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### **Revised list of drosophilid species so far described and recorded from the Kumaon region, Uttarakhand State, India, with replacement names for two homonyms.**

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## **Introduction**

The Cytogenetics Laboratory in the Department of Zoology, Kumaon University, Nainital, India, is actively exploring the Drosophilid fauna of the Kumaon region since 1984, which was completely unknown for its drosophilid fauna. Since then a number of papers have been published on Kumaon Drosophilidae (Singh and Negi, 1989, 1992, 1995; Singh and Dash, 1993, 1998; Singh, Dash and Fartyal, 2000, 2004; Singh and Fartyal, 2002; Fartyal, Singh and Toda, 2005; Joshi, Fartyal and Singh, 2005; Upadhyay and Singh, 2006). The area is characterized by having dense evergreen coniferous forests with medium to very steep slopes and extremely moist condition due to heavy rain fall. This paper deals with the list of drosophilid species so far described and recorded from the Kumaon region, India, with replacement names for two homonyms, *i.e.* *Drosophila* (*Drosophila*) *kulouriensis*; old name *elongata* Singh, Dash and Fartyal, 2004, (Ref. Senck. Biol., 83(2): 173, 2004), and *Drosophila* (*Drosophila*) *sattalensis*; old name *serrata* Singh, Dash and Fartyal, 2004, (Ref. Senck. Biol., 83(2): 176, 2004).

## **Materials and Methods**

This list is the result of drosophilid collections undertaken by the students of the Cytogenetics Laboratory, Department of Zoology, Kumaon University, Nainital, India, since 1984. The collections were largely made by net sweeping over wild vegetation and by trap baiting. The collected flies were preserved in 70% alcohol and stored for their head, thorax and abdomen.

## **Observations**

Out of 82 species collected, a total of 37 species belonging to different genera of the family Drosophilidae were described as new to science, and 18 species were recorded for the first time from India since 1984 from the Kumaon region, India. The genera *Lordiphosa*, Malloch and

*Microdrosophila* Malloch were recorded for the first time from Uttarakhand, and the genus *Dichaetophora* Duda was recorded for the first time from India.

| Table 1. List of Drosophilid species and collection localities so far described and recorded from the Kumaon region, India, with replacement names for two homonyms marked with (*). |                                                                                                                         |                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Genus / Subgenus                                                                                                                                                                     | Species                                                                                                                 | Collection locality                                                                                                    |
| Genus <i>Amiota</i> Loew                                                                                                                                                             | 1. <i>bandes</i> Singh & Negi, 1992                                                                                     | Okhalkanda, Sargakhet, Chaubattia garden, Bageshwar, Amsysri, Nainital                                                 |
| Subgenus <i>Phortica</i> Schiner                                                                                                                                                     | 2. <i>biprotrusa</i> Chen & Toda, 1998                                                                                  | Nainital, Gahna                                                                                                        |
|                                                                                                                                                                                      | 3. <i>pseudotau</i> Toda & Peng, 1990                                                                                   | Mukteshwar                                                                                                             |
| Genus <i>Dettopsomyia</i> Lamb                                                                                                                                                       | 4. <i>nigrovittata</i> (Malloch, 1924)                                                                                  | Latoli, Lariyakanda, Kailakhan, Champawat                                                                              |
| Genus <i>Dichaetophora</i> Duda                                                                                                                                                      | 5. <i>acutissima</i> Okada, 1956                                                                                        | Kausani                                                                                                                |
| Genus <i>Drosophila</i> Fallén                                                                                                                                                       |                                                                                                                         |                                                                                                                        |
| Subgenus <i>Dorsilopha</i> Sturtevant                                                                                                                                                | 6. <i>busckii</i> Coquillett, 1901                                                                                      | Nainital, Almora, Dunagiri, Dwarahat, Ranikhet, Chaukhutia, Kausani, Pinath, Amsyari, Pithoragarh                      |
| Subgenus <i>Drosophila</i> Fallén Str.                                                                                                                                               | 7. <i>analspina</i> Singh & Negi, 1995                                                                                  | Nainital, Letibuga, Kausani, Chaubattia Garden                                                                         |
|                                                                                                                                                                                      | 8. <i>bageshwarensis</i> Singh, Dash & Fartyal, 2004                                                                    | Pithoragarh, Lohaghat, Ranikhet, Amsyari, Bageshwar                                                                    |
|                                                                                                                                                                                      | 9. <i>bishtii</i> Singh & Negi, 1995                                                                                    | Nainital, Okhalkanda, Sargkhet, Ranikhet                                                                               |
|                                                                                                                                                                                      | 10. <i>bizonata</i> Kikkawa & Peng, 1938                                                                                | Nainital, Mukteshwar, Kausani                                                                                          |
|                                                                                                                                                                                      | 11. <i>dwarahatensis</i> Upadhyay & Singh, 2006                                                                         | Dwarahat                                                                                                               |
|                                                                                                                                                                                      | 12. <i>hexaspina</i> Singh, Dash & Fartyal, 2004                                                                        | Nainital, Dhari                                                                                                        |
|                                                                                                                                                                                      | 13. <i>hydei</i> Sturtevant, 1921                                                                                       | Kausani, Dwarahat, Nainital                                                                                            |
|                                                                                                                                                                                      | 14. <i>immigrans</i> Sturtevant, 1921                                                                                   | Nainital, Sheetla, Ranikhet, Dunagiri, Dwarahat, Chaukhutia, Almora, Pithoragarh, Gangolihat, Kausani, Pinath, Amsyari |
|                                                                                                                                                                                      | 15. <i>khansuensis</i> Singh, Dash & Fartyal, 2004                                                                      | Nainital, Tanakpur, Chaukhutia, Kausani                                                                                |
|                                                                                                                                                                                      | 16. <i>kulouriensis</i> * (old name <i>elongata</i> Singh, Dash & Fartyal, 2004; Ref. Senck. Biol. 83(2):163-176, 2004) | Nainital, Dhari                                                                                                        |

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|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
|                                       | 17. <i>lacertosa</i> Okada, 1956                                                                                        | Nainital, Dhari, Ranikhet, Dunagiri, Dwarahat, Chaukhutia, Almora, Pithoragarh, Gangolihat, Kausani, Pinath, Amsyari, Rudarpur |
|                                       | 18. <i>mukteshwarensis</i> Joshi, Fartyal & Singh, 2005                                                                 | Mukteshwar                                                                                                                     |
|                                       | 19. <i>nainitalensis</i> Singh & Bhatt, 1988                                                                            | Ganguachaur, Nainital, Nagpani Chaubattia                                                                                      |
|                                       | 20. <i>nasuta</i> Lamb, 1914                                                                                            | Nainital, Haldwani, Rudrapur                                                                                                   |
|                                       | 21. <i>notostriata</i> Okada, 1966                                                                                      | Kashialekh, Nainital                                                                                                           |
|                                       | 22. <i>paharpaniensis</i> Singh, Dash & Fartyal, 2004<br>Nainital, Okhalkanda, Ranikhet                                 |                                                                                                                                |
|                                       | 23. <i>painaii</i> Singh & Negi, 1995                                                                                   | Bhatelia, Nainital, Bhowali, Almora, Dunagiri, Kausani                                                                         |
|                                       | 24. <i>paramarginata</i> Singh, Dash and Fartyal, 2004                                                                  | Nainital, Okhalkanda, Champawat (Mayawati Ashram)                                                                              |
|                                       | 25. <i>parazonata</i> Dwivedi & Gupta, 1980                                                                             | Nainital                                                                                                                       |
|                                       | 26. <i>paunii</i> Singh & Negi, 1989                                                                                    | Sargakhet, Nainital, Kausani, Pithoragarh, Almora, Ranikhet                                                                    |
|                                       | 27. <i>repleta</i> Wollaston, 1858                                                                                      | Latoli, Nainital, Lalkuan, Dunagiri, Dwarahat, Ranikhet, Kausani                                                               |
|                                       | 28. <i>repletoides</i> Hsu, 1943                                                                                        | Dwarahat                                                                                                                       |
|                                       | 29. <i>sattalensis</i> * (old name <i>serrata</i> Singh, Dash & Fartyal, 2004; Ref. Senck. Biol. 83 (2): 163-176, 2004) | Sattal - bhimtal (Nainital), Chaubattia garden, Ranikhet                                                                       |
|                                       | 30. <i>sulfurigaster</i> Duda, 1923                                                                                     | Letibuga, Nainital, Pithoragarh, Bageshwar                                                                                     |
|                                       | 31. <i>surangensis</i> Singh, Dash & Fartyal, 2004                                                                      | Nainital                                                                                                                       |
|                                       | 32. <i>tetradentata</i> Singh & Gupta, 1980                                                                             | Dunagiri, Kausani                                                                                                              |
|                                       | 33. <i>trizonata</i> Okada, 1966                                                                                        | Dhari, Nainital, Bhowali, Dhari, Khansu                                                                                        |
| Subgenus <i>Sophophora</i> Sturtevant | 34. <i>bifasciata</i> Pomini, 1940                                                                                      | Sheetla, Nainital, Haldwani, Dunagiri, Kausani, Lohaghat, Tanakpur, Pithoragarh                                                |
|                                       | 35. <i>hubeiensis</i> Sperlich & Watabe, 1997                                                                           | Sargakhet, Nainital, Dunagiri, Kausani                                                                                         |
|                                       | 36. <i>jambulina</i> Parshad and Paika, 1964                                                                            | Dhari, Nainital, Dwarahat, Chaubattia Garden, Chaukhutia, Gangolihat.                                                          |
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|-----------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
|                                   | 37. <i>kikkawai</i> Burla, 1954                                           | Sheetla, Nainital, Ranikhet, Dunagiri, Dwarahat, Chaukhutia, Bageshwar, Kausani, Gangolihat                     |
|                                   | 38. <i>malerkotliana</i><br><i>malerkotliana</i><br>Parshad & Paika, 1964 | Pithoragarh (Ghat), Champawat (Mayawati Ashram), Haldwani, Dunagiri, Kausani, Nainital                          |
|                                   | 39. <i>melanogaster</i> Meigen, 1830                                      | Gahna, Nainital, Sat Tal, Dwarahat, Chaukhutia, Almora, Kausani, Pithoragarh, Rudrapur, Binsar Mahadev (Almora) |
|                                   | 40. <i>neobaimai</i> Singh & Dash, 1998                                   | Nainital, Dunagiri, Kausani, Kanalichchina (Pithoragarh)                                                        |
|                                   | 41. <i>neokhaoyana</i> Singh & Dash, 1998<br>Nainital, Gangolihat, Dhari  |                                                                                                                 |
|                                   | 42. <i>nepalensis</i> Okada, 1955                                         | Nainital, Almora, Ranikhet, Dunagiri, Dwarahat, Chaukhutia, Pithoragarh, Kausani, Pinath, Amsyari               |
|                                   | 43. <i>punjabiensis</i> Parshad & Paika, 1964                             | Nainital, Chaubattia garden                                                                                     |
|                                   | 44. <i>sargakhetensis</i> Joshi, Fartyal & Singh, 2005                    | Sargakhet                                                                                                       |
|                                   | 45. <i>saraswati</i> Singh & Dash, 1995                                   | Kausani, Mukteshwar, Pithoragarh, Bageshwar, Gangolihat.                                                        |
|                                   | 46. <i>suzukii indicus</i> Parshad & Paika, 1964                          | Latoli, Nainital, Almora, Ranikhet, Dwarahat, Chaukhutia, Amsyari, Kausani, Gangolihat                          |
|                                   | 47. <i>takahashii</i> Sturtevant, 1927                                    | Bhatelia, Nainital, Ratighat, Almora, Ranikhet, Dwarahat, Dunagiri, Gangolihat, Amsyari, Kausani                |
| Genus <i>Gitona</i> Meigen        | 48. <i>distigma</i> Meigen, 1830                                          | Dhari, Nainital, Lariyakanda                                                                                    |
| Genus <i>Hirtodrosophila</i> Duda | 49. <i>hexaspina</i> Fartyal & Singh, 2002                                | Letibuga, Nainital                                                                                              |
|                                   | 50. <i>quadrivittata</i> Okada, 1956                                      | Sheetla, Nainital                                                                                               |
| <i>Leucophenga</i> Mik            | 51. <i>albiceps</i> de Meijere, 1914                                      | Ganguachaur, Nainital, Lariyakanda, Chaubattia garden, Dunagiri, Kausani, Gangolihat                            |
|                                   | 52. <i>angulata</i> Singh, Dash & Fartyal, 2000                           | Gahna, Nainital, Dunagiri, Kausani, Pinath. Sargakhet                                                           |
|                                   | 53. <i>angusta</i> Okada, 1956                                            | Nainital, Pithoragarh                                                                                           |
|                                   | 54. <i>argentata</i> de Meijere, 1914                                     | Dunagiri, Dwarahat, Gangolihat                                                                                  |
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|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
|                                                                       | 55. <i>bellula</i> (Bergroth, 1894)                                                               | Mukteshwar, Nainital, Ratighat, Ranikhet, Dunagiri, Kausani, Pinath, Amsyari |
|                                                                       | 56. <i>champawatensis</i> Fartyal, Singh & Toda, 2005 (= <i>singhi</i> , Ref. D.I.S. 83:71, 2000) | Nainital, Kausani, Champawat                                                 |
|                                                                       | 57. <i>chaubattianensis</i> Fartyal, Singh & Toda, 2005                                           | Chaubattia garden, Ratighat, Nainital                                        |
|                                                                       | 58. <i>clubiata</i> Singh, Dash & Fartyal, 2000                                                   | Dhari, Nainital, Bhowali, Dunagiri, Kausani                                  |
|                                                                       | 59. <i>kumaonensis</i> Fartyal, Singh & Toda, 2005                                                | Nainital                                                                     |
|                                                                       | 60. <i>nainae</i> Fartyal, Singh & Toda, 2005<br>Nainital, Chaubattia garden                      |                                                                              |
|                                                                       | 61. <i>neointerrupta</i> Fartyal, Singh & Toda, 2005                                              | Nainital, Pilkholi, Dwarahat, Kausani, Pinath                                |
|                                                                       | 62. <i>neolacteusa</i> Singh & Bhatt, 1988                                                        | Latoli, Nainital, Chaubattia garden.                                         |
|                                                                       | 63. <i>okhalkandensis</i> Singh, Dash & Fartyal, 2000                                             | Nainital, Ranikhet, Chaubattia garden, Dunagiri, Kausani                     |
|                                                                       | 64. <i>ornata</i> Wheeler, 1959                                                                   | Kashialekh, Nainital, Chaubattia garden, Dunagiri, Kausani                   |
|                                                                       | 65. <i>quadripunctata</i> (de Meijere, 1908)                                                      | Nainital                                                                     |
|                                                                       | 66. <i>subpollinosa</i> (de Meijere, 1914)                                                        | Sheetla, Nainital, Bhowali, Chaubattia Garden                                |
|                                                                       | 67. sp. 1, Upadhyay & Singh (In press)                                                            | Kausani                                                                      |
| Genus <i>Lissocephala</i> Malloch                                     | 68. <i>parasiatica</i> Takada & Momma, 1975                                                       | Mukteshwar, Nainital, Almora, Ranikhet, Pithoragarh                          |
| Genus <i>Lordiphosa</i> Malloch,                                      | 69. <i>tripartita</i> Okada 1966                                                                  | Dunagiri (Almora)                                                            |
| Genus <i>Microdrosophila</i> Malloch, Subgenus <i>Microdrosophila</i> | 70. sp. 2, Upadhyay & Singh (In press)                                                            | Dunagiri (Almora)                                                            |
| Genus <i>Paraleucophenga</i> Hendel                                   | 71. <i>neojavanaii</i> Singh & Negi, 1992                                                         | Dwarahat (Almora)                                                            |
|                                                                       | 72. <i>todayi</i> Fartyal & Singh, 2004                                                           |                                                                              |
| Genus <i>Hirtodrosophila</i> Duda                                     | 73. <i>actinia</i> Okada, 1991                                                                    | Nainital, Dhari, Pithoragarh, Amsyari                                        |
| Genus <i>Scaptodrosophila</i> Duda                                    | 74. <i>chandraprabhiana</i> Gupta & Ray-Chaudhuri, 1970                                           | Nainital, Bageshwar, Kausani, Champawat, Lohaghat                            |
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|                                   | 75. <i>coracina</i> Kikkawa & Peng, 1938       | Nainital, Bhatelia, Champawat, Almora, Dunagiri, Kausani                                                                   |
|                                   | 76. <i>hirsuata</i> Singh & Dash, 1998         | Sargakhet, Haldwani, Nainital, Bageshwar, Amsyari, Rudrapur, Tanakpur                                                      |
|                                   | 77. <i>subtilis</i> Kikkawa & Peng, 1938       | Kausani                                                                                                                    |
| Genus <i>Scaptomyza</i> Hardy     | 78. <i>elmoi</i> Takada, 1970                  | Latoli, Nainital, Pithoragarh                                                                                              |
|                                   | 79. <i>himalayana</i> Takada, 1970             | Nainital, Almora, Ranikhet, Dwarahat, Dunagiri, Chaukhutia, Pithoragarh, Gangolihat, Kausani, Pinath, Amsyari              |
|                                   | 80. <i>quadruangulata</i> Singh & Dash, 1993   | Letibuga, Bhimtal, Sat Tal, Ramnagar, Nainital, Ranikhet, Dwarahat, Dunagiri, Chaukhutia, Pithoragarh, Gangolihat, Kausani |
| Genus <i>Stegana</i> Meigen       | 81. <i>nainitalensis</i> Singh & Fartyal, 2002 | Nainital                                                                                                                   |
| Genus <i>Zaprionus</i> Coquillett | 82. <i>indianus</i> Gupta, 1970                | Mukteshwar, Nainital, Almora, Ranikhet, Dwarahat, Dunagiri, Chaukhutia, Pithoragarh, Gangolihat, Kausani, Pinath, Amsyari  |

Acknowledgments: The authors express their gratitude to Prof. T. Okada of Gotokuji 2-30-18, Setagaya-ku, Tokyo, Japan-154, and Prof. M.J. Toda of Low Temperature Science, Hokkaido University, Sapporo, Japan, for confirming the identification of specimens, and also thanks to Dr. Baechli for checking this manuscript.

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