BIBLIOGRAPHY

MANG-UHAN, GRACE M. OCTOBER 2007. Insect Pests Associated with Rattan (*Plectocomiopsis mira* Dransfield) in Ifugao. Benguet State University, La Trinidad, Benguet.

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ABSTRACT

The study aims to collect insect feeding on the rattan fruits, leaves and stems, to identify the species of insect, to record the degree of damage caused by the insect on the rattan conducted at the four municipalities of Ifugao specifically Hungduan, Banaue, Lagawe and Kiangan from December to May 2007.

The insect pest associated with rattan at Banaue, Hungduan, Kiangan and Lagawe were *Erionata thrax* (Evans, 1993*)*, *Formica japonica* (Motschoulsky, 1990) *and Lasius japonicus* (Santschi, 1992).

The *Erionata thrax* feed on the leaves of the rattan which causes 51-75% injury. The *Formica japonica* made their nest on the leaf that turned into yellowish which causes 1-25% and the *Lasius japonicus* made also their caste on the leaf bases including the stem which were destructive when harvesting the cane of the rattan

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INTRODUCTION

Rattan (*Plectocomiopsis mira*) are climbing palms which belong to the family calamoideae a large subfamily of the palm family palmae or aracaceae. This characterized by overlapping reflexed scales on the fruit (Dransfield, 1993).

Rattan is spiny climbing palms which are found in the old world tropics and sub tropics and exploited particularly for their flexible stems. The word “rattan” was derived from the word “Rotan” the common name for climbing palms. The most important product of the rattan palms is the cane, the solid rattan stem can be used in furniture’s frames or split, peeled the cored for matting and basketry. The fruits can be eaten.

Identification of insects that feeds on rattan leaves, stem and fruits, the data gathered on this study would be a great help on furniture and basket making industry. It was conducted to acquire knowledge and served as a bench mark for the future researchers on rattan most especially on the municipalities of Ifugao. This could be used future as references.

The objective of the study is to collect insect feeding on the rattan in the fruits, leaves and stems and to identify the species of insect and document.

The study was conducted at the four municipalities of Ifugao specifically Hungduan, Banaue, Lagawe and Kiangan from December 2006 to May 2007.

REVIEW OF LITERATURE

Rattan are climbing palms that are spiny, long and flexible stems that needs support that sometimes confused with bamboo but the canes of the rattan are solid unlike the bamboo that they almost hallow (Dransfield and Manokaran, 1993).

Rattan provides raw materials for the cane furniture industry (Dransfield, 1992).

In 1992, Razali et.al. reported that the stem are sheathing leaf bases which are nearly always fiercely spiny, the spines sometimes arrange in neat rows and interlocking to form galleries in which ants make their nests.

The scale insects feed on the rattan phloem cells secreting sweet honey dew that the ants feed on (Dransfield, 1992).

According to Dransfield (1992) that the fruits can be eaten and they re characterize by overlapping reflexes scales on the fruits. The leaves are used for thatching and the petiole (leaf stalk) and rachises (axis of the leaves) of robust short stemmed species may even use as fishing poles. The fruit and leaves are sometimes used as traditional medicines.

In 2000, Sunderland said that rattan gatherers need to pull the canes from the forest canopy and remove the spiny sheath leaves and whips. Rattan harvesting is dangerous dead braches can be dislodge as the rattan pulled and the ants and wasp can often disturbed in the process.

Anonymous (n.d) said that the bear canes are carried out from the forest and partially processed before saled to the middle man, small diameter are dried in the sun and often smoked over burning sulfur while large cane boiled in oil to remove excess moisture and natural gums to prevent attacked of wood boring beetles.

In 1993, Dransfield and Manokaran reported that locally rattan is used for a very wide range of purposes, the most important being manufacture of baskets and mats. They used as horticultural ornaments.

MATERIALS AND METHOD

Materials

The materials used during the conduct other study were ball pen, small notebook, and camera, killing jar, forceps, 85% ethyl alcohol, carfules, textbooks and rattan plant.

Methods

The four municipalities of Ifugao specifically Hungduan, Banaue, Lagawe and Kiangan were visited and surveyed for the rattan that was present in the municipalities. They were five samples of rattan got in each municipality.

The insect were collected in the leaves, fruits and stems and they were collected in all stages of rattan. After the collection they were documented including the damage. The collected insect was put in the carfules with 80% ethyl alcohol and they were brought in the laboratory for the proper identification of the species. Other observation was noted.

Identification of insect. The insect collected was properly identified on the taxonomic hierarchy: order, family, genus, species and common if possible with the used of textbook of entomology and internet.

Monitoring the degree of injury. The degree of injury was determined through percentage by taking the whole plant through visual estimate. The sample plants were rated by visual observation using the following index:

Rating Index	Qualitative Index	Description
2	No Damage	No Injury
4	Slightly Damage	1 to 25% damage on plants
6	Moderately Damage	26 to 50% damage on plants
8	Severely Damage	51 to 75% damage on plants
10	Very severely Damage	76 to 100% damage on plants

Data Gathered.

1. Insect species. These were the order insect collected from the rattan in the different municipalities of Ifugao.

2. Degree of injury. Amount of leaves, stems, and fruits eaten by pest.

3. Distribution of insect associated with rattan. Presence and absence of insect in each municipalities

RESULTS AND DISCUSSION

Two (2) order of insect associated with rattan. These were leaf rollers order Lepidoptera and ants order Hymenoptera.

Insect associated with rattan were shown in the table 1 and the characteristics of the adult and immature insect associated with rattan were shown in Table 2.

The order lepidoptera. There was one (1) family of Lepidoptera feeding on the leaves of the rattan. This was the leaf rollers or the hesperiidae larvae (Figure 1 and 1.1)

The order hymenoptera. There were two (2) species that belong to one family of the order hymenoptera. This was the formicidae where they made their nest in the leaf bases and the stem and also they rolled the leaf of the rattan (Figure 2 and 2 .1).

Table 1. Insect Associated with rattan

ORDER/FAMILY	SCIENTIFIC NAME	COMMON NAME
Order Lepidoptera Hesperiidae	*Erionata thrax*	Leaf rollers
Order Hymenoptera Formicidae	*Formica japonica* *Lasius japonicus*	Webbing Ants Black Ants

Table 2. Description of adult/immature insect associated with rattan

ORDER/FAMILY	GENUS	DESCRIPTION
Order Lepidoptera Hesperiidae	*Thrax*	The larvae is pale green covered With powdery substance and has a Dark brown head capsule.
Order Hymenoptera Formicidae	*Japonica*	Adult 4.5 - 6 mm. Body color Grayish black or brownish black
	Japonicus	Adult 2.5 - 3.5 mm. Body blackish Brown, with mesosoma often Slightly lighter than the head And gaster. Scape length similar to Head width.

Degree of Injury

The degree of injury was determined through percentage by taking the whole plants through visual estimation.

The most destructive pest were the leaf rollers which has a ratting index of 8 which is severely damaged (Figure 1) and had 56 to 75 % damaged on the plants followed by the webbing ants which had index ratting of 4 which is slightly damaged (Figure 2) and has 1 to 25 % damaged on plants. Lastly the black ants with ratting index of 2 which has no damaged (Figure 3) and no injury on plants.

Table 3. Degree of injury of insect on rattan

ORDER/ COMMON NAME	RATING INDEX	QUALITIVE INDEX	DESCRIPTION
Order Hymenoptera			
Webbing ants	4	Slightly Damaged	1 to 25 % damaged on the plants
Black ants	2	No damaged	No injury
Order Lepidoptera			
Leaf rollers	8	severely Damaged	56 to 75% damaged on the plants

The insect associated with rattan

The different insects that were survey in the four municipalities of Ifugao presented in Table 4. The insect that infected with the different parts of the rattan were leaf rollers (*Erionata thrax*), webbing ants (*Formica japonica*) and black ants (*Lasius japonicus*).

The leaf rollers feed on the leaf and webbing ants and black ants made their nest on the leaves and leaf bases including stems. These insects were all present in the four municipalities in Ifugao that were monitored.

Table 4.Different insect associated with Rattan

MUNICIPALITIES	COMMON NAME	SCIENCITFIC NAME	PARTS OF THE RATTAN INFECTED		
			Leaves	Stems	Fruits
Banaue	Leafrollers	*Erionata thrax*	X	none	none
	Webbing Ants	*Formica japonica*	X	X	none
	Black Ants	*Lasius japonicus*	none	X	none
Hungduan	Leafrollers	*Erionata thrax*	X	none	none
	Webbing Ants	*Formica japonica*	X	X	none
	Black Ants	*Lasius japonicus*	none	X	none
Kiangan	Leafrollers	*Erionata thrax*	X	none	none
	Webbing Ants	*Formica japonica*	X	X	none
	Black Ants	*Lasius japonicus*	none	X	none
Lagawe	Leafrollers	*Erionata thrax*	X	none	none
	Webbing Ants	*Formica japonica*	X	X	none
	Black Ants	*Lasius japonicus*	none	X	none

Figure 1. Damage of Hesperiidae Larvae on rattan leaves in which the leaf where rolled

Figure 1.1. The Hesperiidae larvae which is pale green in color. Covered with powdery substance and has a dark brown head capsule

Figure 2. The damage on rattan leaves caused by *Formica japonica* which transform the leaves in yellow color

Figure 2.1. The adult *Formica japonica* which web the leaves and made their nest on it

Figure 3. *Lasuis japonicus* nest to the leaf bases and stems of rattan

Figure 3.1 Adult *Lasuis japonicus* which build nest on rattan leaf bases and stems as illustrated on Figure 3

SUMMARY, CONCLUSION AND RECOMMENDATION

Summary

The study was conducted at the four municipalities of Ifugao specifically Hungduan, Banaue, Lagawe and Kiangan from December 2006 to May 2007. The study aims to collect insect feeding on the rattan in fruits, leaves and stems, to identify the species of insect, to record the degree of the injury that were damage by an insect and to determine absence and presence of the insect in the four municipalities.

One (1) order of Lepidoptera was identified feeding on the leaf parts and two (2) orders of Hymenoptera species were made their caste on the leaf and leaf bases including the stems of the rattan.

The order Lepidoptera (leaf rollers) were feeding on the leaves of the rattan where they rolled the leaves. The order Hymenoptera (ants) made their nest on the leaf and leaf bases including the stems of the rattan.

The degree of injury was made by visual estimation of the whole plant. *Erionata thrax* has rating index of 8 and 51-75% damaged on the rattan leaf, the *Formica japonica* caused 1-25% injury and *Lasius japonicum* caused no injury but destructive to the leaf bases and stems of the rattan.

The insect pests associated with rattan were all present on the four municipalities that were monitored.

Conclusion

As a conclusion the leaf rollers or the hesperiidae larvae feed on the leaves of the rattan and the ants serve as the protection of the rattan but they were destructive especially when harvesting the rattan cane.

Recommendation

Base on the study it is recommend that further study for the stages of rattan and for possible biological when severely damage occur.

LITERATURE CITED

ANONYMOUS. n.d. Royal Botanic Gardens, Kew: Information Sheets: Rattan http//ww.rbgkew.org.uk/sheets/rattan.html

DRANSFIELD, J. 1992. The Rattan Sarawak. Kew, UK, royal Botanic Garden And Sarawak forest Department Pp 1-10.

DRANSFIELD, J. MANOKARAN, N. 1993. Rattan. Prosea No.6 Pudoc Wageningen Pp. 12-15.

SUNDERLAND, T.C.H.2000. Propagation of African Rattans. Paper presented at the International workshop African. Cmeron:Limbe

WAN RAZALI, DRANSFIELD J. AND MANOKARAN N.1992.A guide to the Cultivation of Rattan. Malaysian forest Records Institute Malaysia Pp.1-4.