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### Description of a New Genus and Species of Decapod Crustacean.

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Family PINNOTHERIDÆ.

*Tubicola*. nov. gen.

Carapace extremely broad; fourth pair of legs much elongated, fifth pair rudimentary.

Habitat, the inside of the tube of an annelid.

*Tubicola longipes*. nov. sp.

Carapace broad, transverse, more than twice as wide as long; front occupying about one-third of the width of the carapace; antero-lateral margins broadly rounded; postero-lateral somewhat concave, the two meeting at an acute angle in the middle of the side of the body; posterior margin straight.

Branchial regions largely developed, tumid; a long transverse depression in the carapace behind the gastric region; antero-lateral margin bordered by a fringe of setæ.

Third joint of external maxillipeds very small; second joint stout and large.

First pair of legs short, with short carpus and flattened elongated manus having a fringe of setæ on its upper border.

Second and third pairs of legs sub-equal, longer than the first, slender, ending in a sharp claw; the third pair slightly longer than the second.

Fourth pair immensely developed, exceeding in length the width of the carapace, terminating in a stout claw.

Fifth pair shortest, reaching to about the middle of the third joint of the fourth pair; usually held in an elevated position over the posterior portion of the carapace.

Width of carapace a little less than ¼ inch; length, ⅙ inch.

Total length from claw to claw at fourth pair, ¾ inch.

Habitat, the sand-constructed tube of an annelid.

I found this curious little crustacean on the tube of an annelid common on the sandy flats left bare at low tide in Tomales Bay. While digging for those sand-excavating lobsters, the *Gebie* and *Callinassæ*, I found in abundance the sandy tubes of an annelid about six inches long, with numerous joints or nodes, each of which was surrounded by a cirlet of setæ, by whose action the creature propelled itself at pleasure up and down the tube.

Believing the worm to be a new species, I gathered some, and while pulling the tube to pieces, and admiring the rich brownish red tint conspicuous at each node of my new prize, I was surprised to see a long narrow creature

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move out, as I believed, head first; but a nearer inspection showed me that the motion was sideways, and that the new-comer was no fourteen-legged amphipod or isopod, but a true decapod crustacean.

The short chelæ, extremely lengthened fourth pair of legs, and short, broad body, are so many adaptations to the mode of life of this creature, which finds an ample dwelling-place in the space intervening between the body of the annelid and the inside of the tube; up and down which it moves with its long fourth pair stretched out in such a manner as to give it the elongated appearance of a *Caprella*.

The width of *Tubicola longipes* from end to end of the fourth pair of legs is eight times greater than its length from front to back.

This is, so far as I am aware, the only instance known of a decapod crustacean becoming the guest or commensal of an annelid, for although the species of the family *Pinnotheridae* are all commensals, most of them reside between the folds of the mantle of large bivalve mollusks, such as mussels or clams (thus the *Fabia subquadrata* lives within the mantle of *Pachydesma crassiteloides*, a large clam of this Coast), and a few live within the tests of Echini, close to the anal aperture.

It is most probable that this worm and its commensal may occur in many other places besides Tomales Bay, possibly in San Francisco Bay, and I should be much obliged if some of our friends who may go out on a fishing excursion would bring me specimens, in alcohol, of the worm and its tubes, that I may find whether the crab is its constant companion in all localities.

The worm is one which is frequently used for bait.

On April 20th, the females of this interesting little crustacean was loaded with spawn.

*Phyllodurus abdominalis*. Stimpson.

When Stimpson, in his Crustacean and Echinodermata of the Pacific Shore of N. A., page 71, first described this species, the female only was known to him. This female, like all those belonging to the family *Bopyridæ* is of comparatively large size, broad and clumsy in appearance, and lives attached to another crustacean.

The crustacean frequented by this commensal is *Gebia pugettensis*, a marine crayfish common on these shores.

About April 24th, I gathered a great number of *Gebias* in Tomales Bay, and found that most of them, all except the largest specimens, had a female *P. abdominalis* attached to one of the abdominal pairs of feet, to which it clung closely by means of its hooked claws.

A close inspection revealed, beside or near the large female, a small and slender male, a kind of miniature edition of its stout mate.

Never more than a single pair were ever found attached to one *Gebia*, but the males appeared so regularly to accompany the females, that I believe that in the few cases I did not find them, it was because they had dropped off in handling the specimens.

The males do not live attached to the *Gebia*, but are free to rove, and their constant presence at this season by the side of the females proves that this is their season of love.

*Male.* Head semi-circular anteriorly, closely united to the succeeding segment. Third and fourth thoracic segments widest. Body oblong, boat-shaped, tapering slowly from the fourth to the seventh thoracic segment.

Outer antennæ four-jointed; inner very small, reaching about to the middle of the second segment of the outer.

Eyes too small to be distinguished by a Coddington lens.

First abdominal segment a little narrower than last thoracic, but flat; succeeding segments tapering rapidly to the sixth or telson, which is pointed at the end, and is provided on each side with a small lamella, giving the whole telson somewhat the appearance of a spear-head.

The lateral laminae of the first five abdominal segments round in sections instead of segmental, as in the female, and considerably longer than the width of the segments to which they are attached.