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Rationale for partition of capelin quota in Subareas 2 and 3<sup>1</sup>

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At the 1973 Annual Meeting of ICNAF a recommendation by the Assessments Subcommittee that the development of the capelin resource in subareas 2 and 3 be controlled at a rate consistent with the assessment of its potential was agreed to by the Commission and, with this perspective in mind, a TAC of 250,000 m. tons was imposed for 1974. Although recognizing that there was at least a partial separation of the capelin in the southeast shoal area (3N) from those farther north, the Subcommittee did not recommend a division of the capelin quota, mainly because of the lack of definitive stock discrimination evidence. However, such a situation could be potentially adverse to the effective management of the capelin resource in subareas 2 and 3 if, because of such factors as availability, accessibility, or conducive fishing conditions, effort is diverted to a specific area or stock. A prime example of such a stock exists on the southeast shoal area of Grand Bank where large schools of capelin concentrate in shallow water to spawn in June and July. In 1973 for instance Norwegian vessels entered this area for the first time and caught an estimated 45,000 m. tons, more than double the total catch by all countries concerned in that area during 1972. The possibility exists, therefore, that in 1974 the bulk of the 250,000 m. ton quota will be taken from the southeast shoal spawning stock. This can be prevented by subdividing the TAC amongst the various stocks according to the best evidence available. This document therefore reviews the stock separation data available and suggests a representative division of the capelin quota.

On the basis of seasonal distributions and probable migration patterns Campbell and Winters (MS 1973) suggest that the capelin resource in subareas 2 and 3 can be broken down into the following stocks: (1) Labrador-Northeast Newfoundland stock (2) Northern Grand Bank-Avalon stock (3) Southeast Shoal stock (4) St. Pierre Bank-Green Bank stock. The main evidence for the Labrador-Northeast Newfoundland (2J-3K) stock was derived from Soviet surveys of the area from September-December 1972 (Kovalyov and Kirin, MS 1973) which indicated that the Hamilton Bank capelin migrated southwards during the autumn to overwinter in the Notre Dame Bay area of Newfoundland between 50°00'-51°00'N and 52°30'-54°00'W. However, more recent data from growth comparisons of Notre Dame Bay capelin with those from inshore Labrador (Winters, this Meeting) suggest that the two areas have different stocks. However, it is possible that capelin from those areas intermingle in the northern areas during the summer feeding season.

The Northern Grand Bank-Avalon stock division is based mainly on inferences from cod migrations. Templeman and Fleming (1962) report that cod tagged on the northwestern part of Grand Bank in early June were feeding heavily on capelin. These tagged cod were subsequently recaptured in late June on the Avalon Peninsula during the capelin spawning season in that area and since capelin are the exclusive food of cod at this time it seems likely that the cod had pursued the capelin to shore.

<sup>1</sup> Presented to the Special Commission Meeting, FAO, Rome, January 1974, as Res.Doc. 74/12.

The southeast shoal capelin are undoubtedly a separate stock since spawning occurs there at the same time as inshore beach-spawning in 3Ps and 3L. Kovalyov (MS 1972) reports that the survivors of spawning migrate from the southeast shoal area to the northern part of the bank and Canadian research vessel surveys substantiate this (Campbell and Winters, MS 1973). In addition Soviet vessels located concentrations of overwintering capelin in deep water along the northern and northwestern edge of Grand Bank during February-March 1972 (Kovalyov and Kudrin, MS 1973). At the same time capelin were also present in the Avalon Channel area. In May and June the same Soviet vessels reported an intensive migration of capelin southwards towards the tail of Grand Bank where spawning concentrations were observed in June. Norwegian surveys indicate a similar migration pattern (Dragesund and Monstad, MS 1973). It would therefore appear that the southeast shoal spawning stock probably mix with the Avalon-Northern Grand Bank stock during the overwintering and post-spawning seasons.

The St. Pierre-Green Bank stock division is based mainly on Norwegian research vessel surveys (Dragesund and Monstad, MS 1973) which indicated that concentrations of mature capelin in the Green Bank area (northern portion of 30) in May were not recorded there in June and presumably had moved westwards to spawn either on St. Pierre Bank or inshore in 3Ps. Quite possibly, they may also have moved southeastwards to join the spawning concentrations in the southeast shoal area.

In summary, it is concluded on the basis of the tentative stock divisions that (1) the Labrador and Northeast Newfoundland capelin comprise different stocks with different growth characteristics but which possibly intermingle offshore in 2J; (2) the southeast shoal and the Avalon Peninsula stocks mix during the overwintering and feeding periods on the northern edges of Grand Bank; (3) the St. Pierre-Green Bank stock may contribute to the southeast shoal spawning population. Therefore, in order to take into consideration possible stock interrelationships a minimum stock division would include the 3LNO and 3Ps areas as one stock complex and the 2J-3K areas as another stock complex. Allocation of quotas to these respective areas can be achieved on the basis of relative stock sizes for which approximate estimates are available. Campbell and Winters (MS 1973) have estimated the total capelin resource in subareas 2-3 to range from 2.2-3.7 million m. tons (mean = 2.5 million m. tons). The 3LNO and 3Ps stock complex has been estimated from acoustic surveys (Dragesund and Monstad, MS 1973) to be around 0.8 million m. tons or roughly one-third of the total resource. This implies a quota of about 80,000 m. tons for 3LNO and 3Ps and 170,000 m. tons for the 2J-3K stock complex.

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