

The Importance of Ayer Hitam Forest Reserve (AHFR), Puchong, Selangor, to the Temuan Ethnic Subgroup

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ABSTRACT

The indigenous people, or Orang Asli, have a prominent role to play in efforts to sustain the management of forest resources in Malaysia. Their direct use of and close association with the forests for generations have made them important for consideration when formulating and implementing forestry policies. Unlike that of other forest reserves, surrounding development has influenced the size of the Ayer Hitam Forest Reserve (AHFR). In fact, not only has the size of the forest reserve been affected, but also continuous rigorous socio-economic development has resulted in the resettlement of one of the Temuan communities from Kg. Sg. Rasau Hulu to Taman Orang Asli Saujana Puchong. Two Temuan ethnic subgroup communities, namely those currently living in Kg. Sg. Rasau Hilir and Taman Orang Asli Saujana Puchong, are located less than 3 km away from AHFR. The two Temuan ethnic subgroup communities also are believed to have occupied the AHFR for the last 400 years. With increasing pressure for further development of this prime forest reserve, the need is crucial to evaluate not only the goods and services but also the Orang Asli as direct users of forest resources.

INTRODUCTION

Literature reviews have indicated that the forests are an important component of the indigenous people's (like the Orang Asli's) way of life worldwide. Studies related to the Orang Asli also have shown that resources, especially non-timber forest produce (NTFPs), extracted from the forest are crucial as a source of both food and income to maintain their lives. To certain groups or ethnic subgroups of Orang Asli, even though they are surrounded by development, their need to be in the forest is something that cannot be denied. Their strong sense of belonging to the forest is beyond description and can be understood only by the Orang Asli themselves. Also, because of their strong relationship with the forest, their presence needs to be acknowledged and felt by all of us – foresters, forest planners or managers, and most important of all, policy-makers.

The Orang Asli's relationship with the forest demands our attention, especially now when their population number is said to be growing substantially. Using figures from the Department of Statistics Malaysia, Nicholas (2000) stated that

the population of Orang Asli grew at an average rate of 1.9 to 4.3% annually between 1947 and 1992. A similar average growth rate was observed between 1990 and 1992. In an earlier study, Nicholas (1997) said that about 42,000 (40%) of the 105,000 Orang Asli population in 1997 lived close to or within forested areas, which indicates their direct association with the forest. The percentage of Orang Asli living close to or within forested areas is our major concern. In other words, the higher the percentage of Orang Asli who are dependent on forest resources, the more we, as resource managers and policy-makers, have to incorporate their needs and interests when drafting and implementing forest management plans.

Besides acknowledging the strong bond of the Orang Asli with the forests, we as custodians of the forests also must include inputs from other stakeholders who may have a direct interest in the said forests. The idea of including views from other stakeholders does not mean the wider community is trying to dictate to the forestry profession what they should or should not do, but rather that the complementary roles

of others in forest management are being acknowledged (Buchy and Hoverman, 2000). Buchy and Hoverman's idea of incorporating the complementary roles of other stakeholders right at the beginning, i.e. from the planning stage through the implementation process, has been advocated by others, as well.

The importance of forests in terms of trade to the Orang Asli has been well documented by many authors (Wang, 1958; Lamb, 1964; Wheatley, 1964; Dunn, 1975; Lim, 1991a; 1991b). However, a majority of these researchers did not quantify the values of forest collections made in relation to the Orang Asli's dependence on those forest resources. Hence, to claim that the Orang Asli are dependent on forest resources, namely NTFPs, for their livelihood, is difficult, especially when one is speaking of the degree of the so-called dependency.

The Ayer Hitam Forest Reserve (AHFR), Puchong, also is said to be important to the Orang Asli, specifically, the ethnic subgroup called Temuan. A majority of the communities living near the forest area are aware of this. Unfortunately, a well-known fact is insufficient to indicate the close relationship of the Temuan with AHFR without the support of hard evidence from the scientific community. To put it differently, the importance of AHFR to the Temuan needs to be quantified scientifically. This paper discusses the importance of AHFR to the Temuan in terms of values of NTFPs hunted and collected, such as animals, fish and medicinal plants. Views of the AHFR's condition, past and present, in terms of the availability of NTFPs that they used to collect, their way of life and being relocated to new homes, also are discussed.

REVIEW OF LITERATURE

Literature on the importance of AHFR to the Temuan ethnic subgroup is rather scanty. The only available literature on the value of AHFR to the Orang Asli is by Rusli *et al.* (1997), as quoted in Awang *et al.* (1999). Rusli *et al.* estimated that the value of timber and non-timber collected by the Orang Asli was worth RM110,000 in 1996. Without detailing what exactly the Orang Asli collected, Rusli *et al.* further stated that birds and small mammals comprised 75% of the animals collected; 24 species were hunted for meat and 48% of the plants were collected for their fruit. According to Awang *et al.* (1999), the case study by Rusli *et al.* (1997) also revealed

that, at the time the survey was conducted, AHFR supplied fewer usable species of plants and animals than before. The interviews of household heads were conducted for two months, namely November and December 1996.

Obviously, without further details about what the Temuan collected, it is difficult to gauge the importance of the types of collections, be they of animals, plants, fruits, or other NTFPs. Besides giving more insight into and better appreciation of the importance of AHFR to the Temuan, information gathered from the study also will help policy-makers formulate a more compatible management plan for AHFR. The need to gain knowledge about the importance of AHFR to the indigenous people, i.e. Temuan, as one of the priority areas for research was decided in the stakeholder analysis conducted jointly by the Forest Research Institute Malaysia (FRIM) and Universiti Putra Malaysia (UPM) between 16 and 17 October 2003. The stakeholders present at the workshop thought that more comprehensive information was needed on the indigenous people, as well as on other aspects such as timber, potential recreational value, carbon sequestration, medicinal plants, fruits and other non-timber values. Stakeholders who attended the workshop strongly believed that knowing all the attributes of AHFR through stakeholder analysis would assist policy-makers in making not only effective but also participatory forest management decisions (Norini *et al.*, 2004).

Before going into the materials and methods used in the study, let us examine the cognitive map, sometimes also referred to as a facilitative device – an outcome of an interview with the headman or Tok Batin of the Orang Asli during the stakeholder analysis workshop (Fig. 1). Fig. 1 clearly indicates that the mind of the indigenous people is not as simple as we might have thought. For instance, when asked what exactly they did when they went into the forests, they informed the interviewer that they collected plants (mostly medicinal plants), hunted animals (e.g. deer mouse, deer and wild boar), and caught fish. More will be said of Fig. 1 in the section on results and discussion.

MATERIALS AND METHODS

Similar to other socio-economic studies, information was gathered in this study through interaction with Temuan heads of households, using a structured questionnaire. Basically, the

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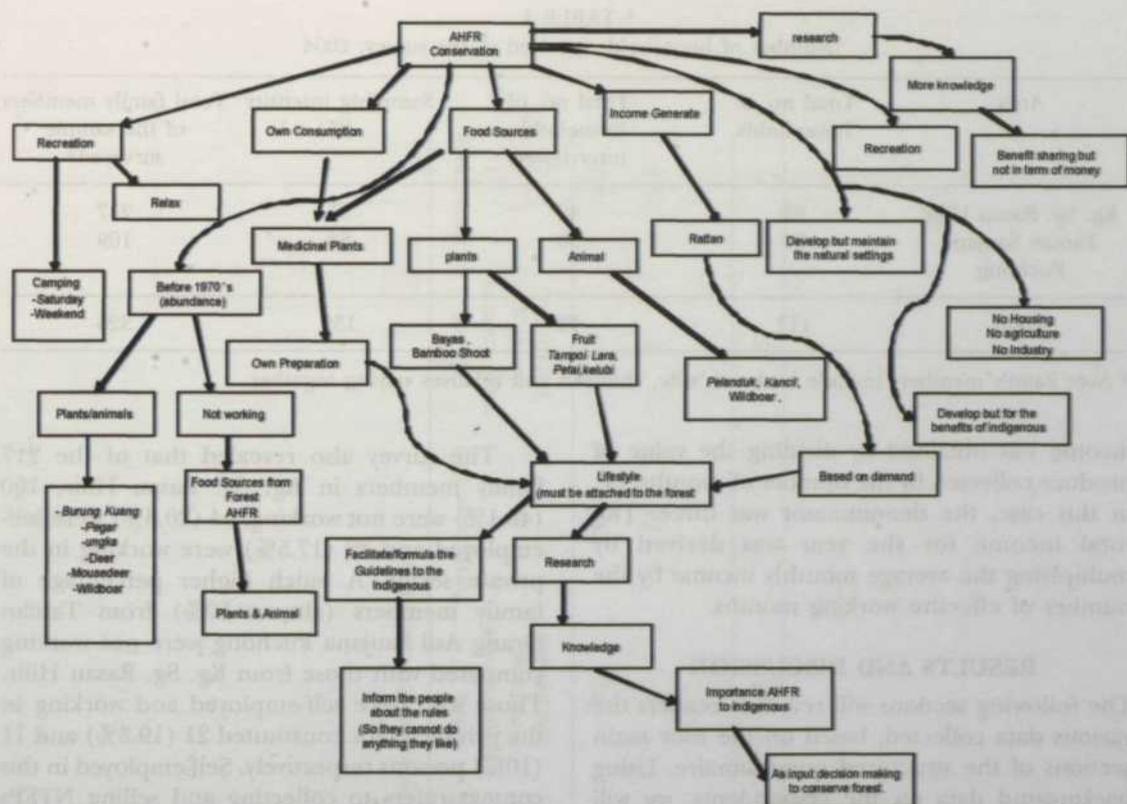


Fig. 1: Part of the facilitative device showing view of an Orang Asli of AHFR

Note: Words in *italic* are local names

Source: Norini et al. (2004)

questionnaire was divided into four main sections: (a) background of respondent; (b) status of land and properties owned; (c) perceptions of development, i.e. from the perspective on AHFR's condition, life-style before and after relocation, income, and availability of NTFPs; and (d) values of NTFPs collected from AHFR.

The survey on the Temuan was conducted in June 2004. Two main groups of Temuan were involved in the survey. They were living in Kg. Sg. Rasau Hilir and Taman Orang Asli Saujana Puchong. The group in Taman Orang Asli Saujana Puchong had moved from Kg. Sg. Rasau Hulu, located reasonably close to AHFR. The former group, Kg. Sg. Rasau Hilir, comprised 83 households whereas the latter, Taman Orang Asli Saujana Puchong comprised only 34 households. Of the 83 households at Kg. Sg. Rasau Hilir, 42 (51%) were interviewed. On the other hand, 30 of the 34 (88%) households from Taman Orang Asli Saujana Puchong, were interviewed (Table 1).

Valuing of Animals, Medicinal Plants, and Fish

Values of NTFPs, such as animals, medicinal plants and fish, could be estimated should detailed data become available. A much better representation of NTFP values also would be obtained if researchers could collect time-series data or be involved with the activities of the Orang Asli. To follow the Orang Asli into the forest and record the values of the NTFPs they collect is one way of obtaining reasonable estimates. Because the data that were collected depended highly on the memories of householders engaged in such activities and because of budgetary constraints, detailed data were not collected. Therefore, in this study, valuation of NTFP such as animals, medicinal plants and fish was based entirely on an average of three months' collection. The units (for animals collected) or weights (for fish, fruits/vegetables and medicinal plants collected) were then translated into values by multiplying the amount by the average unit price. Average

TABLE 1
Number of households involved in the survey, 2004

Area	Total no. of households	Total no. of households interviewed	Sampling intensity (%)	Total family members of the sample surveyed*
Kg. Sg. Rasau Hilir	83	42	51	217
Taman Saujana Puchong	34	30	88	109
Total	117	72	139	326

* Note: Family members include husband, wife, children and relatives staying together.

income was obtained by dividing the value of produce collected by the number of months, i.e. in this case, the denominator was three. The total income for the year was derived by multiplying the average monthly income by the number of effective working months.

RESULTS AND DISCUSSION

The following sections will reveal to readers the various data collected, based on the four main sections of the structured questionnaire. Using background data on the respondents, we will then try to relate that information to the NTFPs collected by the Temuan from AHFR.

Background Data

Information collected on the background of the Temuan indicated that a majority of the 209 family members (more than 28%) in Kg. Sg. Rasau Hilir were between 21 and 30 years old. A figure of 209 instead of 217 family members was quoted because one of the heads of households could not recall the different ages of his eight family members. On the other hand, of the 109 family members in Taman Orang Asli Saujana Puchong, 34 (31%) were also in the age group of between 21 and 30 years.

With regard to educational level, 89 (42.6%) of the family members of the total population living in Kg. Sg. Rasau Hilir did not have any formal education, whereas about 91 (43.5%) and 29 (13.9%) members had primary and secondary school education respectively. A majority of family members from Taman Orang Asli Saujana Puchong had no education (46.8%), whereas about 37.6, 14.7, and 9.2% (one individual) had primary schooling, secondary schooling and college exposure respectively.

The survey also revealed that of the 217 family members in Kg. Sg. Rasau Hilir, 100 (46.1%) were not working, 44 (20.3%) were self-employed and 38 (17.5%) were working in the private sector. A much higher percentage of family members (almost 50%) from Taman Orang Asli Saujana Puchong were not working compared with those from Kg. Sg. Rasau Hilir. Those who were self-employed and working in the private sector constituted 21 (19.3%) and 11 (10%) persons respectively. Self-employed in this context refers to collecting and selling NTFPs from AHFR.

Table 2 indicates that a majority of the total household members interviewed in Kg. Sg. Rasau Hilir (37.9%) earned less than RM300 per month. In Taman Orang Asli Saujana Puchong, the percentage of household members earning less than RM300 per month was 31.6%.

Little can be said about the levels of income earned by the two Temuan groups. The much higher percentage of household members earning less than RM300 per month was not related to the percentage of each group's population who were not working (46.1% from Kg. Sg. Rasau Hilir and 50% from Taman Orang Asli Saujana Puchong). The percentages of household members in both areas that were self-employed also did not differ much.

Status of Land and Properties Owned

A total of 42^a householders responded to the question regarding status of the land where they currently were living. A quick observation indicated that about 30 householders in Kg. Sg. Rasau Hilir owned the land where they were living, whereas 10 householders informed the interviewers that the land had been passed to

TABLE 2
 Pattern of household income, by top three categories

Area	Total family members of the sample surveyed	Total no. of wage earners	No. of wage earners earning < RM300	Percentage (%)	No. of wage earners earning RM300-400	Percentage (%)	No. of wage earners earning RM401-500	Percentage (%)
Kg. Sg. Rasau Hilir	217	87	33	37.9	20	23.0	13	14.9
Taman Saujana Puchong	109	38	12	31.6	3	7.9	8	21.1
Total	326	125	45		23		21	

them by their parents and grandparents. The other two householders indicated that they were occupying government land. Of those householders living in Taman Orang Asli Saujana Puchong, 24 said they owed the land, whereas another 6 were squatting on government land.

Of the total population from the two groups of Temuan, 42 and 15 householders from Kg. Sg. Rasau Hilir and Taman Orang Asli Saujana Puchong respectively responded to the next question. Of the 42 householders from Kg. Sg. Rasau Hilir, 22 said that they had motorcycles and 4 said the cars they drove were their own. In comparison, only 12 householders in Taman Orang Asli Saujana Puchong said that they owned motorcycles as a mode of transportation.

Perceptions of Development

Data collected from the area revealed that eight householders reported that they lost their land and homes to the government because of development. According to the householders from the two groups, the lands taken by the government usually were replaced with new ones or the owners were compensated for them. Householders in Kg. Sg. Rasau Hilir indicated compensation figures of between RM12,000 and RM75,000 if their lands were taken over by the government. A much higher rate, between RM16,000 and RM200,000, was paid to those from Taman Orang Asli Saujana Puchong once their lands were taken over by the government for development purposes.

When asked about the condition of the forest following development, householders from Taman Orang Asli Saujana Puchong said that, as far as resources were concerned, AHFR seemed to have fewer fish and animals, even though there was no restriction on their entering the forest (Table 3). The water quality also was said to have been affected by the development. At this juncture, perhaps it would help if some indicators such as numbers were used to demonstrate the degree of change. Householders living in Kg. Sg. Rasau Hilir expressed similar feelings of concern regarding the condition of selected aspects before and after development. The number of householders who said they were not "comfortable" increased after development (Table 3).

Overall, 40 of the 42 householders interviewed in Kg. Sg. Rasau Hilir were satisfied with their way of life. This comprised about

48.2% of the total households in that area. These Temuan groups were still living in their original state, i.e. they had not been touched by development. It was also noted that 21 or 70% of the householders from Taman Orang Asli Saujana Puchong stated that they were happy with their new homes, whereas another 5 (16%) and 4 (13%) still preferred the old life-style and complained about earning less income because of the distance they had to travel to collect NTFPs from AHFR.

Overall, there was a general feeling that AHFR should be preserved because it is a source of both food and income to the Temuan ethnic subgroup (Fig. 2). Besides, both groups also said that they frequently needed to go into the forest for recreation, to hunt for animals, and to do other related activities of interest.

Values of Non-Timber Forest Produce (NTFPs)

(i) Yearly Values of Animals Collected

Analysis of the data from AHFR revealed that about 17 popular animals currently were hunted either for food or to be sold to prospective buyers (Table 4). For calculation purposes, all NTFPs collected were given a value, regardless of whether they were consumed or sold.

Of the 17 animal species, deer and python seemed to be the most popular. When translated into values, their average worth was between RM10,000 and RM12,000 per year (number of effective months was assumed to be 10 months). As far as price per unit is concerned, one can see that the range for certain animals is substantial. Nonetheless, for calculation purposes, an average price had to be used, even though a range of prices would certainly help improve the total values collected. All in all, the Orang Asli collected a total of RM43,817 from selling the various types of animals (Table 4).

(ii) Yearly Values of Fish Collected

It looks like fishing was not as attractive as hunting animals. The total yearly collection, according to the survey, was slightly more than RM1,200 (Table 5). This figure corresponds to an earlier statement made by the Temuan regarding the number of fish caught before and after development.

(iii) Yearly Values of Medicinal Plants Collected

It is clear from Tables 6 and 7 that collecting medicinal plants and fruits/vegetables was equally important to both the Temuan groups.

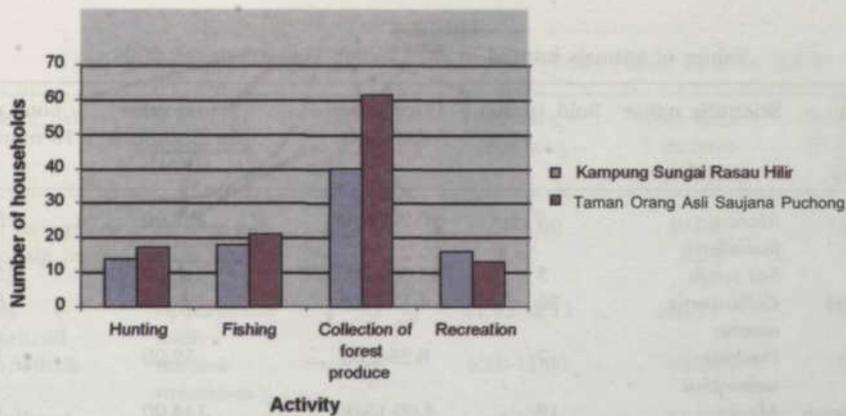


Fig. 2: Activities in Ayer Hitam Forest Reserve

TABLE 3

Conditions of selected aspects before and after development in Taman Orang Asli Saujana Puchong

Item	Condition	No. of households responding	
		Before development	After development
Housing	Comfortable	18	10
	Uncomfortable	11	18
	No change	1	2
Forest resources	Plenty	29	
	Decrease		27
	No difference		2
River	Clean	17	4
	Dirty	1	16
	Shallow		1
	Deep	1	
	No difference	6	6
	A lot of fish	5	
	No. of fish decreased		3
Life-style	Difficult	4	9
	Good	12	6
	Unchanged	3	4
	Self-employed	2	5
	Government staff		
	Traditional	9	
	Modern		5
Income	Business		1
	Unchanged	14	19
	Unfixed	7	1
	Increased	4	7
Entrance to forest	Decreased	4	3
	No restriction	25	1
	Difficult to enter	2	26
Animals	No problem to enter	3	3
	Plenty	24	
	Decreased		23
	No difference	4	5
	Not hunting	2	2

TABLE 4
Values of animals hunted in Ayer Hitam Forest Reserve, 2004

Type of animal	Scientific name	Sold (units)	Price range RM/unit	Total value for 3 months (RM)	Total value for 10 months (RM)
Long tailed macaque	<i>Macaca fascicularis</i>	7	20.00-29.00	167.00	556.67
Wild boar	<i>Sus scrofa</i>	3	230.00-250.00	710.00	2,366.67
Plantain squirrel	<i>Callosciurus notatus</i>	36	4.17-9.00	188.76	629.20
Banded leaf monkey	<i>Presbytis melalophos</i>	7	6.25-9.00	52.00	173.33
Pig-tailed macaque	<i>Macaca nemistrina</i>	18	4.00-13.00	144.00	480.00
Mousedeer	<i>Tragulus javanicus</i>	3	21.67-114.00	249.67	832.23
Porcupine	<i>Hystrix brachyura</i>	14	26.25-35.00	385.00	1,283.33
Water monitor	<i>Varanus salvator</i>	33	17.00-30.00	925.00	3,083.33
Python	<i>Python neticulatus</i>	10	178.00-350.00	3,156.00	10,520.00
Frog	<i>Rana blythi</i>	42	16.00-24.00	824.00	2,746.67
Tortoise	<i>Geomyda spinosa</i>	55	1.87-2.00	109.35	364.50
Deer	<i>Cervus unicolor</i>	6	600.00	3,600.00	12,000.00
Water rat	<i>Hydromys chrysogaster</i>	43	7.50	322.50	1,075.00
Labi-labi	<i>Pelochelys bibroni</i>	4	58.00	232.00	773.33
Malaysian wood rat	<i>Rattus tiomanicus</i>	84	10.00	840.00	2,800.00
Giant treeshrew	<i>Tupaia tana</i>	84	10.00	840.00	2,800.00
Emerald dove	<i>Chalcophaps indica</i>	20	20.00	400.00	1,333.33
Total		469		1,3145.28	43,817.59

For instance, the collection of medicinal plants and of fruits/vegetables in 2004 was estimated to be worth RM11,553.56 and RM13,301.44 respectively.

(iv) Yearly Values of Rattan Collected

Besides fish, fruits/vegetables, medicinal plants, and animals collected and hunted, both the Temuan groups also collected various types of rattan from AHFR. The most common species collected was rattan manau (*Calamus manan*). Based on the survey conducted, the total yearly collection of all rattan from AHFR was estimated to be around RM7,403.

(v) Total Yearly Values of Various Activities

Adding the collections from the various activities yielded a total figure of RM77,309.24. This total

collection for 2004 was much lower than the RM110,000 reported earlier by Rusli *et al.* (1997). If one were to relate the total value of collections to the cognitive map presented in Fig. 1, one would see that the statement that NTFPs were abundant back in the 1970s is accurate. In fact, the decreasing trend in collections of NTFPs should be a direct concern to most foresters. One could argue that the lower total collection could also be due to the smaller number of Temuans making visits or fewer visits being made to the forest. One way of measuring this is through time-series data regarding the number of visits and number of households engaged in collecting NTFPs from AHFR. Whatever the reason may be, the decline in collection of NTFPs is a major concern to all.

TABLE 5
Total yearly values of fish collected from Ayer Hitam Forest Reserve, 2004

Type of fish	Scientific name	Sold (kg)	Price range (RM)/kg	Total value 3 months (RM)	Total value 10 months (RM)
Ikan tenggalan Hampala barb	<i>Puntius bulu</i>	4.5	1.50-3.00	40.08	133.60
	<i>Hampala macroleipido</i>	1.5	3.00	4.50	15.00
Giant snakehead	<i>Ophicephalus laevis</i>	9.1	11.43-12.11	108.77	362.58
Ikan belisik	<i>Rasbora sumatrana</i>	4.8	6.80-11.00	45.24	150.80
Broadhead catfish	<i>Clarias macrocephalus</i>	2.5	4.50	11.25	37.50
Spotted bard	<i>Puntius binotatus</i>	10	0.60	6.00	20.00
Black snakehead	<i>Channa melasoma</i>	3	14.00	42.00	140.00
Others		16.5		112.15	373.83
Total		51.9		369.99	1,233.31

TABLE 6
Values of medicinal plants collected from Ayer Hitam Forest Reserve, 2004

Type of medicinal plant	Scientific name	Sold (units)	Price range (RM)/unit	Total value 3 months (RM)	Total value 10 months (RM)
Ubi jaga	<i>Smilax myosotiflora</i>	18	10.00-20.00	350.00	1,166.67
Tongkat ali	<i>Eurycoma epiculata</i>	8	7.50-20.00	149.81	499.37
Kacip fatimah	<i>Labisia potheria</i>	5	18.00-27.40	127.60	425.33
Buah pakma	<i>Rafflesia hasseltii</i>	7	18.00-19.00	132.00	440.00
Gajah beranak	<i>Goniothalamus scortechinii</i>	11	17.00	187.00	623.33
Rempah gunung	<i>Leptospermum flavescens</i>	11	17.00	187.00	623.33
Cendawan rimau	<i>Travesia cheirantha</i>	7	19.00	133.00	443.33
Tembaga besi	<i>Crinum asiaticum</i>	42	19.00	798.00	2,660.00
Buah jes	NA	6	16.00	96.00	320.00
Akar bertam	<i>Eugenia tristis</i>	5	17.00-17.25	86.00	286.67
Serapat	<i>Parameria polyneura</i>	10	16.00	160.00	533.33
Tengkuk biawak	<i>Allomorpha malaccensis</i>	8.3	11.25-16.00	94.80	316.00
Merian air	NA	7	9.23-11.33	77.21	257.37
Merian batu	<i>Labisia potheria</i>	5.3	12.25-13.00	65.15	217.17
Merian kayu	<i>Croton griffithii</i>	5.5	13.00	71.50	238.33
Tongkat haji samad	<i>Eugenia dyeriana</i>	50	13.00	650.00	2,166.67
Merian panas	<i>Cyrtandra pendula</i>	2	8.00	16.00	53.33
Kayu serong	NA	5	17.00	85.00	283.33
Total		213.1		3,466.07	11,553.56

Note: NA denotes not available.

TABLE 7
Values of fruits/vegetables collected from Ayer Hitam Forest Reserve, 2004

Type of fruit/ vegetable	Scientific name	Sold (kg)	Price range (RM)/kg	Total value 3 month (RM)	Total value 10 months (RM)
Rambutan	<i>Nepheliu lappaceum</i>	5.3	6.58-12.00	41.92	139.73
Tampoi	<i>Baccaurea graffithii</i>	75	8.50-12.00	672.50	2,241.67
Larat	<i>Acrostichum aureum</i>	12.5	18.00	225.00	750.00
Pulasan	<i>Nephelium mutabile</i>	36.25	18.00	652.50	2,175.00
Petai	<i>Parkia speciosa</i>	186.67	3.00-4.50	753.51	2511.70
Jering	<i>Pithecellobium jiringa</i>	13.75	5.00-14.00	75.50	251.67
Perah	<i>Elateriospermum tapos</i>	9.3	6.00	55.80	186.00
Makong	NA	140	3.00	420.00	1,400.00
Pelaga	<i>Amomum kepulaga</i>	12.2	10.00	122.00	406.67
Keledang	<i>Artocarpus lanceolatus</i>	10.1	17.00	171.70	572.33
Langsat	<i>Lansium domesticumjack</i>	12.5	10.00	125.00	416.67
Rambai	<i>Baccaurea motleyana</i>	55.1	6.00	330.60	1,102.00
Kerdas	<i>Pithecellobium bubalinum</i>	6.3	8.00	50.40	168.00
Pucuk bayas	<i>Oncosperma tigillaria</i>	27.5	6.00	165.00	550.00
Pucuk rotan	<i>Calamus ornatus</i>	3.2	10.00	32.00	106.67
Berangan	<i>Castanopsis hullethi</i>	1	12.00	12.00	40.00
Redan	<i>Nephelium glabrum</i>	9	5.00	45.00	150.00
	<i>Noronha</i>				
Pucuk bertam	<i>Eugieissona tristis</i>	4	10.00	40.00	133.33
Total		619.67		3,990.43	13,301.44

CONCLUSION

Quick analyses of the data revealed that the Temuan are still dependent on AHFR as a source of food and income. About 79% of the households from Taman Orang Asli Saujana Puchong were engaged in some sort of forest-related activities in AHFR, whereas about 35% of the households from Kg. Sg. Rasau Hilir were dependent on AHFR as a source of food and income. Clearly, even though the Temuan are surrounded by development, the need to go into the forest for hunting, recreation or other activities is important to them. Their bond with the forest is here to stay.

Between the two groups of Temuan, households from Taman Orang Asli Saujana Puchong seem to be more attached to AHFR, even though they are currently living in modern homes. In short, modernization has not stopped the Temuan from continuously engaging in desirable forest-related activities. Comparison of data from this study with those of the earlier study by Rusli *et al.* (1997) revealed that the values of collection of NTFPs have declined. The next crucial question is: What can we do about it? One way of addressing this issue is to formulate a policy to include the Orang Asli in

the decision-making process. Above all, policy decision-makers must understand the needs of the Orang Asli. Understanding their needs will help policy decision-makers better plan the management of the forest. In other words, getting the Orang Asli involved in the decision-making process would create a sense of belonging, which will indirectly help in managing the forest in a sustainable manner. Sustainability in this context refers not only to timber but also to NTFPs and environmental services that forests can offer.

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INTRODUCTION

Global climate change is a significant and...
 major global environmental challenge of the twenty-first century...
 The impact of climate change on...
 ecosystems and human societies...
 is becoming increasingly apparent...
 as a result of the increasing concentration of greenhouse gases in the atmosphere...
 The Intergovernmental Panel on Climate Change (IPCC) has estimated that the global average surface temperature will increase by 1.5 to 2.5 degrees Celsius by the end of the twenty-first century...
 This increase in temperature will have significant impacts on...
 ecosystems, including changes in...
 precipitation patterns, sea level rise, and...
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 human societies is also significant...
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