

Tagging technique for tanner crab long-term tag

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Abstract

Tagging technique was studied for tanner crab long-term tag which remains to attach after molting. Two techniques, the posterior suture and the carapace tagging, were used with crabs kept in the live tank on board vessel. The results indicate that there is a possibility for use of long-term tag on tanner crab with the suture tagging technique.

In conventional tagging methods for crabs, the tag is shed with the old shell when the crab molts and sometimes prevents molting. In the latter case the crab will probably die. Therefore, the retention period for the tag has been restricted to the duration from the beginning to the next molting. Tagging experiments using the long-term tag are useful for clarifying the biology of crabs by providing information on size increment at each molt, molting frequency and migration. It has been requested, for long time, to create such long-term tags which do not come off with the old shell when the crab molts and tags can remain on the crab regardless of their molting. However, tagging techniques using long-term tags for tanner crab have not been developed.

This report presents some findings on tagging technique for tanner crab long-term tag from aquarium experiment.

Materials and methods

The experiment was conducted on board the Japanese research vessel WAKATAKE MARU, which was engaged in crab research in the eastern Bering Sea from May to June in 1979. Immature *C. bairdi* and *C. opilio* (carapace width 45 to 85 mm), which appeared to be in premolt condition, were captured by trawl gear during the research period. The crabs were placed in live tanks (150×150×80 cm) provided with running sea water for experiment and observation. A Floy anchor tag with a vinyl-chloride tube (1.5 mm in external diameter and 50 to 60 mm in length) was used conveniently in the test (Fig. 1). A tagging gun with tubular needle was used for tag insertion.

The following two techniques were used in tagging:

1. *Posterior suture tagging*—The inside of the posterior carapace and the anterior edge of the abdomen of the tanner crab are connected together. This portion splits and an opening develops between the carapace and the first abdominal segment when molting (ecdysis)

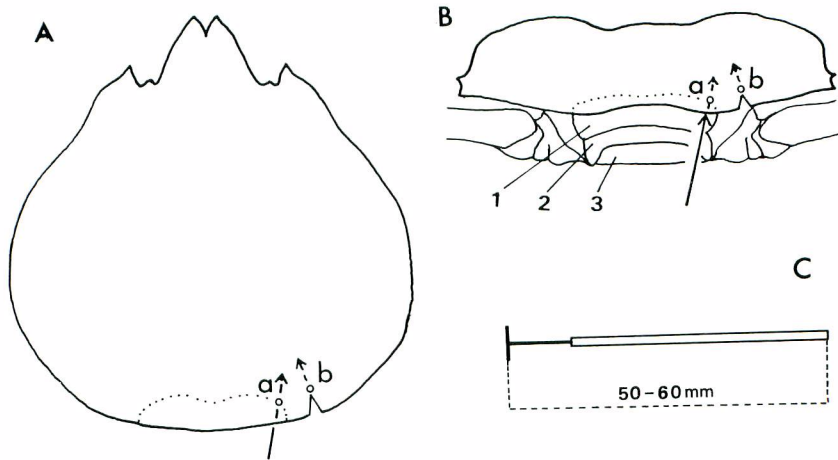


Fig. 1. Illustration of tag insertion and Floy anchor tag in tanner crab long-term tag.
 A: Carapace B: Posterior view of crab C: Floy anchor tag
 a, Posterior suture tagging b, Carapace tagging 1-3, 1st-3rd abdominal segment
 Circle indicates the position to tag, and arrow indicates the direction of tag insertion.

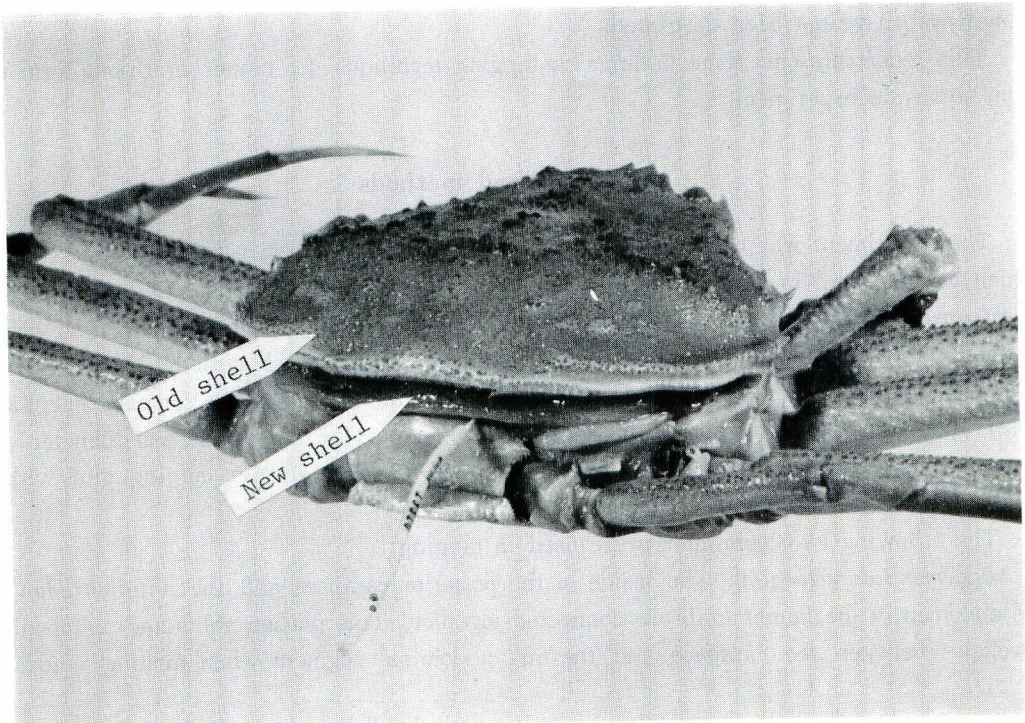


Fig. 2. Tanner crab with the posterior suture tag in the process of molting.

starts. With the progression of molt, this opening widens and the crab with a new shell withdraws from the old shell. The tagging needle with an anchor tag is inserted along the inside of carapace to pass through the portion of anterior edge of the right hand (or left hand) side of the first abdominal segment. We call this the posterior suture tagging technique (Figs. 1 and 2).

2. *Carapace tagging*—An anchor tag is inserted into the postero-lateral part of the carapace. In this technique, it is necessary for the tag to come off smoothly with the old shell during the process of molting. For this purpose, an arrowhead shaped cut was made on the edge of the carapace close to the point of tag insertion (Fig. 1).

Table 1. Molting records for the tagged tanner crabs being held in tanks.

	Posterior suture tag		Carapace tag	
	<i>C. bairdi</i>	<i>C. opilio</i>	<i>C. bairdi</i>	<i>C. opilio</i>
Carapace width (mm)	61.6–81.3	46.4–56.3	60.6–77.7	46.5–54.5
Number of crabs tagged	12	3	14	7
Normal molt, tag retained	6	2	5	2
Abnormal molt*, tag retained	1	0	2	1
Normal molt, tag shed	1	0	3	3
Dead in process of molting	4	1	4	1

* Deformation was observed at carapace or legs of the molted crabs.

Results and discussion

Results with the two techniques are shown in Table 1. Of the 15 crabs tagged with the posterior suture technique, eight molted with no difficulty retaining the tag on the new shell but one shed the tag during the course of normal molt. With the carapace technique, seven of the 21 crabs tagged molted and retained the tag but six shed the tag during the normal molt. Shedding of carapace tag may be caused by cutting the carapace edge. Less shedding of tags is a merit of suture tagging, and it would appear that suture technique is superior to carapace technique. In addition, it is another merit of suture tagging that the tag will be retained through two or more molts.

Considerable number of crabs died before completion of molt in both the posterior suture and carapace tagging and deformation also occurred on the new shell of carapace or legs of some samples despite completion of molt. This means that they had some difficulties in their molting process. One major disturbing factor of molting may have resulted from swaying of crabs in the live tanks on board vessel by waves.

Because of the preliminary nature of the work it is likely that improvement in technique may be required, particularly for crabs of various sizes; for example (1) minute modification of the position of tag insertion, (2) adjustments of length or thickness of tag, and (3) determination of the angle of tag insertion. The results indicate, however, that there is a possibility for use of a long-term tag on tanner crab with the suture tagging technique.

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ズワイガニの長期標識法について

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摘 要

ズワイガニの長期標識法—カニが脱皮した際に標識が脱落しないような標識方法—を開発するため、アンカータグを用いて2つの標識取付け方法を試験した。

- (1) 甲腹間標識法: 甲殻と腹節の接合部が脱皮時に裂け、開口を生ずることを利用して、この部位に標識する。
- (2) 甲殻標識法: 標識を甲殻右(又は左)後縁部に打ち込む。この際標識が旧殻から容易に外れることを期待し、標識部位に近接する甲殻縁辺をくさび形に切り欠く。

甲腹間標識法では、供試15個体のうち8個体が標識をつけたまま正常に脱皮した。甲殻標識法では、供試21個体のうち成功例は7個体であった。

甲腹間標識法では標識の脱落が少なく、この方法によって長期標識を行いうる可能性が示唆された。