

roseipinnis; whereas large specimens, primarily males, have values approaching and overlapping those of *N. b. bellus*. Nevertheless, the degree of overlap is low at most sizes; and most specimens of these three forms can be identified on this count alone. The greatest overlap (the poorest separation) is between small females of *N. atrapiculus* and *N. roseipinnis*.

Though they overlap somewhat in the quantitative index, breeding specimens of this trio are completely separable on qualitative aspects of pattern and development of fin pigment. The differences are illustrated in Figs. 3 and 4, and details are noted in the appropriate descriptive sections. To summarize briefly, the dorsal, anal, pectoral, and pelvic fins in breeding males of *N. b. bellus* are margined by dark bands of uniform width and intensity. Eastern *N. roseipinnis* are characterized by dark lanceolate spots at the apexes of the dorsal and anal fins. The pelvic fin may be without pigment or may have a faint black streak near the tip. The pectoral fin is without any special pigmentary feature. In *N. atrapiculus*, the dark band bordering the dorsal fin is wide and intense anteriorly, but it tapers and fades posteriorly. The anal and pelvic fins usually are marked by a dark apical blotch that tapers and fades posteriorly. In large specimens the apex of this subtriangular blotch may extend far posteriorly along the border of the fin, tending to form an uneven band. Such bands are readily distinguished from those of *N. b. bellus* by their lack of uniform width and intensity. The pectoral fin in breeding males of *N. atrapiculus* is marked by a small dark spot at its apex.

Differences between *N. b. bellus* and *N. roseipinnis* in the development of fin pigment are pointed out in the Comparisons section of the latter species. *N. atrapiculus* contrasts with *N. b. bellus* in that anal and pelvic fin pigment first develops only at the apex of the fin. Unlike *N. roseipinnis*, pigment does not form as a dark streak along the posterior margin of a ray; instead the pattern originates from a few melanophores scattered over the first few interradial membranes. The first place melanophores concentrate is in the crotch of the first branched ray.

SEXUAL DIMORPHISM.—Sexual differences in tuberculation, breeding coloration, and fin pigmentation have been pointed out above. No sexual dimorphism in meristic characters was noted.

Sexual dimorphism in morphometric characters is summarized in Table 2. A sample of 39 breeding males and 30 breeding females from the Choctawhatchee and Escambia River drainages was used for statistical comparison with Student's *t*-test. All specimens measured were 40-50 mm SL. Mean SL for males was 43.49 mm; mean SL for females was 43.78. Levels of probability greater than 0.1 were considered not sig-