I. INTRODUCTION

The Pandanaceae has four genera namely *Pandanus*, *Freycinetia*, *Sararanga* and *Martelidendron*. *Freycinetia* was described in 1824 by the French botanist Gaudichaud. Until now approximately 200 species present in the world. But this genus is not very widespread and the real home of *Freycinetia* is in Malaysia, Indonesia, Philippines, Formosa, Okinawa, New Guinea and surrounding islands, Australia and and New Zealand. The centre of *Freycinetia* distribution is certainly from the Philippines to New Guinea (Stone, 1970). The New Guinea islands according to Stone (1976, 1983) may have 60 species, while in comparison Malaya has 8 species and Borneo has 24 species.

The genus are climbing pandan except *F. arborea* in Hawaii. *Freycinetia* prefer living near rivers or in humid areas especially under canopy. *Freycinetia* could be found from the sea level to 2400 m asl. It is restricted in their habitat. For example *F. elegantula* and *F. pseudoangustisima* that are found only in mountains area but only few species could be found both in the low land and mountain area for example *F. tunicularis*. The limitation area of occupation may related to the agent of distribution. Unlike *Pandanus* with used win as a distribution agent, *Freycinetia* seeds are spread by mammals and birds. That is why most species have colourfull beauty bracts to attract animals to visit the flower.

According to International Plant Nomenclature Index for about 135 names of *Freycinetia* present in New Guinea. Perhaps some are synonymous name, but it show that many species occurs in the area. From eastern New Guinea, more species were published by Warburg (1900), Marteli (1910), Merril & Perry (1940), Stone (1963) and Huynh (1996 - 2003). Huynh mentioned about 87 new species into 8 parts journals of New Guinea *Freycinetia*. Few of the species are also found in the western area. Stone (1968) and Huynh (1997) also published many species from Salomon island and few of them present in Papua too like *F. salomonensis* Stone and *F. plana* Huynh. Some botanists have been published *Freycinetia* species from Western New Guinea. Solms et.al in 1883, Martelli in 1910, Rendle in 1917), followed by Ridley in 1916 to 1922, Merril and Perry in 1940 and Kanehira & Hatusima in 1941. Next, in 1976 Schumann & Lauterbach mentioned 1 species from Jayapura, followed by Huynh in 2002 who
published 1 new species from Tembagapura. Therefore they all found totally 36 species from Papua and 25 species were new species.

Many specimen from Papua are collected and put in Herbarium Manokwariense (Man) in Manokwari, Bogoriense (BO) in Bogor, Lae in Morobe PNG, NHN (L) in Leiden, Nederland and Kew (K) in England. Most of them were put as unknown species. For example in BO, from 200 specimens only 42 specimens are known species. How many species exactly occur in Papua need a taxonomical work to find out.

Inter species classification of Freycinetia were published first by Warburg in 1900 which about 2 sections and it was followed by Stone (1968) who mentioned about 15 sections. Warburg worked based on number of stigma namely Oligostigma section with 1-3 stigmas and Pleiostigma with 3 or more stigmas. Stone mentioned section based on raceme and umbel inflorescence and the umbel one were divided for terminal versus lateral or both lateral and terminal inflorescence. Next the terminal were divided again based on pseudopetiole, cephalia, berries, stigma and auricle. However, some specimens have possibilities to put under 2 section like F. archboldiana

Other taxonomy problems are sinonim name of Freycinetia. Kanehira and Hatusima in 1940 mentioned F. inouei as a new species from Dalman in Nabire, West New Guinea. They mentioned that the species have closely related to F. archboldiana but different species. Stone in 1972 put the F. inouei as sinonim of F. archboldiana.

Some botanist like Martelli in 1910; Merril & Perry in 1940; Kanehira in 1941 and Stone in 1967 said that F.angustissima were sinonim to F. stenophylla Warb. and F. polyclada Merr.& Perry. But, Huynh in 1999 mentioned the three species above were different species. He used both morphological and anatomical characters. Huynh said that in morphological characters F. angustissima and F. polyclada were showed their differences. He also said that the stigma of F. angustissima is 2 or 3 rarely 1 or 4 but stigma and areola is distinctly girdled and F. stenophylla has 2 stigmas with stigma and areola is un-distinctly girdled. Actually, our preliminary study showed that stigma and areola in west New Guinean Freycinetia have many variation and many specimens with unidentified label have the variation.

Solving all problems above need taxonomy work also phylogenetic analysis to make sure about the sections. In Freycinetia species, phylogenetic analysis even used
morphological approach never been done. Cox already made cladistic analysis based on morphological approached but only in generic level. Further, Callmender et. al (2003) produced phylogenetic trees based on cp DNA data on generic levels too.

Some *Freycinetia* species without flowers and good auricle looks similar like *F. palida* and closely unknown species. For this species information from molecular data will guide to understanding what species is, is it same or different species. However, for build a good phylogenetic classification it need comprehensive approached.

According to FWI (Forest Watch Indonesia) report in 2004, deforestation happen in Indonesia, with acceleration of degradation 3 times football area in every minutes. Consequently some species include *Freycinetia* may disappeared without ever identified.

*Freycinetia* have much utilities. All parts of this plant could be used, for example hanging root for nail; stem for lance, traditional rain clothes; leaves for roof, and handicraft like basket and bag, also for perfume; spadix and cephalia as foods; and bracts for cooling drink and juice. To get more benefit for human life, more researches need start from basic study. Therefore the taxonomic research were done using main morphological information and molecular data as a second approach.

**Purposed of the Study**

The purposed of the West New Guinean *Freycinetia* study were:

1. To know the diversity of *Freycinetia* in West New Guinea
2. To obtain delimitation of the genus and species concepts
3. To build phylogenetic classification of *Freycinetia* based on morphological and molecular data.
4. To know distribution of West New Guinea *Freycinetia*