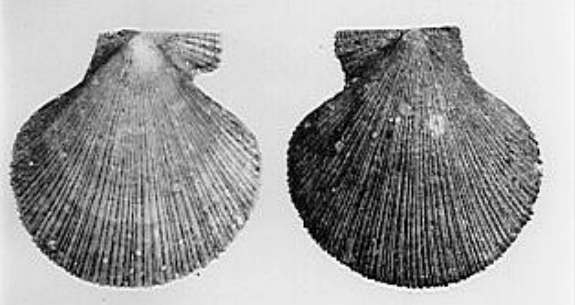

Iceland Scallop in Newfoundland and Labrador

Background

The Iceland scallop is widely distributed within the sub-arctic. In Newfoundland, populations are normally found in waters from 30-100 fms, usually on hard bottom with variable substrate composition, consisting largely of sand, gravel, shell fragments, and stones. Commercial aggregations are found in the Strait of Belle Isle (NAFO Div. 4R), St. Pierre Bank, Grand Bank (Div. 3LN), and off the Labrador (Div.2HJ). The directed fishery for the species in Newfoundland began in the Strait of Belle Isle in 1969, but later expanded onto St. Pierre Bank and the Grand Banks. Aggregations within each area are now regulated by catch levels and by seasons. Cumulative removals from Newfoundland and Labrador have declined significantly and are now only about one-quarter of what it was in 1996. In part this is due to the greater relative availability of other species, notably crab and shrimp, but also due to declines in scallop abundance throughout the areas once supporting lucrative fisheries.

The Iceland scallop resource in 4R is updated from a research survey in 2000. For other aggregations, only fishery performance is summarized.

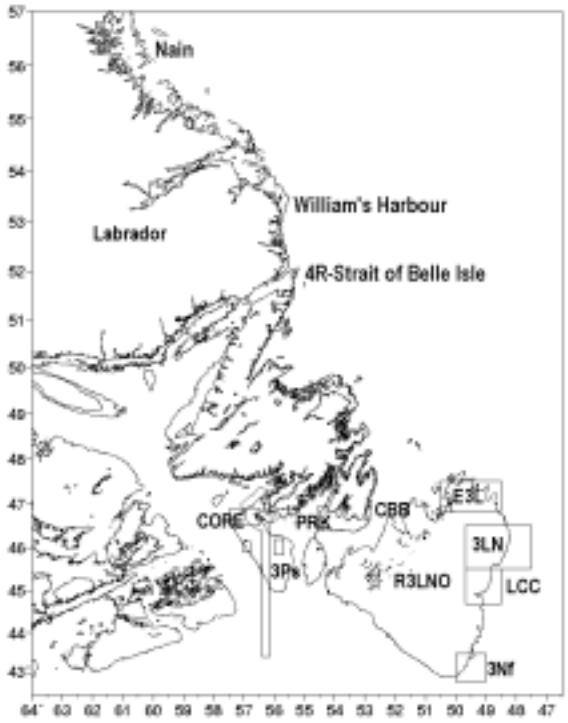

Fig. 1. Iceland scallop aggregations in Newfoundland.

Summary

- In 2000, the scallop fishery was in the final year of a three-year (1998-2000) Management Plan.
- The catch, estimated at 2,647 t was down 12% from the previous year making it the fourth consecutive year of decline. Overall catches represent only 22% of the total TAC.
- As in 1999, effort diversion primarily into crab and shrimp, together with declining availability of scallop, has resulted in catches short of the limits. The nominal catch now is only about one-quarter of the 11,266 t peak in 1996.

NAFO Divisions 3LNO

- Eight vessels participated in the scallop fishery in 2000, up from six in 1999 but still well below the 21 recorded in 1998.

- Overall, only 5% (335t out of 6,800 t) of the available TAC for Divisions 3LNO was taken.

- The majority came from aggregations around the Lily Canyon and Carson Canyon. Catch rate dropped 8% from 1999 (68 kg/tow vs. 74 kg/tow), down 31% from 98 kg/tow when aggregations were first discovered.

NAFO Subdivision 3Ps (Canadian Zone)

Iceland scallop

- Total catch in 2000 was similar to that estimated for the area in 1999 (1,134 t vs. 1, 188 t), and represents only 32% of the 3,500 t TAC available for the entire area.

- In 2000, the number of vessels participating remained unchanged from 1999 (35 vs. 34).

- Most (676 t or 60%) of the catch was taken from offshore aggregations.

- As in 1999, near-shore aggregations in the Perch Rocks area accounted for the remaining 40% (458 t) of overall removals. Catch rates remained unchanged from the previous year (34 kg/tow vs. 35 kg/tow), but are well below those estimated (50 kg/tow) when aggregations here were first exploited.

Sea scallop

- In 2000, after a two-year hiatus, the Maritimes-based offshore fleet returned to St. Pierre Bank. Approximately 34 t was taken.

Canada-France Trans-boundary Area of Subdivision 3Ps

- Neither Canada nor France has fished these aggregations for Iceland scallop since 1998.

NAFO Division 4R (Strait of Belle Isle)

- The catch limit for 2000 had been set at 1,100 t, split 40:60 with the lesser amount to be taken south of 51^{o} 25'N where fishing effort and removals are believed to have been generally higher than north of it.

- The nominal catch in 2000 is estimated at 1,073 t with 663 t (or 62%) coming from the northern area.

- Only 32 vessels participated, down from 42 the previous year. This is the smallest number of vessels prosecuting the fishery in nearly a decade.

- Catch rate for the entire area in 2000 dropped 11% from the 1999 estimate (26.6 kg/tow vs. 29.9 kg/tow), the second consecutive year of decline.

- Number of days-at-sea in 2000 increased by 24% from the previous year (1458 vs. 1177) while the catch per day decreased by 17% to 736 kg/day from 889 kg/day.

- Recruitment indices in 4R are down. Two sources of information (research and observer) again indicated little incoming recruitment. Aggregations

consist almost entirely of large (old) scallop with little potential for further growth.

Labrador

- There is no scientific information for this fishery.
- Total landings from aggregations off Labrador were down sharply from 1999 (105 t vs. 644 t or 84 %), the second consecutive year of decline.
- The catch in 2000 came exclusively from the Nain area.

The Fishery

NAFO Divisions 3LNO

Lilly Canyon, Carson Canyon and Cape Ballard Bank - In 2000, only eight vessels participated in the fishery on the Grand Bank, up from six the previous year but well below the 21 vessels recorded in 1998. Although total catches in 2000 were up (335 t vs. 138 t), they were well short of the 9,454 t recorded in 1996. As in previous years, the majority of the catch came from aggregations around the Lilly Canyon and Carson Canyon (NAFO Div. 3N). Only 33% (295 t out of 900 t) of the catch limit for the three aggregations was taken. Catch rate dropped 8% from 1999 (68 kg/tow vs. 74 kg/tow), down 31% from 98 kg/tow when aggregations here were first harvested in 1995. The remainder of the catch was taken from aggregations closer to shore on Cape Ballard Bank where the catch increased to 35 t from 4 t in 1999. Only 7% of the catch limit (or 35 out of 500 t) was taken. Average meat count in 2000 was up slightly (42/lb vs. 39/lb).

3Nf - No activity. Catch limit 400 t.

3LN - No activity. Catch limit 1,500 t.

Eastern 3L - No activity. Catch limit 1,000 t.

Remainder of 3LNO - Only 5 t out of the 2,500 t catch limit available was taken.

NAFO Subdivision 3Ps (St. Pierre Bank)

Iceland scallop

Scallop aggregations here were first exploited in 1989. Landings peaked in 1997 (5,245 t) but have since declined. In 2000, only 32% of the overall catch limit (1,134 t out of 3, 500 t) was taken, similar to the catch in 1999 (1,188 t). In 2000, the number of vessels participating remained unchanged (35 vs. 34), but well below the 171 recorded in 1996. As in 1999, many vessels that previously fished scallops remained in the crab and shrimp fisheries.

Exploitation of scallop aggregations off Perch Rocks commenced in the early 1990's. A dramatic increase in effort (695 fishing days) was evident in 1997. Both catch and effort have since declined. In 2000, only 259 days were expended and 65% of the catch limit (458 t out of 700 t) was taken. The majority of the catch (373 t or 81%) came from small vessels (< 45ft. L.O.A). Catch rates here have fallen to their lowest level (34 kg/tow) since 1997 (52 kg/tow), however, proximity to shore provides an incentive to harvest these beds preferentially to those located offshore. On average, individual meat weight was higher in 2000 than in the previous year resulting in significantly lower counts (35/lb vs.42/lb).

Management Areas 10 and 11, each under a 1000 t catch limit in 2000, yielded a further 657 t. Both Eastern St. Pierre Bank and Western St. Pierre Bank contributed little to

the overall removals from this area in 2000. Some sea scallop caught both offshore and in Placentia Bay may be included in the landings, as there was no attempt made dockside to distinguish them.

Sea scallop

The Maritimes-based offshore sea scallop fleet returned to St. Pierre Bank in 2000 after a two-year absence. Approximately 34 t was taken.

Catch rate was higher than in 1997 when the offshore vessels last fished the Bank (30.8kg/hr vs. 20.7 kg/hr (meats)).

In the absence of new biological information, a pre-emptive TAC of 415 t has been in place for the sea scallop since 1996. Newfoundland-based vessels fishing for Iceland scallop sometimes catch and retain sea scallop. Regulations currently permit a 10% bycatch of sea scallop. As scallops are shucked at sea and only "meats" landed, species discrimination for monitoring purposes is fraught with difficulty.

Canada/France Trans-boundary Area

There was no directed activity for the Iceland scallop in the core-area (SW of St. Pierre) over the past three years.

NAFO Division 4R (Strait of Belle Isle)

With the exception of a 4-year hiatus (1975-78), the fishery here has persisted since 1969. It is the main scallop fishery in Newfoundland and Labrador. The number of active licenses has ranged from a high of 107 (1985) to a low of 11 (1980). Only 32 vessels participated in the fishery in 2000. This is the smallest number of vessels that remained active in this fishery in nearly a decade.

Scallop beds here are considered to be a single stock for assessment purposes. The fishery is regulated by TAC, weekly catch limits and distribution of removals by area. Even though the catch limit of 1,100 t is for the entire area, the fleet typically converges on high-density aggregations. Vessels here make daily excursions and land a fresh product. In 2000, nearly all (99.7%) scallops were shucked at sea.

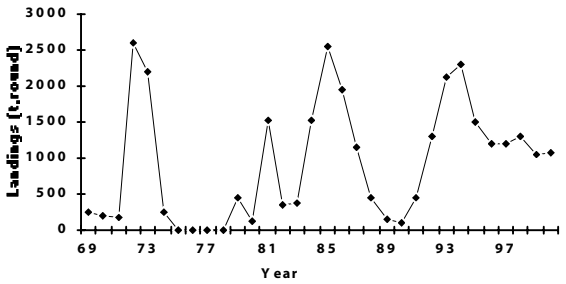

Fig. 2. Nominal catch of Iceland scallop from the Strait of Belle Isle, 1969-00.

Days-at-sea in 2000 increased 24% from 1999 (1458 days vs. 1177) while the catch/day decreased 17% to 736 kg/day from 889 kg/day. Whereas it took 2-3 days to reach a weekly catch limit of 800 lb of meats in 1999, fishers frequently required 5-6 days in 2000 and there were weeks when they could not even reach that limit. This reflects increased steaming and searching time.

Catch rate in terms of kg/tow was down 11% from 1999 (26.6 kg/tow vs. 29.9 kg/tow), making it the second consecutive year of decline greater than 10%.

Aggregations to the south have been particularly hard hit throughout the 1990's with removals sometimes, as in 1997, exceeding 90% of the total. An attempt was made in 1999 to re-distribute some of this effort to the north. With management of the resource increasingly being shared with

stakeholders, it was agreed in 1999 to partition the removals equally between north and south of 51^{o} 25'N. Unfortunately, this did not occur in 1999. The proposed strategy was re-visited in 2000, resulting in the TAC being partitioned 40:60 (or 440:660 t) in part to redress the delayed implementation. In 2000, it is estimated that 663 t was taken north of the line vs. 410 t to the south.

Also, in consultation with stakeholders, a corridor 5 mi. wide across the Strait of Belle Isle has been established where scalloping will be prohibited, possibly for a 10-year period. Encompassing approximately 106.5 n.mi.^{2} out of 1635.5 n. mi. ^{2} (or 6.5%) of Fishing Area 14A, the "refugium" is intended to provide an opportunity to examine if settlement and recruitment would be facilitated in the absence of fishing. This closure will also assist scientists in evaluating the extent to which a "pulse" fishing strategy might be incorporated into a management plan for Iceland scallop to achieve long-term sustainability.

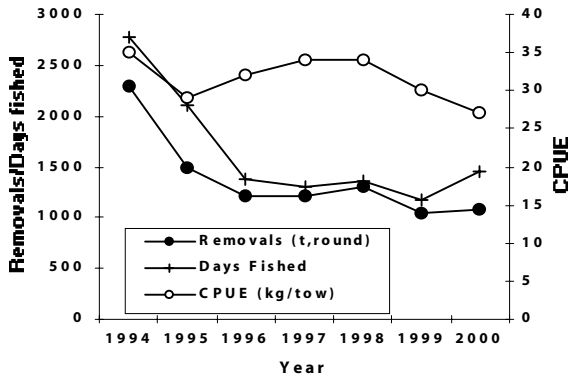

Fig. 3. Removals by year, effort and CPUEs for Strait of Belle Isle

The prolonged absence of pre-recruits has been a recurrent concern in this fishery. Research and at-sea observer coverage in 2000 again indicated that size composition of scallop here has remained unchanged for five consecutive years. A research survey in 2000 estimated that pre-recruits contributed less than 0.5% of the total numbers caught, and only 0.1% of the weight. Aggregations here now consist predominantly of large (old) scallops with little potential for further growth. A third (34%) of all scallops examined from this area in 1999 and 2000 (N= 3278) carried supernumerary "shock" or "stress" rings, a feature most likely attributable to sub-lethal past encounters with fishing gear. This suggests high fishing intensity.

A third attempt was made jointly by DFO, Department of Fisheries and Aquaculture and the Fish, Food and Allied Workers Union (FFAW) to deploy spat collectors to determine reproductive success of Iceland scallop in 4R. Area fishers have been unable to locate the collectors at the end of the fishing season.

Resource Status for 4R

Resource status is updated based on a research survey in 2000. Using improved estimates of availability of suitable bottom types for the presence of scallop and an efficiency-corrected (20%) swept area methodology, the fishable biomass is now estimated in the range of 7,000-10,600 t, with a mean of 8,800 t, round. A catch level based on 10% of the mean biomass would be 880 t, round.

Outlook and Overall Management Perspectives

As pointed out in the previous stock status report, pre-emptive catch limits and exploitation rates for the Iceland scallop in Newfoundland and Labrador have generally been high. This precludes a sustained fishery, which is achievable on this species only with low annual yields. There currently is sufficient latent effort to further deplete the residual resource base and to quickly

deplete any new aggregations that may be discovered. However, after years of expansion on the Grand Bank and St. Pierre Bank, prospects for locating new aggregations are diminished. The kind of short-term, high-yield "pulse" fishing, which has been the normal pattern of exploitation, is not likely to be possible for any of the known aggregations throughout these areas over the near term. Short-term economic considerations will likely continue to provide the basis for harvesting the resource.

Although the fishery in 4R appears to have been relatively stable in recent years, it continues to slowly deplete a standing stock. In the prolonged absence of significant recruitment, it is unlikely that strong year-classes will become available to the fishery during the next several years.

For more information

Contact: K. S. Naidu
Fisheries and Oceans Canada
P. O. Box 5667
St. John's, NF A1C 5X1
Tel: (709)-772-2091
Fax: (709)-772-4105
e-mail: naidu@dfo-mpo.gc.ca

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Naidu, K.S., F.M. Cahill and E.M. Seward. 2001. The Scallop Fishery in Newfoundland and Labrador Becomes Beleaguered. CSAS Res. Doc. 2001/064.

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Newfoundland Region
Science, Oceans and Environment Branch
Fisheries and Oceans Canada
P.O. Box 5667
St. John's NF A1C 5X1
Phone Number (709) 772-2027/8892
Fax Number (709) 772-6100
e-mail address parmiterd@dfo-mpo.gc.ca
Internet address
http:/www.dfo-mpo.gc.ca/csas

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