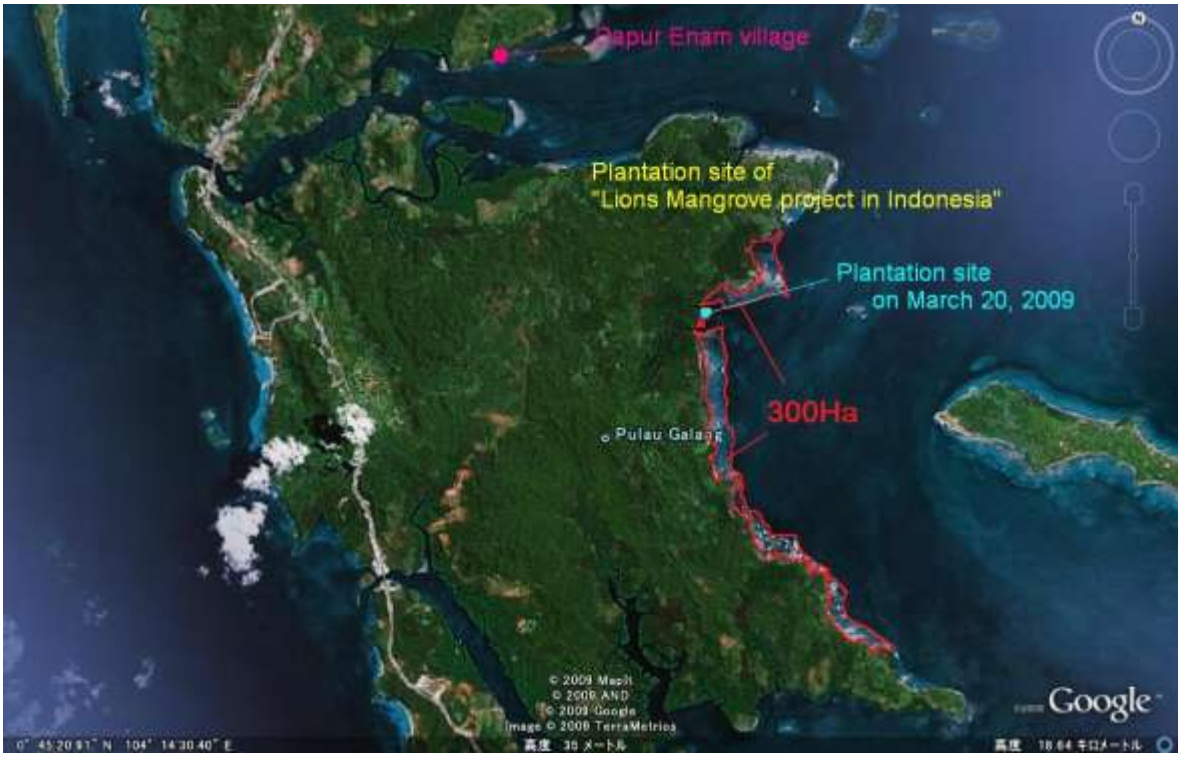
NPO Lions Mangrove Project, a report No. 1

June 24, 2009

Date: Thursday, June 24, 2009 Whether: Cloudy sky to rain

Salt concentration: 3.2 % (measured at the restaurant in Dapur Enam)

Left the restaurant at Dapur Enam to observe the forested site of non-profit organization called Lion's Forest Project (herein after referred as NPO Lion's Forest Project) by boat.



Plantation date: March 20, 2009

Rhizophora mucronata ; 800 stands, *Avicenna officinalis*; 800 stands

Status : 3 months had passed since the plantation.

Tidetable

JUNI 2009

J/T	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	J/T
24	2.3	1.6	0.9	0.4	0.1	0.2	0.5	1.0	1.6	2.2	2.7	2.8	2.8	2.4	2.0	1.7	1.5	1.5	1.8	2.1	2.5	2.9	3.2	3.1	24

(the unit of meter)

Sight observation

Land on dry beach from the east side of the forested site at 7: 24 a.m.

Concentration of salt : 3.0% (measured offshore off the dry beach)

The ocean bed was denuded because of spring tide that was covered with marine plant.

Approaching to the land, we found a lot of crab hole on the sand area. Crabs leave grained sand on the earth when they scrape/dig their holes.

The picture listed below shows current status of *Rhizophora mucronata* that was planted when the members of NPO Lion's Forest Project had visited the site 3 months ago. Growing rate of the *R. mucronata* was 90 % currently.

Many *R. mucronata* stands have 2 to 4 leaves and reach to the 2nd joint. Established theory said that *R. mucronata* will be grown to 8 joints in a year. Comparatively speaking, recently planted *R. mucronata* on the other sites in Batam also conform to grow in the customary growth rate.

The biggest *R. mucronata* grew to 36 centimeter height. (It has grown to 83 cm in height including the length of propagule.)

On the other hand, the pace of growth has varied quite a bit through the entire field. We are not able to determine what made piece-to piece variation in the growth rate, still we assume that pace of growth might be depend on ripeness of the propagules when they collected.

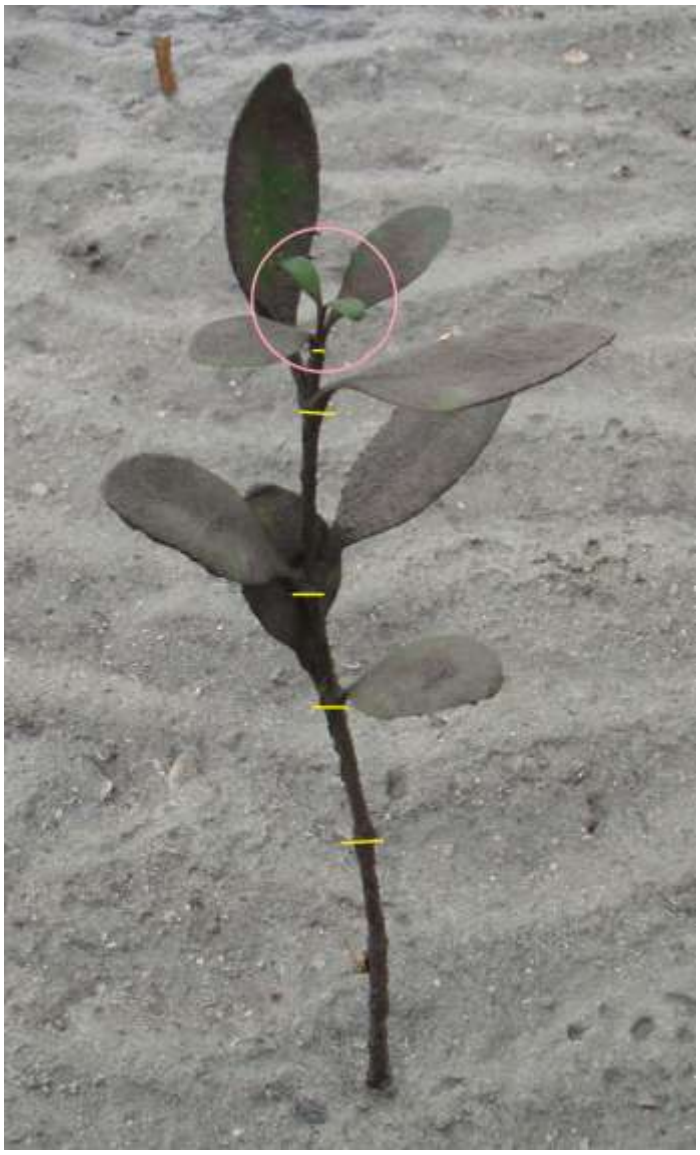
The propagules of *R. mucronata* stock sufficient nutrient, which allow themselves to grow after rooted with photosynthetic activities.

We hardly found any leaves covered with mud for the stands of *R. mucronata*. Heavily the leaves attached some mud on it were observed. In the case the covering of mud was thick, we need to remove them in order to allow them to have photosynthetic activity, but now we don't see such situation. So there is no risk about that now.

The picture below shows the present status of *Avicennia officinalis*, which transplanted seedlings. These seedlings were transplanted 3 months ago, around the same time when *R. mucronata* was planted. The survival rate reaches approximately 10%.

The number of leaves seems decreased and looks unhealthy. Some leaves are dying with attachment of mud on the leaves.

Many stands of *A. officinalis* reach about 20 cm in height. There is no significant growth compared to that when they planted.



There is a fresh sprout at the point circled with pink color in the left picture. It goes to show that seedlings are growing but the spacing between the joint of fresh top and other joints is remarkably narrow. It seems that the height of the seedling doesn't grow well.

This is the first time for us to transplant the seedling of *A. officinalis* in the site of NPO Lions Mangrove Project. Unfortunately, we only have a very few academic data, and worse we never tried the plantation of *A. officinalis* before.
As a result, we have no way of telling that we are on the right truck due to a lack of the growing rate data.
Through future observation of the planted *A. officinalis*, we are going to make effort to collect the data and try to find the reasons.

Challenges for the future

Hypothetically speaking, one of the reasons the A. officinalis stands don't grow well is that we might have planted them in early seasons. This means the seedlings grown in the nursery were still small. Next time, we try to prepare the bigger seedlings, grown in the nursery in the longer period, and try to compare the difference in growth between sizes of the seedlings. The other reason, as far as we consider, might be mud attached on leaf surface. We didn't remove them when the seedlings were grown in the nursery. In the case many mud are attached on the leaves, growing rate of the seedlings may become slow because the photosynthetic activity was inhibited.
There are four *Avicennia* species in Indonesia. The specie we applied was *A. officinalis* but next time we are going to apply *Avicennia alba*. It is commonly known that *A. alba* grows faster than *A. officinalis*. From the beginning of April, the seedlings of A. alba has started to grow with a pot around the house of Mr. Basri. Now we observe that the biggest stand reaches up to 50cm in height. In July, fifty stands will be planted on a trial basis in the site of Lions Mangrove Project.