Choosing an Association Index:	
Recommendations	103
4.6: Temporal Patterning of Interactions/	
Associations	104
4.7: Relative Relationships: Multivariate	
Description of Relationships	109
4.8: Types of Relationships	IIO
4.9: "Special" Relationships: Permutation Tests	
for Preferred/Avoided Companionships	122
4.10: Quantifying the Strength of a Relationship	
and the Bond	130

4.11: Relationships between Classes	135
BOX 4.2: Describing Relationships:	
Recommendations	142
5: Describing and Modeling Social Structure	143
BOX 5.1: Omitting Individuals from Analyses of	
Social Structure	144
5.1: Attributes of Social Structure	146
5.2: Single-Measure Displays of Social Structure	148
BOX 5.2: Visual Displays of Social Structure:	
General Guidelines	167
5.3: Network Analysis	168
BOX 5.3: Network Analyses: Recommendations	184
5.4: Dominance Hierarchies	186
BOX 5.4: Analyzing Dominance Hierarchies:	
Recommendations	194
5.5: Adding Time: Lagged Association Rates	195
BOX 5.5: Lagged Association Rates:	
Recommendations and Extensions	211
5.6: Multivariate Methods	214
5.7: Delineating Groups, Units, Communities,	
and Tiers	222
BOX 5.6: Recommendations for Population	
Division	236
BOX 5.7: Describing Social Structure:	
Recommendations	238
6: Comparing Societies	241
6.1: Comparing Social Structures	241
6.2: Classifying Social Structures	242
6.3: How Complex Is My Society?	244
colleagues, Bob Lutta and Luke Rendalla	
7: What Determines Social Structure, and What	
Does Social Structure Determine?	251
7.1: The Individual in Society: Roles	252
7.2: The Dyad in Society: Conflict	256
7.3: The Dyad in Society: Cooperation	258
BOX 7.1: Quantitative Methods in the Behavioral	
Ecology of Social Systems	265
7.4: Environmental Determinants of Social	
Systems	269

7.5: Mating Systems and Social Systems	274
7.6: Culture in Society	277
Recommendations annies Classification	-//
8: The Way Forward	289
8.1: Conceptual Frameworks	289
8.2: Subjects of Social Analysis	290
8.3: Collecting Better Data	290
8.4: Improving Analysis	292
	4.5
9: Appendices	295
9.1: Glossary	295
9.2: A Key Journal and Some Useful Books	300
9.3: Computer Programs	301
9.4: Estimating Social Differentiation	306
9.5: Assessing Unit Size, Group Size, or	69
Community Size	306
References	309
Index	325