

AN OCEAN LIKE NO OTHER

7.1 INTRODUCTION TO THE SOUTH AFRICAN SQUID FISHERY – WHY DO SQUID CATCHES CRASH INTERMITTENTLY?

VIDEO DURATION– 05:18

This lecture introduces the South African squid fishery. It provides a quick overview of the chokka squid lifecycle, the fishery, fluctuations in landings, its value in the international market, impacts of the environment, and the people who depend on the catches for a livelihood.

This lecture was written by Warwick Sauer, a fisheries scientist in the Department of Ichthyology and Fisheries Science, at Rhodes University, who specialises in cephalopods. And by Mike Roberts from the Nelson Mandela University, a physical oceanographer with strong leanings into marine ecosystem functioning. You will learn about one of the most notorious fisheries in the world — the South African squid fishery. And you will learn that fisheries are not only about fish – they are about people too who are at the mercy of environmental change!

Chokka squid, or *Loligo reynaudii* to give it the correct scientific name, is a cephalopod, and is closely related to the cuttlefish and octopus. Chokka, as it is locally known, is sold and eaten as calamari in restaurants. It is one of the most sought after species around the world, because of its texture and flavour.

It is found on the west and south coasts of South Africa, but concentrates along the south coast where it breeds.

The squid fishery is one of the most important in South Africa, with about 120 vessels fishing each year. The vessels range in length from 12 to about 20m and stay at sea for typically 3 weeks at a time. The fleet operates out of Port Elizabeth and Port St Francis.

These squid form large breeding concentrations targeted by the fishing vessels. The females lay thousands of eggs on the seabed, which at times, span areas about half the size of a football field. Spawning tends to be coastal, at depths of around 20-30 meters but it can be as deep as 120 meters.

Chokka are caught by hand using jigs made from lead or plastic, which have an array of barbless hooks. Fishers operate two hand-lines at a time to catch the squid.

The boats carry up to 26 crew who do the fishing. Fishers are paid individually for their catch. The squid are sorted by size, cleaned using sea water, and then placed in trays that go into a blast freezer. Once frozen, squid are placed into plastic packets and placed in a holding freezer. The larger vessels can carry as much as 40 tons.

Powerful lights are used at night to attract squid to the boats. These lights are even visible from space and can be tracked on satellite images

In the harbour, the frozen squid catch is transferred to the factory, which are then placed in boxes sorted by size, ready for export to markets in Europe — notably Portugal and Spain. 99% of the squid caught in South Africa is exported, with South Africans eating imported squid of lower quality at a cheaper price. South African squid fetches one of the highest prices in the world.

Squid catches vary considerably on a monthly and annual basis.

Consequently, fisher earnings vary largely. Times of poor catches, such as in 2013, results in economic hardship. Many have large families that rely on the income from the squid fishery, living as close to the ports as possible — often in less than ideal conditions. It is estimated that some 35,000 people are dependent on the squid fishery, in a province where economic opportunities are very limited.

As a measure of controlling the fishery, the Department of Agriculture, Forestry and Fisheries, through legislation, limits the number of vessels and crew, and in addition has established two closed fishing seasons — 5 weeks in October/November and 12 weeks between March and June to protect spawning squid. This means that the fishers have no income during these months.

A striking characteristic of squid is that they live fast and die young, with life spans of only 18 months. This means years of good and poor recruitment have very large impacts on the annual biomass and hence catches. Squid are particularly sensitive to the environment during the spawning and early life cycle stages. Factors such as turbid water conditions affect spawning behaviour, with the amount of upwelling — and hence productivity in the ocean — impacting the survival of the minute paralarvae.

Also, they live in one of the most complex and energetic ocean environments on the planet — a place where 3 oceans meet superimposed with one of the most powerful western boundary currents — the Agulhas Current. Together, these factors strongly influence recruitment in the squid fishery. As in other parts of the world's ocean, changes associated with global warming are also becoming evident.

In the next lecture we will explore the biology of chokka squid to find out how the environment affects recruitment.