CHAPTER EIGHT

Fecundity

With the poor living conditions of West Indian slaves and their introduction into a new and hence threatening disease environment, it is intriguing that ill health has not been invoked more often to explain slaves’ low fertility rates. We see instead a strong analytical preference for understanding low fertility as a result of Caribbean slave women’s control of births through contraception, abortion, and infanticide. As argued in the preceding chapter, evidence of these practices by slave women is actually slender. I have suggested ideological reasons for popular and scholarly acceptance of the hypothesis that West Indian slave women controlled births: European and North American fascination with African women’s reputed sexual and healing powers. In this chapter I review the evidence that disease, malnutrition, and illness resulting from overwork were important contributors to male and female subfecundity.

Fertility is an important indicator of women’s economic position and intentions (Ward 1984). Yet in ignoring the evidence of male and female physical incapacity for conception and birth, we may falsely assume that women’s economic interests were opposed to childbirth. In fact, women’s often powerful position within households created an incentive for large families, particularly when men were continuously present. I propose that the bondwoman considered economic and other factors in assessing the costs and benefits of childbirth and child rearing. The more frequent her presence in field labor and the more limited her access to income, the less her material interest in having children. These same economic conditions, in turn, promoted disease, malnutrition, and the illnesses of overwork. Thus subfecundity and voluntary fertility control must together account for low birth rates among Caribbean slaves.

In other settings slaves controlled small-scale agricultural production and trade. In these cases men and women worked in field labor but had the time and opportunities to earn income through the growing and trade of provisions, artisan activities, and hiring out. Women had economic incentives to rear children whether or not alone and regardless of levels of infant mortality. Such conditions generally accompanied low productivity in the production of commodities for export, less likelihood of disease, and better slave nutrition. The slaves in these circumstances also had more access to food and more control over health care and housing. As with other groups in historically similar circumstances, Caribbean slaves presumably found large families an
asset in household economies. Thus slaves’ inability to conceive and bear children is an important factor in explaining low fertility.

I review these arguments in light of comparative examples from Caribbean slave societies. The cases suggest again that both voluntary fertility control and subfecundity contributed to low fertility in the region.

Subfecundity

If voluntary fertility control by Caribbean slaves has been overstated, in what other ways can we account for slaves’ low fertility? The possibility that women slaves were subfecund has been explored little but may suggest as much about the low fertility of bondwomen as sexual abstinence, contraception, abortion, and infanticide do. Cross-culturally and historically the most common causes of population subfecundity are coital inability (individuals cannot perform “normal heterosexual intercourse”), infertility and sterility, involuntary pregnancy loss, and perinatal mortality (late fetal and neonatal mortality) (McFalls and McFalls 1984, p. xix).

Infant mortality was high among Caribbean slaves. It is commonly assumed that miscarriages were frequent (Dirks 1987, p. 105), although direct evidence is slight. Craton (1971, p. 12; 1977, p. 87) found that among once-pregnant slaves at Jamaica’s Worthy Park in 1793, as many as one-third suffered miscarriages and stillbirths. His estimate of 1 miscarriage for every 4.6 births at Worthy Park is not, however, especially high.1 Some thought that colored women were more likely to have miscarriages and other related problems (Nugent 1907, p. 94).2 We perhaps encounter again whites’ belief that African women were strong and fertile and African medicine powerful.

Coital inability has not been considered a source of slave subfecundity in the literature. Yet there were some slave diseases, for example, yaws, that surely made intercourse painful or difficult. Moreover, the large number of slaves with diseases and ailments on nearly all Caribbean plantations reduced fertility by decreasing opportunities for sexual intimacy.

Illness was more frequent among males than females. “Comparative mortality suggests that female diseases were less lethal than those that affected males” (Sheridan 1985, p. 186). Men’s coital inability and ill health may therefore have contributed as much or more substantially to low fertility as female abstinence. An observer on St. Lucia reported to Sturge and Harvey (1838, p. 118) that from 1815 to 1834, a period of intensive sugar cultivation, half of the males but only a third of the females died before the age of 20. Male infant mortality, too, was greater than that of females in the British West Indies (Higman 1984, p. 196). French West Indian women were also healthier than men. Siguret (1968, p. 223) notes in her sample of caféières and indigoteries one coffee plantation where the female population renewed itself but the male
population did not. On the British-occupied plantations of Saint Domingue, women, especially Creoles, were less often ill than men (Geggus 1978, pp. 29-30).

It was not unusual, however, for bondwomen to be ill. On William Beckford’s Clarendon estates in 1780, for example, of 604 females 188 (31 percent) were ill or ailing, and 30 women were labeled “superannuated” or “useless” (Mathurin 1974, p. 313). Of 274 women aged 15 to 50, 78 (28 percent) were in poor shape; of 284 field women 65 (22 percent) were unwell. Perhaps most telling in plantation-specific material about women’s health and its relationship to fertility is Dunn’s finding (1977, p. 59) that at Jamaica’s Mesopotamia half of childless women but only one-third of mothers died in their twenties and thirties. Presumably, healthier women bore children, although it is possible that childbearing had a salutary effect on some slave women’s health. Roberts (1977, p. 156) points out further that slaves’ low life expectancies reduced childbearing years. Using the 22-year life expectancy derived from registration figures for Demerera and Essequibo and assuming a childbearing span from ages 12 to 42, Roberts concludes that bondwomen could expect to survive for only 75 percent of their fertile years.

Did slaves’ illnesses reduce fecundity and opportunities for intercourse? That is, were slaves who engaged in sexual intercourse unable to conceive children because of disease? Two common slave disabilities, venereal disease and tuberculosis, are known to cause subfecundity. In the West Indies, “with tuberculosis, venereal disease was the greatest cause of sterility among the women and, no doubt, of illnesses among children” (Debien 1974, p. 307; see also Lowenthal and Clarke 1977; Roberts 1977; Moreton 1793, pp. 28–31; Dickson 1789, p. 153). Venereal diseases reduce fertility but in fact rarely render population segments sterile. From their analysis of the black fertility drop after emancipation in the United States, McFalls and McFalls (1984, pp. 469–477) contend that venereal disease accounted for no more than 0.5 percent of fertility decline despite the popular assumption that syphilis and gonorrhea were the major sources of postbellum black subfecundity.

Neither syphilis nor gonorrhea impairs male fertility. Women with syphilis generally suffer two years of subfecundity shortly after contracting the disease. McFalls and McFalls (1984, p. 470) speculate that 2–4 percent of newly emancipated black slaves in the United States had syphilis. Assuming a dramatic increase, to an infection rate of 20–30 percent to the end of the nineteenth century, fertility would have dropped by only 1 percent. Caribbean slaves probably had more sexual partners than slaves in the United States, resulting in higher syphilis rates. But it is unlikely that syphilis had the impact on fertility that is generally assumed.

Gonorrhea has more serious consequences for fecundity than syphilis, with about 20 percent of female gonorrhea victims contracting salpingitis. From 60 percent to 70 percent of that 20 percent are generally rendered sterile (McFalls
and Mc Falls 1984, p. 476; see also Bongaarts and Potter 1983, p. 41; Keller et al. 1984, pp. 181–182). Working again with data on U.S. blacks, Mc Falls and Mc Falls assume that, even if as many as 6.4 percent of women had gonorrhea in 1880, only 1.2 percent would become sterile, even with repeated reinfections. There seems little question, then, that gonorrhea contributed to the low West Indian birth rate but that its influence is overstated.

Tuberculosis, on the other hand, has a powerful effect on fertility and may have been responsible for much of the fertility loss of black Americans in the late 1800s and early part of this century (Mc Falls and Mc Falls 1984; Kiple and King 1981). Tuberculosis was common among New World slaves and underestimated because of its common misdiagnosis as dropsy and other diseases (Kiple 1984, pp. 141–142). Africans lacked immunity to tuberculosis and lived in crowded conditions conducive to the spread of the disease. On many West Indian estates tuberculosis was a leading recorded cause of death (Ortiz 1975, p. 282; Debien 1974, p. 307; Dirks 1987, p. 85). At the Newton plantation in Barbados, for example, one in twelve slaves died from tuberculosis between 1790 and 1810. Adding deaths from scrofula, a commonly misdiagnosed form of tuberculosis, the death rate was at least one in eight (Kiple 1984, p. 142). Among black soldiers in the British West Indies studied in 1838, “diseases of the lungs” led other causes of death (whereas white troops died principally from fevers) (Tulloch and Marshall 1977, p. 156).

Tuberculosis can cause sterility, particularly when it spreads in women from the lungs to the fallopian tubes (Mc Falls and Mc Falls 1984, p. 484; Keller et al. 1984, p. 184; Bongaarts and Potter 1983, p. 41). Amenorrhea (cessation of menstruation) results from endometrial destruction in up to 50 percent of infected women (Keller et al. 1984, p. 184). Tuberculosis often strikes young people before they have had children; primary amenorrhea (failure to begin menstruation in adolescence) occurs in probably one-third of tubercular females. The effect of tuberculosis on the fertility of New World blacks has been underrated, it is now argued, in part because of overestimation of the contribution of venereal disease to infertility (Mc Falls and Mc Falls 1984; Kiple and King 1981).

Subfecundity has also been associated historically with African sleeping sickness, schistosomiasis, leprosy, and smallpox. Occasional epidemics of these diseases occurred in West Indian slave populations. Whooping cough, pneumonia, and dysentery can cause subfecundity, and all were common among West Indian slaves. In the absence of clinical evidence, of course, it cannot be proven that diseases caused subfecundity. Because such data are rarely available for population aggregates, “it is not known what diseases are actually capable of materially affecting population fecundity” (Mc Falls and Mc Falls 1984, p. 65). Still, the broad incidence of diseases linked to subfecundity in Caribbean slave populations is suggestive and supplements hypotheses about material incentives for and prohibitions against bearing
children. It should be noted as well, though, that U.S. slaves suffered from many of the same diseases as slaves in the West Indies but had a growing number of children. In general, however, U.S. slaves were much healthier than their Caribbean counterparts (Fogel and Engerman 1974).

Two other factors associated in the historical record with West Indian slave subfecundity are poor nutrition and overwork. In both cases it is assumed that slave women’s physiological stress prevented ovulation and hence conception. Does available evidence support these assertions?

Nutrition appears to have little direct impact on fertility, contrary to the generally held assumption (Debien 1974, p. 360; Schnakenbourg 1980; Turner 1982). Kiple and Kiple (1980, p. 200) estimate that West Indian slaves consumed on average about 3,000 calories daily and less than half a pint of animal protein. This is one-third the generally accepted daily requirement of protein but twice what is now recommended to the relatively sedentary adults of industrial countries. Others estimate a more meager slave diet. Schnakenbourg (1980, p. 54) claims, for instance, that French West Indian slaves ate fewer than the 1,500 to 2,500 calories daily prescribed by the Code Noir. Dirks argues that slaves in British West Indian first gangs needed 3,500 calories daily and probably got 1,500 to 2,000.\(^6\) Slaves generally required 45 grams of protein daily, he suggests, and consumed 41 to 63 (Dirks 1978, p. 139). In Cuba slaves ate an average of 200 grams of jerked beef daily, containing 70 grams of vegetable protein, 13 grams of fat, and 382 calories, plus 500 grams of cornmeal or its equivalent, providing 15 grams of vegetable protein. These were, says Moreno Fraginals (1977, pp. 198–199), sufficient calories for a day’s work. It has been argued that the diet of New World slaves was in fact superior to that of their contemporaries in Africa (Fogel and Engerman 1974; Moreno Fraginals 1977, p. 62).

Whatever the caloric and protein consumption of Caribbean slaves, however, there is little evidence that poor nutrition alone reduces fertility.\(^7\) Experts agree that “moderate chronic malnutrition” has little impact on births (Bongaarts 1980; see also Scott and Johnston 1985). Indeed, contemporary malnourished populations often have extremely high fertility. Age of menarche is slightly delayed among malnourished women, and length of amenorrhea associated with lactation is increased (Kleinman 1980, p. 138; Bongaarts and Potter 1983). Watkins and van de Walle (1985, p. 15) conclude, however, that “short of extreme deprivation . . . the available evidence suggests that neither the period of post-partum amenorrhea nor the length of the waiting period [for resumption of menstruation] vary substantially among women of different nutritional status.’’

Severe weight loss, specifically a decline in fat below 12–13 percent of body mass, can cause amenorrhea, however. Slave women probably retained sufficient levels of body fat to allow ovulation, based on slave diets and despite the low levels of fat consumed. Combined with overwork, however, malnutri-
tion manifested in weight loss is likely to have inhibited conception. This association may be reflected in extensive eighteenth- and nineteenth-century commentary on land and labor productivity in relation to fertility. British abolitionists believed, for instance, that the slave population dropped or increased with the ratio of sugar exported to the total number of slaves (Mathieson 1926, p. 104). Pitman asserted that, where sugar production exceeded 2,000 pounds produced by three slaves, births fell. Soil fertility was also believed to be negatively associated with natality, suggesting that, the harder slaves had to work, the fewer children they bore (Dirks 1978, p. 150). Long (1774, vol. 2, pp. 437-439) asserted that hard work damaged pregnant slave women in Jamaica; cane hole digging, although rarely done by women, was believed to cause infertility (Sheridan 1985, pp. 150, 242).

In fact, Trinidad’s population fell by 2.75 percent when productivity reached 11.80 hundredweight per slave (Mathieson 1926, p. 105). Slaves from the Rolle plantation in the Bahamas had fewer children when sold to a Trinidad plantation where they were forced to work much harder (Craton 1979, p. 23). In many parts of the British West Indies domestics bore more children than did female field slaves (Dirks 1978, p. 149). In the United States similar relationships are found. For example, slave fertility in South Carolina fell with increased rice production and productivity (Wood 1974, p. 164). Fogel and Engerman (1979, p. 575) found that, in general, U.S. slave childlessness increased with plantation size and presumably with productivity.

These cases of decline in fertility in association with women’s apparent work increases can be explained by reference to declining material incentives for fertility and increased infant mortality. The hypothesized relationship between work and rising female incapacity for conception and birth is, however, sufficiently common in early commentary to warrant further consideration. It is likely that women’s work in the field impeded menstruation and ovulation (Dirks 1978, p. 149), as strenuous exercise often does (Keller et al. 1984, p. 50). Amenorrhea is uncommon, found historically among concentration camp victims and others suffering from starvation and more generally among athletes (especially runners), all of whom resumed menstruation when adequate food had been consumed or vigorous training ended (Kleinman 1980, p. 138; Bongaarts and Potter 1983, p. 16). But combined with weight loss from malnutrition, intensive field labor probably reduced body fat to perilously low levels among Caribbean bondwomen, causing amenorrhea and anovulation. This was likely a temporary condition, developing with the harvest and subsiding later, as strenuous work ended and daily diets improved. This hypothesized pattern is consistent with the increased number of slave illnesses immediately after the start of the harvest, dropping and then rising again later (Higman 1984, p. 300).

Finally, infections in female reproductive organs can reduce fertility. Many types of bacteria and viruses cause vaginal, tubal, and other infections. They
can be introduced by abortions and intrauterine devices or spread from the intestines, bladder, and kidneys (Keller et al. 1984, p. 182). Deficiencies in vitamin A and other nutrients can also foster pelvic disease. The impact of infections on infertility is, like most other physical causes of natural decrease among Caribbean slaves, incalculable because reproductive diseases were poorly documented by Europeans and the influence of poor health on fertility was mediated by environmental and social circumstances.

SEXUAL OPPORTUNITIES

Caribbean planters eventually wanted slaves to reproduce, reversing their earlier attitude of disapproval of pregnancy and children. By the late eighteenth century slave owners and colonial governments tried various means to increase fertility, including promoting lasting slave conjugal unions (Roberts 1977, p. 159; Carmichael 1834, vol. 2, p. 19). It had long been believed that marriage encouraged fertility, increasing opportunities for intercourse and incentives to have children. For women in particular the continuing presence of a male partner lessened the material risks of childbearing and allowed children to be a vehicle for kin creation and consolidation.

The relative absence of lasting slave unions, especially in comparison to slaves in the U.S. South, contributed to low fertility. Indeed, demographers measure subfecundity by the number of noncontracepting, continuously married women. The individual's inability to reproduce or tendency to control fertility assumes maximum opportunity to conceive children (McFalls and McFalls 1984, p. 10). Access to sexual opportunities were few for many Caribbean slaves (Dirks 1987, pp. 118–120, 201).

Sexual opportunity should be distinguished from marital frequency as a structural precondition for fertility but is not entirely independent of a group's tendency to marry or establish kinship networks. The strong economic position of some slave women as producers of food and other goods made children an economic asset. But the sale of male slaves and their illnesses and injuries shrank the pool of potential partners to young, strong males, many of whom were already committed to other women and families. Moreover, the slave regimen, especially the long workdays and the separation of males and females into barracks housing, further reduced the chances for sexual union and contributed to subfecundity.10

AMELIORATION

From the late eighteenth to the early nineteenth century colonial governments and slave owners improved slaves’ conditions, especially those associated with
pregnancy, childbirth, and early infant life. These changed attitudes and policies were meant to preserve slaves’ lives, including infants’ and childrens’, to maintain pregnancies and to provide incentives to bear and successfully rear more children.

In the seventeenth and eighteenth centuries work demands on slave women varied in the Caribbean. Richard Ligon reported, for example, that in Barbados new mothers usually had only two weeks relief from work. “If the overseer be discreet, she is suffer’d to rest her selfe a little more than ordinary; but if not, she is compelled to doe as others doe” (Ligon 1657, p. 48). Jamaican slave women worked in the fields until the last six weeks of their pregnancies, according to Lady Nugent (1907, p. 94), and returned two weeks after birth, three in unusual circumstances. In Bermuda a slave mother could “lay in” for six weeks (Packwood 1975, p. 98). Bryan Edwards (1966, vol. 3, p. 253) visited an estate where a women who reared children received five yards of cotton. Jamaican estate bookkeeper J. B. Moreton (1793, p. 152) wrote that the pregnant woman worked in the fields until a few days before birth. The overseer then sent her salt beef, some flour, rum, and sugar. A few days later she and her infant returned to the fields. The baby was laid on a sheep skin in a clearing and watched over by an “invalid woman.”

French West Indian slave mothers with five or six children were exempted from field labor; nursing mothers were generally able to avoid heavy tasks (Debien 1974, p. 355; Raynal 1981, p. 181). Tomich (1976, p. 188) reports a more generous planter attitude toward pregnant and new mothers in Martinique. Women were moved to the petit atelier, or second gang, on reporting their pregnancies to the overseer. After 7 months they stopped work, returning to the second gang 40 days after birth, and the grand atelier, or first gang, after 75 days. New mothers worked half-days until the child was 15 or 16 months old. Similar patterns were observed in St. Croix (Lewisohn 1970, p. 240). In St. John after 1843 pregnant women were relieved from the heaviest physical labor, spared harsh punishment, and allowed to recover for five to six weeks after birth. New mothers were permitted a break at 11:00 A.M. to nurse their babies and could stop work at 5:00 P.M. for a year following birth (Olwig 1985, p. 32). In Cuba, however, women were hurried back to work, unable to nurse their children or provide adequate care. Ortiz (1975, pp. 284, 287) reports that a contemporary commentator found newborns cold and uncovered and lying in their own excrement.

By the 1820s conditions had changed in the British West Indies. Women were permitted to cease work three months before giving birth and did not have to return for two months after (Barclay 1828, p. 308). Higman (1976a, pp. 206–207) suggests that planters exempted women from regular fieldwork with their first missed menstrual period. New mothers remained in the second field gang as long as they nursed their infants, even if the child was 2 years old. In Jamaica overseers were rewarded £3 for each birth, and a tax exemption
was offered to slave owners whose bondwomen reproduced (Roberts 1957, pp. 235–236). A women with six living children was exempt from work in Jamaica according to a 1792 law (Higman 1984, p. 350). In Trinidad, Mrs. Carmichael’s planter husband offered two “joes” (each equal to 1 pound, 25 shillings, 6 pence) to mothers with healthy babies of at least 2 years of age, although only three or four slaves received this award, as others “preferred work, and the nurse to take care of their babies” (Carmichael 1834, vol. 2, pp. 187, 200). At Codrington estate in Barbados mothers received prizes at their children’s births; the attorney for the Newton estate reported that mothers with children surviving to 1 month were given 6 shillings, 3 pence (Higman 1984, p. 349; Bennett 1958). Child care also improved on British West Indian estates. Slave masters built nurseries with sleeping platforms and yards for play (Barclay 1828, p. 312). Mothers of a prescribed number of children born in wedlock were freed in 1826 by the Slave Laws of Barbados (Riland 1828). Incentives were occasionally offered for marriage. A 1798 British Leewards law mandated cash payments to couples who had lived together for a long time (Higman 1984, p. 351). Couples also received assistance in house building (Higman 1984, p. 355).

Cuban planters moved children into nurseries (criollas) under the care of elderly women slaves. Overseers became better educated about birth and early infancy in the 1860s and 1870s. Women waited 45 days after giving birth to return to the field, and their workdays were shorter (Knight 1970, pp. 75–76; Ortiz 1975). Mothers and overseers were rewarded for the survival of babies to 2 years of age (Ortiz 1975, pp. 56–57).

Yet the results of amelioration programs were disappointing throughout the region, in part because their application was haphazard (Gautier 1985, p. 129). Most areas mirrored French West Indian patterns with only an “insensible” change in birth rate with amelioration (Debien 1974, p. 356; see also Higman 1984, p. 355). Dutch Surinam, for example, began its pronatalist policies before the slave trade ended but with poor results. As in Jamaica and Cuba, creolization and improving age and gender ratios can account for recorded fertility changes in Surinam (Lamur 1977, pp. 164, 166–167; see Tables 3.1, 7.2, 8.1, and 8.2). On some estates, such as Jamaica’s Worthy Park, the fertility rate fell during the amelioration period (Craton 1978, p. 331). Trinidad, at the height of sugar production and productivity in the early nineteenth century, experienced a similar decline (Higman 1984, p. 355). Only in Barbados did population increase occur independent of demographic preconditions and as an apparent result of amelioration.

What do these generally negative results of amelioration programs suggest about the causes of low fertility among Caribbean slaves? Amelioration programs assume that slave women voluntarily controlled their fertility and that slave women suffered from overwork during and immediately after
pregnancy. Let us consider these assumptions in turn. First, did amelioration programs give women reasons to have children? Higman (1984, p. 355) contends that incentives were too few, and time, more valuable to slaves than cash, was not directed to the satisfaction of planter and colonial government goals of population reproduction and infant survival. Many slave women used newly extended confinement periods to tend their grounds or engage in other money-making ventures (Debien 1974, p. 356; Sturge and Harvey 1838, p. 64). Higman argues further that, by flaunting their own economic interests and placing them before the needs of slave masters, women revealed little interest in their children, whose survival chances were at best slim.

Pregnant women’s use of extra time to their own economic advantage may be more myth than fact, promulgated by planters to explain low birth rates. The self-serving perspective of Europeans is repeated by abolitionists Sturge and Harvey (1838, p. 64):

During slavery the people declined in numbers; especially on the estates near town. This was partly, we are told, to be attributed to the fact, that women, in an advanced state of pregnancy, after discontinuing estate labor, would employ themselves in bringing heavy loads of sticks and
Table 8.2. General Fertility and Related Factors among Slaves in Catharina Sophia

<table>
<thead>
<tr>
<th>Year</th>
<th>General Fertility Rate</th>
<th>Women Aged 15-44 as % of Female Population</th>
<th>Women Aged 20-29 as % of Females Aged 15-44</th>
<th>General Fertility Rate Nonstandard</th>
<th>General Fertility Rate Standard</th>
<th>Gross Reproduction Rate</th>
<th>Sex Ratio</th>
<th>Total Population</th>
<th>Fertility Group</th>
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<td>93.2</td>
<td>83.9</td>
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a The absolute number of women aged 15-44 was about 115 annually.

b For the whole period 1852-1856 the number of women aged 20-29 was approximately 160; for 1857-1861 the figure was 179.
grass to market, for their own benefit. On certain estates . . . the slaves declined in numbers from twelve hundred to eight hundred; dating from the abolition of the slave trade. In such cases, it was often impossible to contract the cultivation proportionately . . . so that the diminished number was compelled to perform an increased amount of labor, and thus the destructive ratio of decrease was accelerated.

If true, it can be argued that petty agricultural production and trade were more compatible with late pregnancy than field labor, and they were not usually detrimental to the health of women or the children they carried. This judgment can be made based on both historical example and the degree of self-pacing and autonomy intrinsic to horticulture and petty trade. More to the point, high rates of infant and child death are a constant for most preindustrial peoples, and women work in food and subsistence provision through pregnancy to compensate economically for anticipated familial deaths. They also often generate high fertility to counteract the loss of economically productive children. The incentive to produce children as valued laborers must be qualified, of course, for settings such as the Caribbean in the era of slavery, where neither extended kin nor enduring nuclear families were available to help bear the costs of pregnancy or childbearing or to contribute to income accumulation. But there is also little reason to assume that the use of free time by slave women to tend gardens or engage in related activities indicated a lack of material interest in or emotional commitment to their children.

Finally, the impact of amelioration on voluntary fertility cannot be fully assessed so long as subfecundity remains a probable cause of infertility. The likelihood that disease, malnutrition, and overwork kept women from bearing children means that the degree of fertility control is unknown. And what impact did amelioration have on subfecundity? Very little that I can discern, except perhaps in circumstances such as those in Barbados, where production and productivity had ebbed sufficiently to lessen physical stress and its likely manifestation in disease. Future research like Kiple’s (1984) and Sheridan’s (1985) on the physical conditions and diseases of Caribbean slaves will answer this question more satisfactorily, especially if biological and environmental determinants of subfecundity receive fuller attention.

**Comparing Social Structure and Fertility**

A comparative analysis of Caribbean slave societies can show more clearly how ameliorative efforts were hamstrung by concurrent planter programs to increase productivity, resulting in subfecundity and fertility control among
slaves. There appears to be an association between styles and stages of Caribbean production and fertility. This relationship is independent of family form but corresponds to access of a woman and her family to income.

Higman’s work (1976b, 1984) suggests a historical sequence for the analysis. He divides British West Indian slave societies into three stages, similar to those offered by Mintz. Stage 1 sugar producers achieved their highest levels of sugar production in the seventeenth and early eighteenth centuries. They are exemplified in the following discussion by Barbados, the Bahamas, and the Leeward Islands. Stage 2 areas peaked later as sugar producers. They include Jamaica, Martinique, and Saint Domingue. Extensive sugar production began in the stage 3 producers in the early nineteenth century, a pattern found in Trinidad, Cuba, Puerto Rico, and Surinam.

Higman separates the sugar-producing islands from the non-sugar-producing islands to determine population dynamics, that is, fertility and mortality rates. This simple equation yields the expected results, with sugar producers manifesting low birth and high death rates. It masks, however, the complexity of the relationship and the many variables that contribute to population change. Several factors that are obscured in schemas of stages of sugar production are relevant to demographic trends.

1. Labor productivity indicates whether men and women could benefit from children’s labor and whether subfecundity—occasioned by malnutrition, overwork, and disease—was a factor in low fertility.

2. Women’s agricultural labor force participation, specifically the proportion of women engaged in field labor, influenced women’s material incentives to bear children and their physical capacity to do so.

3. Slaves’ access to provision gardens and other means of acquiring cash reveals whether children would be well employed as laborers and aids to their families.

4. An increase in the number of conjugal units among slaves generally raised fertility. Two subfactors are pertinent to family organization and its effect on fertility: sexual opportunity and the incentive for women to have children in order to construct kinship networks and thus increase their material security.

5. Demographic characteristics, including the proportions of women, Creole, and youthful slaves, constricted and created opportunities for population change.

Only those cases with ample information about productivity and work patterns and birth and death rates are considered. None is entirely representative of the era, but all are sufficiently typical to allow comparison with other cases from the same general stage.
Bahamian slaves produced cotton on a large scale, but “conditions did not exist which led . . . to the development of a fully fashioned slave society of the plantation type” (Lewis 1968, p. 309). Slightly more than half of the 10,000 Bahamian slaves registered from 1821 to 1822 lived in “simple nuclear families” (Craton 1979, p. 6). Planters were “Eurocentric, pro-natalist, or publicity-conscious” and encouraged the formation of nuclear families, even on large estates, where infrequent movement and sale of slaves fostered family stability. Gender ratios were even by the 1825-1828 period (see Table 3.1). The birth rate climbed to 31.0 births per 1,000 by the 1825-1828 period, with a natural increase of 16.1 per 1,000.

In 1791 Bahamian cotton production fell and profits dropped. Low labor productivity and work intensity is apparent from the health of older males, not yet outnumbered by female slaves, as in most declining West Indian commodity-producing societies. “Aging and wasting” of females and related drops in fertility did not occur. There is no evidence that women were absent from field labor, only that men and women appear to have enjoyed comparative physical well-being, a prerequisite for population fecundity.

In contrast, the British Leewards experienced few increases in births or high levels of natural increase. The highest recorded rate of natural increase was in Montserrat, where 6.0 people per 1,000 were added from 1824 to 1827 (see Table 3.1). What distinguishes the Leewards from the Bahamas, and what can account for these population trends? Both areas settled and began export production in the 1600s, but the Leewards became major sugar producers, with the smaller Antigua surpassing Barbados in sugar production in the mid-eighteenth century (Sheridan 1973, p. 150). By the end of the eighteenth century sugar production in the Leewards had peaked. Yet birth rates remained lower than those in neighboring Barbados, with its generally greater level of sugar production. Gender ratios were more nearly equal in St. Kitts and Nevis, presumably contributing to births.

Fewer nuclear families formed in the Leewards than in the Bahamas. The Leewards resemble Barbados in this regard, however, and births in Barbados were more numerous. Two factors appear to separate the experiences of Leewards slaves from those in Barbados and point to both the lack of economic incentives for childbearing and to subfecundity in explaining low fertility. First, the Leewards slaves had little or no land for the growing of provisions and depended on food imports and collectively grown food. Slaves barely survived periods of drought and poor production (Mathieson 1926, p. 772; Fergus, 1975, p. 15; Frucht 1977, p. 3). Slaves on Barbados were similarly dependent on plantation- and foreign-grown foods, but repeated droughts and the boycott of Barbados by U.S. food producers during the American Revolution led to greater local food production (Dickson 1789, p. 13). Indeed
by 1815 some proprietors were devoting two-thirds of estate land to the
cultivation of provisions (Levy 1980, p. 9). A similar if less extensive
transition was eventually made in Montserrat. With perhaps the best
developed cash economy in the Leewards, 27 percent of Montserrat’s slaves
were domestic servants, tradesmen, or fishermen (Goveia 1965, p. 146), but
these activities could not reverse the effect of the poorly developed system of
food growing on fertility.15

Two factors, then, stand out among stage 1 producers and may help to
explain population change. First, cultivation of food, even carried out
collectively, generated opportunities for trade and incentives for privatized
production on small plots of land. These activities reinforced and extended
other income-generating efforts in trade and crafts. If sufficiently extensive,
such economic opportunities created motives for the formation of nuclear
families; but single women could also benefit economically, especially by
having children. Women apparently had children in Barbados through the
amelioration period but failed to do so in the Leewards, where entrepreneurial
opportunities were few. It is likely that continuing food shortages also
contributed to subfecundity in the Leewards. Amelioration was powerless
there against long-term impediments to population reproduction.

Stage 2: Martinique, Jamaica, and Saint Domingue

The French islands of Martinique and Saint Domingue are hilly, humid lands
with great potential for indigenous cultivation of food crops. Saint Do­
ingue’s food production, on individual plots and estates, ebbed and flowed
with the intensity of sugar production. Martinique and French Guadeloupe
had more consistent and continuous histories of local food production.

Low fertility in Saint Domingue is easily explained by the continually high
proportion of males and Africans (Debien 1962). Estimates of the ratio of
males to females in eighteenth-century Saint Domingue range from virtually
no women to a gender ratio approaching equality, with 1.39 males for every
female in 1754.16 Many other factors contributed to natural decreases, in
particular the intense working conditions of Saint Domingue’s slaves, man­
ifested in unparalleled labor productivity (and assisted by rich soils). Moreau de
Saint-Méry (1958) estimated in the late 1700s that only 200 slaves (100 effective
workers) were required to produce 150 tons of sugar. As a result, from 1680 to
1776, 800,000 slaves were imported to Saint Domingue and 290,000 survived.
From 1763 to 1776 the population increased by 85,000, with deaths exceeding
births by 50,000 (Hilliard d’Auberteuil 1776, vol. 2, p. 63).17

Creolization and feminization of the population were forestalled by con­
tinued planter commitment to replacement of slaves by purchase. Economic
decline and the abolition of the slave trade might have brought demographic
changes and related if slight population increases, as in Jamaica and
Martinique. But the Revolution of 1791 came first, bringing marked improvements in fertility along with mortality declines.

French settlers occupied Martinique in 1653 and quickly established plantation agriculture. On the eve of the French Revolution, Martinique exported more than 8,000 tons of sugar annually, surpassing Barbados. The abolition of the slave trade along with European wars and changes in French domestic and colonial governments brought a decline in the fortunes of sugar producers that never fully reversed itself (Deerr 1949–1950, p. 233; Schnakenbourg 1980).

Jamaica, the Caribbean’s second great nineteenth-century sugar island, surpassed Martinique and other competitors except Saint Domingue. In 1780, 200,000 slaves produced 500 pounds of sugar each. By 1808, 300,000 slaves produced more than 650 pounds of sugar per capita annually. Production per slave remained roughly the same from 1800 to 1834 (Higman 1976a, p. 213). In 1753, at the height of Martinique’s sugar production, 80,000 slaves there produced 20,544 tons of sugar, about 500 pounds per capita (Deerr 1949–1950, p. 233).

The traditional extent of provision growing, hiring out, and petty trade contributed to a large proportion of conjugal families among slaves in Martinique and Jamaica. The rate of natural decrease fell in Martinique. Curtin estimates that from 1664 to 1735 5.4 individuals were lost per 1,000, improving to a loss of 4.2 per 1,000 from 1736 to 1787 and 1.3 from 1788 to 1831 (see Table 7.2). Gautier (1985, p. 123, 136) concludes that Martinique’s slaves generally sustained an annual natural loss higher than 0.15 in the late eighteenth century, improving to a slight population increase by the 1840s. The natural decrease in Jamaica worsened continuously from the start of the registration period of 1817–1820 through 1829–1832 (see Table 3.1).

Selected estates in Martinique and Jamaica exhibited high rates of conjugal family formation. By reviewing Debien’s (1960) survey of documents from l’Anse-à-l’Ane in Martinique, we find a predominance of conjugal units among Creole slaves, although in other groups maternal units generally prevailed. Analysis of records from three plantations suggests that conjugal units became important at some locations in Jamaica (Higman 1976a). At l’Anse-à-l’Ane fertility was higher in conjugal than in other families, but we see little evidence of the same phenomenon in the Jamaican cases (Higman 1976a, p. 175). Nor does access to provision gardening, extensive in both settings, explain fertility differences. Amelioration efforts had increased in both Martinique and Jamaica, of course, but to little apparent effect.

A single factor emerges as significant: Jamaica’s sugar productivity remained high during the early nineteenth century, and women’s participation in plantation labor actually intensified (Higman 1976; Craton 1977). Either women’s incentives to profit from income-generating activities by increased fertility were reduced or their fecundity waned. Registration figures from the
ameliortation period in Jamaica reveal that the death rate increased. We can reasonably infer that women's health suffered and that the physical limits on fertility did not abate and may have increased.

Stage 3: Cuba, Puerto Rico, Trinidad, and Surinam

Cuban sugar production exceeded that of other Caribbean producers by 1838, the small-scale cultivation of the eighteenth century having given way to greater unit size and productivity. By the early 1800s four-fifths of Cuban slaves were on plantations and rural farms (Knight 1970, p. 48). Age and sex distributions changed, with young males predominating over females and other age groups. By 1822, 55 percent of slaves were from 20 to 45 years of age (Moreno Fraginals 1978, p. 86).

The birth rate increased from about 19 per 1,000 from 1834 to 1841 to 28 per 1,000 from 1856 to 1860 (Moreno Fraginals 1978, p. 88; 1977, pp. 193-195). From 1823 to 1844 children 5 years of age and younger commonly constituted up to 8.19 percent of an estate's population. The influx of women slaves accounts in large part for fertility increases. From 1790 to 1822 women aged 15 to 40 years made up nearly 16 percent of the slave population, and children aged 15 and under only 2.9 percent. Finally, by the 1845-1868 period children made up 29 percent of the population and women of 15 to 40 years of age, 22 percent, suggesting rising fertility during the nineteenth century. But if from 1845 to 1868, as a result of the growing purchase of young slaves, the ratio of imported to locally born children approached that of slaves generally—53 Africans for every 47 Creoles—fertility remained low, with perhaps only half of women aged 18 to 40 years bearing a surviving child (Moreno Fraginals 1977, p. 192). Still, this projected fertility rate surpassed that of earlier eras, implying that in Cuba amelioration had a slightly positive impact on reproduction.

The productivity of Cuban slave women was unprecedented in the history of Caribbean sugar planting, although per capita productivity dropped with the gender ratio (Moreno Fraginals 1977). Women worked with men in nearly all areas of sugar production and labored the extended harvest days, longer and more arduous than elsewhere in the region. Major technological refinements contributed to a dramatic production increase and to increased labor demands in planting and cane harvesting. Mid-nineteenth century “economic pressures forced proprietors to work slaves harder and this, too, accentuated the depletion of the labor force” (Corwin 1967, p. 135). Cuban slaves numbered at most about 400,000, comparable to Jamaica's peak figure of 350,000 slaves. Yet Cuban sugar production, at the mid-nineteenth-century height of more than 200,000 tons, far surpassed Jamaica's highest annual production of over 90,000 tons (Aimes 1967, p. 158; Moreno Fraginals 1978, p. 106).
As remarkable as Cuban slave women’s rising workloads was their rapid loss of control over income-generating activities, in particular, provision growing and hiring out. Subsistence cultivation on conucos ended in many plantation areas during the sugar boom (Knight 1970, p. 68; Scott 1985, pp. 15–19). Hiring-out opportunities also diminished. These restrictions are reflected in the decline of the free colored population, dropping from nearly 20 percent of the total Cuban population at the end of the eighteenth century to 15 percent in the 1820s and 1840s (Knight 1970, p. 21).

Trinidad’s experience closely resembles that of Cuba. Britain seized Trinidad from Spain in 1797. In 1782 there were only 310 slaves in Trinidad; 4,500 slaves were imported annually from 1797 to 1803 (Millette 1970, pp. 7, 17). Slaves numbered 18,302 by 1809 (Brereton 1981, p. 47). Sugar production increased from nearly 6 million pounds in 1798 to over 14 million pounds in 1802; the number of estates rose from 159 in 1796 to 739 in 1809 (Millette 1970, pp. 19, 122; Brereton 1981, p. 47).

Alone among British West Indian colonies, Trinidad failed to generate rising fertility during the registration period after 1813, although the birth rate increased modestly from 1813 to 1825 (see Table 8.3). Its slave population was heavily African, male, and young, all characteristics contributing to low fertility and birth rates in the region. Although mother-child units predominated in towns, nuclear families were commonly associated with plantations of more than 50 slaves with relatively large African populations. The low birth rate on Trinidad’s sugar estates does not, then, reflect women’s isolation from kin but other factors.

Work requirements and related diseases and malnutrition may have discouraged higher fertility levels. Few provisions were grown in Trinidad; foodstuffs were imported from Venezuela, the United States, and the British North American colonies. The interruption of Venezuelan shipments by

| Table 8.3. Basic Demographic Indicators for Trinidad, 1813–1834 |
|------------------|------------------|------------------|------------------|
| Dates            | Males per 100 Females | (Adjusted) Births per 1,000 | (Adjusted) Deaths per 1,000 | Registered Natural Increase per 1,000 |
| 1813–16          | 123.1             | 44.1             | 47.2             | 40.9             | 44.4             | -6.6             |
| 1816–19          | 125.2             | 31.8             | 46.3             | 55.3             | 50.3             | -18.5            |
| 1819–22          | 126.5             | 35.1             | 44.3             | 47.4             | 45.7             | -13.0            |
| 1822–25          | 124.0             | 37.9             | 35.8             | 28.9             | 32.7             | -1.7             |
| 1825–28          | 117.2             | 33.7             | 37.0             | 30.8             | 34.1             | -5.2             |
| 1828–31          | 110.0             | 34.0             | 37.4             | 31.5             | 34.6             | -5.4             |
| 1831–34          | 104.4             | 31.0             | 39.4             | 35.2             | 37.4             | -9.4             |

*Source: Higman 1984, p. 310.*
British and Spanish ships led to frequent food shortages for Trinidad’s slaves, which probably reduced fertility. The apparent low fertility of urban slaves can also be linked to food shortages. Mrs. Carmichael (1834, vol. 2, p. 103) complained that domestics, lacking access to provision grounds, stole food. Higman’s (1984, p. 329) discovery that urban slaves, particularly women and children, had higher mortality levels than rural slaves in the newer colonies, including Trinidad, reflects the urban slaves’ lack of provision grounds.

Dutch Surinam differed from Cuba, Trinidad, and Puerto Rico in the continuing intensity and scope of sugar production from the late seventeenth century to the early nineteenth century. From 1715 to 1735 the slave population increased from perhaps 3,000 to 50,000, where it remained until the early 1800s; yet 300,000 to 325,000 Africans were imported from 1668 to 1823, indicating a greater rate of loss than Jamaica or Saint Domingue experienced (Price 1976, p. 9). And the slave population remained skewed in favor of young African males longer than in most Caribbean slave societies: “Until 1735, more than 70 percent of the total imports to Surinam were male, and children constituted under 7 percent even after the planters began more seriously to encourage breeding as a replacement strategy in the period after 1735, the proportion of female imports did not rise above 40 percent, nor that of children above 22 percent” (Price 1976, p. 12). Slaves generally worked on large plantations, even where cash crops other than sugar were grown. The average eighteenth-century sugar estate had about 228 slaves, with even smaller estates averaging 137 bondmen and women (Price 1976, p. 16). The treatment of slaves was reputedly harsh and manumissions rare, with freed men and women constituting only 7 percent of the nonwhite population as late as 1787 (Price 1976, p. 22).

Lamur estimates the rate of natural decrease before 1814 at 40.0 per 1,000. This figure declined steadily, however, to between 25.0 and 30.0 per 1,000 from 1814 to 1826, to 12.5 per 1,000 from 1826 to 1848, and finally to about 3.1 per 1,000 from 1848 to 1862 (Lamur 1977, p. 163). Demographic factors clearly favored an improving rate of natural decrease. The gender ratio changed rapidly in the nineteenth century, with males outnumbering females in 1830 (105.8 males for every 100 females) but with females outnumbering males by 1850, when the gender ratio was 90.8 males for every 100 females. The female population continued to grow faster than the male population, apparently because of higher male mortality rates.

Slaveholders and colonial officials adopted ameliorative measures early in the 1800s. Lamur’s analysis of the model 500-slave, government-controlled Catharina Sophia estates may be revealing about the effects of amelioration on population change. The rates of natural decrease at Catharina Sophia were 14.5 per 1,000 for the 1851–1861 period and 18.5 per 1,000 for 1857–1861, despite an increase in fertility from 100.0 births per 1,000 women in
1852–1856 to 107.0 in 1857–1861 (Lamur 1977, p. 165). These changes came in part because of a modified adult female age distribution.\textsuperscript{20} The gender ratio changed especially quickly in fertile age groups, suggesting the significance of an increased number of women on births. Lamur (1977, pp. 166–167) cautions, however, that “the average number of live births per fertile woman . . . remained virtually constant . . . at an estimated level of far less than 3.0 children.” Mortality rose on Catharina Sophia in the 1850s, although less dramatically than if the age structure had remained unchanged. Life expectancy for slaves born between 1852 and 1861 was only 23.0 years. “Of the 10,000 newborn persons in the life table [covering all age cohorts and estimated life expectancies from 1852 to 1861] only half reached the 15–24 age groups” (Lamur 1977, p. 170).

Lamur concludes (1977, p. 171) that slave women in Surinam wished to have few children, presumably using contraception and abortion as means to limit population. The constantly high death rate implies that women’s health may have inhibited fertility as well. Lamur points to the possible influences on fertility of nutrition, noting that in 1840 the colonial government mandated more food for slaves. This action was consistent with amelioration measures throughout the region, however, and does not in itself indicate relative hunger or subnutrition in Surinam. The death rate at Catharina Sophia increased markedly in 1859 and 1860, perhaps as a result of epidemic diseases (Lamur 1977, pp. 166–167). The birth rate also fell dramatically in 1859, implying that the factors that influenced deaths also affected births. Time inconsistencies are displayed, however, with deaths increasing in the same year that births fell but continuing to rise for another year, while births again increased the next year to earlier levels. Disease thus seems an unlikely explanation for population shifts. An alternative hypothesis is that a particularly brutal harvest diminished female fecundity by reducing opportunities for intercourse. Similar isolated events may have increased deaths, particularly of Catharina Sophia’s older male slaves, who probably contributed little to fertility.

Puerto Rico’s situation as a stage 3 producer contrasts with that of other cases. As with Trinidad and Cuba, Puerto Rico was not initially a large-scale eighteenth-century sugar producer. A sugar boom then occurred. From 1828 to 1852 the expansion in production of sugar and sugar products was dramatic, with sugar exports growing from 14,595 tons to 52,622 tons and molasses exports increasing from 5,869 hogsheads to 39,407. Meanwhile, coffee production fell from 6,259 tons in 1828–1832 to 5,350 tons in 1845–1852 (see Table 8.4).\textsuperscript{21}

Research has generally concluded that Puerto Rico’s labor and land productivity was much less than that of Cuba and other stage 3 islands. Scarano has argued recently, however, that, although slaves never constituted more than 12 percent of the Puerto Rican population, they were the main
Table 8.4. Puerto Rican Sugar, Molasses, and Coffee Exports, 1828–52 (five-year annual averages)

<table>
<thead>
<tr>
<th>Years</th>
<th>Sugar (Tons)^a</th>
<th>Molasses (Hogsheads)</th>
<th>Coffee (Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1828–32</td>
<td>14,595</td>
<td>5,869</td>
<td>6,259</td>
</tr>
<tr>
<td>1833–37</td>
<td>20,757</td>
<td>13,308</td>
<td>4,890</td>
</tr>
<tr>
<td>1838–42</td>
<td>39,664</td>
<td>28,608</td>
<td>5,234</td>
</tr>
<tr>
<td>1843–47</td>
<td>43,702</td>
<td>30,941</td>
<td>5,059</td>
</tr>
<tr>
<td>1848–52</td>
<td>52,622</td>
<td>39,407</td>
<td>5,350</td>
</tr>
</tbody>
</table>


^a Moscovado (unrefined or raw sugar).

sugar workers in the principal sugar areas (Scarano 1984, p. xxii). Moreover, "on a comparable scale [Puerto Rican estates] were at least as efficient as the Cuban plantations." Puerto Rico produced 23 percent as much sugar as Cuba in 1838–1842, and 16 percent as much in 1848–1852, with far fewer slaves, on much smaller estates (Scarano 1984, p. 6; see also Klein 1986, p. 105).

Flinter’s journal of his sojourn to Puerto Rico introduced the idea that the slave population was small and quickly replaced by free labor. He also described the stable family life of Puerto Rican slaves and their tendency to reproduce themselves. In contrast, French abolitionist Victor Schoelcher believed that Puerto Rican slaves were exceptionally productive and owners very cruel. He argued that Puerto Rico’s 4,000 slaves produced two-thirds as much sugar as Martinique’s 78,000 slaves, although no comparison of soil fertility or technique was offered (cited in Scarano 1984, p. 29).

Still, reproduction rates were high, even with many male Africans. "The Ponce fertility level was about 15 percent greater than the average for the Jamaican parishes [nine analyzed by Higman (1976a)], despite the fact that the proportion of Africans in the Puerto Rican district was higher, and despite an enormous difference in the sex ratio, which was almost 175 males:100 females in Ponce, but only 98:100 in the Jamaican sample" (Scarano 1984, p. 142). Slaves in the U.S. South, the sugar-producing region, had no access to provision grounds, and food crops were seldom grown collectively, given planters’ wish to devote all available land to sugar (Flinter 1834, p. 193). The relatively high birth rate may then be a function of plantation size, with related better slave health and fertility. In contrast, Trinidad, also a stage 3 sugar producer with small estates, exhibited low fertility. But other, related factors may help to explain the differences between Trinidad’s and Puerto Rico’s demographic experiences: The sugar revolution in Puerto Rico was both less extensive and shorter in duration than that of Trinidad and other stage 3 producers, although it is also clear
that earlier commentary underestimated the scope and intensity of Puerto Rico's production of commodities for export.

**AFTER THE REVOLUTION**

What can we conclude from the comparative analysis of fertility and birth rates in Caribbean slave societies? First, the stage of participation in the international sugar market is strongly associated with birth rates and fertility. The utility of children for household income earning appears to be significant as well, along with widespread and effective slave amelioration, seen only in Barbados. In order for children and amelioration to influence fertility, the population must display fecundity, determined by demographic characteristics, in particular suitable age and gender ratios, and physical health and capacity for reproduction.

What emerges most meaningfully from this comparative review, however, is a continuing pattern of population loss or stagnation despite amelioration. Two notable exceptions emerge. In the Bahamas conditions were optimal for increased fertility and rapidly diminishing deaths. In stage 1 societies, with a preponderance of young Creole women, "entrepreneurial encouragement, and virtual self-sufficiency" (Lowenthal and Clarke 1977, p. 516), births were comparable to U.S. slave levels, yet conditions were less favorable to natural increase in the United States at its productive heights. Likewise for Barbados: Demographic conditions, decreased productivity, and amelioration contributed to increased fertility and decreasing mortality. Still, these conditions led to lower levels of natural increase (0.4 percent annually from 1816 to 1834) than among slaves in the U.S. South (3 percent in the early nineteenth century), where working conditions were generally worse (Roberts 1977, pp. 149, 158).

Even under relatively good circumstances, birth rates in Caribbean slave societies were low, suggesting that fertility was somehow impaired. Two additional cases support this inference. Barbuda is a Caribbean island where the production of commodities for export failed. Several hundred slaves remained.

Barbudian slaves enjoyed an abundance of provisions from their large garden plots, from hunting game in the forests, and from fishing. Moreover, they lived virtually on their own, little supervised by the solitary (and often absent) Codrington manager and one or two overseers. Independent and largely self-sufficient, the Barbudian community was all the more close-knit owing to its demographic isolation: no Africans were brought into the island after the mid-eighteenth century, and the Creole inhabitants became essentially one community. (Lowenthal and Clarke 1977, p. 515)
An astonishing natural increase occurred. From 1817 to 1832 the birth rate varied from 26 to 43 per 1,000, with the remarkable death rate of only 10 per 1,000 (Lowenthal and Clarke 1977, p. 518). Visitors noted the relatively robust appearance of Barbudian slaves.

How significant were children to slave economies? Availability of work on the Codrington estates and a plentitude of food and game suggest little economic incentive to have offspring. Plentiful resources inhibited the development of a highly stratified slave society, reducing the potential value of childbirth as a means to compete for scarce goods. Rather it appears that a demographically and physically healthy African population in the Caribbean was capable of rapid reproduction, even in the absence of economic need.

Population trends after emancipation seem to reinforce the significance of slaves' health as a variable in explaining population change. Debien (1974, p. 360) contends that the greatest sources of subfecundity among French West Indian slave women were malnutrition and overwork (see also Deerr 1949–1950, p. 277). The ultimate proof of this proposition, he argues, was the enormous increase in birth rates among slaves after their revolutionary emancipation in 1803, when sugar production declined and slaves retreated to small-scale production of food crops (Deerr 1949–1950, p. 240). Former estate owners were shocked to find their once childless slaves the parents of many children. At la sucrerie Foache à Jean-Rabel, for example, the number of children remained nearly constant from 1779 to 1797, although it had dropped during earlier years when the estate failed to renew its youthful slave population through purchase (Debien 1962, p. 153).

Slave emancipation offered improvements in material life and physical well-being (Debien 1962), and peasant control of means of production marked a major structural change conducive to population reproduction. Transitions in slaves' health were necessary to increase fertility, whereas political and economic transformations were barely sufficient, as the case of U.S. slaves following emancipation illustrates. Their previously high birth rate fell after the Civil War until the mid-1930s. Access to land by newly emancipated U.S. slaves was curtailed in many areas; regional migration occurred, and nuclear families became less common. All of these factors contributed to lowered birth rates. But further evidence suggests that subfecundity among U.S. slaves was a major cause of their declining fertility (McFalls and McFalls 1984; Kiple and King 1981).

Caribbean bondwomen's health in particular had to improve for social factors to have a positive impact on fertility. Sheridan (1985, p. 340) notes the dramatic change: "Perhaps the most marked difference between slavery and freedom was in the condition of black women." And their economic position shifted drastically as well. Women moved out of field labor into household work, horticulture, and marketing; men remained in sugar production, now as wage workers. As with Barbuda's slaves, West Indian emancipated
populations generally lived in relatively open resource situations. It appears that children were often of limited utility. Much like hunter-gatherer groups, postemancipation Caribbean populations had relatively easy access to food and cash that children could little enhance. Still, their numbers increased.

Ex-slaves in some Caribbean societies enjoyed no more household prosperity than during slavery, impeding health improvements and fertility growth. Sturge and Harvey (1838, p. 45) note, for example, that in the Leewards, estate provisions were broken up after emancipation, as it was thought cheaper to import food. Some estates sold provisions to slaves. Of Antigua, Sturge and Harvey (1838, p. 45) remark, “There are no independent villages whatever, and though the people have the strongest desire to acquire what they call ‘a pot of land,’ meaning about an acre, yet great obstacles exist.” Some slaves, then, lacked resources for accumulating income or ensuring their own health and nutrition, suggesting once more two overlapping causes of population stagnation or decrease.

The sugar industry sustained itself nowhere in the region throughout the late nineteenth century. Internal and international economic pressures reduced estate control of rural land, increasing physical capacity and material incentives for children. By the turn of the century, corporate land control increased, with encroachment on peasant farms. But fertility generally increased also, as in other Third World societies where social structures do not enhance quality of life but do not impede fertility either.26

Conclusions

Voluntary fertility control by Caribbean bondwomen has been overstated in explaining low birth rates. Physical causes of subfecundity are offered here as a complementary explanation along with the relatively few opportunities many slaves had for sexual intercourse. A variety of diseases common to Caribbean slave societies can cause subfecundity. The most significant, tuberculosis, caused many deaths among West Indian bondmen and often led to sterility. Others, including syphilis, gonorrhea, and whooping cough rarely caused sterility but probably reduced births by temporarily impairing the capacity of males and/or females to engage in intercourse and conceive children and by impeding women’s ability to carry and deliver infants. The instability of sexual unions among slaves not only reduced material incentives to bear children in order to create kinship networks but also contributed to subfecundity by reducing opportunities for sexual intimacy.

A comparative analysis of Caribbean slave productivity, demographic patterns, and fertility delineates more clearly the probable impact of amelioration on population change. The progression of Caribbean sugar cultivation suggested by Higman and Mintz offers a framework for comparison. Early,
stage 1 cultivators had declining production and productivity levels by the early nineteenth century, improving demographic profiles but not necessarily birth and death rates, which were apparently a function of the availability of food and material incentives to have children. For stage 2 producers continuing high levels of sugar production and trade and enduring importation of male Africans also discouraged fertility. Even where children could contribute to household economies, births were relatively few—inhibited, I propose, by the physical demands on men and women as fieldworkers and by subfecundity resulting from disease, overwork, and malnutrition. The final group of sugar colonies was intensively cultivated. Slaves’ lives were brutal. Natural decreases fell slightly as demographic conditions improved and amelioration enacted. Both voluntary fertility control and subfecundity lowered birth rates in these difficult circumstances.

Finally, the postemancipation period marked a demographic transformation in much of the region. Births increased dramatically where resources were plentiful, suggesting that the health of ex-slaves had improved. In contrast, the fertility of former slaves in the United States fell, a result of land loss, conjugal instability, and increased subfecundity.