



Readings

Huge rise in bigeye catch in the Atlantic

Bigeye are financially the most important of the tunas fished in the Atlantic and are worth US\$ 600 million on the Japanese markets. The introduction of deep-water longliners and freezing systems enabled Japanese vessels to catch bigeye in large quantities in the Atlantic. The Taiwanese fleet, which previously focused on albacore, has also switched largely its attention to bigeye due to high prices in Japan.

Dr Joao Gil Pereira, professor at the Azores Institute of Oceanography, is a specialist in tuna and he gave details of the Atlantic fishery at the 16th Fisheries Week of the Azores conference held in Horta in March 1997.

Catches of bigeye taken with longlines have increased significantly in recent years to 60 000 t in 1994–95. 'Bigeye are caught in shoals close to the surface, by baitboats and purse seiners. But they go into deeper waters as far down as 500 m—and this had led to the development of deep longline gear specifically for bigeye,' Dr Pereira said.

Bigeye are fished extensively by tuna seiners working off west Africa and this fishery is becoming increasingly associated with FADs.

'Since 1991 the use of FADs by tropical purse seiners has been increasing and tens of thousands of floating objects are drifting in the tropical Atlantic,' Dr Pereira said.

Floating objects such as logs and rafts were used in the past as these attracted small fish. Specially designed buoys were then used for the same purpose and these were equipped with radio transponders which could be traced using direction-finder (DF) equipment.

More recently these have been replaced largely by buoys fitted with satellite positioning devices. Seiners shoot around the FADs—and this has increased to the extent that seiner fleets are relying increasingly on FADs. Therefore, they need to spend less time actively searching out for tuna.

Bigeye is taken as a by-catch in this fishery, which targets yellowfin and skipjack tuna, but the catch of juvenile bigeye by purse seiners has increased from 10 000 t before 1991 to 30 000 t in 1994. This is primarily because of the increased use of FADs as bigeye form schools with skipjack and juvenile yellowfin tuna.

An additional juvenile bigeye fishery takes place in west African waters with a live-bait fleet based in Ghana. One other live bait fleet, targeting medium-size bigeye, is based in Dakar.

The technique consists in fishing in schools associated to the fishing boat itself, effectively using the boat as a FAD. This technique is also used by the Spanish (Canary island) fleet. The Portuguese (Azores and Madeira) and Spanish (Canary Islands) pole-and-line fishery further north takes larger fish.

Catch levels of Atlantic bigeye are estimated to stand at around 100 000 t annually.

FADs 'take too many juveniles'

'The International Commission for the Conservation of Atlantic Tunas (ICCAT) feels that catch levels of 100 000 t annually for bigeye cannot be maintained,' Dr Joao Gil Pereira told the ICCAT Azores conference.

'Mortality is calculated at being above the optimum level. This is overexploitation of the reproducing stock and overfishing of juveniles. Millions of bigeye are caught at 2 to 3 kg and so it will be necessary to reduce use of FADs'.

'If no measures are taken, catches will drop to low levels and a total of decline of the stock could result. ICCAT wants catches reduced to the levels of 20 years ago, which is a drastic reduction.'

He went on to say that the Standing Committee on Research and Statistics (SCRS) has proposed an intensive research programme, which would include wide-scale tagging, to see if catch levels are sustainable.

'The high value of the catch justifies this research into bigeye,' Dr Pereira said. He criticised ICCAT Commissioners for ignoring the research proposed by scientists and their failure to adopt the necessary management measures.

He pointed out that the Europeans have a major responsibility in tuna research. 'Tuna research was over-looked by Brussels for many years. It was seen as a distant water fishery. But the situation is changing. Europe is now the biggest exploiter of tuna resources in the Atlantic and Indian Oceans.'

Source: *Fishing News International*, May 1997

Note from the editor:

Following expressions of concern by scientists, three fishing companies (ORTHONGEL in France, OPTUC-ANABAC and OPAGAC in Spain), which operate the majority of European purse-seiners, have decided to implement a three-month moratorium on the use of this technique in some parts of the Atlantic Ocean known as spawning sites.

Effect of fish aggregating devices (FAD) for gathering juvenile Japanese horse mackerel, *Trachurus japonicus*

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The gathering behaviour of juveniles *Trachurus japonicus* towards fish aggregating devices (FADs) was studied using an outdoor water tank (5 x 5 x 3 m) and different scale-model FADs (0.4 x 0.4 x 0.2 m).

The distribution pattern of juveniles *Trachurus japonicus* changed with light intensity. In the day-time, the gathering behaviour to the FAD was apparent, but not in night-time. The results evidently indicated that juvenile of *Trachurus japonicus* are independent of FAD in night-time. In order to determine the gathering behaviour quantitatively, an index, related to the length of the time spent close to the FAD, was introduced. The ratio of gath-

ering index varied with the shape and depth of the different scale models. However, the results showed small index value in all experiments.

It is suggested that localisation by visual stimulation may in some cases play an important part in the taxis of fishes toward FAD. A visual stimulation must be one of the factors but not the only factor which attracted juvenile *Trachurus japonicus* to the FAD. Further studies into the factors are necessary.

Source: *Bulletin of the Japanese Society of Fisheries Oceanography*, Vol. 60, No. 4, 356–362 (in Japanese).

