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MEGLITSCH'S HYPOTHESIS: A CRITICAL EVALUATION

Meglitsch P. A. (Trans. Roy. Soc. N.Z. 88: 265—356 1960), suggested that since myxosporida are autogamous, the higher the rate of cross infections, the more the spores will vary within a single host. This variation would be indicated by a greater variety of morphologies and an increase in spore size divergence. Conversely, it would seem to follow that the detection of spores with large size variances within a single host would suggest a high infection rate for the entire host population. This inference would be very useful in determining infection rates in host populations where few hosts were collected.

To test the hypothesis that an increase in infection rate will lead to morphological diversity of the protozoa, the infection rates and the variances of the spores length and width were compared for several species of deepsea myxosporida from macrourid fishes. Thirty five spores were measured in each group (Table 1). *Auerbachia pulchra* from *Macrourus berglax* found off Newfoundland was compared with *Coryphaenoides filifer* found off Oregon. Although the infection rate for *M. berglax* was three times that of *C. filifer*, their variances did not differ significantly as the hypothesis would predict.

To test further Meglitsch's hypothesis, the variance in spore breadth and sutural diameter of another myxosporidan, *Ceratomyxa hokarari* from *Coryphaenoides acrolepis*, was compared with the corresponding incidences of infection for each of the collection sites from Mexico to British Columbia (Table 1). There was not a consistent relationship between infection rates and spore size variance. In addition, the seasonal infection rates of the southern California hosts were compared with their spores variance. The variances in spore breadth and sutural diameter in the winter, the period of lowest infection rates (27 % 6/22), were 38.0

Table 1. Myxosporida hosts, locality and spore measurements

Myxosporida spp. (host)	Locality	Spore		Infected/ examined (% infected)
		sutural diameter s^2	width s^2	
Auerbachia pulchra (*Macrourus berglax*)	Off Newfoundland	23.0 (17.0 to 28.0) 5.1	8.0 (7.0 to 10.0) 2.8	7/16 (43)
(*Coryphaenoides filifer*)	Off Oregon	20.7 (19.0 to 27.0) 5.5	7.7 (7.0 ato 9.0) 1.6	4/28 (14)
Ceratomyxa hokarari (*Coryphaenoides acrolepis*)	Off Mexico	12.3 (12.0 to 14.0) 1.3	30.3 (29.0 to 38.0) 21.0	14/41 (34)
	Off southern California	9.8 (9.0 to 15.0) 2.8	33.7 (26.0 to 43.0) 39.2	44/85 (51)
	Off central California	12.9 (10.0 to 13.5) 2.5	35.0 (31.0 to 40.0) 24.7	4/6 (66)
	Off northern California	13.2 (10.0 to 16.0) 3.9	37.8 (31.0 to 47.0) 36.9	14/15 (93)
	Off Oregon	14.6 (13.0 to 17.0) 2.0	32.0 (27.0 to 36.0) 5.9	16/22 (72)
	Off British Columbia	11.9 (11.0 to 14.0) 3.6	29.0 (28.0 to 31.0) 4.8	1/1 (100)

* s^2 = variance.

and 2.3 respectively. These variances were comparable to those in the spring, the time of highest infection rates (54 % 33/61). The spring variance in spore breadth was 34.0 and in the sutural diameter was 2.7. These results do not support the hypothesis.

The possibility that these depsea myxosporida could be exceptions to Meglitsch's speculation should not be overlooked.

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