

# **Results of a Feeding Demonstration to Wean Coastal Aquaculture Species from Fresh Fish to Manufactured Feeds**

## **Results of ASA/China 1999 Feeding Trial 35-99-85**

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### **ABSTRACT**

A 10-day feeding demonstration was conducted at Rao Ping, Guangdong Province, to determine if coastal aquaculture species could be weaned from a fresh fish diet to extruded, manufactured feeds. Sea bass weighing 55 g and 110 g, red drum weighing 150 g, and juvenile snapper sea bream 5-6 cm in length were tested in the demonstration. All species and all sizes of fish were successfully weaned to extruded feed pellets. Sea bass readily consumed extruded pellets on the second day of the weaning process. Snapper sea bream of size 5-6 cm consumed extruded pellets on the first day pellets were presented. Red drum was the most difficult of the species tested to wean to extruded pellets.

### **INTRODUCTION**

The American Soybean Association (ASA), in cooperation with the Shanghai Fwuso aquafeed mill and the No. 180 Damen Cage Fish Farm in Zhelin Bay, conducted a feeding demonstration in 1999 to determine whether a variety of coastal aquaculture species could be weaned from fresh fish to extruded (floating) feed pellets. Results of the feeding demonstration are reported below.

### **MATERIALS AND METHODS**

Fish for the demonstration included 600 Japanese sea bass with an average weight of 55 g, 500 Japanese sea bass with an average weight of 110 g, 200 juvenile snapper sea bream of size 5-6 cm total length, and 800 red drum with an average weight of 150 g. All fish were provided by the No. 180 Damen Cage Fish Farm, Zhelin Bay, Guangdong Province, China, where the demonstration was conducted. The fish were stocked by species and size in four, 64-m<sup>3</sup> cages for the demonstration. Each cage measured 4 m x 4 m x 4 m.

All fish had previous been fed their entire life cycle to date with fresh fish, either in paste or cut fish form. Fish were weaned from the fresh fish diet by gradually adding extruded pellets of a 43% protein, 12% fat ration (Table 1) to the fresh fish ration over a maximum period of 10 days. On weaning day one, 1.5% of the fresh fish ration, by weight, was replaced by extruded pellets. On day two, 8% of the fresh fish ration was replaced by extruded pellets. The percentage of

extruded pellets was increased daily until the fish were consuming only extruded pellets. Fish were fed four times daily, with the total daily ration equally divided between the four feedings.

The extruded pellet ration was formulated by ASA and produced by Shanghai Fwuso aquafeed mill. ASA provided all feed for the demonstration. Shanghai Fwuso provided the services of a technician for 10 days to supervise and monitor the feed weaning process. Feed pellet size was 1.5 mm for the 5-6 cm snapper sea bream, 2.0 mm for the 55-g sea bass, and 4.0 mm for the 110-g sea bass and the 150-g red drum.

## **RESULTS**

All fish tested in the feeding demonstration were successfully weaned from a diet of fresh fish to extruded, dry pellets within 10 days. Juvenile snapper sea bream readily consumed extruded pellets the first day the pellets were offered. Japanese sea bass of sizes 55 g and 110 g aggressively consumed extruded pellets on the second day of weaning. Red drum were the most difficult to wean to extruded pellets, and did not readily consume extruded pellets even at the end of the 10-day period.

## **SUMMARY AND CONCLUSIONS**

Production of coastal aquaculture species with manufactured feeds is clearly feasible, even for fish larger than 100 g that have previously been fed entirely on fresh fish. Japanese sea bass up to 110 g in size and juvenile snapper sea bream were successfully weaned from fresh fish to extruded, dry pellets without difficulty. Red snapper of size 150 g were successfully weaned, but with more difficulty than the sea bass and snapper bream. It was found that the correct feed pellet size is critical in weaning fish to extruded pellets. Fish do not readily consume pellets that are small for their mouth size. A feed attractant, such as hydrolyzed krill, may be required for some species, such as red drum, to rapidly wean from fresh fish to manufactured pellets. The attractant could be topically applied on site immediately prior to feeding so that its potency is not diminished.

## **ACKNOWLEDGEMENTS**

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## **Chinese Currency and Production Unit Conversions:**

RMB 8.26 = US\$1.00

1.0 kg = 2.2 lb

TABLE 1. Aquafeed formulation for the 43% protein and 12% fat ration used to wean Japanese sea bass, snapper sea bream, and red drum from a fresh fish diet to an extruded pellet diet. The trial was conducted at the No. 180 Damen Fish Cage Farm in Zhelin Bay, Guangdong Province, China, during July and August 1999.

Ingredient	Aquafeed Ration (% by ingredient)
Fishmeal, anchovy 65/10	44.0
Dehulled soybean meal (47.5%)	18.5
Wheat, SWW	25.0
Fish oil	7.03
Corn gluten meal (60%)	5.00
Mineral premix	0.25
Vitamin premix Roche 2118	0.20
Ethoxyquin	0.02
TOTAL	100.00