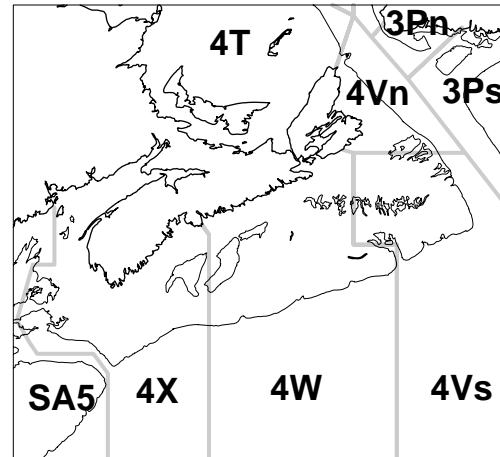




## SCOTIAN SHELF SAND LANCE



### Background

*Sand lance occupy a strategic niche as a forage species in the marine ecosystem. They are of limited importance as a commercial species in Canadian waters, but fishermen welcome their appearance because catch rates of cod and haddock are reportedly high when sand lance are plentiful on offshore banks. Bottom type, particularly sand, is important for burrowing (to escape predators) and reproduction.*

*The stock structure of sand lance is unknown and compounded by the fact that two species co-occur whose taxonomic separation is poorly resolved. Analysis of maturity data indicates a well defined winter breeding season starting in November and ending before March. Newly hatched larvae are concentrated in the vicinity of Sable Island and Middle Bank suggesting these are major spawning sites for sand lance. They exhibit relatively fast growth (4 to 6 cm/year) during the first four to five years of life. Maximum age is 9 yrs. old at a size of 30cm. Sand lance tend to be distributed across the Scotian Shelf in association with most of the offshore banks. Sand lance have been captured at depths ranging from 20-150m with highest concentration at depths less than 50 m. During summer, sand lance have been captured over a wide range of temperatures (1-11°C), however most catches occurred between 1- 5°C.*

*Sand lance is considered a planktonic feeder and copepods (mainly *Calanus finmarchicus*) are their primary food source. Euphausiids and polychaete larvae also make significant contributions to the sand lance diet. Sand lance contribute to the diet of most groundfish species on the Scotian Shelf, although their importance varies seasonally. Cod, haddock, and pollock have been found to consume sand lance on a year round basis while white hake, redfish and skates feed more intermittently on sand lance. Large marine mammals such as fin and humpback whales feed heavily on sand lance as do most seal species.*

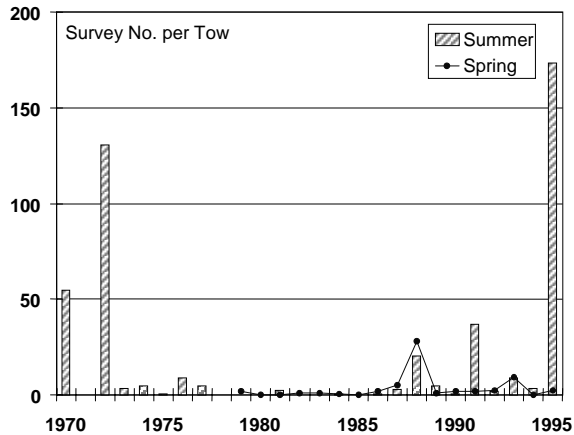
### The Fishery

There is no Canadian fishery for sand lance, however a bait fishery exists in New England waters which landed 20t in 1982. In the eastern Atlantic a major fishery exists for sand lance with a peak in landings of 770,000t recorded in 1980.

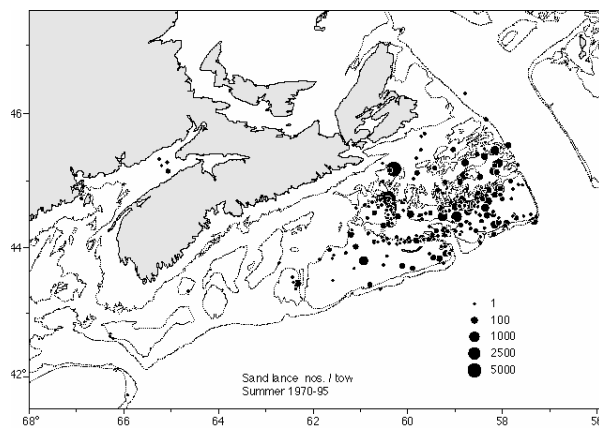
### Resource Status

The behaviour of this species makes it difficult to capture using standard trawl survey techniques. During the day, sand lance burrow into sand sea bottoms to avoid predators. At night, under preferred tidal conditions, they move up into the water to feed, commonly forming dense schools. These behaviours make it hard for standard **trawl surveys** to catch sand lance in a consistent way, so the survey catches cannot be used to estimate the abundance of sand lance. As well sand lance do not possess a swimbladder which makes acoustic surveying of biomass a difficult task. In other geographic areas abundance trends have been based on systematic larval surveys. Recent analysis of seal diets and resultant total fish consumption estimates suggest that

approximately 70,000t of sand lance were consumed by grey seals in 1993 on the eastern Scotian Shelf.



Trends in **abundance** based on spring and summer data from the Scotian Shelf reveal a variable pattern of abundance. Peaks in abundance were evident in the early 1970s and late 1980s to early 1990s. It is noteworthy that the catch rate in 1995 was the highest ever observed.



Based on summer surveys, this species is largely confined to the eastern half of the Scotian Shelf. Peak catches were generally associated with the offshore banks of Middle, Sable Island and Banquereau. Historical sand

lance distributions based on non-standard bottom trawl surveys conducted between 1956 and 1967, show a much broader distribution pattern than that indicated by summer surveys with concentrations over most of the offshore banks including Browns, LaHave, Emerald, Western, Sable Island, and Banquereau. The heaviest concentrations were in the central part of the shelf.

**Outlook**

Sand lance occupies a central position in the marine food web on the Scotian Shelf. This should be considered carefully prior to development of any fishery for this species. Because our standard trawl survey gear is not well suited to detecting changes in the distribution and abundance of this species, a reliable estimate of sand lance biomass on the Scotian Shelf is not available.

**For More Information**

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