

The head of the red-whitebait is much shorter than in any other bully, but the figure is closest to *G. huttoni* and the shortness may be allied to changes in body proportions in 30 years storage in alcohol. Other characters such as fin-ray and vertebral counts are identical in the red-whitebait and *G. huttoni*. Similarity in characters with *G. gobioides* is also marked, but the general rarity of *G. gobioides*, especially when of small size is not consistent with great numbers of these fishes streaming into the rivers as Phillipps (loc. cit.) has described. Stokell (1955, p. 55) reported that he had seldom seen *G. gobioides* "less than six inches", and it seems unlikely that *G. gobioides* could be involved in migrations of large, catchable numbers of small bullies into the rivers. Similar migratory movements have been reported for unidentified bullies in the Hutt River (J. M. Moreland and H. J. Choat, pers. comms.), and McDonald (1947, p. 11) and Taylor (1947, p. 29) report bullies migrating up the Wanganui River in large numbers. Whitebaiters on the west coast of the South Island also report similar migrations, to the extent that the bullies constitute a considerable nuisance to the fishermen.

Although mass entry of *G. huttoni* into the Makara Stream was not observed by the author, the young of *G. huttoni* appear in large numbers over a period of weeks in summer and early autumn, rapidly moving into the lowland stream. In mid-January, 1963, juvenile *G. huttoni* measuring between 16 and 25mm length were seen migrating quietly upstream in the lowland waters of the Makara Stream. In a period of 15 minutes, 62 young fish were counted passing an observation point covering two feet of stream width. On another occasion, 17 young passed upstream and one fish made the reverse movement, in four minutes observation of a three-foot width of stream. Taken over a longer period, movements such as these must comprise large numbers of fishes.

It thus appears that, on hatching, the larvae of *G. huttoni* are carried downstream, probably into the sea, and after about four months migrate back into the streams again at a length of 15–20mm.

DISCUSSION

The breeding of *G. huttoni* appears to conform to the breeding pattern of other Eleotridae. As there is little published data on the breeding of New Zealand Eleotridae, comparison of the breeding of these fishes is based largely on sporadic observations by the author. The breeding of *G. gobioides* is not definitely known. Stokell (1955) considered that the larval life is spent at sea and Phillipps (1926) reported that the eggs are laid against the banks of streams among stones and weeds; spawning from mid-summer to March. It is, however, uncertain whether Phillipps was writing of *G. gobioides*, or of *G. basalis* as now distinguished from *G. gobioides*.

G. basalis was found to enter the Makara Stream from the sea to breed early in December (1961), just after the completion of the breeding of *G. huttoni*. Breeding occurred in the sluggish lower $\frac{3}{4}$ mile of stream. The eggs were deposited in a dense mass on the undersurfaces of logs, wooden planks, old car tyres and other debris, and what was discovered about the breeding of these fish was found to correspond closely with that of *G. huttoni*. The major differences were habitat type (more sluggish stream) and a later breeding period. As with *G. huttoni*, the male *G. basalis* becomes melanic when breeding and guards the nest. A nest of *G. basalis* observed in Lake Taupo (January, 1963) indicated that the male both guards and fans the nest.