Distribution and ecology of sangilu (*Evodia sp*) as a local endemic species in the Bantimurung Bulusaraung National Park

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Abstract. Bantimurung Bulusaraung National Park is a conservation area in unique endemic fauna in the form of a butterfly. One form of efforts to maintain the sustainability of the forest ecosystem is fostering habitat by planting butterfly feed plants. Sangilu (*Evodia sp*) is one of the endemic species of plants as well as a butterfly plant (Host Plant) in the Bantimurung Bulusaraung National Park. However, its population in nature is decreasing. This research activity aims to obtain information on the ecology and distribution of evodia for the conservation of endemic plant species as butterfly feed plants in Bantimurung Bulusaraung National Park. The study was conducted in 2 stages of observation, namely distribution and ecology with exploration of roaming methods. Observations indicate that the distribution of sangilu in the Bantimurung Bulusaraung area was found in 14 points, namely the Samaenre and Bentenge areas of Mallawa, Laiya, Pattirodeceng and Buccu-buccue resorts in Camba. Sangilu in ecological character is found in river banks, watercourses, water sources and mostly grows on slopes.

1. Introduction
The Bantimurung Bulusaraung National Park has the area on 43,750 Ha. Geographically, it is located at 4°33'-5°02' South Latitude and 119°38'-119°57' East Longitude with several types of climate. The southern region, especially the adjacent parts of the Maros Regency capital, such as Bengo-bengo, Karaenta, Biseang Labboro, Bantimurung, Tonasa and Minasa Te'ne, are included in the Type C Climate according to the Schmidt and Ferguson Climate classifications, while in the northern part, especially in the regions Camba and Mallawa Subdistricts, included in Type B Climate [1].

Bantimurung Bulusaraung National Park is a conservation area with a butterfly as a typical endemic fauna. The population and species of the Bantimurung butterfly have gradually declined, some of which are even on the verge of extinction. The decline of butterfly species population is caused by the degradation of butterfly habitat due to population pressure, area encroachment and tourism activities in Ex. TWA. Bantimurung and because of the activity of catching wild butterflies [2]. Habitat improvement of butterfly ecosystems can be carried out with butterfly habitat development activities. PP No. 7 of 1999 [3] states that habitat development can be carried out through planting and maintaining shade trees and animal nests. Butterfly feed plants are both protective and feeding plants for butterfly larvae. Several types have been identified and known as a whole but most of the protective trees and nests or animal feed are often unknown species so that the propagation methods and planting methods are not well known *Evodia* is one type of local endemic plants as well as butterfly feed plants. Butterfly The distribution and ecological character of forage plants is the main
thing before the conservation efforts of the butterflies. The introduction of species will provide direction in the effort to develop silvicultural technologies of local endemic plant species as well as effective and efficient butterfly feed plants.

2. Research methods

2.1. Time and place
The activity was carried out from March to December 2011 in the Bantimurung Bulusaraung National Park (TN) area.

2.2. Tools and materials
The main material used in this activity is to feed plants in the area in Bantimurung Bulusaraung National Park. Tools used in research:

1. Equipment used in the form of GPS, labels, nails, hammers, cutting scissors, tape measure, measuring tape and sasak, alcohol, stationery and paper
2. Equipment for taking environmental data in the form of thermohygrometer and altimeter

2.3. Experiment design and data analysis
The observational method used is a path exploration method and analyzed descriptively.

3. Results and Discussion
The introduction of locally endemic species is the basis of silvicultural technology as part of efforts to restore the forest as before as well as the conservation of typical fauna. Sangilu has the Latin name Evodia sp with the synonym euodia belonging to the family Rutaceae or orange. This type of plant is one of the butterfly larvae feed plants with its presence in nature increasingly fewer in number. Sangilu morphology with straight trunks, branch-free trunks of more than 10 meters and narrow canopy encourage its use in several areas in South Sulawesi as carpentry wood. Plant species are less well known but some countries are used as medicinal plants. Plant parts that are used as medicine are the fruit because of the presence of evodiamine. Sangilu is a local species that can be found in several regions in Sulawesi. Replanting local endemic species of butterfly feed is a must to restore the forest ecosystem and butterfly population in Bantimurung Bulusaraung National Park.

Figure 1. A. Leaf of Evodia sp; B. Evodia sp. Fruits and seeds; C. Bark of Evodia sp.

Sangilu (Evodia sp) is a caterpillar feed of Papilionidae tribal butterflies such as Papilio ullyses, P. Blumei P. gigon, and P. sathaspes P. Fuscus, P Polytes [4]. species of butterflies protected in
Indonesia by PP No 7/1999, namely butterfly species *Troides hypolitus*, *T. helena*, *T. halipron* and *Chetosia myrina*. About 15 other types, included in the international butterfly trade list such as; *Troides cellularis*, *T. halipron*, *T. hypolitus*, *Papilio gigon*, *P. sataspes*, *P. ascalaphus*, *P. blumei*, *P. adamanthius*, *Graphium milon*, *G. meyeri*, *G. rhesus*, *G. androcles*, *G. deucalion*, *G. anceledes* and *Chilasa veiovis*. That conservation effort in situ and ex-situ are needed for its sustainability. Exploration results indicate the location of Sangilu's presence is in a difficult and difficult to reach location so that it requires a greater cost and time for further observation. The distribution of observations showed that there were only 8 sangilu individuals at the Malawa resort and 6 individual trees at the Camba resort with an average circumference of 43.71 cm. Malawa and Camba resorts. Observations on several other resorts cannot be found that type. Development of community information states that some Sangilu trees can be found outside the Bantimurung Bulusaraung Park area, but logging activities in several locations without regard to species conservation make Sangilu even more difficult to find. A narrow distribution with a small amount is possible because of the low regeneration and natural regeneration rates. Such conditions can be seen from the number of seedlings, poles, stakes and not visible in the area under the stand or around. Euodia in the Karaenta region are stands of age because they have small numbers of small and large diameter individual plants [5].

**Table 1.** The number of evodia in the Bantimurung Bulusaraung National Park.

| No | Resort | Location         | Total |
|----|--------|------------------|-------|
| 1  | Mallawa| Samaenre         | 3     |
|    |        | Bentenge         | 4     |
|    |        | Laiya            | 1     |
| 2  | Camba  | Pattirodeceng    | 3     |
|    |        | Buccu-buccue     | 3     |

**Figure 2.** Distribution of Sangilu in Bantimurung Bulusaraung National Park.

The location of Sangilu, on average, is at an altitude of 600-700 m above sea level. Sangilu is mostly found on river banks/watercourses/water sources and grows on slopes. Some plants are trees...
and there are no saplings, poles, saplings or sapaihan. Observations show that fruit and seeds have been fallen and dried while natural tillers are not visible and public information cannot mention the form of the presence of seedlings. Some sangilu trees were observed to appear in a continuous phase of leaf regeneration. Silvicultural technology in the form of propagation and planting techniques is needed to enhance butterfly conservation. In the future, we hope to establish a nursery and demonstration plot as a research center and educational location for endemic species of local butterfly feed plants in the Bantimurung Bulusaraung National Park for the general public so as to provide enthusiasm and knowledge of butterfly conservation.

References

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