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PRELIMINARY STUDIES ON CURCULIONOIDEA (INSECTA: COLEOPTERA) OF KANNUR, KERALA INDIA

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MM collected the data and performed the experiment. SMS designed the study and wrote the paper.

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ABSTRACT

The present study is a preliminary attempt to document the Curculionoidea weevils from different agro ecosystems of Kannur district, Kerala. Being the largest superfamily of weevils, they play important role in the ecosystem as predators, pests, scavengers, pollinators, and vectors that transmit plant diseases. Collection of these group was made by using standard hand net, hand picking and light traps; for a period of seven months from February 2019 to August 2019. The specimens were collected from four different sites including Taliparamba, Kannadiparamba, cheleri and Thottada of Kannur district, Kerala. From this study Curculionoidea belonging to Five families were obtained. They include Curculionidae, Dryophthoridae, Brentidae, Anthribidae and Attelabidae. Of these Curculionidae was the dominant family with maximum number of species. Least number of species were obtained for the family Anthribidae and Attelabidae. Also, the comparative study between the four study sites shows maximum Shannon and Simpson index at Kannadiparamba (1.245 & 0.6756) and minimum at Taliparamba (0.8487 & 0.438 respectively).

1. INTRODUCTION

Curculionoidea is the largest superfamily of weevils or snout beetles. It is one of the most hyper diverse groups of insects. They are economically very important groups, play important role in the ecosystem as predators, pests, scavengers, pollinators, and vectors that transmit plant diseases. Research on the taxonomy of Curculionoidea of Kerala are very little. Most of these species other than major pests have been little studied, and their complex ecosystem roles have not been elucidated due to the lack of proper identification manuals. The present study is a preliminary attempt to document the Curculionoidea weevils from different agro ecosystems of Kannur District, Kerala.

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2. MATERIALS AND METHODS

Periodical survey and collection trips were conducted in four different areas of Kannur from February 2019 to August 2019. The Collection of weevils were made by using standard hand net, hand picking and also by light traps. Live specimens were killed using ethyl acetate. Collected specimens were preserved in 4% formalin and were mounted on triangular cards or pinned on the entomological pins suiting the requirements. Mounted specimens were labeled and stored in insects' boxes for later examination. For identification standard identification manuals were used. The family, subfamily and generic level classification proposed by Thompson (1992), Zimmerman (1993) and Alonzo-Zarazaga and Lyal (1999) was followed. The preserved and identified

specimens were examined; these specimens were run through the keys (Chevrolat, 1885; Kuschel, 1961; Wattanapongsiri, 1966; Zimmerman, 1968; Morimoto, 1978; Hallet et al., 2004) for identification. For male and female genitalia study, terminologies of Wattanapongsiri (1966), Zimmerman (1968), Supare et al., (1990), Thompson (1992), Poorani and Ramamurthy (1997), Wanat (2007) and Davis (2009) was followed.

3. RESULTS AND DISCUSSION

The collection of weevils was carried out for a period of seven months from February 2019 to August 2019 from four different sites, Taliparamba, Kannadiparamba, Cheleri and Thottada of Kannur District. A total of 26 species of Curculionoidea belonging to 19 genera of 5 families such as Anthribidae, Attelabidae, Brentidae, Curculionidae, and Dryophthoridae were recorded during the study. Majority of Curculionoidea collected during the study belonged to family Curculionidae (13), whereas least number in the family Anthribidae and Attelabidae (2).

4. CONCLUSION

The study shows that Curculionidae was the dominant family with maximum number of species (13), this may be because it is the largest family, with most hyperdiverse groups of weevils. This is followed by Dryophthoridae(5), Brentidae (4). Least number of species were obtained in the family Anthribidae and Attelabidae (2). The comparative study between the four study sites shows maximum Shannon and Simpson index at Kannadiparamba (1.245 & 0.6756) and minimum at Taliparamba (0.8487 & 0.438 respectively). High diversity of host plants may be the major reason for greater diversity at Kannadiparamba.

5. CONFLICT OF INTEREST

All authors have declared that there is no conflict of interests regarding the publication of this article.

REFRENCES

[1] A. Wattanapongsiri. A revision of the genera Rhynchophorus and Dynamis (Coleoptera: Curculionidae). Ph.D. (Entomology) thesis, Oregon State University, Corvallis, Oregon, U.S.A., 1966. 431p

[2] E. C. Zimmerman. 1968. Cosmopolites pruinosus, a new pest of banana. J. Eco. Entomol. 61: 870-871.

[3] E.C. Zimmerman. *Nanophyidae, Rhynchophoridae, Erirhinidae, Curculionidae: Amycterinae, Literature Consulted: Vol. 3. Australian Weevils (Coleoptera: Curculionoidea)*. CSIRO Australia,Melbourne, 1993. 854p.

[4] G.Kuschel. On problems of synonym in Sitophilus oryzae complex (30th contribution, Col. Curculionoidea). The Ann. Mag. Nat. His. 1961. (13), 4(40): 241-244.

[5] J Poorani and V. V. Ramamurthy. Weevils of the genus *Lepropus* Schoenherrfrom the Oriental region (Coleoptera: Curculionidae: Entiminae), *Oriental Insects*, 1997.31: 1–81.

[6] K Morimoto. Checklist of the family Rhynchophoridae (Coleoptera) of Japan, with descriptions of a new genus and five new species. Esakia, 1978. 12: 103−118.

[7] L. A. A. Chevrolat. Calandrides. Nouveaux genres et nouvelles espèces, observations, synonymies, doubles emplois de noms de genres et d'espèces, etc. 2e partie. Ann. Soc. Entomol. Fr. 1885, (6), 5: 91-112.

[8] M.A. Alonso-Zarazaga and C. H. C. Lyal. A world catalogue of families and genera of Curculionoidea (Insecta:Coleoptera) (Excepting Scolytidae and Platypodidae). Entomopraxis, Barcelona, 1999, pp.315.

[9] N. R. Supare, S. Ghai and V. V. Ramamurthy. A revision of *Tanymecus* from India and adjacent countries (Coleoptera: Curculionidae). *Oriental Insects*, 1990.24: 1–126.

[10] R. H. Hallett, B. J Crespi, and J. H. Borden. Synonymy of *Rhynchophorus ferrugineus* (Olivier), 1790 and R. vulneratus (Panzer), 1798 (Coleoptera,Curculionidae, Rhynchophorinae). J. Nat. His. 2004.38: 2863-2882.

[11] R.T Thompson. Observations on the morphology and classification of weevils (Coleoptera, Curculionoidea) with a key to major groups. Journal of Natural History .1992.26:835-891.

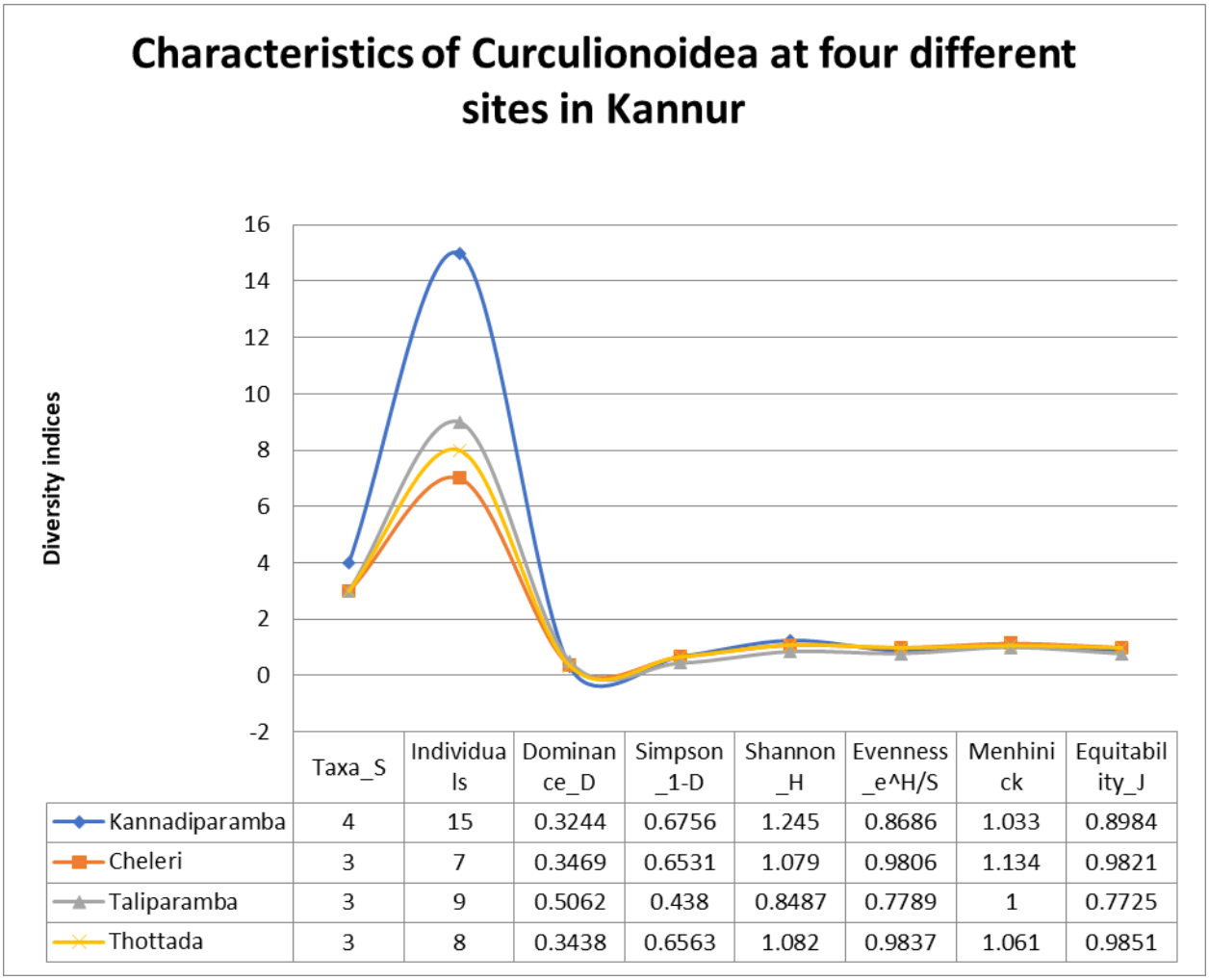
[12] S. R Davis. Morphology of Baridinae and related groups (Coleoptera, Curculionidae). Zookeys .2009.10: 1-136.

Table. 1. List of Curculionoidea recorded from different collection sites

S. No.	Scientific Name	Family	Kannadiparamba	Cheleri	Taliparamba	Thottada
1	*Basitropis sp.*	Anthribidae	+			
2	*Eucorynus crassicornis*	Anthribidae	+			
3	*Paraplapoderus sp.*	Attelabidae		+		
4	*Paratrachelophorus sp.*	Attelabidae		+		
5	*Apion ampullum*	Brentidae			+	
6	*Baryrhynchus poweri*	Brentidae	+			
7	*Cylas formicarius*	Brentidae	+			+
8	*Hormocerus reticulates*	Brentidae				+
9	*Acicnemis sp*	Curculionidae	+			
10	*Acicnemis sp*	Curculionidae	+			+
11	*Aclees hirayamai*	Curculionidae	+		+	
12	*Alcidodes liae*	Curculionidae		+		
13	*Alcidodes waltoni*	Curculionidae		+		+
14	*Alcidodes sp.*	Curculionidae		+		
15	*Cyrtepistomus castaneus*	Curculionidae			+	+
16	*Myllocerus hilleri*	Curculionidae			+	
17	*Myllocerus subfasciatus*	Curculionidae	+		+	
18	*Myllocerus undecimpustulatus*	Curculionidae	+			
19	*Myllocerus viridanus*	Curculionidae	+		+	
20	*Myllocerus sp.*	Curculionidae			+	
21	*Sternochetus mangiferae*	Curculionidae	+			
22	*Cosmopolites sordidus*	Dryophthoridae	+			
23	*Diocalandra frumenti*	Dryophthoridae				+
24	*Odoiporus longicollis*	Dryophthoridae	+	+	+	
25	*Rhynchophorus ferrugineus*	Dryophthoridae	+			+
26	*Sitophilus oryzae*	Dryophthoridae	+	+	+	+

Table. 2. Characteristics of Curculionoidea at four different sites in Kannur

Study Site	Kannadiparamba	Cheleri	Taliparamba	Thottada
Taxa_S	4	3	3	3
Individuals	15	7	9	8
Dominance_D	0.3244	0.3469	0.5062	0.3438
Simpson_1-D	0.6756	0.6531	0.438	0.6563
Shannon_H	1.245	1.079	0.8487	1.082
Evenness_e^H/S	0.8686	0.9806	0.7789	0.9837
Menhinick	1.033	1.134	1	1.061
Equitability_J	0.8984	0.9821	0.7725	0.9851



	Taxa_S	Individuals	Dominance_D	Simpson_1-D	Shannon_H	Evenness_e^H/S	Menhinick	Equitability_J
Kannadiparamba	4	15	0.3244	0.6756	1.245	0.8686	1.033	0.8984
Cheleri	3	7	0.3469	0.6531	1.079	0.9806	1.134	0.9821
Taliparamba	3	9	0.5062	0.438	0.8487	0.7789	1	0.7725
Thottada	3	8	0.3438	0.6563	1.082	0.9837	1.061	0.9851

Fig.1. Characteristics of Curculionoidea at four different sites in Kannur