

## **BIBLIOGRAPHY**

CODOD, CLAIRINEL C. APRIL 2013. Potential Study on the Predation of Carabid Beetles on Snails and Slugs. Benguet State University, La Trinidad, Benguet.

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## **ABSTRACT**

The study was conducted at Mite Predators Rearing House (MPRH) Balili, La Trinidad, Benguet from August to September 2011. Adult snails and slugs were handpicked one day before the experiment from the mound of grasses to Balili Experimental Farm and from the small scale of Oyster mushroom owned by Codod's family at Happy Homes Magsaysay Avenue Baguio City. The study aimed to record the days snails and slugs died, longevity of adult carabid beetles and total number slugs died. Microscope and digital camera were used in observing and recording.

Two (2) species of Carabid Beetle were collected: *Harpalus tardus* and *Patobus longicornis*. That was collected.

The predator searched its prey simultaneously. The predator used its forelegs in catching and holding while mandibles were used in eating its prey. They chewed the integument and suck the body contents of the prey by means of their mandibular and maxillary by rotation of its head and wagging of the antennae.



## RESULTS AND DISCUSSION

### Identification of Predators.

Species. There were two (2) monitored species of Carabid beetles that were used in the study *Harpalus tardus* Panzer (Figure 8) and *Patrobus longicornis* Eaton (Figure 9).

Their habitat is usually moist area and some are semi aquatic and the site at Caponga, Acop Benguet and Bosleng, Atok Benguet.



Figure 8. Adult Carabid beetle *Harpalus tardus* (Panzer)



Figure 9. Adult *Patrobus longicornis* (Eaton) predating on adult snail

The results of predation rate of adult carabid beetle *Patrobus longicornis* for snails, it is shown in table 1 and *Harpalus tardus* for slugs, it is shown in (table 2) were determined.

The data collected present the days Carabid beetle *Patrobus longicornis* consumed the snail: with the ratio of one *Patobus longicornis* and one snail with a replication of ten. The total average of the days snail died was 11.9%. On the other hand total average of the longevity of carabid beetle was 17.2.

The data shows that predator consumed its prey from seven to sixteen days though from the observation some of the carabid beetles leave their prey without consuming the whole snails and the carabid beetle died between fourteen to twenty four days after feeding on the snails.

Table1. Number of snails and slugs eaten/consumed by carabid beetles

SPECIES OF PREDATORS	CONSUMPTION (30 DAYS)
<i>Harpalus Tardus</i>	5
<i>Patrobus longicornis</i>	10

Table 2. Days of consumption of predator to single prey

PREY	DAYS CONSUMPTION
Snail	7
	10
	13
	9
	14
	8
	15
	16
	16
	11



Table 2 continued . . .

PREY	DAYS CONSUMPTION
Slugs	12 19 25 31

The data collected present the days carabid beetle *Harpalus tardus* consumed the slugs: with the ratio of ten carabid beetle *Harpalus tardus* and one slugs there is only one total number of slug that was consumed on the day of twelve, nineteen, twenty five respectively, while on the thirty first day there were two slugs consumed.

On the other hand, out of fifty (50) carabid beetles that serves as predator until the last days where all slugs consumed there were a total number of five carabid beetle observed dead.

### Feeding Behavior

The predator searched its prey simultaneously. The predator uses its forelegs in catching and holding the prey while mandibles were used in eating its prey. The sickle shaped mandible is trusted integument and suck the body contents of the prey by means of their mandibulary and maxillary with rotation of its head and wagging of its antennae.

### Other Collected Insects

Aside from the Carabid beetles there were other insect predators/beneficial insect that were found from two sites. These were the Ants, thrips, cockroach, katydid, lady bug beetle, rove beetle, snout beetle, crickets, housefly and dung beetle.

The collected Carabid beetle has a total number of fifty, where mostly observed and collected at composed grasses commonly found at the edge of the field where other



insects are also observed such as ants, cockroaches including snails, these insects serves as food. The reason *Patrobus longicornis* Carabid beetles were present in that particular area is because of the favorable condition that maintains the soil's moisture for the survival of the predator.



## SUMMARY, CONCLUSION AND RECOMMENDATION

### Summary

The study was conducted at Mite Predators Rearing House (MPRH) located at Balili, La Trinidad, Benguet from August 2011 to September 2011 to record the number of snails and slugs eaten/consumed by Carabid beetles in 30 days and days of consumption of predator to single prey.

Two sites were established as collection sites, the species *Harpalus tardus* was collected from dried chicken dung at Caponga, Acop Benguet. They were placed on a container and brought to the laboratory for examination.

The species *Patrobus longicornis* was collected under harborages beside the field at Bosleng, Atok Benguet. They were placed on a container and brought to the laboratory for identification.

The predator searched its prey simultaneously. The predator uses its forelegs in catching and holding while mandibles were used eating its prey. They chewed the integument and suck the body contents of the prey by means of their mandibular and maxillary by rotation of its head and wagging of the antennae.

### Conclusion

It is therefore concluded that based on the results obtained in the study, the carabid beetles really consumed snails and slugs.

Carabid beetles should conserve, as they are important that will help reduce the population of snails and slugs in farms.



## Recommendation

It is recommended that further study on Carabid beetles should be done for whole year duration to know their activities.



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