



Ask the lobster doc

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This column provides lobster health and handling information.

If you have questions or concerns, contact Cowan at (207) 832-8224 or e-mail <dcowan@lobsters.org>.

Lobster size and mating

Do lobsters mate with partners of similar size? The answer generally is “yes.” Three reasons will be illustrated by the following description of how lobsters mate:

- **Anatomy** – The gonopods must fit deep enough inside the seminal receptacle to deposit the spermatophore where it won’t fall out.
- **Behavior** – Similar size is required for the pair to “embrace” during copulation; the male must be able to lift and cradle the female.
- **Physiology** – Sufficient materials are required for successful fertilization: lots of eggs need lots of sperm.

Female lobsters must mate at some time between shedding and egg extrusion in order to reproduce. The “natural” way of mating is right after the female molts, though large females that don’t molt every year are also capable of mating to get more sperm if they run out.

Female lobsters keep sperm separate from eggs in a storage chamber called the seminal receptacle. Sperm are stored until the female is ready to fertilize the eggs – unless she sheds. When the female sheds, the lining of the receptacle is cast off along with the old shell. Therefore any stored sperm are lost.

During mating the male lobster transfers a spermatophore (packet full of sperm and nutrients) to the female. The

female stores the spermatophore in a seminal receptacle until she is ready to brood eggs.

How do female lobsters make sure their seminal receptacle is re-supplied with sperm?

Before shedding, a premolt female investigates male shelters until she finds a place where she will be safe when she sheds. She moves in with the male and sheds while he stands by and watches over her. Once the lobster has escaped from her old shell she appears shriveled up, is unable to stand, and can’t even lift her antennae. She swallows water to unfold and fill in the empty spaces in her larger new shell.

When she is strong enough to prop herself up on her legs (about 30 minutes after shed), the soft female approaches the male and turns so that her abdomen (tail) is between his claws. The male mounts the female and helps her to roll over using some of his legs to hold her up off the bottom while his claws are pointed down in front of him for balance.

The female unfolds her tail and the pair flutter their swimmerets against one another. Still holding the female, the male inserts his gonopods into the seminal receptacle and thrusts to propel the spermatophore inside.

The lobsters have to be of similar size for this to work. If the male is too small

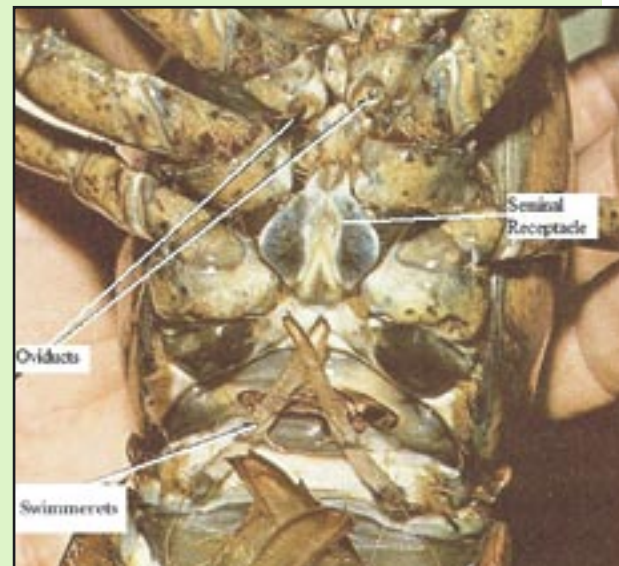
Male anatomy.

During mating the spermatophore is ejaculated through the paired sperm ducts and travels into the female seminal receptacle via insertion of the gonopods. Male gonopods are the first pair of swimmerets calcified to harden as a modification for copulation. The second pair of male swimmerets (not shown) also has a calcified structure that is used to help push the spermatophore into the gonopods.



Female anatomy.

After mating the female stores spermatophore in the seminal receptacle until she is ready to extrude and brood eggs. The eggs are extruded from the paired openings (oviducts) located between the third pair of walking legs. The first pair of swimmerets is soft and reduced in size and carry fewer eggs than other swimmerets.



he will not be able to pick up and hold the female resulting in two disadvantages:

(1) the female could be seriously injured due to being crushed into the substrate; and (2) the male may not be able to get the proper grip to create the force required for the spermatophore to be properly placed within the female.

The size of the male is related to not only the size of his gonopods, but also to the size of his spermatophore. Small males make small packets of sperm. Even if a small male could manage to transfer a spermatophore to a large female — which is doubtful — he produces insufficient sperm to fertilize her eggs. ■