

Super first feed soon ready to serve

August 27 2012, by Torkil Marsdal Hanssen



When placed in oxygen-rich seawater, the copepod eggs hatch within 24 hours.
Photo: Sintef

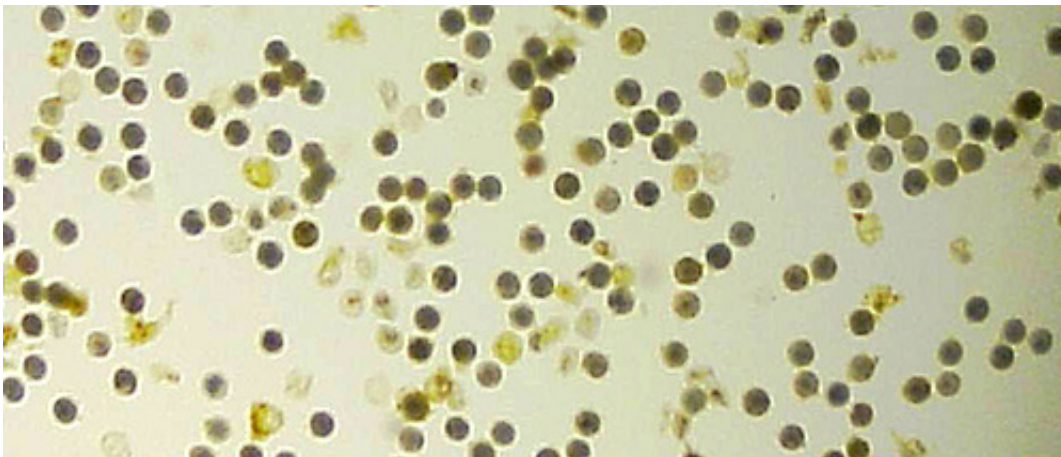
They can be stored for months and then hatch in seawater within 24 hours. Production of copepods, the ultimate live feed for Ballan wrasse and the fry of other marine fish species, can soon be industrialised.

Researchers are confident it will soon be possible to produce copepod [eggs](#) on an industrial scale, which would solve several challenges in fry production and improve quality and survival of marine production [fish larvae](#), such as Ballan wrasse, halibut, turbot and cod. Industrial production of copepod eggs could open the door to producing new [marine species](#) that are difficult to farm using conventional [live feed](#).

Faith in industry

Researchers at SINTEF and the Norwegian University of Science and Technology (NTNU) are already producing copepod eggs intensively for their experiments with various species of marine fish larvae. Female copepods produce 30-50 eggs per day for up to 50 days.

So far the researchers have been able to utilise a fraction of this production, but the potential is enormous: in theory, starting with just three copepods per millilitre of water in a 10-m³ tank, 450-825 million eggs could be produced per day, assuming equal numbers of males and females in the tank.



Copepod eggs are harvested from the tank floor daily, then washed and stored in refrigeration for up to several months. Photo: Sintef

"Copepods are currently fed live microalgae," explains project manager Gunvor Øie of SINTEF Fisheries and Aquaculture.

"We are collaborating with [microalgae](#) producers on developing a special

feed in paste form that will provide more control over feeding. In addition we believe we can increase the ratio of females in the production tanks. Cost-effective, stable, predictable production of copepod eggs, however, will require upscaling, further technology development and automation of processes—which we are very optimistic about."

Just add seawater...

The researchers have found that older, properly stored eggs hatch just as well as fresh eggs. When harvested, the eggs are placed in bottles of oxygen-free [seawater](#) and stored in a dark refrigerator.

"The eggs can be stored like this for at least seven months," explains Dr Øie. "When a farm's fish larvae need copepods, the desired number of eggs can be transferred to oxygen-rich seawater and will [hatch](#) within 24 hours."

Industrial production of copepod eggs will allow greater control over nutritional composition. The eggs can also be disinfected against parasites, bacteria and viruses.

"We know that a diet of copepods substantially improves fry quality in species such as Ballan wrasse, cod and halibut," continues Dr Øie.

"Industrial production also opens up possibilities for farming new marine species for which fry production has proved difficult—such as with tuna, groupers and aquarium fish. Using our copepods, for instance, mandarin fish have now been bred in captivity for the first time."

Provided by The Research Council of Norway

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