

Durian and other food plants of the Maluku Islands and early documentation by the botanist Georgius Everhardius Rumphius

A report from our journey
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Introduction

We spent the first 2 weeks of 2016 in Indonesia on the Moluccan Islands (Moluccas) Ambon and Seram (Bahasa Indonesia: Provinsi Maluku, Pulau Ambon and Pulau Seram, deutsch: Molukken). Our main interest were the tropical plants and fruits and the nature of the country. First we spent some days in Ambon in the Mutiara-Hotel visiting the **market area** near the harbour of the town and made trips to the surrounding beaches. With our driver and friend **Abraham Tuhumena** we went to Amsterdam Fort and Hila, found in the north of the Island. There we could see many **fruits** growing in the nearby gardens. (Bram +6281247166298)

We also may thank the **Maluku Provincial Tourist** office, Jl. Jud. Sudirman, Mrs **Stefanny** for giving us excellent advise how to organize our trip to Seram. It was the last day of 2015 when we visited the Tourist office. (Stefanny +6281328548248)

We went by ship to the Island of Seram, from Tulehu to Amahei, and from there to the north coast of Seram, crossing the National Park of Manusela to Sawai, where we stayed a few days in Lisar Bahari Guesthouse. We participated in a guided tour to the near forest, watching the **durian harvest** of the forest farmers, a boat trip to a near river seeing **mangrove forest, sago-processing** and a small empty **coral island**. We also were guided to surrounding villages seeing the **tropical garden flora**. One village was a **transmigrasi settlement**, where a new system of agriculture, based on crops and vegetables, should be established. We also joined bird watchers from Alaska in the early morning crossing the Manusela National Park by the road and taking a closer look to the **vegetation of the forest**. All the program was organized by the staff of the Lisar Bahari Guesthouse, mainly by Sain and Yani, whom we may thank for the guidance.

At the Lisar Bahari Guesthouse a very experienced guide from Ambon, Arthur Pieris, gave us the information about the **Rumphius Library in Ambon**. Returned to Ambon we visited this library and we found out many interesting facts about Moluccan Islands and **Georgius Everhardius Rumphius**. When we returned to Austria, we found out that the **Herbarium Amboinense** can be found in the National Library of Austria in Vienna (Österreichische Nationalbibliothek) and this book is today accessible via Internet.

So it was possible to find many of the food plants in this extraordinary book published in Amsterdam in the year 1741. When you look into this book you want to learn more about the plants and the people of Ambon and Seram Island and return to these beautiful islands.

Visiting the market area of Ambon



Water spinach (*Ipomoea aquatica*) and **Amaranth** (*Amaranthus* sp.)
 id: kangkong, Vegetables pp 181 id: bayam Vegetables p 83



Durian fruits arriving at the market place in Ambon



First we saw the Durian fruits in the market in Ambon on the last day of the year 2015. Obviously a good harvest campaign was just going on.

Other fruits and vegetables in the market of Ambon



"Ready to eat" rice in beautiful packages and bananas.
Kacang panjang a very long vegetable bean (*Vigna unguiculata*)
and citrus (*Citrus hystrix*), where the fruits and the leaves are used as a
spice in Indonesia.

(pictures of the market in Ambon 31.12.2015)

Trip on the Ambon island

With Abraham Tuhumena we went to the north of the Island, crossing the forest via Telagakodok, visiting Amsterdam Fort in Hila.



Around the Amsterdam Fort there are big **Breadfruit Trees** (Bahasa Indonesia: sukun) (*Artocarpus altilis*) (POSEA pp83ff)



On our way back from Hila, we were shown fruits of the **Salak Palm**. (*Salacca zalacca*) (Pictures 2.1.2016, Palmen Seite 354)



Rita and I were guided **Abraham Tuhumena** He showed us many parts of the Island of Ambon. We may thank him for that!



by
from Ambon.

Journey to Seram



The Island of Seram reaches from 128 to 131 °east, stretches more than 300 km and is located about 3°south of the equator. To cross the island from Amahai/Masohi to Sawai through the Manusela National Park, it takes nearly 5 hours. There is a long mountain chain with the highest Mount Binaiya (2527 m). In the picture from Google Earth you see the Bay of Sawai with the villages Sawai (left) and Rumah Olat (right). The richness of the place is the dense rainforest and the beautiful coral coast.

The beautiful island of Seram



Durian harvest in Sawai

The first durian fruits we saw in the market along the harbour in Ambon. When we came to Sawai we were guided to the near forest with Sain and Yani and it was then just the right time for the harvest of durian.

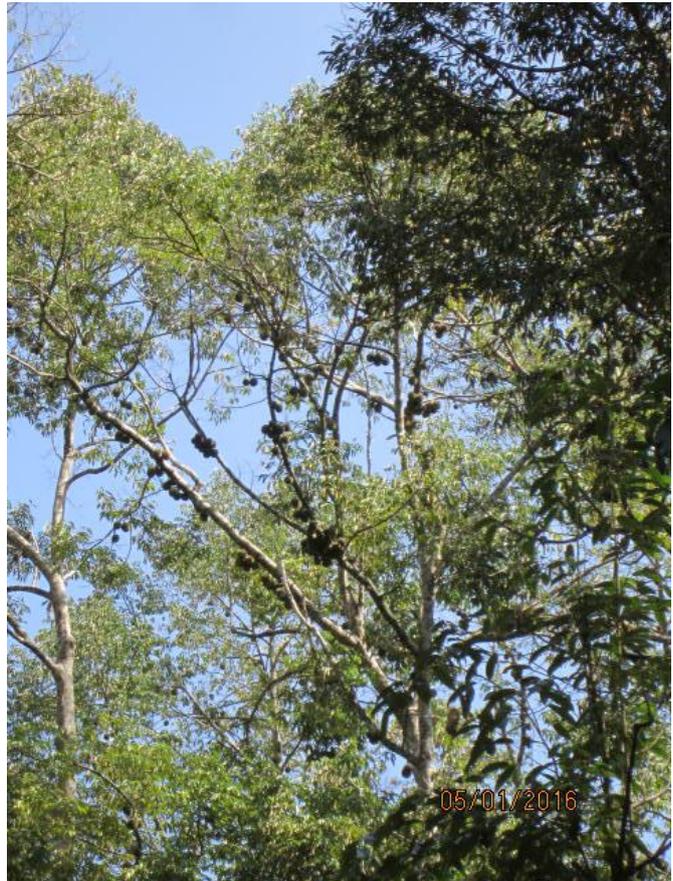
The durian trees are almost 50 m high. We were told that it is now the first rich harvest after a long time. The near forest is like a durian garden. The ripe fruits are falling down. Even if the fruits fall down from the very high trees, they do not crash. Near the durian trees there are small shelters, where people and mainly children wait for the fruits coming down, which are picked up immediately. For the durian harvest families stay in the forest - we were told they stay there even during the night. The fruits are fixed on bamboo sticks and carried down into the village in the evening or in the next morning. Durian fruits from the forest are used for the families and some fruits are sold. Down in the village you see the durians in big piles. Fruits are then opened by knives. The arils are taken out, cooked and then put into molds - like it is done with pudding. The molds are turned and layed out for drying in the sun.

The seed of the durian-fruit is surrounded by an edible aril. The aril is the nourishing tissue for the seed. The aril has a pleasant fruity taste and is liked very much. We liked the fruit and its aroma - the often mentioned smell comes obviously from overripe fruits.



Durian fruit showing an aril in which one seed is imbedded. After taking away the arils, the seeds are used mainly for feeding goats.

Big durian trees in forest gardens around the village



Harvesting durian fruits, whole families are in the forest



Durian fruits are brought out of the forest



The durian is a staple food for the people in Sawai and is grown in the forest. So the forest gives them very nourishing food.



Yani and Sain showed us the durian harvest in Sawai - we may thank them for guiding us into the forest !

Preparing dodol durian in the villages

The arils are taken out, cooked and put into molds.



Dodol made from Durian is a staple food in Sawai and is drying in the sun.

Details from the Durian fruit



The seeds of the Durian are also edible, but usually used for the goats. The inside the seed is full of starch, giving the seed the energy to germinate. The aril of the ripe Durian is smashed and used to prepare the dodol.

Literature on durian:

Subhadrabandhu Suranant, Ketsa Saichol: Durian King of Tropica Fruit. Daphne Brasell Associates Ltd and CABI Publishing 2001 New Zealand

Sago processing



The Sago palm is growing in the wide river valley in a sago palm swamp forest. The palm is cut and the stem is shredded. In former time this was done with knives - today with a very simple constructed machine.





With the water of the river the starch is then washed out of the shredded sago. This is done with a traditional small factory using parts of the palm tree. It may be done in a different way in bigger sago processing plants, but here it was very effective without using energy consuming machines.



The starch is then sedimented and afterwards dried. It is used for making a kind of soup or pudding, which is called papeda sago.



In former times this was done exactly the same way. Sago is the traditional staple food of Maluku Islands.



(aus: Tauern Odo Deodatus, Leipzig 1918)

Plants of Mangrove and Coral Island

On the 6th of January we were taken with a boat up a river to see the sago processing described above. Along the river you can find mangrove vegetation. Though we do not know the mangrove species we made some pictures of the mangrove plants. On this trip we were also shown an empty small Coral Island. Whoever recognizes some of the species, would be invited to send me an eMail: helmut.reiner@teleweb.at

Nypa palm Mangrove ?



This is probably the Nypa palm (*Nypa fruticosa*) - the main mangrove palm, which grows along the mouth of the nearby Salaw river.
(Jones David Palmen S 276)

Mangrove species ?

Along the river were many mangrove evergreen bushes and trees.
Again we could not get information on the species:



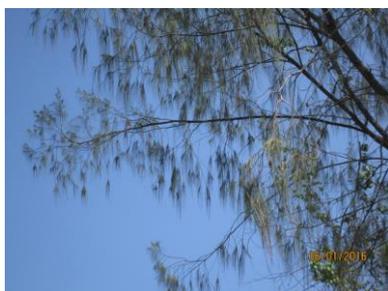
The main mangrove species are the genera *Avicennia*, *Bruguiera*, *Ceriops*, *Rhizophora* and *Sonneratia*. We do not know which species grow along the mouth of this river? Again if you know send me an eMail please:
helmut.reiner@teleweb.at

Pandanus ? in the swamp area



Probably some Pandanus species along growing along the river.
if you know eMail please: helmut.reiner@teleweb.at

On the empty coral island



The tree could be *Casuarina equisetifolia* ?, the plant growing on the sand *Ipomoea pescaprae* ? - this should be a typical plant of the coast of a coral island.

Spices and fruits in the village gardens

By visiting the forest garden of Sawai and the neighbour villages Saleman and Rumah Olat, many interesting plants were shown to us. In the gardens around the villages we were shown the two main spice trees of Maluku islands.

Pala

Nutmeg (*Myristica fragrans*) id **Pala**
Botanical Family: Myristicaceae



Perhatian:
 Kalau Sayang
 Keluarga Jangan
 Ambil Buah Pala
 Di Kebun ini

Too many tourists
 are disturbing
 his garden !



For more information about nutmeg go to Gernot Katzers Spice pages
http://gernot-katzers-spice-pages.com/germ/Myri_fra.html

Cengkeh

Clove (*Syzygium aromaticum*) id **cengkeh**

Botanical Family: Myrtaceae

We could see the clove trees and the clove plantations (regular planted trees in the picture). But during this time of the year there were obviously no flowers and no fruits. You can hardly imagine how the harvesters can climb up these trees and get down the buds. (the clove is the dried flower bud and does not fall down from alone !)



For more information about clove, go to Gernot Katzers Spice pages
http://gernot-katzers-spice-pages.com/germ/Syzy_aro.html



A **mango tree** (*Mangifera indica* - id mangga) in the village and the fruit of a **wild mango** in the forest (right - species not known) very delicious !



In every village you find the juicy **pineapple** (*Ananas comosa* - Bromeliaceae) and the famous **noni fruit** - here in flower (*Morinda citrifolia* - Rubiaceae)



Mangosteen (*Garcinia mangostana* -id. manggis) is native to Indonesia. - pictures taken in Rumah olat 9.1.2016



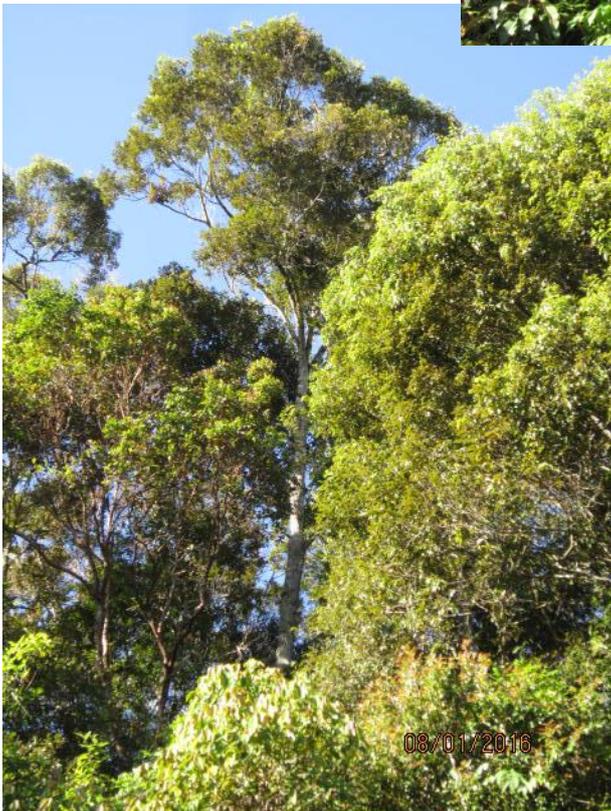
These are plants from the neotropics. **Cacao** (*Theobroma cacao*) is not really used for the market here - it is not fermented, the seeds are eaten like nuts. **Papaya** (*Carica papaya*) can be seen in every village.



There is also a transmigrasi village nearby, where a different agricultural system is tried to be established on a slash and burn area with corn, rice, and vegetable crops. This seems rather difficult, especially because of the high water demand.

Manusela National Park Rain Forest

On the January 8th, 2016 we joined bird watchers from Alaska, who had cameras and micorphones to monitor the famous and beautiful birds of Seram. We watched the plants along the road through the Manusela National Park. Whoever has a knowledge of species and is interested in the botany is invited to contact me. It is not possible to go deeper into the forest. We had to keep on the road through the Manusela National Park.





Georgius Everhardius Rumphius

On January the 12th, 2016 we visited the **Rumphius library in Ambon**. In Sawai Arthur Pieris, a young and very well informed guide gave us the advice to visit this library, where we should find more information. Many interesting books on Maluku Island are in this library.

The library is named after the great Botanist Georgius Everhardius Rumphius (in German Georg Eberhard Rumpf), born 1627 in Wölfersheim in Germany and died 1702 in Ambon. Rumphius is famous for his book **Herbarium Amboinense**. It was published decades after his death 1741 in Amsterdam, because first the VOC (Vereenigde Oostindische Compagnie) did not want to make all the findings public and first kept them as a secret. The book gives a perfect review of the plants of the Maluku-Islands in Latin and Dutch Language.

Edwards J. Valauskas, curator of rare books of the Chicago Botanic Garden gives a good biography of the live of Rumphius in the internet:

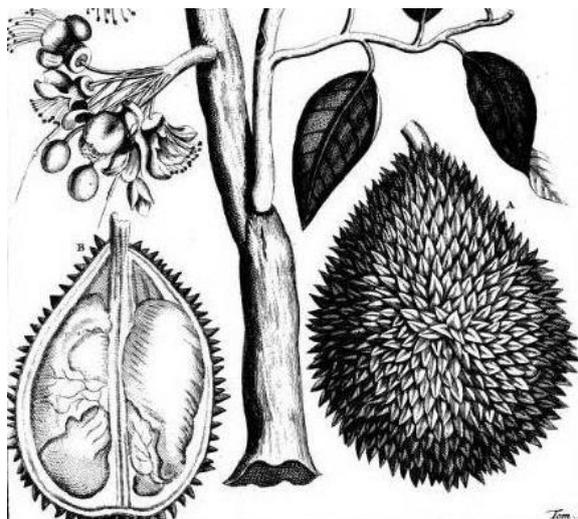
www.chicagobotanic.org/library/stories/rumphius (April 2013)

For him Rumphius is a partron saint for persistence, self-reliance, and intellectual and physical toughness and he tells us the interesting live of Georgius Everhardius Rumphius.

The Austrian National Library has a copy of this book and it is accessible via internet. All plant families are mentioned and even the corals were seen as plants at this time and described in the last book.

http://digital.onb.ac.at/OnbViewer/viewer.faces?doc=ABO_%2BZ16585900X&ref=primo-search&provider=ABO&query=%22Herbarium%22+%22Amboinense%22

This table of a durian fruit is found in the first book of Herbarium Amboinense plurimas complectens arbores frutices ... (Pars prima, Pagina 104, Tabula 29)
Screenshot of Web page 201



http://digital.onb.ac.at/OnbViewer/viewer.faces?doc=ABO_%2BZ16585850X

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