

A HIGHLAND MAYA PEOPLE AND THEIR HABITAT:
THE NATURAL HISTORY, DEMOGRAPHY
AND ECONOMY OF THE K'EKCHI'

by

Michael Robert Wilson

A DISSERTATION

Presented to the Department of Geography
and the Graduate School of the University of Oregon
in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy

December 1972

APPROVED: _____
Carl L. Johannessen

Copyright

by

Michael Robert Wilson

1972

VITA

NAME OF AUTHOR: Michael Robert Wilson

PLACE OF BIRTH: Oakland, California

DATE OF BIRTH: July 26, 1940

UNDERGRADUATE AND GRADUATE SCHOOLS ATTENDED:

Leland Stanford, Jr., University
University of Oregon

DEGREES AWARDED:

Bachelor of Arts, 1962, Stanford University

AREAS OF SPECIAL INTEREST:

Human Geography of Aboriginal America
Biogeography

PROFESSIONAL EXPERIENCE:

Instructor, Department of Geography, University of Oregon,
Eugene, Summer 1966 and Spring 1970

Lecturer, Department of Geography, University of Saskatchewan,
Saskatoon, 1970-1972

AWARDS AND HONORS:

Woodrow Wilson Dissertation Fellowship, 1968-1970

PUBLICATIONS:

Carl L. Johannessen, Michael R. Wilson, and William
A. Davenport, "The Domestication of Maize: Process or
Event?" *The Geographical Review*, Vol. 60 (3), pp. 393-413

ACKNOWLEDGEMENTS

This dissertation is the result of a unique conjunction of favorable influences. First is that of my supervisor, Prof. Carl L. Johannessen, from whose enthusiasm I seem to have contracted a case of my own. But impoverished verve is hamstrung and to the Woodrow Wilson National Scholarship Foundation I owe a debt much larger than the mere money involved in a Dissertation Fellowship. When crossing a language barrier is part of a project then finding a bilingual mentor becomes a critical problem, too, and I was very fortunate to be able to work with two men uniquely suited as informants: one who first worked with Prof. Johannessen and another who was trained in linguistic orthography by Prof. Ray A. Freeze, then a graduate student and a roomer in our house. To these men and their families I owe whatever insight into K'ekchi' culture I acquired; my wife, Rebecca, spent at least half of her time with those families and in doing so provided me with the part of K'ekchi' culture closed to men. Her presence by itself made life and work in San Juan Chamelco far more valuable. No one person can master so many skills as are needed in doing cultural ecology, but I was lucky to have the help of Father Stephen Haeserijn, Mr. William Sedat, Prof. Mário Dary, Mr. and Mrs. Gustav Jacobsthal, Dr. Louis O. Williams, Prof. Alan Covitch, and Prof. Don Acton. It would be unkind to blame them for whatever errors have crept into the information they supplied or for the misinterpretations I may have perpetrated.

M.R.W.

TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION	1
II. CONTEXT, PURPOSE, METHODS AND CONCEPTS	4
Cultural Ecology	4
Purpose	6
Methods and Concepts	7
The Choice of a Case	13
III. EARTH PHENOMENA	28
Weather	28
Landforms	34
Soils and Minerals	36
IV. LAND OWNERSHIP AND SURVEYING	48
Land Tenure and Inheritance	48
Surveying	50
V. ETHNOBIOLOGY	56
Ethnobotany	56
Ethnozoology	67
VI. STAPLE FOOD CROPS	77
Maize Varieties	77
Cultivation Methods	87
Labor Inputs and Grain Yields	112
Maize in the Maya Context	130
Early Bush Beans	140

TABLE OF CONTENTS (Continued)

CHAPTER	PAGE
I. DOORYARD GARDENS	146
Principal Garden Plants	149
Root Crops	157
Greens and Vegetables	159
Tree Crops	162
Ornamentals	166
Hedges and Property Markers	167
Technical Raw Materials	168
VIII. ANIMAL MANAGEMENT	171
Trapping	171
Domestic Animals	178
IX. WOOD-BASED TECHNOLOGY	200
Maya Houses	200
Construction Methods	202
Woodcutting	220
Lumbering	224
X. MAGEY FIBER AND ITS USES	231
Cultivation and Varieties	232
Marketing of Crude Fiber	237
Maguey Twine and Products	239
XI. MINOR PLANT-BASED TECHNOLOGIES	255
Basketry	255
Candle-making and Waxes	261
The Fermentation of Box	266

TABLE OF CONTENTS (Continued)

CHAPTER PAGE

XII.	MINERAL TECHNOLOGY	271
	Lime Roasting	271
	Pottery	277
XIII.	FIELD SITE CENSUS AND ANALYSIS	287
	Demography and Health	289
	Economy	302
	Implications for Landscape and Ecology	311
XIV.	SUMMARY AND CONCLUSIONS	318
	The Environmental Impact of K'ekchi' Culture	321
	Economic Equilibrium	324
	The Future	325

APPENDIX

A.	THE K'EKCHI' LANGUAGE	327
B.	VOCABULARY OF WEIGHTS AND MEASURES	330
C.	MAIZE YIELD DATA.	333
D.	SUPPLEMENTARY CENSUS DATA	338
E.	ETHNOBOTANICAL DICTIONARY	343
F.	ETHNOZOOLOGICAL DICTIONARY	396
G.	VOCABULARY OF DISEASES, PARASITES AND REMEDIES	443

LIST OF TABLES AND ILLUSTRATIONS

TABLE	PAGE
1. Weather Data for Alta Verapaz	31
2. Terms Relating to Atmospheric and Celestial Phenomena ...	33
3. Terms Relating to Landforms	35
4. Soil Test Data	39
5. Vocabulary of Rock Types	43
6. Vocabulary of Mineral Names	46
7. Place Names and Their Locations	55
8. Supra-generic Plant Name Categories	59
9. Plant-locational Terms in K'ekchi'	64
10. Varietal Measurements of Maize	78
11. F ₁ Segregation of Minor Maize Varieties	81
12. Stages of Maize Growth	99
13. Grades of Quality of Maize Ears	102
14. Animal Pests of Maize and Defenses Against Them	106
15. Comparison of Inputs and Outputs in Maize Cultivation ...	122
16. Application Rates of Fertilizer	124
17. Yield Comparison of Fertilized and Unfertilized Plots	125
18. Accounting Summary for Cultivation of Bush Beans	144
19. Highland Garden Plants	147
20. Materials for Traps	174
21. Chicken Characteristics	184
22. Accounting Summary for Domestic Fowl	189
23. Special Terms Relating to Turkeys	189

LIST OF TABLES AND ILLUSTRATIONS (Continued)

TABLE	PAGE
24. Manufacture of Lard Soap	199
25. Considerations in House Site Choice	205
26. Woody Species and Their Construction Uses	205
27. Ingredients for Construction Ritual	207
28. Thatch Species, Their Cost and Durability	207
29. Accounting Summary for House Construction	218
30. Trees Suitable for Firewood	223
31. Accounting Summary for Lumber	229
32. Trees Suitable for Lumber	230
33. Accounting Summary for Maguey Fiber	238
34. Cost Analysis for Maguey Twine	242
35. Accounting Summary for Basketry	261
36. Accounting Summary for Lime Roasting	276
37. Accounting Summary for Pottery	285
38. 1964 Census Statistics for Alta Verapaz	288
39. Cuadro Comparativo de los Dos Censos: 1950 y 1964 (Aldea Cojilá)	290
40. Composition of Age Cohorts, 1969 Census	293
41. Children per Mother and Age at First Birth	297
42. Age-specific Causes of Death	300
43. Conversion Factors	304
44. Occupations and Incomes	312

LIST OF TABLES AND ILLUSTRATIONS (Continued)

FIGURE	PAGE
Frontispiece Panoramic View of the Field Site	xiii
1. Weather Data for San Juan Chamelco, 1969	30
2. Annual Calendar of Fixed and Alternative Activities	114
3. Calendar of Activities in the Three Cultivation Sites	117
4. Spindle (<i>pete:t</i>)	170
5. Gopher Trap	173
6. Deadfall Trap	176
7. Bird Trap	177
8. House Construction Details	201
9. Critical Path Diagram for House Construction	210
10. Details of Ridgepole Thatching	212
11. Detail of Grass Thatching	214
12. Detail of Wattle-and-Daub Wall	214
13. Saw Frame Construction	226
14. Maguey Processing Devices	235
15. Elements of <i>čampa</i> Lacing	241
16. Macramé Bag Knotting	245
17. Hammock-Making Frame	246
18. Hammock Details	248
19. Types of Tump Weave	253
20. Miscellaneous Maguey-Fiber Articles	253
21. Basketry Technique	257

LIST OF TABLES AND ILLUSTRATIONS (Continued)

FIGURE		PAGE
22.	Devices Used with Wax and Candles	264
23.	Sugarcane Press (<i>kare:t</i>)	267
24.	Lime-Making Devices	273
25.	Method for Carrying <i>Kuk</i> with Tumpline and Lashing Only	286
26.	Population Structure, 1964	294
27.	Population Structure, 1969	295
28.	Frequency Diagram of Households' Net Income per Adult-Equivalent	307
29.	Frequency Diagram of Area in Milpa Claimed by Households	308
 MAP		
1.	Location of Alta Verapaz and the K'ekchi' in Guatemala	19
2.	Place Names in the K'ekchi' Core Area	20
3.	San Juan Chamelco and the Field Site, Aldea Cojilá	21
4.	Map for <i>Titulo Supletorio</i>	52
5.	General Location of Maize Cultivation Sites	116
6.	Cojilá Field Site	118
7.	Cajaneb Field Site	119
8.	Saxa'an Field Site	120
9.	Households' Claimed Area in Milpa	309
10.	Households' Net Income per Adult-Equivalent	310
11.	Households' Primary Economic Activities	313

