vary gland and the foregut during the initial stages of digestion may be the reason for an higher invertase activity in the foregut just after moulting. An alternative possibility is the regurgitation of enzyme from the midgut. However, there is a great decline in the activity of this enzyme in the foregut during the later period of development. The larva stops feeding at 72 h. Food materials are present only in the midgut during the final hours of development. This observation correlates well with the highest enzyme activity found in this region at 120 h. Though the invertase activity in the hindgut is low it is comparatively higher than that of foregut except at 120 h when the lumen is empty. It is quite probable that the invertase activity in the hindgut is a result of the voiding of enzymes along with the undigested food.

1 Acknowledgments. The authors wish to thank the Department of Zoology, for providing the facilities for this work. The senior author gratefully acknowledges the junior research fellowship from the University of Calicut.
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Seasonal distribution of *Drosophila* species[1]

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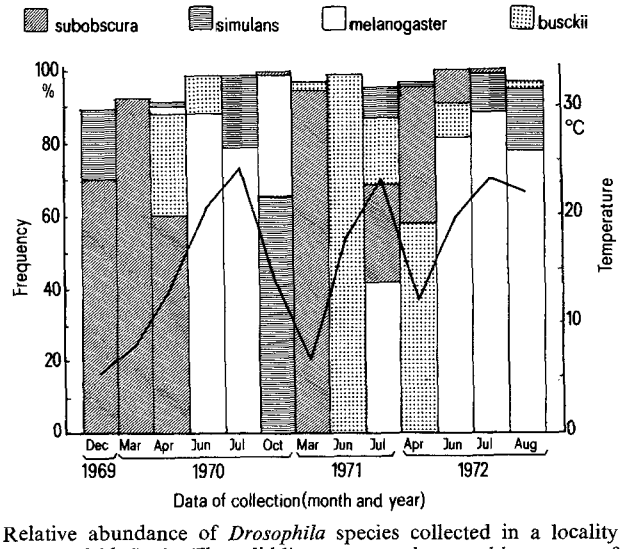
Summary. During a period of 3 years, and in different seasons, adult specimens of *Drosophila* were captured in an area in the center of the Iberian Peninsula. 11 different species were collected over the whole period. The abundance of the 4 more common species follows seasonal patterns: *D. busckii* assumes a preponderance in the spring, *D. melanogaster* in the summer, *D. simulans* in the autumn, and *D. subobscura* in the winter. It is suggested that seasonal changes may play a major role in making possible the existence of related species in the same habitat.

The coexistence of closely related species in the same habitat is a common phenomenon. What factors make possible the coexistence of species sharing in common some food and other resources remains a largely unsolved question. Competing species may coexist in a globally stable equilibrium if they utilize partially different resources, or at least of they utilize them with different efficiency[2]. One possibility little explored is that temporal variations in climate and other environmental characteristics may alter the composition of resources or the efficiency with which they can be utilized by related species.

Material and methods. This report gives the results of a series of *Drosophila* collections made in a small isolated wood from December 1969 to August 1972. The collection site is a small elm wood (387 × 13 m) in the outskirts of Madrid (11 km. from the town of Vallecas). The wood is surrounded by small bushes and grass with no other forests in the neighborhood, and the nearest isolated tree about 7 km away. The climate is continental with clearly differentiated seasons and little precipitation. Collections were made using baits of mashed banana seeded with yeast, left for 1 week at a time.

Results. 11 different species were collected over the whole period; 7 species were always rare or absent, while the other 4 were common at some time or other (table). The abundance of the 4 common species follows seasonal patterns; the figure shows the frequencies of different species in the various collections. *D. melanogaster* appears in late spring and is the predominant species in the summer months; *D. subobscura* is the most common species in late autumn and winter; *D. busckii* is found primarly in the spring, and *D. simulans* mostly in the autumn.

Discussion. The correlation between temperature and relative abundance may be used as an index of the association between specific abundance and season. The figure shows the monthly averages of the mean daily temperatures. The correlation between these monthly averages and the relative abundance of *D. melanogaster* is significantly positive ($r = +0.8347$, with 11 degrees of freedom, 95% confidence interval from $+0.45$ to $+0.93$) while the correlation with



Relative abundance of *Drosophila* species collected in a locality near Madrid, Spain. The solid line connects the monthly average of the mean daily temperatures.

Number of *Drosophila* flies collected at different times in a natural population near Madrid

Species	1969	1970					1971			1972				
	Dec.	March	April	June	July	October	March	June	July	April	June	July	August	Total
D. busckii	0	0	55	27	0	3	1	253	36	238	19	0	1	633
D. melanogaster	0	0	4	219	40	445	0	0	84	3	155	365	45	1.360
D. simulans	94	0	2	0	10	856	0	0	17	2	0	44	10	1.035
D. subobscura	322	217	115	2	0	2	35	0	54	153	17	3	0	920
Other*	47	17	16	1	1	9	1	2	9	14	–	–	2	119
Total	463	234	192	249	51	1135	37	255	200	410	191	412	58	4.067

* 7 other species were collected, with their total numbers given in parentheses: *D. phalerata* (67), *D. hydei* (14), *D. transversa* (13), *D. funebris* (12), *D. cameraria* (11), *D. confusa* (1) and *D. repleta* (1).

the relative abundance of *D. subobscura* is significantly negative ($r = -0.8239$, with 11 degrees of freedom, 95% confidence interval from -0.42 to -0.94). These correlations reflect the predominance of *D. melanogaster* in late spring and summer, and of *D. subobscura* in late autumn and winter. The other 2 species are associated with transition temperatures: *D. busckii* with ascending temperatures, *D. simulans* with descending ones.

Species abundance is often associated with temporal heterogeneity[3]. In the locality sampled in this study, it seems unlikely that migration plays a major role in determining species abundance, since the population is considerably removed from other habitats suitable for *Drosophila*. Changing local environmental conditions are the main factor responsible for the succession of relative abundance. It is suggested that seasonal changes may play a major role in making possible the existence of related species in the same habitat. The ability of different species to exploit common resources may change as the physical conditions of the habitat change.

1 I thank Dr F.J. Ayala for useful discussions and help in preparing the English text. I appreciate comments on the manuscript from Dr A. Prevosti and Dr A. Fontdevila.

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Chromatin circles in amphibian previtellogenic oocytes[1,2]

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Summary. Previtellogenic oocytes of *Odontophrynus americanus* display hundreds of chromatin circles. Electron microscopy of spread preparations of isolated nuclei shows that the circles originate from the chromatin. The circles change their morphology and form new copies. The length of the DNA packed in the nucleosomal circles is about 2.5–3.5 μm or multiples of this value. Assuming that histones need not be removed from chromatin before DNA replication[3] we suggest that the circles might belong to the process of rDNA amplification.

Eukaryotic chromatin consists of repeating units of DNA-histone complexes, the nucleosomes. The nucleosome core is formed by an octamer of histones (H_3, H_4, H_2a, H_2b) circumscribed by a DNA double helix containing 140 base pairs. This DNA segment describes $1\frac{3}{4}$ turns around the outside of the histone octamer, each turn consisting of 75–82 base pairs. The nucleosomes are interconnected by a DNA linker which is variable in length[4]. The H_1 histone is associated with the linker DNA and is implicated in the maintenance of higher-order chromatin structures[5–7].

The nucleosome is a dynamic structure as shown by crystallographical studies[4]. The findings that transcribing genes have altered nucleosomal configuration[8] clearly demonstrate the dynamism of the nucleosome. Regarding chromatin replication, it was found that histones do not need to be removed from chromatin segments before DNA replication, the nucleosomal pattern being rapidly restored afterwards[3]. In addition, some evidence has been found that the distribution of histones among daughter chromatins follows a conservative segregation pattern[9].

In this paper we describe a chromatin replication process in previtellogenic oocytes of *Odontophrynus* resulting in the formation of a high number of circles containing chromatin. The length of the DNA packed in the nucleosomal circles and the stage of meiosis where they occur, suggest that the mechanism could be related to the process of rDNA amplification.

Material and methods. The preparations were obtained from oocytes belonging to 10 females of the frog *Odontophrynus americanus* 4n = 44 (Ceratophrydidae). The previtellogenic oocytes have a diameter of 0.6 mm and a nuclear diameter of 0.2 mm (vitellogenic oocytes have a diameter of 1.3 mm and a nuclear diameter of 0.5 mm). Chromatin fibres were prepared through a modification of Miller's method[10]. The oocytes were isolated in 0.1 M KCl, then transferred to 5:1 of 0.1 M KCl + 10^{-3} M Ca $(NO_3)_2$ for 20 min. Each nucleus was put on to a drop of bidistilled water (pH 8.7, adjusted with sodium borate buffer) and allowed to swell for 15 min. The material collected on parlodium (2%) covered grids was fixed with 10% formalin in 0.1 M sucrose for 10 min. The grids, washed in water, were stained in ethanolic uranyl acetate (1:3 aqueous uranyl acetate plus 95% ethanol, 1 min). Some grids were treated with DNase I Sigma (50 μg/ml) 1 min before fixation. The electron micrographs were obtained in a Siemens Elmiskop I, 60 kV.

Results. The nucleoplasm of previtellogenic oocytes contains hundreds of chromatin circles. They measure ~ 100 Å