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A basking shark surfaces near a diver. There are over 300 species of shark ranging in size from the 18-metre whale shark to the 10-centimetre spined pygmy shark. Only a few of these species pose any threat to humans. The only possible damage that a basking shark could inflict on a diver is through a brush against its very coarse skin.

bed, some hatch inside the mother fully developed and feed on other eggs or developing young before birth, and others are nurtured by the mother through a placenta before birth. Basking sharks are thought to fall into the second category (where embryos cannibalise their siblings), but there are two cases, where captured females gave birth to five and six young, suggesting the possibility of placental development.

Juveniles smaller than three metres and pregnant females are virtually unknown, which suggests that they rarely come to the surface. Gestation for basking sharks may take as long as three and a half years. The smallest basking shark captured was 165 cm long, which is thought to be near to the size of a new-born pup. Growth rings on vertebrae indicate that males mature at six or seven years when four to six metres long.

Commercial basking shark fisheries off Scotland and Ireland have taken 18-25 female sharks for each male. Most of the females caught around Britain are sub-adult, while most of the small number of basking sharks caught in winter are males. This indicates that at least in some parts of the world, the sexes have markedly different habits. Off Scotland and Ireland, males may be more solitary, tend to occur at greater water depth or further offshore, or occupy a different geographic area to females. It has been suggested that dominant males may have harems which they defend from other males.

Unfortunately the history of most shark fisheries is one of boom and bust. Sharks are easily over-exploited because

of their low breeding rates. Basking sharks have long been targeted by fishers, yet because of their especially low reproductive rate, they may be more vulnerable to over-fishing than most commercially sought sharks.

FOR CENTURIES basking sharks have been the object of small-scale, sporadic harpoon fisheries from small boats off the coasts of Norway, Ireland, Scotland, Iceland, California, Peru and Ecuador. In the 1940s, spotter planes were used to locate the sharks off California. The Norwegians in 1960 caught an incredible 4,266 sharks, but by 1987 their entire quota was 400 tonnes of liver (about 800 sharks). In recent years the number of basking sharks off Ireland has declined so much that biologists are worried about the future of the species. Currently basking sharks are being heavily fished around China and Japan by harpoon.

Fishing for basking sharks has primarily been for their huge and valuable oil-rich livers. Unlike many other fish, sharks do not have air-filled swim bladders to give them buoyancy. They compensate for this by having a large, buoyant, oil-filled liver. The livers are about 20 percent of their total body weight, sometimes weigh more than a tonne, and yield up to 2,000 litres of oil.

In New Zealand, there has been sporadic commercial interest in the oil from shark livers for the last 50 years. At one time basking sharks were hunted by harpoon off Kaikoura. Today, basking shark

and other shark livers are still regularly boiled down at Kaikoura by a local company for the Japanese market. The company receives sharks, which have been caught mainly as a by-catch in gill nets set for ling and groper, sent in from fishers around the South Island.

The main lipid or fat in the rich oil of shark livers is a vitamin rich substance called squalene. Squalene has been used extensively in the manufacture of skin moisturisers, sunscreen lotions, lubricants, pharmaceuticals, aromatics, steroid hormones and some health foods. The liver oil was formerly used for tanning leather and for lamp oil. These days the oil is not so valuable because substitutes can be produced synthetically. However, more recently there has been a growing market for natural skin care products.

Basking shark fins are used for shark fin soup, and sometimes the meat is used for human consumption or fishmeal, and the skins for leather.

Basking sharks are regularly caught in New Zealand waters as by-catch in gill nets or by large deep-water trawlers. The gill net problem seems to have been greatest at Kaikoura. A local fisherman was quoted by the *Kaikoura Star* in 1974 as saying that "these sharks can be a great nuisance when they become entangled in the nets, not only for the time involved in untangling, but also the damage caused, and sometimes the loss of a net." This seems to be a common problem wherever gill nets are used within the range of basking sharks. Salmon gill netters off the North American Pacific and Atlantic coasts, for example, regularly catch these sharks, and Irish fishers used to hunt basking sharks because they damaged their salmon nets.

However, not all incidental basking shark captures may be regarded as a nuisance. Sometimes when one basking shark is caught by a large trawler, targeted fishing for more basking sharks may occur. The bellies of the sharks are slit open to remove the large livers and the bodies discarded.

THE HISTORY of human attitudes to wild animals is generally one of increasing awareness and concern. In New Zealand nearly all the larger native land animals now have absolute protection. Yet we have always treated marine life differently from terrestrial life. Nearly every marine creature can be taken by amateur or commercial fishers. No thought is given to whether a fish caught is a rare or threatened species, and the wider effect of catching fish on the marine ecosystem is seldom considered. Yet many marine