7. The *Parartemia* Working Group

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Brine shrimp nauplii are widely used in aquaculture for feeding early-stage fish and crustacean larvae. The nauplii exhibit two essential qualities for this strategy: they are of an appropriate size to be ingestible, and they move actively in the water column, establishing themselves as targets for young carnivores. However, as many of the other papers presented at this workshop have emphasised, the brine shrimp widely used in aquaculture, *Artemia*, is not entirely satisfactory. *Artemia* can produce cysts under prescribed conditions and these, since they float, are easily harvestable. Consequently, there is world-wide interest in *Artemia* production. However, except for limited, small-scale production, the bulk of the cysts used today emanate from a wild-capture harvest susceptible to over-fishing and reduced production due to uncontrollable climatic influences. The net result is an unreliable supply of a product which is not entirely satisfactory anyway, with concomitant fluctuations in price. This is not a satisfactory scenario for driving new industries.

Australian sources

The members of the *Parartemia* Working Group take an entirely different approach. Australian saline lakes harbour a rich fauna of endemic species which have been blithely ignored in the haste to pursue overseas non-solutions to the supply of aquaculture feeds. In particular, Australian saline lakes harbour a rich diversity of endemic brine shrimps, genus *Parartemia*, which, like *Artemia*, can produce cysts from which nauplii hatch, but under quite different limnological conditions. This raises the possibility that the local brine shrimps can be exploited for cyst production, either:

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[2] Wheatbelt Development Commission. (See details in appendix.)

1. as successfully as the overseas production of *Artemia*, thereby resulting in a more reliable supply of a local product with lower amplitudes of price fluctuation for local users of brine shrimp cysts, or
2. even more successfully, generating an export market as well.

The current preoccupation with *Artemia* as the only brine shrimp to be considered is generating a major problem for Australian biodiversity, and possible economic exploitation of the saline lake resources. There is a dangerous mind-set operating by individuals and within government aquaculture organisations which at best sees no problem in introducing *Artemia* into local saline lakes and is even encouraging their spread. The argument typically applied is that *Artemia* have been in Australia for a number of decades now and they have not been a problem. *Artemia* were introduced into a number of strictly coastal salt-works and for a number of years no spread has been observed into the hinterland saline lakes, the area of natural *Parartemia* distribution. However, this situation is now changing: *Artemia* are beginning to move into the *Parartemia* areas, a spread facilitated both by increasing degradation of saline lakes — reflecting the sins of poor catchment use since the advent of European agriculture - and also by human encouragement. It is crucial that we acknowledge that Australian salt lakes are in no way comparable to the massive American lakes from which 1200 tonnes of *Artemia* cysts are harvested each year; these lakes are large, deep (more than 90 m) and permanent. Inland Australian lakes are shallow (under 1 m), do not fill regularly, and have short inundation cycles; because of this they will not produce commercial yields of exotic grazing animals.

The biological and economic values of our natural saline lake resources have never been evaluated; consequently, they cannot be compared with production based on exotic species. It is quite consistent with Australian practice that we destroy one endemic resource which *may* be of far higher value in favour of a lesser, but known, exotic resource. The net result could be the replacement of many local species with a cosmopolitan weed species — a modern-day version of the rabbit.