Nest Site

The breeding site of *G. huttoni* usually comprises a rock with a flat under-surface, generally with a flow of water beneath the rock. In lowland stream where availability of rocks for nests was very low, nests were found on other solid objects in the stream—e.g., planks, logs, bottles, motor tyres.

No direct evidence indicating preparation of the nest site prior to spawning has been obtained. Tavolga (1954, p. 436) reported that the male of *Bathygobius soporator* (f. *Gobiidae*) cleans the nest rock prior to breeding; the nest site of *B. soporator* is essentially the same as that of *G. huttoni*. Gale (1914) mentioned nest cleaning by the male of *Mogurnda striata* (f. Eleotridae). Gravid male *G. huttoni* kept in captivity were found to enlarge defended rock sites by flicking out gravel from beneath the rock with the tail. Since the species was not bred in captivity, it is not known whether this behaviour was related to breeding. In the lowland stream nest sites suitable for *G. huttoni* were found to be covered with a fine layer of silt. Attempts to fasten eggs to such silt-covered surfaces would fail until the silt layer is removed. Nevertheless, a few *G. huttoni* nests were found in the lowland stream. This suggests that the male *G. huttoni* removes the silt layer. From these observations it is concluded that some cleaning of the nest site does take place. This cleaning is, however, not so thorough as to remove the pupae of *Olinga* and *Helicopsyche* (Trichoptera) which were commonly found on nest rocks, sometimes amongst the eggs themselves.

Breeding Behaviour

When the male *G. huttoni* is in ripe breeding condition, it becomes melanic and all the banding features on the cheeks and on the trunk become obscured. The green colouration across the superior edge of the first dorsal fin and at the bases of the second dorsal and anal fins becomes more conspicuous. Melanism of this nature was found in *Gobiosoma robustum* by Breder (1942, p. 62) and in *Bathygobius soporator* by Tavolga (1954, p. 444) and appears to be common amongst gobioid fishes. The breeding melanism of *Gobiomorphus huttoni* is lost quickly if the fish is disturbed. Throughout breeding the colouration of the female shows no change from that observed at other times. Nuptial behaviour by *G. huttoni* has not been observed.

The female places her eggs on the under-surface of the selected rock; although *G. basalis* nests have been observed on the upper surfaces of rocks, this is not known for *G. huttoni*. When depositing eggs, the female is inverted and moves about beneath the rock, propelling herself by flexure of the trunk and movement of the pectoral fins. Numerous pauses between movements can be attributed to the placement of one or a group of eggs. The male, also inverted, performs the same routine, and although insufficient milt is released to perceptibly cloud the stream, it is reasonable to assume that the activity of the male is concerned with fertilisation of the eggs.

There is no apparent relationship between the movements of the sexes, their movements appearing to be quite independent of each other. Each fish was seen to occasionally right itself and apparently rest for a short period, but would soon resume activity. Each of the pair was found to be capable of inverting itself without assistance from the other; inversion appeared to be brought about by twisting of the anterior trunk and rapid flicking of the pectoral fins. If disturbed, or even without apparent disturbance, the male was seen occasionally, partially or completely to leave the nest, but the female would continue deposition without the