500 Years of the Once Largest Fishery in the World: A Comprehensive Catch Reconstruction for the Newfoundland Cod Fishery (1508-2023)

**Supporting Documentation**

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**February 2025**



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**This Supporting Documentation provides detailed information that informs the following work: Hayes, P., Holm, P. and Nicholls, J. 2024. 500 Years of the Once Largest Fishery in the World: A Comprehensive Catch Reconstruction for the Newfoundland Cod Fishery (1508-2023). Fisheries Research - Science Direct. Elsevier. ISBN to follow.**

# Summary

|  |  |  |
| --- | --- | --- |
| **Dataset Title:** | Newfoundland Cod Catches 1500-2023 | |
| **Case Study:** | Newfoundland Cod Catches 1500-2023 | |
| **Large Marine Ecosystem:** | 9. Labrador/Newfoundland | |
| **Subject:** | North Atlantic Cod catches off Newfoundland 1500-2023 | |
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| **Data Provider(s):** | Patrick Hayes  4Oceans Project  Department of History  University of Victoria  Canada | Poul Holm and John Nicholls  4Oceans Project  Trinity Centre for Environmental Humanities  Trinity College Dublin  Ireland |
| **Extent:** | 22,958 records, 1 table, 17 figures | |
| **Keywords:** | Newfoundland, Atlantic cod, Gadus morhua, catches, 1500-2023 | |
| **Citation:** | Hayes, P., Holm, P. and Nicholls, J. 2024. 500 Years of the Once Largest Fishery in the World: A Comprehensive Catch Reconstruction for the Newfoundland Cod Fishery (1508-2023): Supporting Documentation. Dublin: TCD. | |
| **DOI:** | 10.6084/m9.figshare.27111478 | |

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# Introduction

This document and the two accompanying spreadsheets provide the data for the paper *500 Years of the Once Largest Fishery in the World: A Comprehensive Catch Reconstruction for the Newfoundland Cod Fishery (1508-2023)*.

The three separate files that comprise the complete Supporting Documentation are as follows:

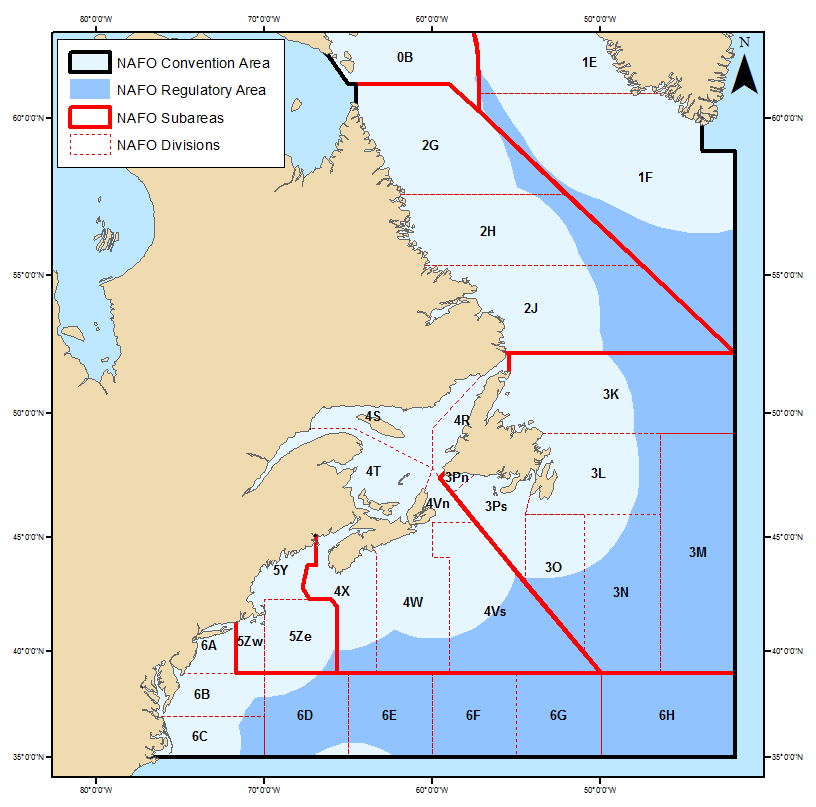
1. **500 Years of the Once Largest Fishery in the World: A Comprehensive Catch Reconstruction for the Newfoundland Cod Fishery (1508-2023): Supporting Documentation** (Word format) supplies textual details that describe the processes, procedures, conversions and data formats relevant to the paper.
2. **Combined Newfoundland Catch Data (1508-2023)** (Excel format) supplies:
   1. a comprehensive table (**Main Data**) of all data used to determine the overall estimated trends of cod landings,
   2. a **Totals for Subareas 2, 3, 4 and 2J3KL** table outlining summary data for these primary geographic regions,
   3. a series of 5 tables (**Phase 1 to 5**) outlining summary data for each of the 5 phases identified in the paper.
3. **Newfoundland Cod Catches Individual Data Series** (Excel format) supplies:
   1. A series of 18 individual tables that provide fully sourced and referenced data that apply to the Combined Newfoundland Catch Data (1508-2023) spreadsheet.
   2. Each individual table includes comprehensive source details including links to the original statistical and academic materials.

The tables supplied have had their Excel spreadsheet tabs colour coded to assist in identifying the 5 phases referred to in the paper.

|  |  |  |
| --- | --- | --- |
|  | **Period** | **Tab Colour Code** |
| Phase 1 | 1508-1610 |  |
| Phase 2 | 1611-1714 |  |
| Phase 3 | 1715-1815 |  |
| Phase 4 | 1816-1945 |  |
| Phase 5 | 1946-2023 |  |

Note: Some original data table data periods overlap between phases. The first indicated Phase has been colour coded, but the data applies to the following phase(es) as well.

# NAFO Convention, Regulatory, Subarea and Divisions Areas



***Figure 1: NAFO Convention, Regulatory, Subarea and Divisions areas chart (NAFO 2022).***

The NAFO (Northwest Atlantic Fisheries Organization) provides divisions within the Convention, Regulatory and Subarea mapped areas. Each Division has its own code as seen in the map (Figure 1). Where known, these codes have been referenced to indicate which marine areas around Newfoundland were being fished in a specific year.

**Bibliography**

NAFO Regulatory Areas. 2022. Northwest Atlantic Fisheries Organization. <https://www.nafo.int/About-us/Maps> (Web Material)

# Weights, Measures, Conversions and Abbreviations

## Weights and Measures

|  |  |
| --- | --- |
| **Unit** | **Explanation** |
| t | Metric tonne |
| kg | Kilogram |
| quintal | Measurement of weight of cod used by Spanish, Portuguese, English and French fishers; each nation’s quintal value differed slightly when converted to metric. |
| ton | Pre-metric weight: Imperial English (sometimes known as tun) and French measurements |
| pound | Pre-metric weight; Imperial English measurement |
| hundredweight | English Imperial weight |
| dollars | US currency |

## Conversions

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit** | **Conversion factor** | **Explanation** | **Source** |
| Dry to LW cod | 1 : 4.7 | Ratio of processed cod weight to fresh, live animal; cod was air dried and salted | Nicholls, et al. 2021; Pope 2003 |
| Quintal (French) | 1 quintal = 48.95 Kg | French pre-1795 measurement of weight to metric | Nicholls, et al. 2021; Zupko 1978 |
| Quintal (French) | 20 quintals = 1 ton | French pre-1795 weights | Nicholls, et al. 2021; Zupko 1978 |
| Ton (French) | 1 ton = 0.979 tonnes | French pre-1795 measurement of weight to metric | Nicholls, et al. 2021; Zupko 1978 |
| Quintal (English) | 1 quintal = 112 lbs | Imperial English measurement in pounds | Nicholls, et al. 2021; Zupko 1977 |
| Pounds (English) | 2,240 lbs = 1 ton | Imperial English long ton or tun | Nicholls, et al. 2021; Zupko 1977 |
| Ton or tun (English) | 1 ton/tun = 1.01605 tonnes | English long ton or tun | Nicholls, et al. 2021; Zupko 1977 |

## Abbreviations

|  |  |
| --- | --- |
| **Abbreviation** | **Explanation** |
| LW | Live Weight - full, live weight of the fish as found naturally |
| NAFO | North Atlantic Fisheries Organization |
| ICNAF | International Commission for the Northwest Atlantic Fisheries |
| HMAP | History of Marine Animal Populations |

Bibliography

* Haines, M. 2004. HMAP Dataset 5: Newfoundland, 1675-1698. Last Modified 2002. Accessed May 15, 2019. https://oceanspast.org/resources.php#HMAP%20Datasets. (Web material)
* Nicholls, J, Allaire, B & Holm P. 2021. The Capacity Trend Method: A new approach for enumerating the Newfoundland cod fisheries (1675–1790). Historical Methods: A Journal of Quantitative and Interdisciplinary History. 54:2. 80-93. DOI: 10.1080/01615440.2020.1853643 (Journal article)
* Pope, P. 2003. HMAP Dataset 5: Newfoundland, 1698-1833. Last Modified 2002. Accessed May 15, 2019. https://oceanspast.org/resources.php#HMAP%20Datasets. (Web material)
* Zupko, R. E. 1977. British weights & measures: A history from antiquity to the seventeenth century. London: University of Wisconsin Press. (Book)
* Zupko, R. E. 1978. French weights and measures before the Revolution: A Dictionary of Provincial and Local Units. Bloomington & London: Indiana University Press. (Book)

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# Data Series

## Explanation of Data Tables

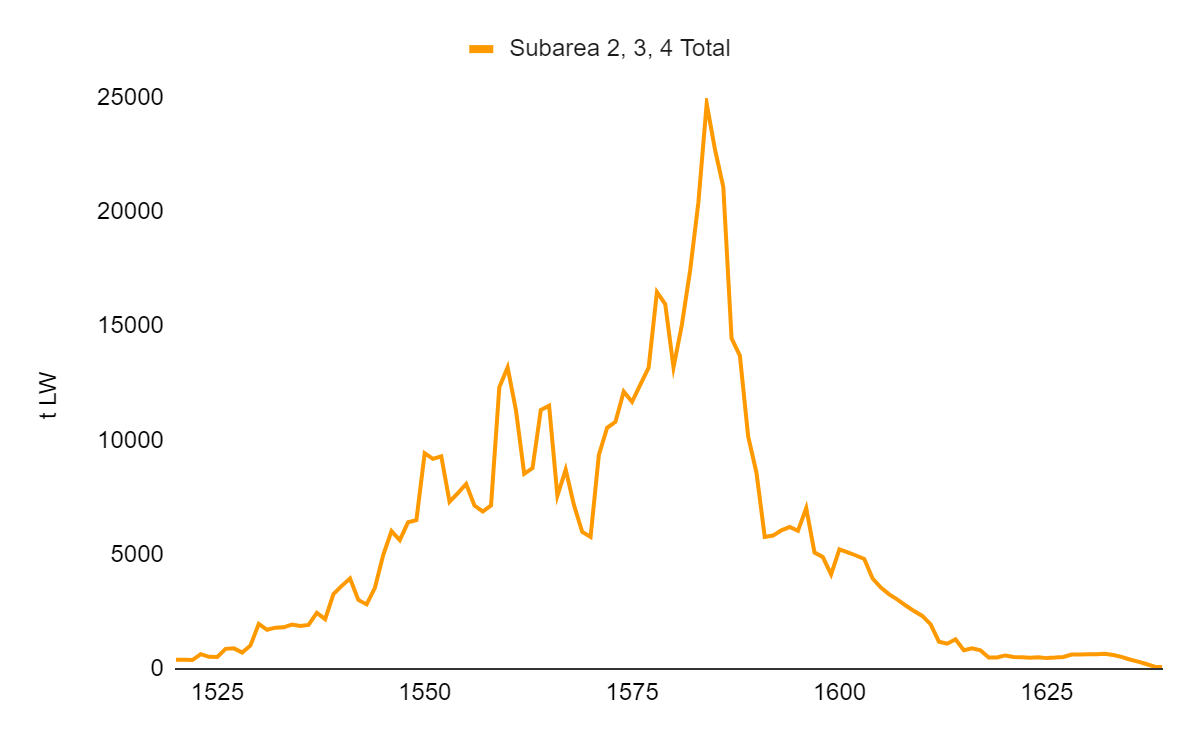
The data series shown here are accessible in aggregated form at: https://figshare.com/account/articles/27111478?file=49451175. Each data series relates to a unique tab in the downloadable spreadsheet. All series relate to Newfoundland Cod Fisheries and highlight relative values for NAFO 2J3KL areas. **Table 1** defines data series headings. Headings shown in **red** are required for each series and are present in all series.

|  |  |  |
| --- | --- | --- |
| **Heading** | **Explanation** | **Example** |
| **citation** | Citation to be used when citing or referencing the dataset | Hayes, P., Holm, P. and Nicholls, J. 2024. Supporting Documentation: Newfoundland Cod Catches, 1500-2023. Dublin: TCD. |
| **year** | Calendar year in which activity occurred | 1790 |
| **totalLWtonnes** | Total of Live Weight of cod catch in metric tonnes. This figure includes landings from all areas (i.e. area 1,5), which do not necessarily match our estimated totals for areas 2,3,4. | 51,325 |
| **2J3KLtotalLWTonnes** | Total of Live Weight of cod catch in metric tonnes from the 2J3KL NAFO areas, typically an estimated share | 20,345 |
| **notesOn2J3KL** | Notes and comments relating to the cod catch from the 2J3KL NAFO areas | Estimated 31% of overall effort |
| **source** | Academic sources and materials employed in determining values | Allaire and Nicholls 2021; Ivinson and Nicholls 2020 |
| notesOnDivisionsNotCovered | Notes and comments relating to the cod catch from the NAFO areas outside 2J3KL | French focused on 4R and Nova Scotia |
| nAFOdivision | NAFO defined divisions where specifically available | 3L |
| nAFOsubarea | NAFO defined subareas where specifically available | 3 |
| portLocations | Name of “port” or landing/staging areas on Newfoundland coast where available | Bay de Verde |
| decimalLatitude | Decimal latitude of given locations where available | 48.08 |
| decimalLongitude | Decimal longitude of given locations where available | -52.90 |
| noOfVessels | Number of vessels engaged in the fishing effort where available | 337 |
| averageTonnagePerVessel | Average tonnage prior to applied conversion rates | 149 |
| totalTonnage | Total tonnage prior to applied conversion rates | 46,843 |
| weightInQuintals | Total weight in quintals prior to applied conversion rates (typically tonnage x 20) | 936,860 |
| weightInMetricTonnes | Total weight in t prior to applied conversion rates (typically quintal value x 0.0458) | 45,438 |
| exportAmountHundredweights | Export values indicated in Imperial Hundredweights | 664,277 |
| exportAmountThousandsOfDollars | Export values indicated in Imperial Hundredweights | 2,584 |
| exportAmountPounds | Export values indicated in Imperial Pounds | 74,399,024 |
| exportAmountKg | Export values indicated in Metric Kilogrammes (Kg) | 33,745,271.6 |
| exportAmountTonnes | Export values indicated in Metric Tonnes (t) | 33,745 |
| population | Population figures for Newfoundland; values in red are interpolated | 52,376 |
| populationStepValue | Population step values based on given source | 2,751 |
| populationStepValueSource | Source of population step values | https://www150.statcan.gc.ca/n1/pub/98-187-x/4064809-eng.htm |
| domesticConsumptionInTonnes | Domestic Consumption in tonnes | 1,177 |
| totalEstimatedCatches | Estimated total catches combining Domestic Consumption and Export values | 185,702 |
| originalYearFromSource | Provided where original year format differs from the **year** field | 1929-30 |
| nAFOArea(n) | Total catch in t for NAFO Area number where (n) represents the number | 8,733 |
| nAFOAreasTotal | Total catch in t for aggregated available NAFO Areas data | 248,192 |
| nAFOAreas2and3 | Total catch in t for aggregated available NAFO Areas 2 and 3 only | 239,459 |
| nAFOAreas2To4 | Total catch in t for aggregated available NAFO Areas 2 to 4 | 179 |
| nAFONoArea | Total catch in t given but no specific Area noted | 1,529 |
| extrapolatedValuesForCanada | Extrapolation of Canadian catch data in t | 63,150 |
| newfoundlandCatches | Reported overall Newfoundland Catches in t | 235,221 |
| canadaPlusNewfoundlandCatches | Aggregated Canadian and Newfoundland Catch values in t | 339,121 |
| ratioCanadaToNewfoundland | Indicative ratio of Canada to Newfoundland Catches | 21 |
| canadaEstimated2J3KL | Estimated Canadian catch in t occurring in NAFO 2J3KL region | 3,811 |
| percentInArea(n) | Percentage of catch occurring in NAFO Area (n) | 64 |
| totalPortugueseLandings | Total Portuguese landings in Newfoundland in t | 4,484 |

***Table 1: Definitions of Data Series Headings***

## Spanish and Basque 1520-1639

Data are sparse and limited with very rare quantitative sources for the Spanish and Basque fishery in this period. For our data, most values are derived from qualitative reports from Spanish fishing crews and contemporary English observers on fishing or cargo vessels who spoke to the scale of the Spanish effort. These accounts generally relate to the size of the fishing fleet rather than catch estimates. We comprehensively collected all such qualitative accounts to provide the best overall estimate of Spanish fishing activities in this period (Ivinson, et al. 2020a, 2020b). Data gaps were filled using the Capacity Trend Method (Nicholls, et al. 2021).

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***Chart 1. Reconstructed cod catches for Spanish and Basque fleet in Subareas 2,3,4, 1520-1790 (2J3KL values are the same as 2,3,4 total).***

Method for limiting to NAFO 2J3KL

We assume all Spanish catches took place within 2J3KL in this period. As outlined in Norfish Supporting Documentation, Spanish and Basque Newfoundland Cod Fishery 1520-1790 (Ivinson, et al. 2020b), observations of Spanish and Spanish Basque vessels were largely made by English fishers who operated in 2J3KL. While it is possible that Spanish fishing occurred outside 2J3KL we have no evidence to enumerate this activity.

Bibliography

Data source:

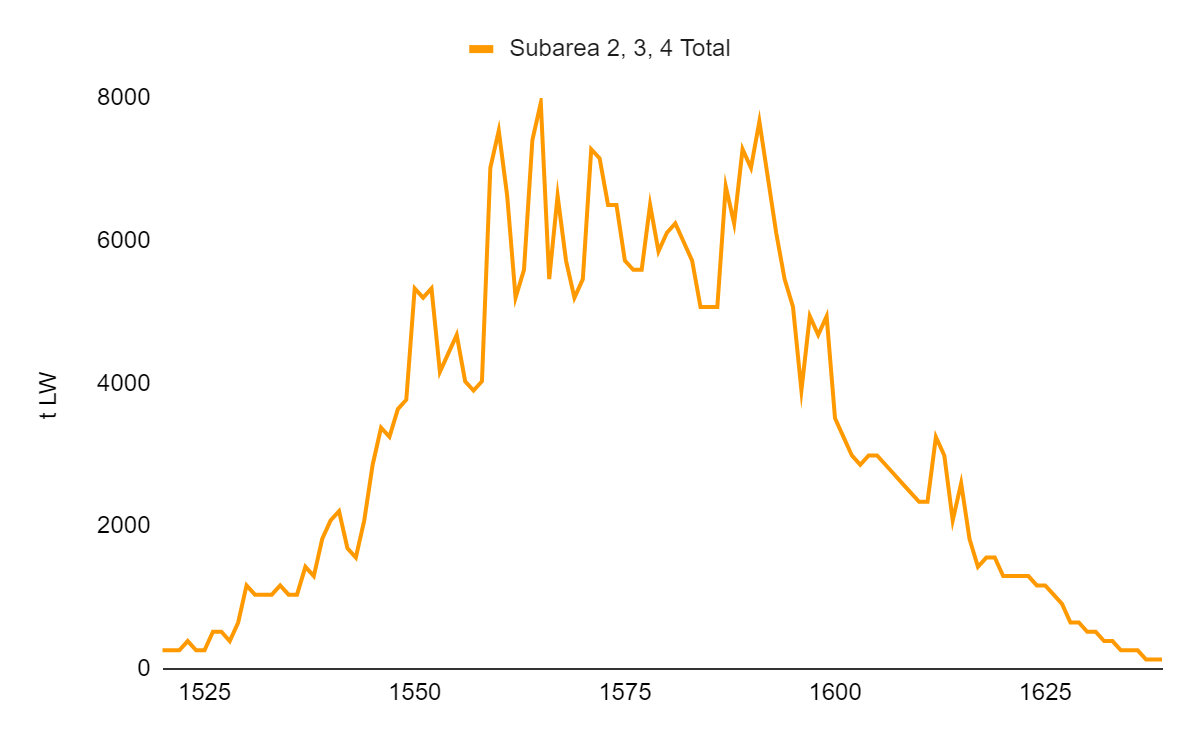
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Additional references:

* Ivinson, J, Montgomery, P and Nicholls, J. 2020. Norfish Supporting Documentation: Spanish and Basque Newfoundland Cod Fishery 1520-1790. Dublin: TCD. <https://figshare.com/articles/dataset/Norfish_Spanish_and_Basque_Newfoundland_Cod_Fishery_1520-1790/14258486?file=28735893>. (Web material)
* Nicholls, J, Allaire, B & Holm P. 2021. The Capacity Trend Method: A new approach for enumerating the Newfoundland cod fisheries (1675–1790). Historical Methods: A Journal of Quantitative and Interdisciplinary History. 54:2. 80-93. DOI: 10.1080/01615440.2020.1853643 (Journal article)

## Portuguese 1520-1639

As is the case for the Spanish and Basque Cod Data, Portuguese data for this period are sparse and limited with very rare quantitative sources. Again, our values are largely derived from reports by fishing crews and contemporary English observers from fishing or cargo vessels who spoke to the scale of the Portuguese effort. We compiled all such accounts to estimate the overall scale of Portuguese fishing activities (Ivinson, et al. 2020a, 2020b). Data gaps were filled using Capacity Trend Method (Nicholls, et al. 2021).

***Chart 2. Reconstructed cod catches for Portuguese fleet in Subareas 2,3,4, 1520-1639 (2J3KL values are the same 2,3,4 total).***

Method for limiting to NAFO 2J3KL

We assume all Portuguese catches took place within 2J3KL in this period. As per the Spanish and Basque Cod Fishery, observations of Portuguese vessels were largely made by English fishers who operated primarily in 2J3KL. While Portuguese fishing would have taken place outside this range to some extent, we have no clear indication of values or alternate locations.

Bibliography

Data source:

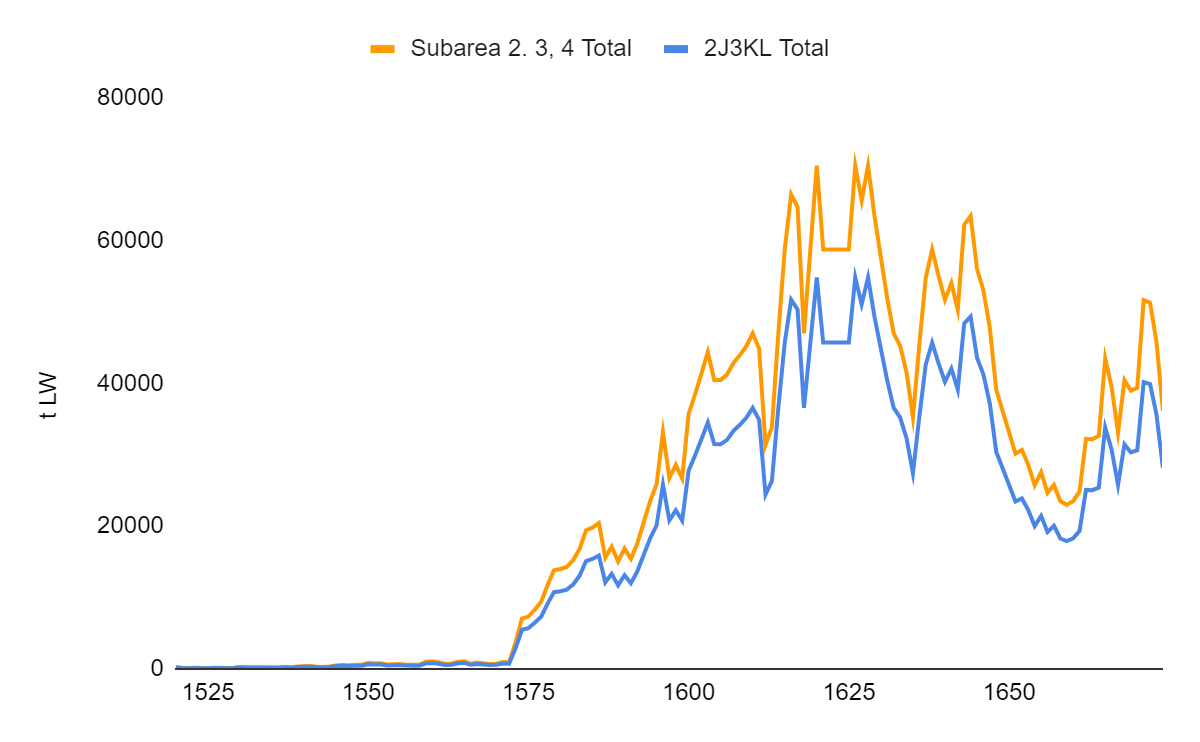
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* Nicholls, J, Allaire, B & Holm P. 2021. The Capacity Trend Method: A new approach for enumerating the Newfoundland cod fisheries (1675–1790). Historical Methods: A Journal of Quantitative and Interdisciplinary History. 54:2. 80-93. DOI: 10.1080/01615440.2020.1853643 (Journal article)

## English 1520-1674

Few records exist for the period, but through use of several state reports and official letters for specific years (Ivinson and Nicholls 2021a; 2021b), and use of the Capacity Trend Method (Nicholls, et al. 2021), a data series was established. Official reports and qualitative reports combined to provide more concrete data. After 1674, Admiralty records were more prominent and provided a greater depth of information.

***Chart 3. Reconstructed cod catches for the English fleet in Subareas 2,3,4 (orange line) and 2J3KL (blue line), 1520-1674.***

Method for limiting to NAFO 2J3KL

We assume all English catches took place within 2J3KL in this period. Based on qualitative accounts and our limited quantitative data we know English fishers operated primarily in 2J3KL, where they established “ports” or landing stages. There is no indication that for this period fishing took place outside of the indicated areas.

Bibliography

Data source:

* Ivinson, J and Nicholls, J. 2021a. English Newfoundland Cod Fishery 1520-1790. Dublin: TCD. <https://figshare.com/articles/dataset/Norfish_English_Newfoundland_Cod_Fishery_1520-1790/14401181?file=41453400>. (Web material)

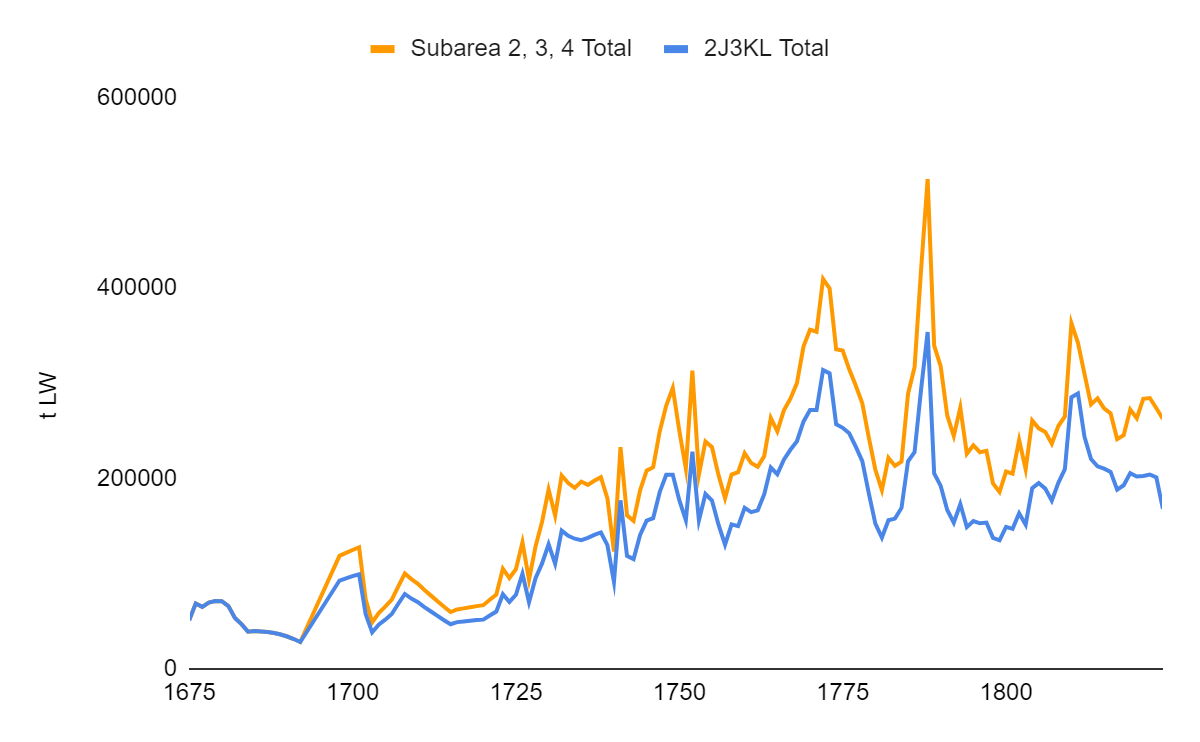
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## 

## English 1675-1824

The History of Marine Animal Populations (HMAP) datasets provide two detailed series for English catches that cover the years 1675-1692 and 1698-1824 (Pope 2003; Haynes 2004). We employed the Capacity Trend Method to fill gaps and improve the overall accuracy of this dataset (Nicholls, et al. 2001). We also added more refined spatial information to this data to track how landings changed spatially over time (See Fig 7 in the main paper). The HMAP data also includes the number of fishing boats that operated each year, which allows us to calculate a rough estimate of the catch per unit of effort for the English fleet in this period (See Figure 8 in the main paper for more).

***Chart 4. Reconstructed cod catches for the English fleet in Subareas 2,3,4 (orange line) and 2J3KL (blue line), 1675-1824.***

Method for limiting to NAFO 2J3KL

Detailed information is provided in the HMAP datasets that highlights the specific “ports” where cod was landed - these ports ranged from harbours to simple landing stages on beaches. Accurate coordinates are provided and the NAFO Divisions and Subareas can be determined with reasonable accuracy.

Bibliography

Data sources:

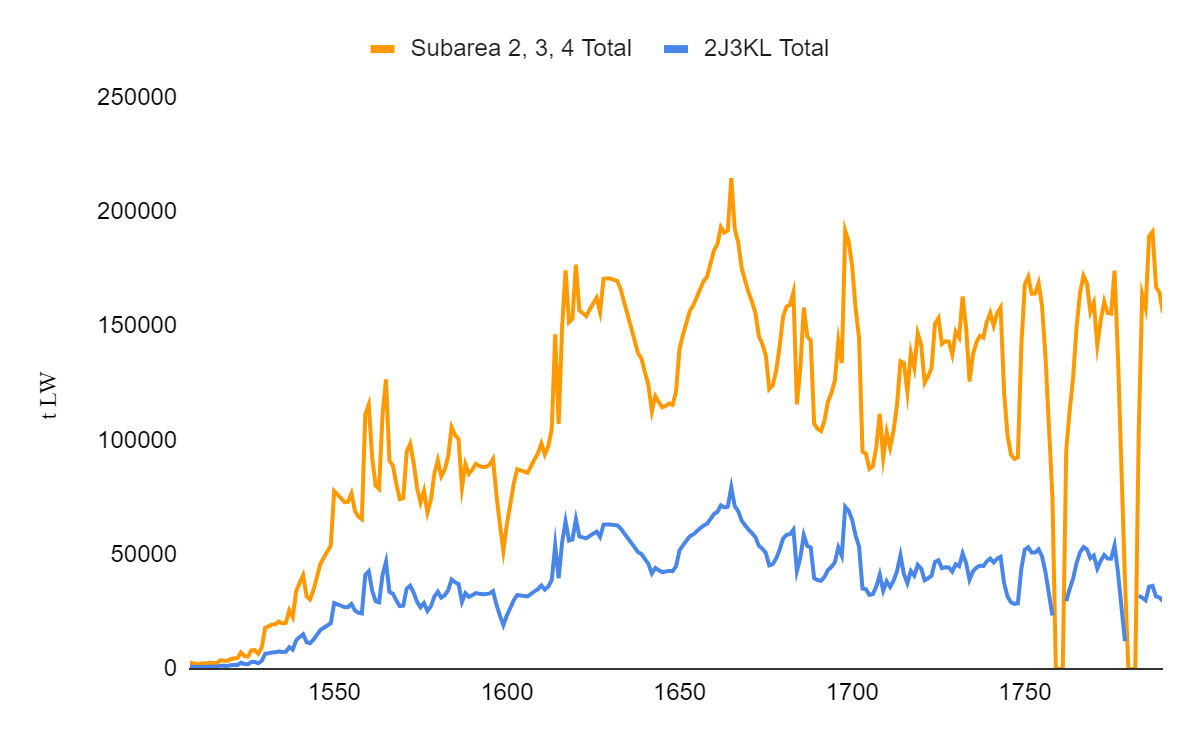
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* Pope, P. 2003. HMAP Dataset 5: Newfoundland, 1698-1833. Last Modified 2002. Accessed May 15, 2019. <https://oceanspast.org/resources.php#HMAP%20Datasets>. (Web material).

Additional references:

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## French 1500-1790

The French fisheries were active from at least 1508 and dominated the fishing efforts in Newfoundland until the early 18th century. To accurately capture the scale of French fishing activities, we developed a dataset detailing the number of voyages originating from France that went to NW Atlantic waters to fish for cod each year (Allaire and Nicholls 2021a). This dataset was primarily based on bottomry loan records from French archives. These records detail the tonnages of ships enabling us to estimate the volume of cod carried by French ships from NW Atlantic waters to European markets. Gaps in this data were filled using methods detailed in Allaire and Nicholls 2021b.

***Chart 5. Reconstructed cod catches for the French fleet in Subareas 2,3,4 (orange line) and 2J3KL (blue line), 1500-1790.***

Method for limiting to NAFO 2J3KL

We do not have accurate data for the specific location of early French fishing efforts. Based on qualitative accounts of French fishing we estimate that prior to 1713, 37% of French fishing happened in 2J3KL. Following the Utrecht Treaty in 1713, some French settlers were removed from 2J3KL; for this reason, we estimate that 31% of total French catch occurred in those divisions from 1714-1784. By 1784, following the complete removal of French fishers from subareas 3L and 3P, French efforts in 2J3KL were limited to a reduced activity in 3K, which we estimate was only 19% of their total catch (Nicholls et al. 2021b).

Bibliography

Data source:

* Allaire, B. and Nicholls, J. 2021a. Norfish: French Newfoundland Cod Fishery 1500-1790. Dublin: TCD <https://figshare.com/articles/dataset/Norfish_French_Newfoundland_cod_fishery_1500-1790/14480505?file=28735656> (Web material).

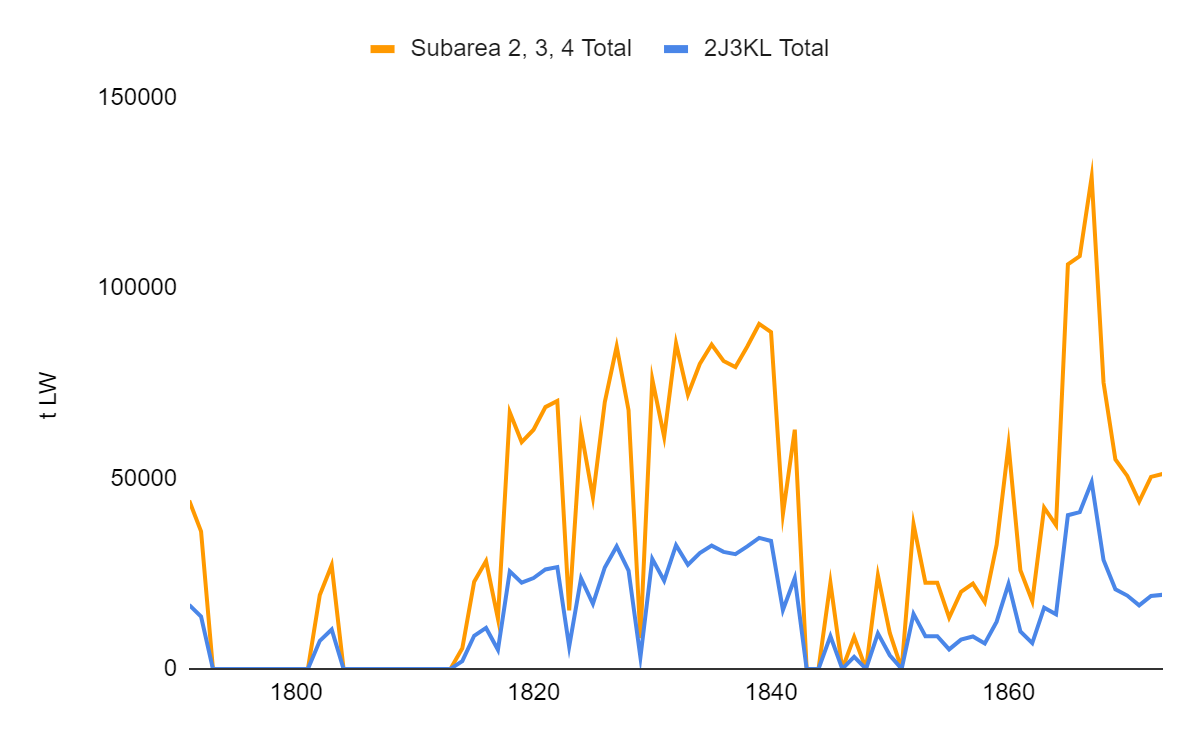
Additional references:

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## French 1791-1873

For the French fishery from 1791-1873, we use figures provided by Jacqueline Hersart de La Villemarqué (1995). The data originally derive from reports from the main French ports participating in the Newfoundland and Grand Banks fishery and cover the period 1508 to 1950. However, they are sometimes incomplete, referred to as “parfois incomplets” (ibid. p.11) and do not cover certain smaller ports. The figures are therefore minima.

For the period 1791-1802 de la Villemarqué (1995) assembled the data from diverse secondary sources (du Rin 1935, Morandiere 1962, Innis 1978, and Pfister 1985). For 1803-62 the main source is primary archival documents in the Archives Nationales, série marine CC% - fonds gén´ral F 12, with gaps filled in by the above-mentioned sources. From 1863-73 the main source was annual statistics published in the Revue Maritime et Coloniale.

***Chart 6. Reconstructed cod catches for the French fleet in Subareas 2,3,4 (orange line) and 2J3KL (blue line),1791-1873.***

Method for limiting to NAFO 2J3KL

Harris (1990, p. 25) estimates that 38% of the French catch took place in 2J3KL from 1874 to 1952 and we employ this figure as well.

Bibliography

Data source:

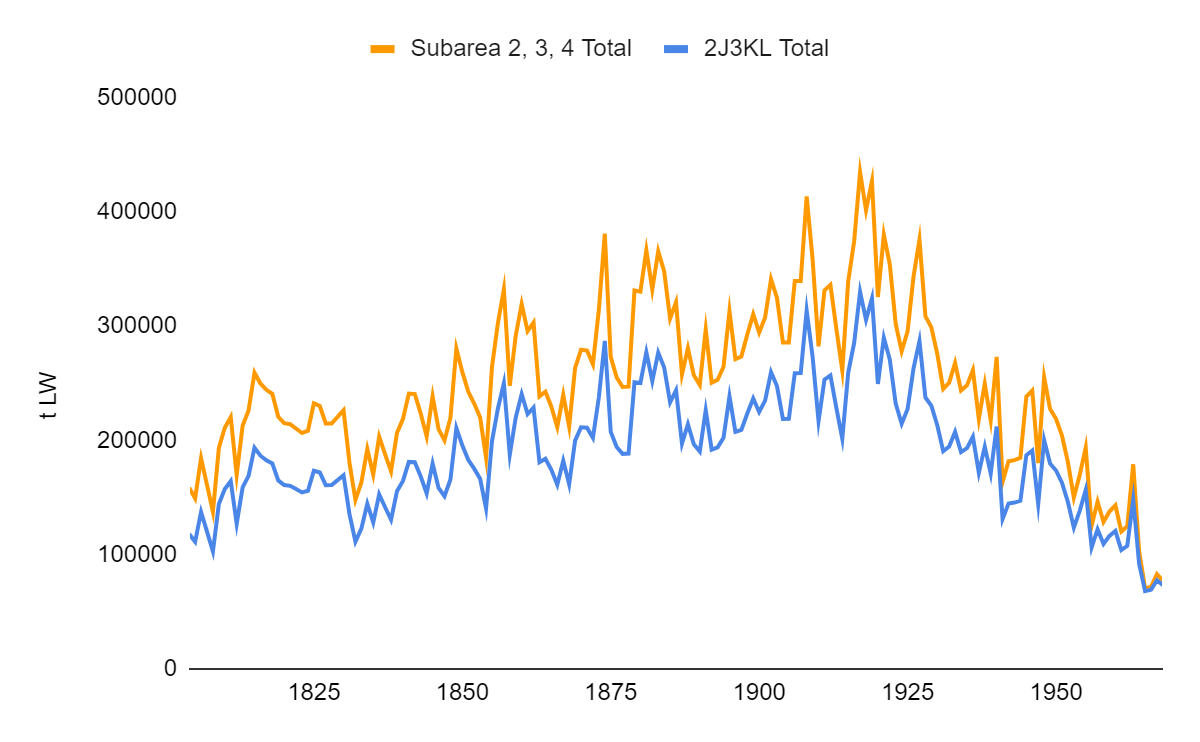
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## Newfoundland 1804-1968

Data for this period is based on a combination of export values and estimates of domestic consumption. Export values from 1804 to 1968 come from Historical Statistics of Newfoundland and Labrador (1970) and Statistics Canada (1983). Domestic consumption was calculated by multiplying Sette’s (1928) estimate of 0.873 quintal (44.4 kg) per capita cod consumption by yearly population estimates for Newfoundland. Sources for population figures are listed in the accompanying spreadsheet.

***Chart 7. Reconstructed cod catches for the Newfoundland fleet in Subareas 2,3,4 (orange line) and 2J3KL (blue line), 1804-1968.***

Method for limiting to NAFO 2J3KL

Based on data from 1953 to 1961 Harris (1990, p. 25) estimates that 74% of Newfoundland catches took place in 2J3KL. We employ these same figures to estimate catches back to 1804 (although we only use figures from 1925-1951 in the combined totals). As Harris notes, the percentage of catches within 2J3KL fluctuated in the 1950s, so estimates back in time will invariably ‘result in overestimations for some years and underestimations for others’ (Harris 1990, p. 25).

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Data sources:

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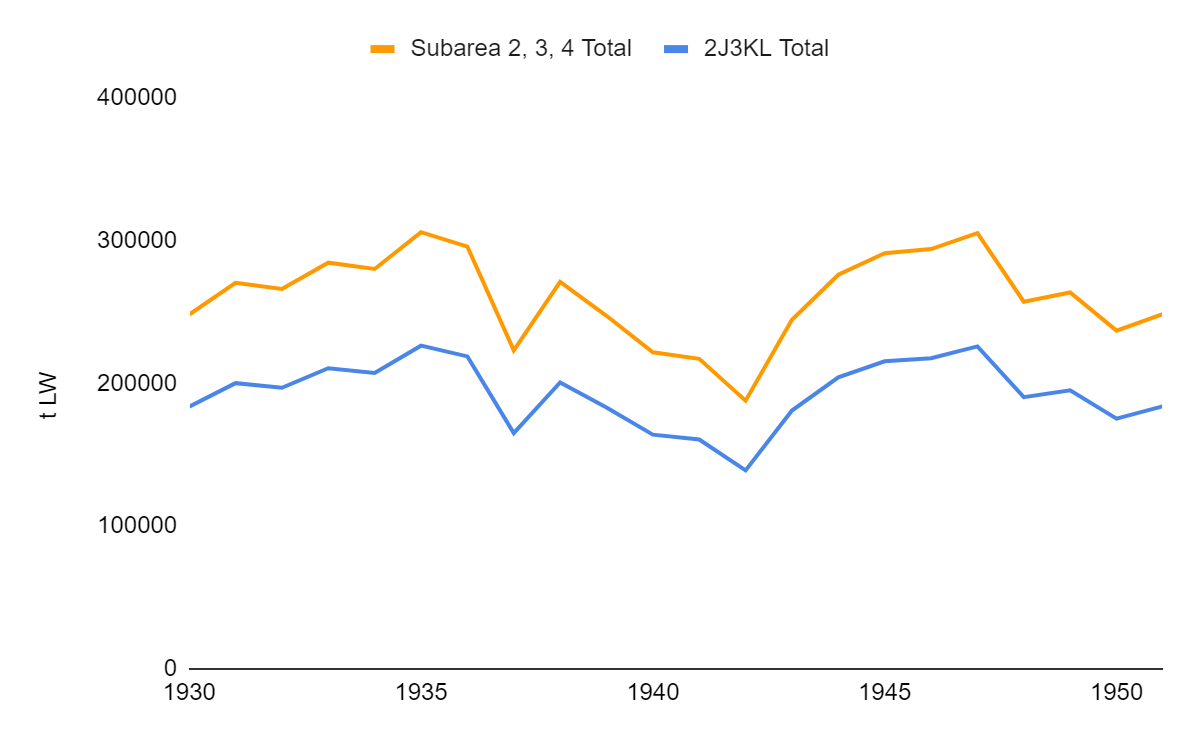
Additional references:

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## ICNAF Newfoundland 1929-1951

ICNAF provides regional-level landings statistics for this period.

***Chart 8. Reconstructed cod catches for the Newfoundland fleet in Subareas 2,3,4 (orange line) and 2J3KL (blue line), 1929-1951.***

Method for limiting to NAFO 2J3KL

Based on Harris (1990), 74% of the total fishery was focused on the 2J3KL region.

Bibliography

Data source:

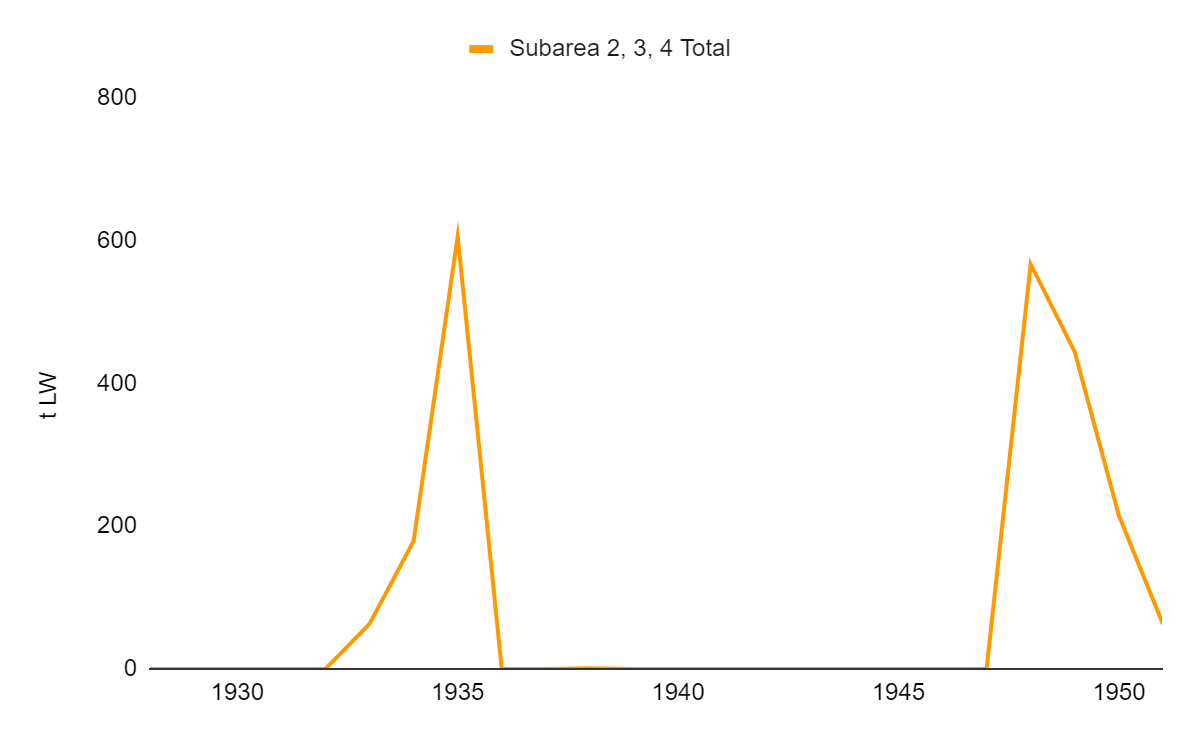
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## ICNAF UK 1928-1951

ICNAF provides limited landings statistics for the UK fleet in this period.

***Chart 9. Reconstructed cod catches for the UK fleet in Subareas 2,3,4, 1929-1951.***

Method for limiting to NAFO 2J3KL

ICNAF provides very limited data for this series, especially for NAFO Areas 2 and 3. UK catches for this period are not included in the 2J3KL estimates.

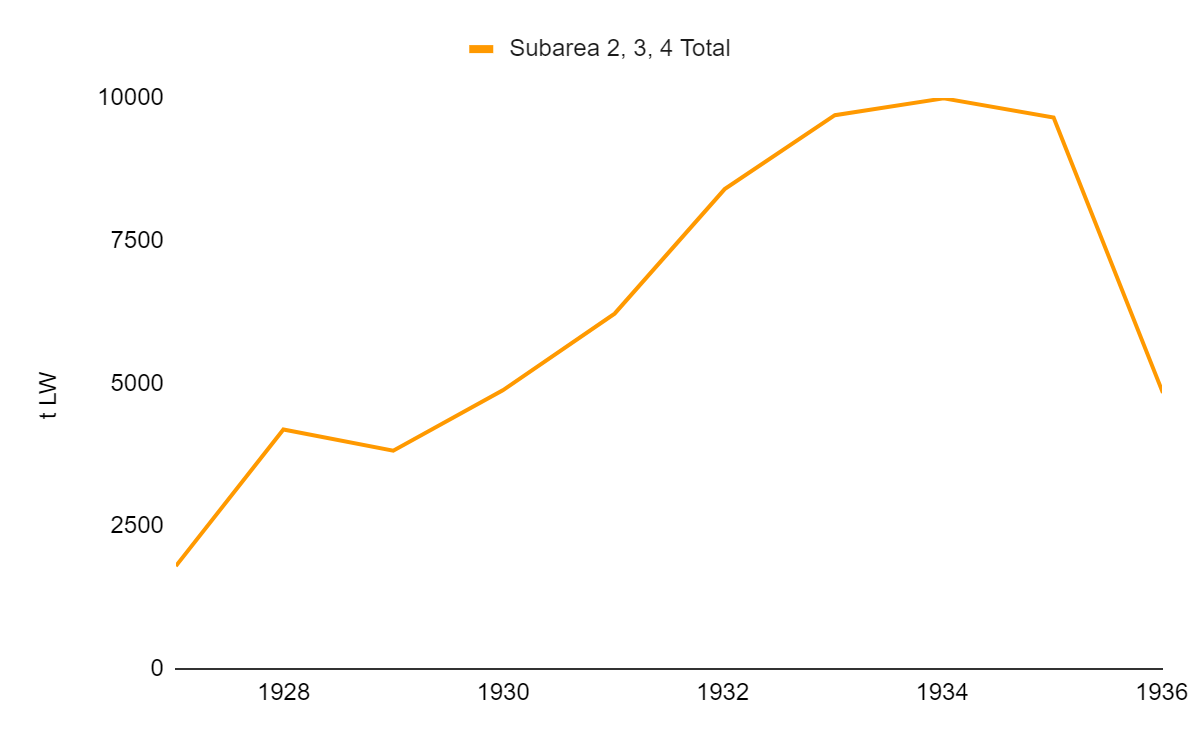
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## Spanish 1927-1936

Giraldez Rivero (1996, p.42) provides data showing an increase in cod landings taken from Pesquerias y Secaderos de Bacalao de Espa- na (PYSBE), the most important Spanish cod fishing company. Giraldez Rivero (1996, p.41) reports: “As far as cod fishing in Newfoundland waters was concerned, the first initiative came from the Galician shipowners Esmeraldo and Manuel Dominguez, who, although they abandoned it in 1927, opened the way for deep-sea fishing. In the same year, the company PYSBE, based in Pasa- jes de San Juan, took up the Galician initiative again, but on a larger scale. The continued expansion of a large tonnage fleet - in 1929 it consisted of six steamships, with a total capacity of six steamers, with a tonnage of more than 1,000 tons. The continued expansion of a large tonnage fleet - in 1929 there were six steamers with a tonnage of over 1,000 tons - allowed a continuous increase in production and even the partial substitution of cod imports, a product in which the Spanish trade balance was traditionally in deficit: in 1935, its production already reached 20 percent of imports.”

***Chart 10. Reconstructed cod catches for the Spanish fleet in Subareas 2,3,4, 1927-1936.***

Method for limiting to NAFO 2J3KL

We assume that all catches occurred within the 2J3KL region.

Bibliography

Data source:

* Giraldez Rivero, J. 1997. Las bases históricas de la actividad pesquera en España. In Papeles de economía española, Nº 71: 33-47, ISSN 0210-9107. (Journal article)

Additional references:

* Ivinson, J and Nicholls, J. 2020. Norfish: Spanish and Basque Newfoundland Cod Fishery 1520-1790. Dublin: TCD. (Web material)

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## ICNAF Spanish Landings 1951

ICNAF reports Spanish landings totalled 66,047 t LW in 1951, with some area level data available.

Method for limiting to NAFO 2J3KL

We include all catches from area 2-3 in the 2J3KL estimate, totalling 45,422 t.

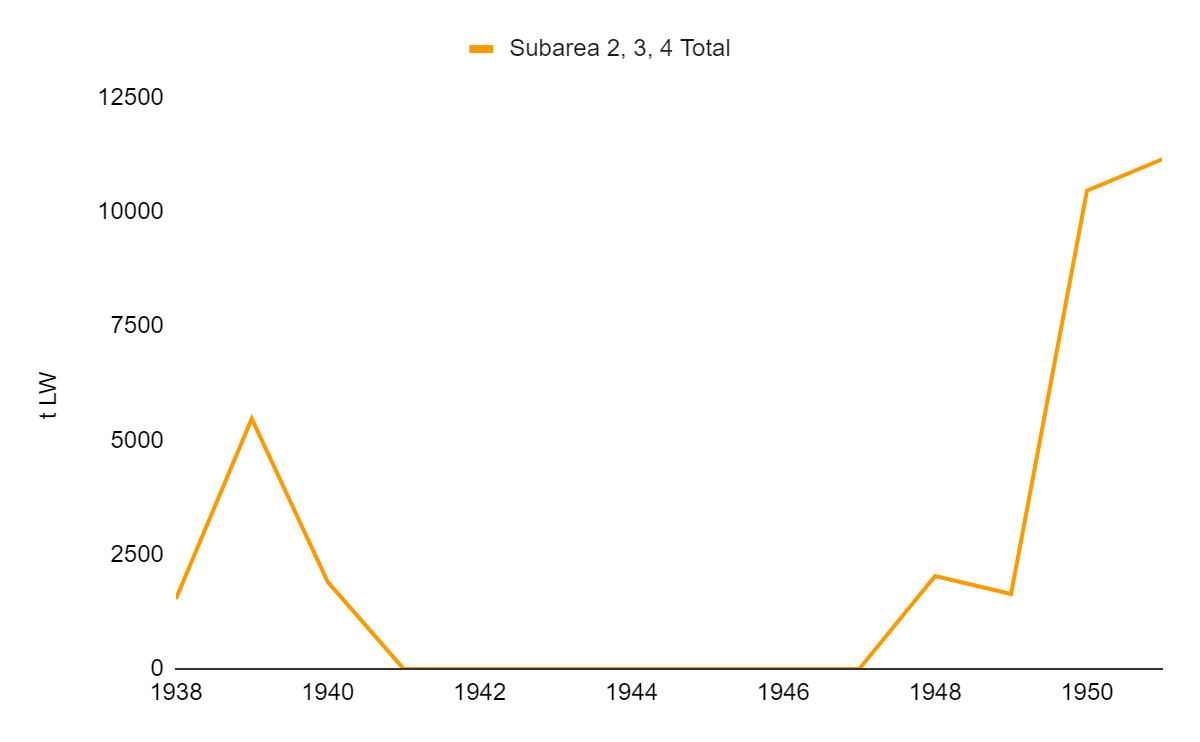
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## ICNAF Italian 1938-1951

ICNAF provides some limited Italian landings data for this period.

***Chart 11. Reconstructed cod catches for the Italian fleet in Subareas 2,3,4, 1938-1951.***

Method for limiting to NAFO 2J3KL

ICNAF provides very limited data for this series, especially for NAFO Areas 2 and 3. Totals have therefore been excluded from the overall series.

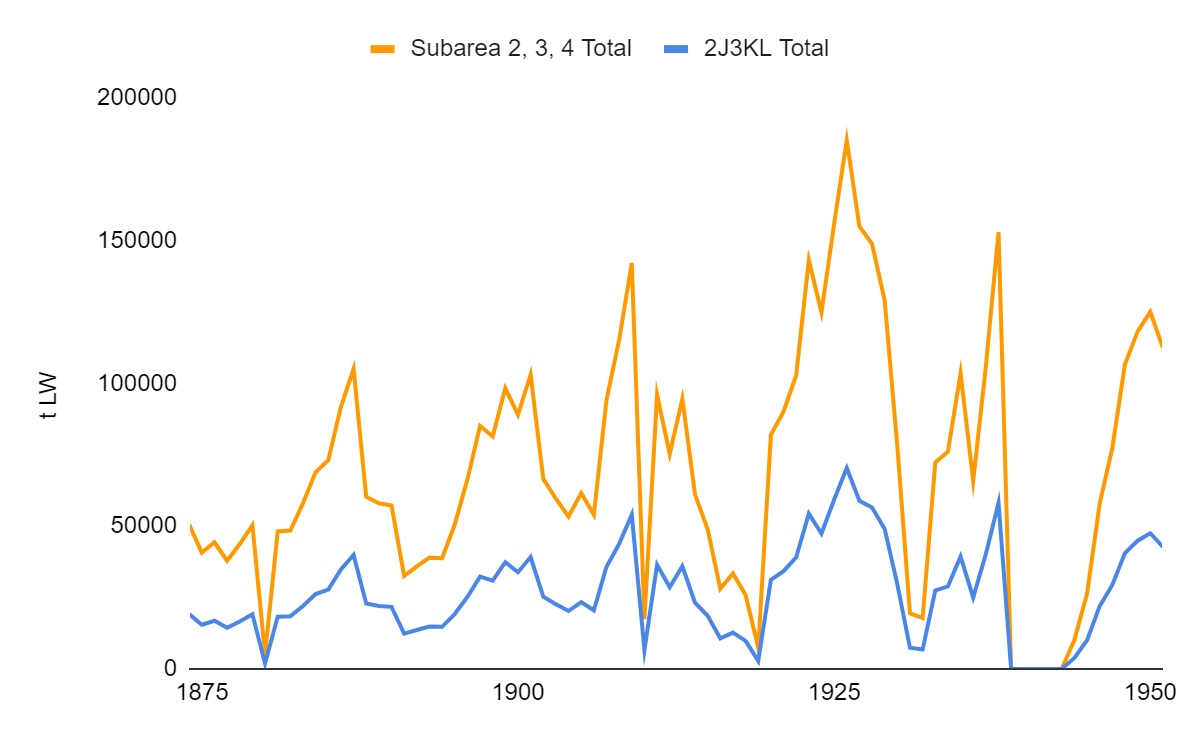
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Data source:

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## ICNAF French 1874-1951

ICNAF data provide overall totals for French landings from 1874-1951. Full historical sources listed by ICNAF.

***Chart 12. Reconstructed cod catches for the French fleet in Subareas 2,3,4 (orange line) and 2J3KL (blue line), 1874-1951***.

Method for limiting to NAFO 2J3KL

Harris (1990, p. 25) estimated that 38% of French catch took place in 2J3KL, we employ the same figure here.

Bibliography

Data source:

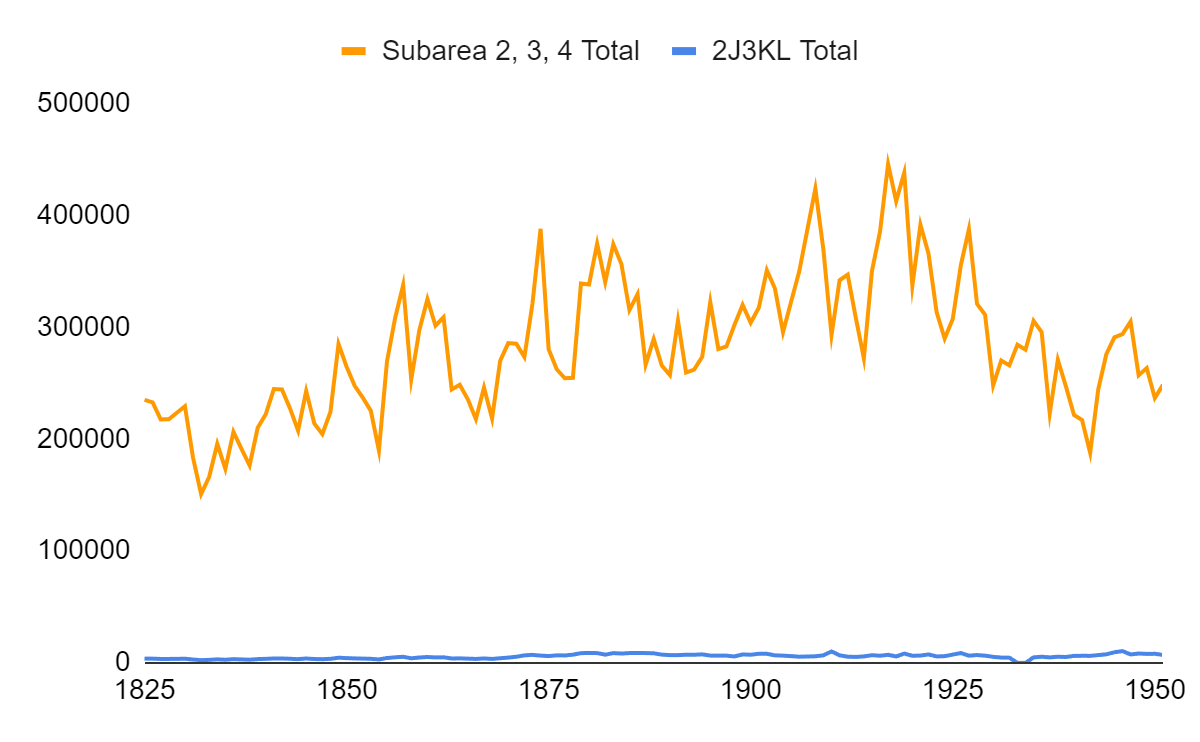
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Additional references:

* Harris, L. 1990. Independent Review Of The State Of The Northern Cod Stock. Department of Fisheries and Oceans, Canada. (Report)

## ICNAF Canadian 1825-1951

ICNAF provides Canadian (other than Newfoundland) landings data back to 1869. We estimate Canadian landings back to 1825 by first establishing that, from 1869 to 1951, Canadian landings averaged 28% of the equivalent Newfoundland fleet landings. Assuming this ratio remained consistent back to 1825, we estimate Canadian landings for each year by taking 28% of the total Newfoundland catch and attributing it to the Canadian fleet.

***Chart 13. Reconstructed cod catches for the Canadian fleet in Subareas 2,3,4 (orange line) and 2J3KL (blue line),1825-1951.***

Method for limiting to NAFO 2J3KL

We estimate catches in 2J3KL based on later ICNAF Statistical data from 1954-9 that shows 6% of Canadian catches happened in the region.

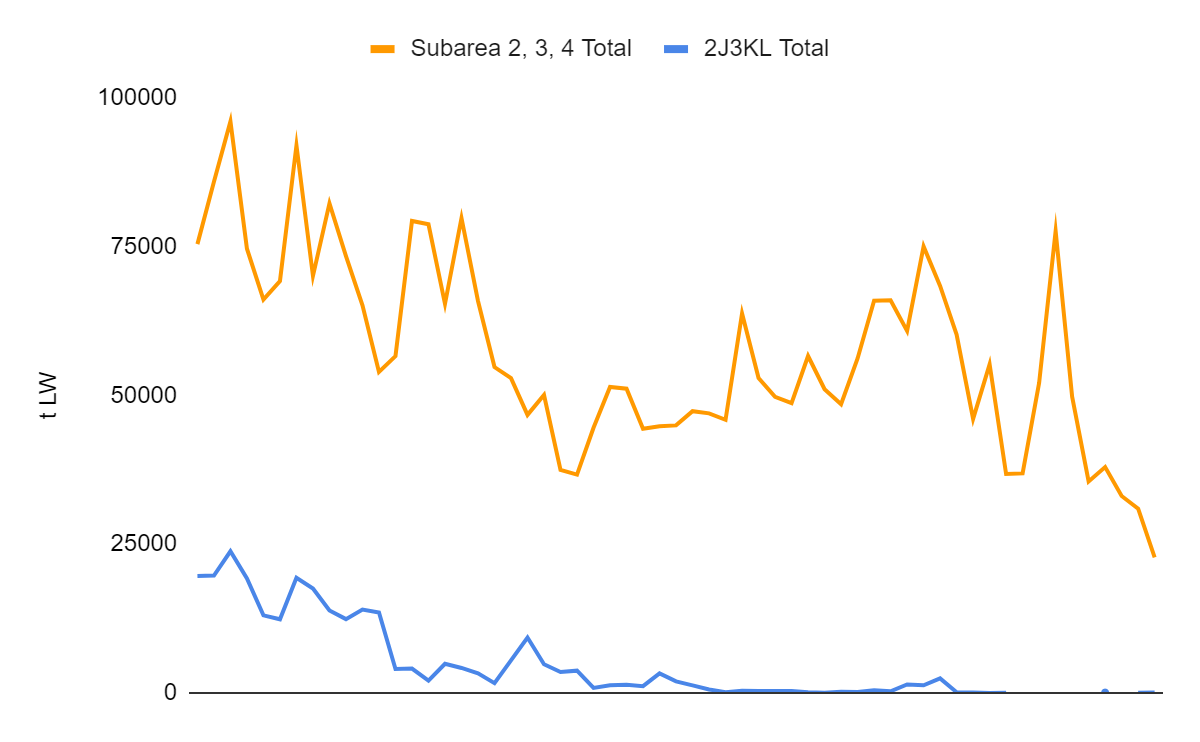
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## ICNAF USA (1893-1951)

ICNAF provides area-level data for USA landings from 1893 to 1951. Most USA landings in this period (65%) were in area 5, but we only include landings from areas 3 and 4 in our data (no USA landings in area 2 were recorded). It is likely the USA entered the fishery before 1893, but unfortunately, we have no data prior to this year. Further research is needed to extend the historical record of US fishing in Subarea 3 and to better understand the scale of their operations in earlier decades.

***Chart 14. Reconstructed cod catches for the USA fleet, in Subareas 2,3,4 (orange line) and 2J3KL (blue line), 1893-1951.***

Method for limiting to NAFO 2J3KL

From 1893 to 1951 the total for area 3 is used to estimate total catches in 2J3KL.

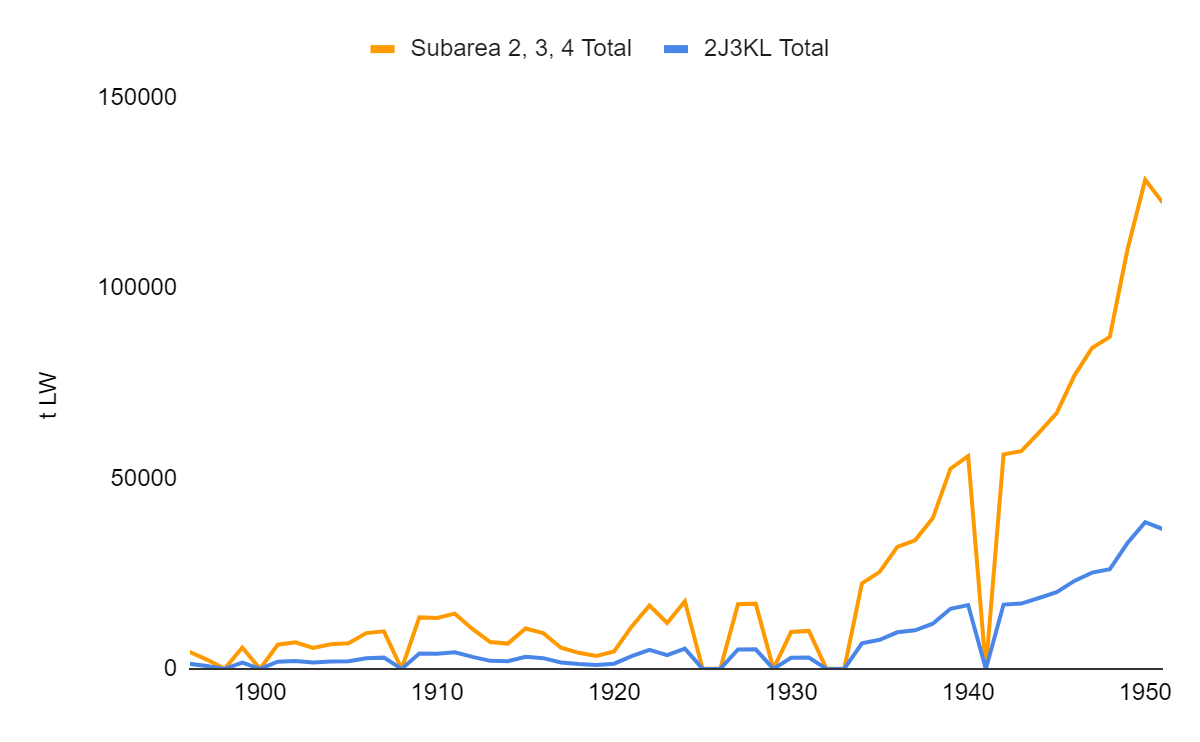
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## ICNAF Portuguese 1896-1951

ICNAF provides Portuguese landings data from 1896 to 1951. From 1947 to 1951 we have some limited area-level data, which shows 37% of Portuguese catches took place in area 1, with 15% in areas 3-4 and 45% with no area assigned. In order to accurately estimate catches in areas 2-4, we estimate that 62% of landings took place in those years before 1947.

***Chart 15. Reconstructed cod catches for the Portuguese fleet in Subareas 2,3,4 (orange line) and 2J3KL (blue line), 1896-1951.***

Method for limiting to NAFO 2J3KL

Harris (1990, p. 25) estimated that 30% of the Portuguese catch occurred in 2J3KL, we use the same figure here.

Bibliography

Data source:

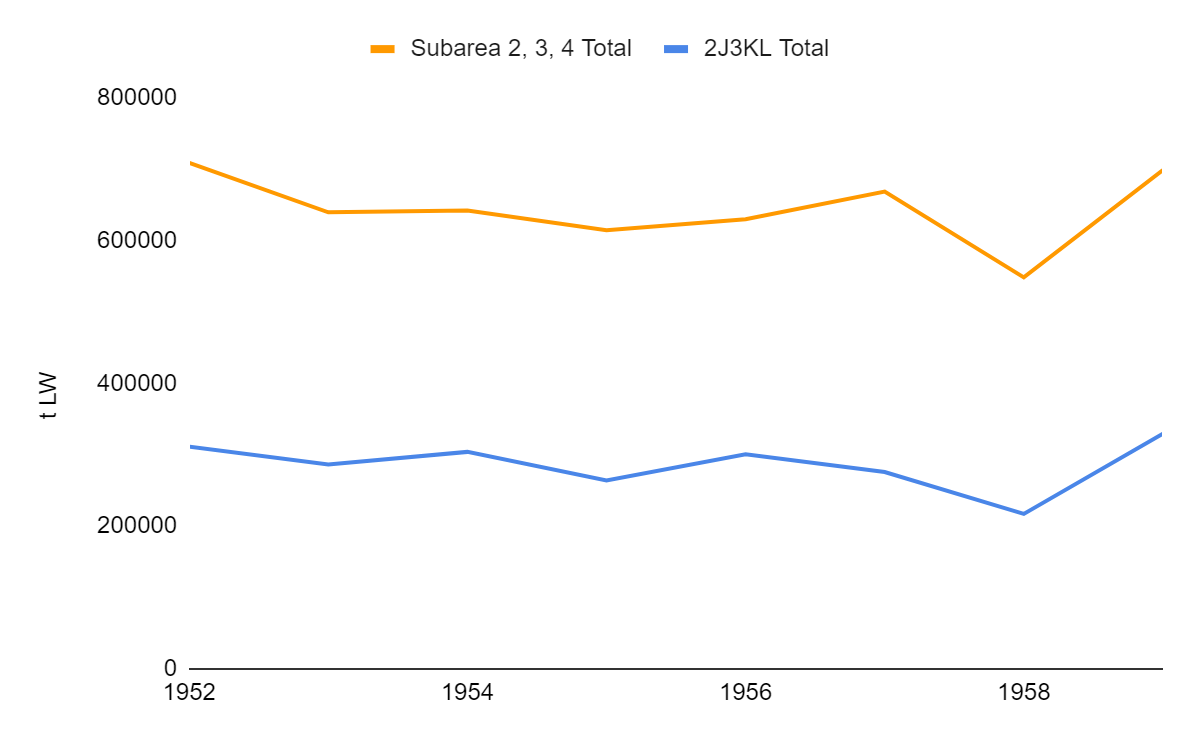
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## ICNAF 1952-1959

ICNAF reports provide detailed landings data for 17 different fleets over these years. Only 1952 is missing NAFO division-level data.



***Chart 16. ICNAF Cod Landings in Subareas 2,3,4 (orange line) and 2J3KL (blue line), 1952-1959.***

Method for limiting to 2J3KL

Data from 1954 to 1959 can be accurately limited to 2J3KL, but figures from 1952-3 need to be estimated as there is no division-level data available. The data shows that 30.89% of total catches took place in 2J3KL from 1954-9, so this figure is used to limit catches in 1952-3 as well.

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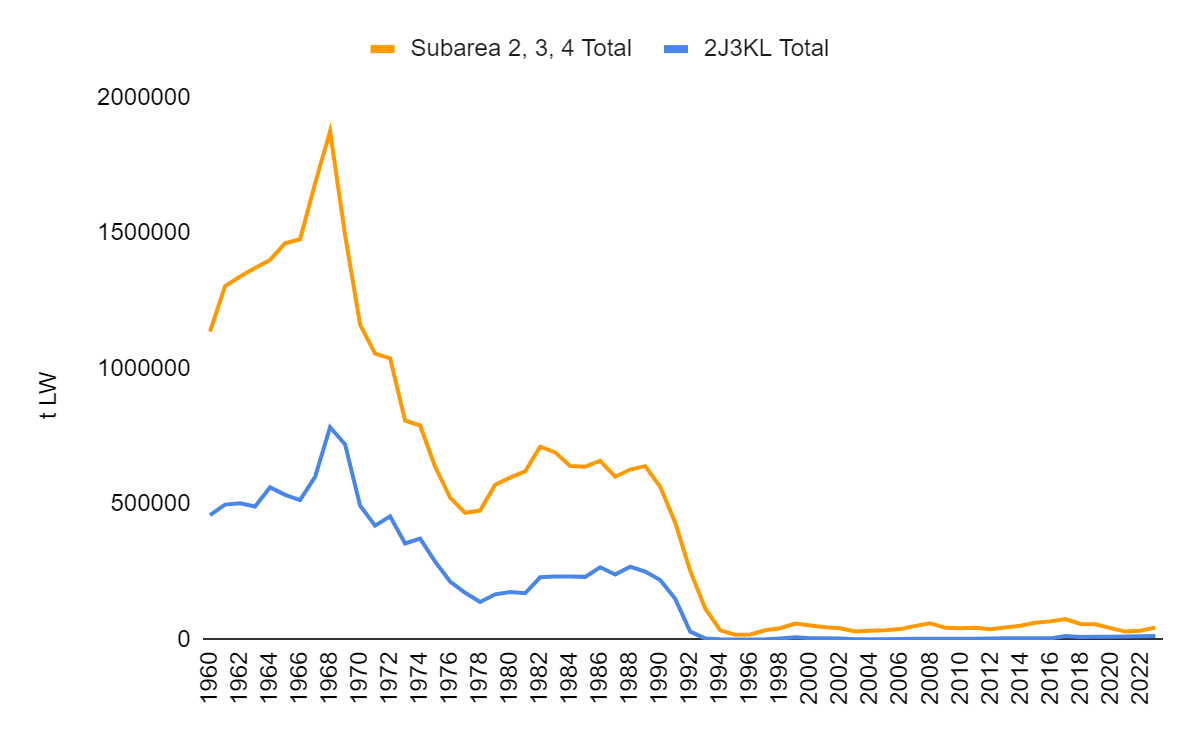
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## NAFO 1960-2023

NAFO provides detailed country and division-level data for all fleets during these years.

***Chart 17. NAFO Cod Catches in Subareas 2,3,4 (orange line) and 2J3KL (blue line), 1960-2023.***

Method for limiting to 2J3KL

Data from 2J3KL can be accurately extracted from the larger dataset.

Bibliography

Data source:

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