

7 Northeast Arctic golden redfish¹

The advice cycle for golden redfish in subareas 1 and 2 is biennial, following the recommendation of the benchmark assessment for redfish stocks in January 2018 (WKREDFISH, ICES 2018a). Advice was last given in 2020. The age-based GADGET model was then run for the period 1990–2019, in the configuration approved during the benchmark. The present report therefore updates the assessment and provides advice for the next two years.

7.1 Status of the fisheries

7.1.1 Recent regulations of the fishery

A description of the historical development of the fishery and regulations is found in the Stock Annex for this stock. The Stock Annex was last updated in February 2018.

Prior to 1 January 2003 there were no regulations particularly for the *S. norvegicus* fishery, and the regulations aimed at *S. mentella* had only marginal effects on the *S. norvegicus* stock. After this date, all directed trawl fishery for redfish (both *S. norvegicus* and *S. mentella*) outside the permanently closed areas were forbidden in the Norwegian Economic Zone north of 62°N and in the Svalbard area. When fishing for other species it was legal to have up to 15% redfish (both species together) in round weight as bycatch per haul and onboard at any time. Until 14 April 2004, there were no regulations of the other gears/fleets fishing for *S. norvegicus*. After this date, a minimum legal catch size of 32 cm has been set for all fisheries, with the allowance to have up to 10% undersized (i.e. less than 32 cm) specimens of *S. norvegicus* (s) per haul. In addition, a time-limited moratorium (up to 8 months) was enforced in the conventional fisheries (gillnet, longline, handline, Danish seine) except for handline vessels less than 11 metres. From 2016, when trawling outside 12 nm, vessels can have up to 20% by weight of redfish in each catch and upon landing. When trawling inside 12 nm, it is permitted to have up to 10% bycatch. Since 2015 it has been prohibited to fish for redfish with conventional gears north of 62°N. The ban does not, however, apply to vessels less than 15 metres fishing with handline from 1 June to 31 August. When fishing with conventional gears for other species, it is permitted to have up to 10% by weight of redfish. Vessels less than 21 metres can still have up to 30% by weight of redfish in the period 1 August to 31 December. Bycatch of redfish is calculated in live weight per week.

7.1.2 Landings prior to 2022 (Tables 7.1–7.4 and Figures 7.1–7.3)

Nominal catches of *S. norvegicus* for the years 1998–2021 by country for subareas 1 and 2 combined, and for each subarea and division are presented in Tables 7.1–7.4. The total landings for both *S. norvegicus* and *S. mentella* are presented in section 6 (Tables 6.6 and 6.7). The sources of information used are catches reported to ICES, NEAFC, Norwegian and Russian authorities (foreign vessels fishing in these countries' economic zone) or direct reporting to the AFWG. Where catches are reported as *Sebastes sp.*, they are split into *S. norvegicus* and *S. mentella* by AFWG experts based on available correlation between official catches of these two species in the considered areas. Landings of *S. norvegicus* showed a decrease from a level of 23 000–30 000 t in 1984–1990 to a stable level of about 16 000–19 000 t in the years 1991–1999. Then the landings decreased further, and the total landings figures for *S. norvegicus* in 2003–2013 were low but remarkably

¹ Golden redfish (*Sebastes norvegicus*) in subareas 1 and 2 (Northeast Arctic); reg.27.1-2.

stable, between 5500–8000 t. In 2014 the landings decreased to 4825 t, followed by a further decrease in 2015 with landings of 3873 t, mainly due to stronger regulations. This has since reversed with 8559 tonnes in 2019, 9644 tonnes in 2020 and 10 193 tonnes in 2021 (provisional). This increase is likely due to the increased quota for beaked redfish and thereby increased bycatch of golden redfish. The time-series of *S. norvegicus* landings is given in Figure 7.1. A map of *S. norvegicus* catches from Norwegian vessels' logbooks in 2020 is shown in Figure 7.2. Note that species identification from landings and logbooks is not always trusted when the Norwegian final landings data are prepared (see Stock Annex).

The Norwegian landings are presented by gear and month/year in figures 7.3a,b. Reported landings were at the lowest level since World War II in 2015. Since 2015 only bycatches of *S. norvegicus* are allowed except for a limited amount caught by vessels less than 15 metres fishing with handline from 1 June to 31 August. The increase in landings since 2015 is due to increased bycatch in trawl.

The reported Russian catches of *S. norvegicus* have been around 600–900 t since 2001, but from 2017 onwards the catches increased steadily to a maximum of 2615 tonnes in 2020 and then decreasing again to 1737 tonnes in 2021. Twelve other countries together usually report catches in the 300–500 t range or less (Table 7.1).

The bycatch of redfish (*Sebastes* spp.) in the Norwegian Barents Sea shrimp fisheries during the period 1983–2017 were dominated by *S. mentella*, and hence influenced the *S. norvegicus* to a much lesser extent. However, these bycatches probably inflicted extra mortality on *S. norvegicus* in the coastal areas before the sorting grid was enforced in 1990. From 1 January 2006, the maximum legal bycatch of redfish juveniles in the international shrimp fisheries in the northeast Arctic has been reduced from ten to three redfish per 10 kg shrimp.

Information describing the splitting of the redfish landings by species and area is given in the Stock Annex.

7.1.3 Expected landings in 2022

New regulations were designed and implemented in the Norwegian coastal fisheries with conventional gears in 2016. No directed fishery is allowed, but the bycatch-regulations are currently rather liberal with vessels less than 21 metres being allowed to have up to 30% by weight of redfish in the period 1 August–31 December. The bycatch is calculated in live weight per week.

As expected, total landings in 2021 increased due to the raised quota for *S. mentella*, and thus an increase in bycatch of *S. norvegicus*. The quota for *S. mentella* in 2021 was not fully exhausted but catches increased by about 10 000 t compared to the previous year. With an even higher *S. mentella* quota for 2022, the increase in bycatch of *S. norvegicus* is expected to continue in 2022.

7.2 Data used in the assessment (Table 0.1 and Figure E1)

An example of the sampling levels (by season, area and gear) of the data used in the assessment is presented in Figure E1 for 2013. Although Table 0.1 (see Section 0) shows a reasonably good total sampling level for this stock, the number of different boats sampled, and the gear and area coverage should be improved.

7.2.1 Catch-at-length and age (Table 7.5 and Figure 7.4)

The method previously used for calculating catch-at-length and age of Norwegian catches can no longer be used and the procedure was intended to use the new StoX-Reca software. However,

this ran into problems with the bimodal growth pattern exhibited by golden redfish and the large number of length-samples compared with age-samples. Therefore, it was decided to fall back onto the workaround used in the 2020 assessment for catch-at-length and to use the age data from StoX-Reca for 2018 onwards with ages 30+, at which most of the differences occurred, set to missing. Work on the StoX-Reca method will continue towards the benchmark in 2024.

Age composition data were only provided by Norway in the latest years. Other countries were assumed to have the same relative age distribution and mean weight as Norway. The catch numbers-at-age matrix is shown in Table 7.5. Catch at length data were also only available from Norway (Figure 7.4).

7.2.2 Catch weight-at-age (Table 7.6)

Weight-at-age data for ages 7–24+ from Norwegian catches were estimated using StoX-Reca starting with the 2018-catches (Table 7.6). For 2021 weight-at-age-data was not available during the working group, due to a lack of age data from that year. Variations in the weight-at-age of young individuals (< 10 years) must be considered with caution as these numbers are derived from only a small number of aged individuals.

7.2.3 Maturity-at-age (Table E1, Figure 7.5a–b)

A maturity ogive has previously not been available for *S. norvegicus*, and knife-edge maturity-at-age 15 (age 15 as 100% mature) had hence been assumed. Maturity-at-age and length is available from Norwegian surveys and landings up to 2019, as reported in Table E1 and presented in Figure 7.5a. Only the data up to 2018 was considered in the model, due to insufficient age readings in the later years. The maturity ogive modelled by Gadget is presented (Figure 7.5b). This analysis shows that 50% of the fish at age 12 are mature.

7.2.4 Survey results (Tables E2a,b–E3a,b–E4, Figures 7.6a,b–7.8)

Results from the following research vessel survey series are available for *S. norvegicus*:

Joint Norwegian–Russian Barents Sea winter bottom-trawl survey (A6996 BS–NoRu–Q1 BTr) from 1986 to 2022 in fishing depths of 100–500 m. Length compositions for the years 1986–2022 are shown in Table E2a and Figure 7.6a. Age compositions for the years 1992–2016, 2018 and 2019 are shown in Table E2b and Figure 7.6b. This survey covers important nursery areas for the stock. As described in the stock annex, this survey is used in model tuning.

Norwegian Svalbard (Division 2.b) bottom-trawl survey (August–September) from 1985 to 2020 in fishing depths of 100–500 m (depths down to 800 m incl. in the swept-area). Since 2005 this is part of the Joint Norwegian–Russian Barents Sea Ecosystem survey (A6996 Eco–NoRu–Q3 BTr). Length compositions for the years 1985–2021 and age compositions for the years 1992–2008, 2012, 2013, 2016 and 2018 are shown in Table E3a and E3b, respectively. This survey covers the northernmost part of the species' distribution. Missing age compositions are due to insufficient number of age readings or too few age samples. This survey is not currently included in the model tuning.

Data on length and age from winter and ecosystem surveys have been combined and are shown in Figures 7.7a–b.

Norwegian Coastal and Fjord survey in 1998–2020 from Finnmark to Møre (NOcoast–Aco–Q4). Length composition from catch rates (numbers/nm² averaged for all stations within subareas and finally averaged, weighted by subarea, for the total surveyed area) are shown in Figure 7.8 and

Table E4. The survey is an acoustic survey designed to obtain indices of abundance and estimates of length and weight-at-age of saithe and coastal cod north of 62°N. The index for golden redfish was previously used in the assessment, but was considered unreliable and stopped in 2010. A new index series was recalculated for the benchmark in 2018 (WKREDFISH 2018a). The aggregated survey index varied too much year-to-year to be driven by the population dynamics, but the length distribution was included in the assessment.

SToX versions of winter and ecosystem surveys are used since AFWG 2020. The group recommended that work continues to investigate redfish-specific strata systems for the winter survey and continued monitoring whether the distribution of redfish shifts outside the strata system used for the ecosystem survey. The coastal survey for *S. norvegicus* is in the process of conversion to StoX and adoption of a species-specific strata system, aiming to establish a coherent index of abundance and/or biomass can be obtained for this survey (which is currently only used for annual length distributions).

The bottom-trawl surveys covering the Barents Sea and the Svalbard areas show that the abundance indices over the commercial size range (> 25 cm) were relatively stable up to 1998 but declined to lower levels afterwards. Abundance of pre-recruits (< 25 cm) has steadily decreased since 1991 and has dropped to very low levels after 2000 (Figure 7.6a). An increase in the number of pre-recruits is visible from 2008 onwards. Although this could partly result from taxonomic misidentification, the confirmation of increased numbers for individuals of size 15 cm and greater gives some confidence that at least some of the increasing numbers are *S. norvegicus*.

7.3 Assessment with the Gadget model

7.3.1 Description of the model

Since AFWG2005, the GADGET model has been used for this stock, first with experimental runs, and then as analytical assessments following its adoption by WKRED (2012) benchmark (ICES CM 2012/ACOM:48). The model was then approved again at WKREDFISH (2018a), where it was also recommended to switch to a two-year advice cycle. A number of changes have been made to the model at the benchmark WKREDFISH (2018a); the model is moved to a one-year time-step; the fleet structure has been revised to better reflect recent fishing patterns; age-length data are used for tuning in 5 cm (rather than the previous 1 cm) bins to reduce the extensive noise in this series; proportions (but not absolute abundance) by length in the coastal survey is used for tuning; the model weights have been recalculated; a number of minor errors in the model and data were fixed. Full details are in the WKREDFISH benchmark report (ICES 2018a).

The GADGET model used for the assessment of *S. norvegicus* in subareas 1 and 2 is closely related to the GADGET model that currently is used by the ICES Northwestern WG on *S. norvegicus* (Björnsson and Sigurdsson, 2003). The functioning of a Gadget model, including parameter estimation and data used for tuning, is described in Bogstad *et al.* (2004) and in the stock annex for *S. norvegicus*. In brief, the model is a single species forward simulation age-length structured model, split into mature and immature components. There are three commercial fleets (a gillnet, a trawl and a combined longline and handline fleet). Prior to 2009 the trawl and longline fleets are combined into one, due to difficulties in obtaining data on a finer resolution. The gillfleet has different selectivity from 2009 compared to 2008 and earlier. There are two surveys used in the model, winter survey and coastal survey. Winter survey tunes to total survey index, the coastal survey to length distributions only. Growth and fishing selectivity within each fleet and survey are assumed constant over time (except for the gillfleet), and recruitment is estimated on annual basis (no SSB-recruit relationship).

The weighting scheme for combining the different datasets into a single likelihood score is a method where weights are selected so that the catch and survey data have approximately equal contribution to the overall likelihood score in the optimized model, and that each dataset within each group gives approximately equal contributions to each other. This ensures that both noise and bias (actually divergence from the consensus) are taken into account in the weighting of datasets. The parameters in the model are estimated using a combination of Simulated Annealing (wide-area search) and Hooke and Jeeves (local search) repeated in sequence until a converged solution is found.

7.3.2 Data used for tuning

- Annual catch in tonnes from the commercial fishing fleets, i.e. Norwegian gillnet, and trawl fleet, longline since 2009 and “combined trawl and longline” prior to 2009.
- Annual length distribution of total international commercial landings from the commercial fishing fleets to 2021. Due to late data submissions, there is one-year time-lag in the inclusion of length distributions from other countries than Norway.
- Annual age-length data (1 year by 5 cm resolution) from the same fishing fleets, up to 2020. In the last three years (2018–2020) ages above 29 were excluded due to changes in age reading which particularly affected the proportion of fish aged 30+.
- Length disaggregated frequencies from the Barents Sea (Division 2.a) bottom-trawl survey (February) from 1990–2022 (Table E1a).
- Age-length data and aggregated survey indices from the same survey up to 2019, excluding 2017 (Table E1b).
- Length disaggregated frequencies from the Barents Sea (Division 2.a) coastal survey (February) from 1998–2021 (Table E3, Figure 7.8).

7.3.3 Assessment results using the Gadget model (Figures 7.9–7.13)

The general patterns in the stock dynamics of *S. norvegicus* are similar to those modelled for the past several years, but the recruitment event in 2003 is now beginning to have a noticeable positive effect on the overall stock. The overall stock numbers and biomass have shown a decline over a number of years, but the recent recruitment means that immature and total numbers as well as immature biomass are improving. By now some of the 2003 year class are mature, and the mature stock numbers are therefore stabilizing. The mature biomass is not responding yet, since the maturing fish are still relatively small.

As in previous years, we note that there has been a tendency for some recruitment signal to be reduced in subsequent years, possibly due to misidentification of small *S. mentella* (which is a larger stock and has had good recent recruitment) as *S. norvegicus*, and the model has repeatedly revised down the estimates of this recruitment, although not to zero. The largest fish from the 2003 year class are now entering the mature stock and the fishery, and this is providing multiple sources of information that this was a genuinely good recruitment. The WG stresses that the subsequent recruitment signals (for example the high estimated 2009 year class) should still be treated with extreme caution until they enter the fishery (c. 12–15 years after recruiting).

The most important conclusions to be drawn from the current assessment using the Gadget model are:

- The recruitment to the stock has been very poor for a long period, and especially prior to 2005 (Figure 7.10).
- There has been somewhat better-estimated recruitment in recent years, with a reasonably good recruitment in 2003 (Figure 7.13). Indications of a second pulse of good recruitment

- in 2009 have strengthened in the current assessment, but are still highly uncertain, and will need to be tracked for some years to come, to reduce this uncertainty.
- The estimated fishing mortality (F_{15+}) declined between 1990 and 2005 but remained relatively stable until around 2015, (Figure 7.11, Table 7.7). The current mortality is estimated to $F = 0.41$ (Figure 7.11), well above a sustainable level for a redfish species, and above the $F_{MSY} = 0.05$ estimated at WKREDFISH (ICES 2018a). Note that the F estimate is based on the 2003 year class being a good one, and the estimate would be higher if this is not the case.

According to the model the total-stock biomass (3+) of *S. norvegicus* has decreased from about 119 000 tonnes in the early 1990s to just under 50 000 tonnes in 2021 (Figure 7.12, Table 7.8). Due to the improved recruitment from the 2003 year class, the total biomass is beginning to stabilize, although the SSB is continuing to decline. This reduction is primarily the result of prolonged low recruitment, combined with excessively high fishing pressure.

The average assessment bias (Mohn's Rho) over the last 5 assessments was 1% for recruitment, 56% for $F(15+)$ and -29% for SSB. The retrospective plots (Figure 7.13) exhibit a sharp rise in the estimate of mature biomass compared to earlier assessments and a corresponding decline in $F(15+)$. This can partially be explained by a change in the method of splitting the catch between beaked and golden redfish. However, also in earlier years the retrospectives exhibited a rise in mature biomass for which the reason is unclear and will have to be monitored.

7.3.4 State of the stock

Survey observations and the Gadget assessment update confirm previous diagnostics that this stock is currently in a very poor situation. This is confirmed by the production model run as a check at WKRED (ICES 2012) and for the 2020 red list evaluation, which produced similar trends. Indications are that the SSB is continuing to fall. This has led to an upwards trend in F to a level that may place an increasing burden on an already poorly performing stock. Furthermore, in the absence of a substantial population of fish in the 10 to 18 age range, the fishery has become increasingly concentrated on the oldest (18 years and older) individuals, reducing the reproductive capacity of the stock.

There are indications that new recruits from the 2003 year class may have entered the population in recent years as noted in previous AFWG reports. The estimated immature biomass is now beginning to increase, but SSB still declines. However, the total level of this recruitment is still uncertain, and although the 2003 year class is estimated to have been the best since the late 1990s, it is not the largest year class seen in the time-series. Consequently, any rebuilding from this year class is likely to be slow. Rebuilding of this stock is therefore dependent on protecting both the existing SSB and any fish recruiting to it. Note that there are significant uncertainties from misidentification between the redfish species in the Barents Sea, and thus the exact values of both stock and F are uncertain, although the trends are clearly defined.

S. norvegicus is currently on the Norwegian Redlist as a threatened (EN) species according to the criteria given by the International Union for Conservation of Nature (IUCN).

Red-listing is understood to mean that a species (or stock) is at risk of extinction. ICES convened two workshops in 2009. The first Workshop WKPOOR1 (ICES CM 2009/ACOM:29) addressed methods for evaluating extinction risk and outlined approaches that could support advice on how to avoid potential extinction. The second Workshop WKPOOR2 (ICES CM 2009/ACOM:49) applied the results of the first workshop to four stocks selected as being of interest to Norway and ICES.

There are three general methods for evaluating extinction risk: (1) screening methods, such as the IUCN redlisting criteria; (2) simple population viability analysis (PVA) based on time-trends; and (3) age-structured population viability analysis. None of the methods are considered reliable for accurately estimating the absolute probability of extinction, but they may be useful to evaluate the relative probability of extinction between species or between management options.

The fishery is largely concentrated on mature individuals. With a currently estimated SSB of below 30 000 tonnes and a F_{MSY} of 0.05, one would expect a sustainable catch to be in the order of 1000 to 1500 tonnes. The current catches are about ten times as much.

7.3.5 Biological reference points

Reference point calculations were conducted at WKREDFISH benchmark (2018a), based on a B_{LOSS} with reasonable recruitment, and a forecast with constant recruitment to produce an F_{MSY} candidate. Note that the benchmark used preliminary data and that the results presented here are slightly changed from those at WKREDFISH (2018). We, therefore, follow the methodology presented at WKREDFISH (2018a) but adjust the B_{lim} based on the revised SSB estimate for 2002. This has the effect of raising the proposed B_{lim} from 44 000 tonnes to 49 000 tonnes. The F_{MSY} calculations are unaffected, as these are based on steady-state forecasts.

No stock–recruitment relationship is presented for this stock. Within the model, recruitment is modelled as an annual recruitment value with no relationship with the SSB.

- B_{lim} : B_{lim} is based on the Lowest Observed Stock Size at which reasonable recruitment was observed. This is assumed to be the 2003 year class, at which time the SSB is estimated to be 49 000 tonnes (or 44 000 tonnes using the benchmark values)
- B_{pa} : Using the ICES default multiplier of 1.4 for B_{pa} gives a B_{pa} value of 68 600 tonnes (61 000 tonnes using the benchmark values)

The stock is currently well below the biomass limit reference point, and thus F_{MSY} is not recommended as the current fishing level. However, it was considered useful to try to estimate a candidate F_{MSY} reference point, which can be used to compare against management performance. Using yield–per–recruit analysis WKREDFISH (2018a) proposes $F_{0.1(15+)}$, estimated to be 0.0525, as a candidate F_{MSY} (Figure E2).

Given the poor state of this stock, management should be based on the need to protect and recover the stock, not on F_{MSY} .

7.3.6 Management advice

AFWG considers that the stock is severely depleted. There are signs that recruitment in 2003 is now beginning to stabilize the population and, for the immature fish, improve the stock status. However, the stock remains in a poor state, and as of now, there are only weak indications that the mature stock is improving. AFWG, therefore, recommends that current area closures and low bycatch limits should be maintained. No directed fishery should be conducted on this stock at the moment, and the percent legal bycatch should be set as low as possible for other fisheries to continue. There will be no directed fishery for *S. norvegicus* in 2022. It is critical that the bycatch regulations do not allow the catch to increase, as this would impair prospects for recovery.

7.3.7 Implementing the ICES F_{MSY} framework

As a long-lived species, *S. norvegicus* has many year classes contributing to the population, and consequently a relatively stable stock level from year-to-year. This makes it relatively simple to

manage to some proxy of MSY (e.g. $F_{0.1}$) once the biomass has reached close to B_{MSY} , provided adequate measures can be implemented to reduce fishing pressure to an appropriate level. It should be noted that the current fishery is well above the preliminary F_{MSY} for the stock. The main focus should therefore be on reducing total F . The current priority is to stabilize the stock and prevent further decline and allow the recruiting 2003 year class to grow and reproduce. Only then could a recovery strategy and eventually an MSY fishery be implemented. The recent upturn in immature biomass gives some hope that such recovery may be possible, given low fishing pressure.

7.4 Tables and figures

Table 7.1. *S. norvegicus* in subareas 1 and 2. Nominal catch (t) by countries in Subarea 1 and divisions 2.a and 2.b combined.

| Year | Denmark | Faroe Islands | France | Germany | Greenland | Iceland | Ireland | Lithuania | Netherlands | Norway | Poland | Portugal | Russia | Spain | UK | Total |
|------|---------|---------------|--------|---------|-----------|---------|---------|-----------|-------------|--------|--------|----------|--------|-------|-----|-------|
| 1998 | – | 78 | 494 | 131 | 33 | – | 19 | – | – | 16540 | – | 6 | 1632 | 51 | 171 | 19155 |
| 1999 | – | 35 | 35 | 228 | 47 | 14 | 7 | – | – | 16750 | – | 3 | 1691 | 7 | 169 | 18986 |
| 2000 | – | 17 | 13 | 160 | 22 | 16 | – | – | – | 13032 | – | 16 | 1112 | – | 73 | 14461 |
| 2001 | – | 37 | 30 | 238 | 17 | – | 1 | – | – | 9134 | – | 7 | 963 | 1 | 119 | 10547 |
| 2002 | – | 60 | 31 | 42 | 31 | 3 | – | – | – | 8561 | – | 34 | 832 | 3 | 46 | 9643 |
| 2003 | – | 109 | 8 | 122 | 36 | 4 | – | – | 89 | 6853 | – | 6 | 479 | – | 134 | 7840 |
| 2004 | – | 19 | 4 | 68 | 20 | 30 | – | – | 33 | 6233 | – | 5 | 722 | 3 | 69 | 7206 |
| 2005 | – | 47 | 10 | 72 | 36 | 8 | – | – | 48 | 6085 | – | 56 | 614 | 8 | 52 | 7036 |
| 2006 | – | 111 | 8 | 35 | 44 | 31 | 3 | – | 21 | 6305 | – | 69 | 713 | 9 | 39 | 7388 |
| 2007 | – | 146 | 15 | 67 | 84 | 68 | 13 | – | 20 | 5784 | – | 225 | 890 | 5 | 55 | 7372 |
| 2008 | – | 274 | 63 | 30 | 71 | 27 | 6 | – | 2 | 5216 | – | 72 | 749 | 4 | 85 | 6599 |
| 2009 | – | 70 | 1 | 58 | 81 | 66 | – | – | 1 | 5451 | – | 30 | 698 | – | 31 | 6487 |
| 2010 | – | 171 | 51 | 31 | 72 | 22 | – | – | – | 5994 | 1 | 28 | 565 | 3 | 44 | 6981 |
| 2011 | – | 24 | 53 | 9 | 51 | 22 | – | – | 1 | 4681 | 48 | 25 | 919 | 6 | 13 | 5852 |

| Year | Denmark | Faroe Islands | France | Germany | Greenland | Iceland | Ireland | Lithuania | Netherlands | Norway | Poland | Portugal | Russia | Spain | UK | Total |
|-------------------|---------|---------------|--------|---------|-----------|---------|---------|-----------|-------------|--------|--------|----------|--------|-------|-----|-------|
| 2012 | – | 87 | 182 | 71 | 58 | 23 | 12 | – | 5 | 4247 | 34 | 17 | 681 | – | 100 | 5517 |
| 2013 | 1 | 83 | 353 | 1 | 45 | 8 | 1 | – | – | 3836 | 19 | 36 | 797 | – | 493 | 5673 |
| 2014 | – | 67 | 219 | 6 | 20 | 29 | – | – | 1 | 3440 | 21 | 5 | 806 | – | 211 | 4825 |
| 2015 | 1 | 76 | 53 | 24 | 211 | 35 | – | – | – | 2733 | 17 | – | 664 | 2 | 57 | 3873 |
| 2016 | 7 | 183 | 30 | 4 | 87 | 55 | – | – | – | 4131 | 26 | – | 864 | – | 76 | 5463 |
| 2017 | – | 123 | 17 | 19 | 61 | 65 | – | – | 2 | 3567 | 27 | 90 | 1297 | 44 | 160 | 5472 |
| 2018 | 1 | 146 | 37 | 66 | 77 | 67 | – | – | – | 4961 | 36 | 67 | 1834 | 12 | 37 | 7341 |
| 2019 | – | 236 | 25 | 93 | 56 | 83 | – | 3 | – | 5951 | 20 | 73 | 1929 | 65 | 25 | 8559 |
| 2020 ¹ | – | 166 | 1 | 88 | 99 | 52 | – | – | – | 6503 | 9 | 86 | 2615 | 6 | 19 | 9644 |
| 2021 ¹ | 2 | 323 | 6 | 76 | 92 | 72 | – | – | – | 7701 | 20 | 60 | 1737 | 8 | 96 | 10193 |

1 – Provisional figures.

Table 7.2. *S. norvegicus* in subareas 1 and 2. Nominal catch (t) by countries in Subarea 1.

| Year | Faroe Islands | France | Germany | Greenland | Iceland | Ireland | Lithuania | Norway | Poland | Portugal | Russia | Spain | UK | Total |
|------|---------------|--------|---------|-----------|---------|---------|-----------|--------|--------|----------|--------|-------|----|-------|
| 1998 | 78 | – | 5 | – | – | – | – | 2109 | – | – | 308 | – | 30 | 2530 |
| 1999 | 35 | – | 18 | 9 | 14 | – | – | 2114 | – | – | 360 | – | 11 | 2561 |
| 2000 | – | – | 1 | – | 16 | – | – | 1983 | – | – | 146 | – | 12 | 2158 |
| 2001 | 4 | – | 11 | – | – | – | – | 1053 | – | – | 128 | – | 16 | 1212 |
| 2002 | 15 | 1 | 5 | – | – | – | – | 693 | – | – | 220 | – | 9 | 943 |
| 2003 | 15 | – | – | 1 | – | – | – | 815 | – | – | 140 | – | 4 | 975 |
| 2004 | 7 | – | – | – | – | – | – | 1237 | – | – | 213 | – | 12 | 1469 |
| 2005 | 10 | 1 | – | – | – | – | – | 1002 | – | – | 61 | – | 4 | 1078 |
| 2006 | 46 | – | – | – | – | – | – | 690 | – | – | 136 | – | – | 872 |
| 2007 | 15 | – | 12 | 15 | – | – | – | 1034 | – | – | 49 | 2 | 20 | 1147 |
| 2008 | 45 | 7 | 2 | – | – | – | – | 634 | – | 3 | 49 | – | 15 | 755 |
| 2009 | – | – | 3 | 2 | 6 | – | – | 701 | – | 30 | 19 | – | 24 | 768 |
| 2010 | 58 | – | – | – | – | – | – | 497 | – | – | 21 | 1 | 6 | 583 |
| 2011 | 24 | – | – | 2 | 1 | – | – | 674 | – | – | 7 | – | – | 708 |
| 2012 | 17 | – | 3 | 1 | 9 | 2 | – | 546 | – | – | 27 | – | 18 | 623 |

| Year | Faroe Islands | France | Germany | Greenland | Iceland | Ireland | Lithuania | Norway | Poland | Portugal | Russia | Spain | UK | Total |
|-------------------|---------------|--------|---------|-----------|---------|---------|-----------|--------|--------|----------|--------|-------|----|-------------|
| 2013 | 28 | 2 | 1 | – | + | – | – | 563 | – | – | 41 | – | 4 | 639 |
| 2014 | 59 | 10 | 6 | 17 | 4 | – | – | 573 | 2 | – | 26 | – | 17 | 714 |
| 2015 | 57 | 4 | 9 | 211 | 13 | – | – | 624 | 2 | – | 51 | 2 | 10 | 983 |
| 2016 | 161 | 7 | 4 | 74 | 51 | – | – | 1152 | 4 | – | 136 | – | 60 | 1649 |
| 2017 | 81 | 5 | – | 8 | 4 | – | – | 970 | 2 | 2 | 211 | 2 | 23 | 1308 |
| 2018 | 146 | 28 | 35 | 29 | – | – | – | 1151 | 5 | 3 | 302 | 5 | 25 | 1729 |
| 2019 | 220 | 10 | 32 | 22 | 30 | – | 2 | 1104 | 4 | 1 | 422 | 3 | 10 | 1860 |
| 2020 | 143 | – | 14 | 18 | 33 | – | – | 1284 | 2 | 8 | 708 | 6 | 1 | 2217 |
| 2021 ¹ | 296 | – | – | 54 | 15 | – | – | 1445 | – | 12 | 305 | – | – | 2127 |

1 – Provisional figures.

+ denotes less than 0.5 tonnes.

Table 7.3 *S. norvegicus* in subareas 1 and 2. Nominal catch (t) by countries in Division 2.a.

| Year | Faroe Islands | France | Germany | Greenland | Iceland | Ireland | Netherland | Norway | Poland | Portugal | Russia | Spain | UK | Total |
|------|---------------|--------|---------|-----------|---------|---------|------------|--------|--------|----------|--------|-------|-----|-------|
| 1998 | – | 494 | 116 | 33 | | 19 | – | 14326 | – | 6 | 1078 | 51 | 137 | 16260 |
| 1999 | – | 35 | 210 | 38 | | 7 | – | 14598 | – | 3 | 976 | 7 | 156 | 16030 |
| 2000 | 17 | 13 | 159 | 22 | | – | – | 11038 | – | 16 | 658 | – | 61 | 11984 |
| 2001 | 33 | 30 | 227 | 17 | | 1 | – | 8002 | – | 6 | 612 | 1 | 103 | 9032 |
| 2002 | 45 | 30 | 37 | 31 | 3 | – | – | 7761 | – | 18 | 192 | 2 | 32 | 8151 |
| 2003 | 94 | 9 | 122 | 35 | 4 | – | 89 | 5970 | – | 6 | 264 | | 130 | 6723 |
| 2004 | 12 | 4 | 68 | 20 | 30 | – | 33 | 4872 | – | 5 | 396 | 3 | 58 | 5501 |
| 2005 | 37 | 9 | 60 | 36 | 8 | – | 48 | 4855 | – | 56 | 265 | 8 | 48 | 5430 |
| 2006 | 60 | 8 | 35 | 44 | 31 | 3 | 21 | 4404 | – | 59 | 293 | 9 | 39 | 5006 |
| 2007 | 119 | 15 | 55 | 69 | 68 | 13 | 20 | 4101 | – | 70 | 599 | 3 | 35 | 5167 |
| 2008 | 229 | 56 | 28 | 71 | 27 | 6 | 2 | 4456 | – | 68 | 450 | 4 | 70 | 5467 |
| 2009 | 70 | 1 | 55 | 79 | 60 | – | 1 | 4543 | – | 17 | 500 | – | 7 | 5333 |
| 2010 | 113 | 51 | 31 | 72 | 22 | – | – | 5414 | 1 | 26 | 287 | 2 | 38 | 6057 |
| 2011 | – | 51 | 9 | 49 | 20 | – | 1 | 3942 | – | – | 695 | 2 | 13 | 4782 |
| 2012 | 49 | 182 | 33 | 57 | 13 | 2 | 2 | 3599 | – | 1 | 427 | – | 33 | 4398 |

| Year | Faroe Islands | France | Germany | Greenland | Iceland | Ireland | Netherland | Norway | Poland | Portugal | Russia | Spain | UK | | Total |
|-------------------|---------------|--------|---------|-----------|---------|---------|------------|--------|--------|----------|--------|-------|-----|---------------|-------|
| 2013 | 55 | 343 | – | 45 | 8 | – | – | 3170 | – | 9 | 475 | – | 466 | Denmark – 1 | 4572 |
| 2014 | 8 | 209 | – | 3 | 25 | – | 1 | 2732 | – | 2 | 559 | – | 178 | | 3717 |
| 2015 | 18 | 49 | 15 | – | 22 | – | – | 2081 | 12 | – | 439 | – | 47 | | 2683 |
| 2016 | 22 | 23 | – | 13 | 4 | – | – | 2946 | 8 | – | 545 | – | 15 | | 3576 |
| 2017 | 41 | 12 | 19 | 36 | 61 | – | 2 | 2549 | 22 | 88 | 680 | 38 | 137 | | 3685 |
| 2018 | – | 9 | 17 | 43 | 67 | – | – | 3746 | 12 | 64 | 489 | 7 | 12 | – | 4466 |
| 2019 | 16 | 14 | 61 | 34 | 53 | – | – | 4744 | 16 | 72 | 794 | 61 | 14 | Lithuania – 1 | 5880 |
| 2020 ¹ | 23 | 1 | 61 | 81 | 19 | – | – | 4838 | – | 78 | 946 | – | 16 | | 6063 |
| 2021 ¹ | 24 | 5 | 21 | 36 | 57 | – | – | 5680 | – | 48 | 1073 | 2 | 90 | | 7036 |

1 – Provisional figures.

Table 7.4 *S. norvegicus* in subareas 1 and 2. Nominal catch (t) by countries in Division 2.b.

| Year | Denmark | Faroe Islands | France | Germany | Greenland | Iceland | Ireland | Netherlands | Norway | Poland | Portugal | Russia | Spain | UK | Total |
|------|---------|---------------|--------|---------|-----------|---------|---------|-------------|--------|--------|----------|--------|-------|----|-------|
| 1998 | – | – | – | 10 | – | | | | 105 | – | – | 246 | – | 3 | 364 |
| 1999 | – | – | – | – | – | | | | 38 | – | – | 355 | – | 2 | 395 |
| 2000 | – | – | – | – | – | | | | 10 | – | – | 308 | – | – | 318 |
| 2001 | – | – | – | – | – | | | | 79 | – | 1 | 223 | – | – | 303 |
| 2002 | – | – | – | – | – | | | | 107 | – | 16 | 420 | 1 | 5 | 549 |
| 2003 | – | – | – | – | – | | | | 68 | – | – | 75 | – | – | 143 |
| 2004 | – | – | – | – | – | | | | 124 | – | – | 113 | – | – | 237 |
| 2005 | – | – | – | 13 | – | | | | 228 | – | – | 288 | – | – | 529 |
| 2006 | – | 5 | – | – | – | | | | 1211 | – | 10 | 284 | – | – | 1510 |
| 2007 | – | 12 | – | – | – | | | | 649 | – | 155 | 242 | – | – | 1058 |
| 2008 | – | – | – | – | – | | | | 126 | – | 1 | 250 | – | – | 377 |
| 2009 | – | – | – | – | – | | | | 207 | – | – | 179 | – | – | 386 |
| 2010 | – | – | – | – | – | | | | 83 | – | 2 | 257 | – | – | 342 |
| 2011 | – | – | 2 | – | – | 1 | – | – | 65 | 48 | 25 | 217 | 4 | – | 362 |
| 2012 | – | 21 | – | 35 | – | 1 | 8 | 3 | 102 | 34 | 16 | 227 | – | 49 | 496 |

| Year | Denmark | Faroe Islands | France | Germany | Greenland | Iceland | Ireland | Netherlands | Norway | Poland | Portugal | Russia | Spain | UK | Total |
|-------------------|---------|---------------|--------|---------|-----------|---------|---------|-------------|--------|--------|----------|--------|-------|----|-------|
| 2013 | – | – | 9 | – | – | – | 1 | – | 102 | 19 | 27 | 281 | – | 23 | 462 |
| 2014 | – | – | – | – | – | – | – | – | 135 | 19 | 3 | 221 | – | 16 | 394 |
| 2015 | 1 | – | – | – | – | – | – | – | 28 | 3 | – | 175 | – | – | 207 |
| 2016 | 7 | – | – | – | – | – | – | – | 34 | 14 | – | 183 | – | – | 238 |
| 2017 | – | – | – | – | 18 | – | – | – | 48 | 2 | – | 405 | 4 | – | 477 |
| 2018 | 1 | – | – | 14 | 6 | – | – | – | 64 | 19 | – | 1043 | – | – | 1147 |
| 2019 | – | – | – | – | – | – | – | – | 103 | – | – | 712 | 1 | 1 | 817 |
| 2020 | – | – | – | 13 | – | – | – | – | 381 | 7 | – | 961 | – | 3 | 1365 |
| 2021 ¹ | 2 | 3 | + | 55 | 2 | – | – | – | 576 | 20 | – | 359 | 6 | 6 | 1030 |

1 – Provisional figures.

+ denotes less than 0.5 tonnes.

Table 7.5. *S. norvegicus* in subareas 1 and 2. Catch numbers-at-age (in thousands). Since 2018, numbers are from StoX-Reca.

| Year/Age | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | +gp | Total Num. | Tonnes Land. |
|----------|---|----|-----|-----|-----|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|------|------------|--------------|
| 1992 | 5 | 22 | 78 | 114 | 394 | 549 | 783 | 1718 | 3102 | 2495 | 2104 | 1837 | 998 | 858 | 688 | 547 | 268 | 3110 | 19670 | 16185 |
| 1993 | 0 | 24 | 193 | 359 | 406 | 1036 | 1022 | 1523 | 2353 | 1410 | 1655 | 1678 | 745 | 716 | 534 | 528 | 576 | 3482 | 18240 | 16651 |

| Year/Age | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | +gp | Total Num. | Tonnes Land. |
|----------|----|-----|-----|-----|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|------|------------|--------------|
| 1994 | 46 | 7 | 292 | 640 | 816 | 1930 | 2096 | 2030 | 1601 | 2725 | 2668 | 1409 | 617 | 733 | 514 | 256 | 177 | 1508 | 20065 | 18120 |
| 1995 | 60 | 85 | 230 | 672 | 908 | 1610 | 2038 | 2295 | 1783 | 1406 | 785 | 563 | 670 | 593 | 419 | 368 | 250 | 3232 | 17967 | 15616 |
| 1996 | 9 | 119 | 313 | 361 | 879 | 1234 | 1638 | 2134 | 1675 | 1614 | 1390 | 952 | 679 | 439 | 560 | 334 | 490 | 3135 | 17955 | 18043 |
| 1997 | 9 | 98 | 156 | 321 | 686 | 1065 | 1781 | 2276 | 2172 | 1848 | 1421 | 851 | 804 | 608 | 511 | 205 | 334 | 2131 | 17277 | 17511 |
| 1998 | 28 | 51 | 206 | 470 | 721 | 968 | 1512 | 1736 | 1582 | 1045 | 1277 | 970 | 1018 | 846 | 443 | 764 | 486 | 3389 | 17512 | 19155 |
| 1999 | 78 | 593 | 855 | 572 | 1006 | 1230 | 1618 | 1480 | 1612 | 1239 | 1407 | 1558 | 1019 | 394 | 197 | 459 | 174 | 2131 | 17622 | 18986 |
| 2000 | 4 | 13 | 70 | 245 | 902 | 958 | 1782 | 1409 | 2121 | 2203 | 1715 | 753 | 483 | 458 | 132 | 230 | 224 | 895 | 14597 | 14460 |
| 2001 | 23 | 23 | 44 | 199 | 347 | 482 | 1120 | 1342 | 1674 | 1653 | 1243 | 568 | 119 | 183 | 154 | 112 | 135 | 254 | 9675 | 10547 |
| 2002 | 14 | 36 | 71 | 143 | 414 | 686 | 1199 | 1943 | 1377 | 1274 | 1196 | 388 | 313 | 99 | 104 | 117 | 113 | 253 | 9740 | 9643 |
| 2003 | 22 | 25 | 30 | 44 | 204 | 359 | 705 | 1687 | 1338 | 1071 | 937 | 481 | 367 | 146 | 84 | 51 | 18 | 69 | 7637 | 7841 |
| 2004 | 19 | 47 | 46 | 65 | 198 | 277 | 504 | 590 | 677 | 963 | 1059 | 787 | 436 | 169 | 183 | 108 | 79 | 186 | 6390 | 7320 |
| 2005 | 40 | 55 | 94 | 80 | 165 | 173 | 393 | 779 | 741 | 916 | 926 | 743 | 376 | 210 | 189 | 129 | 111 | 220 | 6338 | 7037 |
| 2006 | 45 | 32 | 56 | 70 | 245 | 204 | 201 | 809 | 549 | 779 | 794 | 747 | 496 | 332 | 310 | 188 | 165 | 397 | 6419 | 7348 |
| 2007 | 15 | 21 | 31 | 68 | 138 | 306 | 448 | 495 | 523 | 637 | 892 | 616 | 510 | 396 | 225 | 322 | 170 | 630 | 6443 | 7306 |
| 2008 | 1 | 4 | 14 | 12 | 49 | 139 | 265 | 366 | 361 | 443 | 442 | 538 | 547 | 479 | 281 | 223 | 144 | 1032 | 5342 | 6557 |
| 2009 | 0 | 11 | 2 | 4 | 9 | 23 | 144 | 277 | 315 | 248 | 406 | 374 | 509 | 404 | 331 | 323 | 253 | 911 | 4544 | 6487 |
| 2010 | 1 | 0 | 10 | 7 | 4 | 20 | 75 | 261 | 291 | 529 | 359 | 311 | 531 | 502 | 385 | 295 | 247 | 776 | 4605 | 6982 |
| 2011 | 2 | 1 | 3 | 0 | 2 | 5 | 64 | 304 | 466 | 266 | 312 | 223 | 378 | 289 | 247 | 229 | 253 | 985 | 4028 | 5852 |

| Year/Age | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | +gp | Total Num. | Tonnes Land. |
|----------|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------------|--------------|
| 2012 | 15 | 10 | 5 | 12 | 0 | 2 | 228 | 226 | 322 | 295 | 191 | 169 | 184 | 283 | 266 | 268 | 262 | 1152 | 3891 | 5517 |
| 2013 | 31 | 88 | 138 | 57 | 10 | 44 | 58 | 202 | 241 | 437 | 321 | 205 | 213 | 270 | 258 | 196 | 322 | 1216 | 4309 | 5608 |
| 2014 | 5 | 4 | 8 | 8 | 8 | 15 | 26 | 49 | 67 | 204 | 197 | 148 | 167 | 184 | 165 | 156 | 213 | 1197 | 2821 | 4438 |
| 2015 | 15 | 16 | 14 | 17 | 26 | 43 | 29 | 96 | 113 | 128 | 170 | 147 | 159 | 115 | 99 | 96 | 220 | 1156 | 2661 | 3628 |
| 2016 | 53 | 59 | 60 | 88 | 88 | 147 | 293 | 217 | 266 | 81 | 178 | 176 | 110 | 162 | 110 | 182 | 191 | 1103 | 3563 | 4674 |
| 2017 | 106 | 82 | 132 | 69 | 132 | 165 | 311 | 455 | 225 | 132 | 105 | 83 | 85 | 102 | 88 | 138 | 182 | 1169 | 3760 | 5257 |
| 2018 | 129 | 65 | 230 | 443 | 246 | 496 | 158 | 170 | 236 | 171 | 145 | 183 | 194 | 232 | 233 | 229 | 249 | 2425 | 6235 | 7341 |
| 2019 | 36 | 98 | 169 | 130 | 318 | 635 | 356 | 282 | 96 | 123 | 71 | 99 | 67 | 57 | 145 | 129 | 93 | 2159 | 5064 | 5951 |
| 2020 | 26 | 14 | 108 | 439 | 472 | 580 | 651 | 324 | 190 | 153 | 55 | 62 | 126 | 49 | 112 | 98 | 90 | 1751 | 5302 | 6503 |

Table 7.6. *S. norvegicus* in subareas 1 and 2. Catch weights at age (kg). Since 2018, numbers are from StoX-Reca.

| Year/Age | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | +gp |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1992 | 0.18 | 0.29 | 0.48 | 0.42 | 0.50 | 0.59 | 0.58 | 0.65 | 0.65 | 0.71 | 0.82 | 0.84 | 0.94 | 1.02 | 1.03 | 1.15 | 1.27 | 1.27 |
| 1993 | 0.2 | 0.33 | 0.36 | 0.43 | 0.51 | 0.51 | 0.64 | 0.64 | 0.76 | 0.86 | 0.89 | 0.98 | 1 | 1.03 | 1.21 | 1.03 | 1.2 | 1.14 |
| 1994 | 0.25 | 0.37 | 0.38 | 0.49 | 0.51 | 0.64 | 0.74 | 0.76 | 0.86 | 0.95 | 1.03 | 1.07 | 1.11 | 1.16 | 1.15 | 1.13 | 1.02 | 1.36 |
| 1995 | 0.33 | 0.43 | 0.64 | 0.61 | 0.59 | 0.65 | 0.74 | 0.79 | 0.84 | 0.92 | 1.12 | 1.01 | 1.01 | 1.21 | 1.14 | 1.09 | 1.3 | 1.01 |
| 1996 | 0.22 | 0.49 | 0.56 | 0.65 | 0.71 | 0.81 | 0.84 | 0.88 | 0.96 | 1 | 1.02 | 1.01 | 1 | 1.03 | 1.04 | 1.14 | 1.09 | 1.16 |
| 1997 | 0.23 | 0.51 | 0.53 | 0.74 | 0.72 | 0.78 | 0.8 | 0.86 | 0.91 | 0.99 | 1.16 | 1.18 | 1.21 | 1.34 | 1.28 | 1.54 | 1.19 | 1.29 |
| 1998 | 0.37 | 0.21 | 0.47 | 0.62 | 0.67 | 0.77 | 0.77 | 0.85 | 1.05 | 0.96 | 1.25 | 1.28 | 1.3 | 1.23 | 1.87 | 1.46 | 1.73 | 1.29 |

| Year/Age | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | +gp |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1999 | 0.14 | 0.26 | 0.44 | 0.57 | 0.69 | 0.78 | 0.86 | 1.04 | 1.07 | 1.12 | 1.18 | 1.71 | 1.09 | 1.18 | 1.04 | 1.34 | 1.18 | 1.34 |
| 2000 | 0.19 | 0.24 | 0.32 | 0.44 | 0.53 | 0.64 | 0.73 | 0.84 | 0.96 | 1.11 | 1.25 | 1.32 | 1.53 | 1.06 | 1.29 | 1.32 | 1.12 | 1.2 |
| 2001 | 0.15 | 0.26 | 0.45 | 0.55 | 0.58 | 0.67 | 0.8 | 0.89 | 1.01 | 1.14 | 1.33 | 1.43 | 1.62 | 1.6 | 1.47 | 2 | 2.7 | 2.31 |
| 2002 | 0.17 | 0.25 | 0.33 | 0.42 | 0.54 | 0.67 | 0.72 | 0.84 | 0.98 | 1.09 | 1.2 | 1.3 | 1.44 | 1.78 | 1.68 | 1.88 | 2.12 | 1.84 |
| 2003 | 0.19 | 0.22 | 0.31 | 0.39 | 0.49 | 0.58 | 0.69 | 0.84 | 0.96 | 1.05 | 1.29 | 1.36 | 1.65 | 1.74 | 2.09 | 1.85 | 2.3 | 2.38 |
| 2004 | 0.21 | 0.26 | 0.36 | 0.45 | 0.51 | 0.59 | 0.68 | 0.8 | 0.96 | 1.07 | 1.22 | 1.34 | 1.57 | 1.67 | 1.75 | 2.09 | 1.9 | 2.04 |
| 2005 | 0.16 | 0.21 | 0.36 | 0.45 | 0.52 | 0.58 | 0.68 | 0.82 | 0.94 | 1.03 | 1.16 | 1.36 | 1.46 | 1.51 | 1.67 | 1.91 | 2.23 | 2.27 |
| 2006 | 0.13 | 0.15 | 0.28 | 0.41 | 0.51 | 0.58 | 0.66 | 0.74 | 0.83 | 1 | 1.14 | 1.27 | 1.39 | 1.46 | 1.37 | 1.47 | 1.64 | 2.03 |
| 2007 | 0.15 | 0.21 | 0.33 | 0.39 | 0.5 | 0.59 | 0.65 | 0.77 | 0.9 | 1 | 1.09 | 1.27 | 1.42 | 1.32 | 1.53 | 1.47 | 1.69 | 1.81 |
| 2008 | 0.41 | 0.55 | 0.55 | 0.57 | 0.52 | 0.58 | 0.65 | 0.81 | 0.9 | 1.07 | 1.14 | 1.36 | 1.51 | 1.81 | 1.99 | 2.01 | 2.26 | 1.93 |
| 2009 | 0.00 | 1.01 | 0.34 | 0.59 | 0.61 | 0.66 | 0.82 | 0.92 | 0.94 | 1.09 | 1.22 | 1.35 | 1.40 | 1.57 | 1.68 | 1.74 | 1.73 | 2.25 |
| 2010 | 0.15 | 0.00 | 0.10 | 0.32 | 0.52 | 0.73 | 0.77 | 0.89 | 0.98 | 1.09 | 1.25 | 1.40 | 1.48 | 1.64 | 1.77 | 1.99 | 1.82 | 1.86 |
| 2011 | 0.16 | 0.20 | 0.21 | 0.00 | 0.54 | 0.52 | 0.72 | 0.91 | 1.08 | 1.14 | 1.20 | 1.45 | 1.40 | 1.43 | 1.54 | 1.60 | 1.74 | 1.93 |
| 2012 | 0.19 | 0.25 | 0.33 | 0.72 | 0.61 | 0.88 | 0.70 | 0.86 | 0.95 | 1.02 | 1.13 | 1.18 | 1.33 | 1.48 | 1.31 | 1.55 | 1.50 | 2.59 |
| 2013 | 0.20 | 0.27 | 0.32 | 0.44 | 0.47 | 0.55 | 0.63 | 0.88 | 0.96 | 1.08 | 1.08 | 1.19 | 1.21 | 1.39 | 1.38 | 1.62 | 1.41 | 1.81 |
| 2014 | 0.20 | 0.26 | 0.39 | 0.41 | 0.56 | 0.61 | 0.71 | 0.87 | 0.95 | 1.07 | 1.14 | 1.28 | 1.46 | 1.35 | 1.51 | 1.62 | 1.69 | 1.84 |
| 2015 | 0.16 | 0.22 | 0.30 | 0.50 | 0.51 | 0.60 | 0.66 | 0.88 | 0.93 | 1.04 | 1.15 | 1.18 | 1.23 | 1.34 | 1.51 | 1.50 | 1.48 | 1.62 |
| 2016 | 0.17 | 0.21 | 0.34 | 0.62 | 0.53 | 0.66 | 0.68 | 0.86 | 0.94 | 1.03 | 1.11 | 1.32 | 1.43 | 1.29 | 1.42 | 1.43 | 1.48 | 2.67 |

| Year/Age | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | +gp |
|-------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 2017 | 0.18 | 0.23 | 0.29 | 0.38 | 0.55 | 0.59 | 0.70 | 0.80 | 0.92 | 1.06 | 1.15 | 1.35 | 1.40 | 1.56 | 1.37 | 1.74 | 1.83 | 2.92 |
| 2018 | 0.75 | 0.76 | 0.80 | 0.86 | 0.92 | 1.00 | 1.04 | 1.06 | 1.15 | 1.23 | 1.24 | 1.27 | 1.35 | 1.40 | 1.43 | 1.50 | 1.48 | 2.34 |
| 2019 | 0.93 | 0.98 | 1.07 | 1.12 | 1.20 | 1.26 | 1.28 | 1.34 | 1.38 | 1.33 | 1.36 | 1.43 | 1.44 | 1.45 | 1.43 | 1.50 | 1.48 | 1.95 |
| 2020 ¹ | 1.71 | 1.13 | 1.28 | 1.14 | 1.31 | 1.28 | 1.39 | 1.49 | 1.56 | 1.59 | 1.52 | 1.59 | 1.64 | 1.68 | 1.67 | 1.69 | 1.64 | 2.09 |

1 – Provisional figures.

Table 7.7. *S. norvegicus* in subareas 1 and 2. Fishing mortalities as estimated by Gadget.

| Age | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | 0.04 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 |
| 9 | 0.07 | 0.05 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 |
| 10 | 0.10 | 0.08 | 0.07 | 0.04 | 0.04 | 0.03 | 0.04 | 0.04 | 0.04 | 0.04 | 0.03 | 0.02 | 0.02 | 0.02 | 0.02 |
| 11 | 0.13 | 0.11 | 0.10 | 0.09 | 0.07 | 0.05 | 0.06 | 0.06 | 0.06 | 0.06 | 0.05 | 0.04 | 0.04 | 0.03 | 0.03 |
| 12 | 0.17 | 0.13 | 0.12 | 0.12 | 0.12 | 0.08 | 0.09 | 0.08 | 0.09 | 0.09 | 0.07 | 0.06 | 0.05 | 0.04 | 0.04 |
| 13 | 0.22 | 0.17 | 0.14 | 0.14 | 0.15 | 0.12 | 0.11 | 0.11 | 0.12 | 0.12 | 0.10 | 0.08 | 0.07 | 0.06 | 0.06 |
| 14 | 0.28 | 0.20 | 0.17 | 0.16 | 0.17 | 0.14 | 0.16 | 0.13 | 0.15 | 0.16 | 0.13 | 0.10 | 0.09 | 0.07 | 0.07 |

| Age | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 15 | 0.34 | 0.24 | 0.19 | 0.18 | 0.19 | 0.16 | 0.18 | 0.17 | 0.18 | 0.19 | 0.15 | 0.11 | 0.10 | 0.09 | 0.08 |
| 16 | 0.41 | 0.29 | 0.22 | 0.21 | 0.21 | 0.17 | 0.20 | 0.19 | 0.22 | 0.21 | 0.17 | 0.13 | 0.12 | 0.10 | 0.09 |
| 17 | 0.48 | 0.33 | 0.25 | 0.23 | 0.24 | 0.19 | 0.21 | 0.21 | 0.24 | 0.25 | 0.19 | 0.15 | 0.13 | 0.11 | 0.10 |
| 18 | 0.52 | 0.38 | 0.29 | 0.26 | 0.26 | 0.21 | 0.23 | 0.22 | 0.25 | 0.27 | 0.22 | 0.16 | 0.14 | 0.12 | 0.11 |
| 19 | 0.55 | 0.40 | 0.31 | 0.28 | 0.28 | 0.22 | 0.25 | 0.24 | 0.27 | 0.28 | 0.23 | 0.17 | 0.15 | 0.13 | 0.12 |
| 20 | 0.58 | 0.42 | 0.32 | 0.30 | 0.30 | 0.24 | 0.26 | 0.25 | 0.28 | 0.29 | 0.24 | 0.17 | 0.16 | 0.13 | 0.12 |
| 21 | 0.61 | 0.43 | 0.33 | 0.31 | 0.31 | 0.25 | 0.27 | 0.26 | 0.29 | 0.30 | 0.24 | 0.18 | 0.16 | 0.13 | 0.12 |
| 22 | 0.62 | 0.44 | 0.33 | 0.31 | 0.31 | 0.25 | 0.27 | 0.26 | 0.29 | 0.31 | 0.25 | 0.18 | 0.16 | 0.13 | 0.12 |
| 23 | 0.62 | 0.43 | 0.33 | 0.30 | 0.30 | 0.24 | 0.27 | 0.26 | 0.29 | 0.31 | 0.25 | 0.18 | 0.16 | 0.12 | 0.11 |
| 24 | 0.61 | 0.42 | 0.32 | 0.29 | 0.29 | 0.23 | 0.26 | 0.25 | 0.29 | 0.30 | 0.24 | 0.17 | 0.15 | 0.12 | 0.11 |
| 25 | 0.58 | 0.40 | 0.29 | 0.27 | 0.27 | 0.22 | 0.25 | 0.24 | 0.27 | 0.29 | 0.23 | 0.17 | 0.15 | 0.12 | 0.11 |
| 26 | 0.55 | 0.36 | 0.26 | 0.24 | 0.24 | 0.20 | 0.22 | 0.22 | 0.25 | 0.26 | 0.21 | 0.16 | 0.14 | 0.11 | 0.10 |
| 27 | 0.50 | 0.33 | 0.23 | 0.21 | 0.22 | 0.17 | 0.20 | 0.20 | 0.22 | 0.23 | 0.18 | 0.14 | 0.13 | 0.10 | 0.09 |
| 28 | 0.46 | 0.30 | 0.21 | 0.19 | 0.19 | 0.15 | 0.17 | 0.17 | 0.20 | 0.20 | 0.16 | 0.12 | 0.11 | 0.09 | 0.09 |
| 29 | 0.42 | 0.27 | 0.19 | 0.16 | 0.16 | 0.13 | 0.15 | 0.15 | 0.17 | 0.17 | 0.14 | 0.10 | 0.09 | 0.08 | 0.08 |
| 30 | 0.34 | 0.20 | 0.13 | 0.11 | 0.13 | 0.11 | 0.12 | 0.11 | 0.13 | 0.14 | 0.10 | 0.08 | 0.07 | 0.04 | 0.04 |
| 15+ | 0.513 | 0.351 | 0.264 | 0.241 | 0.243 | 0.196 | 0.219 | 0.212 | 0.239 | 0.251 | 0.199 | 0.147 | 0.132 | 0.107 | 0.099 |

| Age | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 |
| 9 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.02 | 0.03 |
| 10 | 0.02 | 0.02 | 0.02 | 0.02 | 0.01 | 0.02 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 | 0.05 | 0.06 |
| 11 | 0.03 | 0.03 | 0.03 | 0.03 | 0.02 | 0.03 | 0.02 | 0.02 | 0.03 | 0.02 | 0.02 | 0.03 | 0.03 | 0.05 | 0.06 | 0.07 | 0.10 |
| 12 | 0.04 | 0.04 | 0.04 | 0.04 | 0.03 | 0.04 | 0.03 | 0.04 | 0.04 | 0.04 | 0.03 | 0.05 | 0.05 | 0.07 | 0.09 | 0.11 | 0.14 |
| 13 | 0.05 | 0.06 | 0.06 | 0.06 | 0.04 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 | 0.04 | 0.06 | 0.06 | 0.09 | 0.12 | 0.15 | 0.19 |
| 14 | 0.07 | 0.07 | 0.07 | 0.07 | 0.06 | 0.07 | 0.06 | 0.06 | 0.07 | 0.06 | 0.05 | 0.08 | 0.08 | 0.12 | 0.15 | 0.18 | 0.24 |
| 15 | 0.08 | 0.08 | 0.09 | 0.08 | 0.07 | 0.09 | 0.07 | 0.07 | 0.08 | 0.07 | 0.06 | 0.09 | 0.10 | 0.14 | 0.18 | 0.22 | 0.29 |
| 16 | 0.09 | 0.10 | 0.10 | 0.10 | 0.08 | 0.10 | 0.08 | 0.08 | 0.09 | 0.09 | 0.07 | 0.11 | 0.11 | 0.16 | 0.21 | 0.26 | 0.34 |
| 17 | 0.10 | 0.11 | 0.11 | 0.11 | 0.09 | 0.11 | 0.09 | 0.09 | 0.10 | 0.09 | 0.08 | 0.12 | 0.12 | 0.18 | 0.23 | 0.29 | 0.38 |
| 18 | 0.11 | 0.11 | 0.12 | 0.11 | 0.10 | 0.12 | 0.10 | 0.10 | 0.11 | 0.10 | 0.08 | 0.13 | 0.13 | 0.19 | 0.25 | 0.32 | 0.43 |
| 19 | 0.11 | 0.12 | 0.12 | 0.12 | 0.10 | 0.13 | 0.11 | 0.11 | 0.12 | 0.11 | 0.09 | 0.13 | 0.14 | 0.21 | 0.27 | 0.34 | 0.46 |
| 20 | 0.11 | 0.12 | 0.12 | 0.12 | 0.11 | 0.14 | 0.11 | 0.11 | 0.12 | 0.11 | 0.09 | 0.14 | 0.14 | 0.21 | 0.28 | 0.36 | 0.48 |
| 21 | 0.11 | 0.12 | 0.12 | 0.12 | 0.11 | 0.14 | 0.11 | 0.11 | 0.13 | 0.11 | 0.09 | 0.14 | 0.15 | 0.22 | 0.28 | 0.36 | 0.50 |

| Age | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 22 | 0.11 | 0.12 | 0.12 | 0.12 | 0.11 | 0.14 | 0.11 | 0.12 | 0.13 | 0.11 | 0.09 | 0.14 | 0.15 | 0.21 | 0.28 | 0.36 | 0.50 |
| 23 | 0.11 | 0.12 | 0.12 | 0.11 | 0.11 | 0.14 | 0.11 | 0.11 | 0.12 | 0.11 | 0.09 | 0.14 | 0.15 | 0.21 | 0.28 | 0.36 | 0.49 |
| 24 | 0.10 | 0.11 | 0.12 | 0.11 | 0.11 | 0.14 | 0.11 | 0.11 | 0.12 | 0.11 | 0.09 | 0.13 | 0.14 | 0.21 | 0.27 | 0.35 | 0.47 |
| 25 | 0.10 | 0.10 | 0.11 | 0.10 | 0.11 | 0.13 | 0.11 | 0.11 | 0.12 | 0.11 | 0.09 | 0.13 | 0.14 | 0.20 | 0.26 | 0.33 | 0.45 |
| 26 | 0.09 | 0.10 | 0.10 | 0.09 | 0.10 | 0.13 | 0.11 | 0.11 | 0.12 | 0.10 | 0.09 | 0.13 | 0.13 | 0.19 | 0.25 | 0.32 | 0.43 |
| 27 | 0.09 | 0.09 | 0.10 | 0.08 | 0.10 | 0.13 | 0.10 | 0.10 | 0.11 | 0.10 | 0.08 | 0.12 | 0.13 | 0.18 | 0.23 | 0.30 | 0.40 |
| 28 | 0.08 | 0.09 | 0.09 | 0.08 | 0.09 | 0.12 | 0.10 | 0.10 | 0.11 | 0.10 | 0.08 | 0.12 | 0.12 | 0.17 | 0.22 | 0.28 | 0.37 |
| 29 | 0.08 | 0.08 | 0.08 | 0.07 | 0.09 | 0.11 | 0.09 | 0.10 | 0.10 | 0.09 | 0.08 | 0.11 | 0.12 | 0.16 | 0.21 | 0.26 | 0.35 |
| 30 | 0.04 | 0.04 | 0.04 | 0.04 | 0.07 | 0.09 | 0.08 | 0.08 | 0.09 | 0.08 | 0.06 | 0.09 | 0.09 | 0.13 | 0.16 | 0.19 | 0.25 |
| 15+ | 0.095 | 0.101 | 0.104 | 0.098 | 0.096 | 0.123 | 0.101 | 0.102 | 0.111 | 0.101 | 0.083 | 0.122 | 0.129 | 0.186 | 0.240 | 0.307 | 0.411 |

Table 7.8. *S. norvegicus* in subareas 1 and 2. Stock numbers, biomass, mean weight and maturity ogives as estimated by GADGET.

| year | total stock | | | mature | | | immature | | | recruit | |
|------|-------------|---------|---------|------------|---------|---------|------------|---------|---------|---------|------------|
| | Number | mean wt | biomass | number | mean wt | biomass | number | mean wt | biomass | F(15+) | age 3 |
| | (millions) | (kg) | (1000t) | (millions) | (kg) | | (millions) | (kg) | (1000t) | | (millions) |
| 1986 | 375 | 0.35 | 132.28 | 103 | 0.67 | 69.06 | 271 | 0.23 | 63.22 | | 4.25 |
| 1987 | 370 | 0.35 | 129.94 | 101 | 0.65 | 65.92 | 268 | 0.24 | 64.01 | | 3.54 |
| 1988 | 348 | 0.36 | 125.06 | 98 | 0.61 | 60.02 | 250 | 0.26 | 65.04 | | 1.98 |
| 1989 | 328 | 0.37 | 122.35 | 96 | 0.58 | 56.21 | 231 | 0.29 | 66.14 | | 1.84 |

| year | total stock | | | mature | | | immature | | | recruit | |
|------|-------------|---------|---------|------------|---------|---------|------------|---------|---------|---------|------------|
| | Number | mean wt | biomass | number | mean wt | biomass | number | mean wt | biomass | F(15+) | age 3 |
| | (millions) | (kg) | (1000t) | (millions) | (kg) | | (millions) | (kg) | (1000t) | | (millions) |
| 1990 | 305 | 0.37 | 113.79 | 92 | 0.54 | 49.82 | 213 | 0.30 | 63.97 | 0.51 | 1.98 |
| 1991 | 289 | 0.39 | 113.64 | 94 | 0.55 | 51.17 | 195 | 0.32 | 62.47 | 0.35 | 1.83 |
| 1992 | 275 | 0.42 | 115.73 | 96 | 0.57 | 55.39 | 178 | 0.34 | 60.34 | 0.26 | 1.65 |
| 1993 | 260 | 0.45 | 116.56 | 98 | 0.61 | 59.71 | 162 | 0.35 | 56.85 | 0.24 | 1.56 |
| 1994 | 248 | 0.46 | 115.09 | 97 | 0.64 | 62.75 | 151 | 0.35 | 52.33 | 0.24 | 1.91 |
| 1995 | 233 | 0.49 | 115.17 | 97 | 0.69 | 66.78 | 136 | 0.36 | 48.38 | 0.20 | 1.24 |
| 1996 | 213 | 0.52 | 111.60 | 94 | 0.72 | 68.08 | 119 | 0.37 | 43.52 | 0.22 | 0.85 |
| 1997 | 195 | 0.55 | 107.39 | 90 | 0.76 | 68.37 | 105 | 0.37 | 39.02 | 0.21 | 0.85 |
| 1998 | 173 | 0.58 | 100.10 | 84 | 0.79 | 65.81 | 89 | 0.39 | 34.29 | 0.24 | 0.42 |
| 1999 | 151 | 0.60 | 91.59 | 76 | 0.81 | 61.68 | 75 | 0.40 | 29.91 | 0.25 | 0.42 |
| 2000 | 135 | 0.64 | 86.51 | 71 | 0.85 | 59.87 | 64 | 0.41 | 26.64 | 0.20 | 0.35 |
| 2001 | 124 | 0.68 | 84.51 | 67 | 0.90 | 60.37 | 56 | 0.43 | 24.14 | 0.15 | 0.44 |
| 2002 | 113 | 0.73 | 82.75 | 64 | 0.95 | 61.03 | 49 | 0.44 | 21.72 | 0.13 | 0.35 |
| 2003 | 104 | 0.79 | 81.95 | 61 | 1.02 | 62.45 | 43 | 0.46 | 19.51 | 0.11 | 0.32 |
| 2004 | 98 | 0.83 | 81.10 | 59 | 1.09 | 63.66 | 40 | 0.44 | 17.44 | 0.10 | 0.52 |
| 2005 | 92 | 0.87 | 79.89 | 56 | 1.15 | 64.41 | 36 | 0.43 | 15.48 | 0.09 | 0.38 |

| year | total stock | | | mature | | | immature | | | recruit | |
|------|-------------|---------|---------|------------|---------|---------|------------|---------|---------|---------|------------|
| | Number | mean wt | biomass | number | mean wt | biomass | number | mean wt | biomass | F(15+) | age 3 |
| | (millions) | (kg) | (1000t) | (millions) | (kg) | | (millions) | (kg) | (1000t) | | (millions) |
| 2006 | 92 | 0.84 | 78.05 | 52 | 1.22 | 64.13 | 40 | 0.35 | 13.91 | 0.10 | 1.08 |
| 2007 | 86 | 0.88 | 75.63 | 49 | 1.28 | 63.13 | 37 | 0.34 | 12.50 | 0.10 | 0.33 |
| 2008 | 82 | 0.90 | 73.58 | 46 | 1.34 | 62.08 | 35 | 0.33 | 11.50 | 0.10 | 0.49 |
| 2009 | 77 | 0.93 | 71.48 | 44 | 1.39 | 60.63 | 33 | 0.32 | 10.85 | 0.10 | 0.36 |
| 2010 | 74 | 0.92 | 67.86 | 41 | 1.42 | 57.50 | 33 | 0.31 | 10.36 | 0.12 | 0.51 |
| 2011 | 80 | 0.82 | 66.07 | 38 | 1.45 | 55.56 | 42 | 0.25 | 10.51 | 0.10 | 1.36 |
| 2012 | 93 | 0.70 | 64.94 | 37 | 1.46 | 53.64 | 56 | 0.20 | 11.29 | 0.10 | 2.03 |
| 2013 | 89 | 0.71 | 63.43 | 36 | 1.43 | 51.47 | 53 | 0.22 | 11.96 | 0.11 | 0.39 |
| 2014 | 82 | 0.76 | 62.65 | 36 | 1.41 | 50.07 | 47 | 0.27 | 12.57 | 0.10 | 0.03 |
| 2015 | 76 | 0.82 | 62.73 | 36 | 1.39 | 49.63 | 41 | 0.32 | 13.10 | 0.08 | 0.04 |
| 2016 | 95 | 0.65 | 62.00 | 35 | 1.37 | 47.86 | 60 | 0.23 | 14.14 | 0.12 | 2.58 |
| 2017 | 117 | 0.53 | 61.98 | 35 | 1.32 | 46.26 | 82 | 0.19 | 15.72 | 0.13 | 2.95 |
| 2018 | 114 | 0.53 | 60.04 | 35 | 1.24 | 43.26 | 79 | 0.21 | 16.78 | 0.19 | 0.77 |
| 2019 | 130 | 0.44 | 57.79 | 35 | 1.14 | 39.45 | 96 | 0.19 | 18.35 | 0.24 | 2.70 |
| 2020 | 118 | 0.46 | 54.15 | 34 | 1.02 | 35.03 | 83 | 0.23 | 19.12 | 0.31 | 0.03 |
| 2021 | 104 | 0.47 | 49.18 | 33 | 0.90 | 29.89 | 71 | 0.27 | 19.29 | 0.41 | 0.03 |

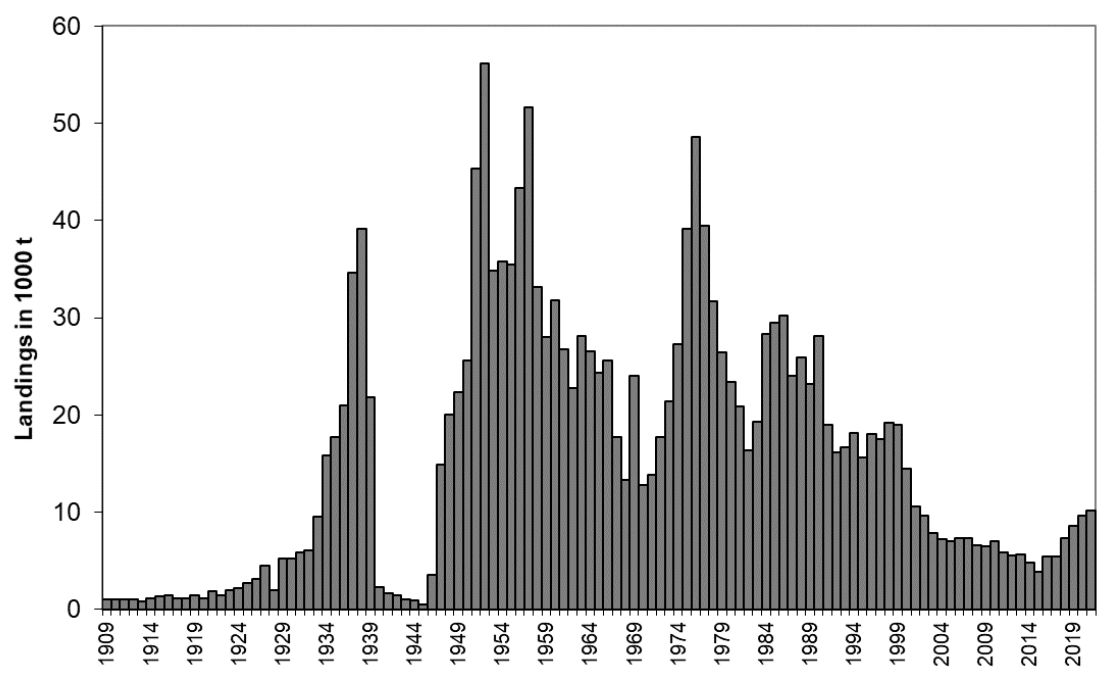


Figure 7.1. *S. norvegicus* in subareas 1 and 2. Total international landings 1908–2021 (in thousand tonnes).

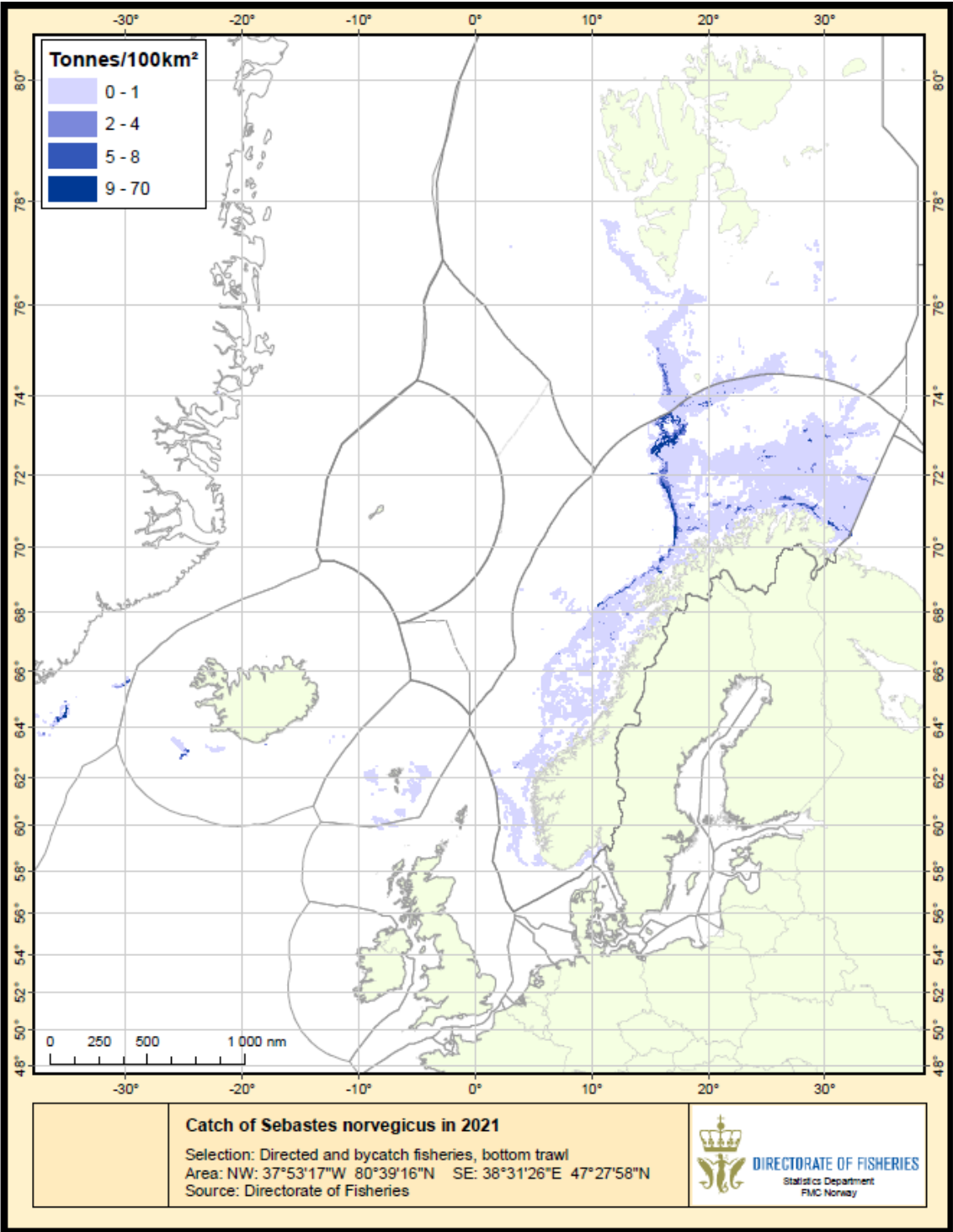


Figure 7.2. *S. norvegicus* in subareas 1 and 2. Catches (including bycatch) of *S. norvegicus* in 2021 from Norwegian log-books. Due to reporting on the genus level these catches may contain a considerable amount of *S. mentella*.

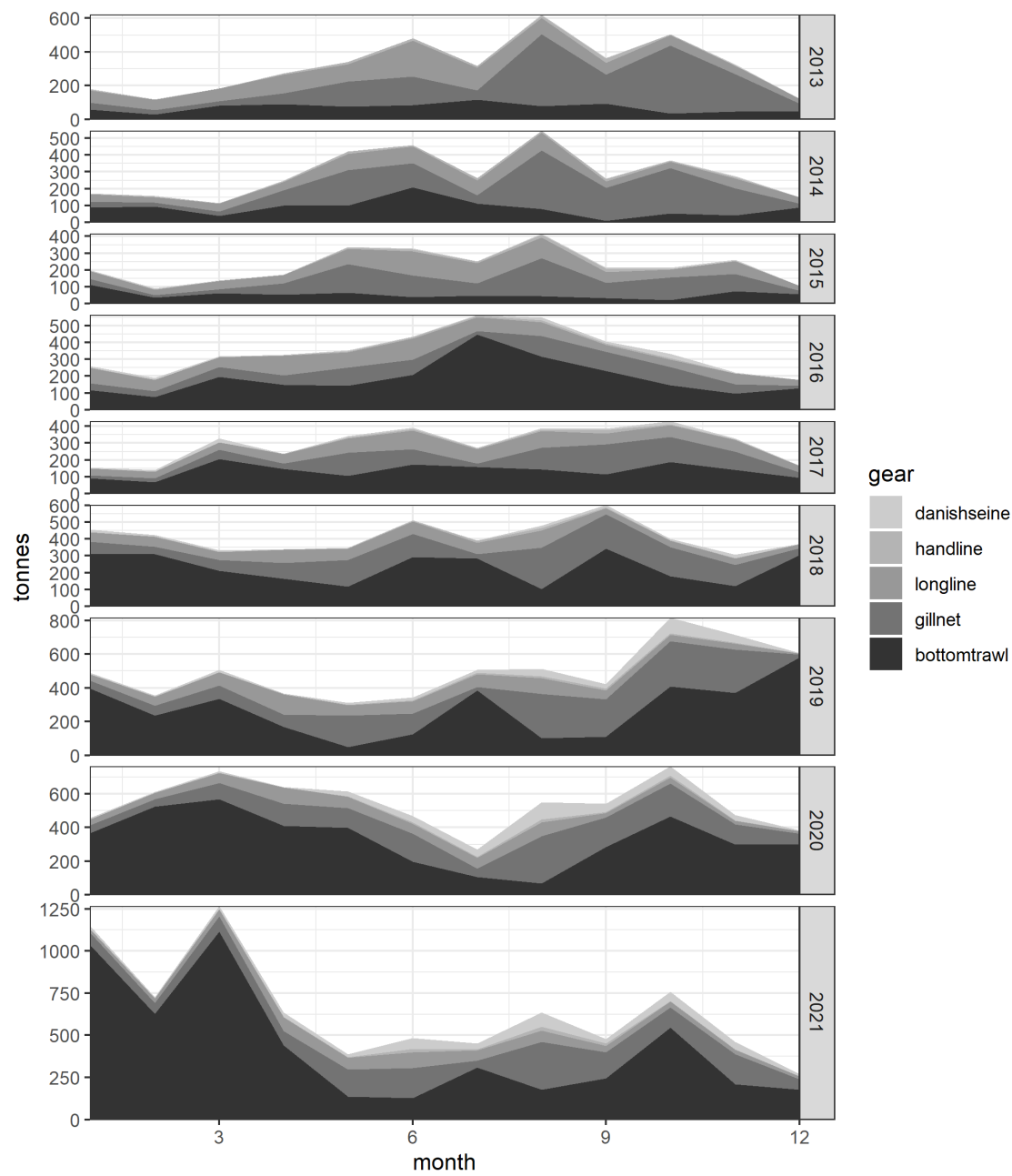


Figure 7.3a. Illustration of the seasonality in the different Norwegian *S. norvegicus* fisheries in 2013-2021, also illustrating how the current regulations are working.

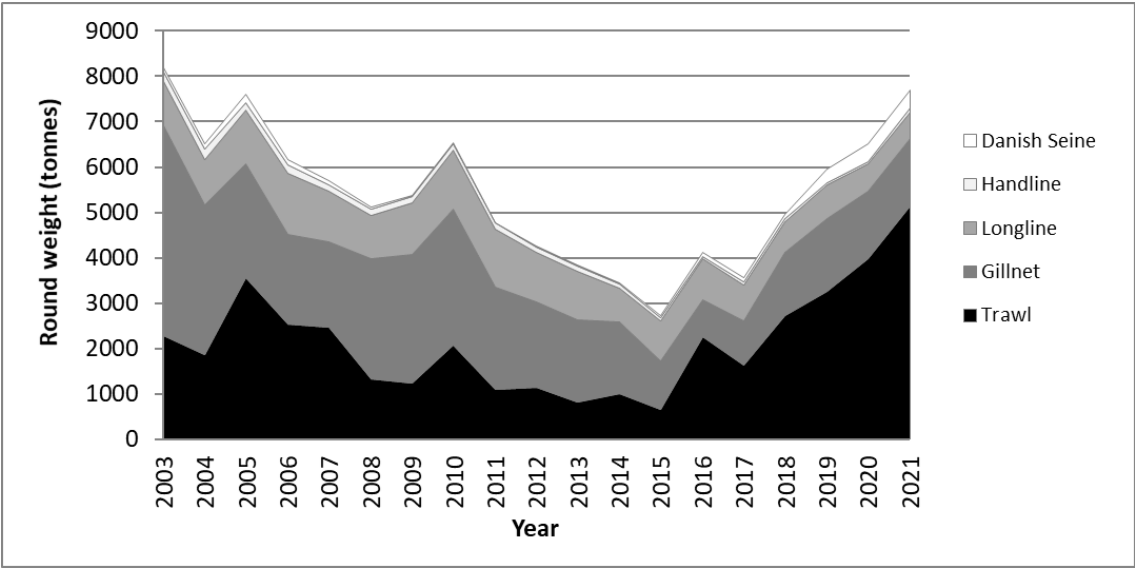


Figure 7.3b. Interannual changes in the Norwegian catches by fleet of *S. norvegicus* fisheries (2003–2021).

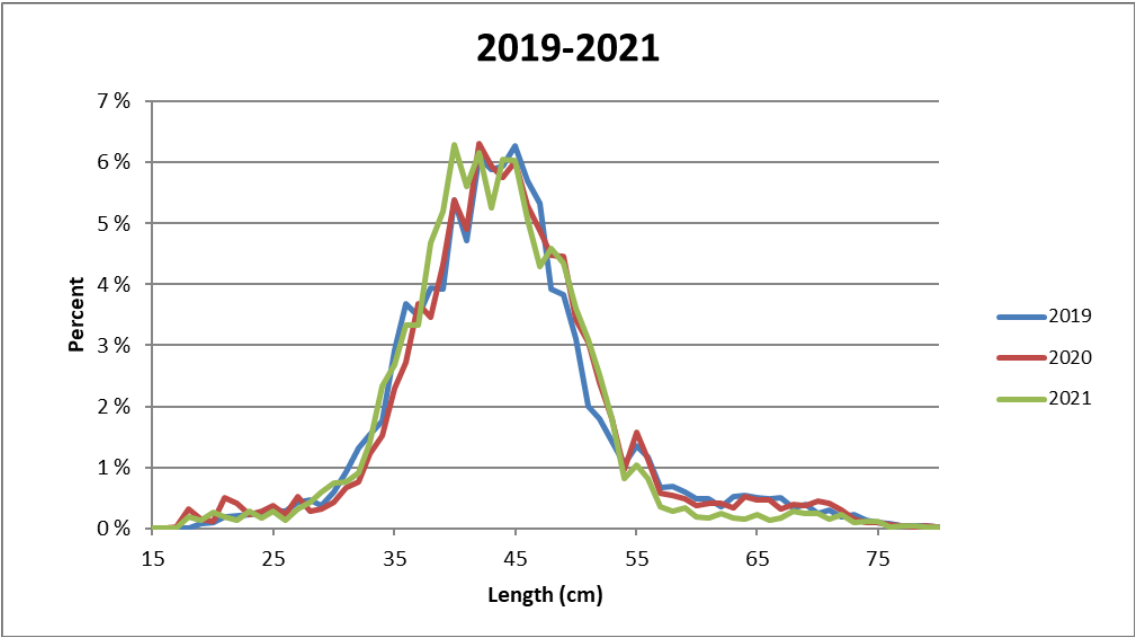


Figure 7.4. *S. norvegicus*. Length frequency of *S. norvegicus* reported from Norwegian catches in 2019-2021, all gears combined.

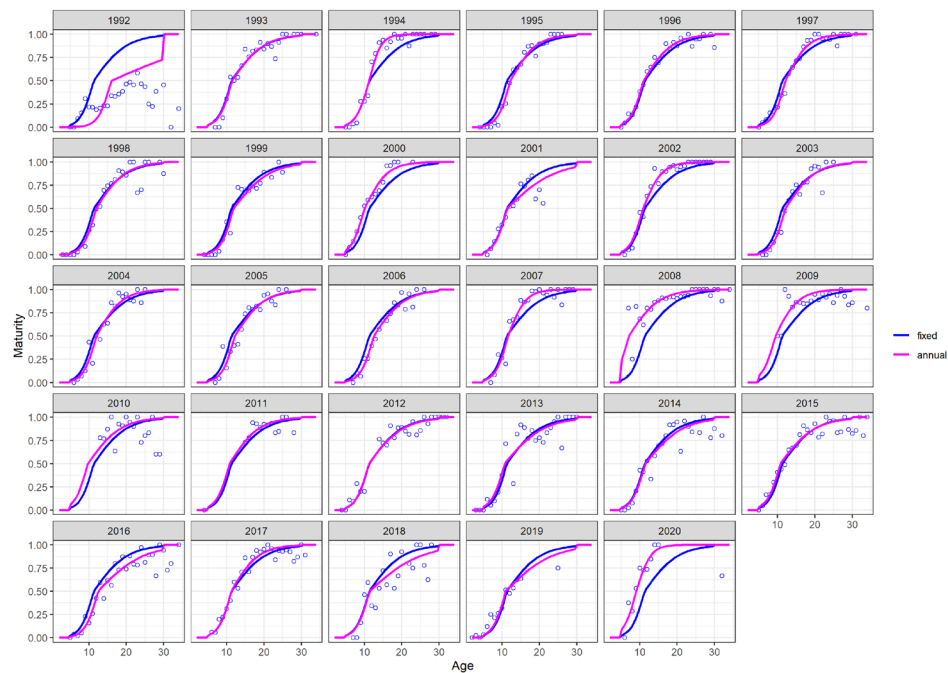


Figure 7.5a. Proportion maturity-at-age of *S. norvegicus* in subareas 1 and 2 derived from Norwegian commercial and survey data (Table E4). The proportions were derived from samples with at least five individuals. Updated for the 2022 assessment, but due to a lack of data in later years only the data up to 2018 was used in the model.



Figure 7.5b. *S. norvegicus* in subareas 1 and 2. Estimates of maturity-at-age by Gadget. Input data have been proportions of *S. norvegicus* mature both at age and length as collected and classified from Norwegian commercial landings and surveys.

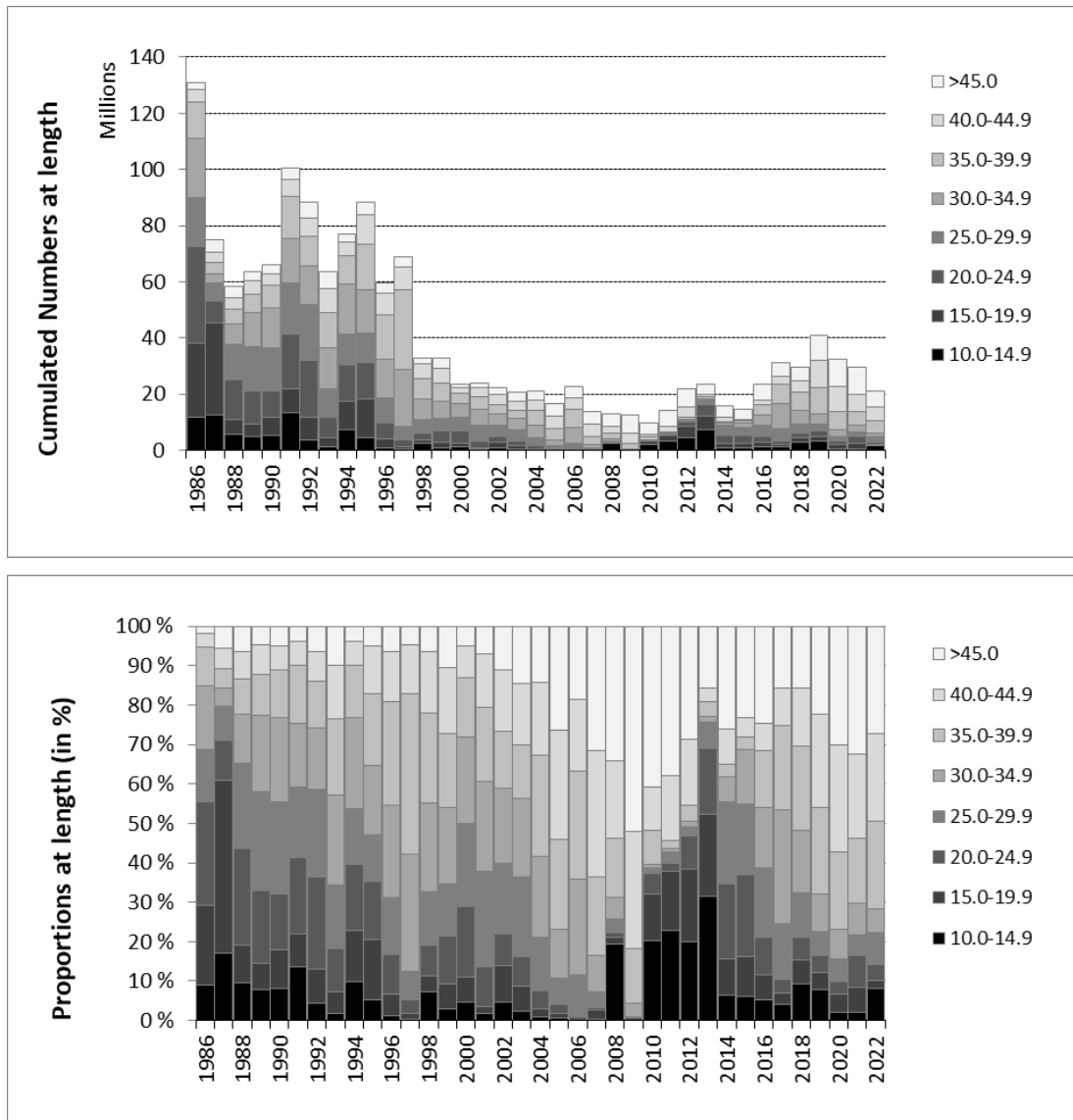


Figure 7.6a. *S. norvegicus*. Abundance indices disaggregated by length for the winter Norwegian Barents Sea (Division 2.a) bottom trawl survey (BS–NoRu–Q1 (BTr); joint with Russia some of the years since 2000), for 1986–2022 (ref. Table

E2a). Numbers for 2022 are preliminary as Russian data were not available during AFWG 2022. Top: absolute index values, bottom: relative frequencies.

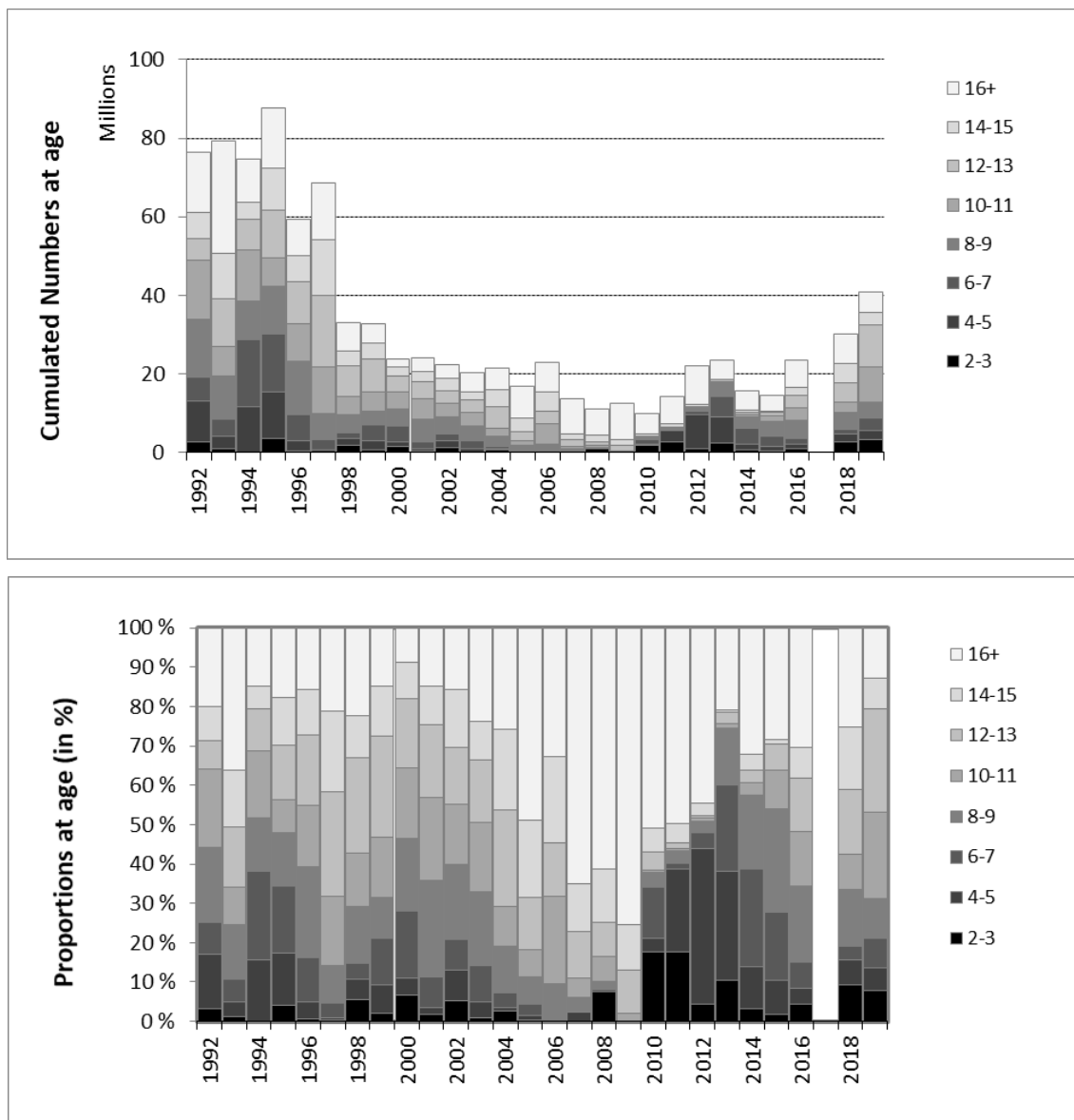


Figure 7.6b. *S. norvegicus*. Abundance indices by age from the winter Norwegian Barents Sea (Division 2.a) bottom-trawl survey (BS-NoRu-Q1 (BTr); joint with Russia some of the years since 2000), for 1992–2019 (ref. Table E2b). Age readings for 2017 and 2020–2022 not available during AFWG 2021. Top: absolute index, bottom: relative frequencies.

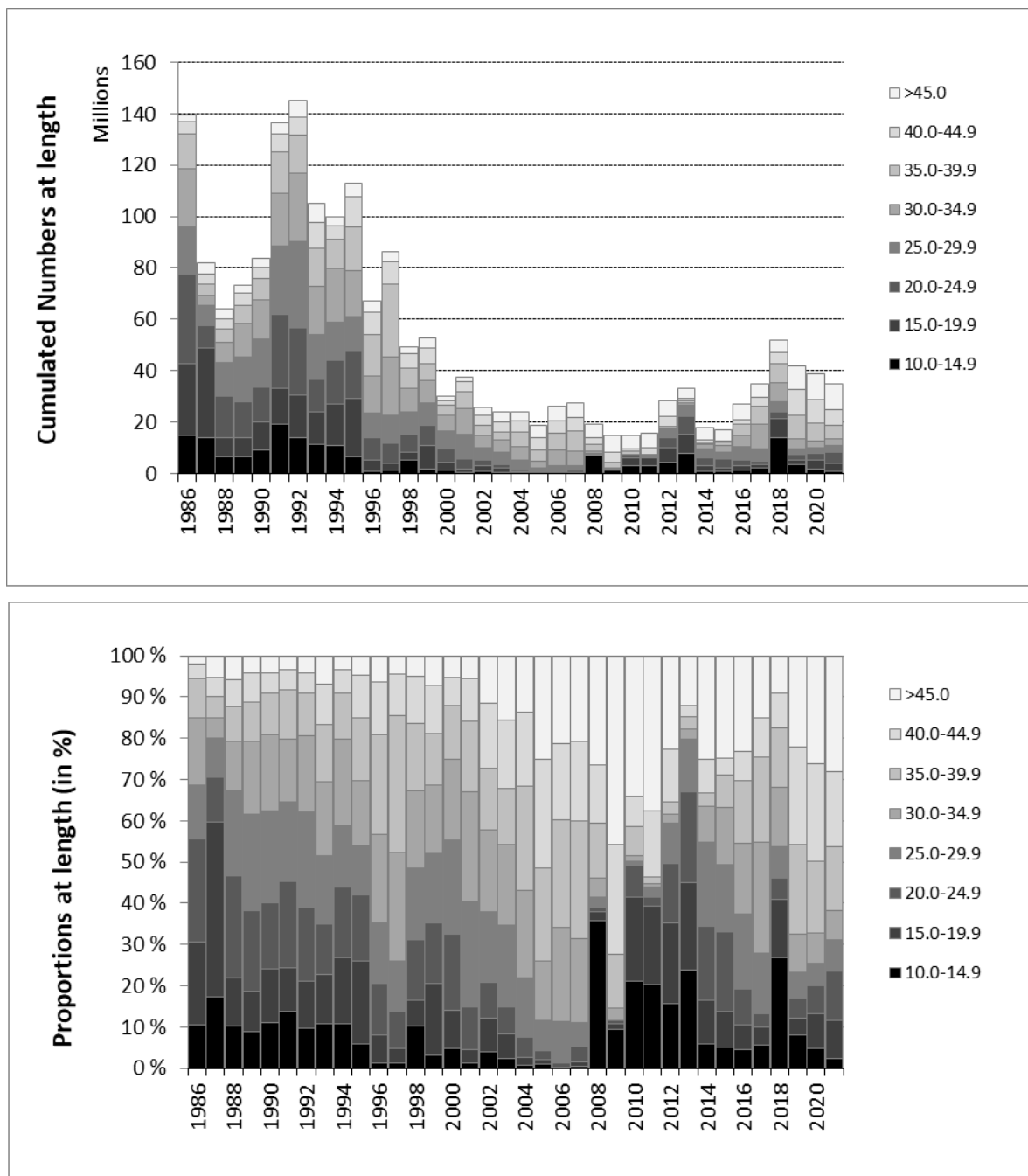


Figure 7.7a. *S. norvegicus*. Abundance indices disaggregated by length when combining the Norwegian bottom-trawl surveys 1986–2021 in the Barents Sea (winter) and at Svalbard (summer/autumn). Top: absolute index values. Bottom: relative frequencies. Horizontal line indicates the median length in the surveyed population.

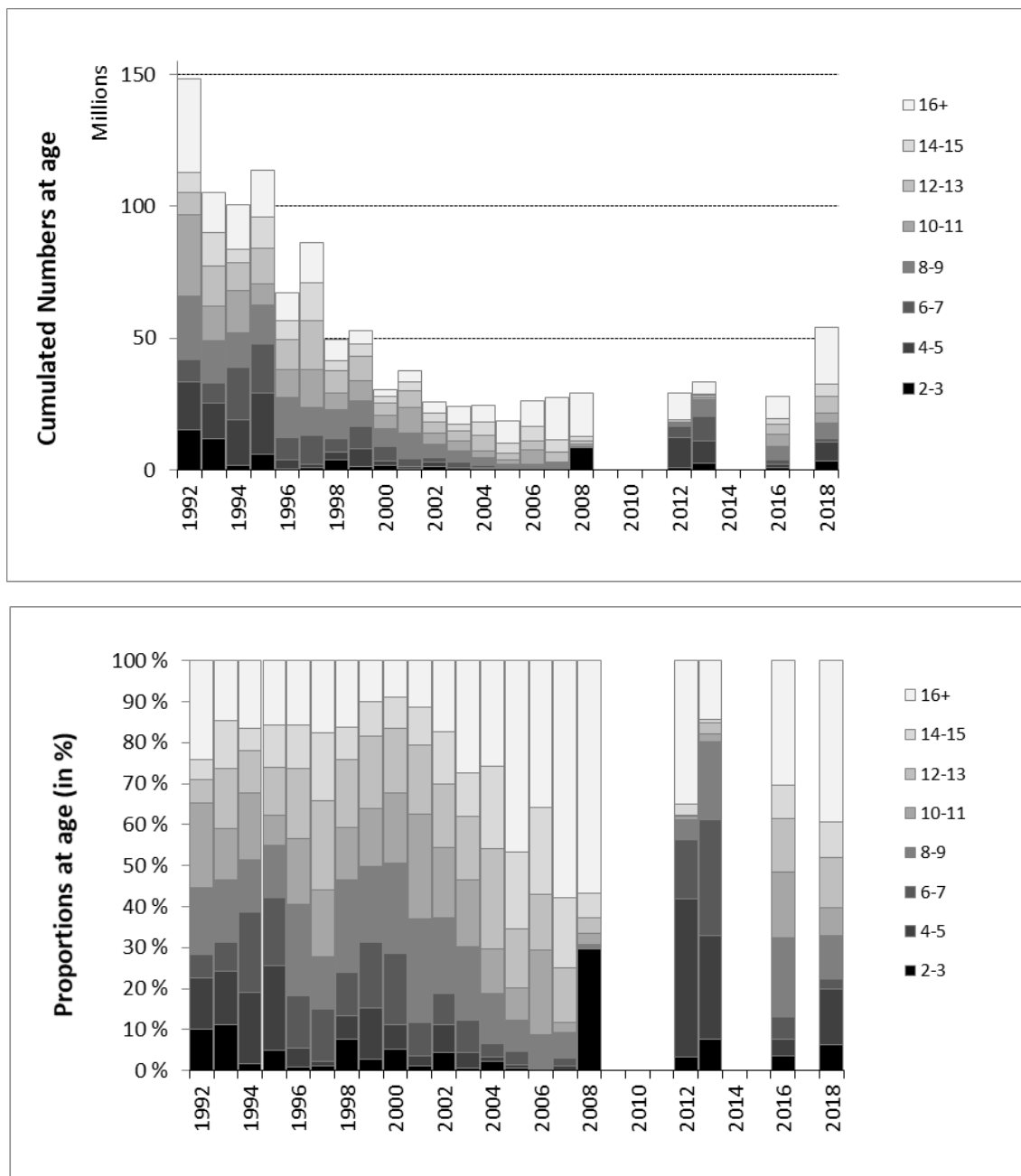


Figure 7.7b. *S. norvegicus*. Abundance indices disaggregated by age. Combined Norwegian bottom-trawl surveys 1992–2018 in the Barents Sea (winter) and Svalbard survey (summer/autumn). Top: absolute index values, bottom: relative frequencies. Horizontal line indicates median age of the surveyed population. In 2009–2011, 2014–2015, 2017, 2019–2021 there was insufficient number of age readings to derive numbers-at-age.

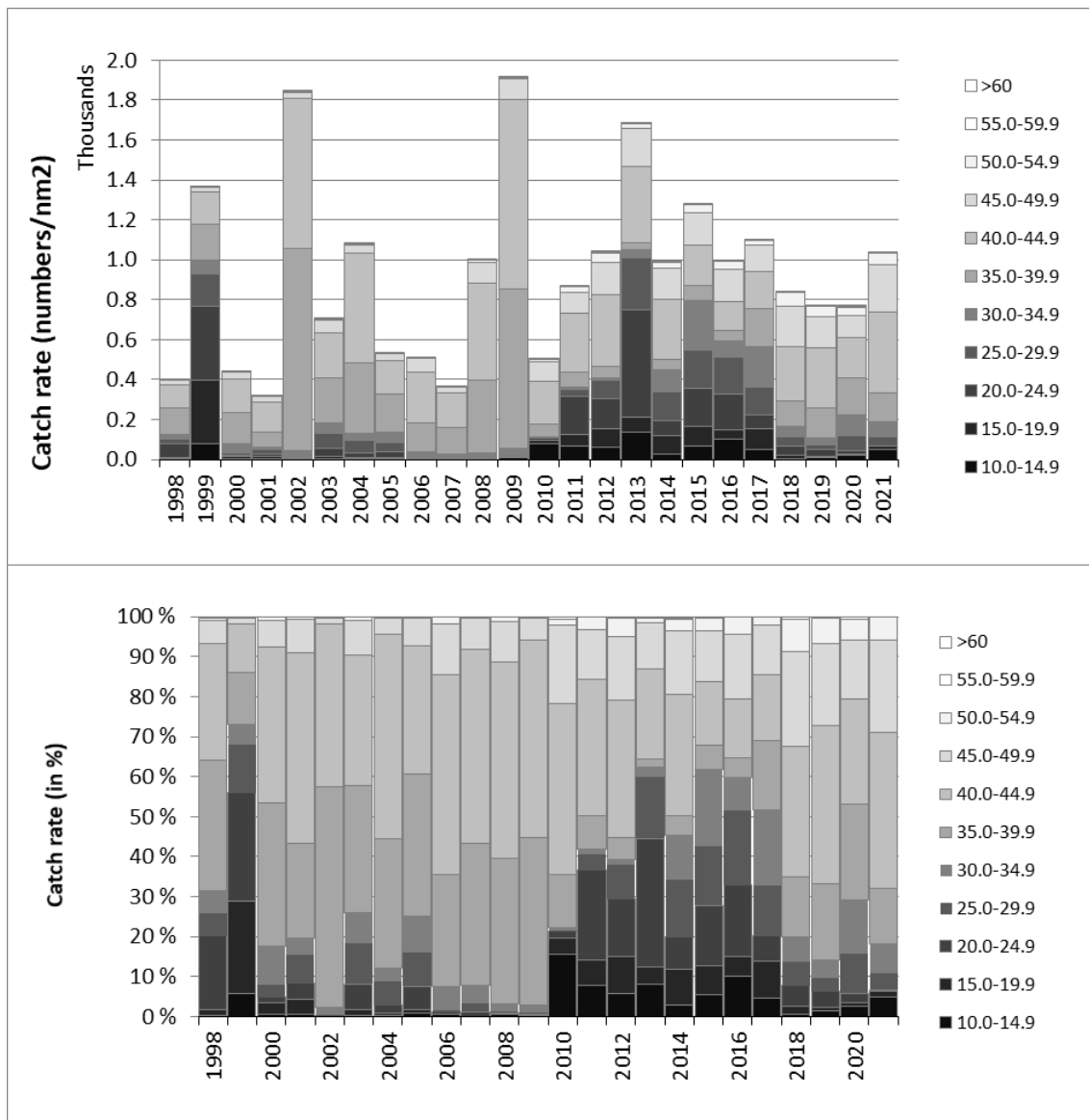


Figure 7.8. *S. norvegicus*. Catch rates (numbers/nm) disaggregated by length for the Barents Sea coastal survey 1998–2021. Top: absolute catch rates. Bottom: relative values.

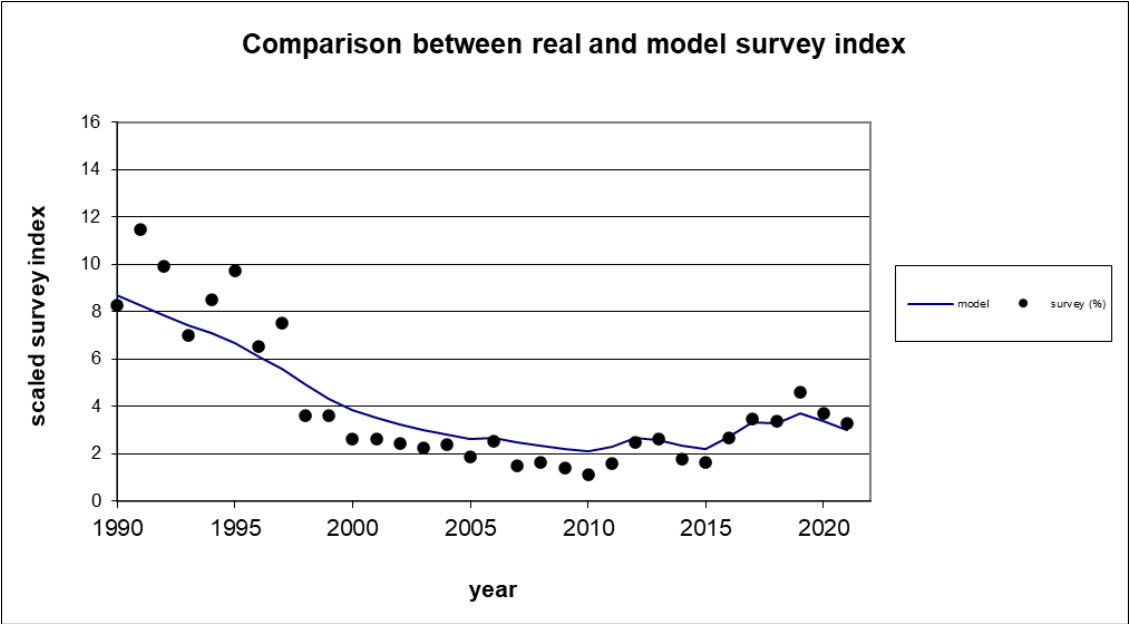


Figure 7.9. *S. norvegicus* in subareas 1 and 2. Comparison of observed and modelled survey indices (total number scaled to sum=100 during the period) for the Barents Sea winter survey in February. Dots: survey indices. Plain lines: survey indices estimated by the model.

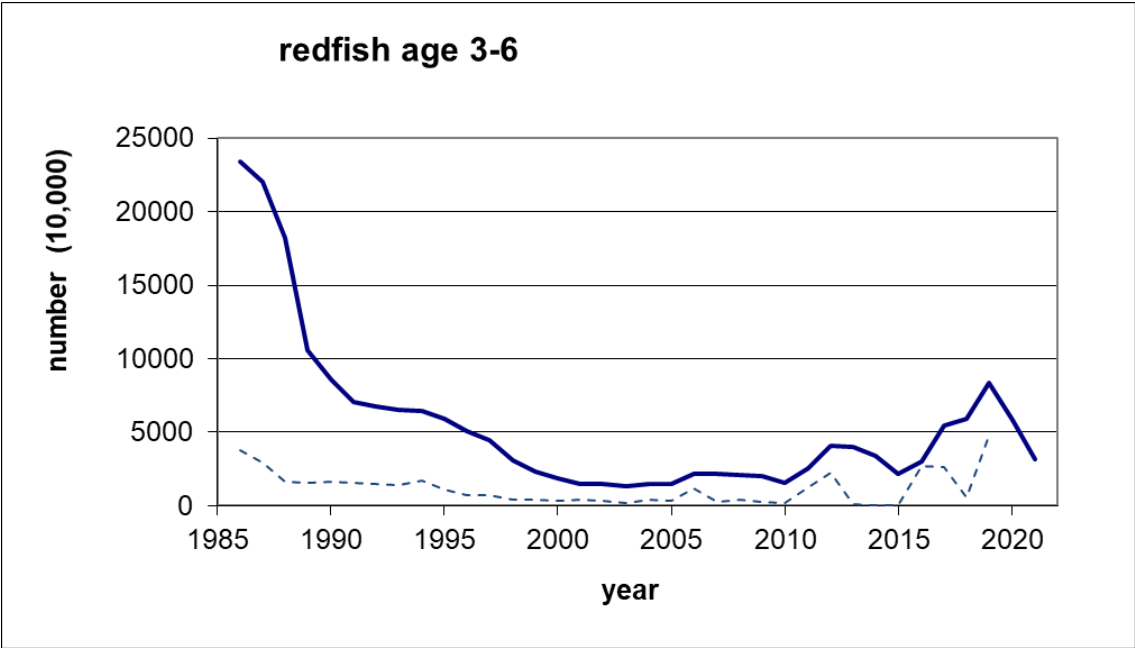


Figure 7.10. *S. norvegicus* in subareas 1 and 2. Estimates of abundance-at-age 3–6 by Gadget for this year’s assessment (solid line) and the last assessment (broken line), with data up to 2019 and 2021, respectively. Note that recent year (since 2015) have very little tuning data behind them.

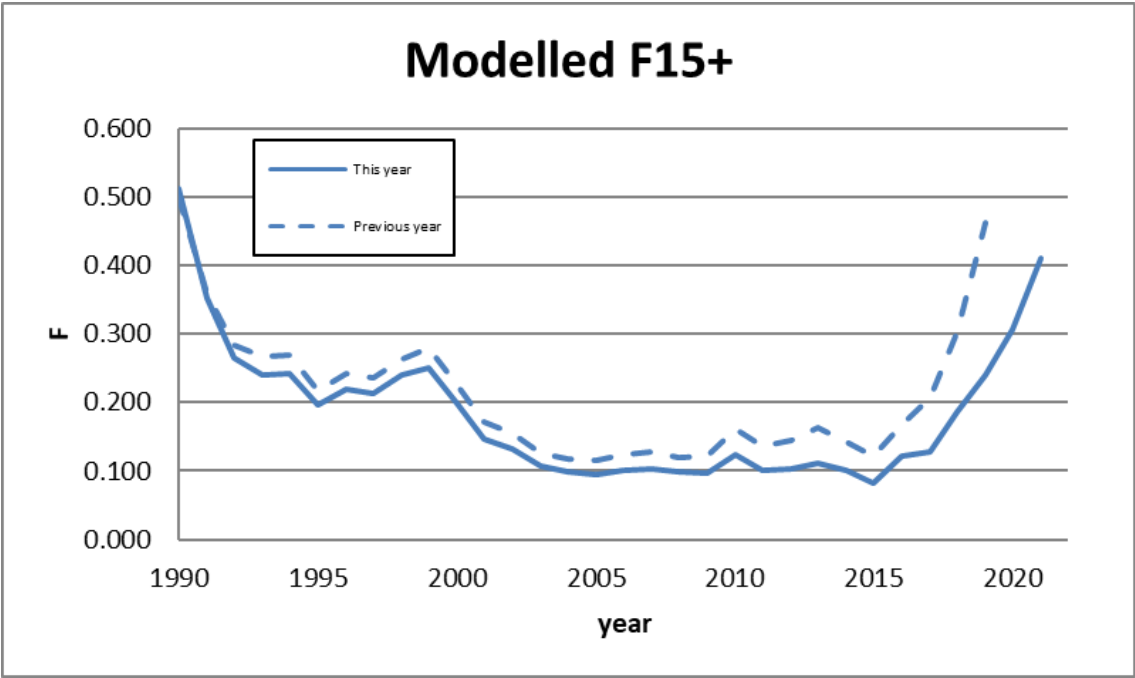


Figure 7.11. *S. norvegicus* in subareas 1 and 2. Unweighted average fishing mortality of ages 15+. Solid line shows this year's assessment (data up to 2021) and the dashed line shows last assessment (data up to 2019).

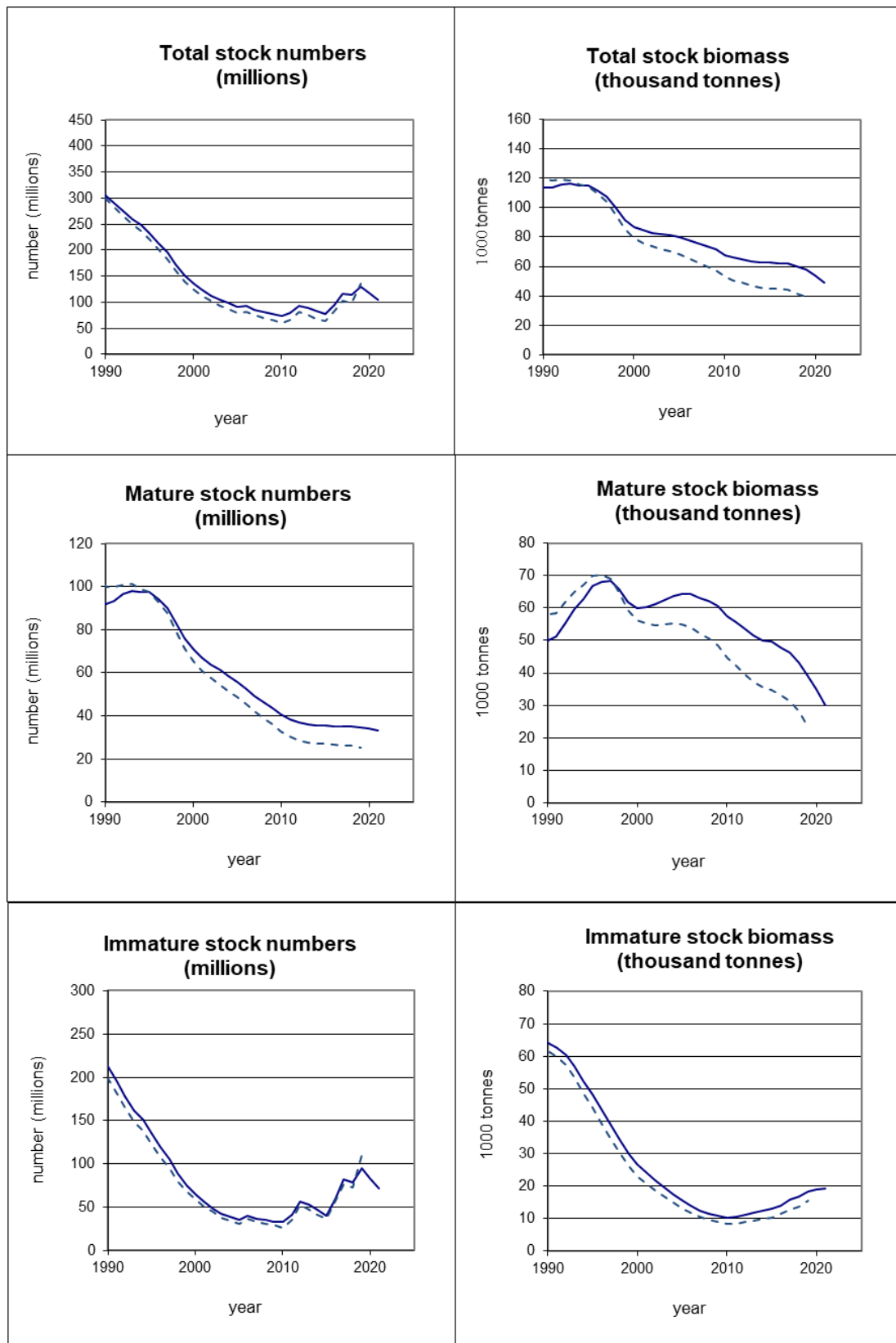


Figure 7.12. *S. norvegicus* in subareas 1 and 2. Stock numbers (in millions) and biomass (in 1000 tonnes) for the total stock (3+; upper panel), and the fishable and mature stock (middle panel), and the immature stock (lower panel), as estimated by Gadget using two surveys as input. Solid line shows this year's assessment (data up to 2021), and the dashed line shows last assessment (data up to 2019).

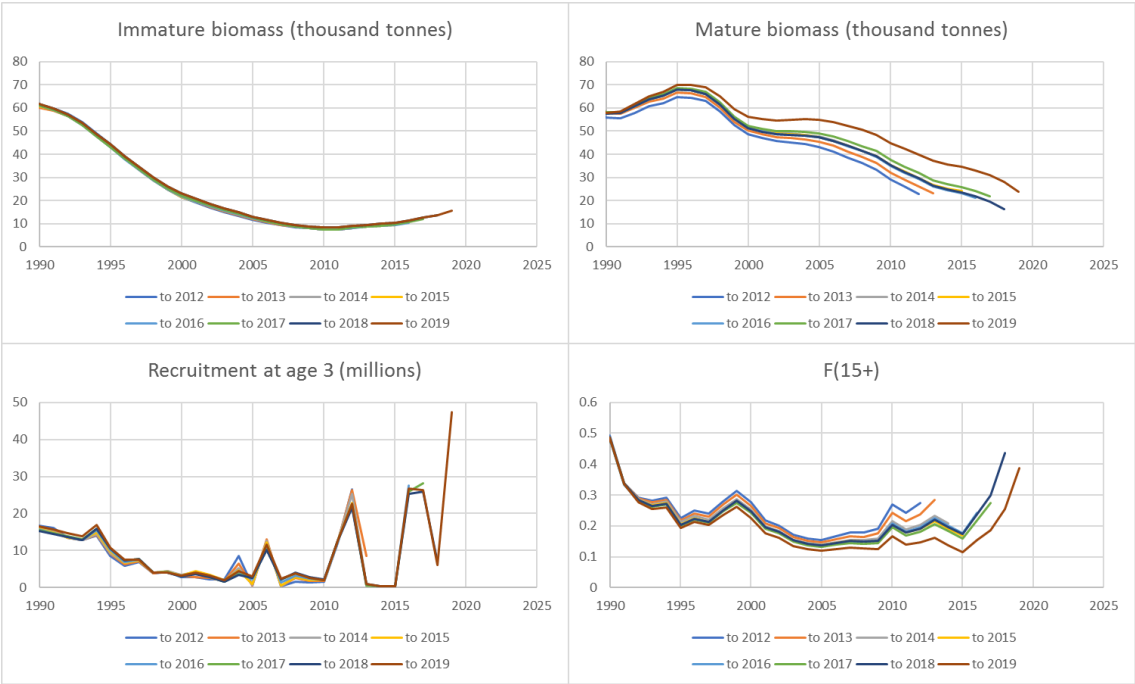


Figure 7.13. Gadget retrospective trends 2012 to 2019, immature biomass, mature biomass, recruitment-at-age 3, and F(15+).

7.5 Additional tables and figures

Table E1. Observed proportion of maturity—at-age 5 through 30 in *S. norvegicus* in subareas 1 and 2 derived from Norwegian commercial and survey data. The proportions were derived from samples with at least five individuals. Data for years after 2018 was considered insufficient until further age reading and is not presented.

| Year/Age | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1992 | 0.00 | 0.00 | 0.09 | 0.15 | 0.31 | 0.22 | 0.21 | 0.20 | 0.22 | 0.26 | 0.30 | 0.44 | 0.45 | 0.47 | 0.45 | 0.62 | 0.51 | 0.63 | 0.76 | 0.60 | 0.57 | 0.60 | 0.68 | 0.74 | 0.82 | 0.80 |
| 1993 | - | - | 0.00 | 0.00 | 0.10 | 0.29 | 0.54 | 0.47 | 0.53 | 0.67 | 0.80 | 0.75 | 0.78 | 0.82 | 0.91 | 0.85 | 0.82 | 0.87 | 0.75 | 0.91 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 1994 | 0.00 | 0.00 | 0.03 | 0.05 | 0.28 | 0.28 | 0.32 | 0.70 | 0.79 | 0.91 | 0.94 | 0.85 | 0.92 | 1.00 | 0.96 | 0.96 | 1.00 | 0.88 | 1.00 | 1.00 | 1.00 | 1.00 | - | 1.00 | 1.00 | - |
| 1995 | 0.00 | 0.00 | 0.00 | 0.05 | 0.02 | 0.22 | 0.25 | 0.48 | 0.61 | 0.64 | 0.68 | 0.80 | 0.87 | 0.88 | 0.76 | 0.89 | 0.90 | 0.91 | 1.00 | 1.00 | 1.00 | 1.00 | - | - | - | - |
| 1996 | 0.00 | 0.05 | 0.14 | 0.13 | 0.22 | 0.38 | 0.43 | 0.60 | 0.64 | 0.75 | 0.69 | 0.77 | 0.90 | 0.85 | 0.91 | 0.88 | 0.96 | 0.93 | 1.00 | 0.87 | 0.95 | 0.95 | 1.00 | - | 1.00 | 0.86 |
| 1997 | 0.00 | 0.05 | 0.08 | 0.15 | 0.17 | 0.21 | 0.34 | 0.35 | 0.57 | 0.64 | 0.72 | 0.73 | 0.85 | 0.93 | 0.94 | 1.00 | 1.00 | 0.95 | 0.89 | 0.94 | 0.93 | 0.89 | 1.00 | 1.00 | 1.00 | - |
| 1998 | 0.00 | 0.00 | 0.03 | 0.11 | 0.09 | 0.26 | 0.32 | 0.49 | 0.52 | 0.69 | 0.74 | 0.77 | 0.81 | 0.91 | 0.89 | 0.86 | 1.00 | 1.00 | 0.67 | 0.70 | 1.00 | 1.00 | - | - | 1.00 | 0.88 |
| 1999 | 0.00 | 0.00 | 0.00 | 0.04 | 0.17 | 0.35 | 0.22 | 0.53 | 0.73 | 0.71 | 0.67 | 0.69 | 0.74 | 0.71 | 0.77 | 0.89 | - | 0.83 | - | 1.00 | 0.89 | - | - | - | - | - |
| 2000 | 0.00 | 0.08 | 0.14 | 0.25 | 0.40 | 0.51 | 0.59 | 0.62 | 0.65 | 0.69 | 0.78 | 0.96 | 0.96 | 1.00 | 1.00 | - | - | - | 1.00 | - | - | - | - | - | - | - |
| 2001 | - | 0.00 | 0.06 | 0.14 | 0.28 | 0.32 | 0.40 | 0.52 | 0.53 | 0.60 | 0.76 | 0.74 | 0.81 | 0.85 | 0.60 | 0.70 | 0.56 | - | - | - | - | - | - | - | - | - |
| 2002 | - | 0.00 | 0.05 | 0.07 | 0.23 | 0.44 | 0.41 | 0.63 | 0.74 | 0.93 | 0.77 | 0.89 | 0.90 | 0.94 | 0.96 | 0.92 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | - |
| 2003 | - | - | - | 0.05 | 0.13 | 0.24 | 0.24 | 0.47 | 0.58 | 0.68 | 0.75 | 0.65 | 0.77 | 0.78 | 0.93 | 0.96 | 0.94 | 0.67 | 1.00 | - | 1.00 | - | - | - | - | - |
| 2004 | - | - | 0.03 | 0.07 | 0.13 | 0.43 | 0.21 | 0.51 | 0.46 | 0.63 | 0.64 | 0.86 | 0.82 | 0.96 | 0.92 | 0.95 | 0.89 | 0.88 | 1.00 | 0.86 | 1.00 | - | - | - | - | - |
| 2005 | - | - | - | 0.04 | 0.39 | 0.16 | 0.33 | 0.40 | 0.41 | 0.57 | 0.74 | 0.81 | 0.78 | 0.82 | 0.78 | 0.94 | 0.95 | 0.88 | 0.83 | 1.00 | - | 1.00 | - | - | - | - |
| 2006 | - | - | - | 0.10 | 0.07 | 0.26 | 0.26 | 0.39 | 0.47 | 0.57 | 0.67 | 0.67 | 0.74 | 0.86 | 0.83 | 0.97 | 0.79 | 0.95 | 0.81 | 1.00 | - | 1.00 | - | - | - | - |

| Year/Age | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
|----------|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 2007 | - | - | - | 0.08 | 0.30 | 0.26 | 0.20 | 0.66 | 0.68 | 0.70 | 0.88 | 0.86 | 0.89 | 0.99 | 0.98 | 1.00 | 0.96 | 0.94 | 1.00 | 0.92 | 1.00 | 0.83 | 1.00 | 1.00 | 1.00 | - |
| 2008 | - | - | 0.80 | 0.25 | 0.82 | 0.68 | 0.62 | 0.80 | 0.79 | 0.86 | 0.88 | 0.91 | 0.90 | 0.92 | 0.92 | 0.90 | 0.93 | 0.93 | 0.94 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.93 | 1.00 |
| 2009 | - | - | - | - | - | 0.50 | 0.50 | 1.00 | 0.93 | 0.81 | 0.86 | 0.86 | 0.85 | 0.85 | 0.88 | 0.95 | 0.89 | 0.95 | 0.92 | 0.95 | 0.86 | 0.94 | 1.00 | 0.93 | 0.83 | 0.86 |
| 2010 | - | - | - | - | - | - | - | - | 0.78 | 0.77 | 0.87 | 1.00 | 0.64 | 0.93 | 0.91 | 1.00 | 0.95 | 0.90 | 1.00 | 0.73 | 0.80 | 0.83 | 1.00 | 0.60 | 0.60 | - |
| 2011 | - | - | - | - | - | - | - | - | - | - | 0.73 | 0.78 | 0.94 | 0.93 | 0.89 | 0.92 | 0.92 | 0.93 | 0.83 | 0.85 | 1.00 | 1.00 | - | 0.83 | - | - |
| 2012 | - | 0.11 | 0.10 | 0.29 | 0.20 | 0.20 | - | - | - | 0.76 | 0.72 | 0.70 | 0.91 | 0.78 | 0.88 | 0.89 | 0.85 | 0.81 | 0.95 | 0.81 | 0.86 | 1.00 | 0.93 | 1.00 | 1.00 | 1.00 |
| 2013 | - | 0.12 | 0.05 | 0.10 | 0.19 | 0.38 | 0.71 | - | 0.29 | 0.82 | 0.92 | 0.89 | 0.77 | 0.86 | 0.75 | 0.78 | 0.73 | 0.83 | 0.89 | 0.95 | 1.00 | 0.67 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2014 | - | - | 0.02 | 0.08 | 0.21 | 0.43 | 0.41 | 0.53 | 0.33 | 0.58 | 0.69 | 0.71 | 0.80 | 0.92 | 0.92 | 0.95 | 0.63 | 0.96 | 0.90 | 0.84 | 0.95 | 0.83 | 1.00 | - | 0.78 | 0.88 |
| 2015 | - | 0.05 | 0.17 | 0.17 | 0.30 | 0.41 | 0.44 | 0.49 | 0.65 | 0.67 | 0.69 | 0.81 | 0.91 | 0.86 | 0.83 | 0.93 | 0.78 | 0.82 | 1.00 | 0.95 | 0.96 | 0.83 | 0.84 | 1.00 | 0.87 | 0.82 |
| 2016 | - | 0.04 | 0.02 | 0.05 | 0.23 | 0.16 | 0.26 | 0.43 | 0.59 | 0.42 | 0.62 | 0.57 | 0.80 | 0.73 | 0.87 | 0.74 | 0.88 | 0.79 | 0.78 | 0.97 | 0.81 | 0.89 | 0.89 | 0.67 | 1.00 | 0.94 |
| 2017 | - | 0.06 | 0.06 | 0.20 | 0.22 | 0.31 | 0.40 | 0.60 | 0.53 | 0.71 | 0.86 | 0.71 | 0.86 | 0.94 | 0.92 | 0.95 | 1.00 | 0.96 | 0.84 | 0.94 | 0.93 | 0.94 | 0.92 | 0.82 | 0.87 | 1.00 |
| 2018 | - | - | - | - | 0.16 | 0.46 | 0.59 | 0.34 | 0.32 | 0.53 | 0.72 | 0.57 | 0.90 | 0.53 | 0.67 | 0.92 | - | 0.80 | 0.75 | 1.00 | 1.00 | 0.78 | 0.63 | 1.00 | - | - |

Table E2a. *S. norvegicus* in subareas 1 and 2. Abundance indices (numbers in millions) – on length – from the winter Norwegian Barents Sea (Division 2.a) bottom-trawl survey (BS–NoRu–Q1 (BTr)) from 1986 to 2022. The area coverage was extended from 1993. Indices recalculated from 1994 onwards.

| Length group (cm) | | | | | | | | | | |
|-------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|-------|
| Year | 5.0–9.9 | 10.0–14.9 | 15.0–19.9 | 20.0–24.9 | 25.0–29.9 | 30.0–34.9 | 35.0–39.9 | 40.0–44.9 | > 45.0 | Total |
| 1986 | 3.0 | 11.7 | 26.4 | 34.3 | 17.7 | 21.0 | 12.8 | 4.4 | 2.6 | 133.9 |
| 1987 | 7.7 | 12.7 | 32.8 | 7.7 | 6.4 | 3.4 | 3.8 | 3.8 | 4.2 | 82.5 |
| 1988 | 1.0 | 5.6 | 5.5 | 14.2 | 12.6 | 7.3 | 5.2 | 4.1 | 3.7 | 59.2 |

| Length group (cm) | | | | | | | | | | |
|-------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|-------|
| Year | 5.0–9.9 | 10.0–14.9 | 15.0–19.9 | 20.0–24.9 | 25.0–29.9 | 30.0–34.9 | 35.0–39.9 | 40.0–44.9 | > 45.0 | Total |
| 1989 | 48.7 | 4.9 | 4.3 | 11.8 | 15.9 | 12.2 | 6.6 | 4.8 | 3.0 | 112.2 |
| 1990 | 9.2 | 5.3 | 6.5 | 9.4 | 15.5 | 14.0 | 8.0 | 4.0 | 3.4 | 75.3 |
| 1991 | 4.2 | 13.6 | 8.4 | 19.4 | 18.0 | 16.1 | 14.8 | 6.0 | 4.0 | 104.5 |
| 1992 | 1.8 | 3.9 | 7.7 | 20.6 | 19.7 | 13.7 | 10.5 | 6.6 | 5.8 | 90.3 |
| 1993 | 0.1 | 1.2 | 3.5 | 6.9 | 10.3 | 14.5 | 12.5 | 8.6 | 6.3 | 63.9 |
| 1994 | 0.7 | 7.5 | 10.1 | 12.8 | 10.9 | 17.8 | 10.1 | 4.8 | 2.9 | 77.6 |
| 1995 | 0.4 | 4.7 | 13.5 | 13.1 | 10.4 | 15.4 | 16.2 | 10.6 | 4.6 | 88.9 |
| 1996 | 0.0 | 0.7 | 3.3 | 5.9 | 8.7 | 14.0 | 15.7 | 7.5 | 3.9 | 59.7 |
| 1997 | 0.0 | 0.3 | 1.0 | 2.2 | 5.1 | 20.3 | 28.0 | 8.5 | 3.3 | 68.8 |
| 1998 | 0.1 | 2.4 | 1.3 | 2.6 | 4.5 | 7.4 | 7.5 | 5.1 | 2.2 | 33.0 |
| 1999 | 0.2 | 0.9 | 2.1 | 4.0 | 4.4 | 6.3 | 6.1 | 5.5 | 3.5 | 32.4 |
| 2000 | 0.5 | 1.1 | 1.5 | 4.2 | 4.9 | 5.1 | 3.6 | 1.9 | 1.2 | 23.9 |
| 2001 | 0.1 | 0.4 | 0.4 | 2.5 | 5.8 | 5.4 | 4.5 | 3.2 | 1.7 | 24.1 |
| 2002 | 0.1 | 1.0 | 2.0 | 1.8 | 3.9 | 4.2 | 3.2 | 3.5 | 2.4 | 22.3 |
| 2003 | 0.0 | 0.5 | 1.3 | 1.5 | 4.2 | 4.1 | 2.8 | 3.2 | 3.0 | 20.5 |
| 2004 | 0.7 | 0.2 | 0.4 | 1.0 | 2.8 | 4.4 | 5.4 | 3.9 | 3.0 | 21.8 |
| 2005 | 0.0 | 0.1 | 0.2 | 0.4 | 1.1 | 2.1 | 3.8 | 4.7 | 4.4 | 16.8 |

| Length group (cm) | | | | | | | | | | |
|-------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|-------|
| Year | 5.0–9.9 | 10.0–14.9 | 15.0–19.9 | 20.0–24.9 | 25.0–29.9 | 30.0–34.9 | 35.0–39.9 | 40.0–44.9 | > 45.0 | Total |
| 2006 | 0.0 | 0.0 | 0.0 | 0.2 | 2.5 | 5.5 | 6.3 | 4.2 | 4.3 | 22.9 |
| 2007 | 0.0 | 0.1 | 0.3 | 0.1 | 0.5 | 1.3 | 2.7 | 4.4 | 4.3 | 13.7 |
| 2008 | 1.7 | 2.5 | 0.2 | 0.2 | 0.4 | 0.7 | 2.0 | 2.5 | 4.5 | 14.7 |
| 2009 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.4 | 1.7 | 3.8 | 6.6 | 12.7 |
| 2010 | 0.4 | 2.0 | 1.1 | 0.5 | 0.1 | 0.1 | 0.9 | 1.1 | 4.0 | 10.2 |
| 2011 | 0.3 | 3.2 | 2.1 | 0.3 | 0.4 | 0.1 | 0.3 | 2.3 | 5.3 | 14.4 |
| 2012 | 0.8 | 4.4 | 4.0 | 1.8 | 0.5 | 0.3 | 0.9 | 3.6 | 6.3 | 22.7 |
| 2013 | 0.1 | 7.4 | 4.9 | 4.0 | 1.6 | 0.4 | 0.9 | 0.8 | 3.7 | 23.7 |
| 2014 | 0.1 | 1.0 | 1.5 | 3.0 | 3.3 | 1.0 | 0.5 | 1.4 | 4.1 | 16.0 |
| 2015 | 0.1 | 0.9 | 1.5 | 3.0 | 2.6 | 2.0 | 0.5 | 0.7 | 3.4 | 14.7 |
| 2016 | 0.7 | 1.3 | 1.5 | 2.3 | 4.2 | 3.6 | 3.4 | 1.7 | 5.8 | 24.3 |
| 2017 | 0.3 | 1.3 | 0.9 | 1.1 | 4.5 | 9.1 | 6.7 | 3.0 | 5.0 | 31.7 |
| 2018 | 1.1 | 2.7 | 1.8 | 1.7 | 3.3 | 4.7 | 6.3 | 4.3 | 4.7 | 30.6 |
| 2019 | 0.7 | 3.2 | 1.7 | 1.8 | 2.5 | 3.9 | 9.0 | 9.7 | 9.1 | 41.7 |
| 2020 | 1.0 | 0.6 | 1.5 | 1.0 | 1.9 | 2.4 | 6.5 | 8.8 | 9.9 | 33.6 |
| 2021 | 0.1 | 0.6 | 1.9 | 2.3 | 1.5 | 2.4 | 4.9 | 6.3 | 9.6 | 29.8 |
| 2022 ¹ | 1.7 | 1.7 | 0.4 | 0.8 | 1.7 | 1.3 | 4.7 | 4.7 | 5.8 | 23.0 |

1 – Provisional figures. Russian data not provided in time for AFWG 2022.

Table E2b. *S. norvegicus* in subareas 1 and 2. Norwegian bottom-trawl indices (numbers in thousands) – on age – from the annual Winter Norwegian Barents Sea (Division 2.a) bottom trawl survey (BS–NoRu–Q1 (BTr)) from 1986 to 2019. Age readings not available for 2017 and 2020–2022 at the time of AFWG 2022. The area coverage was extended from 1993 onwards. Indices recalculated from 1994 and onwards.

| Year/age | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16+ | Total |
|----------|------|------|------|------|-------|-------|------|------|-------|------|-------|-------|------|-------|-------|
| 1992 | 2509 | 4070 | 6395 | 2375 | 3757 | 10392 | 4299 | 3567 | 11526 | 2276 | 3239 | 3070 | 3666 | 15183 | 76324 |
| 1993 | 996 | 1308 | 1661 | 3005 | 1559 | 7689 | 3346 | 4801 | 2712 | 5480 | 6568 | 2735 | 8801 | 28737 | 79398 |
| 1994 | 0 | 9249 | 2475 | 5998 | 10871 | 6530 | 3523 | 8189 | 4566 | 1639 | 6285 | 1486 | 2964 | 11035 | 74809 |
| 1995 | 3544 | 4554 | 7203 | 9362 | 5598 | 8583 | 3308 | 2305 | 5004 | 7512 | 4602 | 4848 | 5948 | 15455 | 87826 |
| 1996 | 365 | 800 | 1825 | 2917 | 3715 | 8299 | 5343 | 3038 | 6373 | 4653 | 5945 | 3113 | 3720 | 9357 | 59462 |
| 1997 | 154 | 37 | 489 | 1012 | 1588 | 2717 | 3764 | 2925 | 9098 | 6036 | 12131 | 11643 | 2430 | 14607 | 68629 |
| 1998 | 1604 | 1118 | 607 | 550 | 858 | 2233 | 2470 | 2310 | 2157 | 3345 | 4618 | 827 | 2785 | 7320 | 32803 |
| 1999 | 489 | 1079 | 1289 | 2708 | 1220 | 1315 | 2060 | 3177 | 1766 | 3129 | 5342 | 2053 | 2085 | 4828 | 32537 |
| 2000 | 437 | 427 | 588 | 1774 | 2274 | 2559 | 1814 | 2378 | 1850 | 1817 | 2396 | 1838 | 336 | 2089 | 22577 |
| 2001 | 322 | 105 | 280 | 583 | 1346 | 2759 | 3072 | 2603 | 2488 | 2511 | 1886 | 1377 | 1016 | 3552 | 23903 |
| 2002 | 973 | 919 | 796 | 1126 | 640 | 1511 | 2744 | 1694 | 1754 | 2144 | 1090 | 1102 | 2172 | 3492 | 22157 |
| 2003 | 165 | 88 | 773 | 1329 | 523 | 1154 | 2638 | 1391 | 2140 | 1330 | 1890 | 801 | 1165 | 4809 | 20197 |
| 2004 | 0 | 163 | 68 | 250 | 544 | 978 | 1513 | 1069 | 1110 | 2135 | 3150 | 1559 | 2832 | 5541 | 20911 |
| 2005 | 57 | 85 | 86 | 114 | 393 | 532 | 627 | 460 | 689 | 1095 | 1178 | 1713 | 1545 | 8244 | 16818 |
| 2006 | 0 | 0 | 0 | 0 | 26 | 1025 | 1157 | 2641 | 2424 | 1244 | 1888 | 3242 | 1795 | 7480 | 22922 |
| 2007 | 19 | 39 | 256 | 39 | 0 | 320 | 173 | 369 | 293 | 868 | 751 | 809 | 847 | 8941 | 13724 |
| 2008 | 826 | 0 | 0 | 0 | 76 | 97 | 116 | 224 | 477 | 320 | 623 | 885 | 621 | 6744 | 11010 |

| Year/age | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16+ | Total |
|----------|---|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
| 2009 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 80 | 176 | 220 | 1168 | 417 | 1018 | 9507 | 12598 |
| 2010 | 0 | 0 | 328 | 1012 | 250 | 0 | 364 | 62 | 0 | 96 | 343 | 264 | 345 | 4955 | 8018 |
| 2011 | 2001 | 1750 | 1283 | 135 | 64 | 0 | 440 | 0 | 103 | 0 | 214 | 119 | 560 | 7110 | 13776 |
| 2012 | 938 | 3955 | 4777 | 547 | 342 | 267 | 391 | 112 | 102 | 86 | 0 | 247 | 506 | 9811 | 22083 |
| 2013 | 1594 | 1773 | 4772 | 2651 | 2504 | 2050 | 1386 | 275 | 0 | 483 | 143 | 166 | 0 | 4925 | 22721 |
| 2014 | 485 | 985 | 724 | 1030 | 2856 | 1906 | 1048 | 532 | 0 | 262 | 228 | 113 | 513 | 5056 | 15737 |
| 2015 | 223 | 438 | 814 | 1034 | 1481 | 1909 | 1947 | 483 | 943 | 484 | 471 | 104 | 53 | 4130 | 14514 |
| 2016 | 338 | 557 | 408 | 390 | 1163 | 2022 | 2567 | 2214 | 1027 | 805 | 2392 | 1324 | 555 | 7162 | 22925 |
| 2017 | Age data not available during AFWG 2022 | | | | | | | | | | | | | | |
| 2018 | 1597 | 1016 | 892 | 354 | 696 | 1784 | 2627 | 1082 | 1596 | 2558 | 2358 | 3461 | 1307 | 7626 | 28953 |
| 2019 | 899 | 1684 | 780 | 2120 | 900 | 1240 | 2821 | 3276 | 5770 | 7289 | 3393 | 2170 | 983 | 5251 | 38577 |

16+ group is considered in the calculation since 2005. Values prior to this date were derived by subtracting the sum of abundance in groups 1–15 to the total abundance, available in Table E1a.

Table E3a. *S. norvegicus* in subareas 1 and 2. Abundance indices (numbers in thousands) – on length – from the Norwegian Svalbard (Division 2.b) bottom-trawl survey (August–September) from 1985 to 2021. Since 2005 this is part of the Ecosystem survey (Eco–NoRu–Q3 (BTr)).

| Length group (cm) | | | | | | | | | | |
|-------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|-------|
| Year | 5.0–9.9 | 10.0–14.9 | 15.0–19.9 | 20.0–24.9 | 25.0–29.9 | 30.0–34.9 | 35.0–39.9 | 40.0–44.9 | > 45.0 | Total |
| 1985 ¹ | – | 1307 | 795 | 1728 | 2273 | 1417 | 311 | 142 | 194 | 8167 |
| 1986 ¹ | 200 | 2961 | 1768 | 547 | 643 | 1520 | 639 | 467 | 196 | 8941 |

| Year | Length group (cm) | | | | | | | | | Total |
|-------------------|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|-------|
| | 5.0–9.9 | 10.0–14.9 | 15.0–19.9 | 20.0–24.9 | 25.0–29.9 | 30.0–34.9 | 35.0–39.9 | 40.0–44.9 | > 45.0 | |
| 1987 ¹ | 100 | 1343 | 1964 | 1185 | 1367 | 652 | 352 | 29 | 44 | 7036 |
| 1988 ¹ | 500 | 1001 | 1953 | 1609 | 684 | 358 | 158 | 68 | 95 | 6426 |
| 1989 | 200 | 1629 | 2963 | 2374 | 1320 | 846 | 337 | 323 | 104 | 10096 |
| 1990 | 1700 | 3886 | 4478 | 4047 | 2972 | 1509 | 365 | 140 | 122 | 19219 |
| 1991 | 100 | 5371 | 5821 | 9171 | 8523 | 4499 | 1531 | 982 | 395 | 36393 |
| 1992 | 1700 | 10228 | 8858 | 5330 | 13960 | 12720 | 4547 | 494 | 346 | 58183 |
| 1993 | 200 | 10160 | 9078 | 5855 | 7071 | 4327 | 2088 | 1552 | 948 | 41279 |
| 1994 | 100 | 3340 | 5883 | 4185 | 3922 | 3315 | 1021 | 845 | 423 | 23034 |
| 1995 | 470 | 2000 | 9100 | 5070 | 3060 | 2400 | 1040 | 920 | 780 | 24840 |
| 1996 | 80 | 130 | 1260 | 2480 | 1030 | 480 | 550 | 990 | 400 | 7400 |
| 1997 | 0 | 810 | 1980 | 5470 | 5560 | 2340 | 590 | 190 | 450 | 17390 |
| 1998 | 180 | 2698 | 1741 | 4620 | 4053 | 1761 | 535 | 545 | 241 | 16374 |
| 1999 | 0 | 794 | 7057 | 3698 | 4563 | 2449 | 467 | 619 | 369 | 20016 |
| 2000 | 40 | 360 | 1240 | 1390 | 2010 | 760 | 400 | 160 | 390 | 6750 |
| 2001 | 10 | 110 | 790 | 1470 | 3710 | 4600 | 1880 | 680 | 370 | 13620 |
| 2002 | 0 | 0 | 65 | 415 | 459 | 880 | 621 | 565 | 521 | 3526 |
| 2003 | 87 | 87 | 104 | 84 | 534 | 635 | 459 | 759 | 738 | 3487 |

| Year | Length group (cm) | | | | | | | | | Total |
|------|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|-------|
| | 5.0–9.9 | 10.0–14.9 | 15.0–19.9 | 20.0–24.9 | 25.0–29.9 | 30.0–34.9 | 35.0–39.9 | 40.0–44.9 | > 45.0 | |
| 2004 | 0 | 8 | 9 | 192 | 581 | 667 | 607 | 395 | 213 | 2672 |
| 2005 | 0 | 52 | 0 | 84 | 267 | 608 | 411 | 274 | 283 | 1979 |
| 2006 | 0 | 0 | 75 | 74 | 138 | 437 | 470 | 668 | 1264 | 3126 |
| 2007 | 0 | 29 | 52 | 938 | 1069 | 4268 | 5154 | 892 | 1390 | 13792 |
| 2008 | 8603 | 4255 | 211 | 25 | 50 | 169 | 525 | 180 | 536 | 14554 |
| 2009 | 216 | 1403 | 108 | 108 | 0 | 0 | 197 | 214 | 220 | 2466 |
| 2010 | 868 | 1117 | 1845 | 607 | 0 | 123 | 189 | 0 | 996 | 5745 |
| 2011 | 0 | 0 | 850 | 50 | 0 | 0 | 0 | 159 | 578 | 1637 |
| 2012 | 0 | 111 | 1565 | 2242 | 2217 | 285 | 0 | 0 | 146 | 6566 |
| 2013 | 56 | 489 | 2155 | 3307 | 2738 | 433 | 136 | 34 | 349 | 9697 |
| 2014 | 64 | 0 | 425 | 167 | 296 | 531 | 74 | 0 | 312 | 1869 |
| 2015 | 0 | 0 | 0 | 216 | 198 | 303 | 877 | 18 | 810 | 2422 |
| 2016 | 0 | 0 | 121 | 119 | 813 | 1007 | 754 | 300 | 498 | 3612 |
| 2017 | 838 | 675 | 577 | 93 | 585 | 291 | 476 | 288 | 262 | 4085 |
| 2018 | 826 | 11129 | 5619 | 1000 | 677 | 2741 | 1134 | 127 | 110 | 23363 |
| 2019 | 78 | 90 | 104 | 219 | 68 | 0 | 115 | 131 | 182 | 987 |
| 2020 | 527 | 1193 | 1728 | 1591 | 290 | 368 | 318 | 365 | 264 | 6644 |

| Year | Length group (cm) | | | | | | | | | Total |
|------|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|-------|
| | 5.0–9.9 | 10.0–14.9 | 15.0–19.9 | 20.0–24.9 | 25.0–29.9 | 30.0–34.9 | 35.0–39.9 | 40.0–44.9 | > 45.0 | |
| 2021 | 0 | 184 | 1277 | 1849 | 1074 | 95 | 407 | 20 | 69 | 4975 |

1 – Old trawl equipment (bobbins gear and 80 m sweep length).

Table E3b. *S. norvegicus* in subareas 1 and 2. Norwegian bottom trawl survey indices—on age—from the Norwegian Svalbard (Division 2.b) bottom trawl survey (August–September) from 1985 to 2019. Since 2005 this is part of the Ecosystem survey (Eco–NoRu–Q3 (BTr)). In 2009–2011, 2014–2015 and 2019–2021, there was insufficient number of age readings to derive numbers-at-age, or age readings were not available at the time of the AFWG 2022.

| Year | Age | | | | | | | | | | | | | | Total |
|------|-----|-------|------|------|------|------|------|------|------|------|------|------|-----|-----|-------|
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
| 1992 | 284 | 12378 | 5576 | 2279 | 371 | 2064 | 3687 | 5704 | 9215 | 6413 | 1454 | 1387 | 696 | 22 | 51530 |
| 1993 | 32 | 10704 | 5710 | 5142 | 1855 | 1052 | 1314 | 3520 | 2847 | 2757 | 2074 | 1245 | 844 | 119 | 39215 |
| 1994 | 429 | 1150 | 3418 | 2393 | 1723 | 1106 | 1714 | 1256 | 1938 | 1596 | 2039 | 484 | 550 | 319 | 20115 |
| 1995 | 600 | 1600 | 6400 | 5100 | 1800 | 2200 | 1800 | 700 | 700 | 400 | 700 | 500 | 400 | 500 | 23400 |
| 1996 | 40 | 110 | – | 560 | 1050 | 940 | 930 | 400 | 1050 | 280 | 320 | 590 | 160 | 70 | 6500 |
| 1997 | 320 | 490 | – | 480 | 1500 | 6950 | 2720 | 1680 | 800 | 1310 | 550 | 30 | – | 120 | 16950 |
| 1998 | 210 | 1817 | 881 | 202 | 1555 | 2187 | 4551 | 1913 | 1010 | 797 | 49 | 264 | 73 | 187 | 15696 |
| 1999 | 0 | 760 | 2893 | 1339 | 3534 | 1037 | 3905 | 2603 | 762 | 1663 | 481 | 361 | 258 | 152 | 19748 |
| 2000 | 40 | 20 | 400 | 350 | 840 | 480 | 730 | 1670 | 620 | 340 | 510 | 100 | 80 | 70 | 6250 |
| 2001 | 0 | 40 | 50 | 450 | 330 | 790 | 1760 | 1970 | 3300 | 1200 | 1810 | 150 | 660 | 430 | 12940 |
| 2002 | 0 | 0 | – | – | 65 | 160 | 204 | 326 | 364 | 614 | 442 | 328 | 15 | 0 | 2518 |
| 2003 | 0 | 0 | 0 | 0 | 95 | 0 | 283 | 227 | 93 | 296 | 285 | 189 | 228 | 341 | 2035 |

| Year | Age | | | | | | | | | | | | | | |
|------|------|-----|------|------|------|------|------|------|-----|-----|------|------|------|------|-------|
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Total |
| 2004 | 0 | 0 | 0 | 0 | 0 | 0 | 359 | 144 | 362 | 152 | 343 | 315 | 316 | 220 | 2209 |
| 2005 | 0 | 50 | 0 | 0 | 0 | 73 | 25 | 286 | 106 | 191 | 271 | 167 | 125 | 152 | 1447 |
| 2006 | 0 | 0 | 0 | 0 | 0 | 71 | 0 | 0 | 233 | 106 | 174 | 194 | 305 | 179 | 1261 |
| 2007 | 0 | 0 | 0 | 0 | 0 | 513 | 776 | 399 | 0 | 0 | 292 | 1752 | 1759 | 1349 | 6841 |
| 2008 | 7844 | 0 | 0 | 0 | 0 | 0 | 0 | 37 | 98 | 16 | 18 | 148 | 86 | 164 | 8412 |
| 2009 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 2010 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 2011 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 2012 | 0 | 40 | 123 | 2445 | 2105 | 1205 | 642 | 92 | 35 | 0 | 0 | 0 | 0 | 0 | 6687 |
| 2013 | 0 | 56 | 383 | 1532 | 3963 | 377 | 1910 | 1029 | 214 | 121 | 250 | 0 | 0 | 166 | 10000 |
| 2014 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 2015 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 2016 | 0 | 0 | 124 | 0 | 0 | 0 | 0 | 813 | 455 | 739 | 0 | 483 | 136 | 263 | 3015 |
| 2017 | 356 | 187 | 322 | 97 | 145 | 130 | 193 | 205 | 79 | 292 | 205 | 176 | 278 | 0 | 2667 |
| 2018 | 543 | 0 | 1363 | 4066 | 0 | 367 | 885 | 422 | 0 | 970 | 1625 | 0 | 0 | 0 | 10239 |

Table E4. *S. norvegicus* in Sub-area 1 and 2. Mean catch rates (numbers/nm) of *S. norvegicus* from the Norwegian Coastal Surveys (NOcoast-Aco-Q4; Division 2.a) in 1998-2021.

| Length range (cm) | 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | >60 | # Hauls | Total.Distance (nm) | # Fish Caught | # Fish Sampled | Area (nm ²) |
|-------------------|-----|-------|--------|--------|--------|--------|-------|----------|--------|--------|-------|-------|------|---------|---------------------|---------------|----------------|-------------------------|
| 1998 | 0 | 0 | 692 | 6632 | 73075 | 22255 | 22430 | 130161 | 116216 | 23519 | 2547 | 880 | 0 | 89 | 139 | 778 | NA | 43574 |
| 1999 | 0 | 7587 | 77067 | 317802 | 369258 | 165769 | 67222 | 178802 | 163919 | 20445 | 3642 | 1520 | 0 | 103 | 138 | 2144 | NA | 43574 |
| 2000 | 0 | 0 | 1856 | 13048 | 6459 | 13065 | 42990 | 156418 | 171407 | 29117 | 3036 | 331 | 191 | 99 | 144 | 756 | 503 | 43574 |
| 2001 | 0 | 295 | 2031 | 11787 | 12305 | 22408 | 14127 | 74790 | 150763 | 26573 | 1787 | 345 | 191 | 81 | 113 | 460 | 325 | 43574 |
| 2002 | 0 | 0 | 0 | 0 | 2321 | 7588 | 34283 | 1011 273 | 754947 | 26769 | 3195 | 513 | 0 | 109 | 172 | 3289 | 332 | 43574 |
| 2003 | 0 | 0 | 2579 | 10118 | 44506 | 72473 | 52479 | 224734 | 228374 | 62121 | 5536 | 481 | 0 | 123 | 160 | 1367 | 1053 | 43574 |
| 2004 | 0 | 937 | 3139 | 5591 | 21042 | 66182 | 34613 | 351154 | 552183 | 41851 | 2666 | 1345 | 0 | 104 | 130 | 1290 | 950 | 43574 |
| 2005 | 0 | 554 | 5209 | 4627 | 30272 | 46072 | 48379 | 189993 | 170639 | 37468 | 1450 | 0 | 0 | 99 | 132 | 833 | 780 | 43574 |
| 2006 | 0 | 0 | 2884 | 496 | 1738 | 3065 | 29933 | 144743 | 256394 | 65959 | 9272 | 0 | 0 | 112 | 112 | 771 | 680 | 43574 |
| 2007 | 0 | 0 | 0 | 0 | 4335 | 7308 | 17338 | 129412 | 177332 | 29042 | 1182 | 0 | 0 | 131 | 140 | 637 | 637 | 43574 |
| 2008 | 0 | 3644 | 4555 | 955 | 3957 | 4679 | 17440 | 362633 | 490611 | 99469 | 11772 | 1630 | 0 | 110 | 139 | 1156 | 850 | 43574 |
| 2009 | 0 | 0 | 6976 | 2285 | 2984 | 4530 | 39275 | 800208 | 945004 | 106479 | 6244 | 663 | 1122 | 114 | 136 | 2947 | 598 | 43574 |
| 2010 | 0 | 39758 | 77542 | 20364 | 8814 | 1378 | 2582 | 66948 | 214182 | 99061 | 7417 | 2454 | 0 | 117 | 136 | 833 | 690 | 43574 |
| 2011 | 0 | 3654 | 67407 | 55725 | 193640 | 35323 | 10043 | 72244 | 296697 | 107318 | 27832 | 286 | 0 | 113 | 104 | 998 | 571 | 43574 |
| 2012 | 0 | 39530 | 59337 | 95227 | 150260 | 89534 | 12686 | 58890 | 356556 | 163645 | 46792 | 4640 | 263 | 98 | 96 | 1191 | 778 | 43574 |
| 2013 | 0 | 5176 | 137751 | 72253 | 540679 | 260689 | 38079 | 34628 | 384207 | 190595 | 21534 | 3528 | 2091 | 93 | 95 | 2231 | 1105 | 43574 |

| Length range (cm) | 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | >60 | # Hauls | Total.Dist- ance (nm) | # Fish Caught | # Fish Sampled | Area (nm^2) |
|-------------------------|------|-------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|------|---------|--------------------------|---------------|----------------|-------------|
| 2014 | 0 | 524 | 28653 | 89876 | 78267 | 144543 | 109523 | 47736 | 302185 | 157358 | 30251 | 2343 | 3361 | 107 | 108 | 1717 | 777 | 43574 |
| 2015 | 0 | 5081 | 69615 | 93690 | 193721 | 189891 | 246181 | 77869 | 202765 | 163442 | 41838 | 3335 | 0 | 97 | 103 | 1886 | 984 | 43574 |
| 2016 | 0 | 0 | 100206 | 49233 | 177926 | 186202 | 81997 | 49197 | 145043 | 163426 | 41278 | 869 | 567 | 99 | 101 | 1648 | 1153 | 43574 |
| 2017 | 0 | 1789 | 51611 | 101305 | 67426 | 140564 | 205389 | 191361 | 182391 | 134508 | 21507 | 1130 | 515 | 110 | 147 | 2996 | 1866 | 43574 |
| 2018 | 0 | 509 | 5230 | 16112 | 43173 | 50831 | 52728 | 124778 | 273489 | 200310 | 67433 | 4181 | 988 | 154 | 220 | 2182 | 1837 | 43574 |
| 2019 | 0 | 646 | 10371 | 6780 | 31170 | 26133 | 34875 | 145733 | 303319 | 158832 | 48546 | 1234 | 635 | 159 | 182 | 1856 | 1363 | 43574 |
| 2020 | 0 | 8763 | 19753 | 7782 | 16762 | 75324 | 104097 | 184328 | 200398 | 113592 | 40320 | 4186 | 475 | 136 | 201 | 3338 | 1703 | 43574 |
| 2021 | 2786 | 28669 | 51554 | 12878 | 4767 | 41451 | 78399 | 142549 | 404448 | 238166 | 60729 | 530 | 470 | 127 | 160 | 2482 | 1484 | 43574 |

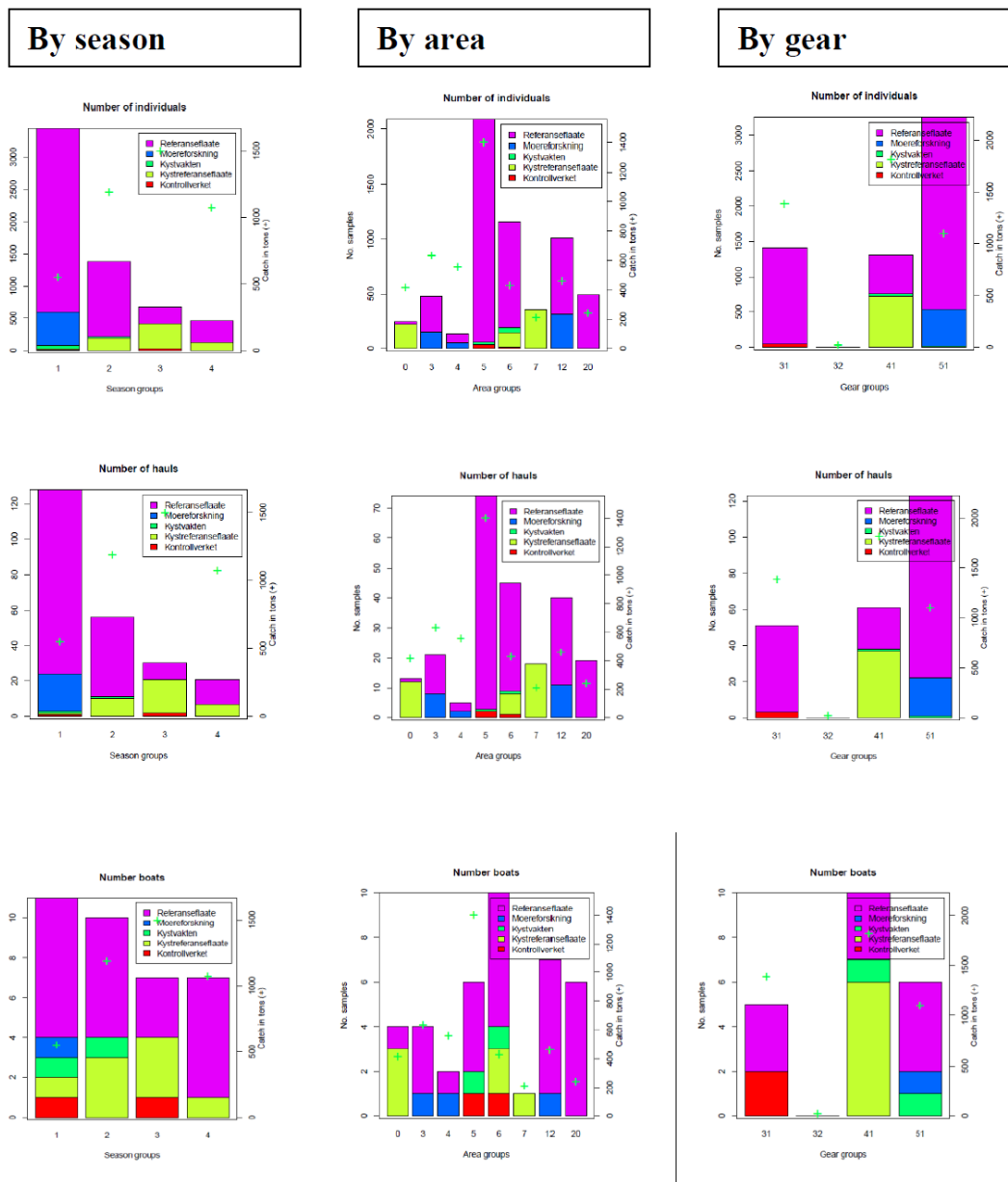


Figure E1. Overview of the Norwegian biological age samples (number individuals, number hauls/sets, number of boats) from the commercial fisheries for *S. norvegicus* in 2013 representing more than 80% of the catches and which the input data to the Gadget model are based upon. The colours denote which sampling platform has been used: High Seas Reference fleet, port sampling, Coast guard, Coastal Reference Fleet, or inspectors/observers at sea. The green crosses show the catch in tonnes for the different seasons, areas and gears.

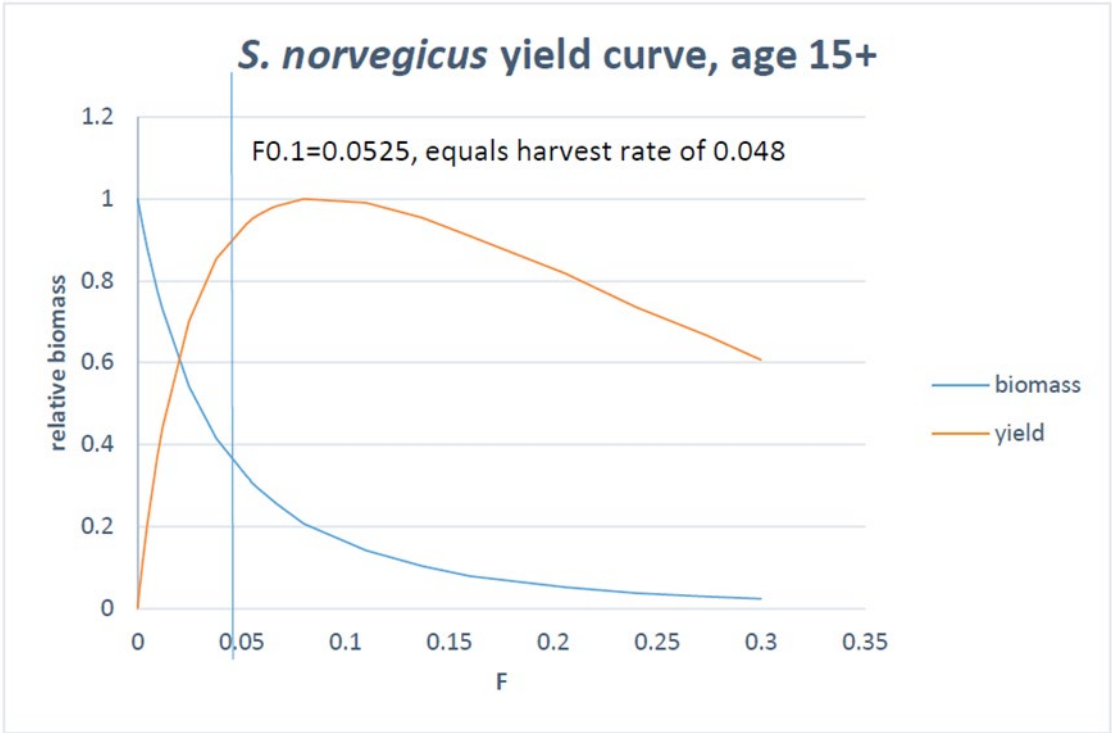


Figure E2. *S. norvegicus* in subareas 1 and 2. Yield-per-recruit for *S. norvegicus*, computed from the GADGET assessment model presented at the benchmark assessment in January 2018 (WKREDFISH, ICES 2018a).

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