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SEASONAL INCIDENCE OF THE CARRION BREEDING BLOWFLIES *Lucilia sericata* (Meigen) AND *Chrysomya albiceps* (Wied.) (DIPTERA:CALLIPHORIDAE) IN ABU- RAWASH FARM - GIZA - EGYPT

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SUMMARY

Seasonal incidence of both blowflies *Lucilia sericata* and *Chrysomya albiceps* when offered different carrion baits, was carried out in Abu-Rawash Farm, Giza, Egypt. *L. sericata* was absent during the hot season (July, August and September), and present during the rest of the year. Maximum adult percentage (95.20% and 89.80%) was recorded during March and April (spring), respectively. This percentage gradually decreased during May (60.80%) and June (53.40%). The seasonal abundance of *L. sericata* depends also to a certain extent on the type of carrion bait used in accordance with temperature and humidity. Liver of sheep attracted to a great deal ovipositing females of *L. sericata* as the number of formed pupae reached its highest values (222 pupae), when compared to other carrion baits used. Although the highest number of collected pupae of *C. albiceps* was (3002 and 2120 pupae) during April and March (spring), these flies were able to breed successfully in carrion in summer and fall. The percentage of emerging adults recorded its highest values during July 94.90% and August 92.90%. However in spite of the presence of liver of sheep as carrion bait *C. albiceps* pupae were not collected during winter months (December, January and February).

INTRODUCTION

Since time immemorial, flies have always manifested themselves in Egypt in prodigious numbers. The favourable climatic conditions which prevail almost all the year round in this country together with the immediate availability of all sorts of breeding grounds have greatly contributed to the striking abundance of flies. Among the multitude of flies of medical and veterinary

importance, the blowflies, which are considered as carcass inhabitants, breeding in carrion. They play a significant role in causing myiasis as larvae may be deposited in various tissues of man and animals causing destruction of healthy tissues and sometimes leading to death. The present work was undertaken to study the seasonal incidence of two blowflies *L. sericata* and *C. albiceps* in presence of different carrion baits.

MATERIALS AND METHODS

Field studies of the seasonal incidence of both *Lucilia sericata* and *Chrysomya albiceps* on different types of carrion decomposition were carried out in Abu-Rawash Farm, 30km far from Cairo City, Giza Governorate, Egypt, during June 1995 till the end of May 1996. The different carrion baits used were: turkey, crow, rabbit, dog, pig, pigeon, liver of sheep, mutton, fish, liver of donkey, chicken and stomach of sheep. The carrion baits were placed on the ground and protected by a vertebrate scavenger-exclusion cage made of a steel frame (36 x 36 x 36cm) and covered with welded wire mesh (1.5 x 1.5 cm) to prevent crows, or mice from eating them. Meanwhile insects of all sizes had free access to the carcasses. Twice a month (every 15 days) fresh carrion baits were placed, and old decomposed ones were removed, examined and the number of formed pupae were collected randomly inside and beneath each baits with forceps. Also excavations in the soil beneath the baits were made with a small trowell to search for pupae of flies, as post- feeding larvae of sarcosaprophagous flies normally wander considerable distances from baits or burrow in the soil beneath them at depth of about 3cm (Greenberg, 1990). The pupae were kept in the cage till eclosion to the adult stage to confirm species identification. The number of pupae of *L. sericata* and *C. albiceps* were counted and recorded. The number of emerging flies from both species were recorded to calculate the percentage of monthly incidence. Records of the climatic factors namely: temperature, relative humidity, rainfall and wind velocity during the two years of investigation (1995 and 1996) were all obtained from Egyptian Meteorological Station, Cairo, Egypt.

RESULTS AND DISCUSSION

Identification of the emerging adults were achieved according to Zumpt (1965). From results represented in Table (1), it appeared that although *L. sericata* was absent during the hot season July, August and September, the fly was found during the rest of the year. However the maximum adult percentage (95.20%) and (89.80%) was recorded during the spring months March and April respectively. This percentage gradually decreased during May (60.80%) and June (53.40%). These results were in agreement with those reported by Selim (1953), who found that *Lucilia* spp. in Egypt occurred all over the year, their incidence and prevalence reached its maximum in spring (March, April and May), then they became scarce

in summer (July and August). Heath and Bishop (1986) reported that in New Zealand *L. sericata* was most prevalent in March and April and also present from October to May. However Park and Jo (1984) reported that the peak populations of *L. sericata* in the Korean Republic occurred in May and September. Wilson (1932) stated that in New Jersey *L. sericata* was moderately abundant and appeared during June and July; Ullyett (1950) found that in South Africa adult populations of *L. sericata* reached their highest prevalence in summer; Petrova (1976) stated that *L. sericata* was abundant at the hottest time of the year from July to September in the Maritime Territory of the USSR; Hegazi et al. (1991) during their survey on the zoosaprophagous insects and their associates in a natural ecosystem in the Egyptian Western desert (80km west of Alexandria, 12km from the Mediterranean Sea shore) reported that *L. sericata* disappeared or occurred in very low numbers during winter months. Captured *L. sericata* reached maximum numbers during spring (May), decreased to a minimum during the winter period from November to January, then gradually increased again.

Results obtained also showed that the magnitude of each fly collected depended upon several factors as temperature, humidity, type of bait carrion, carcasses decomposition and competition between different species. Soulsby (1969) found that in Australia, the prevalence of flies is seasonal because the adults are adapted to definite range of temperature and to variations of humidity, as some species prefered lower temperatures than others. The occurrence of calliphorids was directly related to the quantity and quality of available breeding media (Das and Dasgupta, 1982). During the present study, it appeared that liver of sheep attracted a great deal of ovipositing females as the number of formed pupae reached its highest values (222 pupae), when compared to other carrion baits used. Similar findings were obtained by Goddard (1988) in Bexar Country, Texas, when using fresh liver and rotting fruit to collect blowflies during the 1-year study period, a total of 602 blowflies were collected among these flies only 1 fly of *L. sericata* was taken from fruit and 9 flies from liver. Amin et al. (1997 & 1998) found that the most attractive bait for the members of family Calliphoridae was liver followed by minced meat. The absence of *L. sericata* during summer (July, August and September), might also be attributed to the rapid resource depletion, as carcasses in summer season decayed at a much faster rate than those in fall and winter as well as the activity of *L. sericata* in high summer season decreased. A similar conclusion was stated by Tantawi et al. (1996), who reported that in summer the carcasses took only 4.5 days to reach the dry stage when average daily temperatures were more or less 28°C. In contrast during winter 15.5 days were required for the carcasses to reach the dry stage when average daily temperatures ranged from 13.6 to 16.6°C so that *L. sericata* was able to breed successfully in carrion in fall, winter and spring.

From the results tabulated in Table (1), it appeared that *C. albiceps* was able to breed successfully in carrion in spring, summer and fall. The highest number of collected pupae was (3002 and 2120 pupae) during April and March respectively. The percentage of emerging adults recorded its highest values during July (94.90%) and August (92.90%). In spite of the presence of liver of sheep as carrion bait *C. albiceps* pupae did not exist during winter months (December, January and February). The complete absence of *C. albiceps* was attributed to weather conditions as low temperatures prevent adults to emerge from previously formed pupae (Omar, 1974). Similar results were obtained by Hafez (1939 and 1947) who reported that *C. albiceps* occurred in early or late summer; by Selim (1953) who stated that Chrysomya in Egypt began to appear in late spring and increased gradually, reaching their maximum prevalence in early summer, and remained abundant until early autumn, then began to decrease and completely disappeared in late autumn. Also Iwuala and Okpala (1978) stated that high number of *Chrysomya* occurred in June and July and the lowest numbers in January and February in Nigeria; by Tantawi et al. (1996) who stated that *C. albiceps* was a secondary species on carrion in summer, fall and spring. However Abd El-Baky (1986) stated that *C. albiceps* was found in Sinai region during the four seasons of the year; Braack and Vos (1987) reported that *C. albiceps* maintained high population numbers between January and March with minimum numbers between May and August in the Northern Kruger National Park, while in the Southern Kruger National Park *C. albiceps* became abundant from November to February with low population levels between April and September.

From the results obtained it appeared that *L. sericata* and *C. albiceps* did not coexist at the same time of the year on the carrion bait because of the significant difference in development. *L. sericata* larvae left the arena very rapidly while most of *C. albiceps* larvae were still in the 2nd instars. Similar observations were reported by Tantawi et al. (1996), or they might compete with each other during warmer temperatures. However Greenberg and Povolny (1971) stated that the two species do not compete in carrion in the Palaearctic region because of their different temperature requirement and phenology.

Table (1): Seasonal incidence of *Lucilia* sericata and *Chrysomys albiceps* collected from different carrion baits in Abu-Rawash farm, Giza, Egypt during the period from june 1995 to May 1996.

Month/ year	Mean of temperature (°C)	Mean of Relative Humidity %	Types of carrion	*Lucilia sericata*			*Chrysomya albiceps*		
				No. of pupae	No. of emerged flies	% of adult emergence	No. of pupae	No. of emerged flies	% of adult emergence
Jun-95	30.8	37.5	Turkey Crow	146 103	78 67	53.40 65.00	1510 1226	1328 1091	87.90 89.00
Jul.-95	31.9	45.6	Turkey Rabbit	---- ----	---- ----	---- ----	1424 985	1324 935	93.00 94.90
Aug.-95	30.2	47	Dog Pig	--- ---	--- ---	--- ---	1090 963	991 895	90.90 92.90
Sep.-95	32	49	Turkey Pigeon	---- ----	---- ----	---- ----	896 871	698 766	77.90 87.90
Oct.-95	27.4	47	Rabbit Liver of sheep	168 195	109 132	64.90 67.70	855 956	607 697	71.00 72.90
Nov.-95	20.5	51	Mutton Fish	203 93	156 65	76.80 69.90	336 913	171 493	50.90 54.00
Dec.-95	15.4	51.5	Pigeon Liver of sheep	176 128	144 111	81.80 86.70	--- ---	--- ---	--- ---
Jan.-96	15.9	50	Turkey Liver of sheep	156 120	129 106	82.70 88.30	--- ---	--- ---	--- ---
Feb.-96	18.8	45.5	Rabbit Mutton	187 169	149 152	79.70 89.90	--- ---	--- ---	--- ---
Mar.-96	24.4	42	Liver of sheep Mutton	222 165	204 157	91.90 95.20	2120 901	1632 712	77.00 79.00
Apr.-96	27.6	39	Liver of donkey Chicken	185 98	162 88	87.60 89.80	3002 1492	2371 1207	79.00 80.90
May-96	32.4	34	Pigeon Stomach of sheep	130 155	79 97	60.80 62.60	1161 1500	1027 1216	88.50 81.10

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