# NORWAY REDFISH
# *Sebastes viviparus*

## GENERAL INFORMATION

Norway redfish (*Sebastes viviparus*) is the smallest of the three *Sebastes* species found in Icelandic waters, rarely reaching length over 30 cm. Norway redfish is distributed around Iceland with highest densities along the south and southwest coast of Iceland at depths ranging from 40 to 400 m. Little is known about the biology of the species but as with other redfish species in Icelandic waters the Norway redfish is slow-growing and long-lived.

## THE FISHERY

A directed fishery for Norway redfish started in 1997 with a catch of 1200 t (Figure 1 and Table 1). The catches declined rapidly until 2000, and between 2001 and 2009 only a few tonnes were landed. In 2010, a directed fishery started again with total landings of 2600 t. Landings have since then declined and annual catches in 2017-2020 were on average around 135 t. Norway redfish in Icelandic waters is caught by demersal trawlers.

The main fishing grounds for Norway redfish are southeast and south of Iceland (Figures 2 and 3). Small portion is taken along the Reykjanes-ridge.

Norway redfish is mainly caught at depths between 100 and 400 m (Figure 4). From 2011-2018 there was a gradual increase in catches at depths between 400 and 600 m.

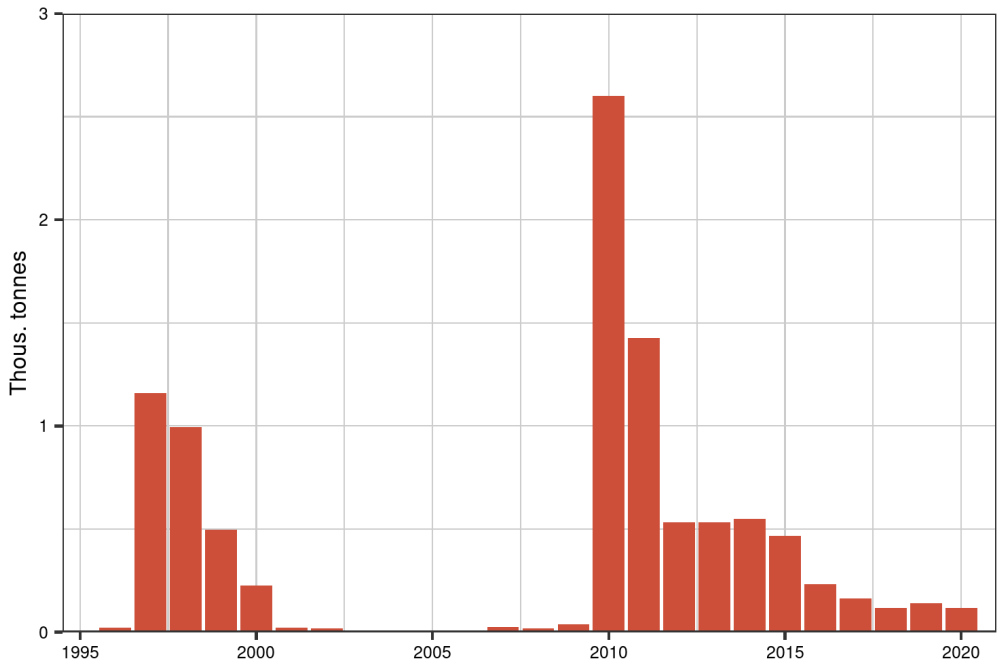


**Figure 1. Norway redfish. Landings 1996-2020.**

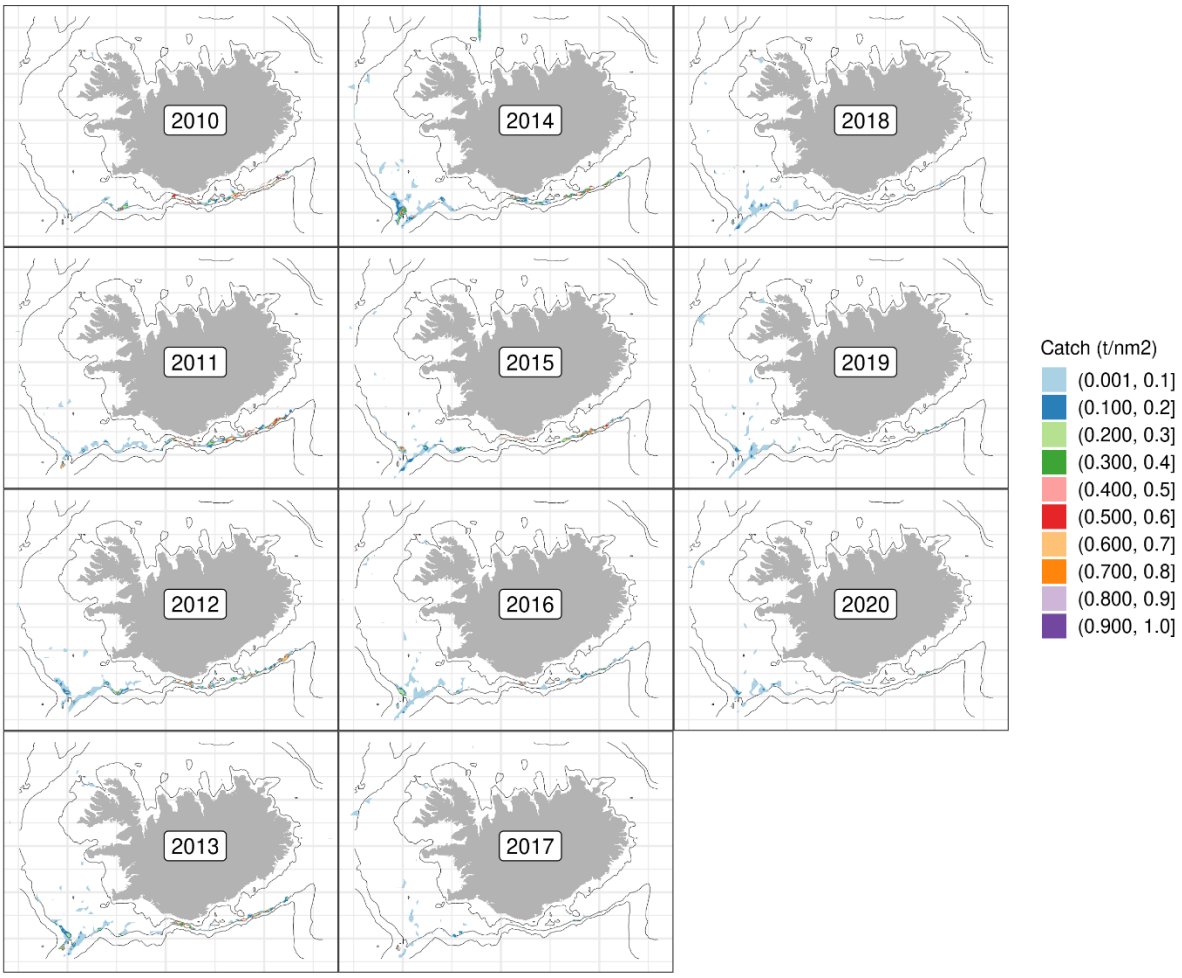


**Figure 2. Norway redfish. Geographical distribution of the Icelandic fishery 2010-2020. Reported catch from logbooks.**

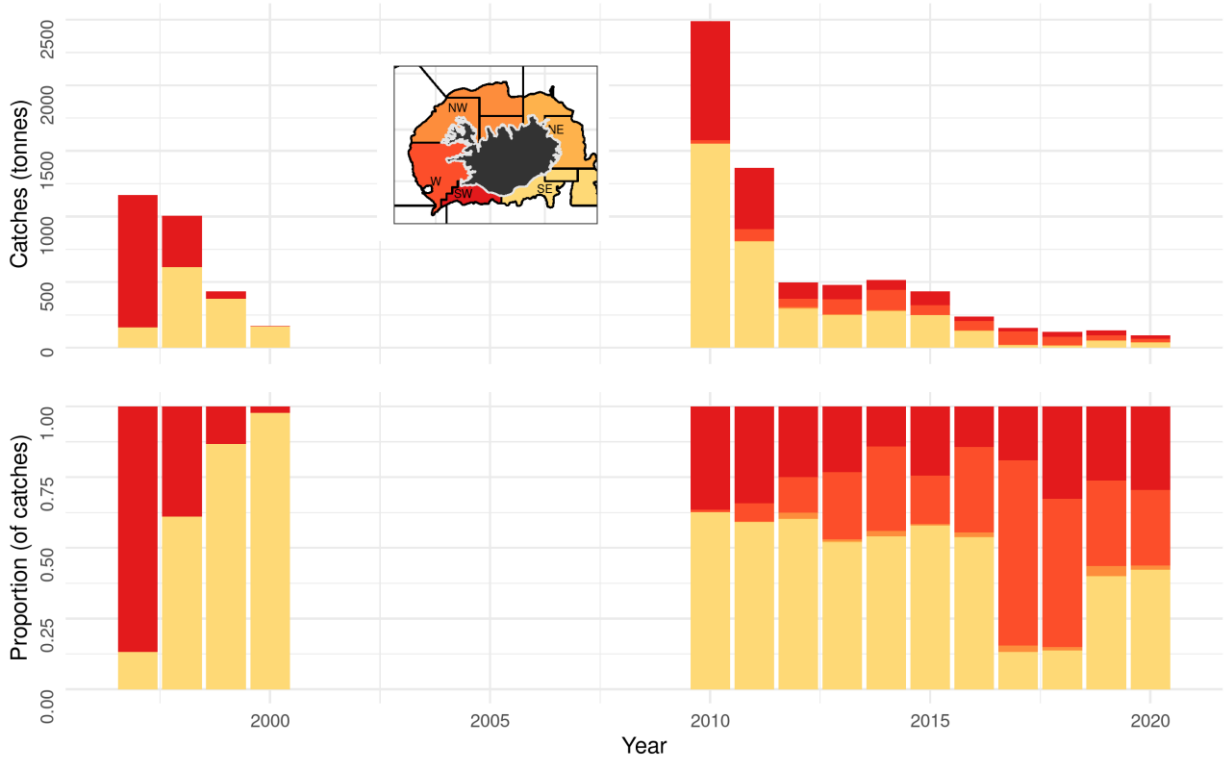


**Figure 3. Norway redfish. Spatial distribution of the Icelandic fishery by fishing area from 1997-2020.**

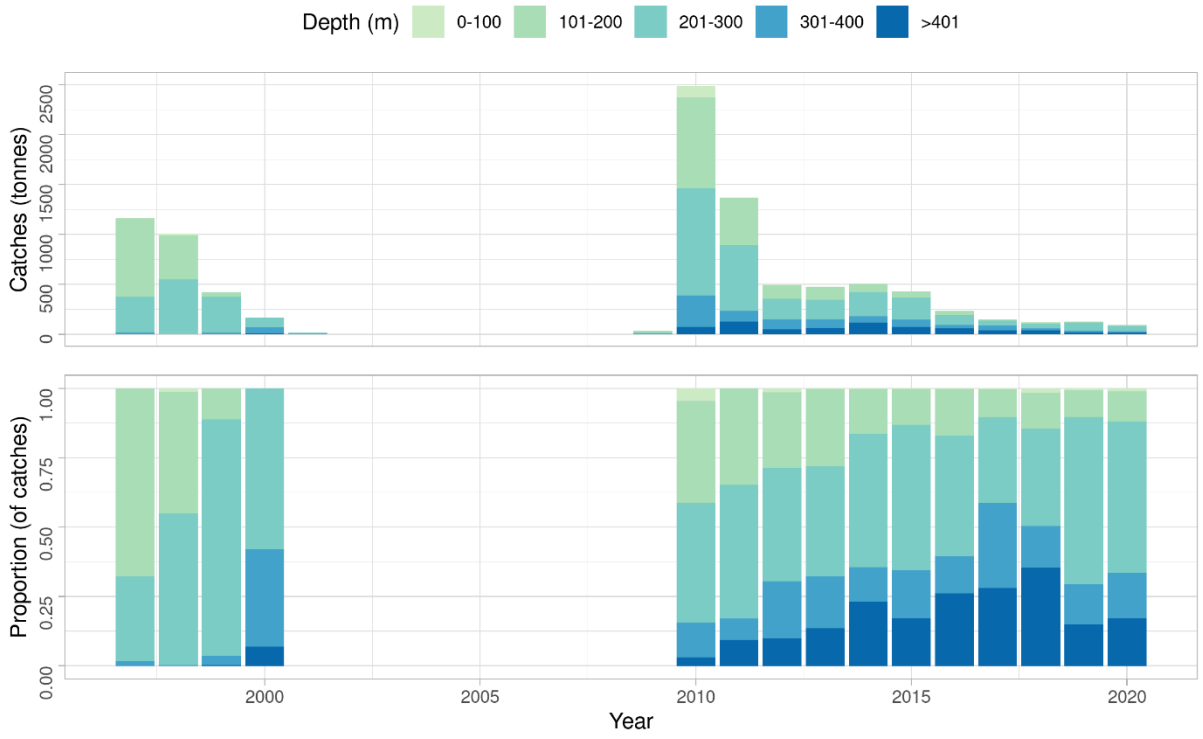


**Figure 4. Norway redfish. Depth distribution of demersal trawl catches according to logbooks 1997-2020.**

***Table 1. Norway redfish. Number of Icelandic trawlers landing catch of 1000 kg or more of Norway redfish, and all landed catch 1997-2020.***

| | NUMBER OF VESSELS | CATCHES (TONNES) |
|---|---|---|
| YEAR | *Demersal trawlers* | *Total* |
| ***1996*** | | 22 |
| ***1997*** | | 1159 |
| ***1998*** | | 994 |
| ***1999*** | | 498 |
| ***2000*** | 3 | 227 |
| ***2001*** | 2 | 21 |
| ***2002*** | 2 | 20 |
| ***2003*** | - | 3 |
| ***2004*** | - | 2 |
| ***2005*** | - | 4 |
| ***2006*** | - | 9 |
| ***2007*** | - | 24 |
| ***2008*** | 1 | 15 |
| ***2009*** | 4 | 37 |
| ***2010*** | 23 | 2602 |
| ***2011*** | 21 | 1427 |
| ***2012*** | 21 | 535 |
| ***2013*** | 18 | 532 |
| ***2014*** | 14 | 550 |
| ***2015*** | 13 | 468 |
| ***2016*** | 12 | 234 |
| ***2017*** | 10 | 161 |
| ***2018*** | 7 | 117 |
| ***2019*** | 12 | 143 |
| ***2020*** | 12 | 118 |

## CATCH PER UNIT EFFORT (CPUE) AND EFFORT.

CPUE estimates of Norway redfish in Icelandic waters are not considered representative of stock abundance as changes in fleet composition and technical improvements have not been accounted for when estimating CPUE.

Non-standardized estimates of CPUE in demersal trawl (kg/h), in hauls where redfish was more than 10% of the catch, decreased from about 2700 kg/h to 1200 kg/h in 1997-2000 (Figure 5). In 2010, when the fishery commenced again, CPUE was about 1300 kg/h but decreased and has in recent nine years fluctuated between 500-1000 kg/h. Total fishing effort (number of towing hours decreased between 1997 and 2000 but increased rapidly in 2010 when target fishery started again. Since 2010, fishing effort has steadily decreased and was in 2017-2020 lowest in the time series (Figure 5). The decrease in effort is due to decrease in the targeted fishery towards Norway redfish.

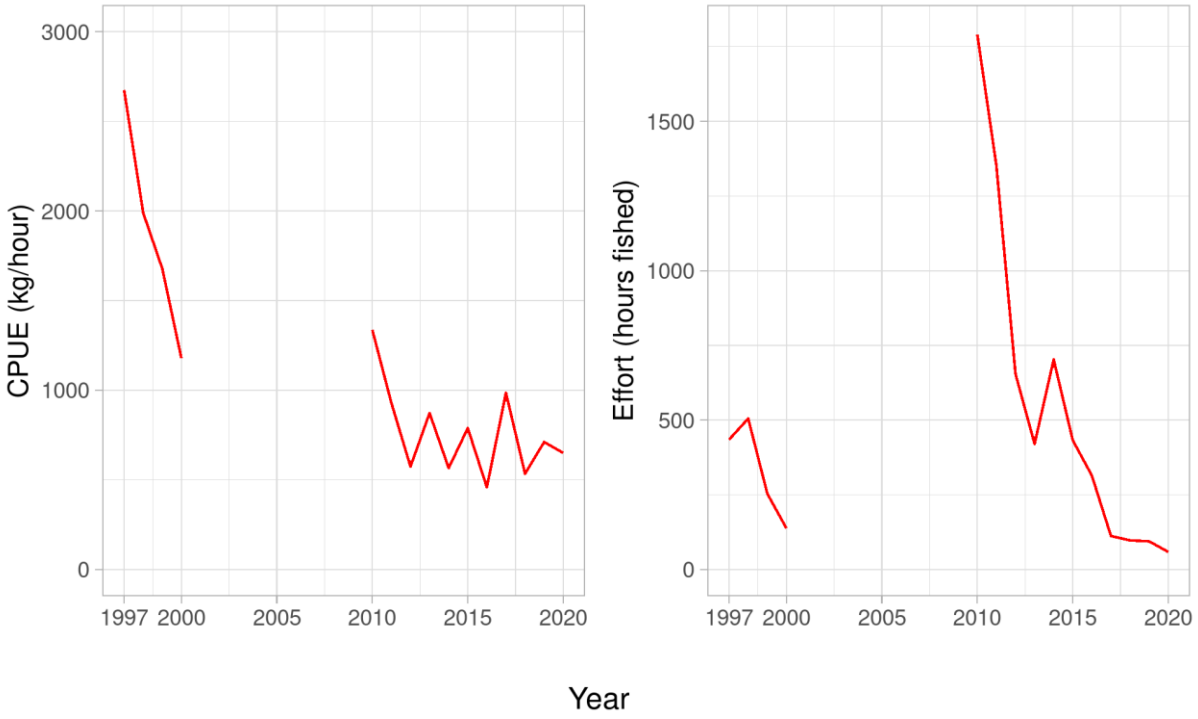


**Figure 5. Norway redfish. Non-standardised estimates of CPUE (kg/hour, left) and fishing effort (right, hours fished) from demersal trawl.**

## SURVEY DATA

The Icelandic spring groundfish survey (IS-SMB), which has been conducted annually in March 1985-2021, covers the main distribution of Norway redfish in Icelandic waters. Figure 6 shows the total biomass and recruitment indices (fish smaller than 15 cm). The total biomass index has increased rapidly since 2011 and was in 2016-2021 the highest recorded and more than three times higher than in 2000. The index in recent years is largely dominated by few large hauls, causing high variance.

The juvenile abundance index for individuals smaller than 15 cm indicates stronger recruitment in 2003-2012 compared to other years (Figure 6).

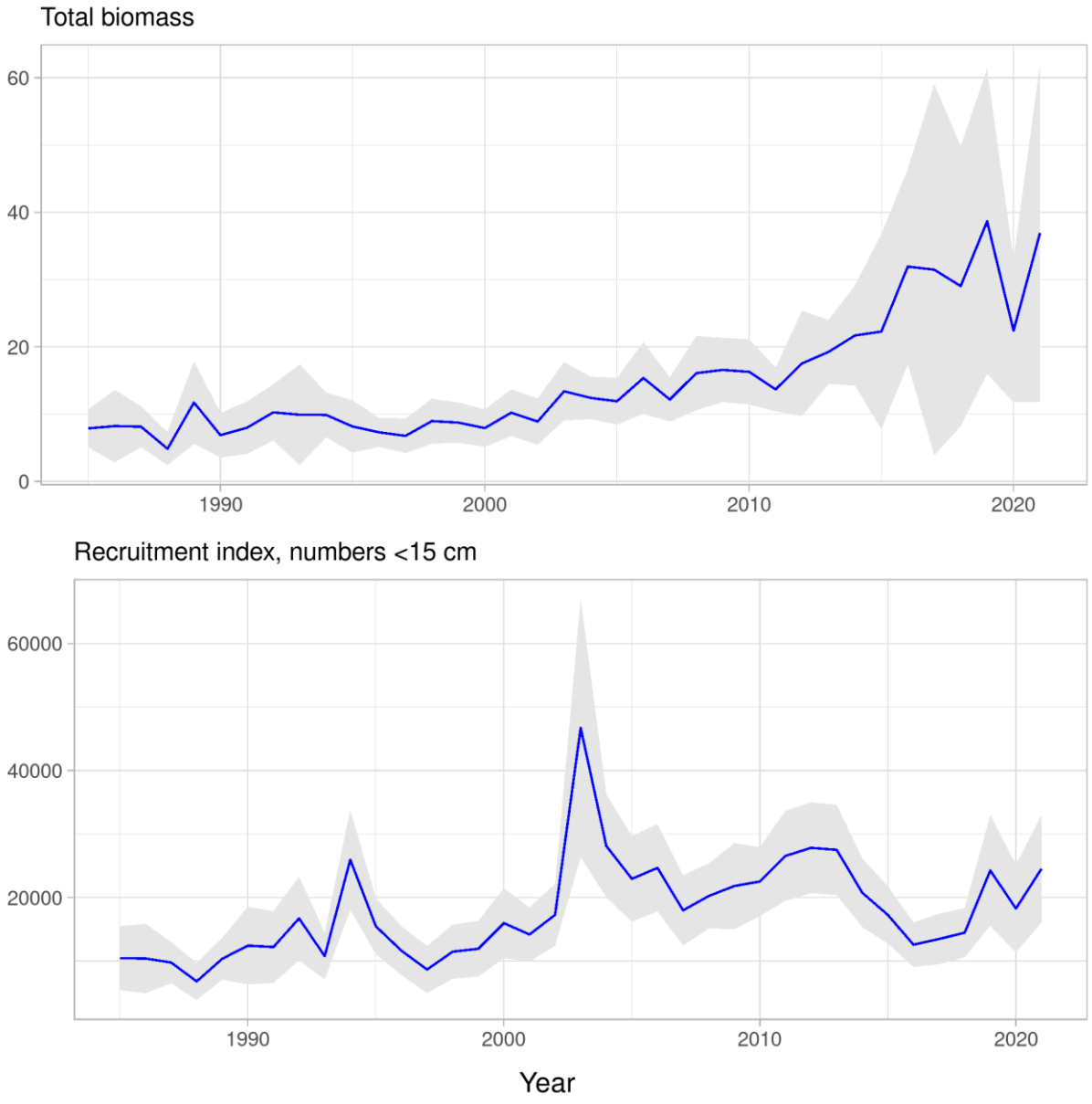


**Figure 6. Norway redfish. Total biomass index (upper) and juvenile abundance indices (<15 cm) (lower) from the spring survey from 1985-2021. The grey area represents 95% CI.**

Length distributions from IS-SMB show that the modes are between 20 and 25 cm (Figure 7). The increased abundance of fish smaller than 15 cm can be observed in 2003-2012 in the IS-SMB (Figure 7) and this fish has contributed to increased stocks size of Norway redfish since 2008.

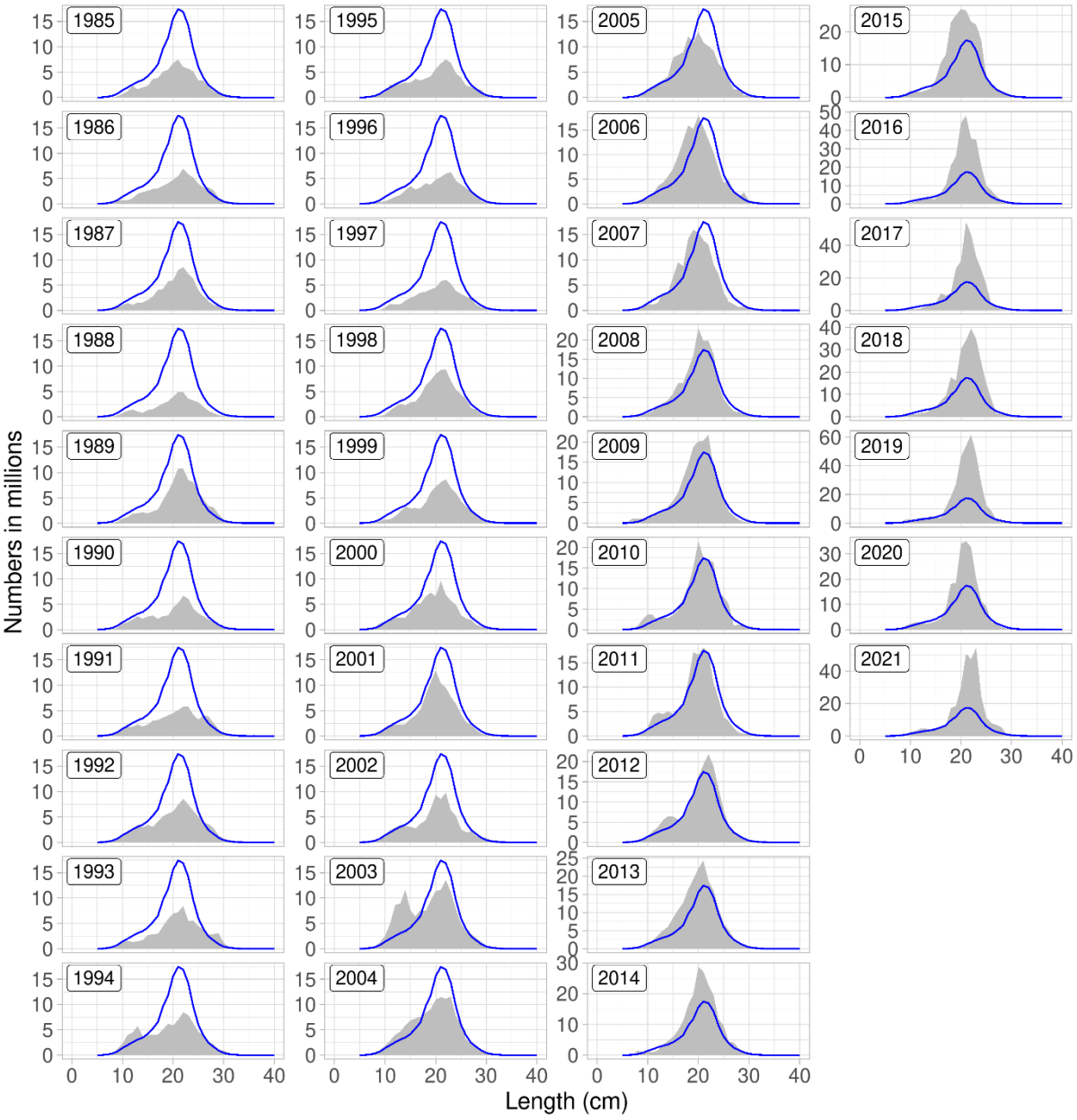


**Figure 7. Norway redfish. Length disaggregated abundance indices from the spring survey 1985-2021. The blue line shows the mean for all years. Note that the y-axis is not the same on the figures.**

Norway redfish in the spring survey is found all around Iceland but is most abundant along the south and southwest of Iceland (Figures 8). In recent years, the abundance in the West area has increased and majority of the Norway redfish biomass in the last five years was measured in that area.

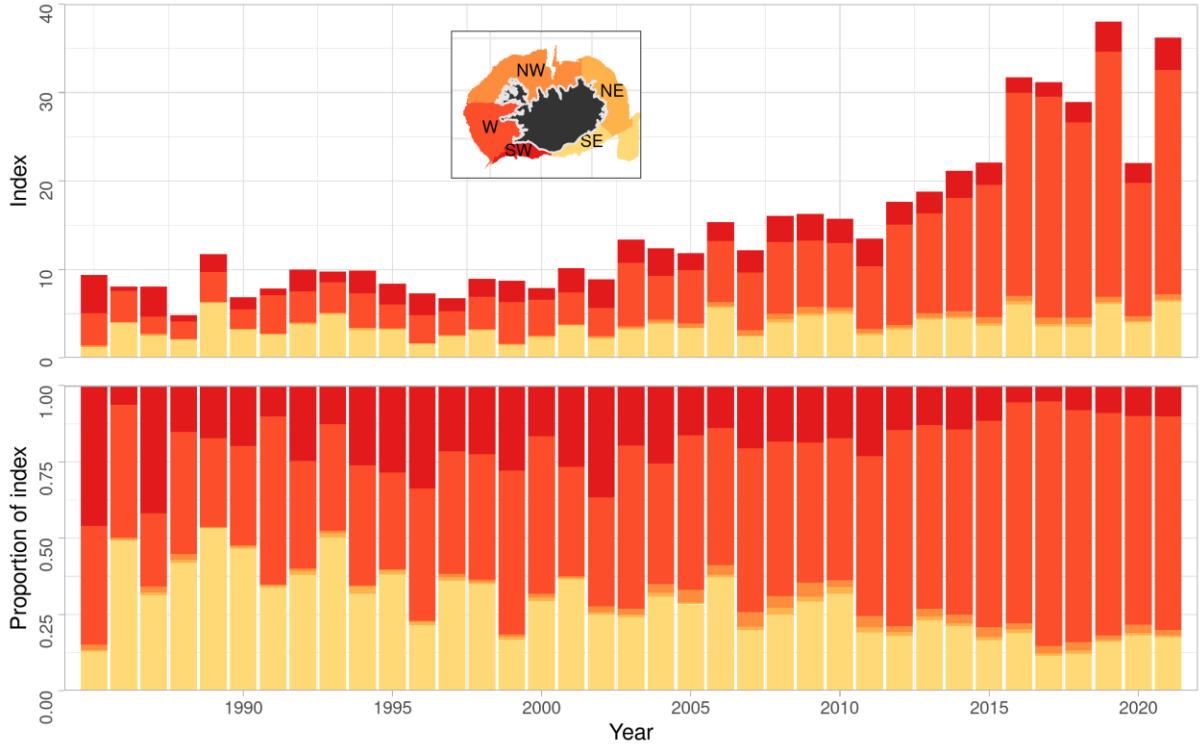


**Figure 8. Norway redfish. Spatial distribution of the biomass index from the spring survey 1985-2021.**

## MANAGEMENT

The species is managed under the Icelandic ITQ system, without direct management. MFRI has given advice for the stock since the 2011/2012 fishing year and the Icelandic authorities have since the 2013/2014 fishing year issued a TAC. Since the 2013/2014 fishing year, only 10-30% of the TAC has been caught and landed. About 30% of the TAC has been transferred to other species, and between 11 and 27% has been transferred to the next fishing year. Between 40 to 60% of the total quota (TAC + what was transferred from previous fishing year) is not used. In recent for fishing year only 7-15% of the total TAC has been landed.

**Table 2. Norway redfish. Recommended TAC, national TAC, and total TAC (includes interannual transfer from previous fishing year). The right side of the table shows how the TAC was used each fishing year and is divided to landed catch, transfer from Norway redfish to other species, transfer to next fishing year, and that TAC that was not used (not caught or transferred). All weights are in tonnes.**

| FISHING YEAR | REC. TAC | TAC | FROM PREVIOUS FISHING YEAR | TOTAL TAC | CATCH | BETWEEN SPECIES | TO NEXT FISHING YEAR | NOT USED |
|---|---|---|---|---|---|---|---|---|
| **2010/2011** | - | - | - | | 2347 | - | - | - |
| **2011/2012** | 1500 | - | - | | 1219 | - | - | - |
| **2012/2013** | 1500 | - | - | | 605 | - | - | - |
| **2013/2014** | 1500 | 1500 | 0 | 1500 | 666 | 431 | 176 | 227 |
| **2014/2015** | 1500 | 1500 | 176 | 1677 | 390 | 277 | 212 | 800 |
| **2015/2016** | 1500 | 1500 | 212 | 1712 | 421 | 489 | 210 | 591 |
| **2016/2017** | 1500 | 1500 | 210 | 1710 | 110 | 457 | 417 | 726 |
| **2017/2018** | 1500 | 1500 | 417 | 1917 | 151 | 421 | 212 | 1134 |
| **2018/2019** | 1500 | 1500 | 212 | 1712 | 164 | 475 | 211 | 863 |
| **2019/2020** | 697 | 697 | 211 | 908 | 138 | 175 | 143 | 456 |
| **2020/2021** | 684 | 684 | 143 | 827 | | | | |