

## Population Dynamics among the Orang Asli of Peninsular Malaysia

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## **Population Dynamics among the Orang Asli of Peninsular Malaysia**

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### **ABSTRACT**

This article analyzes the demographic dynamics of Orang Asli populations in Peninsular Malaysia. The Bateq and the Mendriq, inhabiting Pos Lebir village in the state of Kelantan, have been described as hunter-gatherer populations. With sedentarization, they have come to reside in permanent residences and engage in hunting and gathering to earn cash. The purpose of this study is first to analyze demographic dynamics, and second to reveal the effect of sedentarization and subsistence transition on them. Results demonstrated that fertility values in Pos Lebir were quite high, compared with other hunter-gatherer populations. Although the mortality rate remained high in Pos Lebir, population grew rapidly because of a high fertility rate. This case study follows the hypothesis that population growth is synchronized with sedentarization through behavioral and structural changes. Population growth will cause some problems for the Bateq and the Mendriq. First, it will lead to accelerating exhaustion of resources for hunting and gathering, and second it will damage their welfare because of a scarcity of medical and educational services.

### **INTRODUCTION**

This article analyzes the demographic dynamics of Orang Asli populations in Peninsular Malaysia, focusing on their status as hunter-gatherers and as a minority in a nation-state. The Bateq and the Mendriq, the subjects of this study, have been described as hunter-gatherer populations (Endicott 1979; Gomes 2010). Although there are many ethnographies of the Orang Asli, little information is available about their demographic dynamics.

Demographic studies on hunter-gatherer populations have focused mainly on reconstructing the history of the human species (Howell 1986); *Homo sapiens* populations have sustained themselves as hunter-gatherers since prehistory. In particular, since Binford proposed that population pressure was the reason that subsistence changed in the Pleistocene from hunting and gathering to agriculture

(Binford 1968), the population dynamics of hunter-gatherer populations have been studied as key to understanding human history.

However, rapid social and environmental changes have affected hunter-gatherer populations. Demographic studies on such populations must address broader issues: first, so the demographics of hunter-gatherer populations must be considered to provide information about the welfare of such populations, and not merely as an insight into human history. Since Said's critique of Orientalism (Said 1978), anthropologists have been aware that their studies affect the societies they investigate. Demographic features are essentially public health indexes (Ulijaszek and Ohtsuka 2007); thus, their findings cannot be discussed apart from health problems in the societies under study. Second, present hunter-gatherer populations have restricted mobility and subsistence activities because they live in nation-states with geographically and socially distinct borders. Thus, their demographic features cannot be understood independently of the political and social dynamics within and among nation-states (Howell 2000: 361–371).

The underlying question of this study is whether populations of hunter-gatherers have increased or decreased in the contemporary world. Minter reported that the Agta population of the Philippines have not decreased (Minter 2010: 52–53), although classic studies predicted that the Agta would become extinct (cf. Headland and Headland 1997). The “tribal-extinction paradigm” has been argued as applicable to both hunter-gatherer populations and other minorities. Whether a population has grown, declined, or become extinct should be determined based on national census data; however, that on minority populations drawn from national and public censuses in the Third World remain unreliable.

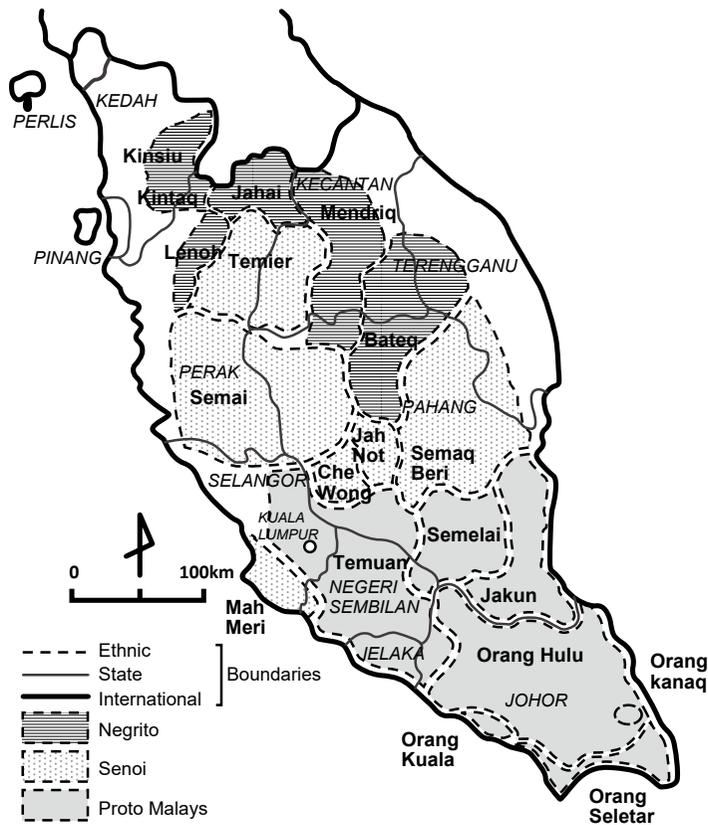
In this article, the author analyzes the demographic dynamics of Orang Asli populations in Peninsular Malaysia in relation to changes that have occurred in the social structure and residential pattern owing to subsistence transition. The subject populations are the Bateq and Mendriq in Pos Lebir Village, in the State of Kelantan. With sedentarization, the Bateq and Mendriq have come to live in permanent residences. Although formerly the Bateq and Mendriq depended on hunting and gathering for their daily subsistence (Endicott 1979), during the period of this research, they engaged in hunting and gathering only to earn money. They collected forest products to sell and consumed store-bought foods. Their subsistence characteristics are typical of the recently proposed “commercial hunter-gatherers”– hunter-gatherers who have forged a lifestyle in contemporary times (Stiles 1992).

Sedentarization and subsistence transition are assumed to relate to the behavioral factors that pertain to reproduction. For example, the change to living in permanent residences could limit the activities of women. Thus, changes in behavioral factors affect population growth. Further, the biological factors that pertain to reproduction are also transformed by sedentarization and subsistence transition. Subsistence transition facilitates nutritional changes because sedentarization and the availability of health services, such as for immunization,

can improve hygiene. In the first part of this study, demographic features, fertility rates, mortality rates, and population growth rates are discussed. Then these figures are compared with those of previous studies to discuss population dynamics among hunter-gatherers in the contemporary world.

*Orang Asli*

The Orang Asli are indigenous people from Peninsular Malaysia. A 2005 census conducted by the JHEOA<sup>1</sup> (Jabatan Hal Ehwal Orang Asli [Department of Aboriginal Affairs] Malaysia) indicated that there were 141,230 Orang Asli (JHEOA 2006). For administrative purposes, the Orang Asli are separated into 3 groups and 18 linguistic populations<sup>2</sup>. Figure 1 shows their geographical distribution; however, it should be noted that the areas marked on the map in the figure are not territories held by each population. Many recent studies on the Orang Asli have used Benjamin’s map (Benjamin 1985: 227). However, Benjamin’s map indicates only approximate positions for settlements and areas in



**Figure 1** Orang Asli populations in Peninsular Malaysia  
 Source: Modified by the author from Benjamin 1985: 227, Fig 10.1.

which the Orang Asli are mobile, and, which are assumed to change according to social and political circumstances<sup>3</sup>).

The Senoi<sup>4</sup>) constitute the largest group and accounts for 56 percent (78,884) of the total population of the Orang Asli; the Temiar, Semai, Semaq Beri, Jah Hut, Mah Meri, and the Che Wong are included as part of the Senoi. The Proto-Malays (58,675) are the second-largest group, accounting for 41 percent of the total population of the Orang Asli. They encompass the Jakun, Semelai, Orang Hulu, Orang Seletar, Orang Kuala, and Orang Kanaq. The Negrito (3,671) are the third-largest group; they account for 3 percent of the total population of the Orang Asli and include the Kensiu, Kintaq, Jahai, Lanoh, Mendriq, and Bateq.

At present, the Orang Asli comprise a single social unit; Orang Asli constituents share a kind of united identity. However, the Orang Asli category had been constructed historically by other actors. The authoritative definition of who counts as Orang Asli is provided in the *Aboriginal Peoples Act* 1954 (Act 134), which defines a member of the Orang Asli as a person whose parent is an aboriginal, language is aboriginal, and lifestyle or customs are aboriginal. This definition was enacted after Malaysia became an independent, ethnically diverse nation-state. During the Malayan Emergency (1948–1960), such definitions were considered necessary to prevent members of minority groups from participating in communist activities.

However, the Malaysian government has categorized people and enforced policies based on the concept of *bumiputra*. Muslim Malays and the Orang Asli are both categorized as *bumiputra* (Andaya and Andaya 2001: 3–4). *Bumiputra* means “son of the land”, excluding Chinese and Indian who immigrated to Malaysia relatively later. The policies give economic and educational privileges to *Bumiptra*. In reality, economically and politically the Orang Asli are still marginalized in Malaysian society (Nobuta 2009); it is thus ironic that they have been lumped in with the majority as *bumiputra*.

Although the category of Orang Asli was established socially for political purposes and some Orang Asli are no longer that different from members of other ethnic groups in Malaysia, physical, linguistic, and social differences persist. Some physical differences originate from prehistory. It has been argued that the Negrito and the Senoi are descendants of the Hoabinhians<sup>5</sup>) who occupied the Malay peninsular for several thousand years until about 4000 BC (Benjamin 1976; Kuchikura 1997). In contrast, the Proto-Malays and Malays have ancestral ties to the Austronesians<sup>6</sup>).

Consistent with the diversity among the Orang Asli, populations differ substantially concerning subsistence and mobility. The Senoi and Proto-Malays have been described as farmers, whereas the Negrito have been described as hunter-gatherers. Farmers have been described with less mobility, whereas hunter-gatherers have been described as having more mobility. However, government policies do not consider of this diversity. Lumping the Orang Asli into a uniform group obscures that the various groups experience different difficulties in adjusting

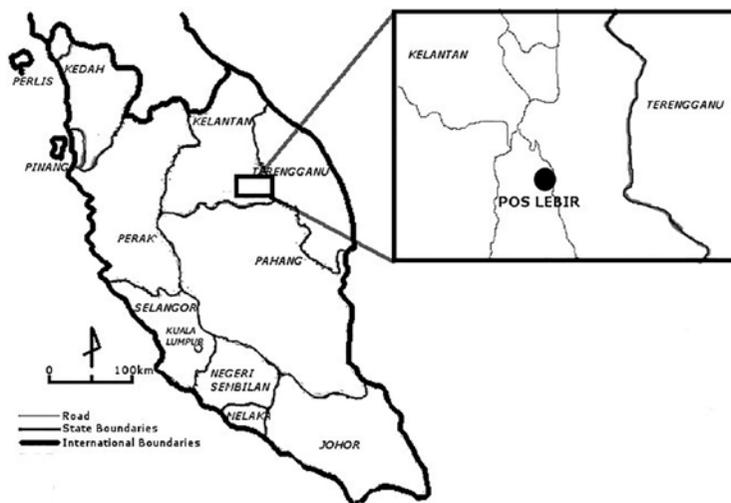
to government policies. It is relatively easy for less mobile populations to adjust to sedentarization; for highly mobile populations the adjustment is more difficult.

Sedentarization policies have been adopted for several reasons. The first, were political: measures to equalize the ethnic groups of Malaysia were considered necessary to defuse the ethnic tensions exposed by the Malayan Emergency (1948–1960). For the Orang Asli, who are a minority in Peninsular Malaysia, equalization was equivalent to assimilation into the Malay populace. Consequently, the Orang Asli have been directed to become sedentary farmers. The second is that sedentarization has been promoted for practical reasons. Implementing policies of equalization and “modernization” policies requires centers to provide public services and for private trade. For example, schools can be built or piped water provided only in permanent settlements. Further, Orang Asli who have acceded to receiving public services and engaging in private trade have required permanent housing.

The subject populations, the Bateq and the Mendriq, are included as part of the Negrito. Classic ethnographies have described the Bateq and Mendriq as highly mobile; thus, it may be assumed that they have been influenced most by the policies of sedentarization. This study discusses the relationship between sedentarization and population dynamics by analyzing the demographic features of the Bateq and Mendriq, and by comparing those features to those of other ethnic groups in Malaysia and other hunter-gatherer populations.

### *Pos Lebir Village*

Fieldwork was conducted from 2009 to 2011 in Pos Lebir Village (Figure 2),



**Figure 2** The location of Pos Lebir village  
Source: Author's field data

located in the State of Kelantan along the Lebir River, a tributary of the Kelantan River. To the east of the village are Semaq Beri communities in the State of Terengganu on the opposite side of Lake Kenyir, which was formed by dams completed in 1985. To the south of the village, there are Bateq communities in the State of Pahan, across the Taman Negara (National Park). These communities also have been described as engaged in hunting and gathering. People in Pos Lebir and these other communities have close relationships; intermarriages have taken place. Pos Lebir consists of two communities: Machang (mainly Bateq) and Pasir Linggi (mainly Mendriq). The names Machang and Pasir Linggi were recorded in the British colonial era.

The village is one of several permanent settlements built by the JHEOA around 1970 (Abdullah and Yaacob 1974) (Photo 1). Permanent settlements in Kelantan and Pahan were constructed by a Malaysian government motivated to defend against the activities of the Malayan Communist Party, which operated in the forests of northern Malaysia. At present, although this political motivation no longer exists, permanent settlements continue to be constructed and reconstructed to address socioeconomic issues. Administrative and commercial projects related to the Orang Asli, including those related to school construction, health services provision, and plantation development, are based on permanent settlements (Photo 2). There are concrete houses in the village that are inhabited mainly by nuclear households. The village has piped water, electricity, and paved roads.

Previous studies conducted on the Bateq and surrounding populations (Endicott 1979; Kuchikura 1988) have indicated that Orang Asli populations around Pos Lebir formerly hunted and gathered foods for their daily subsistence. These activities have continued; however, with subsistence transition, modernization, and globalization, these activities are now undertaken to obtain not food but to provide



**Photo 1** Permanent settlement in Pos Lebir  
(Photograph by the author, September 16, 2010)

an income (cf. Lye 2004; Gomes 2010). At the time of this author's research, foraged agar wood (*Aquilaria spp.*) and rattan were their primary sources of income. This has affected gender roles in relation to subsistence activities; in daily life: men usually engage in cash-earning activities whereas women engage do housekeeping. Among the Semaq Beri, changes in subsistence activities and gender roles have been reported to affect demographic features (Kuchikura 2011).

Typically, villagers use their motorcycles to go on foraging trips that last between one and several days (Odani 2013). These trips are usually organized by men. The men collect agar wood (Photo 3), rattan, mammals and reptiles that have commercial value - for example, soft-shelled turtles (*Amyda cartilaginea*). On their foraging trips, they eat fruits and seeds they have collected, whereas in the village, purchased foods, such as rice and canned foods, are consumed regularly. Some villagers work for wages on a rubber plantation developed by the JHEOA in the reserve area surrounding the village.

## METHODS

To obtain the data, a census of Pos Lebir was conducted. People were interviewed



**Photo 2** Morning assembly of the primary school in Pos Lebir  
(Photograph by the author, September 19, 2011)



**Photo 3** Foraging agar wood (Photograph by the author, August 30, 2011)

about basic information: age, gender, marital status, place of birth, and occupation. To cross check the data, people were interviewed regarding their families and life histories.

These interview data were validated using two official census data sets. First, census data obtained by JHEOA officials in villages as part of the national census were used. The JHEOA undertakes its own census for its own purposes: for example, to plan the building of houses and the implementation of agricultural projects and welfare activities. Data from the JHEOA census then become included as basic data in the national census of Malaysia (the “Population and Housing Census, Malaysia” organized by Jabatan Perangkaan Malaysia). In other words, JHEOA officers collecting data for the national census in Orang Asli communities are concurrently census takers.

Second, personal data from the national registration department of Malaysia (Jabatan Pendaftaran) were used. The national registration department issues an identification card (*My Kad*) to all Malaysians, typically at birth. The *My Kad* and subsidiary documents indicate basic information such as age, gender, and marital status. In the research period, almost every person in Pos Lebir had a *My Kad*, apart from a few adults<sup>7</sup>. Doctors and nurses assist mothers who deliver their babies in hospitals with registering their babies for the *My Kad*. Some adults in

Pos Lebir who were not born in hospitals were never registered in the *My Kad* system. The interview data, census data from the JHEOA, and *My Kad* data were crosschecked to obtain the census data used in this study.

Census variables in this study were measured retroactively from January 1, 2008 because at the time of this research, the latest JHEOA census had been conducted in 2008. The author initiated field research in 2009; he crosschecked data from the latest JHEOA census against interview and *My Kad* data. In 2010 and 2011, the data were revised by year, according to changes that had occurred in Pos Lebir. Census variables were followed until September 20, 2011, the last day of field research. Changes to the data by year were collected by interview and observation. In particular, correct birth and death dates were necessary for analyzing fertility and mortality rates. Although doctors and nurses had helped mothers giving birth in hospitals to register their babies, many of their birthdates were registered incorrectly: the JHEOA census and *My Kad* data showed that a disproportionate number of people had been born on either January 1 or the first of a month.

## OVERVIEW OF DEMOGRAPHIC FEATURES

Table 1 shows the *de jure* population of Pos Lebir as on January 1, 2008, when the population was 256 people, and on September 20, 2011, when the population was 303 people. The crude increase was 47 people. In part, this was because of migration. Table 2, which indicates basic changes between the starting and ending points, shows that 32 people moved in and 20 people moved out. The table also notes that 54 people were born and 19 people died. However, because this study was intended to examine only intra-community population dynamics, migrants to and from the community were excluded both from the birth and death numbers, and from the analysis in general. Although social increases and decreases in a population are essential in the study of population dynamics, only those who had been born and died in Pos Lebir were analyzed in this study. Population increases in Pos Lebir warrant analysis in future studies.

Figure 3 shows the demographic structure on January 1, 2008 and September 20, 2011. Excluding migrants, the total population was 236 persons on January 1, 2008 and 271 on September 20, 2011. The shape of the graphs suggests that the population has expanded in Pos Lebir and that young people outnumber older people. The age distribution further indicates that few people over the age of 65

**Table 1** *De jure* population of Pos Lebir

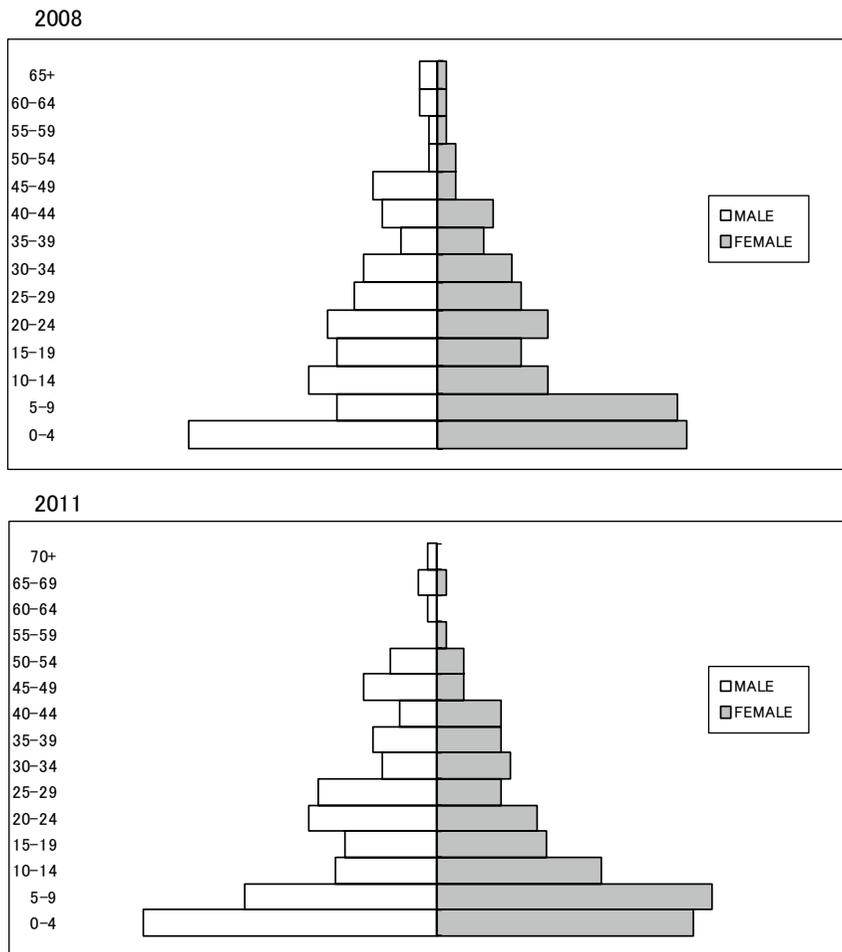
	MALE	FEMALE	TOTAL
1-Jan-08	126	130	256
20-Sep-11	152	151	303

Source: Author's field research

**Table 2** Demographic change in the research period

	MALE	FEMALE	TOTAL
1-Jan-08	126	130	256
Moved in	17	15	32
Moved out	11	9	20
Birth	28	26	54
Death	8	11	19
20-Sep-11	152	151	303

Source: Author's field research



**Figure 3** Demographic structure of Pos Lebir  
Source: Author's field data

live in Pos Lebir. From these results, the demographic structure of Pos Lebir may be considered similar to that of other pre-demographic-transition populations in the Third World, despite the demographic features of Malaysia as a whole having been deemed as “The trend of these indicators is in line with the transition of age structure towards aging population of Malaysia.” (Jabatan Perangkaan Malaysia 2011: 6).

At the end of the research period, Pos Lebir had 183 Bateq people (68 percent), 84 of the Mendriq (31 percent), and four who belonged to other ethnic groups (1 percent). The two communities in Pos Lebir are Macang and Pasik Lingi. Originally, Macang consisted of Bateq, and Pasik Lingi of Mendriq. At the end of the research period, Macang and Pasik Lingi had 118 and 153 people, respectively. In Macang, 109 of 118 people (92 percent) were Bateq and in Pasik Lingi, 75 of 153 people (49 percent) were Mendriq. This indicates that the population has flowed from Macang to Pasik Lingi because Pasik Lingi has better access to roads, shops, and a community school.

Marriages among people of different ethnic groups also were observed. Three couples consisted of a man from Pos Lebir and a woman from an Orang Asli ethnic group that was not Bateq or Mendriq (for example, the Temier). In Pos Lebir, there were 37 couples in which both husband and wife were still alive. In these, there were 14 couples (38 percent) in which a man of the Bateq/the Mendriq ethnic group and a woman of another group.

Most people (253 people, 93 percent) had been born in Pos Lebir. Others had been born in Aring (a Bateq settlement; 10 people, 4 percent), Selangor State (two people, 1 percent), Sayap (a Bateq settlement; one person), Rah (a Mendriq settlement; one person), Tako (a Mendriq settlement; one person), and Pahan State (one person). No data were available on three people.

## BIRTH, MORTALITY, AND GROWTH RATES

Figures related to births are shown in Table 3. Despite the small population, the number of births, or the crude birth rate (CBR), has tended to be constant. The total fertility rate (TFR) has been high consistently.

In 2010, Malaysia’s CBR and TFR were 17.5 and 2.2, respectively (Jabatan Perangkaan Malaysia 2011: 5). Compared with the national data, the fertility rate

**Table 3** Birth Rate

	2008	2009	2010
Mid-Year Population	260	270	278
Number of Births	13	15	13
Crude Birth Rate (‰)	50.0	55.6	46.8
Total Fertility Rate	7.50	9.03	6.85

Source: Author’s field study

of Pos Lebir was quite high. No data are available regarding the birth rate among the Orang Asli. For reference, the 2010 data indicate CBRs by ethnicity; the CBRs among ethnic Malays, other *bumiputra*, Chinese, Indians, and others were 20.5, 20.1, 11.3, 14.2, and 15.1, respectively (Jabatan Perangkaan Malaysia 2011: 6). Although the CBRs of the ethnic Malay and other *bumiputra* populations were closer to that of Pos Lebir, they were still approximately only half of Pos Lebir's CBR.

Kuchikura's longitudinal study of the Semaq Beri in Terengganu State indicated changes in the TFR over time: the periods 1930–1955, 1945–1975, 1965–1995, and 1980–2005 had TFRs of 4.71, 5.44, 8.50, and 9.64, respectively (Kuchikura 2011). TFRs in Pos Lebir (7.50, 9.03, and 6.85) have been almost the same as the later values (8.50 and 9.64) for the Semaq Beri. Kuchikura discussed the relationship between sedentarization and demographic dynamics. According to him, sedentarization policies began to be implemented in relation to the Semaq Beri around the 1970s, as they were on the Bateq. The change in TFR among the Semaq Beri from 5.44 (1945–1975) to 8.50 (1965–1995) corresponds to the enforcement of sedentarization.

Studies have been conducted on hunter-gatherer populations in other countries. In the Philippines, data from the Agta also reveal a relationship between social changes and demographic dynamics (Early and Headland 1998). In the periods 1965–1979 and 1980–1994, TFRs for the Agta of San Ildefonso, who had a relatively traditional lifestyle, were 7.0 and 7.6, respectively (Early and Headland 1998: 95). However, among acculturated Agta in the same region, the TFR for the period 1951–1994 was 9.2 (Early and Headland 1998: 158). Factors different from those in Pos Lebir effected sedentarization among the Agta of San Ildefonso: environmental changes caused by commercial logging, migration to other places, and subsistence transition. Differences between data from Pos Lebir and that from the Agta of San Ildefonso must be taken into account. However, that acculturated Agta had a higher TFR than did those with a relatively traditional lifestyle suggests that similar trends can be observed among the Orang Asli and the Agta.

Studies on the Dobe Kung! of South Africa have yielded different findings. Howell summarized several studies on the demographic dynamics of Dobe Kung! including her own (Howell 2000: 378). TFRs among the Dobe Kung! in 1968, 1973, 1978, 1988, and 1998 were 4.7, 5.0, 6.9, 5.0, and 5.0, respectively. In her ethnographic description, sedentarization was enforced on the Dobe Kung! in the 1960s and 1970s and subsistence transition took place (Howell 2000: 372–377). However, the data of Dobe Kung! do not indicate high fertility rates—Howell indicates that the HIV pandemic in southern Africa around 1990 was one of the main reasons.

The TFR in Pos Lebir in 2009 was 9.03. This value was high not only among hunter-gatherer populations, but also among the general population. “Natural fertility,” considered the limit of human fertility, was observed among the Hutterites at a value of 10.9 (Eaton and Mayer 1953). Although 9.03 remains

**Table 4** Mortality and Growth Rate

	2008	2009	2010
Number of Deaths	5	4	7
Crude Death Rate (‰)	18.9	14.5	24.9
Number of Infant Deaths	0	1	0
Infant Mortality Rate (‰)	0.0	66.7	0.0
Number of Under-5 Deaths	1	2	4
Growth Rate (%)	3.13	4.30	2.34

Source: Author's field data

lower than this value, it may be said that the fertility rate in Pos Lebir has approached the limits of human fertility.

Mortality and growth rates are shown in Table 4. Mortality rates fluctuated more than fertility rates because there were few deaths. Although the infant mortality rate in 2009 (66.7) was high, the values in 2008 and 2010 were zero because no infant died. Because birth cohorts from prior to 2007 were not investigated retroactively in this study, under-five mortality rates were not analyzed. In place of under-five mortality, the number of under-five deaths are shown in the table. Despite the few events, these deaths amounted to half of the total. Pos Lebir's growth rate consistently has been positive, because the high fertility rate has compensated for deaths; this suggests that the population of Pos Lebir will increase rapidly.

In 2010, the crude death rate and infant mortality rate in Malaysia were 4.8 and 6.8, respectively (Jabatan Perangkaan Malaysia 2011: 1). Compared with the national data, Pos Lebir's mortality rate was quite high. By ethnicity, crude death rates in Malaysia in 2010 among Malays, other *bumiputra*, Chinese, Indians, and others were 4.9, 3.7, 5.4, 5.8, and 2.1, respectively (Jabatan Perangkaan Malaysia 2011: 3). The Pos Lebir value is higher than are those of all of these ethnic groups. However, Pos Lebir's growth rate was higher than 2.0, the national average annual population growth rate (2000–2010).

In the period 2004–2007, the crude death rate and infant mortality rate among the Semaq Beri were 13.2 and 125 (Kuchikura 2011). Pos Lebir's crude mortality rate was about same as that among the Semaq Beri, whereas Pos Lebir's infant mortality rate was lower than that among the Semaq Beri. For reference, the crude birth rate and infant mortality rate among the Semaq Beri in the period 1979–1984 were 15.2 and 125, respectively—in other words, the two periods were nearly identical in crude birth rate and infant mortality rate. Differences between the infant mortality rate in Pos Lebir and among the Semaq Beri cannot be discussed, as necessary background information is lacking. However, mortality rates in Pos Lebir and among the Semaq Beri were both much higher than among other ethnic groups in Malaysia.

Among the Agta of San Ildefonso, crude death rates in the periods 1965–1979

and 1980–1994 were 34.8 and 47.6, respectively (Early and Headland 1998: 102). The infant mortality rate in the period 1980–1993 was 266. In the 44-year period 1950–1944, the growth rate averaged 0.62 (Early and Headland 1998: 83). The Pos Lebir data are more recent than are those for the Agta of San Ildefonso. It should be noted that the high mortality rate among the Agta is remarkable. A different researcher found in 2005 that among the Agta of the Northern Sierra Madre Natural Park, the infant mortality was 137 (Minter 2010); this was slightly lower than among the Agta of San Ildefonso, but still high. Differences between the Orang Asli and the Agta are assumed to result partly from differences in hygiene between Malaysia and the Philippines. The infant mortality rate of Malaysia in 2010 was 6.8 (Jabatan Perangkaan Malaysia 2011: 1), whereas that of the Philippines was 12.6 (National Epidemiology Center 2011: 78).

Because latest trends in mortality and growth rates among the Kalahari hunter-gatherers are difficult to obtain, Howell constructed a simulation model for population dynamics by using other studies as well as her own ethnographic data (Howell 2000: 381). In her model, until 1988, values among the Dobe Kung! were comparable and were calculated based on actual data. In 1968, the crude mortality rate was 35.25, the infant mortality rate 348.6, and the growth rate 0.13 in 1968. In 1978, the crude death rate was 23.95, the infant mortality rate 207.4, and the growth rate 1.23. In 1988, the crude death rate was 21.32, the infant mortality rate 178.78, and the growth rate 1.65. Although crude death rates among the Dobe Kung! were the same as among the Orang Asli, the infant mortality rate was much higher, thus limiting the growth rate.

## DISCUSSION AND CONCLUSION

As the survey results indicated, fertility values in Pos Lebir were quite high, even compared with other hunter-gatherer populations. No single factor was responsible for this, rather it was the result of a confluence of factors, one of which was sedentarization, the main issue of this article. However, the relationship between sedentarization and the high fertility rate cannot be described as a simple, single process.

Sedentarization first affected reproductive behavior. Sedentarization enhanced differences between the genders in Pos Lebir. Married men would go outside the village to forage for forest products such as agar wood, rattan, mammals and reptiles (Photo 4). Women would stay in the village to engage in housekeeping activities (Odani 2013) (Photo 5). If women are less mobile, this may be assumed to affect the proximate factors of reproduction. Among the Semaq Beri, a tendency among women to become “housewife” and engage in childcare was observed (Kuchikura 2011).

In addition, sedentarization facilitates short birth intervals, which further facilitate high fertility rates. People in Pos Lebir now have easy access to store-bought food from a store in the village and from peddlers. They often buy and



**Photo 4** Adult males using motorcycles to go on foraging trips (Photograph by the author, September 6, 2010)



**Photo 5** Adult females going fishing near the village (Photograph by the author, September 17, 2011)

consume skimmed milk and baby foods. This has shortened the duration of breast-feeding as well as the attendant duration of the postpartum menopause. In studies on the Dobe Kung! (Howell 2000) and Agta (Early and Headland 1998), it was concluded that short birth intervals were the main factor facilitating high fertility rates.

Recent developments in public health services have also been related to high fertility rates. During the research period, all mothers delivered their babies in a hospital close to the village. No maternal deaths were observed during the research period.

The mortality rate in Pos Lebir was high. However, because this was offset by the high fertility rate, Pos Lebir exhibited a positive growth rate. Although public health services are available in Pos Lebir (Photo 6), the mortality rate suggested that people there are in worse health than members of other ethnic groups in Malaysia. Multiple factors may be assumed to have caused this. Interviews indicated, for example, that because of racial discrimination, people were disinclined to use hospitals and pharmacies in a nearby town; they were also disinclined to spend money on health services.

In terms of demographic phase, Pos Lebir's high fertility and high mortality rates place it at the pre-industrial stage in the demographic transition model.



**Photo 6** Monthly health check conducted by a local hospital (Photograph by the author, August 24, 2010)

However, Pos Lebir's mortality rate is lower than are rates among hunter-gatherer populations in other countries. In addition, the growth rate, at around 3%, is quite high compared with global rates. Consequently, it may be said that Pos Lebir has entered the industrial developmental phase, characterized by a high growth rate, high fertility rates, and relatively low mortality. If population outflow remains the same, the population of Pos Lebir will increase rapidly.

In conclusion, this case study accepts the hypothesis that population growth is synchronized with sedentarization. The "tribal extinction paradigm" criticized by Minter (Minter 2010: 52–53) is not now and was never applicable to Pos Lebir. The notion that populations of "sedentarized" hunter-gatherers increase explains a part of human history, namely, that the subsistence transition in the Pleistocene from hunting and gathering to agriculture was caused by population pressure (Binford 1968).

Further, population pressures resulting from sedentarization are problematical; people in Pos Lebir are now coping with this. Pos Lebir now has too many sick people for the health services to care for, a problem that may be considered intermediate between population pressures in Pos Lebir and the high mortality rate.

Population growth causes not only problems pertaining to human health, but also problems pertaining to resource availability and identity. At present, people rely on hunting and gathering to earn money. Using their motorcycles, they travel over a wide range because all the resources near Pos Lebir have been exhausted. Population growth will accelerate the exhaustion of resources, aggravate competition, and widen disparities among people.

Because of problems of resource availability, it is expected that more people will abandon hunting and gathering to engage in other subsistence activities. Once hunting and gathering are no longer viable, it is doubtful that Pos Lebir will have sufficient job opportunities for its inhabitants. Further, hunting and gathering define a large part of their identity. Can families or communities that abandon hunting and gathering be called "hunter-gatherers"? Can such families and communities come to think of themselves as Bateq or Mendiq, independent of hunting and gathering?

In her study of the Agta, Minter discussed the cultural resilience of hunter-gatherers (Minter 2010). Focusing on resource access rights, Minter asserted that such rights are a key to cultural resilience. Rights are of course important in the Pos Lebir case; however, there resource exhaustion caused by population growth will jeopardize cultural resilience.

## NOTES

- 1) In 2011, the JHEOA was reorganized into the Jabatan Kemajuan Orang Asli (JAKOA); or Department of Orang Asli Development. This article describes the organization as the JHEOA, but events and policies since 2011 have been undertaken by the JAKOA. In 1954,

- the Jabatan Orang Asli (JOA) was established, and in 1963, the JOA was renamed the JHEOA.
- 2) Many studies on the Orang Asli have counted 19 linguistic populations, with the addition of the Temoq. However, the JHEOA counted 18 and omitted the Temoq. In line with the reliance of this study on the JHEOA census, it follows the JHEOA count. Moreover, orthographical variants of populations are found also in many studies—for example, the Bateq are also known as the “Batek.” This study follows the JHEOA’s spelling.
  - 3) Efforts to secure “territories” for all Orang Asli groups, where they have land rights, have progressed (cf. Nicholas 2000). However, such efforts have not yet encompassed all Orang Asli groups.
  - 4) As groups, the Negrito, Senoi, and Proto-Malays have recently been reclassified according to linguistic features; the new groups are, for example, the Northern Aslian, Southern Aslian, and Proto-Malays. However, in line with the reliance of this study on the JHEOA census, the older classification is used.
  - 5) The Hoabinhians had a Mesolithic culture that has been mainly from prehistoric sites in northern Vietnam. Flakes and cobble artifacts characterize this culture, which dates to 10,000 BC.
  - 6) The Austronesians are a linguistic population; they speak languages of the same family throughout the islands of Southeast Asia and the Indian and Pacific Oceans. From linguistic analyses (Blust 1999), it has been hypothesized that the Austronesians originated near Taiwan, and subsequently expanded overseas around 5000–2500 BC.
  - 7) Deficiencies were revealed in checking *My Kad* numbers against data from the JHEOA census; only 93 of 262 (35%) people in the census had the *My Kad*. It seems that many younger children do not have *My Kad* card numbers. In the next survey period, this ID system will be checked against data from the JHEOA. The *My Kad* number has six digits that represent birth date—for example, 700717 indicates July 17, 1970. Although the data were deficient, demographics can be analyzed by using them.

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