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Ruditapes philippinarum is a clam native to Japan, with a wide distribution in the Indopacific area. This species is presently nearly cosmopolitan, as it has been imported into many countries for its better productivity in comparison with native clams. Introduction into the Adriatic dates back to 1983, when it was first cultivated in the lagoon of Venice. Breeding plants are now present in several brackish basins of the Northern Adriatic.

In order to increase the productivity of hatchery stocks, it is very important:
1) to acquire detailed knowledge of the genetic structure of wild and artificial populations,
2) to verify to what extent the genetic architecture of the strains can be modified by natural selection, and
3) to test whether the process of adaptation is similar in different lagoons, and in marine areas.

Moreover, the fact that *Ruditapes philippinarum* is undergoing a rapid phenomenon of naturalization means that it is a good model to study the evolution of the genetic structure of populations during the spreading phase. Comparison with native species, which are probably poorer competitors, may throw some light on the relations existing between the genetic architecture of a species and its performance as competitor and colonizer.

Genetic variability was estimated by the electrophoretic analysis of allozymes. Heterozygosity may be a relevant parameter, as it has frequently been proven to be related with morphometric traits and growth. Besides, heterozygote deficiencies appear to be a common feature in many bivalve species, but the explanation of these findings is still rather unclear.

Samples from cultivated stocks were collected in two brackish basins in the delta of the river Po: the lagoons of Caleri (samples C1 and C2), and Scardovari (S1 and S2). Sampling was repeated in April and September 1991. Electrophoresis was carried out according to BORSA and THIRIOT-QUIEVREUX (1990), testing eight enzyme systems for a total of 15 loci, only one of which (*Mdh-2*) did not show any variation. The number of animals scored, number of alleles per locus [NA], observed heterozygosity [Ho] and heterozygote deficiencies [(Ho-He)/He] are reported in the table.

As can be seen in the table, the strains have a rather high level of heterozygosity, similar to that found in previous studies (BORSA and THIRIOT-QUIEVREUX, 1990; MATTOCCIA, 1991). The presence of a good degree of genetic heterogeneity may represent a potential advantage for breeding, as it provides raw material to artificial selection.

Allele frequencies of a number of loci differed in the two basins. In the lagoon of Caleri a difference was found with respect to the estimates obtained from naturalized populations (MATTOCCIA, 1991). These findings suggest the possible involvement of selection and adaptation to local ecological conditions.

LOCUS	NA	N. INDIVIDUALS				Ho x 1000				(Ho-He)/He x 100			
		S1	C1	C2	S2	S1	C1	C2	S2	S1	C1	C2	S2
<i>Aat-1</i>	3	100	87	45	80	230	207	156	275	-8	-8	-39	-1
<i>Aat-2</i>	4	73	86	33	55	370	233	182	273	-3	-17	-53	-16
<i>Pam-1</i>	3	93	88	56	94	419	432	339	468	-23	-17	-37	-16
<i>Pam-2</i>	3	/	71	/	59	/	169	/	254	/	-13	/	-41
<i>Pai-1</i>	6	100	89	60	98	570	742	650	653	-9	+7	-10	+6
<i>Pai-2</i>	3	100	87	/	20	80	207	/	100	-9	+9	/	-55
<i>Slb</i>	3	89	84	61	98	270	440	262	367	+12	-2	-13	+7
<i>Idh-1</i>	4	89	92	45	98	326	446	289	367	-11	0	-26	-12
<i>Idh-2</i>	3	94	93	--	78	96	237	/	141	-31	-6	/	-33
<i>Lap-1</i>	4	92	86	61	96	359	267	180	281	-28	-25	-50	-23
<i>Lap-2</i>	3	--	67	--	76	/	388	/	553	/	-25	/	+39
<i>Mdh-1</i>	3	80	71	61	100	75	56	66	10	+7	+4	+3	0
<i>Mdh-2</i>	1	80	71	61	100	0	0	0	0	/	/	/	/
<i>Sod-1</i>	4	--	52	56	100	/	135	55	70	/	+7	+4	+3
<i>Sod-2</i>	3	80	86	55	100	137	209	291	150	-21	-10	-3	-6

Our data are in accordance with the common finding of a heterozygote deficiency. As the table shows, the defect is the most frequent condition (35 out of 49 cases), although only six revealed a significant difference. Several hypotheses, reviewed by GAFFNEY *et al.* (1990), have been suggested to explain this phenomenon but, at the present state of research, it is not possible to make a choice. It is probably better to conclude that "The causes of heterozygote-deficiency.....remain obscure" (ZOUROS *et al.*, 1988).

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In the period September 1989-September 1990, a research was carried out to individualize the meteorological factors influence on fish fry migration in the Lesina Lagoon. A particular fishing net was used, a modified hand lift-net, previously experimented in a similar research at Lake Fusaro (IANNIBELLI *et al.*, 1988, 1989).

The chemical-physical parameters of water were detected with the following instruments: currentmeter Hontsch Instruments and portable oxygen-meter Leeds & Nordrup, both with magnetic recording, thermometer with reading of the first decimal figure, salinometer Atago and portable ph-meter Electromate Beckman with direct reading. All the instruments and capture equipment were positioned at about 200 meters from the seamount of the lagoon connecting channel.

The captured specimens were taxonomically identified using the analytical keys of PERLMUTTER *et al.* (1957) and FARRUGIO (1977).

For *L. ramada* it is evidenced that the above species in the migration schooling tends to avoid minimum and maximum temperatures and prefers for its displacements an intermediate temperature range (12-13°C) with salinity about 26-27 ppt. Concerning the dissolved oxygen the most numerous groups of specimens are always found when the oxygen value is far beyond the saturation, up to 13.7 mg/l. For the current, *Liza ramada* avoids extreme values in the cases of greater aggregation, preferring the intermediate ones, between 19 and 25 cm/s, while the favourite flow-direction is the outgoing one.

For *Liza aurata*, in the Lesina Lagoon this species tends to aggregate with rather low temperature values (11°C and 7°C). The highest temperature values (over 20°C) keep this species far from the channel mouth and also the lowest values represent a barrier to the displacements: in fact great quantities of *L. aurata* and also *L. ramada* fry were captured only in the sea-tract in front of the mouth, in a whole sampling day (20/1/90). On the contrary, saline preferences in the schooling in migration of *L. aurata* were not evidenced. Both for dissolved oxygen and current velocity *L. aurata* seems to prefer intermediate conditions, between 7.9 and 11.7 mg/l for the oxygen and between 15 and 25 cm/s for the flow velocity, while the favourite direction was above all the outgoing one.

Regarding *Liza saliens* it is present in a range of temperature between 57 and 23.5°C and tends to avoid low winter temperatures. It does not seem instead to have any saline preferences, while the data of dissolved oxygen are too scarce to give any useful information. On the contrary, for the ph it is interesting to evidence a clear obstacle to the migration in presence of high values of this parameter (8.6-8.7). Groups of a certain number of specimens of *L. saliens* are captured being present values of current velocity between 16 and 19 cm/s. Concerning *M. cephalus*, finally, the most numerous groups were captured with water temperatures of 15.7°C and 22.7°C, thus evidencing a certain tendency of this species to avoid aggregation in case of higher temperatures. Regarding the salinity *M. cephalus* seems to move and aggregate without particular preferences, in a range between 28 and 37 ppt. The oxygen data are too scarce to be considered. The ph does not show any particular correlations with the displacements of *M. cephalus* except in only one case recorded, where the high value (8.6) may have created an obstacle to a certain aggregation of animals that were certainly present in the waters in front of Lesina Lagoon. In fact, at the outside of the seamount quite large quantities of fish fry of this species were captured by means of a circular scoop net fitted with a handle. Regarding the velocity and direction of the current, a clear preference in schooling is to be evidenced in the cases of current velocity of 16-19 cm/s and outgoing flow.

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