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Toda, M.J. & O.K. Kwon.* Hokkaido University, Sapporo, Japan. *Cheju National University, Cheju, Korea. Collection records of drosophilid flies from the Quelpart Island, Korea.

The location of the Quelpart Is. is important to consider the faunistic relationship between Japan and the East Asian Continent. We made a brief collection of drosophilid flies in the Island.

The collections were made in a secondary deciduous broad-leaved forest with admixture of laurels and Cryptomeria japonica at Mt. Booriak, Quelpart Is., for two days on August 12 and 13, 1979. The collections were mainly based on bait trapping with grapes and peaches fermented by Baker's yeast. Besides, to collect other species which are hardly attracted to fruit traps, sweeping collections with an insect net were made at various places: on fleshy fungi, on forest floor, at shelters of cliffs or rocks, and on tree trunks covered with moss or lichen. Males of genus Amiota flying around human eyes were also captured.

The present collection yielded 745 specimens of 30 species belonging to seven genera in Drosophilidae. Up to the present, 42 drosophilid species have been recorded from the Island (Chung 1955, 1958; Paik & Kim 1957; Kang et al. 1959; Lee 1964). Of the 30 species obtained in the present study, 17 are new to the Island, of which 6 are also new to Korea. A total of 59 drosophilid species so far recorded from the Quelpart Is. are listed below, together with information of their geographical distributions, which are classified into eleven types: endemic to the Quelpart Is. (E), recorded only from Korea (K), only from Korea and China (KC), only from the Quelpart Is. and Japan (QJ), only from Korea and Japan (KJ), Eastern Asiatic (EA), Southeastern Asiatic (SA), Palaearctic (P), Holarctic (H), Cosmopolitan (C) and others (O). The species new to the Island are marked with *, and those to Korea with **. For the species obtained in the present study, numbers of specimens collected are given in parentheses as Total=♀♀+♂♂ after the codes of respective collection methods: by fruit traps (Tf), on fleshy fungi of Agaricales (Mg) and Aphyllophoralles (Mp), sweeping on forest floor (Sff), on tree trunks (TT), at rock shelters (RS), and around human eyes (HE).

** 1. Amiota (Amiota) albilabris (Roth) P: Korea, Japan, Europe (HE:3=0+3)
2. A. (A.) chungi Okada (= A. alboguttata f. koreana Okada & Chung) K
** 3. A. (Phortica) okadai Maca (= A. variegata Fallen type A) QJ (Tf:1=0+1)
4. Leucophenga (Leucophenga) maculata (Dufour) P: Korea, Japan, Taiwan, Java, Europe
* 5. L. (L.) orientalis Lin & Wheeler (= L. magnipalpis Duda) EA: Korea, Japan, Taiwan (Mp:1=0+1, Sff:16=0+16, TT:1=0+1, RS:1=1+0)
* 6. L. (L.) ornata Wheeler SA: Korea, Japan, Taiwan, Philippine, Java, Nepal, Australia (Mp:1=0+1)
* 7. L. (L.) sorii Kang, Lee & Bahng KJ (TT:1=0+1)
8. Microdrosophila (Oxystyloptera) urashimae Okada KJ
9. Liodrosophila castanea Okada & Chung K (Sff:1=1+0)
10. Scaptomyza (Scaptomyza) choi Kang, Lee & Bahng E
11. Sc. (Sc.) graminum Fallen H: Korea, Japan, S.Asia, Siberia, Europe, N.America, Africa
12. Sc. (Parascaptomyza) pallida (Zetterstedt) C
**13. Sc (P.) elmoi Takada O: Korea, Japan, Taiwan, Hawaii, Australia (Sff:1=1+0)
**14. Nesiodrosophila sp. E (RS:1=0+1)
15. Mycodrosophila basalis Okada KJ
*16. My. gratiosa (de Meijere) (=My. splendida Okada) O: Korea, Japan, Taiwan, Micronesia, S.Asia, Polynesia, Seychelles, Africa (Mg:1=0+1, Mp:1=1+0)
*17. My. planipalpis Kang, Lee & Bahng KJ (Mp:1=1+0)
*18. My. poecilogastra (Loew) P:Korea, Japan, China, Europe (Mp:2=0+2)
*19. My. shikokuana Okada KJ (Sff:1=0+1)
**20. My. subgratiosa Okada QJ (Sff:1=0+1)
21. Drosophila (Scaptodrosophila) coracina Kikkawa & Peng SA: Korea, Japan, China, Borneo
22. D. (Sc.) puncticeps Okada KJ
23. D. (Sc.) subtilis Kikkawa & Peng EA: Korea, Japan, China

24. D. (Sophophora) bifasciata Pomini P: Korea, Japan, Taiwan, Europe, India
25. D. (So.) suzukii (Matsumura) SA: Korea, Japan, China, Thailand, India, Hawaii (Tf:1=1+0, Sff:1=1+0, TT:1=1+0)
26. D. (So.) lutescens Okada (= D. lutea Kikkawa & Peng) KJ (Tf:87=40+47, TT:1=1+0)
27. D. (So.) melanogaster Meigen C
28. D. (So.) magnipectinata Okada KJ
29. D. (So.) auraria Peng EA: Korea, Japan, China (Sff:1=1+0)
*30. D. (So.) triauraria Bock & Wheeler (=D. auraria Peng C type) KJ (Tf:121=64+57, Mg:1=1+0, Sff:4=4+0)
**31. D. (Lordiphosa) collinella Okada EA: Korea, Japan, Mongolia (Mg:1=1+0)
32. D. (Hirtodrosophila) alboralis Momma & Takada KJ (Sff:1=1+0)
33. D. (H.) confusa Staegar (=D.histrioides Okada & Kurokawa) P: Korea, Japan, Europe
*34. D. (H.) macromaculata Kang & Lee KJ (RS:1=0+1)
35. D. (H.) quadrivittata Okada KJ
36. D. (H.) sexvittata Okada KJ (Mg:9=9+0, Sff:6=3+3, TT:11=3+8, RS:1=1+0)
37. D. (H.) trilineata Chung K
38. D. (H.) trivittata Strobl P: Korea, Japan, Taiwan, Java, Ceylon, Europe
*39. D. (H.) kangi Okada KJ (Sff:2=1+1, TT:67=31+36, RS:1=0+1)
40. D. (H.) nokogiri Okada KJ (Sff:1=0+1, RS:1=0+1)
41. D. (Dorsilopha) busckii Coquillett C
42. D. (Dichaetophora) quelpartiensis Kang, Lee & Bahng E
43. D. (Drosophila) repleta Wollaston C
44. D. (D.) cheda Tan, Hsu & Sheng KC
45. D. (D.) lacertosa Okada SA: Korea, Japan, Taiwan, India, Nepal (Tf:19=14+5)
46. D. (D.) virilis Sturtevant C
47. D. (D.) curviceps Okada & Kurokawa SA: Korea, Japan, India
48. D. (D.) immigrans Sturtevant C (Tf:65=46+19, Sff:1=1+0)
49. D. (D.) testacea von Roser H: Korea, Japan, Europe, N. America
50. D. (D.) angularis Okada KJ (Tf:27=16+11, Mg:27=8+19, Mp:2=0+2, Sff:13=2+11)
51. D. (D.) brachynephros Okada SA: Korea, Japan, India
52. D. (D.) unispina Okada KJ (Mg:28=9+19, Mp:10=2+8, Sff:12=5+7, RS:1=1+0)
53. D. (D.) kuntzei Duda P: Korea, Japan, Europe
54. D. (D.) nigromaculata Kikkawa & Peng KJ
55. D. (D.) bizonata Kikkawa & Peng O: Korea, Japan, Hawaii (Tf:55=35+20, Mg:73=21+52, Mp:3=0+3, Sff:46=19+27, TT:1=0+1)
56. D. (D.) histrio Meigen P: Korea, Japan, China, Europe
57. D. (D.) sternopleuralis Okada & Kurokawa KJ (Tf:2=1+1, Mg:1=0+1, Sff:3=1+2)
58. D. (D.) grandis Kikkawa & Peng KJ
*59. D. (D.) tenuicauda Okada KJ (Sff:1=0+1)

Judging from the relatively large proportion (28.8%, 17/59) of the species newly recorded in the present study, the above list is supposed to be yet rather incomplete. A considerable number of species may remain undiscovered from the Island. Although the faunistic knowledge is thus limited to a considerable extent, the drosophilid fauna of the Island is provisionally characterized as follows. The KJ species occupy a large part of the fauna (20 spp. 33.9%), followed by P (8 spp. 13.6%), SA (6 spp. 10.2%), C (6 spp. 10.2%), K (4 spp. 6.8%), EA (4 spp. 6.8%), E (3 spp. 5.1%), O (3 spp. 5.1%), QJ (2 spp. 3.4%), H (2 spp. 3.4%) and KC (1 sp. 1.7%). In connection with the location of the Island between the Korean Peninsula and Japan, the fauna is divided into five elements. The first is the continental element (K+KC, 5 spp. 8.5%). The second is of Japan and Pacific Islands, composed of three species (5.1%), two QJ and Sc. elmoi (O), all of which were newly recorded from the Island in the present study. The third is the element common to both areas, composing the majority of the fauna (KJ+EA+SA+P+H+two O, 42 spp. 71.2%). In addition to these three elements, the other two, endemics (E) and cosmopolitans (C), contribute to the fauna. In conclusion, the drosophilid fauna of the Island is not much endemic and related so closely both to those of the Korean Peninsula and of Japan that the majority is composed of the species common to both areas.

Finally, it should be noted that collections on tree trunks and at rock shelters brought respectively characteristic samples composed of peculiar species which are usually quite rare or absent in samples by ordinary collection methods such as bait trapping and sweeping on fleshy fungi or on bushes. Particularly, D. kangi, belonging to the hirticornis group of the subgenus Hirtodrosophila, was frequently collected on tree trunks. The abundance of this species and others of the hirticornis group on tree trunks was observed also at other localities in Japan (Toda 1982, unpubl.).

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Valentin, J. University of Göteborg, Sweden. The maternal age effect on recombination is entirely reversed in mei-9b D.melanogaster.

It has been known for quite some time that the age of a female affects the recombinant frequency among her offspring (the early work is summarised by Bridges 1927). The textbook description is that this maternal age, or brood, effect causes recombination to decrease during the first ten or so days of egg-laying.

In fact, the pattern is more complicated, and in the X chromosome two opposing trends occur: distally, recombination increases with increasing age, while proximal recombination decreases with increasing age (Valentin 1972, Lüning 1981). In the middle of the chromosome, maternal age has little influence on recombination.

The preceding paragraph describes the normal situation in the X chromoxome. A number of meiotic mutants display a similar pattern, although of course at much lower levels of recombination. However, it appears that mei-9b has an entirely different brood pattern.

Table 1 shows recombination frequencies in the X chromosome in mei-9b and in control flies, displayed separately for five 2/3 day broods. Actually, the marker genes were sc-cv-ct^6-v-f^5-Dp(1;1)sc^{V1}, y^+, but for clarity the material is shown lumped for sc-ct (distal region), ct-f(middle region) and f-y^+ (proximal region).

The difference in pattern between mei-9b and control is dramatic. In the distal region, the control series shows the expected increase of recombination, but mei-9b shows a decreasing trend. The very low value in the first brood is probably a spurious effect, but even if it is real the pattern deviates entirely from control. In the middle of the region, the control values also increase (quite reasonably and in agreement with older data, since the segment studied includes more distal than proximal material). In mei-9b, there is instead a considerable reduction of recombination with broods. And in the proximal region, the control pattern is a steady decrease as expected, while in mei-9b data hint a minimum value in the third brood. Admittedly, the difference between patterns is not as striking proximally as elsewhere in the chromosome, but at least for the distal and middle regions, there can be no doubt that the maternal age effect is quite difference in mei-9b than in control flies.

Table 1. Recombination frequency in the X chromosome of mei-9b and control (mei+) D.melanogaster as a function of brood (maternal age).

		Days after mating (broods)				
Region	Strain	1 - 2	3 - 4	5 - 7	8 - 9	10-11
sc-ct	mei-9b	1.8	4.6	3.8	3.4	2.5
	Control	15.0	15.0	18.9	22.9	20.8
ct-f	mei-9b	7.5	8.5	5.1	3.9	2.9
	Control	36.2	34.4	51.4	55.2	54.0
f-y+	mei-9b	2.3	2.4	1.6	1.7	1.9
	Control	14.9	12.8	13.2	13.0	11.1
No. of off-	mei-9b	440	950	1066	939	970
spring	Control	1330	2281	2640	2460	2565

Since the cause of the maternal age effect is unknown, it is very difficult to explain what the abnormal behaviour of mei-9b might depend on. But accumulation of data on deviations from "normal" brood effects is probably necessary if we are to begin to understand such brood effects some time in the future.

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