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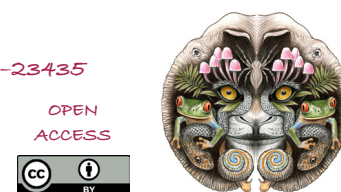
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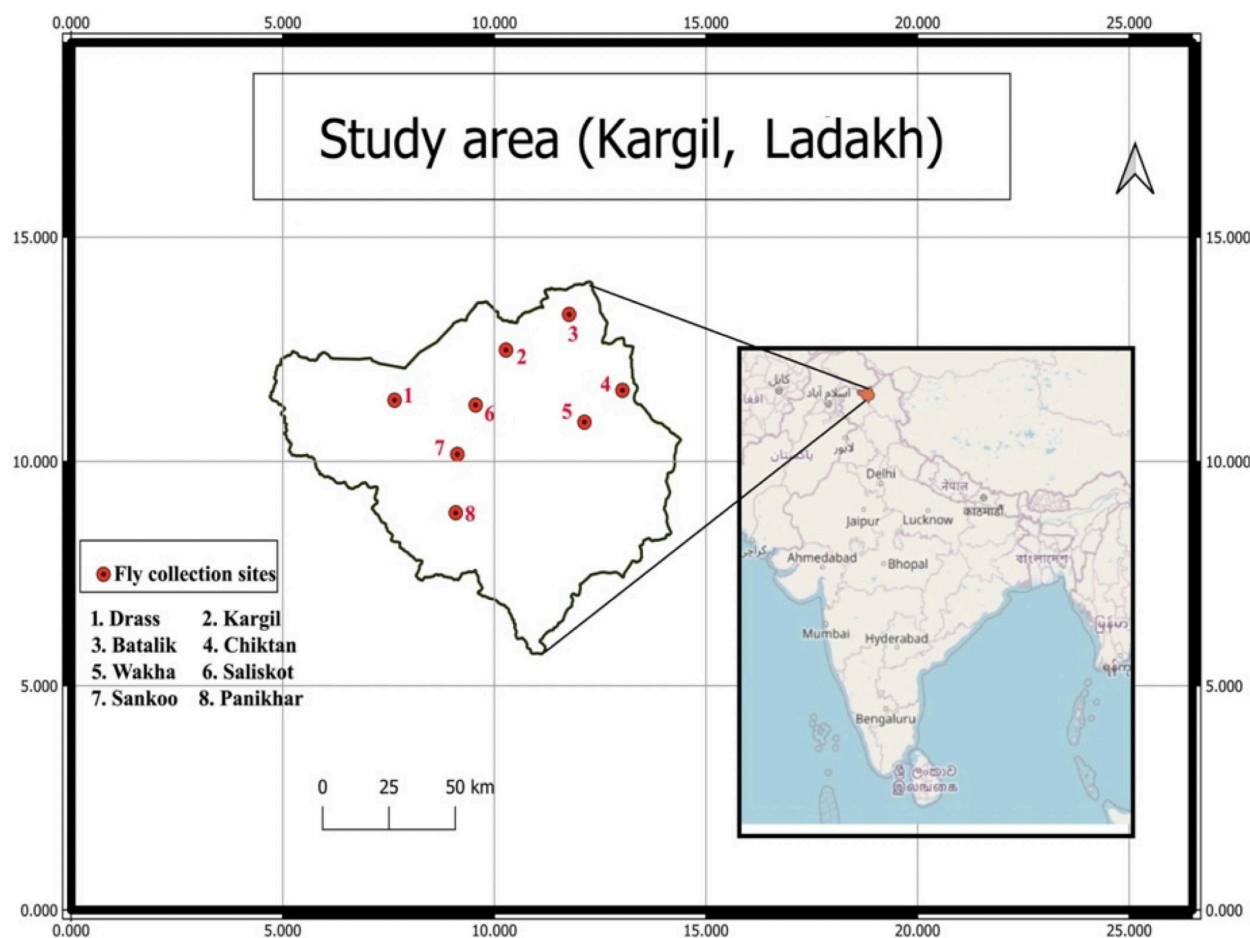


Figure 1. Map of study area Kargil Ladakh.

## MATERIAL AND METHODS

Kargil is a district under the administration of UT, Ladakh, India in Trans-Himalayan region, situated 30 to 35 degree N and 75 to 77 degree E, with an area of about 14,036 km<sup>2</sup>. The survey was conducted for three consecutive years from April 2018 to March 2021. To ease the survey, based on geography, topography, and climatic condition, the study area was divided into eight main sites, viz.: Drass, Kargil town, Batalik, Chiktan, Wakha (Shargole), Saliskot, Sankoo, and Panikhar (Figure 1). The survey was carried out on a monthly basis by using plastic bottle traps baited with 100 g unwashed day old goat/sheep stomach (Hussain et al. 2022, 2022). On each visit, three traps were installed in all the above mentioned study sites at a distance of about 100 m for three hours extending from 1100 h to 1400 h, around places like slaughterhouses, local latrines, meat shops, and waste dumping areas. The survey was not conducted during the winter months (November to March) as the climatic conditions were not feasible and no fly activity was observed at average temperatures below 4°C. The

trapped flies were killed using ethyl acetate/chloroform. Based on their morphology *L. cuprina* was sorted out, counted and identified up to species level by using available keys (Wallman 2001; Carvalho & Mello-Patiu 2008; Whitmore et al. 2020). The total number of flies captured from each site/visit were pooled and drawn against each month to access the seasonal abundance. Photographs were captured using Leica S9i stereo-zoom binocular microscope fitted with camera and edited with Adobe Photoshop 7.0. Data was analysed using software SPSS 16.0 and graphs were plotted using software Origin pro 8. Climatic data of the district Kargil was obtained from the Indian Metereological Department, Metereological Center, Rambagh, Srinagar, Jammu & Kashmir UT, India.

## RESULTS AND DISCUSSIONS

### *Lucilla cuprina* (Wiedemann, 1830)

**Type-locality:** China. Type in the Leyden Museum

**Type species:** *Lucilia acutifolia*

**Material examined:** India: Ladakh: Kargil town, 4♀ :1♂, 34.56°N, 76.13°E, 2,672 m, 11.vi.2018, M. Hussain; Drass, 2♀ :1♂, 34.41°N, 75.77°E, 3,081 m, 18.v.2018, M. Hussain; Batalik, 2♀, 34.66°N, 76.34°E, 2,814 m, 11.v.2018, M. Hussain; Chiktan, 3♀, 34.46°N, 76.52°E, 3,294 m, 18.vi.2018, M. Hussain; Wakha, 2♀, 34.37°N, 76.39°E, 3,371 m, 18.vi.2018, M. Hussain; Trespone, 1♀, 43.41°N, 76.03°E, 2,849 m, 16.vii.2018, M. Hussain; Sankoo, 3♀, 34.28°N, 75.96°E, 2,985 m, 16.vii.2018, M. Hussain; Panikhar, 1♀, 34.13°N, 75.95°E, 3,229 m, 16.vii.2018, M. Hussain.

### Diagnosis

Body metallic green; gena white with black hairs; posterior slope of humeral callus with 0–4 hairs; notopleuron surface between last notopleuron seta and edge of notopleuron with 2–5 hairs; central occipital area below each inner vertical seta with one setula; ketatergite bar; wings hyaline; basicostae bright yellow; stem vein bar above; lower calypters bar above; frontoclypeal membrane dark brown; width of frontal stripe (frontal vitta) as wide as parafrenal plate; color of the fore femora dark metallic green (Image 2–9).

During the present study 1,176 flies were captured from April 2018 to March 2021, of which Kargil town represented a maximum of 202 (17.18%) followed by Chiktan 173 (14.71%), Sankoo 154 (13.1%), Batalik 138 (11.73%), Saliskot 137 (11.64%), Drass 135 (11.47%), Wakha 129 (10.1%), and Panikhar 108 (9.18%) which

indicates that this species is widely distributed across the Trans-Himalayan region which coincides with the distributions of *L. sericata* (Hussain et al. 2022).

Being a cold blooded animal, the activity of *L. cuprina* is directly influenced by climatic factors like temperature, humidity, rainfall, and snowfall. Kargil, being a part of a cold climate desert, shows great variation in the seasonal temperature ranging from -35°C during midwinter to 40°C during midsummer (Behera et al. 2014). During the study it was recorded that this species showed a strong positive correlation with temperature ( $r = 0.868$ ) and a weak positive correlation with relative humidity ( $r = 0.276$ ). *Lucilia* spp. overwinters in both the larval and pupal stages (Wall et al. 2000; Rosati 2014). During the present study it was recorded that adult *L. cuprina* begin to appear in April with an average temperature of  $13.95 \pm 1.4^\circ\text{C}$  (Mean  $\pm$  SE), and reached its highest peak in August with an average temperature of  $23.81 \pm 1.0^\circ\text{C}$  (Mean  $\pm$  SE) and was not observed during winter months from November through March during which the ambient average temperature remained below  $1.24 \pm 1.8^\circ\text{C}$  to  $-6.12 \pm 2.3^\circ\text{C}$  (Mean  $\pm$  SE) (Figure 2). It was found that this species was most abundant in August, which recorded  $119.00 \pm 14.0$  (Mean  $\pm$  SE) followed by July with  $111.60 \pm 4.4$  (mean  $\pm$  SE) and the least ( $4.33 \pm 0.66$ ; mean  $\pm$  SE) was recorded in the month of April. Statistical analysis (ANOVA, Duncan test) showed that there was no significant difference in the fly abundance in July and August; whereas, these two months showed significant difference in fly-abundance from rest of the months. These results corroborate with those of Brundage et al. (2011) and Hussain et al. (2022).

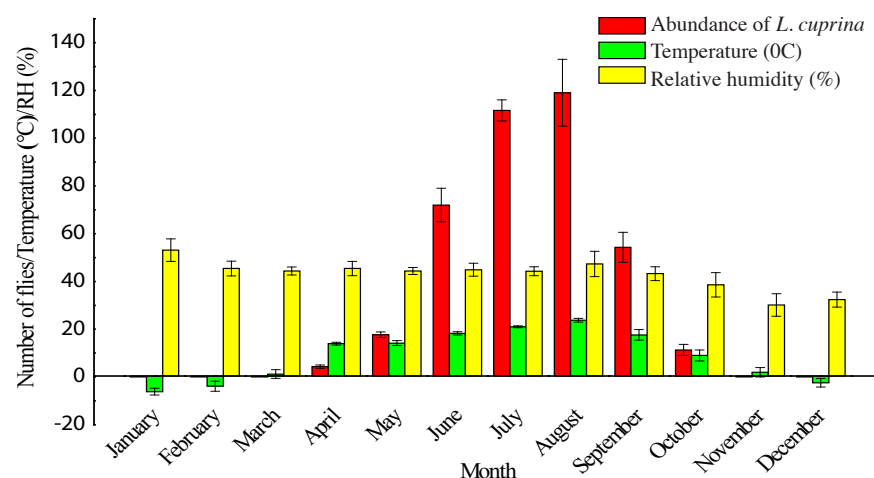


Figure 2. Seasonal abundance of *L. cuprina* in Kargil Ladakh from April 2018 to March 2021.



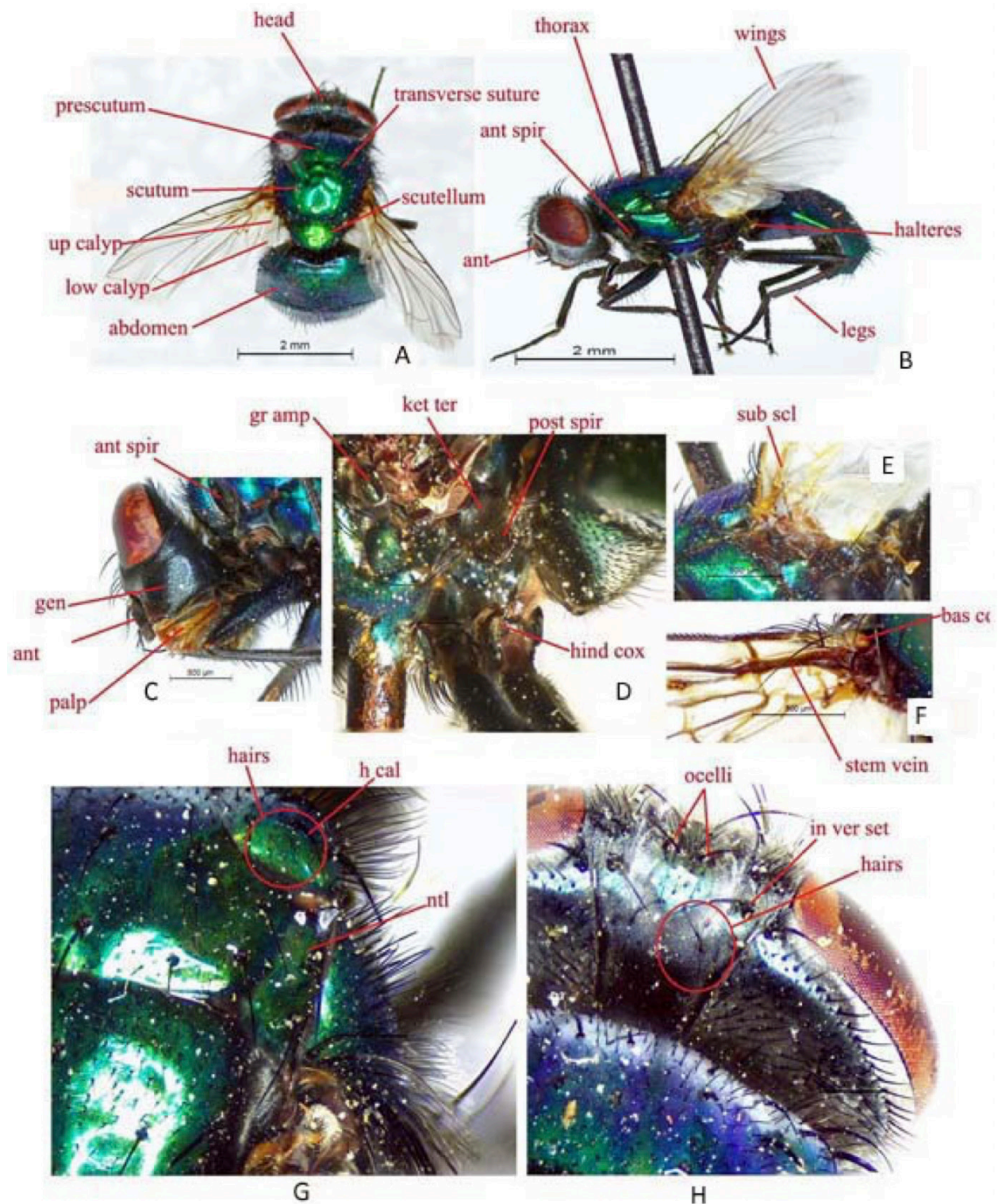


Image 1. *Lucilia cuprina*: A—Body, dorsal view | B—Body, lateral view | C—Head lateral view | D—Thorax, postero-lateral view | E—Wing base, ventral view | F—Wing, dorsal view | G—Thorax, dorsal view | H—Head, dorsal view.

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