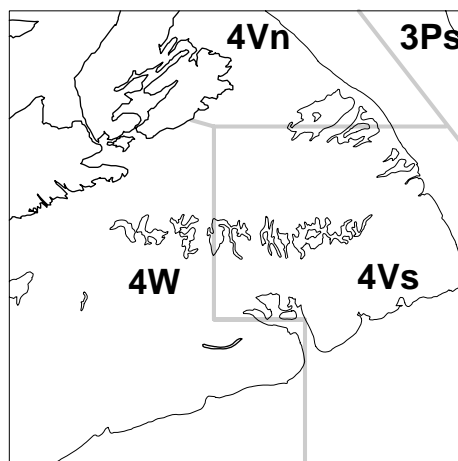


EASTERN NOVA SCOTIA FLATFISH



Background

Flatfish are bottom dwelling fishes primarily associated with soft substrate (mud and sand bottom). They are unique among other fish in being asymmetrical, both eyes lying on one side of the highly flattened body. They commence life swimming in the normal manner, but early in life they start to swim on one side and the eye on the underside migrates to the upper side. Flatfishes lie on the bottom on the blind side. Principle food items include crustaceans, mollusks, polychaete worms and small fishes. The three commercially important species fished in the 4VW area are. American plaice, witch flounder and yellowtail flounder.

Up to and including 1993, flounders were managed as one stock complex (4VWX). In 1994, the management area was divided into an eastern (4VW) and western (4X) component and the overall TAC reduced to 10,000t, with 5,500t allocated to the 4VW area, based on catch history. As well, winter flounder was included in the western component. The 1995 management plan was set at a TAC of 7,500t which was partitioned between 4VW and 4X giving the eastern component a TAC of 4,125t.

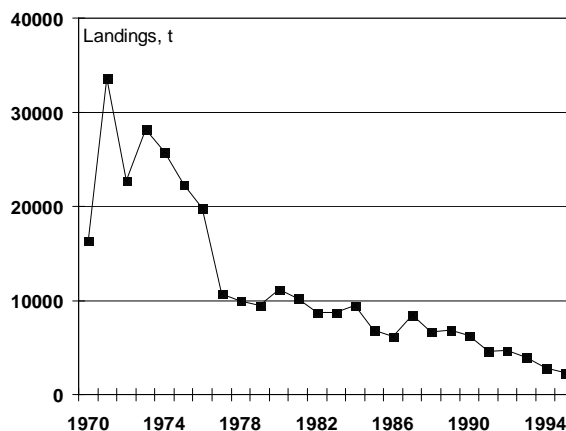
Management of the three species together under one TAC reflects the fact that it has to date been impossible to obtain reliable statistics on landings by each species separately. A system initiated in the late 1960s, which assigned landings to species based on regional keys, and equated local names with official ones for each species was abandoned in 1991. However, the system which replaced it (ITQ logs and dockside monitoring of landings) was unsuccessful in assigning more than 50% of the landings to individual species because landings were not separated at weighout or were misidentified by the weighmaster. Separation by species, although requested formally in 1993 (letter to ITQ holders and weighmasters) was never enforced. The absence of reliable landing statistics makes it difficult to determine the level of exploitation for the individual species.

The Fishery

Landings (thousands of tonnes)

Year	70-79 Avg.	80-89 Avg.	1991	1992	1993	1994	1995
TAC*						5.5	4.1
Canada	11.2	8.3	4.2	4.7	3.9	2.8	2.3
Foreign	8.5	0.1	0.1	0.1	-	-	-
TOTAL	19.7	8.3	4.3	4.8	3.9	2.8	2.3

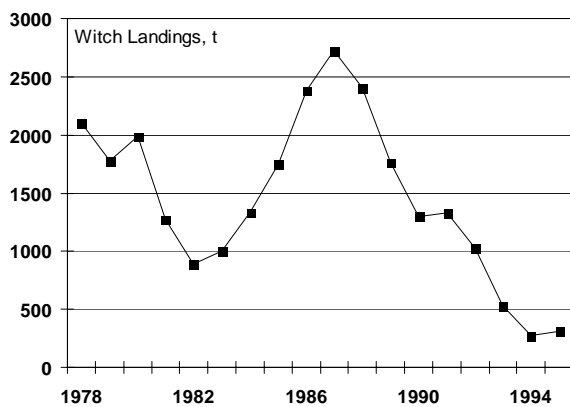
* New management unit established 1994



Total landings of 4VW flatfish in 1995 amounted to 2,325t, a decrease from the 2,824t taken in 1994. The decrease is not likely due to the TAC reduction and sharing arrangements for the fleet sectors, as none of the sectors took their full allocation. It must be noted that a

substantial portion of the offshore catch was caught by vessels less than 65ft which were fishing offshore flatfish quotas under the Temporary Vessel Replacement Program (TVRP). This increased the catch by the inshore mobile gear fleet by over 500t. Other than the portion of their quota taken by the inshore fleet through the use of TVRPs, the offshore fleets caught only 8% of their quota. The 1996 TAC is 3,500t.

Landings for **witch flounder** (the only flounder usually identified due to higher prices) have declined significantly since the late 1970s to a low of 275t in 1994, with a catch in 1995 of 315t.

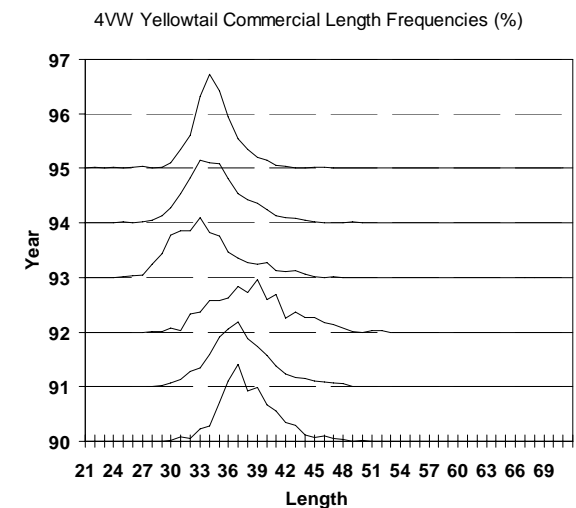
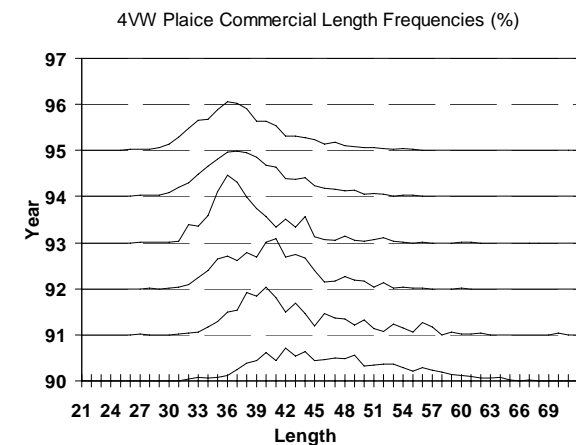


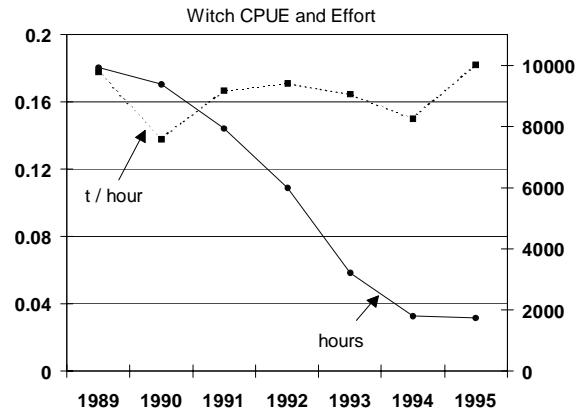
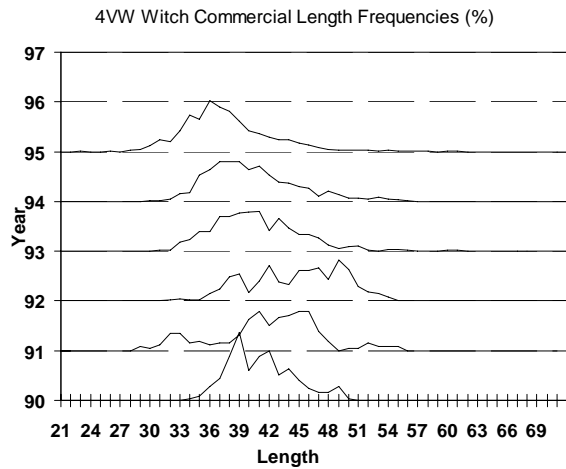
In recent years, the commercial flatfish fishery has been conducted almost entirely in 4V. The yellowtail fishery was on Banquereau Bank while plaice was fished throughout 4V. Witch flounder was fished throughout 4V and to a certain limited extent in 4W, especially in the Gully area. There was no significant fishery for winter flounder in 4VW. The majority of flatfish caught in 4VW are taken by Danish seines less than 65ft. Consultations with industry generally indicated a somewhat scarcer flatfish resource in 1995.

Resource Status

Stock status evaluations were based on commercial landings and size composition, the commercial catch rates for combined flounders, and survey abundance indices and size composition by species.

Commercial length frequencies for all three commercially important species have indicated a shift toward smaller fish in the 1990s.

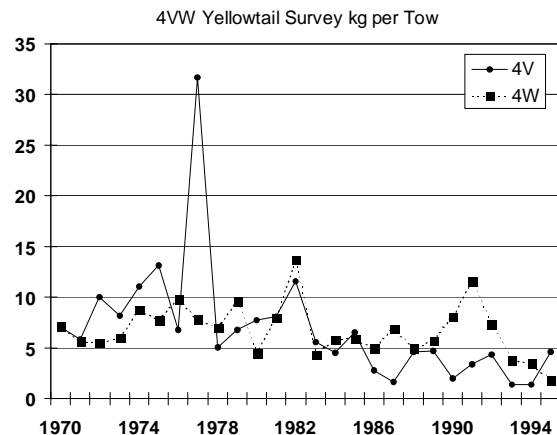
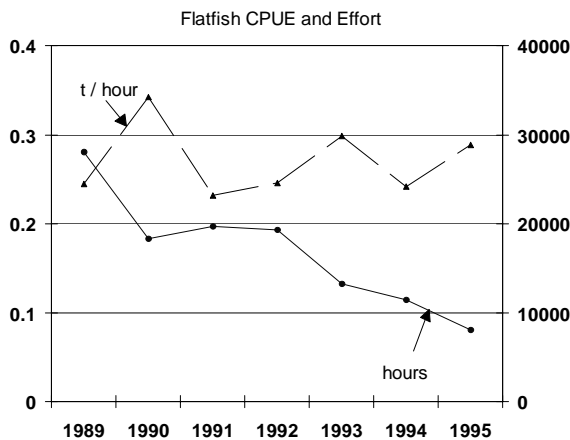




Commercial catch rates for flounders for the less than 65ft mobile gear have generally remained stable over the last seven years, but declined in 1994, and increased in 1995. Because of reported changes in fishing practices, it is difficult to interpret the trends in effective fishing effort. However, effort dropped in 1992 likely due to the virtual absence of the fleet greater than 65ft from the flounder fishery, and has since declined in the fleet less than 65ft. Catch rates for witch flounder have remained relatively stable, even though landings and hours fished have declined.

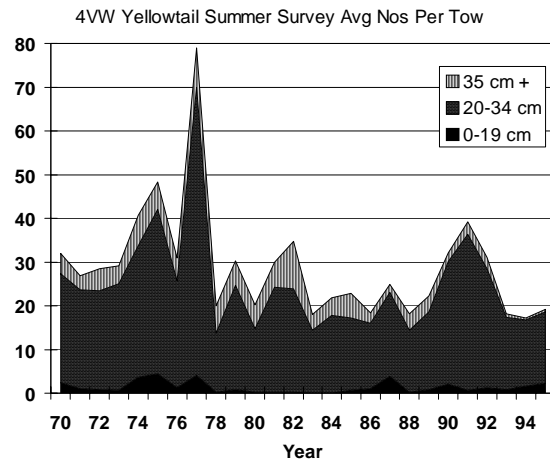
Yellowtail

Survey abundance estimates of yellowtail in 4V have declined since the late 1970s. The population has been composed of older fish, almost all in the size range exploited by the commercial fishery. Both weight and number per tow in 4W have been decreasing since 1991. Here, yellowtail have usually been smaller and more abundant and generally not of commercial size. Tagging results indicate some movement between the two areas, mainly from 4W to 4V.

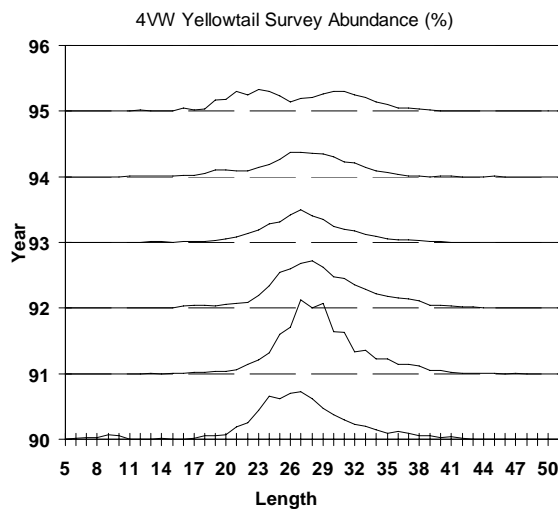


Survey length frequency distributions of yellowtail in 4V indicate a similar shift to a

smaller size as seen in the commercial length frequencies. Although the stock area includes both 4V and 4W, the entire fishery takes place in 4V. Length frequencies for 4VW reflect the generally higher abundance and smaller size of the yellowtail in 4W. The 1995 length frequencies show two peaks due to a large set of very small fish caught in 4V during the summer survey and the decreased abundance in 4W. The peak length observed in the 4V portion of the survey declined from about 35cm in 1990, and is currently close to the minimum market size of 30cm. In spite of the one set containing large numbers of small fish taken in the 1995 survey, recruitment in 4V continues to be poor for 1995. Spring survey length frequencies did not show evidence of small fish.

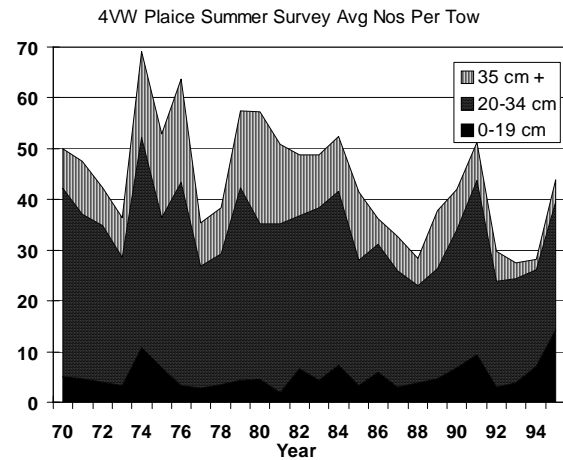
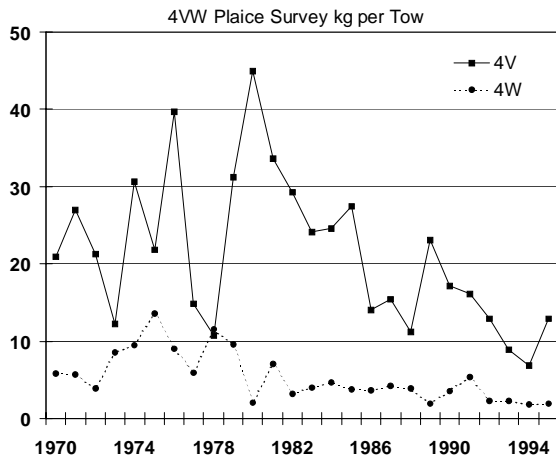


In summary, average numbers and weights per tow of yellowtail in 4V, have declined since the early 1980s and now appear to be at a very low level. The population in 4V generally is composed of older fish while historically in 4W, yellowtail have been smaller, more abundance and not of commercial size. There is little evidence of incoming recruitment in 4V. The indices for 4W had been more stable than that for 4V, however notable declines occurred after 1992 and continued through to 1995. The modal length for both the survey and the commercial fishery has decreased in 4V and is now very close to the minimum market size. Overall abundance for the 4VW area is down.



American Plaice

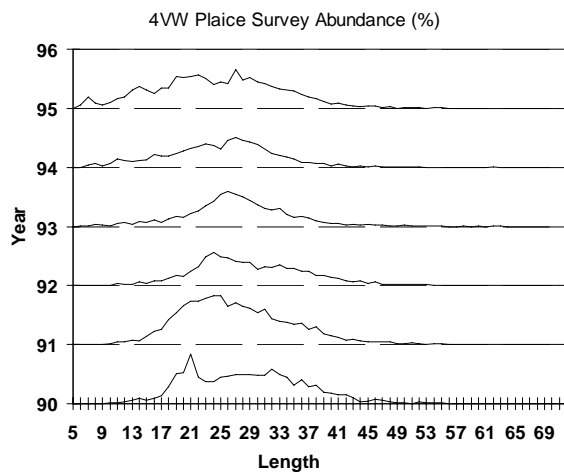
American plaice survey average numbers and weight per tow in 1995 increased in 4V while remaining stable in 4W. Survey abundance indices for 4V are substantially higher than for 4W but show the greatest decline in recent years, particularly in terms of weight per tow. Overall average weight per tow is well below the long-term mean and number per tow is at about the 1970-1994 average.



Survey length frequency distributions in 4VW indicate that there are fewer fish greater than 40 cm in the survey in recent years. Numbers of small fish observed in the summer survey have increased since 1992 and are currently at historic high levels for the series. Spring research vessel survey length frequencies do not support the observation that incoming recruitment has been average or better.

It should be noted that the commercial fishery takes most of its catch at lengths considerably larger than those generally observed in the survey.

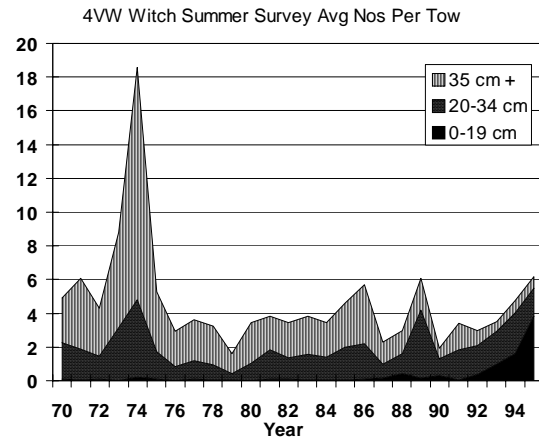
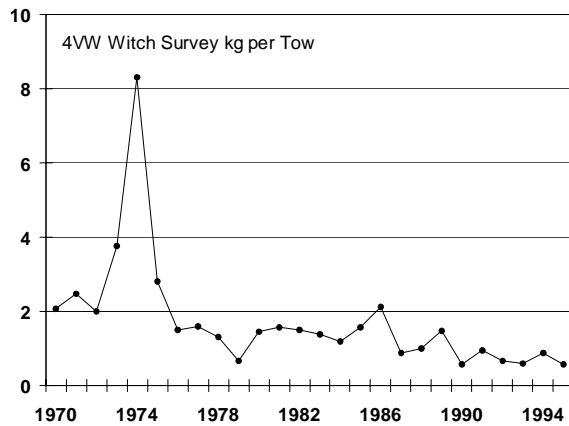
In summary, the plaice resource is at a depleted state with average weight per tow in 4V declining since 1980. Numbers per tow remained at about the long-term average, while higher numbers of less than 20cm fish suggest incoming recruitment. Both the survey and commercial fishery indicated fewer large fish than in the past. In spite of the signs of potential recruitment, the absence of larger fish nonetheless causes concern about declining biomass.



Witch Flounder

Witch flounder **survey average weight per tow** has declined gradually since the early 1970s. Average numbers have been relatively stable with large numbers of small witch (less than 20cm) observed in recent years, particularly in the 1995 survey. In the past, small witch flounder were virtually absent in the survey catches, but since the late 1980s have been caught in increasingly large numbers. The presence of small witch in recent surveys may be related to changes in distribution or to a change in abundance.

Survey catches of witch occur mostly in the 4Vn and Gully areas.

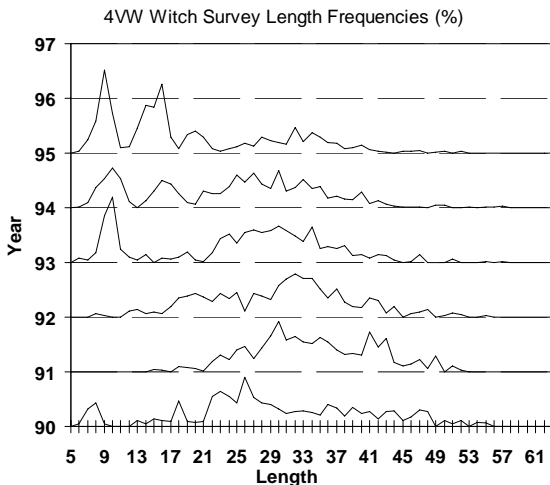


Witch flounder survey **length frequencies** indicate a trend toward smaller fish in the latter half of the survey series, with commercial sized fish declining in abundance. In recent years, the survey appears to be picking up more <20cm witch than in the past with three apparently good year-classes, although these will not recruit to the fishery until at least 1998.

In summary, witch flounder average weight per tow has shown a slow decline over time. Survey length frequencies indicate potential for improved recruitment although there are few large fish in the population.

Winter Flounder

For winter flounder, the entire survey biomass is found in 4W with a large portion contained within the closed area. Coastal populations of winter flounder are not sampled by the survey. The survey numbers and weights per tow have been increasing since 1983 and abundance remains relatively high. Winter flounder is not fished commercially in 4VW.



Outlook

In the last few years, all commercially exploited flatfish have shown a declining biomass, and an absence of larger fish in both the survey and the commercial fishery. In 4V, particularly Banquereau Bank, these signs are most evident. This is especially true for yellowtail where even recruitment prospects appear to be poor. Aside from some modest to good recruitment potential for the other species, resource status appears to have deteriorated over the last few years and is unlikely to improve substantially in the near future. Stable

catch rates for flatfish coincident with the overall smaller size would indicate that the fishery is killing more fish to maintain the same catch in weight. The absence of complete catch information by species limits our ability to assess stock status and evaluate the possible consequences of various levels of fishing. What indicators there are suggest a decline in the resource. The appearance of more small fish in the catches, even with the introduction of larger mesh sizes, may result in increased discarding. It is noteworthy however, that the 4W component of the populations also showed some decline in abundance even in the absence of any significant level of fishing. This suggests that the declines observed in 4V may not be entirely related to fishing.

The 1995 TAC was set at 4,125t, a substantial reduction from the 1994 level of 5,500t. With the present fleet allocations, this reduced TAC resulted in catches in the 2,300t range. Except for the improved recruitment possibilities, the reduced catch did not result in any apparent improvement in stock status. The reduction in size range may be an important factor, suggesting that removals may still be too high and any recruitment may be quickly taken.

The reduction of the TAC in 1996 to 3,500t under current allocations will be very restrictive to the fleet less than 65ft, and unless fleet utilizations, through the use of the Temporary Vessel Replacement Plan (TVRP) increase, should result in catches in the 2,000t range for 1996. However, it should be noted that both catch and effort could increase in 1996 if fleet allocations are taken through the TVRP. Catch, at or above the 1996 level, would not likely promote recovery of this resource. As stated in previous evaluations, stock rebuilding can only take place if effort is kept at a very low level. Given the continuing declines in flatfish biomass, effort levels to allow rebuilding are below the levels applied in

recent years. Furthermore, there may be serious damage to incoming recruitment if capture, particularly capture and discarding, of small flatfish occurs in 1997.

For More Information

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