

female in the vicinity and repeat the performance so that there may be several batches of eggs on a rock, hatching at different times.

The eggs are oval shaped and about a millimetre long; they form a compact, single-layered mass, each egg attached to the surface by a group of adhesive threads at one of the pointed ends.

Black colouration lost

Unless otherwise interfered with, the male maintains his black nuptial colouration at least until the eggs have hatched several weeks after spawning. He stays in his territory, spending some time near the eggs beneath the nest rock, but emerging to patrol the area, to chase away intruders, and to feed on bottom fauna insects. It is on these patrols that he is seen by youngsters, and their observation that "You never catch the black ones" has a rather simple explanation.

It's not that they **can't** be caught; rather that once they **are** caught and are seriously stressed by the experience, their bold, black colouration, designed largely to increase visibility during courtship and territorial defence, is rapidly lost and the fish return to their more usual blotching of sombre browns and greys — a colour pattern designed to assist concealment.

The breeding habits of New Zealand's six bully species are essentially similar to that discussed above, though some species have marine-living larvae (red-finned, common, blue-gilled, and giant bullies) and some do not (upland and Cran's).

In the marine-living species the eggs are very small, and the tiny larvae, on hatching, are washed down stream to the sea, where they feed and grow in the plankton, returning to

fresh water some 3 to 4 months later and migrating up stream at a size of 15 to 20 mm.

Some common bully populations have abandoned the marine stage and have adopted a lake-limited life history, with the larvae living in the open lake waters rather than in the sea. The two species which do not go to the sea have much larger eggs, 2 to 3 mm long, and when the somewhat larger larvae hatch, they can be found in small, loose shoals in still water along river margins.

Different appearance

Another interesting feature of all species is that the sexes differ in appearance. Until this was understood it caused much confusion, some observers thinking that the male and female were of different species and thus recognising too many "species"; other observers made the mistake of thinking that the fish were very variable in appearance and so recognising fewer species than actually occur in New Zealand.

In all six species the male grows larger than the female and has a much blunter snout and distinctly larger fins. The male is also more handsome in appearance, in particular having much brighter colouration: the bright yellows, oranges, and reds described for various species are present only in the males.

These differences are greatest in the red-finned bully. The male of this species has bright orange to crimson stripes on the cheeks, blotches and bands along the sides, and speckling in the fins. It is a particularly handsome fish, undoubtedly the most spectacularly coloured of our native species.

By contrast the female has no bright colouration, but is much more sombre, with patterns of greys and browns.

Differences of this sort, though less extreme, are characteristic of all the species, males with some bright colouration, the females more plain and sombre.

Increases in subscriptions

THE JUNE meeting of the council of the Society approved the treasurer's recommended increases in subscription rates and agreed that these increases should be effective from 1 September.

The new rates are:

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| Ordinary | \$15 |
| Family (with each member, including children, nominated) | \$15 |
| Junior, in own right | \$10 |
| Senior citizen (including spouse) | \$10 |
| Schools or classes | \$10 |
| Life member | \$250 |
| (per head) | |

Research fund for entomological study

In 1972 the Entomological Society of New Zealand set up a 21st Anniversary Research Fund, which is intended to encourage the pursuit of entomological projects and foster the improvement and diffusion of entomological knowledge in New Zealand.

About \$1,500 is available each year, and the fund is open to individuals, clubs, and members and non-members of the Entomological Society. Since 1975 more than \$10,000 has been granted for a total of 36 projects covering a wide variety of entomological studies.

Further information about the research fund may be obtained from the secretary, Mrs S. Millar, 8 Maymorn Road, Te Marua, Upper Hutt.