Nat. Acad. Sci. Letters, Vol. 10, *No.* 8, 1987

A note on salinity tolerance of *Liza parsia* (HAM)

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ABSTRACT The salinity tolerance of *Liza parsia* fry was assessed during peak abundance period. Mortality was noticed when fry was released suddenly in water of higher salinity. LC_{50} for higher salinity was 31.35 ppt. Low salinity had negligible effect on fry.

In traditional brackishwater culture system the fish and prawn seed enter the impoundments alongwith the tidal water. With the increasing demand of brackishwater fish, farmers are now stocking their impoundments and ponds, etc. by procuring the seed from different sources having marked variation in salinity. Farmers generally do not acclimatize the fry and directly stock them into the water bodies, resulting in heavy mortality in some cases. One of the causes of such mortality is the salinity difference. Salinity tolerance of different fresh water fishes to assess the mortality and cultural possibilities in brackishwater has been studied by several authors[1–3]. Ghosh[4] has studied the tolerance of *Lates calcarifer* (Bloch), a priced brackishwater fish, in fresh water. The present communication is an attempt to assess the mortality of fry fo *Liza parsia* (Ham.) at different levels of salinity.

Fry of *Liza parsia* (25 mm) which is available in Kakdwip area during January to July, were collected from the inter tidal pits of the Muriganga river and acclimatized to captive condition in cemented tanks. The first set of experiment was initiated during February 1984 when the salinity of the collection pits ranged between 10 and 15 ppt. Water of different higher salinities, 13.5 to 36.5 ppt. was prepared by dissolving common salt in river water. Fry of *L. parsia*, acclimatized in 12.5 ppt. salinity for three days were directly released in salinities 13.5 to 36.5 in glass aquaria at the rate of 5 nos. per litre with four replicates per treatment. Mortality was recorded up to 72 hours of treatment in different salinities. During the period of treatment rice bran was given in small quantities as feed and water changed partially. The second set of experiment was done during June 1984 when the salinity of seed collection pits ranged between 22 and 26 ppt. The collected seeds were acclimatized in the laboratory condition at 24 ppt. Water of different lower salinities, viz. 2 to 23 ppt. was prepared by diluting river water with fresh water. Experiment was repeated to study the effect of direct release of *L. parsia* in different grades of lower salinity.

Table 1 reveals that the mortality occurs when the fry were suddenly subjected to higher salinity.

In case of sudden lowering in salinity even 20 ppt., mortality was negligible.

TABLE 1

Showing percentage of mortality at different salinity levels.

Salinity (in ppt)	Mortality (%)	Salinity (in ppt)	Mortality (%)	Salinity (in ppt)	Mortality (%)
13.5	0	21.5	0	29.5	25.00
14.5	0	22.5	5.00	30.5	42.50
15.5	0	23.5	5.00	31.5	53.00
16.5	0	24.5	6.00	32.5	73.33
17.5	0	25.5	0	33.5	80.00
18.5	0	26.5		34.5	85.00
19.5	0	27.5	10.00	35.5	95.00
20.5	0	28.5	12.50	36.5	100.00

The dosage mortality analysis[5] was done to see the mortality at different levels of higher salinity and the line is represented by $Y=-29.6225+23.1409\,x$, where Y is the probit and x is the log dose. The LC_{50} calculated is 31.35 ppt.

Results indicate that though *L. parsia* is a euryhaline fish, care should be exercised in releasing the seed to higher salinities with proper acclimatization.

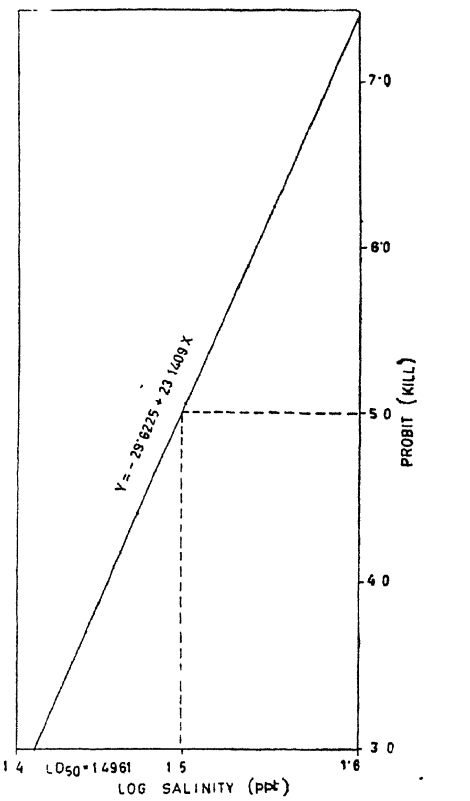

Figure-1 : Showing Dosage-Mortality relationship for *Liza parsia fry.*

REFERENCES

1. Ghosh, A. N., Ghosh, S. R. & Sarkar, A. N. (1973) *J. inland Fisheries Society of India* V : 215.
2. Ghosh, A. N. & Pandit, P. K. (1976) *J. Inland Fisheries Society of India* VIII : 115.
3. Khan, H. A., Ghosh, B. B. & Mukhopadhyay S. K. (1976) *J. Inland Firheries Society of India* VIII : 111.
4. Ghosh, A. (1971) *J. Inland Fisheries Society of India* III : 123.
5. Finney, D. J. (1964) *Probit Analysis*, Cambridge University Press, Cambridge.