

# 51

## Effect of broodstock diets on reproduction of fish

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**Abstract** — Nutrition is known to have a profound effect upon gonadal growth and fecundity, however until recently, little information was available on broodstock nutrition of fish. The purpose of this review is, therefore, to summarize and discuss recent advances in knowledge of broodstock nutrition and to indicate the necessity for further research on detailed nutritional requirements of broodstock.

The red sea bream (*Pagrus major*), an important marine culture species, is mass produced in hatcheries in Japan and is used as an example of the evolving research on this topic. The quality of the diet fed to broodstock has been shown to exert a major effect on fecundity and egg quality. Data from protein, lipid, vitamin and mineral trials are reviewed. Protein concentration in the eggs is proportional to the amount of protein included in the diet. Vitamin A and E are also found to be incorporated in the eggs together with lipids. Related to this finding, vitamin E, phospholipids and astaxanthin have been shown to be critical elements related to egg quality in this fish. Parameters such as fecundity, egg quality (buoyancy, presence of one or more oil globules), hatching rate and presence of larval deformities were monitored.

Suggestions are made regarding the effects of time of initiation of feeding and duration of feeding but more research is needed on these topics. Initial results suggest that diets given shortly before spawning have a profound effect on reproduction. More work is needed on establishing the nutrient requirements of this species coupled with identification of the critical parameters to be monitored as an indication of reproductive success. Further collaborative research between nutritionists and reproductive physiologists is suggested.