



## Ask the lobster doc

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*This column provides lobster health and handling information.*

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### Female lobsters: Size matters

Are some lobsters better breeders than others?

The bigger the lobster the more offspring produced per breeding event. So is bigger better?

The last column (see CFN March 2004) discussed how lobster migrations help get the offspring off to a good start by increasing the chances of releasing larvae in suitable habitat with favorable environmental conditions. The next Lobster Doc column will explore how finding a mate of the appropriate size at the right time also plays a role.

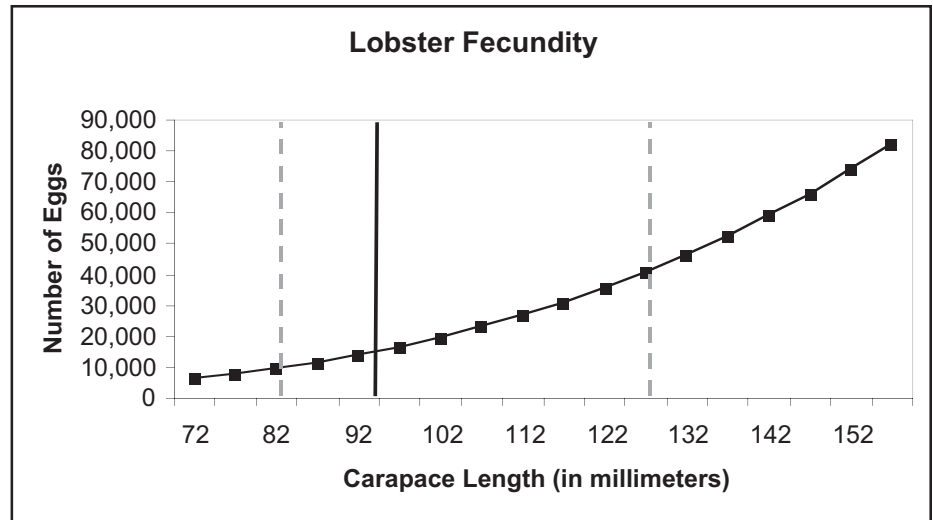
This column looks at female lobster size at maturity and how body size is related to the number of offspring produced.

The presence of mature sperm in the testes and mature eggs in the ovaries shows that lobsters have the capacity to reproduce. Whether a small male with mature sperm actually succeeds at fertilizing eggs is difficult to determine because it depends on his ability to mate. With females it's easy to tell – the presence of fertilized eggs on her abdomen leaves her maturity beyond question.

The size at which 50% of female lobsters in the Gulf of Maine reach maturity is approximately 93 millimeters (mm) carapace length (3-5/8" gauge). This means that half of the female lobsters reach sexual maturity by the time they are one molt larger than the minimum legal size (3-1/4" or 83 mm). Some females mature at smaller sizes while others mature at larger sizes.

To draw an analogy: the age at 50% maturity in human females worldwide is 10. Thus half the girls of the world are capable of reproducing by age 10. Some girls mature by age 8 and most are mature by age 14. However successful offspring production often occurs later.

Lobsters and humans actually mature at a similar age and in both species individuals are capable of reproducing for



*This graph plots the number of eggs close to hatching carried by female lobsters of sizes between 72 and 157 mm in carapace length. The dashed vertical lines indicate minimum (3-1/4" = 83 mm) and maximum (5" = 127 mm) legal sizes in Lobster Management Area 1. The solid vertical line indicates the approximate size at 50% maturity for the same region.*

decades of their lives.

Unlike humans, fecundity (the ability to produce relatively large numbers of offspring) in lobster increases with body size. As the female lobster grows her abdomen becomes broader and she is capable of carrying more and more eggs.

Lobster fecundity is measured by counting the number of eggs that are ready to hatch. Large females produce and hatch far more eggs than small females. It would take about 10 of the smallest lobsters on the graph to produce the same number of eggs as one of the largest lobsters.

But can 10 small lobsters contribute the same quality or quantity of offspring as one large female to the next generation? Part of the answer appeared in the last column. Part of the problem with small females was that they hatched their offspring where they spawned while large females dispersed their offspring

over space and time.

Another problem with depending too much on small female lobsters for egg production is that small females sometimes molt while carrying late stage eggs – effectively aborting their broods. Small females also carry smaller eggs that may result in having less hardy offspring.

There may be other unrecognized reasons that size matters. Lobsters brood their eggs for 9-13 months. The offspring live as larvae in the water column for 4-8 weeks. They then live as juveniles for nearly a decade. Lobsters continue to grow and reproduce for several more decades.

The lobster way of life has succeeded for millennia. Living long lives while continuing to grow and reproduce is a strategy that has proven successful for lobsters. It is prudent to preserve a way of life that works. ■