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Feeding of crabs (Cancer pagurus L.)

by

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INTRODUCTION

The crab fishery in Norway takes place mainly in the period August to November. In these months the meat content of the crab generally is highest. However, crabs taken in Norwegian waters are of very variable quality both within the time interval mentioned and from different localities.

In order to study the possibilities of providing crabs of guaranteed quality for fresh consumption, an experiment was carried out in Norway in the late summer and autumn 1969 (Gundersen 1969). As known from laboratory work, sufficient temperature and surplus of food are two of the components needed to obtain crabs of good condition. The experiment in 1969 took place in a basin on shore, supplied with seawater by a pump from about 2 metres depth. The surface layer reached a temperature of about 15-16°C during summer on the westcoast of Norway. The crabs were fed mainly with fresh fish.

The experiment showed a marked difference in the increase of the brown body meat between fed and unfed females, while the males showed no significant difference.

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## MATERIALS AND METHODS

Feeding of crabs continued in the late summer and autumn 1970 and 1971.

In 1970, in addition to the basin, floating crates made for storing lobsters were used. These crates were 12 x 6 x 2 feet in length, breadth and depth respectively, most of them were divided in two rooms, and would keep about 200 crabs in each room.

In 1971 crates only were used, and only female crabs were fed.

To prevent the crabs from fighting and damaging each other, different methods of setting the claws out of function were used. In 1969 and 1970 the tip of the unmoveable part of the claw was cut off. This was done by a light knock with the blunt edge of a sheat knife. In 1971 two other methods were used, either tie the claws with string of brass, or cut the attachment of the muscle which opens the claw. These methods were used under two different conditions.

One half of the crabs, which were cut, was dropped in water immediately after cutting, the other half was kept on board some hours before they were dropped in the crates. The ties crabs were handled in the same way.

The quality of the crabs was estimated from boiled crabs as the proportion of brown body meat in relation to the weight of the body without claws and legs.

Before boiling, the crabs were placed in concentrated salted water for about 10 minutes, which paralyzed the crabs. Then the crabs were placed in the pan with the back down. To place them this way is very important. When boiling crabs the usual way, one will remark that crabs of poor condition will be floating on the water with the back up since the body contain some air. The weight of a crab in such a condition will be uncomparabel with a crab filled with only meat and water.

After placing all the crabs for the boiling in the pan, the crabs were kept under pressure by a lid to prevent them from coming out of

position. With the backs down air can escape between the carapace and the body.

After boiling, the crabs were handled carefully with the back down while claws and legs were removed. The rest was weighed, and the crabs were opened. The body was put back again in the carapace and they were placed in an upright position permitting the water inside to drain out slowly for 2 hours. Now the crabs were weighed again, and the difference between the two weights gives the amount of water.

Then all the brown body meat were removed from the shell and body and weighed. In fact all the crab's meat ought to be taken into consideration, but this would have complicated the investigation seriously. On the other side the condition of the brown body meat gives a very good indication of the quality of the crab. Therefore, only the weight of the brown body meat in relation to the body weight just after removing of the claws and legs has been calculated.

In 1970 samples for boiling were taken at the same time from the basin and the crates, and newly fished crabs from the sea were also obtained for comparison.

### RESULTS

Fig. 1 shows the results of samples of females from basin, crates and the sea with fitted regression lines. The mean weight of the brown body meat in percent of body weight increased in the period of feeding.

The basin and crates give in general the same results. The difference in weight increase between crabs fed in basin and crates, and unfed crabs from the sea is rather marked.

Fig. 2 shows the results of samples of males from the same dates. In this case there is only a small increase in the mean percent of brown body meat, and there is no marked difference between fed and unfed crabs. The same result is obtained in basin and crates.

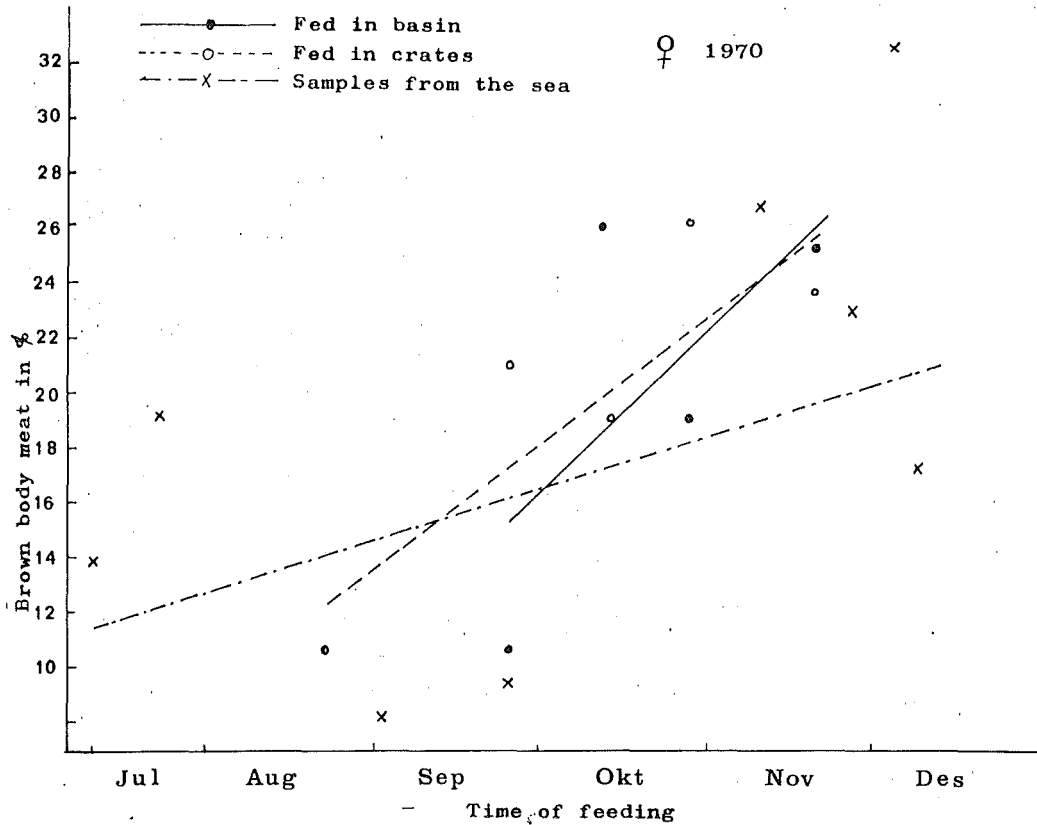


Figure 1. Feeding of crabs. The points show the mean values of the different samples.

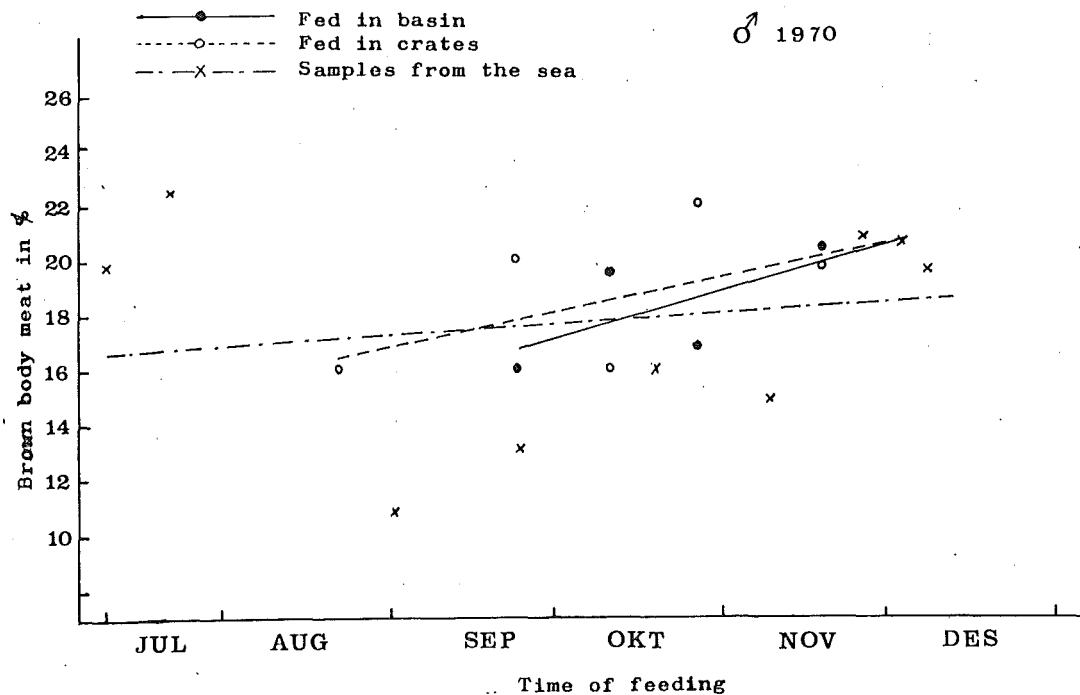


Figure 2. Feeding of crabs. The points show the mean values of the different samples.

As mentioned before, in 1971 only female crabs were used. This year only one sample of newly fished crabs was taken at the beginning of the feeding period, the first days of September. This sample showed a mean percent of the brown body meat of 13,6%.

Figure 3 shows the results of the bioled samples in October - November and December.

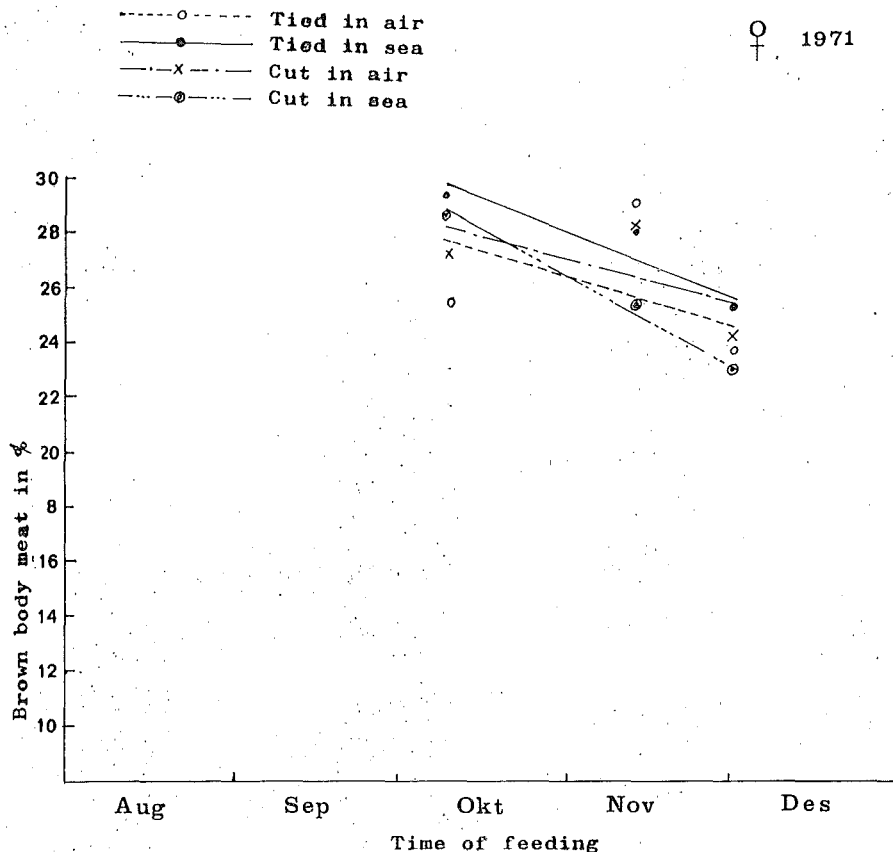


Figure 3. Feeding of crabs. The points show the mean values of the different samples.

This year the percent of brown body meat increased substantially from the beginning of September to the middle of October and stayed on a high level to the middle of November, but decreased in the beginning of December.

It has not been possible to find a plausible cause of this decrease, but probably the samples has been too small.

## DISCUSSIONS

During the examination of the boiled crabs, it was observed that in a crab of excellent quality the brown body meat was firm and dry. The weight of the brown body meat exceeded about 36% of the body without claws and legs.

When crabs are graded according to the percent of brown body meat after the following definition,: 0-12% - poor, 12,1-24% fair and 24,1-36% good quality, the number of crabs of the three different qualities from all experiments after about 2 months of feeding are:

|          | "Poor"<br>0-12% | "Fair"<br>12,1-24% | "Good"<br>24,1-36% |
|----------|-----------------|--------------------|--------------------|
| 3.11 -69 | 2               | 1                  | 14                 |
| 19.11-70 | 2               | 4                  | 18                 |
| 19.11-70 | 1               | 9                  | 19                 |
| 13.11-71 | 1               |                    | 19                 |
| 13.11-71 | 2               |                    | 14                 |
| 13.11-71 |                 | 4                  | 19                 |
| 13.11-71 | 1               | 6                  | 13                 |
|          | 9 (6%)          | 24 (16%)           | 116 (78%)          |

Consequently, when female crabs are fed for about 2 months in Norwegian waters in late summer and autumn, it is reasonable to expect about 70% crabs of good quality, 24% of fair quality, and about 6% remain in a poor quality condition.

## REFERENCES

- Gundersen, K.R. 1970. Foringsforsøk på krabbe. Fiskets Gang, 27: 499-501.
- " 1970. Artificial feeding of crabs. (Cancer pagurus) Coun. Meet. int. Coun. Explor. Sea, 1970 (K:18): 1-5, [Mimeo.]