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The Catch Statistics of the Shrimp Fishery (*Pandalus borealis*)  
in the Denmark Strait in the Years 1980-1997

by

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#### Abstract

In this paper detailed data on the catch, effort and CPUE from the shrimp fishery in the Denmark Strait for all countries in the years 1989 to 1997 are shown. Total effort and mean CPUE of all countries combined has been calculated using the figures for nominal catch for every country going as far back as 1980.

It is considered here that the shrimp stock is the same on both sides of the midline between Iceland and Greenland in the so-called north and east area. The so-called south area may represent a different stock so the data coming from those will be kept separate from the north at present.

The catch rates in the traditional north and east area were low in the years 1989 through 1993, namely from 89 to 109 kg. The catch rate then increased to 155 kg in 1994 and has since decreased to 106 kg in 1996 and increased again to 163 kg. This coincided with the effort being directed more to the new area south of 65°N.

The nominal catch has in recent years decreased a great deal and was only some 3 400 tons in 1996 in the north area, but 6 200 tons in the southern area. The preliminary figures for 1997 (January-October) indicate that the total catch in the north will increase a little from the 1996 value.

#### Introduction

Shrimp in fishable concentrations in the Denmark Strait area was first found in September 1976 but a fishery was first commenced in 1978 by Iceland and a year later the Norwegians started fishing in the area as well, and by 1980, Greenland, Denmark, Faroe Islands and France joined in. From then on the fishery was carried out by all these 6 countries. However France has not been fishing since 1991. The fishery in the southern areas started in 1993 after the search of Lehmann (1990) and by the opening of the redfish box in 1993 which lies near the so-called middle area (Fig. 1).

In this paper all data available on the catch, effort and the CPUE, are gathered by month for all countries and strata within each area and then combined for the years 1989-1996. Similar proceedings have been carried out for the previous years 1980-1989 (Skúladóttir, 1991).

Throughout the paper the data are separated into north of 65°N and south of 65°N respectively.

#### Material and Methods

For most of the catch there are logbook data which include catch and effort. The individual authors have also calculated the CPUE by dividing the catch per month (in kg) by the corresponding effort (in trawling hours). In order to assess the overall CPUE per every half year, all the effort in the period January to June was summed. Then only the catches that correspond to stated effort are summed by every half year. The subtotal sum of the catch is divided by the subtotal sum of effort to get the CPUE per every half year. In order to assess the total effort exerted by each country in the area, the nominal catch per month is summed by every half year. The nominal catch is often higher than

the catch reported in logbooks. Therefore the effort was corrected by every half year by dividing the nominal total catch by the CPUE of the same half year. The effort that is proportional to the nominal catch is calculated by dividing the nominal catch by the CPUE of the same period. It has been assumed here that the gear and the efficiency of all vessels of a country is more like that of the ones not reporting of the same country than that of other countries. Therefore the effort was first corrected by individual countries.

### Results and Discussion

The effort, catch and nominal catch as well as the calculated CPUE are presented in tables 1 to 6 for the six countries for the north area, including the east area which is only fished by Iceland (Table 4) namely north of 65°N. The data for the middle and south areas combined, namely south of 65°N, are presented in tables 8 - 11.

For the first years the CPUE and effort was taken from the NAFO Scientific Council Reports 1980 and 1983 (Skúladóttir 1991). Later the CPUE and effort data were obtained from the scientists of the respective countries. For Norway, the data come from Smedstad and Torheim (1992) and after that from Godø (personal communication). For France the data come from Bertrand, Battaglia and Poulard (personal communication). The nominal catch data were obtained from Carlsson and Kannevorff (1992) and now from Hvingel et al (1997).

Table 7 which has data for the north area for all countries by half years goes back to 1978. From table 7 it is notable that there is considerable variation in the CPUE of the different countries. This could be due to different gear sizes and the difference in power of the respective vessels. For the Icelandic vessels it is known that gear size was about 2400 meshes (circumference) for many years, but increased in 1993 to about 2700 meshes. The mean size of trawl has gone down again for 1994 and 1995, being some 2100 and 2300 meshes respectively. In 1996 the mean size of Icelandic trawls increased to 3120 meshes and to 3200 meshes in 1997.

In most years catch rate is highest in the first 6 months of the year or more accurately in the period February through April. However a second peak in catch rates can occur late in the year. Twin trawls were accounted for by doubling the effort where twin trawls are being used.

The yearly catch rate is calculated in table 12 where the half years are added together. The CPUEs have been falling gradually since the years 1980 and 1981 or from 245 kg per hour to 90 kg in 1991. In spite of doubling the effort there was little gain in addition to the 11 thousand tons fished in 1986. However by 1993 the effort has decreased considerably or from 108 thous. hours in 1989 to some 40 thous. hours in 1993. In 1994 there is the most dramatic drop in effort or down to some 15 thous. hours. The catch in the traditional area has gone down drastically as well at the same time as the new southern areas came into use. The CPUE has now increased to 155 kg in 1994 in the traditional area, but has fallen to 106 kg in 1996 in spite of little effort in the past 3 years.

Table 13 contains the logbook data gathered together for the four countries for the so-called south area, marked middle and south area on Fig. 1. These are combined from 1993 through 1997. Apart from the huge CPUE that the Faroe Islands and Greenland report in the second half of 1993, 1895 and 1138 kg per trawling hour respectively with only little effort spent, the CPUEs are not much higher than they were in the beginning of the eighties in the traditional north area as average annual CPUE. The mean CPUE was 158 kg in 1993 increasing after that to 307 kg in 1996 to remain high or 293 kg in 1997 (table 14).

The total catch is listed in Table 15 as well as advised TAC by the Scientific Council of NAFO, by years. Through the years the effective TAC by Greenlandic authorities has usually been moderate and similar to the advised TAC. However from the year 1990 onwards the effective TACs have been far too high. Those unrealistic TACs of some 13 000 to 14 500 tons have never been reached in Denmark Strait not even counting the Icelandic catch east of the midline which is not included in the TAC set by Greenland. In the north area the yearly catch has been gradually falling as the new areas south of 65° N seemed more attractive. The total catch was 5 000-6 400 tons in the traditional area in 1993-1995 as compared to 7 500 tons in 1992. The catch in the north area has decreased much in year 1996, namely to about 3 400 tons. In the southern areas the catch increased from 1 200 in 1993 to 6 200 in 1996. In 1995 there appears to be a slightly increased fishery in the north area. The catch in the east area (Icelandic side of the midline) in 1997 is the highest ever as availability in 1997 was high and ice conditions were moderate.

The catch in the whole area (north and south) increased when the new areas in south were discovered and increased from the level of 7 500 and 7 600 of the years 1992 and 1993 to altogether 9 800 tons in 1994, 9 500 tons in 1995 and 9 600 tons in 1996. The provisional catch for 1997, the months January-September is 6 200 tons.

#### Conclusion

The stock in the traditional north area of Denmark Strait appears to have reached the stage in 1995 where stock level has reached a higher stable level than in the years 1989 to 1993 as judged by CPUE although not as high as that of the early eighties. The reduced annual removals from the shrimp stock in the north area of Denmark Strait appear to have had a beneficial influence on the state of stock when looking at the CPUE of 1997. The CPUE of 1996 is however quite low and cannot be easily explained. It is not certain if a connection exists between the northern and the southern areas to allow for a migration of part of the stock to the south in recent years, but concentrations in the south do not seem to be diminishing at present.

#### References:

Carlsson, D. M., and P. Kannevorff. 1992. The commercial shrimp fishery in Denmark Strait in 1991 and early 1992. NAFO SCR Doc. No. 64, Ser. No. N2118. 26p.

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Skúladóttir, U. 1991. The catch statistics of the shrimp fishery (*Pandalus borealis*) in the Denmark Strait, in the years 1978-1990. NAFO SCR Doc. No 58. No N1942 16p.

1996. The catch statistics of the shrimp fishery (*Pandalus borealis*) in the Denmark Strait, in the years 1980-1996. NAFO SCR Doc. 96/107, Ser. No N2804 17p.

Table 1. North area. Catch rates (kg per hour) effort (hours trawling) and corresponding catch (tons) from the shrimp fishery in Denmark Strait, in the traditional north area, i.e. north of 65° N, by Greenland in two periods of the year.

| Year     | January - June |      |        |        | July - December |      |        |       |
|----------|----------------|------|--------|--------|-----------------|------|--------|-------|
|          | Month          | Cpue | Effort | Catch  | Month           | Cpue | Effort | Catch |
| 1990     | Jan            | 139  | 8602   | 1196.8 | Jul             | 94   | 82     | 7.7   |
|          | Feb            | 185  | 8289   | 1533.1 | Aug             | 59   | 352    | 20.6  |
|          | Mar            | 143  | 8299   | 1186.1 | Sep             | 64   | 710    | 45.2  |
|          | Apr            | 473  | 1050   | 496.9  | Oct             | 58   | 1734   | 101.4 |
|          | May            | 455  | 2133   | 971.5  | Nov             | 65   | 2121   | 138.7 |
|          | Jun            | 45   | 116    | 5.2    | Dec             | 79   | 5160   | 408.5 |
|          | Subtotal       | 189  | 28489  | 5389.6 | Subtotal        | 71   | 10159  | 722.1 |
|          | Total          | 189  | 28956  | 5478.0 | Total           | 71   | 10298  | 732.0 |
| 1991     | Jan            | 142  | 6812   | 964.0  | Jul             | 0    | 38     | 0.0   |
|          | Feb            | 129  | 7205   | 926.0  | Aug             | 0    | 0      | 0.0   |
|          | Mar            | 101  | 6403   | 646.0  | Sep             | 74   | 404    | 30.0  |
|          | Apr            | 128  | 7700   | 987.0  | Oct             | 64   | 375    | 24.0  |
|          | May            | 85   | 5084   | 434.0  | Nov             | 91   | 505    | 46.0  |
|          | Jun            | 72   | 471    | 34.0   | Dec             | 106  | 897    | 95.0  |
|          | Subtotal       | 119  | 33675  | 3991.0 | Subtotal        | 88   | 2219   | 195   |
|          | Total          | 119  | 33582  | 3980.0 | Total           | 88   | 2560   | 225.0 |
| 1992     | Jan            | 94   | 3698   | 346.0  |                 |      |        |       |
|          | Feb            | 113  | 3802   | 431.0  |                 |      |        |       |
|          | Mar            | 123  | 5423   | 665.0  | Oct             | 35   | 143    | 5.0   |
|          | Apr            | 73   | 3682   | 268.0  | Nov             | 84   | 358    | 30.0  |
|          | May            | 101  | 1260   | 127.0  | Dec             | 104  | 1669   | 174.0 |
|          | Subtotal       | 103  | 17865  | 1837.0 | Subtotal        | 96   | 2170   | 209.0 |
|          | Total          | 103  | 17612  | 1811.0 | Total           | 96   | 2087   | 201.0 |
|          | 1993           | Jan  | 85     | 6216   | 528.0           |      |        |       |
| Feb      |                | 93   | 5066   | 469.0  |                 |      |        |       |
| Mar      |                | 120  | 2347   | 282.0  |                 |      |        |       |
| Apr      |                | 85   | 390    | 33.0   |                 |      |        |       |
| May      |                | 0    | 26     | 0.0    | Dec             | 176  | 95     | 16.7  |
| Subtotal |                | 93   | 14045  | 1312.0 | Subtotal        | 176  | 95     | 16.7  |
| Total    |                | 93   | 15073  | 1408.0 | Total           | 176  | 97     | 17.0  |
| 1994     |                | Jan  | 217    | 844    | 183.0           |      |        |       |
|          | Feb            | 172  | 3037   | 523.1  |                 |      |        |       |
|          | Mar            | 155  | 2194   | 339.6  |                 |      |        |       |
|          | Apr            | 37   | 76     | 2.8    |                 |      |        |       |
|          | May            |      | 2      | 0.0    |                 |      |        |       |
|          | Subtotal       | 170  | 6153   | 1048.5 |                 |      |        |       |
| Total    | 170            | 6197 | 1056.0 |        |                 |      |        |       |
| 1995     | Jan            | 262  | 3801   | 996.0  |                 |      |        |       |
|          | Feb            | 193  | 2691   | 518.1  |                 |      |        |       |
|          | Mar            | 174  | 1907   | 332.0  |                 |      |        |       |
|          | May            | 0    | 1      | 0.0    | Dec             | 54   | 964    | 52.1  |
|          | Subtotal       | 220  | 8400   | 1846.1 | Subtotal        | 54   | 964    | 52.1  |
|          | Total          | 220  | 8468   | 1861.0 | Total           | 54   | 964    | 52.1  |
| 1996     | Jan            | 86   | 1926   | 165.0  | July            | 0    | 9      | 0.0   |
|          | Feb            | 152  | 25     | 3.8    | Aug             | 0    | 6      | 0.0   |
|          |                |      |        |        | Dec             | 86   | 603    | 52.0  |
|          | Subtotal       | 87   | 1951   | 168.8  | Subtotal        | 84   | 618    | 52.0  |
|          | Total          | 87   | 1951   | 168.8  | Total           | 84   | 618    | 52.0  |
| 1997     | Jan            | 147  | 269    | 39.5   |                 |      |        |       |
|          | Feb            | 0    | 25     | 0.0    | Dec             | 0    | 0      | 0.0   |
|          | Subtotal       | 134  | 294    | 39.5   | Subtotal        | 0    | 0      | 0.0   |
|          | Total          | 134  | 294    | 39.5   | Total           | 0    | 0      | 0.0   |

Table 2. North area. Catch rates (kg per hour trawling) and corresponding effort (hours trawling) and catch (tons) from the shrimp fishery in Denmark Strait, by France in two periods of the year.

| Year | January - June |      |        |       | July - December |      |        |       |
|------|----------------|------|--------|-------|-----------------|------|--------|-------|
|      | Month          | CPUE | Effort | Catch | Month           | CPUE | Effort | Catch |
| 1987 | Apr            | 227  | 400    | 90.9  | Sep             |      |        | 94.0  |
|      | May            | 250  | 578    | 144.7 | Oct             |      |        | 59.0  |
|      |                |      |        |       | Nov             |      |        | 170.0 |
|      | Subtotal       | 241  | 978    | 235.6 | Subtotal        |      |        | 323.0 |
|      | Total          | 241  | 2599   | 626.0 | Total           |      |        | 405.0 |
| 1988 | Apr            | 147  | 462    | 68.1  | Aug             |      |        | 2.0   |
|      | May            | 136  | 473    | 64.2  | Sept            |      |        | 48.0  |
|      | Subtotal       | 141  | 935    | 132.3 |                 |      |        |       |
|      | Total          | 141  | 3138   | 444.0 | Total           |      |        | 50.0  |
| 1989 | Mar            | 203  | 247    | 50.2  | Jul             | 58   | 116    | 6.7   |
|      | Apr            | 192  | 907    | 174.2 | Aug             | 59   | 409    | 24.0  |
|      | May            | 23   | 23     | 0.5   |                 |      |        |       |
|      | Subtotal       | 191  | 1177   | 225   | Subtotal        | 58   | 525    | 30.7  |
|      | Total          | 191  | 1525   | 291.3 | Total           | 58   | 1536   | 89.8  |
| 1990 | Mar            | 126  | 172    | 23.3  |                 |      |        |       |
|      | Subtotal       | 126  | 172    | 23.3  |                 |      |        |       |
|      | Total          | 126  | 286    | 36.0  | Total           |      |        | 15.0  |
| 1991 | Feb            | 141  | 206    | 29.0  |                 |      |        |       |
|      | Mar            | 93   | 350    | 32.7  |                 |      |        |       |
|      | Apr            | 119  | 468    | 55.8  |                 |      |        |       |
|      | Subtotal       | 115  | 1024   | 117.5 |                 |      |        |       |
|      | Total          | 115  | 1024   | 117.5 |                 |      |        |       |

Table 3. North area. Catch rate (kg per hour trawling) and corresponding effort (hours trawling) and catch (tons) from the shrimp fishery in the north area of Denmark Strait, i.e. north of 65°N, by Norway.

| Year  | January - June |       |        |        | July - December |       |        |        |
|-------|----------------|-------|--------|--------|-----------------|-------|--------|--------|
|       | Month          | CPUE  | Effort | Catch  | Month           | CPUE  | Effort | Catch  |
| 1990  | Jan            | 77    | 1584.4 | 122    | July            | 38    | 368    | 14.0   |
|       | Feb            | 73    | 2424.7 | 177    | Aug             | 37    | 2162   | 80.0   |
|       | Mar            | 70    | 3914.3 | 274    | Sep             | 43    | 6465   | 278.0  |
|       | Apr            | 66    | 1848.5 | 122    | Oct             | 52    | 6077   | 316.0  |
|       | May            | 237   | 1898.7 | 450    | Nov             | 52    | 6981   | 363.0  |
|       |                |       |        |        | Dec             | 68    | 3500   | 238.0  |
|       | Subtotal       | 98    | 11671  | 1145   | Subtotal        | 50    | 25553  | 1289.0 |
| Total | 98             | 11982 | 1175.6 | Total  | 50              | 26247 | 1324.0 |        |
| 1991  | Jan            | 96    | 3197.9 | 307    | Aug             | 37    | 270    | 10.0   |
|       | Feb            | 70    | 4885.7 | 342    | Sep             | 49    | 1469   | 72.0   |
|       | Mar            | 58    | 4206.9 | 244    | Oct             | 45    | 4711   | 212.0  |
|       | Apr            | 76    | 5631.6 | 428    | Nov             | 55    | 6473   | 356.0  |
|       | May            | 48    | 5458.3 | 262    | Dec             | 78    | 3218   | 251.0  |
|       | June           | 47    | 234.04 | 11     |                 |       |        |        |
|       | Subtotal       | 68    | 23614  | 1594   | Subtotal        | 56    | 16141  | 901.0  |
| Total | 68             | 23703 | 1600   | Total  | 56              | 16195 | 904.0  |        |
| 1992  | Jan            | 72    | 3500   | 252    | Sep             | 50    | 820    | 41.0   |
|       | Feb            | 71    | 4309.9 | 306    | Oct             | 50    | 3180   | 159.0  |
|       | Mar            | 69    | 5956.5 | 411    | Nov             | 74    | 3878   | 287.0  |
|       | Apr            | 63    | 5381   | 339    | Dec             | 87    | 2701   | 235.0  |
|       | May            | 43    | 4790.7 | 206    |                 |       |        |        |
|       | Subtotal       | 63    | 23938  | 1514   | Subtotal        | 68    | 10580  | 722.0  |
|       | Total          | 63    | 23938  | 1514   | Total           | 68    | 14448  | 986.0  |
| 1993  | Jan            | 51    | 4366   | 223.2  | Sep             | 43    | 1033   | 44.7   |
|       | Feb            | 77    | 4582   | 352.2  | Oct             | 39    | 2959   | 116.3  |
|       | Mar            | 56    | 5456   | 303.2  | Nov             | 24    | 3136   | 76.2   |
|       | Apr            | 58    | 5517   | 317.4  | Dec             | 78    | 1050   | 82.4   |
|       | May            | 81    | 1852   | 149.6  |                 |       |        |        |
|       | Subtotal       | 62    | 21773  | 1345.6 | Subtotal        | 39    | 8178   | 319.6  |
|       | Total          | 62    | 22990  | 1420.8 | Total           | 39    | 8633   | 337.4  |
| 1994  | Jan            | 174   | 315    | 54.8   | Aug             | 0     | 6      | 0.0    |
|       | Feb            | 228   | 1053   | 240.3  | Sep             | 74    | 2266   | 168.1  |
|       | Mar            | 168   | 1833   | 307.1  | Oct             | 57    | 2230   | 128.0  |
|       | Apr            | 108   | 4688   | 505.6  | Nov             | 87    | 2230   | 193.0  |
|       | May            | 70    | 1141   | 80.1   | Dec             | 210   | 1012   | 212.5  |
|       | Subtotal       | 132   | 9030   | 1187.9 | Subtotal        | 91    | 7744   | 701.6  |
|       | Total          | 132   | 9030   | 1187.9 | Total           | 91    | 7744   | 701.6  |
| 1995* | Jan            | 130   | 2653   | 343.6  | Aug             | 36    | 153    | 5.5    |
|       | Feb            | 58    | 854.4  | 49.8   | Sep             | 92    | 4553   | 416.7  |
|       | Mar            | 106   | 2835   | 299.7  | Oct             | 65    | 3934   | 256.3  |
|       | Apr            | 65    | 1720   | 111    | Nov             | 60    | 5101   | 304.3  |
|       | May            | 109   | 799    | 87.1   | Dec             | 69    | 2653   | 184.0  |
|       | Subtotal       | 101   | 8861   | 891.2  | Subtotal        | 71    | 16394  | 1166.8 |
|       | Total          | 101   | 8861   | 891.2  | Total           | 71    | 16394  | 1166.8 |
| 1996* | Jan            | 71    | 3277   | 231.1  | Aug             | 93    | 668    | 62.1   |
|       | Feb            | 94    | 2177   | 205.1  | Sep             | 83    | 2007   | 166.7  |
|       | Mar            | 157   | 3276   | 514.4  | Oct             | 70    | 2454   | 172.4  |
|       | Apr            | 122   | 1284   | 156.5  | Nov             | 85    | 2239   | 190.2  |
|       | May            | 94    | 1166   | 109.5  |                 |       |        |        |
|       | Subtotal       | 109   | 11180  | 1216.6 | Subtotal        | 80    | 7368   | 591.4  |
|       | Total          | 109   | 11180  | 1216.6 | Total           | 80    | 7368   | 591.4  |
| 1997* | Jan            | 122   | 1757   | 214.8  | Jul             | 160   | 10     | 1.6    |
|       | Feb            | 160   | 1619   | 258.4  | Aug             | 40    | 15     | 0.6    |
|       | Mar            | 185   | 1497   | 277.3  |                 |       |        |        |
|       | Apr            | 126   | 2769   | 347.8  |                 |       |        |        |
|       | May            | 166   | 1103   | 182.6  |                 |       |        |        |
|       | Subtotal       | 154   | 4873   | 750.5  | Subtotal        | 88    | 25     | 2.2    |
|       | Total          | 154   | 4873   | 750.5  | Total           | 88    | 25     | 2.2    |



Table 5. North area. Catch rates (kg per hour trawling) and corresponding effort (hours trawling) and catch (tons) from the shrimp fishery in the Denmark Strait, north of 65°N, by Faroe Islands.

| Year     | January - June |      |        |       | July - December |      |        |       |
|----------|----------------|------|--------|-------|-----------------|------|--------|-------|
|          | Month          | CPUE | Effort | Catch | Month           | CPUE | Effort | Catch |
| 1990     | Jan            | 93   | 1205   | 112.5 |                 |      |        |       |
|          | Feb            | 109  | 1307   | 142.2 |                 |      |        |       |
|          | Mar            | 85   | 957    | 81.2  |                 |      |        |       |
|          | Apr            | 23   | 113    | 2.6   | Nov             | 65   | 307    | 13.9  |
|          | May            | 269  | 860    | 177.5 | Dec             | 62   | 1357   | 122.7 |
|          | Subtotal       | 122  | 4242   | 516.0 | Subtotal        | 82   | 1664   | 136.6 |
|          | Total          | 122  | 5631   | 685.0 | Total           | 82   | 1925   | 158.0 |
| 1991     | Jan            | 112  | 1980   | 221.6 | Sep             | 83   | 262    | 21.7  |
|          | Feb            | 91   | 2922   | 266.7 | Oct             |      | 274    | 13.2  |
|          | Mar            | 68   | 1790   | 122.5 | Nov             | 60   | 1333   | 79.6  |
|          | Apr            | 129  | 330    | 42.5  | Dec             | 88   | 2759   | 244.1 |
|          | Subtotal       | 93   | 7022   | 653.3 | Subtotal        | 77   | 4628   | 358.6 |
|          | Total          | 93   | 8610   | 801.0 | Total           | 77   | 2659   | 206.0 |
|          | 1992           | Jan  | 69     | 2040  | 140.0           |      |        |       |
| Feb      |                | 66   | 1536   | 101.2 |                 |      |        |       |
| Mar      |                | 96   | 1135   | 108.6 | Oct             | 25   | 290    | 9.1   |
| Apr      |                | 52   | 356    | 18.4  | Nov             | 81   | 2120   | 171.6 |
| May      |                | 50   | 1234   | 61.7  | Dec             | 112  | 3131   | 350.2 |
| Subtotal |                | 68   | 6301   | 429.9 | Subtotal        | 96   | 5541   | 530.9 |
| Total    |                | 68   | 7446   | 508.0 | Total           | 96   | 6095   | 584.0 |
| 1993     | Jan            | 66   | 2634   | 175.0 |                 |      |        |       |
|          | Feb            | 70   | 2394   | 167.0 |                 |      |        |       |
|          | Mar            | 63   | 1674   | 105.0 |                 |      |        |       |
|          | Apr            | 57   | 721    | 41.0  |                 |      |        |       |
|          | May            | 43   | 23     | 1.0   |                 |      |        |       |
|          | Subtotal       | 66   | 7446   | 489.0 |                 |      |        |       |
|          | Total          | 66   | 8436   | 554.0 |                 |      |        |       |
| 1994     | Jan            | 398  | 133    | 53.0  |                 |      |        |       |
|          | Feb            | 173  | 596    | 103.0 |                 |      |        |       |
|          | Mar            | 167  | 293    | 49.0  |                 |      |        |       |
|          | Apr            | 64   | 235    | 15.0  | Nov             | 52   | 287    | 15.0  |
|          | May            | 90   | 189    | 17.0  | Dec             | 178  | 381    | 68.0  |
|          | Subtotal       | 164  | 1446   | 237.0 | Subtotal        | 124  | 668    | 83.0  |
|          | Total          | 164  | 1745   | 286.0 | Total           | 124  | 668    | 83.0  |
| 1995*    | Jan            | 114  | 1569   | 179.0 | Sep             | 93   | 354    | 33.0  |
|          | Feb            | 82   | 1242   | 102.0 | Oct             | 79   | 191    | 15.0  |
|          | Mar            | 99   | 1106   | 109.0 | Nov             | 38   | 158    | 6.0   |
|          | Apr            | 46   | 259    | 12.0  | Dec             | 57   | 1815   | 104.0 |
|          |                |      | 0      | 0.0   | Subtotal        | 63   | 2518   | 158.0 |
|          | Subtotal       | 96   | 4176   | 402.0 | Total           | 63   | 3347   | 210.0 |
|          | Total          | 96   | 5558   | 535.0 |                 |      |        |       |
| 1996*    | Jan            | 58   | 2921   | 170.0 | Nov             | 151  | 118    | 17.8  |
|          | Feb            | 43   | 768    | 33.0  | Dec             | 126  | 3183   | 400.0 |
|          | Mar            | 184  | 461    | 85.0  | Subtotal        | 127  | 3301   | 417.8 |
|          | Subtotal       | 69   | 4150   | 288.0 | Total           | 127  | 3301   | 417.8 |
|          | Total          | 69   | 4943   | 343.0 |                 |      |        |       |
|          |                |      |        |       |                 |      |        |       |
|          |                |      |        |       |                 |      |        |       |
| 1997*    | Jan            | 67   | 1041   | 70.0  | Nov             | 52   | 287    | 15.0  |
|          | Feb            | 242  | 264    | 64.0  | Dec             | 178  | 381    | 68.0  |
|          | Mar            | 0    | 9      | 0.0   | Subtotal        | 124  | 668    | 83.0  |
|          | Apr            | 198  | 131    | 26.0  | Total           | 124  | 668    | 83.0  |
|          | May            |      |        | 0.0   |                 |      |        |       |
|          | Subtotal       | 111  | 1445   | 160.0 |                 |      |        |       |
|          | Total          | 111  | 1445   | 160.0 |                 |      |        |       |



Table 6. North area. Catch rates, corresponding effort (trawling hours) and catch (tons) from the shrimp fishery in the Denmark Strait by Denmark, north of 65°N.

| Year  | January - June |          |        |       | July - December |          |        |       |       |
|-------|----------------|----------|--------|-------|-----------------|----------|--------|-------|-------|
|       | Month          | CPUE     | Effort | Catch | Month           | CPUE     | Effort | Catch |       |
| 1990  | Jan            | 100      | 243    | 24.3  | Jul             | 46       | 316    | 14.5  |       |
|       | Feb            | 74       | 140    | 10.3  | Aug             | 43       | 454    | 19.3  |       |
|       | Mar            | 93       | 338    | 31.3  | Sep             | 38       | 373    | 14.2  |       |
|       |                |          |        |       | Oct             | 47       | 414    | 19.4  |       |
|       |                |          |        |       | Nov             | 46       | 406    | 18.7  |       |
|       |                |          |        |       | Dec             | 17       | 186    | 3.1   |       |
|       |                | Subtotal | 91     | 721   | 65.9            | Subtotal | 42     | 2149  | 89.2  |
|       | Total          | 91       | 3304   | 302.0 | Total           | 42       | 2120   | 88.0  |       |
| 1991  | Mar            | 52       | 349    | 18.2  | Sep             | 45       | 230    | 10.3  |       |
|       | Apr            | 81       | 424    | 34.4  | Oct             | 69       | 521    | 35.7  |       |
|       | May            | 78       | 328    | 25.6  | Nov             | 0        | 3      | 0.0   |       |
|       |                |          |        |       | Dec             | 52       | 294    | 15.2  |       |
|       |                | Subtotal | 71     | 1101  | 78.2            | Subtotal | 58     | 1048  | 61.2  |
|       |                | Total    | 71     | 3295  | 234.0           | Total    | 58     | 2123  | 124.0 |
| 1992  | Jan            | 59       | 70     | 4.1   | Nov             | 37       | 115    | 4.3   |       |
|       | Mar            | 41       | 293    | 11.9  | Dec             | 53       | 217    | 11.4  |       |
|       | Apr            | 42       | 212    | 9.0   |                 |          |        |       |       |
|       |                | Subtotal | 43     | 575   | 25.0            | Subtotal | 47     | 332   | 15.7  |
|       |                | Total    | 43     | 3013  | 131.0           | Total    | 47     | 613   | 29.0  |
| 1993  | Jan            | 34       | 451    | 15.5  |                 |          |        |       |       |
|       | Feb            | 46       | 566    | 25.9  |                 |          |        |       |       |
|       | Mar            | 44       | 477    | 21.2  | Dec             | 72       | 167    | 12.0  |       |
|       | Apr            | 33       | 222    | 7.3   |                 |          |        |       |       |
|       |                | Subtotal | 41     | 1716  | 69.9            | Subtotal | 72     | 167   | 12.0  |
|       |                | Total    | 41     | 2094  | 85.3            | Total    | 72     | 353   | 25.4  |
| 1994  | Jan            | 150      | 147    | 22.0  | Sept            | 49       | 41     | 2.0   |       |
|       | Feb            | 77       | 65     | 5.0   | Oct             | 72       | 125    | 9.0   |       |
|       | Mar            | 102      | 283    | 29.0  | Nov             | 66       | 122    | 8.0   |       |
|       | Apr            | 55       | 110    | 6.0   | Dec             | 178      | 557    | 99.0  |       |
|       | May            | 51       | 59     | 3.0   |                 |          |        |       |       |
|       |                | Subtotal | 102    | 605   | 62.0            | Subtotal | 140    | 845   | 118.0 |
|       |                | Total    | 102    | 634   | 65.0            | Total    | 140    | 952   | 133.0 |
| 1995* | Jan            | 203      | 659    | 134.0 |                 |          |        |       |       |
|       | Feb            | 108      | 721    | 78.0  | Dec             | 15       | 34     | 1.0   |       |
|       | Mar            | 228      | 127    | 29.0  |                 |          |        |       |       |
|       |                | Subtotal | 160    | 1507  | 241.0           | Subtotal | 15     | 34    | 1.0   |
|       |                | Total    | 160    | 1507  | 241.0           | Total    | 15     | 34    | 1.0   |
| 1996* | Jan            | 101      | 148    | 15.0  | Dec             | 78       | 59     | 4.6   |       |
|       | Jun            | 67       | 15     | 1.0   |                 |          |        |       |       |
|       |                | Subtotal | 98     | 163   | 16.0            | Subtotal | 78     | 59    | 4.6   |
|       |                | Total    | 98     | 163   | 16.0            | Total    | 78     | 59    | 4.6   |
| 1997* | No fishery     |          |        |       |                 |          |        |       |       |

Table 7. North area. Catch rates (kg per hour trawling) and corresponding effort (hours trawling) and catch (tons) from the shrimp fishery in Denmark Strait north of 65° N, by all nations combined in two periods of the year.

| Year | Country            | January-June |        |        | July - December |        |        |
|------|--------------------|--------------|--------|--------|-----------------|--------|--------|
|      |                    | CPUE         | Effort | Catch  | CPUE            | Effort | Catch  |
| 1978 | Iceland            | 215          | 298    | 64.2   | 314             | 952    | 299.2  |
| 1979 | Iceland            | 186          | 166    | 30.9   | 229             | 1982   | 454.4  |
| 1980 | Greenland, Denmark | 350          | 1665   | 582.0  | 129             | 2483   | 320.0  |
|      | France             |              |        | 50.0   |                 |        |        |
|      | Norway             | 468          | 3108   | 1455.0 | 124             | 8106   | 1006.0 |
|      | Iceland            | 125          | 1760   | 219.3  | 101             | 5318   | 539.4  |
|      | Faroe Islands      | 427          | 9115   | 3892.0 |                 |        | 341.0  |
|      | Subtotal           | 393          | 15648  | 6148.3 | 117             | 15907  | 1865.4 |
|      | Total              | 393          | 15775  | 6198.3 | 117             | 18815  | 2206.4 |
| 1981 | Greenland, Denmark | 395          | 4013   | 1585.0 |                 |        |        |
|      | France             | 246          | 1436   | 353.0  |                 |        |        |
|      | Norway             | 216          | 9296   | 2006.0 | 43              | 232    | 10.0   |
|      | Iceland            | 99           | 688    | 68.0   | 67              | 848    | 56.9   |
|      | Faroe Islands      |              |        | 686.0  |                 |        | 27.0   |
|      | Subtotal           | 260          | 15433  | 4012.0 | 62              | 1080   | 66.9   |
|      | Total              | 260          | 18072  | 4698.0 | 62              | 1516   | 93.9   |
| 1982 | Greenland, Denmark | 220          | 8432   | 1855.0 |                 |        |        |
|      | France             | 226          | 1833   | 414.0  |                 |        |        |
|      | Norway             | 203          | 9337   | 1894.0 |                 |        |        |
|      | Faroe Islands      |              |        | 737.0  |                 |        |        |
|      | Subtotal           | 212          | 19602  | 4163.0 |                 |        |        |
|      | Total              | 212          | 23072  | 4900.0 |                 |        |        |
| 1983 | Greenland          | 255          | 5752   | 1467.0 |                 |        |        |
|      | France             | 192          | 1516   | 291.0  |                 |        |        |
|      | Norway             | 163          | 6830   | 1114.0 | 101             | 6100   | 613.0  |
|      | Iceland            | 99           | 52     | 5.1    | 161             | 238    | 38.3   |
|      | Denmark            |              |        | 204.0  |                 |        |        |
|      | Faroe Islands      |              |        | 443.0  |                 |        |        |
|      | Subtotal           | 203          | 14150  | 2877.1 | 103             | 6338   | 651.3  |
|      | Total              | 203          | 17332  | 3524.1 | 103             | 6338   | 651.3  |
| 1984 | Greenland          | 340          | 6627   | 2250.0 |                 |        |        |
|      | France             | 256          | 1951   | 500.0  |                 |        |        |
|      | Norway             | 191          | 11141  | 2128.0 |                 |        |        |
|      | Iceland            | 42           | 53     | 2.2    | 103             | 7164   | 739.6  |
|      | Denmark            |              |        | 443.0  |                 |        |        |
|      | Faroe Islands      |              |        | 576.0  |                 |        | 92.0   |
|      | Subtotal           | 247          | 19772  | 4880.2 | 103             | 7164   | 739.6  |
|      | Total              | 247          | 23900  | 5899.2 | 103             | 8074   | 831.6  |
| 1985 | Greenland          | 270          | 6469   | 1744.0 | 251             | 3389   | 852.0  |
|      | France             | 194          | 2594   | 504.0  | 170             | 814    | 138.0  |
|      | Norway             | 166          | 12355  | 2051.0 |                 |        |        |
|      | Iceland            | 88           | 4485   | 396.0  | 94              | 14944  | 1398.0 |
|      | Denmark            |              |        | 150.0  | 137             | 1482   | 203.0  |
|      | Faroe Islands      |              |        | 404.0  |                 |        | 270.0  |
|      | Subtotal           | 181          | 25903  | 4695.0 | 126             | 20629  | 2591.0 |
|      | Total              | 181          | 28959  | 5249.0 | 126             | 22779  | 2861.0 |

Table 7 continued

| Year | Country       | January-June |        |        | July - December |        |        |
|------|---------------|--------------|--------|--------|-----------------|--------|--------|
|      |               | CPUE         | Effort | Catch  | CPUE            | Effort | Catch  |
| 1986 | Greenland     | 288          | 14285  | 4114.0 | 437             | 3811   | 1667.0 |
|      | France        | 175          | 3415   | 597.0  | 218             | 841    | 183.0  |
|      | Norway        | 145          | 12845  | 1861.0 | 123             | 1340   | 165.0  |
|      | Iceland       | 73           | 3205   | 234.0  | 103             | 8893   | 916.0  |
|      | Denmark       | 226          | 1962   | 443.0  | 226             | 252    | 57.0   |
|      | Faroe Islands | 93           | 5428   | 506.0  | 416             | 531    | 221.0  |
|      | Subtotal      | 189          | 41140  | 7755.0 | 205             | 15668  | 3209.0 |
|      | Total         | 189          | 41140  | 7755.0 | 205             | 15668  | 3209.0 |
| 1987 | Greenland     | 314          | 17667  | 5547.0 | 144             | 7502   | 1080.0 |
|      | Norway        | 135          | 11353  | 1533.0 | 96              | 5261   | 507.0  |
|      | Iceland       |              |        |        | 79              | 16835  | 1330.0 |
|      | France        | 241          | 2599   | 626.0  |                 |        | 405.0  |
|      | Denmark       | 144          | 2997   | 431.0  | 99              | 1250   | 124.0  |
|      | Faroe Islands | 229          | 1635   | 375.0  | 106             | 2068   | 220.0  |
|      | Subtotal      | 235          | 36251  | 8512.0 | 99              | 32916  | 3261.0 |
|      | Total         | 235          | 36251  | 8512.0 | 99              | 37004  | 3666.0 |
| 1988 | Greenland     | 219          | 24111  | 5285.0 | 157             | 13820  | 2165.0 |
|      | Norway        | 83           | 15314  | 1274.0 | 83              | 9332   | 778.0  |
|      | Iceland       | 107          | 1769   | 189.5  | 54              | 22735  | 1234.5 |
|      | France        | 141          | 3138   | 444.0  |                 |        | 50.0   |
|      | Denmark       | 95           | 3479   | 329.0  | 98              | 1172   | 115.0  |
|      | Faroe Islands | 166          | 4031   | 669.0  |                 |        | 10.0   |
|      | Subtotal      | 158          | 51842  | 8190.5 | 91              | 47059  | 4292.5 |
|      | Total         | 158          | 51842  | 8190.5 | 91              | 47717  | 4352.5 |
| 1989 | Greenland     | 192          | 23343  | 4471.0 | 75              | 20039  | 1510.0 |
|      | Norway        | 84           | 8354   | 704.0  | 52              | 27056  | 1394.0 |
|      | Iceland       | 108          | 7835   | 847.3  | 45              | 10722  | 478.7  |
|      | France        | 191          | 1525   | 291.3  | 58              | 1536   | 89.8   |
|      | Denmark       | 211          | 1336   | 282.0  | 58              | 1450   | 84.0   |
|      | Faroe Islands | 145          | 3035   | 439.0  | 93              | 1672   | 156.0  |
|      | Subtotal      | 155          | 45428  | 7034.6 | 59              | 62475  | 3712.5 |
|      | Total         | 155          | 45428  | 7034.6 | 59              | 62475  | 3712.5 |
| 1990 | Greenland     | 189          | 28956  | 5478.0 | 71              | 10298  | 732.0  |
|      | Norway        | 98           | 11982  | 1176.0 | 50              | 26247  | 1324.0 |
|      | Iceland       | 80           | 2538   | 203.9  | 66              | 1165   | 77.1   |
|      | France        | 126          | 286    | 36.0   |                 |        | 15.0   |
|      | Denmark       | 91           | 3304   | 302.0  | 42              | 2120   | 88.0   |
|      | Faroe Islands | 122          | 5631   | 685.0  | 82              | 1925   | 158.0  |
|      | Subtotal      | 150          | 52697  | 7880.9 | 57              | 41740  | 2379.1 |
|      | Total         | 150          | 52697  | 7880.9 | 57              | 42003  | 2394.1 |
| 1991 | Greenland     | 119          | 33582  | 3980.0 | 88              | 2560   | 225.0  |
|      | Norway        | 68           | 23703  | 1600.0 | 56              | 16195  | 904.0  |
|      | Iceland       | 218          | 1930   | 421.1  | 104             | 423    | 43.7   |
|      | France        | 115          | 1024   | 117.5  |                 |        |        |
|      | Denmark       | 71           | 3295   | 234.0  | 58              | 2123   | 124.0  |
|      | Faroe Islands | 93           | 8610   | 801.0  | 77              | 2659   | 206.0  |
|      | Subtotal      | 99           | 72144  | 7153.6 | 63              | 23960  | 1502.7 |
|      | Total         | 99           | 72144  | 7153.6 | 63              | 23960  | 1502.7 |
| 1992 | Greenland     | 103          | 17612  | 1811.0 | 96              | 2087   | 201.0  |
|      | Norway        | 63           | 23938  | 1514.0 | 68              | 14448  | 986.0  |
|      | Iceland       | 211          | 8232   | 1733.3 | 101             | 169    | 17.1   |
|      | Denmark       | 43           | 3013   | 131.0  | 47              | 613    | 29.0   |
|      | Faroe Islands | 68           | 7446   | 508.0  | 96              | 6095   | 584.0  |
|      | Total         | 95           | 60241  | 5697.3 | 78              | 23412  | 1817.1 |

Table 7 continued

| Year  | January-June  |      |        |        | July - December |        |        |
|-------|---------------|------|--------|--------|-----------------|--------|--------|
|       | Country       | CPUE | Effort | Catch  | CPUE            | Effort | Catch  |
| 1993  | Greenland     | 93   | 15073  | 1408.0 | 175             | 97     | 17.0   |
|       | Norway        | 62   | 22990  | 1420.8 | 39              | 8633   | 337.4  |
|       | Iceland       | 184  | 13854  | 2548.4 | 219             | 21     | 4.6    |
|       | Denmark       | 41   | 2094   | 85.3   | 72              | 353    | 25.4   |
|       | Faroe Islands | 66   | 8436   | 554.0  |                 |        |        |
|       | Total         | 96   | 62447  | 6016.5 | 42              | 9104   | 384.4  |
| 1994  | Greenland     | 170  | 6197   | 1056.0 |                 |        |        |
|       | Norway        | 132  | 9030   | 1187.9 | 91              | 7744   | 701.6  |
|       | Iceland       | 286  | 5233   | 1498.9 | 92              | 167    | 15.4   |
|       | Denmark       | 104  | 634    | 65.8   | 140             | 952    | 133.0  |
|       | Faroe Islands | 164  | 1745   | 286.0  | 124             | 660    | 82.0   |
|       | Total         | 179  | 22839  | 4094.6 | 98              | 9523   | 932    |
| 1995* | Greenland     | 220  | 8468   | 1861.0 | 54              | 964    | 52.0   |
|       | Norway        | 101  | 8861   | 891.2  | 71              | 16394  | 1166.8 |
|       | Iceland       | 309  | 3721   | 1150.0 | 171             | 7      | 1.2    |
|       | Denmark       | 160  | 1507   | 241.0  | 29              | 34     | 1.0    |
|       | Faroe Islands | 96   | 5558   | 535.0  | 63              | 3347   | 210.0  |
|       | Total         | 166  | 28115  | 4678.2 | 69              | 20746  | 1431.0 |
| 1996* | Greenland     | 87   | 1951   | 168.8  | 84              | 618    | 52.0   |
|       | Norway        | 109  | 11180  | 1216.6 | 80              | 7368   | 591.4  |
|       | Iceland       | 242  | 2297   | 555.0  | 175             | 61     | 10.7   |
|       | Denmark       | 98   | 163    | 16.0   | 78              | 59     | 4.6    |
|       | Faroe Islands | 69   | 4943   | 343.0  | 127             | 3301   | 417.8  |
|       | Total         | 112  | 20534  | 2299.4 | 94              | 11407  | 1076.5 |
| 1997* | Greenland     | 134  | 294    | 39.5   |                 |        |        |
|       | Norway        | 154  | 4873   | 750.5  | 88              | 25     | 2.2    |
|       | Iceland       | 252  | 9430   | 2379.7 | 53              | 6321   | 338.0  |
|       | Denmark       |      |        | 0.0    |                 |        |        |
|       | Faroe Islands | 111  | 1445   | 160.0  | 124             | 668    | 83.0   |
|       | Total         | 208  | 16042  | 3329.7 | 60              | 7014   | 423    |

Table 8. Middle and South area. Catch rates, corresponding effort and catch (tonnes) from the shrimp fishery in the middle area in the Denmark Strait, i.e. south of 65° N by Greenland in two periods of the year.

| Year  | January - June |      |        |        | July - December |      |        |        |
|-------|----------------|------|--------|--------|-----------------|------|--------|--------|
|       | Month          | CPUE | Effort | Catch  | Month           | CPUE | Effort | Catch  |
| 1993  | Jan            | 149  | 74     | 11.0   |                 |      |        |        |
|       | Feb            | 69   | 350    | 24.0   |                 |      |        |        |
|       | Mar            | 162  | 802    | 130.0  |                 |      |        |        |
|       | Apr            | 181  | 2422   | 438.0  |                 |      |        |        |
|       | May            | 329  | 923    | 304.0  | Dec             | 1138 | 80     | 91.0   |
|       | Subtotal       | 198  | 4571   | 907.0  | Subtotal        | 1138 | 80     | 91.0   |
|       | Total          | 198  | 4168   | 827.0  | Total           | 1138 | 80     | 91.0   |
| 1994* | Jan            | 439  | 2015   | 884.0  | Jul             | 463  | 19     | 8.8    |
|       | Feb            | 322  | 1123   | 362.0  | Aug             | 460  | 904    | 415.5  |
|       | Mar            | 191  | 642    | 122.8  | Sept            | 383  | 92     | 35.2   |
|       | Apr            | 288  | 835    | 240.4  | Oct             | 250  | 32     | 8.0    |
|       | May            | 239  | 493    | 117.7  | Nov             | 512  | 813    | 416.0  |
|       | Subtotal       | 338  | 5108   | 1726.9 | Dec             | 323  | 878    | 283.6  |
|       | Total          | 338  | 5037   | 1703.0 | Subtotal        | 426  | 2738   | 1167   |
|       |                |      |        | Total  | 426             | 2738 | 1167.0 |        |
| 1995  | Jan            | 362  | 785    | 284.2  | Jul             | 439  | 31     | 13.6   |
|       | Feb            | 163  | 452    | 73.9   | Aug             | 380  | 499    | 189.4  |
|       | Mar            | 33   | 24     | 0.8    | Sept            | 126  | 109    | 13.7   |
|       | May            | 481  | 405    | 194.7  | Oct             | 546  | 37     | 20.2   |
|       | Subtotal       | 332  | 1666   | 553.6  | Nov             | 393  | 1162   | 456.9  |
|       | Total          | 332  | 1679   | 558.0  | Dec             | 367  | 2368   | 869.5  |
|       |                |      |        |        | Subtotal        | 372  | 4206   | 1563.3 |
|       |                |      |        | Total  | 372             | 4243 | 1577.0 |        |
| 1996* | Jan            | 286  | 1888   | 540.0  | Jul             | 342  | 780    | 267.0  |
|       | Feb            | 444  | 1259   | 559.0  | Aug             | 403  | 1166   | 470.0  |
|       | Mar            | 469  | 505    | 237.0  | Sept            | 218  | 101    | 22.0   |
|       | Apr            | 441  | 399    | 176.0  | Oct             | 445  | 1700   | 756.0  |
|       | May            | 50   | 8      | 0.4    | Nov             | 284  | 3418   | 971.0  |
|       | June           | 388  | 24     | 9.3    | Dec             | 247  | 1119   | 276.0  |
|       | Subtotal       | 373  | 4083   | 1521.7 | Subtotal        | 333  | 8284   | 2762.0 |
| Total | 373            | 4083 | 1521.7 | Total  | 333             | 8284 | 2762.0 |        |
| 1997* | Jan            | 476  | 1964   | 935.0  | Jul             | 405  | 237    | 96.0   |
|       | Feb            | 303  | 781    | 237.0  | Aug             | 853  | 17     | 14.5   |
|       | Mar            | 275  | 40     | 11.0   |                 |      |        |        |
|       | Apr            | 517  | 29     | 15.0   |                 |      |        |        |
|       | May            | 315  | 20     | 6.3    |                 |      |        |        |
|       | Subtotal       | 425  | 2834   | 1204.3 | Subtotal        | 435  | 254    | 110.5  |
|       | Total          | 425  | 2834   | 1204.3 | Total           | 435  | 254    | 110.5  |

Table 9. Middle and South area. Catch rates, corresponding effort and catch (tons) from the shrimp fishery south of 65° N by Norway in two periods of the year.

| Year  | January - June |      |        |       | July - December |      |        |       |
|-------|----------------|------|--------|-------|-----------------|------|--------|-------|
|       | Month          | CPUE | Effort | Catch | Month           | CPUE | Effort | Catch |
| 1993  | March          | 0    | 3      | 0.0   |                 |      |        |       |
|       | April          | 88   | 105    | 9.2   | Oct             | 164  | 64     | 10.5  |
|       | May            | 81   | 455    | 36.7  | Nov             |      |        |       |
|       | June           |      |        |       | Dec             |      |        |       |
|       | Subtotal       | 82   | 563    | 45.9  | Subtotal        | 164  | 64     | 10.5  |
|       | Total          | 82   | 563    | 45.9  | Total           | 164  | 64     | 10.5  |
| 1994  | Jan            | 408  | 216    | 88.2  | Aug             | 257  | 308    | 79.3  |
|       | Feb            | 147  | 164    | 24.1  | Sep             | 213  | 234    | 49.9  |
|       | Mar            | 67   | 3      | 0.2   | Oct             | 174  | 188    | 32.8  |
|       | April          | 164  | 308    | 50.6  | Nov             | 200  | 980    | 196.1 |
|       | May            | 177  | 733    | 129.4 | Dec             | 152  | 81     | 12.3  |
|       | Subtotal       | 205  | 1424   | 292.5 | Subtotal        | 209  | 1710   | 358.1 |
|       | Total          | 205  | 1424   | 292.5 | Total           | 209  | 1710   | 358.1 |
| 1995* |                |      |        |       | Aug             | 260  | 470    | 122.2 |
|       | April          | 362  | 29     | 10.5  | Sep             | 157  | 84     | 13.2  |
|       |                |      |        |       | Oct             | 159  | 1846   | 292.7 |
|       |                |      |        |       | Dec             | 70   | 20     | 1.4   |
|       | Subtotal       | 362  | 29     | 10.5  | Subtotal        | 177  | 2420   | 429.5 |
| Total | 362            | 29   | 10.5   | Total | 177             | 2420 | 429.5  |       |
| 1996* | Jan            | 355  | 56     | 19.9  | Jul             | 196  | 220    | 43.2  |
|       | Feb            | 134  | 147    | 19.7  | Aug             | 171  | 424    | 72.7  |
|       | April          | 292  | 1155   | 337.4 | Oct             | 93   | 136    | 12.6  |
|       | May            | 333  | 372    | 124.0 | Nov             | 122  | 665    | 81.0  |
|       | Subtotal       | 290  | 1730   | 501.0 | Subtotal        | 145  | 1445   | 209.5 |
|       | Total          | 290  | 1730   | 501.0 | Total           | 145  | 1445   | 209.5 |
| 1997* | Jan            | 162  | 503    | 81.5  | Jul             | 215  | 282    | 60.5  |
|       | Feb            | 180  | 971    | 175.1 | Aug             | 228  | 165    | 37.7  |
|       | March          | 214  | 307    | 65.7  |                 |      |        |       |
|       | April          | 198  | 154    | 30.5  |                 |      |        |       |
|       | May            | 207  | 73     | 15.1  |                 |      |        |       |
|       | Subtotal       | 183  | 2008   | 367.9 | Subtotal        | 220  | 447    | 98.2  |
|       | Total          | 183  | 2008   | 367.9 | Total           | 220  | 447    | 98.2  |



Table 12. North area. Catch rates (kg per hour trawling) and corresponding effort (hours trawling) and catch (tons) from the shrimp fishery in Denmark Strait north of 65° N, by years.

| Year | Periods    | CPUE | Effort | Catch   | Year  | Periods    | CPUE | Effort | Catch   |
|------|------------|------|--------|---------|-------|------------|------|--------|---------|
| 1980 | Jan-Jun    | 393  | 15775  | 6198.3  | 1989  | Jan-Jun    | 155  | 45428  | 7034.6  |
|      | Jul-Dec    | 117  | 18815  | 2206.4  |       | Jul-Dec    | 59   | 62475  | 3712.5  |
|      | Mean/Total | 243  | 34590  | 8404.7  |       | Mean/Total | 100  | 107903 | 10747.1 |
| 1981 | Jan-Jun    | 260  | 18072  | 4698.0  | 1990  | Jan-Jun    | 150  | 52697  | 7880.9  |
|      | Jul-Dec    | 62   | 1516   | 93.9    |       | Jul-Dec    | 57   | 42003  | 2394.1  |
|      | Mean/Total | 245  | 19588  | 4791.9  |       | Mean/Total | 109  | 94700  | 10275.0 |
| 1982 | Jan-Jun    | 212  | 23072  | 4900.0  | 1991  | Jan-Jun    | 99   | 72144  | 7153.6  |
|      | Jul-Dec    | -    | -      | -       |       | Jul-Dec    | 63   | 23960  | 1502.7  |
|      | Mean/Total | 212  | 23072  | 4900.0  |       | Mean/Total | 90   | 96104  | 8656.3  |
| 1983 | Jan-Jun    | 203  | 17332  | 3524.1  | 1992  | Jan-Jun    | 95   | 60241  | 5697.3  |
|      | Jul-Dec    | 103  | 6338   | 651.3   |       | Jul-Dec    | 78   | 23412  | 1817.1  |
|      | Mean/Total | 176  | 23670  | 4175.4  |       | Mean/Total | 90   | 83653  | 7514.4  |
| 1984 | Jan-Jun    | 247  | 23900  | 5899.2  | 1993  | Jan-Jun    | 96   | 62447  | 6016.5  |
|      | Jul-Dec    | 103  | 8074   | 831.6   |       | Jul-Dec    | 42   | 9104   | 384.4   |
|      | Mean/Total | 211  | 31974  | 6730.8  |       | Mean/Total | 89   | 71551  | 6400.9  |
| 1985 | Jan-Jun    | 181  | 28959  | 5249.0  | 1994  | Jan-Jun    | 179  | 22839  | 4094.6  |
|      | Jul-Dec    | 126  | 22779  | 2861.0  |       | Jul-Dec    | 98   | 9523   | 932.0   |
|      | Mean/Total | 157  | 51738  | 8110.0  |       | Mean/Total | 155  | 32362  | 5026.6  |
| 1986 | Jan-Jun    | 189  | 41140  | 7755.0  | 1995* | Jan-Jun    | 166  | 28115  | 4678.2  |
|      | Jul-Dec    | 205  | 15668  | 3209.0  |       | Jul-Dec    | 69   | 20746  | 1431.0  |
|      | Mean/Total | 193  | 56808  | 10964.0 |       | Mean/Total | 125  | 48861  | 6109.2  |
| 1987 | Jan-Jun    | 235  | 36251  | 8512.0  | 1996* | Jan-Jun    | 112  | 20543  | 2299.4  |
|      | Jul-Dec    | 99   | 37004  | 3666.0  |       | Jul-Dec    | 94   | 11407  | 1076.5  |
|      | Mean/Total | 166  | 73255  | 12178.0 |       | Mean/Total | 106  | 31950  | 3375.9  |
| 1988 | Jan-Jun    | 158  | 51842  | 8190.5  | 1997* | Jan-Jun    | 208  | 16042  | 3329.7  |
|      | Jul-Dec    | 91   | 47717  | 4352.5  |       | Jul-Dec    | 60   | 7014   | 423.0   |
|      | Mean/Total | 126  | 99559  | 12543.0 |       | Mean/Total | 163  | 23056  | 3752.7  |



Table 13. Middle and south area. Catch rates (kg per hour trawling) and corresponding effort (hours trawling) and catch (tons) from the shrimp fishery in the middle area of Denmark Strait, i.e. south of 65°, by all nations combined in two periods of the year.

| Year  | Country       | January-June |        |        | July - December |        |        |
|-------|---------------|--------------|--------|--------|-----------------|--------|--------|
|       |               | CPUE         | Effort | Catch  | CPUE            | Effort | Catch  |
| 1993  | Greenland     | 198          | 4168   | 827.0  | 1138            | 80     | 91.0   |
|       | Norway        | 82           | 563    | 45.9   | 164             | 64     | 10.5   |
|       | Denmark       | 83           | 572    | 47.6   |                 |        |        |
|       | Faroe Islands | 64           | 2389   | 153.0  | 1895            | 38     | 72.0   |
|       | Total         | 140          | 7692   | 1073.5 | 953             | 182    | 173.5  |
| 1994  | Greenland     | 338          | 5037   | 1703.0 | 426             | 2738   | 1167.0 |
|       | Norway        | 205          | 1424   | 292.5  | 209             | 1710   | 358.1  |
|       | Denmark       | 136          | 391    | 53.0   | 211             | 2061   | 435.0  |
|       | Faroe Islands | 216          | 2106   | 455.0  | 234             | 1370   | 321.0  |
|       | Total         | 279          | 8958   | 2503.5 | 290             | 7879   | 2281.1 |
| 1995* | Greenland     | 332          | 1679   | 558.0  | 372             | 4243   | 1577.0 |
|       | Norway        | 362          | 29     | 10.5   | 177             | 2420   | 429.5  |
|       | Denmark       | 339          | 62     | 21.0   | 277             | 2035   | 564.0  |
|       | Faroe Islands | 82           | 1408   | 116.0  | 556             | 216    | 120.0  |
|       | Total         | 222          | 3178   | 705.5  | 302             | 8914   | 2690.5 |
| 1996* | Greenland     | 373          | 4083   | 1521.7 | 333             | 8284   | 2762.0 |
|       | Norway        | 290          | 1730   | 501.0  | 145             | 1445   | 209.5  |
|       | Denmark       | 351          | 1766   | 620.0  | 300             | 1051   | 315.2  |
|       | Faroe Islands | 169          | 1485   | 251.3  | 104             | 415    | 43.0   |
|       | Total         | 319          | 9064   | 2894.0 | 297             | 11195  | 3329.7 |
| 1997* | Greenland     | 425          | 2834   | 1204.3 | 435             | 254    | 110.5  |
|       | Norway        | 183          | 2008   | 367.9  | 220             | 447    | 98.2   |
|       | Denmark       | 435          | 691    | 300.5  |                 |        |        |
|       | Faroe Islands | 169          | 2040   | 345.2  |                 |        |        |
|       | Total         | 293          | 7573   | 2217.9 | 298             | 701    | 208.7  |

Table 14. Middle and south area. Catch rates (kg per hour trawling) and corresponding effort (hours trawling) and catch (tons) from the shrimp fishery in the middle area of Denmark Strait south of 65° N by years.

| Year  | Periods    | CPUE | Effort | Catch  |
|-------|------------|------|--------|--------|
| 1993  | Jan-Jun    | 140  | 7692   | 1073.5 |
|       | Jul-Dec    | 953  | 182    | 173.5  |
|       | Mean/Total | 158  | 7874   | 1247.0 |
| 1994  | Jan-Jun    | 279  | 8958   | 2503.5 |
|       | Jul-Dec    | 290  | 7879   | 2281.1 |
|       | Mean/Total | 284  | 16837  | 4784.6 |
| 1995* | Jan-Jun    | 222  | 3178   | 705.5  |
|       | Jul-Dec    | 302  | 8914   | 2690.5 |
|       | Mean/Total | 281  | 12092  | 3396.0 |
| 1996* | Jan-Jun    | 319  | 9064   | 2894.0 |
|       | Jul-Dec    | 297  | 11195  | 3329.7 |
|       | Mean/Total | 307  | 20259  | 6223.7 |
| 1997* | Jan-Jun    | 293  | 7573   | 2217.9 |
|       | Jul-Dec    | 298  | 701    | 208.7  |
|       | Mean/Total | 293  | 8274   | 2426.6 |

Table 15. Nominal catch (tons) of shrimp in the Denmark Strait.

| Nation                        | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986   | 1987   | 1988   | 1989   | 1990   | 1991   | 1992   | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |  |  |
|-------------------------------|------|------|------|------|------|------|------|------|--------|--------|--------|--------|--------|--------|--------|------|------|------|------|------|------|--|--|
| North area                    |      |      |      |      |      |      |      |      |        |        |        |        |        |        |        |      |      |      |      |      |      |  |  |
| Denmark                       | -    | -    | 702  | 581  | 740  | 204  | 443  | 353  | 500    | 555    | 444    | 366    | 390    | 358    | 160    | 111  | 199  | 242  | 21   | 21   |      |  |  |
| Faroe Islands                 | -    | -    | 4233 | 713  | 737  | 443  | 668  | 674  | 727    | 595    | 679    | 595    | 843    | 1007   | 1092   | 554  | 368  | 745  | 761  | 243  |      |  |  |
| France                        | -    | -    | 50   | 353  | 414  | 291  | 500  | 642  | 780    | 1030   | 494    | 381    | 51     | 118    |        |      |      |      |      |      |      |  |  |
| Greenland                     | -    | -    | 200  | 1004 | 1115 | 1467 | 2250 | 2596 | 5781   | 6827   | 7456   | 5976   | 6210   | 4205   | 2012   | 1425 | 1056 | 1913 | 221  | 40   |      |  |  |
| Iceland                       | 363  | 485  | 759  | 125  | 0    | 43   | 742  | 1794 | 1150   | 1330   | 1431   | 1326   | 281    | 465    | 1750   | 2553 | 1514 | 1151 | 566  | 2718 |      |  |  |
| Norway                        | -    | 800  | 2461 | 2016 | 1896 | 1727 | 2128 | 2051 | 2026   | 2041   | 2052   | 2098   | 2500   | 2504   | 2500   | 1758 | 1890 | 2058 | 1808 | 753  |      |  |  |
| Total                         | 363  | 1285 | 8405 | 4792 | 4902 | 4175 | 6731 | 8110 | 10964  | 12178  | 12556  | 10742  | 10275  | 8657   | 7514   | 6401 | 5027 | 6109 | 3377 | 3754 |      |  |  |
| Middle and south area         |      |      |      |      |      |      |      |      |        |        |        |        |        |        |        |      |      |      |      |      |      |  |  |
| Denmark                       | -    | -    | -    | -    | -    | -    | -    | -    | -      | -      | -      | -      | -      | -      | -      | 48   | 488  | 585  | 935  | 301  |      |  |  |
| Faroe Islands                 | -    | -    | -    | -    | -    | -    | -    | -    | -      | -      | -      | -      | -      | -      | -      | 225  | 776  | 236  | 294  | 345  |      |  |  |
| Greenland                     | -    | -    | -    | -    | -    | -    | -    | -    | -      | -      | -      | -      | -      | -      | -      | 918  | 2870 | 2135 | 4284 | 1315 |      |  |  |
| Norway                        | -    | -    | -    | -    | -    | -    | -    | -    | -      | -      | -      | -      | -      | -      | -      | 56   | 651  | 440  | 711  | 466  |      |  |  |
| Total                         | -    | -    | -    | -    | -    | -    | -    | -    | -      | -      | -      | -      | -      | -      | -      | 1247 | 4785 | 3396 | 6224 | 2427 |      |  |  |
| Σ eastern side                | 363  | 485  | 759  | 125  | 0    | 43   | 742  | 1794 | 1150   | 1330   | 1431   | 1326   | 281    | 465    | 1750   | 2553 | 1514 | 1151 | 566  | 2718 |      |  |  |
| Σ north area not eastern side | 0    | 800  | 7646 | 4667 | 4902 | 4132 | 5989 | 6316 | 9814   | 10848  | 11125  | 9416   | 9994   | 8192   | 5764   | 3848 | 3513 | 4958 | 2811 | 1036 |      |  |  |
| Σ middle and south area       |      |      |      |      |      |      |      |      |        |        |        |        |        |        |        | 1247 | 4785 | 3396 | 6224 | 2427 |      |  |  |
| Σ western side                | 0    | 800  | 7646 | 4667 | 4902 | 4132 | 5989 | 6316 | 9814   | 10848  | 11125  | 9416   | 9994   | 8192   | 5764   | 5095 | 8298 | 8354 | 9035 | 3463 |      |  |  |
| Σ Σ all areas                 | 363  | 1285 | 8405 | 4792 | 4902 | 4175 | 6731 | 8110 | 10964  | 12178  | 12556  | 10742  | 10275  | 8657   | 7514   | 7648 | 9812 | 9505 | 9601 | 6181 |      |  |  |
| Advised TAC                   | -    | -    | -    | -    | 4200 | 4200 | 4200 | 5000 | -      | -      | -      | -      | 10000* | 10000* | 10000* | 8000 | 5000 | 5000 | 5000 | 5000 | 5000 |  |  |
| Effective TAC western side    | -    | -    | -    | 8000 | 4500 | 5725 | 5245 | 6090 | 7525** | 7725** | 8725** | 9025** | 14100  | 14500  | 13000  | 9563 | 9563 | 9563 | 9563 | 9563 | 9563 |  |  |

\* Advised for a few years as a precautionary measure.

\*\* not including Greenland fishery north of 66°30'N.

\*\*\* Provisional

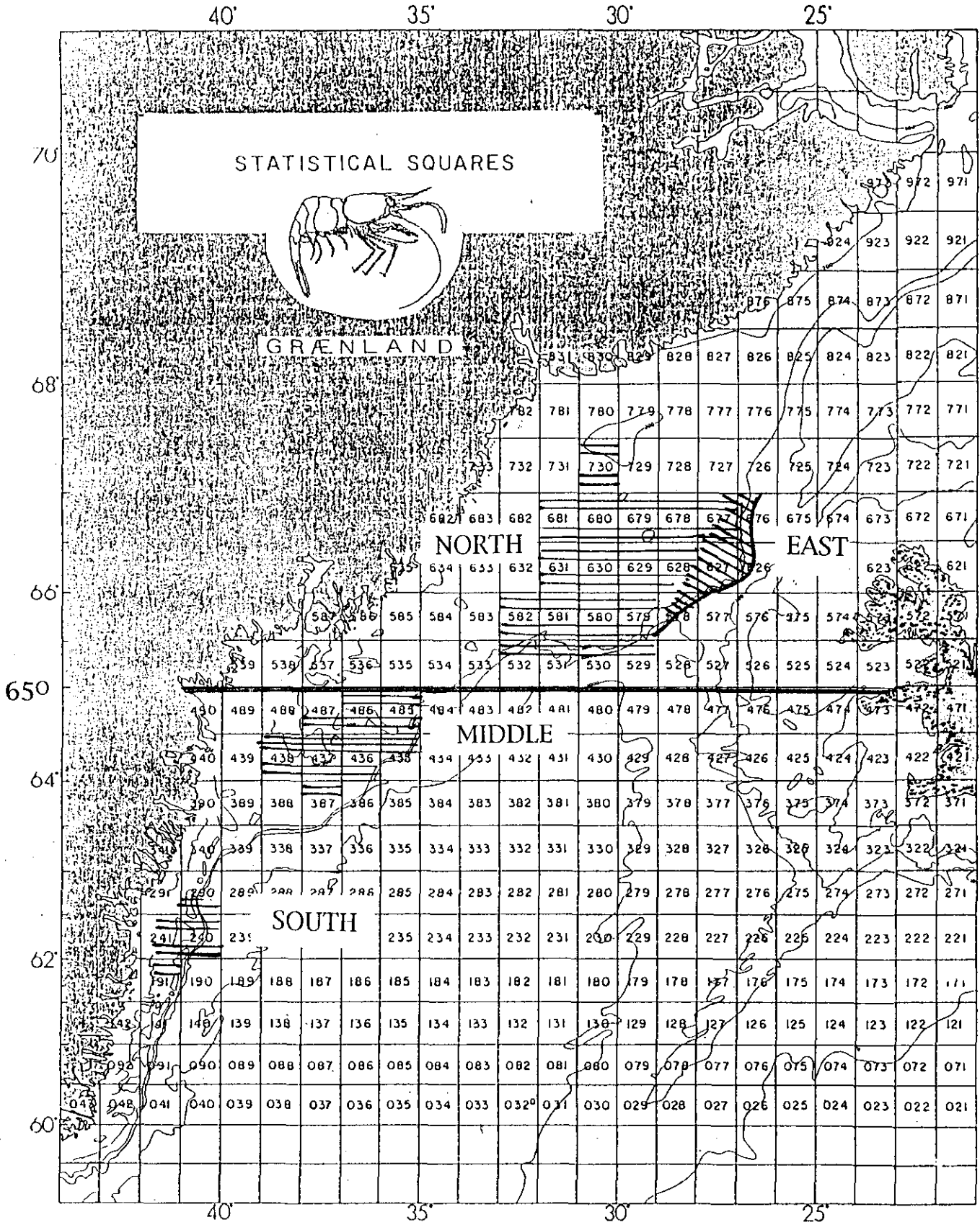


Fig. 1. The main shrimp areas in the Denmark Strait.