Begon, M. University of Leeds, England. Preliminary observations on the yeasts associated with Drosophila obscura and D. subobscura.

The Drosophila fauna of Adel Dam Nature Reserve, a mixed woodland near Leeds, is dominated by D. phalerata (a fungal feeder), D. obscura and D. subobscura. The yeasts occurring in the crops of adults of the latter two species have been examined and compared to those occurring in known and prospective feeding sites, as part of an attempt to gain some insight into the field ecology of these species. The results outlined here cover the period late March to late July 1973, during which period the two species occurred in comparable numbers (Shorrocks pers. comm.), and are as follows: (1) During late March and April sycamore (Acer pseudoplatanus) and birch (Betula pubescens) trees bled, and occasionally formed slime fluxes on which males and females of both species fed.

A slime flux of a birch and the crops of flies removed from it showed excellent correspondence with respect to four dominant yeast species, including Rhodotorula rubra and a yeast very similar to Kluyveromyces dobzhanskii (obtained from D. pseudoobscura (Shehata et al. 1955) and D. persimilis (Phaff et al. 1956)). These two species of yeast were also common in crops of flies removed from dripping sycamore sap as was the yeast Aureobasidium pullulans. However only A. pullulans was found in the sap.

No differences emerged between males and females or between D. obscura and D. subobscura in this period.

(2) In late April sap ceased to flow, attempts to cause artificial flows through scoring of bark throughout May, June and July being similarly unsuccessful; during May many bluebells (Endymion non-scriptum) flowered and subsequently rotted. Their yeast flora was as follows: Rh. aurantiaca, Rh. lactosa, Cryptococcus laurentii var laurentii, A. pullulans, plus one other, as yet unidentified.

The crops of D. subobscura caught during this period predominantly contained these same four identified yeasts, plus one other, again unidentified, probably Saccharomyces sp., suggesting the rotting bluebells as at least one of D. subobscura's sources of food; whereas from five D. obscura caught only one Rh. rubra colony was obtained.

However Rh. aurantiaca, A. pullulans and the presumptive Sacch. sp. were all obtained from D. obscura during other periods, and Rh. lactosa was the only one of these species to occur later in D. subobscura, but not in D. obscura. It therefore appears unlikely that D. obscura is incapable of using these yeasts at this time; and, unless explicable by small sample size, the results perhaps suggest an association of D. obscura with its breeding-site as either newly-emerged or actively-breeding adults, since Carson and Stalker (1951) noted a temporal separation between active feeding and breeding, and Carson, Knapp and Phaff (1956) observed that the microflora of breeding sites was strikingly different from that found in the crops of Drosophila adults.

(3) Throughout June and July a total of thirty-two flies were examined. Neither in the yeast species present, nor in the diversity of yeasts per individual fly was any significant between-sex or between-species difference revealed. The yeasts obtained were in the main different species to those obtained during April and May and included A. pullulans, Rh. aurantiaca, Rh. lactosa, Rh. glutinis var glutinis, Torulopsis apicola, Cryptococcus melibiosum and Cr. albidus var diffluens.

Leaf surfaces, rotting flowers, rotting fungi and the rotting vegetation collected in the forks of trees were all examined as potential food-sources, but no pattern of correspondence emerged between these and the crop contents. A. pullalans did however, occur on the leaf surfaces of all eight tree species sampled, and Rh. lactosa on six of them, so that the possibility exists that these constitute part of the food-source.

Thus in June and July, as in April, there appears to be no differentiation of the niches of D. obscura and D. subobscura with respect to adult food.

Had all flies been collected from one site, it might have been argued that the food sources vary spatially, and niche-differentiation varies with food-source. Especially so since Shorrocks (pers. comm.) has found that bait at a height of approximately 6 m. attracts more flies and a higher proportion of D. obscura than bait placed on the ground below it.

Flies caught in this situation, however, revealed no differences in crop contents as a function of bait-height.

Furthermore the food source, whatever it is, appears to be the same throughout the Reserve, since flies caught simultaneously at two sites, 400 m. apart, showed no significant differences in their crop contents.

All of which points towards niche-differentiation, if any, being at the larval or ovi-

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Singh, B.N. Banaras Hindu University, Varanasi, India. Studies on the fecundity of Drosophila ananassae.

Experiments were conducted in order to study the egg-laying capacity of Drosophila ananassae females. Several wild laboratory stocks of D. ananassae raised from flies collected in different localities of India, were utilised during the present investigation. Males and females from each stock were collected within the six hours after eclosion and were grown for 48 hours. The pair mating between females and males from the same stock was done in culture vials. In order to facilitate the counting of eggs a green edible dye was added to the food medium. Each female remained in a culture vial for 24 hours and then transferred to fresh culture vial without etherisation. The eggs laid were counted from the old vial which represented the number of eggs laid by the female within a period of 24 hours. In the similar manner the egg counts were made for all the females for continuously twenty days. If any female died before the twentieth day, the egg-laying data of that female were rejected. The number of females tested varied in different stocks.

The results are summarised in Table 1. The number of eggs laid per female per day varies between 8.67 to 45.64. The χ^2 value has been calculated under the assumption that all the

Table 1. Fecundity of Drosophila ananassae females in different strains.

Strains	Days eggs counted	Number of females tested	Total number of eggs counted	Eggs/♀ for the counted period	Eggs/day/♀
Mughalsarai	20	44	13620	309.54	15.48
Nagpur	20	20	5002	250.10	12.50
Port Blair	20	22	3814	173.36	8.67
Jamsoti	20	47	42902	912.8	45.64
Lowari	20	40	26858	671.45	33.57
ST - Tejpur	20	48	31236	650.75	32.54
a_{25}	20	40	23491	587.27	29.36
Gorakhpur	20	35	24192	691.20	34.56
AL - Tejpur	20	43	22474	522.65	26.13

stocks must possess nearly the same egg-laying capacity. The total χ^2 value is 43.94 which shows highly significant variation. This suggests that the stocks differ in their egg-laying pattern.

The fecundity of D. pseudoobscura is a species characteristic since the several stocks and their crosses yield about the same number of eggs[1]. Thus D. ananassae clearly differs from D. pseudoobscura. Stone et al.[2] investigated the genetic composition of the D. ananassae populations found at the Marshall Islands. The fecundity of D. ananassae was measured. The average eggs per day for the stocks and crosses varied but no consistent relation to genotype was detected. The data reported in the present paper show wide differences as compared to those of Stone et al.[2]. The variability in eggs per day per female recorded in Table 1 reflects genetic differences between strains.

Acknowledgement: The author is indebted to Prof. S.P. Ray-Chaudhuri for guidance.

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positional level; a suggestion consistent with the apparent abundance of potential adult food-sources, and the apparent impossibility of finding breeding sites during this period.

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