NOTES ON DERWENT ESTUARY FISHES.

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When, in August, 1909, the Harbour Trust were replacing the piers of Hobart, I took advantage of the opportunity to examine the old piles as certain of them were lifted from the water.

There were four species of interest; with a fifth taken on a Field Naturalists' Club expedition down the river.

1. Blennius tasmanianus, Rich.
2. Clinus perspicillatus, Cuv. and Val.
3. Tripterygium clarkei, Morton.
4. Cristiceps australis, Cuv. and Val.
5. Trachinops caudimaculatus, McCoy.

1. Blennius tasmanianus.—Of this species I collected sixty specimens from the dismembered end of one pier, and within the same week; young, adult, and apparently all intermediate stages.

In the mature specimens just placed in spirit, and four inches in length, there are no less than four types, being variously graded between deep brown and cream-white. The structural characters do not vary among themselves.

Briefly put, the variations are:—

a. Uniform deep violet-brown, with almost obsolete transverse bars, too indistinct to be counted.

b. Pale violet-brown, in parts tending to cream, with the transverse bars prominently showing; seven in all. In certain of the young this tendency to lightly marked areas is concentrated upon the posterior half, while it is almost white in two specimens.

c. Rufous, deep brown, and pale cream in about equal proportions, and disposed over the whole head, trunk, and tail indiscriminately. In the specimen with the mark c the bars are quite absent, and the distribution of the pigment has become so erratic as to form bold confluent blotches of irregular shape instead of bars, and with no likeness to them.

d. It is almost white; delicate creamy white, with a slender indication of obsolete brown pigment marks.

The evolution of phase c with its rufous and blotching belongs to an aberrant rather than a normal stage. This fusion of what should be regular bands of pigment is also to be seen in a younger specimen, though in a much less degree.

In the young measuring between 1.2 and 2.5 inches there are two types, and their after development appears to be based separately upon the two-colour schemes—

a^1 Young similar to a (adult).

b^1 Young similar to b (adult).

Here we have a dark phase and a pale phase with transverse bars. The bars in the young are broken midway.

There is distinctly a violet tinge on all the brown parts, while some specimens of 1.2 inches in length are richly diffused with it and completely over the animal; the bars showing.

With age the dark pigment either disappears, the fish assuming the pale phase, or the species is dimorphic. This latter is indicated in many of the young specimens 2.5 inches in length.

If the young shows a comparatively large amount of cream between the bars of the posterior third of the fish this stage will develop into the light phase.

If the young is deep violet-brown, with its bars just visible, it will develop into the dark phase.

Judging by b, which is an intermediate phase, it will eventually evolve into the light phase d.

Thus the species would appear to be dimorphic up to maturity, when both phases a and b pass into d, the phase of total loss of pigment.

Of the sixty specimens, there appear to be only half a dozen fully adult (four inches in length) of which four are losing or have lost their pigment.

Of twelve more carefully examined the dorsal fin in ten is xii. : xviii.; in one it is xii. : xvii; in another it is xii. : xix.; while the anal fin showed ii. : xx. in nine, and ii. : xix. in three.

Specimen "e" appeals to me as not being normal. It has its first and second dorsals so distinctly severed and wide apart (0.25 inch) that I conclude it must have met with an accident in the early part of its life. The last ray of the first dorsal and the first ray of the second dorsal are so opposed to each other as to form an angle of 70 degrees.

Of the sixty specimens examined all, excepting this one, have the dorsals fully united in the usual way with a lessening in length of 2-3 rays in order to form the slight depression that makes a division between the two dorsals.

This particular specimen belongs to the pale phase, with seven thumb-like lateral marks to indicate the obsolete broad bars of the trunk.

2. Clinus perspicillatus, Cuv. and Val.—In the key to this species we find that Mr. A. R. McCulloch* marks the anal fin as II.: 24-26, figuring it in Plate xi.

This is how Richardson illustrates his type ** showing the two anal spines as being less than one-third of the

*Austr. Mus. Catal., Vol. VII., No. 1 (1908).

**Trans. Zool. Soc., Vol. III., pl. 6, fig. 2 (1849).

length of the first of the second anal, while McCulloch shows his two anal spines as being half the length of the first spine of the second anal.

a. This specimen does not show either of these two spines of the first series, as a first series of small spines, but rather has them so developed as to be part of the second series of the anal fin, thus making a fin of only one series. The ventral is made up of two conspicuous and a third barely visible ray, being a young fish (2.5 inches). It is normally marked in pale rufous brown with seven deep brown bars, not including the intermittent bar of the peduncle.

As the first three anal rays are subequal, making the first anal absent, I conclude this specimen is a variety : D. iii. : xxxii. : 4. A.26.

b. The second specimen of interest (Hobart, 2—8—09) measures 4.4 inches in length The colours and markings agree with Richardson's figure, already referred to. The variance lies in the dorsal fin, which shows ii. : xxxiv. : 4. A casual glance at the spirit specimen would indicate that the third spine has joined the second series, leaving a definite distance between them, and with the web joined in the ordinary manner to the first ray of the second dorsal. A lens shows it agrees with the second ray of the second series. So far the species has always shown D. iii. : xxxii.-xxxiv. : 3-5.

In addition, the first anal in size more nearly approaches the second. Thus the first anal is variable.

3. Tripterygium clarkei, Morton.—The only record so far is Bass Straits (Clarke Island), and the type is not available for comparison.

I captured some twenty specimens of varying ages amongst the piers of Hobart in August, 1909. They represented young and adult, ranging between 1.5 and 3 inches in length. As with the other two blennies, they were feeding among the mussels of the piles.

Two types of colour with intermediate stages of variation in each type are shown:

3a. Chestnut, with lateral transverse lines that are too scattered and insufficiently pronounced to be bars.

3b. Pale brown, with stronger indications of bars.

The first develops into the pale phase, with well-defined transverse bars, while the second evolves into the dark phase with its undersurface of so deep a brown as almost to hide the brown bars.

A comparison would almost indicate that 3a. lives upon a light bottom and 3b. upon a dark bottom. Their ancestors probably did so.

4. Cristiceps australis, Cuv. and Val.—In April, 1911, I was able to gather, in the D'Entrecasteaux Channel, by means of the dredge, four specimens of the young ranging between 2.5 and 3.2 inches. The bodies in all were of a uniform clear orange yellow colour, the fins of the two larger specimens being also similar, though paler. The two smaller specimens have all the dorsal and anal fins striped longitudinally with iridescent colours of pale green to blue and pale pink. The caudal fin is pale pink, with a spot of pale green at its base. The youngest, though a spirit specimen of twelve months, still shows strongly the five bars of pale green with the pale pink between. Judging by these four specimens those delicate colours are on the youngest, and disappear gradually with age.

The species appears to be dimorphic, as Mr. McCulloch in his descripton says: "Its general colour is green, with darker bands and silvery markings."***

5. Trachinops caudimaculatus, McCoy. — This is the second record of the genus having been found in Tasmanian waters. It is a young one of uniform pale chestnut, with its caudal fin conspicuously and even more strongly marked in this region than the adult specimen captured with it. The boundaries of this sagittate mark

***Rec. Austr. Mus., Vol. VII., No. 1; p. 40 (1908)

are more clearly contrasted than in the adult. It is 1.5 inches in length. The specimen previously recorded as T. taeniata is this species. The genus of two species inhabits the Port of Hobart, Port Phillip and Port Jackson. It will be interesting to learn the distribution and fusion of waters between the points of this triangle.

The twenty-four specimens represented in the above notes will be additions to the Tasmanian Museum.