From *http://dianawalstad.com*

Hatching Brine Shrimp in a Dish

by Diana Walstad (Feb 2026)

More than one hobbyist has decided that feeding live brine shrimp is not worth the mess. Maybe not. However, after decades of fussing and fiddling, I finally settled on a procedure that I could live with—the "dish method."

An ordinary casserole dish (12" X 7.5") is shallow with a large surface area. It provides plentiful oxygen to hatch small batches. That eliminates a noisy air pump and messy tubing. The small volume of eggs (no more than 1/4 teaspoon) that I start each batch with does not quickly contaminate the saltwater, such that it can be reused for several weeks.

Hatch Setup Saltwater prepared in the depicted 1-gal milk jug will last for several months. The styrofoam strip keeps floating eggs on the dish's right side. Stones (optional!) help hold the strip in place.

Materials

- casserole dish (12" X 7.5")- must be glass (metal pans will release heavy metals that prevent hatching)
- 1 gal tapwater
- 2 T. + 2 tsp. of table salt
- 1/4 tsp. of baking soda (raises pH above 8.0)
- aquarium water conditioner (combats heavy metals)
- styrofoam strip
- turkey baster
- shrimp net or sieve for harvesting

Add water, salts, and the water conditioner to a 1-gal jug. Set dish on a level surface, preferably near a light source. Add a narrow styrofoam strip. (The strip should "semi-float" on the water surface to keep floating eggs on one side, yet allow nauplii to swim underneath to the other side.) Pour 3-4 cups of the jug's saltwater into the dish. (Save the rest of the saltwater for replenishing, etc.) Sprinkle 1/8 to 1/4 teaspoon eggs on the dark side of dish.

I collect nauplii—as needed and as they hatch—, not all at once. After my final collection of nauplii from an egg batch, I filter the used saltwater to remove egg shells and debris. I briefly clean the dish and styrofoam strip with tapwater. (No need to remove any attached algae, as it will remove ammonia from the saltwater.) Finally, for "seeding" a new batch, I pour the filtered saltwater into the cleaned dish and start over.

Nauplii The pink cloud is nauplii that hatched and—attracted to light—swam under the styrofoam strip. (At cool temperatures, more eggs will hatch over the next 24 hr and can be collected the next day.)

From *http://dianawalstad.com*

Hatching Factors

What is Important

- Neutralizing metals in tapwater
- Not adding too many eggs- 1/8 to 1/4 tsp of eggs produces enough nauplii for a hundred or so fry, while not immediately contaminating the saltwater

Less Important Factors

- salt- *any* ordinary table salt (iodized or non-iodized) will work
- light- window light or desk lamp
- temperature- 65-85°F
- salinity- 15-25 ppt
- age of eggs- eggs stored dry in freezer will last decades
- egg quality- eggs sold by BrineShrimpDirect.com that have a modest hatch rate (82%) work fine

Harvesting Nauplii with a turkey baster and the "artemia hatching sieve" (from 'BrineShrimpDirect.com')

A higher incubation temperature speeds up hatching, but it does not prevent hatching. It only slows it. Most hatching takes one day at 75-80°F and two days at 65°F. Temperature determines my seeding and collection schedule. For the low temperature, I start a batch early in the morning. The next day, I harvest the early-hatching nauplii to feed fish, while refrigerating some for the next day. Two days after seeding, I collect all the late hatchers and combine them with refrigerated nauplii harvested the day before. Thus, I start a new batch every other day. With this method—as opposed to a single harvest at 24 hours—, I obtain more freshly hatched nauplii from a given number of eggs. It sounds complicated, but it really is not. I just follow the "hatching rhythm" of the eggs.

Harvested naupli can be easily distributed by partially dipping this sieve into each tank. (I also use the sieve for filtering used saltwater.) Convenient!

Cold Storage

I store excess nauplii in ~1 cup of saltwater in the refrigerator for 1-2 days. I can feed fish these nauplii while waiting for the next egg batch to hatch.

Live nauplii stored at 4°C in a refrigerator for 1-2 days are just as nutritious as freshly hatched nauplii [**1, 2**]. In contrast, frozen nauplii, which release their contents during the freezing and thawing process, are not.

Stored Nauplii from the refrigerator

DISCUSSION

Brine shrimp (*Artemia* species) are incredibly adaptive to oxygen, salinity, temperature, ammonia, etc. For example, eggs hatch fine for me when my reused and older saltwater contains 50 ppm ammonia. The main impediment to hatching is metal toxicity. Eggs are *exquisitely* sensitive to heavy metals (copper, zinc, nickel, etc.) that may sometimes be present in ordinary tapwater [**3**]. For example, eggs

will not hatch in saltwater prepared from my well water with its 0.8 ppm zinc—unless I add an aquarium water conditioner. For readers who have never gotten good hatches, metal toxicity is probably the reason.

Eggs will hatch at salinities ranging from 5 to 85 ppt, but the higher the salinity, the harder it is for eggs to absorb water in order to hatch. In saline lakes, eggs hatch when spring rains bring in an influx of freshwater. I use a relatively low salinity of ~16 ppt (~1.012 g/ml density). A lower salinity has advantages: (1) better hatch rate; (2) nauplii survive longer when added to the tank because they are much less "osmotically shocked" coming from 16 ppt than higher salinities; and (3) there is less salt for me to deal with, both in preparation and later disposal.

Adult brine shrimp in nature can survive at 100- 200 ppt. (Seawater is 35 ppt.) However, nauplii cannot. The higher the salinity, the greater the osmotic stress [**4**]. Brine shrimp are in osmotic balance at 10.5 ppt salinity [**5**]. If the water is saltier, the shrimp must get rid of the excess salt via osmotic pumps. (In turn, if salinity is less than 10.5 ppt, the shrimp will have to pump in the other direction.) Pumping requires energy and inevitably depletes the nauplii's nutritional value to fish.

I reuse the saltwater for several weeks, replenishing evaporated water with either tapwater or clean saltwater from the 1-gal stock jug. (I sometimes use a clear, plastic cover over the dish to slow evaporation.) Once the water turns excessively cloudy from bacterial growth and hatches start to decline, I discard the used saltwater and start over with clean saltwater from the stock jug.

Hobbyists are often advised to harvest nauplii at a single time point—usually at 24 hr. The problem is that many eggs take longer than 24 hr to hatch, so perfectly good unhatched eggs are wasted. However, if one waits for a complete hatch, say at 36 or 48 hr, many of the older shrimp will have lost their food value. (Nauplii cannot eat during their first day, so they quickly lose their food value.) My method allows one to easily collect small portions of nauplii over a 1-to-3-day period. Fish get freshly hatched, nutritious nauplii and eggs are not wasted.

Brine shrimp have long been recognized as a superior food for fry. Unlike other foods, one can hatch stored eggs whenever convenient. No need to keep a live culture going when there are no baby fish to feed. Moreover, my juvenile and even adult guppies go crazy over live nauplii.

For many years, I have tried various methods to hatch eggs for small-scale fish breeding. So far, this "dish method" has been the easiest.

REFERENCES

1. Leger, P *et al*. 1983. International study on *Artemia* XXIV. Cold storage of live *Artemia* nauplii from various geographical sources: Potentials and limits in aquaculture. *Aquacultural Engineering* 2: 69-78.
2. Sorgeloos P *et al*. 2001. Use of brine shrimp, *Artemia* spp., in marine fish larviculture. *Aquaculture* 200: 147-159.
3. MacRae TH and Pandey AS. 1991. Effects of metals on the early life stages of the brine shrimp, *Artemia*: A developmental toxicity assay. *Arch. Environ. Contam. Toxicol*. 20: 247-52.
4. D'Agostino A. 1980. Physiology and nutrition of *Artemia*. In: Persoone G, Sorgeloos P, Roels O and Jaspers E (Eds). *The Brine Shrimp Artemia* (Vol 2). Universa Press (Wetteren, Belguim), pp 55-82.
5. Holliday CW *et al*. 1990. Salinity-induced changes in branchial Na^+/K^+-ATPase activity and transepithelial potential difference in the brine shrimp *Artemia salina*. *J. Exp. Biol*. 151: 279-296.