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**Food security among the Orang Rimba in Jambi:
transformation processes among contemporary Indonesian
hunter-gatherers**

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Summary

The focus of this dissertation is on the food and livelihood security of the Orang Rimba, a hunter-gatherer people living in central Jambi (Sumatra, Indonesia). Living in small groups, they eke out a living by gathering forest products and hunting wildlife, which is sometimes combined with the adoption of commercial farming. Today, their total population is estimated at around 3,600 people, distributed over three locations: in the buffer zone of the Bukit Tigapuluh National Park in northern Jambi, outside the forest alongside the Sumatran highways in southern Jambi, and in and around the Bukit Duabelas National Park in central Jambi, where this study took place.

Jambi used to have vast stretches of rainforest, which suffered severe degradation due to rapid growth-focused development and poor forest management practices, which began in the 1970s and continue until this day. These practices promoted plantation crops (rubber, palm oil, and coffee, among others), increased accessibility through the construction of infrastructure, transmigrant settlements, logging (both legal and illegal), and slash-and-burn subsistence cultivation.

The advent of these changes has intensified pressure on Orang Rimba land and curtailed their mobile lifestyle, forcing them into an increasingly sedentary existence. Moreover, forest degradation and decimation of biodiversity have reduced the Orang Rimba's access to economic resources inside the forest. Consequently, the Orang Rimba have had to make culturally costly adjustments.

Central to my dissertation is the documentation and analysis of processes of change among contemporary Orang Rimba as hunter-gatherers, through the lens of food security. By closely examining their food consumption patterns and food procurement strategies, we can not only assess to what extent the Orang Rimba do or do not enjoy food security, but we can also pinpoint how processes of intense social and environmental change are reflected in their daily diets.

The main research question is: *"What are the patterns of food production and consumption among different Orang Rimba groups and how do these patterns relate to their food security?"* Additionally, this study answers the following sub-questions:

1. What do the Orang Rimba eat?
2. How do they obtain their food?
3. To what extent are the Orang Rimba food (in)secure?
4. How do they adjust their modes of livelihood under changing environmental and social conditions?

Most information was collected from the Orang Rimba through in-depth fieldwork, which took place during 21 months across 2012 through 2016. Additional information was gathered from other relevant stakeholders such as local government officials (at the

village, sub-district, district, and provincial level), local Non-Government Organizations, and outside experts on the Orang Rimba. Qualitative interviewing was combined with the collection of quantitative records on food consumption and procurement.

The core of the data consists of 2,520 food intake records, which were collected among six households from three Orang Rimba groups, namely in Sako Tulang, Terab and Air Hitam. In each site, the records covered a continuous period of three months and detailed the number and ingredients of each meal consumed by the various households. In addition, information was collected regarding the ways the meal ingredients were acquired, e.g., through hunting, fishing, gathering, cultivation, exchange between families or purchasing. Participatory observation further enabled me to closely observe food production and preparation techniques and social activities related to food production and consumption.

The three Orang Rimba groups considerably differ from each other in terms of their livelihood strategies, the ecological conditions and their proximity to Malay settlements. The Sako Tulang group lives on the border of secondary forest and a transmigration settlement. Their main livelihood consists of cash crop plantation farming (mostly rubber and to a lesser extent also oil palm) which they combine with hunting and gathering. Some of them have become middlemen and act as traders of these cash crops. The Terab group is the most mobile group. Having lost much of their original forest area to oil palm plantation development, they now largely depend on these logged-over plantation areas, where they make a living from hunting wild pig, intermittent financial handouts from plantation companies, and plantation labor. The Air Hitam group, finally, live in relatively intact forest inside the Bukit Duabelas National Park. They combine hunting and gathering with trading non-timber forest products and rubber tapping.

Overall, the records show that Orang Rimba diets are rich in carbohydrates and animal protein. While the meals consumed by all three groups quite consistently contain these components, the Terab group falls behind the other two groups in terms of the frequency in which they are present in their meals. Although Orang Rimba do not cultivate rice, this crop has become the number one source of carbohydrates among all groups. Rice is followed by cassava, which most often is grown by Orang Rimba themselves, or obtained through exchange with relatives. Wild tubers (which are dug up from the natural forest) are most consistently consumed by the Sako Tulang group, which is noteworthy given their heavy involvement in cash crop production.

Animal protein is mainly derived from hunting, fishing, and exchange with other households, and much less often from the market. However, there are notable differences between the three groups. Among the Sako Tulang and Air Hitam groups, freshwater fish is the main source of animal protein, which is both self-caught and bought on the market. In contrast, the Terab group mainly rely on lizards and wild pigs for their animal protein consumption. These pigs are mostly hunted in oil palm plantations, where the animals feed on fallen fruits.

In contrast to carbohydrates and animal protein, the records shows that vegetables and

fruits are rarely consumed during meals. Vegetables, mostly consisting of home-grown cassava leaves, are on average part of just over 2% of all meals. Only the Terab group ever eat fruits as (part of) their meals. Importantly, during the abundant fruiting season this group periodically over-consumes fruits, which leads to gastro-intestinal issues.

In principle, Orang Rimba households strive to eat three meals a day. The food intake records show that both the Sako Tulang and Air Hitam groups do quite well in this respect. The sampled households in these groups consumed 97% and 95% of all regular meals respectively, implying they skipped between 3-5% of all the meals that could have potentially been consumed during the 3-month period of observation. The picture is rather different for the Terab group. The sampled households in that group consumed 85% of all regular meals, which means that they had to forego around 15% of potential meals during the observation period.

Combining these analyses with insights on the context in which the three groups procure their food and income, this dissertation shows that the Terab group is most vulnerable in terms of food and livelihood security. They lag behind the other two groups with respect to carbohydrate and animal protein consumption, and they skip meals three times as often. Being a highly mobile group moving around oil palm plantations and secondary forest, they depend on a relatively confined and degraded environment in which they are confronted with limited availability of food and lack of safe drinking water. These factors contribute to malnutrition and health issues, which in 2015 culminated in 15 people dying of hunger.

In contrast to the Terab group, the Air Hitam group, living inside the Bukit Duabelas National Park, still has continued access to relatively intact forest. Being able to obtain most of their food from that forest, this group is least dependent on cash. However, they do rely on their earnings from rubber tapping for purchasing rice, which is reflected in periodic rice shortages, especially in the dry season.

The Sako Tulang group are the most cash-dependent among the three groups, their main livelihood being rubber tapping and trading. Such cash crop farming is successfully combined with hunting and gathering activities in the adjacent secondary forest, which together provide this group with a relatively stable income. Nonetheless, they too, face food and income scarcity during the dry season.

Food-sharing is the most important coping mechanism to prevent and mitigate food shortages among all three groups. This is an important trait of hunter-gatherer peoples in general, and it applies most strongly to food that is procured through hunting, fishing and gathering. Purchased rice too, however, may be shared between close relatives. Food sharing is practiced across relatively large distances and is surrounded by a set of specific cultural rules and taboos.

Despite inter-group variation, overall, the Orang Rimba face high vulnerability in terms of food and livelihood security. Their main asset, the natural forest, is no longer large

and abundant enough to cater to their food needs year-round and it continues to shrink rapidly. This is because swathes of natural forest are signed away by the government to both private and state-owned rubber and oil palm plantations, logging concessions, infrastructure development, and transmigration projects, as part of the Indonesian government's economic policy. Moreover, in their trade of forest and plantation products, most Orang Rimba continue to be highly dependent on asymmetrical trade and labor relationships with external middle-men and plantation companies, while their increasing dependency on cash further exacerbates their vulnerability as price volatility results in periods of scarcity and hardship.

The dissertation is structured as follows.

Chapter I discusses the conceptual background used, including reflections on the concepts of hunter-gatherers, food, and livelihood security. It also includes a brief discussion of the Orang Rimba literature. In addition, it presents the methodology of the research and the outline of the dissertation.

Chapter II discusses the setting of my research. This includes a discussion of the interconnection of the Orang Rimba with the wider world, the lives of the Orang Rimba in more specific ways, especially in terms of local knowledge and livelihood, and a discussion of the Bukit Duabelas National Park. This chapter explains how the interaction of various factors and actors has shaped the lives of the Orang Rimba. This includes government policy and the interventions by the non-state actors such as NGOs, media, and other communities. These actors and factors have a significant influence on various changes faced by the Orang Rimba.

Chapters III, IV, and V are dedicated to the presentation of the extensive findings based on the fieldwork conducted in the three groups: the Sako Tulang group, the Terab group, and the Air Hitam group. The results of the daily food intake records and the interview data on the Orang Rimba's knowledge of edible wild plants and animals in each location are also carefully investigated in these three chapters.

Chapter VI provides a comparative analysis of the data from the three groups and a general conclusion. It argues that despite their diets being relatively rich in carbohydrates and animal protein, all three groups face food insecurity in different ways and at different levels. The continued decline of the natural forests on which Orang Rimba livelihoods and culture depend, the lack of secure access to land, the increased dependency on the market and associated exposure to price volatility, and the unrelenting government efforts to make the Orang Rimba part of the national modernization project, work against their food and livelihood security. As is the case for other hunter-gatherer peoples, it is vital for the Orang Rimba that future interventions depart from *their* understanding of what food security and progress mean.