

# Brine Shrimp and Great Salt Lake

## FOOD FOR THOUGHT

Brine shrimp are important to the ecology of the Great Salt Lake. The Great Salt Lake is hypersaline, which means that it is many times saltier than the ocean. While fish and frogs cannot tolerate the high salt concentration, brine shrimp, *Artemia franciscana*, thrive as the dominant organism.

Brine shrimp have few aquatic predators in the Great Salt Lake. They mostly serve as food for migrating waterfowl and shorebirds, providing them with fat reserves as stored energy for migration in spring and fall months. Wilson's Phalarope, Eared Grebe, Black Necked Stilt, American Avocet, and the California Gull are some of the birds that eat brine shrimp during their months of habitation at the Great Salt Lake.

When birds which feed on brine shrimp eventually visit the ocean, dormant brine shrimp cysts from the birds' feces or feathers fall into the ocean and hatch into nauplii. Although brine shrimp thrive in seawater, they do not exist in the ocean because brine shrimp nauplii have no means of protecting themselves, and thus are immediately eaten by hungry ocean predators.

Brine shrimp cysts have become an important larval feed to shrimp and fish farmers. In the fall, the cysts float on the water's surface and are harvested, washed, dried, canned, and shipped to aquaculture hatcheries worldwide. Hatched nauplii from the cysts are fed to very small shrimp and fish (larvae), thus ensuring their rapid growth and high survivability rate. Commercial harvesting of brine shrimp cysts was begun by Cleon Sanders of Sanders Brine Shrimp Company in 1950 and has developed into an important industry to the State of Utah.

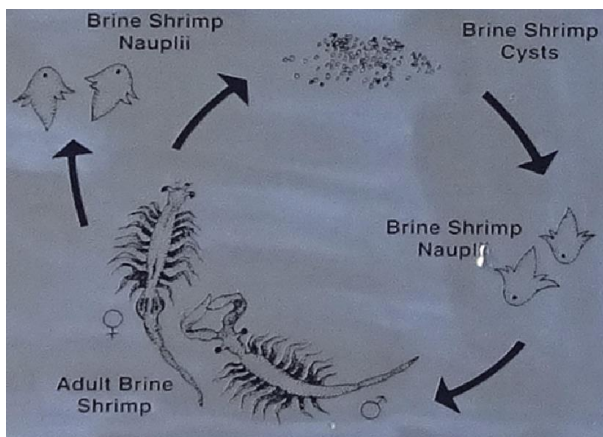
## Food for thought

Male and female brine shrimp mate during the summer and fall. The life of a brine shrimp involves two methods of reproduction: ovoviviparous (producing live young) and oviparous (producing dehydrated, dormant cysts).

Ovoviviparous reproduction takes place from March through September. During these months, food, oxygen, and water temperature are optimal for growth and reproduction of brine shrimp. Brine shrimp primarily rely on algae for food and oxygen. To become abundant, the algae rely on the brine shrimp for carbon dioxide and nutrients from the brine shrimps' feces.

Oviparous reproduction takes place from September through mid-January. During these months, food and oxygen are limited due to shorter day length and cooler water temperatures. Under these harsh conditions, adult brine shrimp produce dormant cysts. Water temperatures drop to about -4 Celsius (25 Fahrenheit) by the end of December, and most of the adult brine shrimp die. However, cysts survive the extreme cold winter and temperatures in the water or on the shoreline.

When spring approaches, rain and snowmelt hydrate the dormant cysts and they begin hatching. Due to longer day length and warmer temperatures, food in the form of microalgae and bacteria becomes abundant. The newly hatched brine shrimp nauplii grow to adults in three to six weeks and begin reproducing.



(Med Google oversæt, kommer teksten til at lyde: )

## Et par muligheder

Mandlige og kvindelige artemia mate i løbet af sommeren og efteråret. Den liv i en saltlage rejer involverer to metoder til reproduktion: ovoviviparous (producerer levende ung) og oviparous (producerer dehydrerede sovende cyster).

Ovoviviparous reproduktion finder sted fra marts til september. Under disse måneder, føde, oxygen og vandtemperaturen er optimale for vækst og reproduktion af saltlagerejer. Brine rejer primært holder sig til alger, mad og ilt. For at blive rigelig, the alger stole på saltlage rejer til kuldioxid og næringsstoffer fra Saltsøkrebs afføring.

Oviparous reproduktion finder sted fra september til midten af januar. under disse måneder, fødevarer og ilt er begrænset på grund af kortere daglængde og køligere vandtemperaturer. Under disse barske vilkår, voksne artemia producere hvilende cyster. Vandtemperaturer falde til omkring -4 Celsius (25 Fahrenheit) ved udgangen af december, og det meste af den voksne saltlage rejser dø. Men cyster overleve ekstrem kulde vinter og temperaturer i vandet eller på kysten.

Når foråret nærmer sig, regn og smeltevand hydrat de hvilende cyster og de begynder hatching. På grund af længere daglængde og varmere temperaturer, fødevarer i form af mikroalger og bakterier bliver rigeligt. Den nyklækkede artemia nauplil vokse til voksne i tre til seks uger og begynder formere.