

SFI Memo: Intergenerational Transmission of *Bwa Den* Small Holdings in Rural Dominica

Rob Quinlan, Ph.D.
Evolutionary & Cultural Anthropology
Washington State University
Pullman, WA 99164-4910
rquinlan@wsu.edu

Here I outline basic features of a rural Caribbean community in the Commonwealth of Dominica. I discuss methods used to estimate acres of bayleaf or *bwa den* (*Pimenta racemosa* L.), owned by villagers, which is the main source of cash in the community. I present descriptive statistics, several correlation analyses, and several multiple regression models for men's and women's *bwa den* ownership. Both men and women can and do own *bwa den*. I find significant intergenerational transmission of *bwa den* ownership between parents and sons, but not between parents and daughters; however, women's *bwa den* holding is significantly and positively associated with their number of sisters. I suggest that these findings reflect aspects of rural Caribbean social organization.

Bwa Mawego, Commonwealth of Dominica, West Indies

The Commonwealth of Dominica is a small, rural island nation located between Guadeloupe and Martinique (15°N, 61°W). The island is mountainous and relatively undeveloped. Dominica's population (approximately 65,000) is of mixed African, European and Island-Carib descent. Most Dominicans are bilingual in English Creole and French Patois.

Bwa Mawego is one of the least developed villages on the remote Windward side of the island. There are about 700 full and part-time residents, occupying small (150 – 600 sq. ft.), mostly one or two room houses. There are about 300-450 full-time residents, though that number is difficult to pin down for many reasons (Quinlan 2005). Average annual household income in Bwa Mawego is approximately \$5,000 E.C. (\$1,850 U.S.). Economic activities include subsistence horticulture, fishing, bay oil production (from *bwa den*), banana production, running a rum shop, and limited wage labor. Opportunities for education are limited. About 30% of villagers born between 1955 and 1986 have attended "high school," which is approximately equivalent to 9th and 10th grade in the U.S. Almost no older individuals attended high school because it was largely unavailable before the mid 1970's.

The population is relatively healthy. Children's mean height and weight for age are near the 50th percentile of U.S. growth standards (Flinn, Leone & Quinlan 1999). Infant mortality rate is relatively low for Caribbean region. Life expectancy for Dominicans is high years compared to other Caribbean nations. (Data are from the U. S. Census Bureau available at www.census.gov/ipc/www/idbnew.html.)

Kinship and family are the foundation of economic, social, and reproductive behavior in Bwa Mawego. Almost everyone in the village is related through blood or marriage. Kin ties provide a map for navigating social life, and they offer avenues for the flow of goods and services. Households have fuzzy boundaries in terms of composition, and classification schemes are of limited use in this community (e.g. Goodenough 1955). Many households have a “matrifocal” orientation, and consist of several women and their children. Even a male-headed household may be “matrifocal” if it also includes several women at its core (e.g. R. T. Smith 1996:39-57). Along with matrifocal families, conjugal families, single-mother families and various alternative styles are common (Quinlan & Flinn 2003). Often several households of closely related kin are grouped together in a family compound. Beyond households, larger kin groups are important (see Quinlan & Flinn 2005). There are several large patrilineages and many more small lineages. Matrilineages are not recognized. Patrilineal descent provides individuals with access to ancestral family lands, which can be advantageous to individuals whose immediate family does not own land. Importance of patrilineages in a largely matrifocal context reflects the many paradoxes inherent in rural Caribbean culture.

Land Ownership and Bwa Den

As is typical in horticultural or “peasant” communities, villagers in Bwa Mawego are very reluctant to talk openly about their wealth or land holdings, yet such information is common knowledge. For example, when I first began fieldwork in Bwa Mawego our landlady’s 12 year old son became my cultural guide. As we walked along the village foot paths, without any prompt from me, he would name the owner of each fruit tree or patch of *bwa den*. He did this with some apparent pride in his ability. I found that with adults I could only talk about land in private and quite often those conversations would end up in a rant about who was encroaching on their land or some other dispute. Clearly a survey of land ownership would be very difficult.

Land is the foundation of economic production in Bwa Mawego. *Bwa den* (bayleaf or *Pimenta racemosa* L.) is the primary source of cash in Bwa Mawego. (Here bayleaf is not the same as the cooking spice.) Villagers extract bay oil from *bwa den*, which is then sold to a local bay oil cooperative that in turn sells the oil to global distributors as an ingredient in soap, perfume etc. Most villagers either own or work in *bwa den* for income.

Land tenure in the village is complicated and sometimes contentious, and has a pattern similar to other Caribbean populations (e.g. Clarke 1957). Rights to use family land in Bwa Mawego are transferred over generations to many descendants. As the village founders died, each of their children had rights to cultivate a portion of their land. Current patrilineal descendants also have a right to use family land.

Family land several generations removed from the grantee is referred to by the original owner's surname (e.g. L'Homme land). In addition to family land, villagers have access to "village land," which was part of the original grant to the founders of the village, or "Crown land" which technically belongs to the state.

By custom land cannot be partitioned or sold; however, the practice of usufruct allows improvements on land to be transferred to an individual. If one builds a house on family land, then that house can be sold. Similarly if one plants trees on family land, then those trees can be sold or transferred to an individual. *Bwa den* or bayleaf (*Pimenta racemosa*) is a relatively short tree that lives for many human generations; hence, ownership of *bwa den* can be passed on to one heir or it can be sold, whereas the land itself cannot. This aspect of local usufruct allows us to estimate individual ownership of *bwa den*.

In addition to *bwa den*, many families and individuals cultivate various plots for subsistence which are dominated by several varieties of taro (*Colocasia esculenta* (L.) Schott). These plots are not owned per se but belong to an individual or household as long as they work them. Once a garden plot is left fallow for a time and the weeds and forest take over, then the plot it is basically up for grabs, though it is often easier and more productive to clear a new patch of forest on family, village or Crown land.

In the summer of 2006 my graduate student, Shane Macfarlan, and I used a genealogical method (Quinlan in press) to estimate ownership of *bwa den* patches. By this time my informants and I were well acquainted with the process of genealogical interviewing. We used two groups of locals to estimate land holding of *bwa den*. One source is an older couple (now in their 70s and 80s) and their grown granddaughter. The other is a middle-age couple (now in their 60s) and two of their grown daughters. We conducted a simple interview with the two groups in which we asked them to estimate the amount of *bwa den* each villager age 25 years and older owned or the amount they owned before they sold it or transferred it to a family member (such transfers were noted on our data sheets). At the outset, my informants and I discussed the nature of the interview and the purpose for collecting the data. I assured our informants that I would, as usual, protect their privacy and the privacy of the individual villagers we would discuss. I limited queries to living residents of the village who were at least 25 years old in 2005 and dead individuals who were residents at their time of death. All interviews were conducted in Dominican Creole English (Roberts 1988: 97-99). I simply asked the informants to estimate the amount of *bwa den* each individual villager owns/owned in acres, which is the local unit of land area. This was an easy and easygoing task for my sources. It was surprisingly easy for the informants to estimate acreage of *bwa den*: *Bwa den* patches have boundaries clearly marked with red ti plants called *malvina* (*Cordyline fruticosa* (L.) A. Chev.), and the terrain is dissected so that one can observe people working in *bwa den* patches all around the village from many sites in the village. (My graduate student, Shane Macfarlan, will be sampling and mapping *bwa den* plots this summer to estimate the accuracy of informant estimates.)

Because land ownership is such a contentious issue in the community, I anticipated very low inter-rater reliability. In fact, I predicted that kinship between the informants and ego would explain inter-rater differences in *bwa den* ownership estimation. The two sources (discussed above) estimated *bwa den* acreage for 155 common egos. One group estimated the average holding at .268 acres with total *bwa den* acreage for the 155 egos at 41.7 acres. The other group estimated average holding at .263 acres with total acreage for 155 egos at 40.8 acres. Initially the inter-rater reliability for living villagers was a bit low, but higher than I anticipated (Pearson's $r = .55$; Cronbach's $\alpha = .68$). As I explored the kinship bias hypothesis, every test showed null results. This finding encouraged me to examine other sources of "error" between raters. The results revealed a somewhat unexpected pattern of land ownership when separate analyses of inter-rater reliability were conducted for men and women. Reliability for men was quite high ($r = .70$; $\alpha = .79$) indicating data that are reliable for further statistical analysis. Furthermore, estimates of *bwa den* ownership showed a kind of "convergent validity": Acres of *bwa den* owned was positively associated with men's lifetime reproductive success ($r = .30$, $p = .02$, $n = 61$), which is consistent with findings for land ownership and men's RS on Trinidad (Flinn 1986). In contrast, reliability for women's *bwa den* ownership was very low ($r = .18$, $\alpha = .29$). Interestingly, the raters agreed on the men's *bwa den* ownership and they agreed on the total amount of land under cultivation; however, the sources showed substantial disagreement on women's ownership. This finding offers empirical evidence that female land rights are not nearly as clear cut as are men's rights. Apparently everyone in Bwa Mawego agrees that women can own and inherit *bwa den* (see also Clarke 1957 for rural Jamaica), but when it comes to recognizing individual land rights, the situation seems more contentious for women than for men. This finding suggests an important avenue for future research.

Intergenerational Transmission of Bwa Den Ownership in Bwa Mawego

Descriptive statistics are reported in table 1. The average age of living *bwa den* owners is 52 years. The total sample of 333 villagers includes 234 that are still living in the village. The sex ratio is slightly male biased reflecting the higher probability of female migration (Quinlan 2005, 2006). The average acres of *bwa den* owned is .26, which is consistent with smaller sample ($N = 155$) used to assess inter-rater reliability. The largest holding of *bwa den* is 4 acres which is much more than the next largest holding of 2.2 acres.

Table 2 shows correlations among individual's, siblings' and parents' land holdings. (Also see the scatter plots below.) The sibling correlations were calculated as follows: I sorted by sex and parents ID numbers. The correlations were then based on the first two same sex siblings encountered in the data set. If there was a third same-sex sibling, then he/she was excluded. If there were four same sex siblings, then

the first two were paired with each other and the second two were paired. (I haven't had time to work on more elaborate sibling correlations, but I will in the future.) For the correlation analyses and the regressions that follow, I have aggregated mother's and father's *bwa den* holdings into "parent's land", because both parents can and do maintain separate plots of *bwa den*, though in practice the management and produce is pooled at the household level.

Multiple regression analysis with men and women pooled showed a significant positive association between parents land holding and offspring land holding (see model 1). Here land holding is log (acres of *bwa den* * 100). Individuals with no *bwa den* were given a score of 1. Robust SEs for family clusters using either mother or father as the cluster variable made little difference to the SEs.

I also conducted separate analyses for men and women. Analyses for men showed a much stronger association between parents' and offspring *bwa den* holdings (beta=.7) for models 2.1 through 2.4. Including number of siblings in the model did not substantially alter beta (models 2.2-2.4). Women's models showed a much different pattern: Parents' land holding was not significantly associated with women's land holding (beta= -.05; model 3.1). As mentioned above, estimates of women's land holding showed low inter-rater reliability which could account for this null result. However, number of siblings was a significant predictor of women's land holdings (models 3.2-3.4). Women with more sisters tended to have more land (model 3.4). This result requires further investigation.

Conclusions

There is significant intergenerational "transmission" of economic capacity through *bwa den* production in this rural Caribbean community. The ethnography indicates that much of this capacity comes through inheritance of *bwa den* plots from parent to offspring, particularly for men. Although women can and do own *bwa den*, inter-rater reliability suggests that women's claims to land are somewhat ambiguous. Regression analysis may indicate that women do not inherit much land, which is consistent with the patrilineal norms in this community (Quinlan & Flinn 2005). However, women can accumulate land through other means: by planting new trees or purchasing plots. The positive association between women's *bwa den* holdings and number of sisters is consistent with the matrifocal nature of cooperation in the community (Quinlan 2006) and may suggest that adult sisters help each other achieve economic success. This interpretation requires additional fieldwork.

References cited

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Table 1. Descriptive statistics for acres of *Bwa Den* (Bayleaf, *Pimenta racemosa*)

	Age	Sex	Dead people	Age if living	parent-offspring comparisons				
N	333	333	99 of 333	234	98				
Mean	63.27	0.56*	0.30*	52					
	acres_bay	logbay	parents_bay	logparentbay	sibs_bay	brothers	sisters	siblings	
N	333	333	98	98	157	423	423	423	
Mean	0.26	2.04	0.36	2.22	0.27	1.33	1.20	2.54	
Median	0.10	2.30	0.10	2.30	0.17	1.00	1.00	2.00	
SD	0.42	1.79	0.58	1.91	0.35	1.28	1.36	1.95	
Variance	0.17	3.20	0.34	3.64	0.12	1.64	1.85	3.81	
Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Maximum	4.00	5.99	4.00	5.99	2.20	6.00	7.00	10.00	

*indicates proportion male and proportion dead

Table 2. Pearson's correlations (N) for acres of *Bwa Den* (Bayleaf, *Pimenta racemosa*)

<u>Men & women</u>	<u>acres bay</u>	<u>parent bay</u>	<u>sibs bay</u>	<u>age2004</u>	<u>Men only</u>	<u>acres bay</u>	<u>parent bay</u>	<u>sibs bay</u>
parents_bay	0.20 (98)				parents_bay	0.26 (55)		
Sibs_bay	0.33 (157)	0.29 (45)			Sibs_bay	0.36 (99)	0.34 (28)	
Age	0.12 (332)	-0.10 (115)	0.09 (156)		Age	0.12 (185)	-0.07 (60)	0.06 (99)
Sex	0.08 (333)	-0.06 (115)	0.09 (157)	-0.01 (423)				
	<u>acres bay</u>	<u>parents</u>	<u>sibs bay</u>					
Women only								
parents_bay	0.04 (43)							
Sibs_bay	0.21 (58)	0.04 (17)						
Age	0.11 (147)	-0.14 (55)	0.16 (57)					

Regression models for log acres of *Bwa Den* (Bayleaf, *Pimenta racemosa*)

Model 1: Parent-offspring regression for adult offspring log_acres

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.321(a)	.103	.065	1.73851

a Predictors: (Constant), agexpland, agesqr2004, logparentland, age2004

	Sum of Squares	df	Mean Square	F	Sig.
Regression	32.352	4	8.088	2.676	.037(a)
Residual	281.084	93	3.022		
Total	313.436	97			

a Predictors: (Constant), agexpland, agesqr, logparentland, age

b Dependent Variable: logland

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	-	1.672	-1.831	.070
logpland	3.062	.148	2.372	.020
age	.350	.053	2.815	.006
Age^2	.150	.000	-2.500	.014
agexpland	-.001	.004	-1.676	.097

a Dependent Variable: logland

Model 2.1: Parent-offspring regression for men's log_acres

	R			
1	a			8

a B t
b

1	B	8	4	F	B a
	B	8	6	9	
	B	8	5		

a B C , d
b B
c S f e s g e

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	-4.611	2.098	-2.198	.033
logpland	.707	.198	3.577	.001
age	.177	.066	2.675	.010
Age^2	-.001	.000	-2.117	.039
agexpland	-.015	.006	-2.602	.012

a Dependent Variable: logland
b Selecting only cases for which Sex = 1.00

Model 2.2: Parent-offspring regression for men's log_acres

	R			
N				2
1	a	a		

a b c d

					F	
N			5	6	2	0
1			0	0		

a b c

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	-4.736	2.110	-2.245	.029
logpland	.720	.199	3.619	.001
age	.173	.066	2.597	.012
Age^2	-.001	.000	-2.032	.048
agexpland	-.015	.006	-2.585	.013
N_of_sibs	.097	.117	.831	.410

a Dependent Variable: logland
 b Selecting only cases for which Sex = 1.00

Model 2.3: Parent-offspring regression for men's log_acres

S

	R			
	1			
N				
1	0	0	8	0

a P
b P

A **b** **D**

	r	f	S	F	
N		5	8	1	0
1	.8	0	2		
	.8	5			

a P
b P
c S
e
n

Coefficients(a,b)

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	-4.858	2.110	-2.302	.026
logpland	.738	.200	3.693	.001
age	.174	.066	2.629	.011
Age^2	-.001	.000	-2.028	.048
agexpland	-.016	.006	-2.689	.010
N_of_Bros	.185	.179	1.032	.307

a Dependent Variable: logland
b Selecting only cases for which Sex = 1.00

Model 2.4: Parent-offspring regression for men's log_acres

	R			
	1			
N				
1	8	2	8	6

a P
b

v b

N					
1	8	5	7	0	8
	2	9	2		
	8	5			

a P
b P
c S

d

n

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	-4.608	2.118	-2.176	.034
logpland	.705	.200	3.530	.001
age	.175	.067	2.619	.012
Age^2	-.001	.000	-2.078	.043
agexpland	-.015	.006	-2.523	.015
N_of_sisters	.058	.207	.279	.781

a Dependent Variable: logland
b Selecting only cases for which Sex = 1.00

Model 3.1: Parent-offspring regression for women's log_acres

	R		
Model		S	5
1	.6		

a R
b

q

A

b

D

Model		df		F	
1	R	3	4	0	0
	R	6	8	6	
	R	6	2		

a R
b R
c S

b

D

t

n

Coefficients(a,b)

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	-2.806	2.613	-1.074	.290
logpland	-.054	.207	-.261	.796
age	.183	.086	2.119	.041
Age^2	-.002	.001	-2.311	.026
agexpland	.004	.006	.632	.531

a Dependent Variable: logland

b Selecting only cases for which Sex = .00

Model 3.2: Parent-offspring regression for women's log_acres

	R			
N				
1	a			8

a P
0 0

b 0

e 0

v b

N					
1	0	5	8	2	0
	0	3	0		
	0	2			

a 0

b 0

c 0

Coefficients(a,b)

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	-4.673	2.628	-1.778	.084
logpland	-.066	.197	-.334	.741
age	.236	.086	2.755	.009
Age^2	-.002	.001	-3.023	.005
agexpland	.007	.006	1.083	.286
N_of_sibs	.305	.138	2.212	.033

a Dependent Variable: logland
 b Selecting only cases for which Sex = .00

Model 3.3: Parent-offspring regression for women's log_acres

S

	R				
N	B			B	
1	.8	.4	.2	.6	

a β
 a θ 4

V b

N		d	M	F	
1	.8	.5	.0	.8	.2
	.8	.3	.2		
	.0	.2			

a ρ d
 b β n
 c θ

Coefficients(a,b)

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	-3.431	2.769	-1.239	.223
logpland	-.057	.209	-.274	.785
age	.201	.090	2.224	.032
Age^2	-.002	.001	-2.404	.021
agexpland	.005	.007	.792	.433
N_of_Bros	.235	.326	.722	.475

a Dependent Variable: logland
 b Selecting only cases for which Sex = .00

Model 3.4: Parent-offspring regression for women's log_acres

	R			
	.6			.6
N				
1	a	2	3	0

a
b
c

b

N						
1	R		5	5	F	0
	R	2	3	3		
	T	0	2			

a P
b P
c S
n
e

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	-4.145	2.544	-1.629	.112
logpland	-.064	.196	-.325	.747
age	.220	.083	2.638	.012
Age^2	-.002	.001	-2.892	.006
agexpland	.005	.006	.888	.380
N_of_Sisters	.387	.168	2.303	.027

a Dependent Variable: logland
b Selecting only cases for which Sex = .00



