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ZOOGEOGRAPHICAL REMARKS ON DISTRIBUTION OF FISH IN INDIA BASED ON FISH FAUNA OF UTTAR PRADESH TERAI

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INTRODUCTION

In order to explain the presence of Malayan elements in the fauna and flora of peninsular India, Hora (1937) proposed Satpura Hypothesis and mentioned that the hill-stream fish fauna from Malayan, Burmese and Eastern Indian regions travelled to peninsular India along Satpura-Vindhya range of mountains and then to Western Ghats and peninsular India. He also stated that the migration of Malayan fish fauna was checked along the Himalaya because of certain orogenic movements and became deflected along the Satpura range of mountains; the typical Malayan elements in the fish fauna of Himalaya did not extend westwards beyond Tista drainage system on southern face although on the northern face of Himalaya, the fish fauna is uniformly spread from Yunnan (South China) in the east to Seistan in the west. The Malayan elements in the fauna are well represented in all hills of eastern India from where they travelled over the bridged gap between Garo and Rajmahal hills to Satpura-Vinfhys-Western Ghats ranges. It has been now felt that Hora (1937, 1949, 1951) thought on those lines and suggested Satpura Hypothesis because thorough surveys and studies on the fish fauna along Himalaya west of Tista Drainage and plains of Uttar Pradesh were not available at that time. Recently, extensive studies on the fish fauna of the area along the base of Himalaya west of Tista drainage and plains of Uttar pradesh have been conducted and many eastern Indian forms have been discovered from these areas (Tilak & Husain, 1975, 1978, 1980, Tilak, in press a, b, c) which shows that the fish fauna of eastern India travelled along the base of Himalaya towards the west after Pleistocene Glaciation period (Menon, 1954, 1973, 1980). Based on the available information on the fish, notes on the distribution of some of these forms to Uttar Pradesh Terai have been presented in this paper.

COMMENTS ON EASTERN INDIAN FORMS OF FISH RECORDED FROM UTTAR PRADESH.

Order SILURIFORMES

Family SISORIDAE

1. ***Conta conta*** (Hamilton)

Conta conta (Hamilton) is one of the *Erethistes* group of fishes of the family Sisoridae and was known only from eastern India. Tilak (in press, a) has collected a

large number of specimens of this species from Shard river, district Pilibhit, Uttar Pradesh Terai and extended the range of distribution of this species westwards. Tilak (op.cit.) mentioned that the wider distribution of this species as known at present indicates that the species is quite versatile and withstood the changes in the ecological conditions of different geological eras during the period of dispersal and changes in the drainage system.

2. ***Laguvia ribeiroi kapuri*** Tilak & Husain

Laguvia ribeiroi Hora was reported from Bihar, Madhya Pradesh and Mirzapur district of Uttar Pradesh but Tilak and Husain(1975) collected material of an allied form from Seharanpur district of Uttar Pradesh and named it *L. ribeiroi kapuri*. Hora and Nair(1941), while reporting *L. ribeiroi* from Hoshangabad, Madhya Pradesh, stressed its importance in showing a probable continuity of the Satpura renge of mountains with the hills of Assam and Darjiling Himalaya on the one hand and the Western Ghats on the other. The zoogeographic importance of the presence of this species as far west as Saharanpur district has been pointed out by Tilak and Husain (1975).

3. ***Glyptothorax sasii*** (Jenkins)

Glyptothorax sasii (Jenkins) was earlier recorded only from Satpura range of mountains (Bihar) but Tilak and Husain (1978) recorded this species from Malini river, Malan Sanctuary, district Pauri Garhwal and Mohand Rao, Rajaji Nsational Pasrk, district Saharanpur (Uttar Pradesh) and extended the range of distribution of this species to the foot-hills of western Himalaya. These authors explained the importance of discontinuous distribution of this species and opined that Hora's Satpura Hypothesis should be modified to explain the two divergent routes of migration of fish from eastern India, one along the Satpura range of mountains and the other along the base of Himalaya.

Family BAGRIDAE

4. ***Chandramara chandramara*** (Himilton)

Chandramara chandramara (Himilton) is an extremely rare species of fish North Bengal, North Bihar, East Bengal and Assam but Tilak (in press,a) collected two specimens of this species from Sharda river, district Pilibhit, Uttar Pradesh Terai and extended the range of this species to as far west as Pilibhit district of Uttar Pradesh along the base of Himalaya and provided another supporting evidence for the modification of Hora's Satpura Hypothesis suggested earlier.

Order CYPRINIFORMES

Family PSILORHYNCHIDAE

5. ***Psilorhynchus sucatio nudithoracicus*** Tilak & Hussin

P. sucatio (Hamilton) has been recorded from Darjiling district, North Bengal and

Meghalaya and *P. sucatio damodari* David is recorded from the confluence of Barakar and Damodar rivers of Chota Nagpur, Bihar along the Satpura range of mountains. Tilak and Husin (1980) discovered another form, *P sucatio nudithoracicus* from western Uttar Pradesh in district Saharanpur and stressed upon the importance of the distribution of this taxon in various parts of India. The original stock of *P. sucatio* diverged along two routes from eastern India, one along the Satpura range of mountains (*P. sucatio damodarai*) and the other towards the west (*P. sucatio nudithoracicus*) and gave added support to the proposal of modification of Hora's Satpura Hypothesis.

Family HOMALOPTERIDAE

6. ***Balitora brucei*** (Hamilton)

Balitora brucei (Hamilton) is one of rare species of fish which have very well adapted to the torrential stream environment and has so far been recorded from Burma, Assam, Bangladesh and Nepal. Tilak (in press, c) has collected a long series of this species from Gola river, district Nainital, Uttar Pradesh and extended the range of distribution of this species to western part of India. The distribution of different species of *Balitora* in India, as known at present, indicates that the stock of this genus in eastern India travelled along two routes, one along the Satpura range of mountains to travel upto Karnataka (*B. mysorensis*) and the other towards the west along the base of Himalaya (*B. brucei*).

Family COBITIDAE

7. ***Acanthophthalmus pangia*** (Hamilton)

Acanthophthalmus, a cobitid genus, is represented in India by only two species, *A. pangia* (Hamilton) and *A. goaensis* Tilak, the former recorded from North-east Bengal, Assam and Manipur while the latter from Goa. Tilak (in press,b) has recently collected two fine specimens of *A. pangia* from Sharda river, district Pilibhit, Uttar Pradesh Taria and extended the range of distribution of this species to western part of India in Uttar Pradesh. This species is of rare occurrence and shows discontinuous distribution. The distribution of this genus in India exhibits parallel instance to that of *Balitora* because in this genus also the stock of *Acanthophthalmus* in eastern India travelled along two routes, one along the Satpura range of mountains upto Goa *(A. goaensis)* and the second along the base of Himalaya upto district Pilibhit *(A. pangia)*.

8. ***Lepidocephalus (Lepidocephalus) irrorata*** (Hora)

Lepidocephalus (Lepidocephalus) irrorata was described by Hora (1921) from Loktak Lake, Manipur and subsequently, this species was never recorded from any other region of India. Recently, 6 examples of this species (all adults) have been collected from Ranwas Taal, nearly 2.5 kms. north of Belyrain Forest Rest House in Dudhwa National Park, district Lakhimpur Kheri, Uttar Pradesh Terai. The present distribution of this species is discontinuous because the species has not been recorded from the intervening

geographical area between Manipur on the one hand and Lakhimpur in Uttar Pradesh on the other. This record of *Lepidocephalus (L.) irrorata* extends the range of distribution of this species as far west as Uttar Pradesh Terai. The presence of this species in Dudhwa National Park, Uttar Pradesh Terai is zoogeographically important and supports the view that fish fauna from eastern India dispersed to western side of India along the base of Himalaya.

DISCUSSION AND CONCLUSION

The record of *Conta conta* (Hamilton), *Laguvia ribeiroi kapuri* Tilak and Husain, *Glyptothorax saisii* (Jenkins) of the family Sisoridae, *Chandramara chandramara* (Hamilton) of the family Bagridae, *Acanthophthalmus pangia* (Hamilton) and *Lepidocephalus (Lepidocephalus) irrorata* (Hora) of the family Cobitidae, *Balitora brucei* (Gray) of the family Homalopteridae *Psilorhynchus sucatio nudithoracicus* Tilak and Husiain of the family Psilorhynchidae from Uttar Pradesh is zoogeographically important and throws light on the distribution of freshwater fish fauna in India in Time and Space. Hora's Satpura Hypothesis (Hora, 1973,1949,1951) stressed on the distribution of Malayan elements of fish from eastern India to peninsular India through Satpura-Vindhya range of mountains and expressed the opinion that fish fauna did not travel westwards beyond Tista drainage system along Himalaya. Menon (1954,1973,1980) has shown that fish fauna travelled along base of Himalaya towards the west after the Pleictocene Glaciation period. This is amply substantiated by the recent survey and study of fish fauna from base of Himalaya and plains of Uttar Pradesh (Tilak, in press a, b, c; Tilak and Husain, 1975,1978,1980). This also strengthens the belief that the fish fauna from Eastern part of India travelled along two routes, one along the Satpura range of mountains (Hora's Satpura Hypothesis) and the other along the base of Himalaya towards the west. Tilak (in press,d), on the basis of the study of Schizothoracid fishes of India, edduced evidence that palaearctic fish fauna of India entered this region through Ladakh and Kashmir and travelled along the base of Himalaya from its far west end towards the east. The palaearctic elements of fish entered Ladakh through the Pamir mountains. The schizothoracids, while travelling along the base of Himalaya, entered into the new drainage formed due to the uplift of Himalaya during the Pleistocene era. This is amply justified by the fact that the same species of fish, *Schizothorax richardsonii* (Gray), which exists in Indus river at an altitude of more than 4000 mts. has not been able to ascend the drainage system of southern face of Himalaya above an altitude of 1500 mts.

From the foregoing discussion, it is evident that the fish fauna of Himalaya has been received both from the east as well as from the west. They travelled all along Himalaya and then into the plains also but many of these elements could not survive the changes in the ecological set up of the new drainage system where they entered and thus perished at many places along the route of migration, creating discontinuous distribution of some of the faunal elements of fish.

SUMMARY

The fish fauna of Uttar Pradesh Terai is zoogeographically important and some of the important species of fish recorded recently form this area throw light on the manner of distribution of freshwater fish fauna in India in Time and Space (Tilak, in press a,b,c). Hora (1937) propounded Satpura Hypothesis to explain the dispersal of freshwater fish fauna from Malaya, Burma and eastern India to peninsular India along Satpura-Vindhya range of mountains but this hypothesis lacked the support of geologists. Menon (1954, 1973, 1980) reassessed Hora's Satpura Hypothesis and opined that the Malayan freshwater fish froms entered India during Pliocene Siwalik period and the torrential-water fish fauna developed much later, probably during Pleistocene, and such forms dispersed along Himalaya after Pleistocene glaciation period. The distribution of *Laguvia ribeiroi kapuri* Tilak & Husain, *Glyptothorax saisii* (Jenkins), *Conta conta* (Hamilton), *Chandramara chandramara* (Hamilton), *Acanthophthalmus pangia* (Hamilton), *Lepidocephalus (Lepidocephalus) irrorata* Hora, *Balitora brucei* (Gray), *Psilorhynchus sucatio nudithoracicus* Tilak & Husain to western part of India along the base of Himalaya and the Uttar Pradesh Terai indicates that many of the eastern Indian fish forms dispersed towards the west along Himalaya.

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REFERENCES

Hora, S. L. 1921. Fish and fisheries of Manipur with some observations on those of the Naga hills. *Rec. Indian Mus.*, **22**(3) 165-214.

Hora, S. L. 1973. Distribution of Himalayan fishes and its bearing on certain palaeogeographical problems. *Rec. Indian Mus.*, **39** : 251-259.

Hora, S. L. 1949. Symposium on Satpura Hupothesis of the distribution of Malayan fauna and flora to peninsular India. *Proc. natn. Inst. Sci. India*, **15** : 309-422.

Hora, S. L. 1951. Some observations on the palaeogeography of the Garo-Rajmahal gap as evidenced by the distribution of Malayan fauna and flora to peninsular India. *Proc. natn. Inst. Sci. India*, **17** : 437-444.

Hora, S. L. & Nair, K. K. 1941. Fishes of the Satpura range, Hoshangabad district, Central Provinces. *Rec. Indian Mus.*, **43** 361-373.

Jayaram, K. C. 1972. Contributions to the study of bagrid fishes (Siluroidea : Bagridae). 7. First record of *Pimelodus chandramara* Hamilton. *J. Zool. Soc. India*, **23**: 131-133.

Jayaram, K. C. 1973. Contributions to the study of bagrid fishes (Sliuroidea : Bagridae). 10. Systematic position of *Pimelodus chandramara* Hamilton with description of a new genus. *Int. Revue ges. Hydrobiol.*, **57**(5) : 815-820.

Jayaram, K. C. 1981. The Freshwater fishes of India, Pakistan Bangladesh, Burma and Sri Lanka-A Handbook.Z.S.I., Calcutta, i-viii + 1-475, pls.I-XIII.

Menon, A. G. K. 1954. Fish geography of the Himalayas. *Proc. natn. Inst. Sci. Indian*, **22** : 467-493.

Menon, A. G. K. 1973. Origin of freshwater fish fauna of India *Curr. Sci.*, **16**:553-556.

Menon, A. G. K. 1980. The Satpura Hypothesis. *Proc. natn. Acad. Sci. India*, B **46**(1) : 27-32.

Tilak, R. (in press, a). Studies on the fish fauna of Uttar Pradesh Terai. 1. On the extension of range of distribution of *Conta conta* (Hamilton) and *Chandramara chandramara* (Hamilton) (Hamilton) (Sisoridae and bagrida : Siluriformes). *Matsya.*

Tilak, R. 1987. *Fauna of India-Schizothoracinae.* Zool. Surv. India, Calcutta.

Tilak, R. 1990a. Studies on the fish fauna of Uttar Prasesh Terai. 2. On the extension of range of distribution of *Acanthophthalmus pangia* (Hamilton) with zoogeographical remarks. *Rec. zool. Surv. India*, **87**(1) : 51-56.

Tilak, R. 1990b. Studies on the fish fauna of Uttar Pradesh Terai. 3. Notes on the distribution and ecology of Balitora brucei (Hamiilton). *Rec. zool. Surv. India*, **87**(2) : 91-95.

Tilkar, R. & Husain, A. 1975. A new sisorid catfish, *Laguvia ribeiroi kapuri* (Sisoridae Siluriformes) from Uttar Pradesh. *J. Inland Fish. Soc. India*, **6** : 1-5, figs.1-3.

Tilak, R. & Husain, A. 1978. Redescription of *Glyptothorax Saisii* (Jenkins) (Sisoridae : Siluriformes) with notes on zoogeography. *Ann. Zool.*, Agra, **14**(1) : 33-40. figs. 18-22.

Tilak, R. & Husain, A. 1980. Description of a new psilorhynchid, *Psilorhynchus sucatio nudithoracicus* (Psilorhynchidae : Cypriniformes) from Uttar Pradesh with notes on zoogeography. *Mitt. zool. Mus. Berl.*, **56**(2) : 35-40, figs.1-3.