

# DR. THOMAS CAMUS

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PhD 2011 to 2013

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## The improvement of copepods intensive culture protocols as live feeds for aquaculture hatcheries

Tomas graduated from Hawaii Pacific University with a BSc in Marine Biology in 2005. The following year he moved to Townville, where he completed a Master of Applied Science in Aquaculture before starting a Master by Research in 2007, supervised by Chaoshu Zeng and focused on the improvement of copepod cultures as live feeds for tropical aquaculture. In 2009, after 2 publications in the journal Aquaculture, Tomas transferred to a PhD in order to expand his research. He submitted his PhD thesis in December 2012 and graduated in February 2013. His thesis was listed by the Dean as Research Higher Degree Excellence.

As wild fisheries stocks dwindle, there is increasing demand for aquaculture, as with any farmed animal, feed is critically important. Traditional live fish feeds such as rotifers and Artemia have been associated with very high mortality; low development rates and high incidence of deformities when used as the primary food source for a large number of species, including most of the high valued reef fish such as groupers and snappers. In the wild, copepods are the natural prey of virtually every fish larvae, especially reef fish. The inclusion of copepods in the larval rearing cycle of high valued tropical fish has been shown to improved survival and development, as well as digestive track development, enzyme activities and pigmentation rates. However, only very little research is conducted about copepods, prompting the need to assess their potential as hatchery live feeds.

The aim of Tomas' research project was to improve the intensive culture protocol of tropical calanoid copepods, to be used as live feeds for tropical aquaculture.

This was achieved through investigation of optimal culture parameters such as food quality and quantity, optimal stocking density, cultures in medium size volumes, influence of photoperiod on production and development of copepods.

Tomas presented at the 2011 International Conference on Copepoda in Merida, Mexico where he was able to network with the leaders in his field.

Thomas is now working as an aquaculture consultant at New Caledonia's new Mariculture Technical Development Centre (CCDTAM) set up under the territory's Agency for Economic Development; ADECAL.

## Publications

- Camus, T. & Zeng, C., 2008. Effects of photoperiod on egg production and hatching success, naupliar and copepodite development, adult sex ratio and life expectancy of the tropical calanoid copepod *Acartia sinjiensis*. *Aquaculture*, 280(1-4), pp.220–226. Available at: <http://linkinghub.elsevier.com/retrieve/pii/S0044848608003475>
- Camus, T. & Zeng, C., 2012. Reproductive performance, survival and development of nauplii and copepodites, sex ratio and adult life expectancy of the harpacticoid copepod, *Euterpina acutifrons*, fed different microalgal diets. *Aquaculture Research*, 43(8), pp.1159–1169. Available at: <http://doi.wiley.com/10.1111/j.1365-2109.2011.02919.x>
- Camus, T. & Zeng, C., 2010. Roles of microalgae on total egg production over female lifespan and egg incubation time, naupliar and copepodite survival, sex ratio and female life expectancy of the copepod *Bestiolina similis*. *Aquaculture Research*, 41(11), pp.1717–1726. Available at: <http://doi.wiley.com/10.1111/j.1365-2109.2010.02565.x>
- Camus, T. & Zeng, C., 2009. The effects of stocking density on egg production and hatching success, cannibalism rate, sex ratio and population growth of the tropical calanoid copepod *Acartia sinjiensis*. *Aquaculture*, 287(1-2), pp.145–151. Available at: <http://linkinghub.elsevier.com/retrieve/pii/S0044848608007448>
- Camus, T., Zeng, C. & McKinnon, a. D., 2009. Egg production, egg hatching success and population increase of the tropical paracalanid copepod, *Bestiolina similis* (Calanoida: Paracalanidae) fed different microalgal diets. *Aquaculture*, 297(1-4), pp.169–175. Available at: <http://linkinghub.elsevier.com/retrieve/pii/S0044848609007935>
- Camus, T., Zeng, C. & McKinnon, A.D., 2011. Cannibalism on naupliar stages by *Acartia sinjiensis*, a calanoid copepod. In *11th International Conference in Copepoda*. Merida, Mexico.
- Camus, Thomas (2012) The improvement of copepods intensive culture protocols as live feeds for aquaculture hatcheries. PhD thesis, James Cook University.