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TRANSLATION

GROWTH INCREMENT PER MOLT IN TANNER CRAB

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Information on growth per molt and cycles of molt for crab are indispensable for determining the growth of tanner crab as is the case for other species of crustaceans.

Preliminary results of a growth per molt survey using the R/V Wakatake maru will be reported here.

During the trawl surveys in 1979 and 1980, crabs which were about to molt were selected from the catch and placed in a tank on board. Fresh sea water was supplied continually to the tank. Increments of growth for carapace width per molt were calculated by measuring the old molted shell and the new shell when it became hard enough to measure by a caliper. Measurements were made in units of 1/10 mm.

C. bairdi (female)

Fifty-eight molted female C. bairdi were measured which had carapace width in the range of 56.2 to 82.7 mm. The crabs were sorted into adults and non-adults by presence or absence of fine hair on the abdominal appendages for attaching eggs. All the crabs became adult types through molting. The growth increment of carapace width per molt was 11.5 mm on the average and ranged from 8.4 to 15.3 mm. The increment appeared to have no relation to the size of carapace width of each crab before molt (Fig. 1).

C. bairdi (male)

Six male C. bairdi with carapace width of 55.0 to 64.7 mm before molt showed 13.9 to 19.5 mm increments on molting and there appeared to be a tendency for crabs with greater carapace width to have a greater increment per molt. Seven males with carapace width of 78 to 108 mm showed 18.3 to 22.9 mm increments on molting with an average of 20.5 mm and there appeared to be no relation between carapace width of each crab before molt and molt increment as was the case for female crabs (Fig. 1).

C. opilio (female)

Through the survey period from May to August, the number of female C. opilio identified as pre-molt were few and only eight crabs of the adult type after molt, and three crabs of non-adult type, were measured. The former group, with carapace width of 46.7 to 57.7 mm, showed 6.5 to 10.2 mm increments of carapace width on molt with an average of 8.4 mm while the latter, with carapace width of 49.6 to 53.9 mm, showed 10.1 to 12.6 mm increments with an average of 11.0 mm (Fig. 2).

C. opilio (male)

Through the survey period from May to August, no male C. opilio identified as pre-molt were found. However, if it is assumed that male C. opilio have the same tendency as female C. opilio for growth increments per molt, and the ratio of male and female increment of carapace width in C. opilio per molt is the same as the ratio in C. bairdi, then the growth increment of carapace width per molt of male C. opilio was estimated to be 15.0 mm on the average which corresponds to the 8.4 cm of female C. opilio.

In the case of female C. bairdi, at puberty molt, there was observed a tendency for growth increments in carapace width of crabs to be about the same and bearing no relationship to the size of carapace width before puberty molt. The same tendency was also observed for male C. bairdi with carapace width of 80 mm and larger. These facts suggest that there must be some relationship between maturity and growth increment per molt but further study on this subject should be conducted.

FIGS. 1 AND 2 ARE IN ENGLISH IN THE JAPANESE DOCUMENT

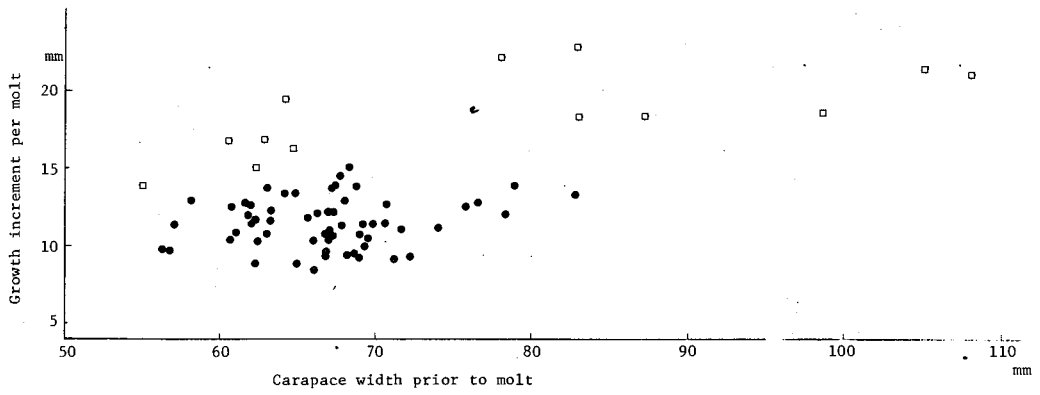


Fig. 1. Growth increment per molt for *C. bairdi*.
 □ males
 ● females, molting to adult

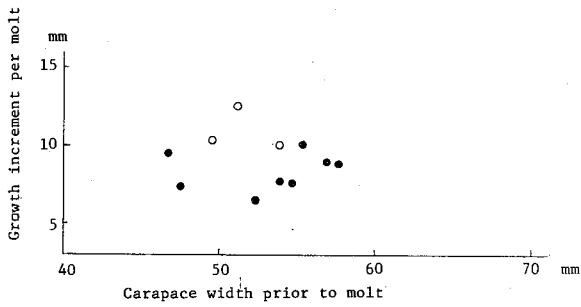


Fig. 2. Growth increment per molt for *C. opilio*.
 ○ females, molting to juvenile
 ● females, molting to adult



ズワイガニの脱皮当たりの
成長量について

Growth increment per molt in tanner crabs

1981年 8月

August, 1981

水 産 庁

Fisheries Agency of Japan

ズワイガニの脱皮当たりの成長量について

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ズワイガニの成長は、他の甲殻類と同様に脱皮によるものであるから、その成長を明らかにするためには、第1に脱皮当たりの成長量と脱皮の周期についての情報が必要である。

このうち脱皮1回当たりの成長量について、調査船若竹丸における実測結果を暫定的にとりまとめ報告する。

1979年と'80年のトロール調査において、採集されたズワイガニの中から、近く脱皮するとみられるカニを船上の水槽に収容した。水槽には絶えず新しい海水が供給された。

水槽内で脱皮したカニについて、脱ぎ捨てられた古い甲殻と、測定に耐えるまでに硬化した新しい甲殻はキャリパーによって1/10 mm単位で測定され、甲幅の増加量が求められた。

C. bairdi 雌

脱皮した58尾の雌C. bairdiが測定され、その甲幅は56.2～82.7 mmの範囲にあった。脱皮したカニは腹肢に卵付着のための細毛があるかないかにより成体型か未成体型か判別された。その結果、どの例も脱皮によって未成体型から成体型に移行していた。これらの脱皮当たりの甲幅増加量は8.4 mm～15.3 mmの範囲にあり平均は11.5 mmで、脱皮前の甲幅の大きさには無関係とみられる(図1)。

C. bairdi 雄

脱皮前の甲幅が55～64.7 mmの6尾では、脱皮当たりの甲幅増加量は13.9～19.5 mmの範囲で、甲幅の大きいカニほど増加量も大きい傾向があるように見える。しかし甲幅78～108 mmの7尾では、甲幅の増加量は18.3～22.9 mmの範囲にあり、平均は20.5 mmで前記の雌ガニと同様、脱皮前の甲幅の大きさとは関係が無いようにみられる(図1参照)。

C. opilio 雌

5月～8月の全調査期間を通じて、脱皮直前とみられる雌C. opilioの採集数は少なく、脱皮して成体型となったもの8尾と未成体型にとどまったもの8尾を測定した。前者は、脱皮前の甲幅が46.7～57.7 mmで、甲幅の増加量は6.5～10.2 mmの範囲にあり、平均8.4 mmであった。後者は脱皮前の甲幅が49.6～53.9 mmで甲幅の増加量は10.1～12.6 mmの範囲にあり、平均が11.0 mmであった(図2)。

C. opilio 雄

全調査期間を通じて、脱皮直前とみられる雄ガニを発見することができなかった。しかし、脱皮当たりの成長量にC. bairdiの雄と同様の傾向があり、また雄と雌との成長量の比がC. bairdiのそれと同じと仮定すると、雌ガニの脱皮当たり甲幅増加量の平均8.4 mmに対応する雄ガニのそれは15.0 mm程度とみられる。

雌C. bairdiの成体型への脱皮において、甲幅の大きさに関係なく成長量がほぼ一定になる傾向のみられることと、甲幅80 mm以上の雄C. bairdiにおいても脱皮当たり成長量がほぼ一定になる傾向のみられることは、性成熟と脱皮当たり成長量の関連性を示唆するものと思われるが、これについては更に検討する必要があると考える。