

The period of fosterage is given by various workers as from nine to ten months—one, at the least, gives so long as eleven to twelve months. This period is not given in any case from actual observations of lobsters in confinement, but is calculated from the time the first and last berried lobsters are caught in the pots, and from other observations taken at various seasons. In the case of the first two lobsters mentioned in the tables the date of moulting, coition, and spawning, and the date of the hatching of the first and last of the eggs, is known. In the case of one of these two the subsequent moult was observed, and the date of the second spawning is known within a few days. The following is the history of the first-mentioned from the time of its arrival on the 29th June, 1906 (egg-bearing on arrival), to the present date, May, 1909 :—

Arrived, June 29, 1906; a few eggs still attached.

Moulted, January, 1907; no male present.

Moulted, November 21, 1907; copulated same date.

Spawned, January 24, 1908.

First eggs hatched, October 13, 1908.

Last eggs hatched, November 23, 1908.

Moulted again, December 28, 1908.

Spawned again previous to March 12, 1909.

Throughout this period the above-mentioned lobster was seldom handled, but was very easily distinguished in the pond by having lost the large right claw at the first moult and the left one at the second, and by the miniature regenerating claws. Being so readily recognised, this particular lobster was kept under very close observation, and has served as an excellent example as to the exact dates of moulting, &c. The exact dates of these events in the history of the other lobsters individually are not known, but they vary very slightly, if at all, from those given above. The temperature of the pond was carefully taken daily, and it should be possible in future, the date of spawning being known, by calculating on a temperature unit basis, to determine within a few days when the hatching of the brood of each individual will commence. This would effect a great saving in time and labour, and would avoid a long confinement in the small aquarium-tanks, which has a detrimental effect on the eggs, however carefully the tanks may be cleaned out.

The stock of lobsters available on the 10th October, 1907, consisted of nine females and six males. These were placed in the No. 3 pond on that date for breeding purposes. Two of the females had been berried in June, 1906, both had cast in January, 1907, but as no males were present no spawning took place. Four of the other females arrived in February, 1907, and bore eggs at that time. The remaining three arrived in August, 1907: one still bore eggs on arrival, the others had shed them during the voyage. The pond in which they were placed is a small natural basin with clean rocky walls on three sides, and is enclosed by a concrete wall, through which the water is controlled by means of a screened valve and a 9 in. earthenware pipe. The bottom of the pond is concreted and cemented, and, in addition to the natural crevices in the rocks, a number of shelters were provided. The capacity is about 20,000 gallons. Each day, at about one hour flood tide, the valve is lifted, and the water is allowed to run down to a depth of about a foot. The valve is closed again at high water, at which time the depth of the pond is from six to eight feet. This insures a constant change of water, and has a very beneficial effect.

The first moult took place on the 18th November, 1907. The others moulted on the following dates: 1 male cast November 18; 1 female cast November 21; 1 female cast November 27; 1 female cast December 5; 1 female cast December 10; 1 female cast December 25; 1 female cast December 29; 1 male cast January 1, 1908; 2 (sex?) cast February 12, 1908; 1 male cast March 3, 1908. The remaining three must have cast during my absence in January, as all had certainly cast by the 3rd March, 1908.

A female cast her shell on the 21st November, at 3 p.m. As is usual after casting, it lay for some time alongside the cast shell. Two hours afterwards it was seen roaming round the pond and frequently approaching the various shelters, returning regularly and fearlessly to a shelter containing a large male. On approaching the entrance to this shelter the large claws were extended in a direct line with the body, and the antennæ were thrust within the shelter. After a few moments the rostrum of the male appeared, the female meanwhile rapidly whipping her antennæ across the now projecting rostrum of the male, which in turn showed increasing signs of excitement, the antennæ being whipped very rapidly over the female in the same manner as those of the female. After an interval of perhaps a minute the male gradually withdrew from its shelter, the female at the same time turning over on its back. Coition took place at once, the act occupying only a few seconds, the male retiring at once into its own shelter and the female into another. The following day both were observed to be living in one shelter, and they continued to do so, on and off, for several weeks. The probability is that the eggs are not at this time fertilised, but that fertilisation takes place (as is the case with the crab) when the eggs are extruded. The male was hard-shelled, and had not cast since the previous May, six months before. Copulation was again witnessed between a hard-shelled male and a female that had cast the previous night, on the 10th December. On this occasion the pond had just been run down to a depth of about 9 in., and during the act a considerable portion of the male was actually out of water—that is, the antennæ and about one-half of the anterior portion of the cephalo-thorax. On two other occasions the act has been witnessed, and has taken place in all cases within a few hours after the female has moulted, and always with a hard-shelled male. The female that cast on the 21st November, 1907, spawned on the 25th January, 1908, sixty-five days after coition. The one that cast on the 27th November, 1907, spawned on the 30th January, 1908, sixty-five days after casting. Every one of the nine females had spawned a full and healthy batch of eggs by the 19th March, 1908, on which date the males were removed to another pond, as they appeared to harass the females. By the middle of June the temperature of the water had fallen to 4° C., and it was feared that a heavy fall of snow might reduce this to freezing-point, and to avoid the risk of leaving all the eggs, as