

Drosophilid Fauna of Six Regions Near the Demilitarized Zone in Korea*

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韓國非武裝地帶隣近 6個地域의 초파리 分布相

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摘 要

1. 1966年 10월부터 1968年 6月 사이에 걸쳐 韓國非武裝地帶隣近 6個地域의 초파리 分布相을 調査하였던바 7屬 34種 5022個體를 採集하였다.
2. *D. auraria*와 *D. angularis*는 대체로 모든 地域에서 多數 採集되었으며 이밖에도 *Scaptomysza*屬의 초파리가 sweeping法에 의하여 풀밭에서 많이 採集되었다.
3. 東部地域에서는 7屬 27種 1552個體가 採集되었는데 이 個體數는 全體의 30.90%였다.
4. 總採集個體數의 52.93%인 2658個體가 中部地域에서 採集되었는데 이를 整理한 結果, 6屬 29種이었다.
5. 西部地域에서는 3屬 16種 812個體가 採集되었는데 이는 全體의 16.17%였다.

INTRODUCTION

Since the truce of Korean war was made, the demilitarized zone(DMZ) has been uninhabited and undisturbed for 14 years(1953-1966). This area (width: 4 km, length: 249 km) begins at the northern part ($37^{\circ}46'; 126^{\circ}15'$) of Kyodong Island located in the west coast of Korea, and ends at the small fishery village, Song-Hyunli ($38^{\circ}37'; 128^{\circ}17'$) located in the east coast.

All civilians having been prohibited(or restricted) to enter this area including its adjacents from the time of truce, these are considered to be very interesting places for living things including *Drosophila* population.

Until 1940 the knowledge concerning the drosophilid fauna in Korea consisted of only the records of several species of *Drosophila* reported by Kikkawa and Peng (1938), and Nakayama and Okamoto(1940). Since 1955, however, *Drosophila* survey in Korea has attracted the attentions of taxonomists and geneticists, and repeated surveys have been carried out by Chung(1955, 1958, 1960), Chung *et al.* (1956), Chung and Rho(1959), Paik and Kim(1957), Lee(1959, 1962, 1964, 1966), Kang *et al.* (1958, 1959, 1960, 1965a, 1965b, 1966),

Kang and Lee(1961), and Kim(1963, 1964). By reviewing the above records, approximately 100 species of *Drosophilidae* are known in Korea. But the demilitarized zone including its adjacents has not been investigated biologically until 1966. Since the truce was made, the demilitarized zone has been well conserved. So this area can be expected to develop a rich breeding site for *Drosophila*, and the outcome of the experiment can be contributed to determine the degree of environmental diversities of ecological niches in the area. Besides, it may also provide the basic knowledge to study the speciation problem of *Drosophila* population in Korea. As the first step for the study of the above problem, a preliminary survey was made.

METHOD

Collecting sites were selected on the basis of ecological factors, such as humidity, temperature, altitude, and vegetation of plant. Regions and dates of collections are as shown in Table 1. The major part of the collections was made not only by using large trap cans (height: 30cm, diameter: 15cm) baited with fermenting

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Table 1 Regions and dates of collection

Regions	Location	Altitude	Date
(1) Mt. Hyangnobong	Eastern part (38°15'; 128°17')	1200 m	(1) Jun. 16--20 '67 (2) Oct. 1--5 '67 (3) May 23--28 '68
(2) Punch-bowl	Eastern part (38°15'; 128°5')	1100 m	(1) Oct. 18--23 '67
(3) Myojangdong	Central part (38°15'; 127°10')	400 m	(1) Apr. 13--19 '67 (2) Aug. 15--19 '67 (3) May 8--12 '68
(4) Kaari	Central part (38°16'; 127°45')	780 m	(1) May 18--22 '67 (2) Jun. 15--19 '68
(5) Munsan	Western part (37°50'; 126°40')	150 m	(1) Sep. 25--29 '67
(6) Kangwha Is.	Western part (37°45'; 126°25')	200 m	(1) Apr. 1 -- 5 '68

apples, banana, peaches and pears, but by net sweeping in various sorts of vegetation. The binocular dissection microscopes were generally adequate both for dissection of genital organ and for observation of specimens.

RESULT AND DISCUSSION

A total of 5022 flies were represented by 7 genera, 34 species, as given in Table 2. Most flies of the genus *Drosophila* were attracted to the fermenting fruits. But flies of the genus *Amiota* were captured by net sweeping from human eyes. Also, net sweeping from various kinds of grasses and fungi gave the occurrence of the genus *Stegana*, *Leucophenga*, *Liodrosophila*, *Scaptomyza* and *Mycodrosophila*.

Among the species lured to the baits, *Drosophila auraria* (1089 specimens, 21.68% in frequency) and *D. angularis* (556 specimens, 11.07%) were predominant in number. These species were distributed abundantly in Mt. Hyangnobong (eastern part), Kaari and Myojangdong (central part) and Munsan (western part). *Scaptomyza pallida* (523 specimens), *S. graminum* (356 specimens) occurred at comparatively high frequency in this survey. Also, common species obtained were *D. brachynephros* (425 specimens), *D. unispina* (311 specimens), *D. histrio* (212 specimens), *D. coracina* (203 specimens), *D. sordidula* (188 specimens), *D. kuntzei* (185 specimens) and *D. nigromaculata* (166 specimens).

a) Eastern part: A total of 1552 specimens (30.90% in total) belonging to 27 species and 7 genera were sampled. According to Takada (1954) and Ishihara (1955), *D. Suzukii* was collected only in the low regions (below 240

m). Kang *et al.* (1959), however, captured it on the highlands of about 800m sea level. The collection of *D. Suzukii* was also performed in a certain place at an altitude of 1100m of Mt. Hyangnobong by the use of traps. A few flies of the genus *Stegana* and *Liodrosophila* were secured only in this region. The survey in Punch-bowl was made only one time, so the number of flies (365 specimens) presented in Table 2 can not be considered to represent the exact members living in this area. It is interesting to see, however, that *D. sexvittata* was secured only in this region.

b) Central part: A total of 2658 flies (52.93% in total) representing 29 species and 6 genera were obtained. Most common species among them were *D. auraria* (740 specimens, 28.21% in frequency) and *D. angularis* (272 specimens, 10.23%). It is noticeable that among 6 collecting sites, the largest number of specimens was captured in Kaari located in the central part of Korea. Common species noted in this central part were *D. coracina* (197 specimens), *D. brachynephros* (168 specimens) and *D. sordidula* (172 specimens). *Mycodrosophila japonica* (3 specimens) were collected only in this area. It is remarkable that the number of flies (352 specimens, 13.24%) obtained in Myojangdong is much smaller than that of Kaari's (2306 specimens, 86.76%). The fact is also interesting that *D. angularis*, one of the most common species, was not found in Myojangdong. The main reason of this marked faunistic difference between Kaari and Myojangdong may be that all grass fields and mountains of Myojangdong were set on fire for the military purpose recently, while those of Kaari were not.

Table 2 Species and number of flies collected in 6 regions near DMZ

Area Species	Eastern part		Central part		Western part		Total
	1	2	3	4	5	6	
<i>Stegana sp. from Mt. Sulak</i>	6	—	—	—	—	—	6
<i>Amiota alboguttata</i>	4	—	6	—	3	—	13
<i>A. alboguttata, forma Koreana</i>	2	1	1	—	—	—	4
<i>A. variegata</i>	36	9	8	28	8	—	89
<i>Leucophenga magnipalpis</i>	19	—	2	—	—	—	21
<i>L. concilia</i>	8	—	—	—	—	—	8
<i>L. maculata</i>	3	—	4	—	—	—	7
<i>Mycodrosophila japonica</i>	—	—	3	—	—	—	3
<i>M. Koreana</i>	4	2	2	—	—	—	6
<i>Liodrosophila castanea</i>	2	—	3	—	—	—	5
<i>Scaptomyza graminum</i>	127	—	134	31	72	2	366
<i>S. pallida</i>	182	—	223	24	94	—	523
<i>Drosophila alboralis</i>	13	—	—	—	—	—	13
<i>D. histrioides</i>	12	8	9	—	—	—	29
<i>D. sexvittata</i>	—	35	—	—	—	—	35
<i>D. trilineata</i>	4	—	3	—	—	—	7
<i>D. coracina</i>	12	—	197	—	—	—	209
<i>D. bifasciata</i>	46	—	11	—	—	—	57
<i>D. suzukii</i>	14	—	6	17	19	—	56
<i>D. melanogaster</i>	—	—	46	—	37	1	84
<i>D. clarofinis</i>	—	—	8	—	—	—	8
<i>D. auraria(A.B.C)</i>	204	—	642	98	141	4	1089
<i>D. brachynephros</i>	113	75	166	2	69	—	425
<i>D. angularis</i>	105	69	272	—	110	—	556
<i>D. unispina</i>	70	42	108	—	91	—	311
<i>D. nigromaculata</i>	55	7	79	—	25	—	166
<i>D. kuntzei</i>	37	53	82	—	13	—	185
<i>D. testacea</i>	—	—	8	—	—	—	8
<i>D. bizonata</i>	—	—	11	6	38	—	55
<i>D. histrio</i>	49	64	57	—	42	—	212
<i>D. tenticauda</i>	5	—	6	—	—	—	11
<i>D. virilis</i>	55	—	14	72	—	—	141
<i>D. lacertosa</i>	—	—	73	26	27	—	126
<i>D. sordidula</i>	—	—	124	48	16	—	188
Total	1187	365	2306	352	805	7	5022

1. Mt. Hyangnobong
4. Myojangdong

2. Punch-Bowl
5. Munsan

3. Kaari
6. Kangwha Is.

c) Western part: The collection record provided 812 individuals (16.17% in total) which represented 16 species covering 3 genera. *Drosophila auraria* was dominant species, showing 145 flies (17.85%), while *D. angularis* ranked next, exhibiting 110 individuals (13.54%). The survey in this area having been made only one time as in Punch-bowl, it is difficult to draw a conclusion on the drosophilid fauna of this area.

SUMMARY

Collections of the drosophilid flies were made at 6 regions near the demilitarized zone from October 1966 to June 1968, with particular attention to their habitats and distribution. A total of 5022 flies representing 34 species belonging to 7 genera were obtained mostly by the traps baited with fermenting apples and banana, partially by the aid of net.

The data accumulated for about 21 months are summ-

arized in this paper. *Drosophila auraria* and *D. angularis* were found to be most common species showing the most extensive distribution. In eastern part, a total of 1552 individuals(30.90%) representing 27 species, 7 genera were sampled. In central part, a total of 2658 flies (52.93%) yielded 29 species, 6 genera. In western part, a total of 812 specimens(16.17%) which belong to 16 species representing 3 genera were collected. Most specimens belonging to the genus *Scaptomyza* have been found on grasses.

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