

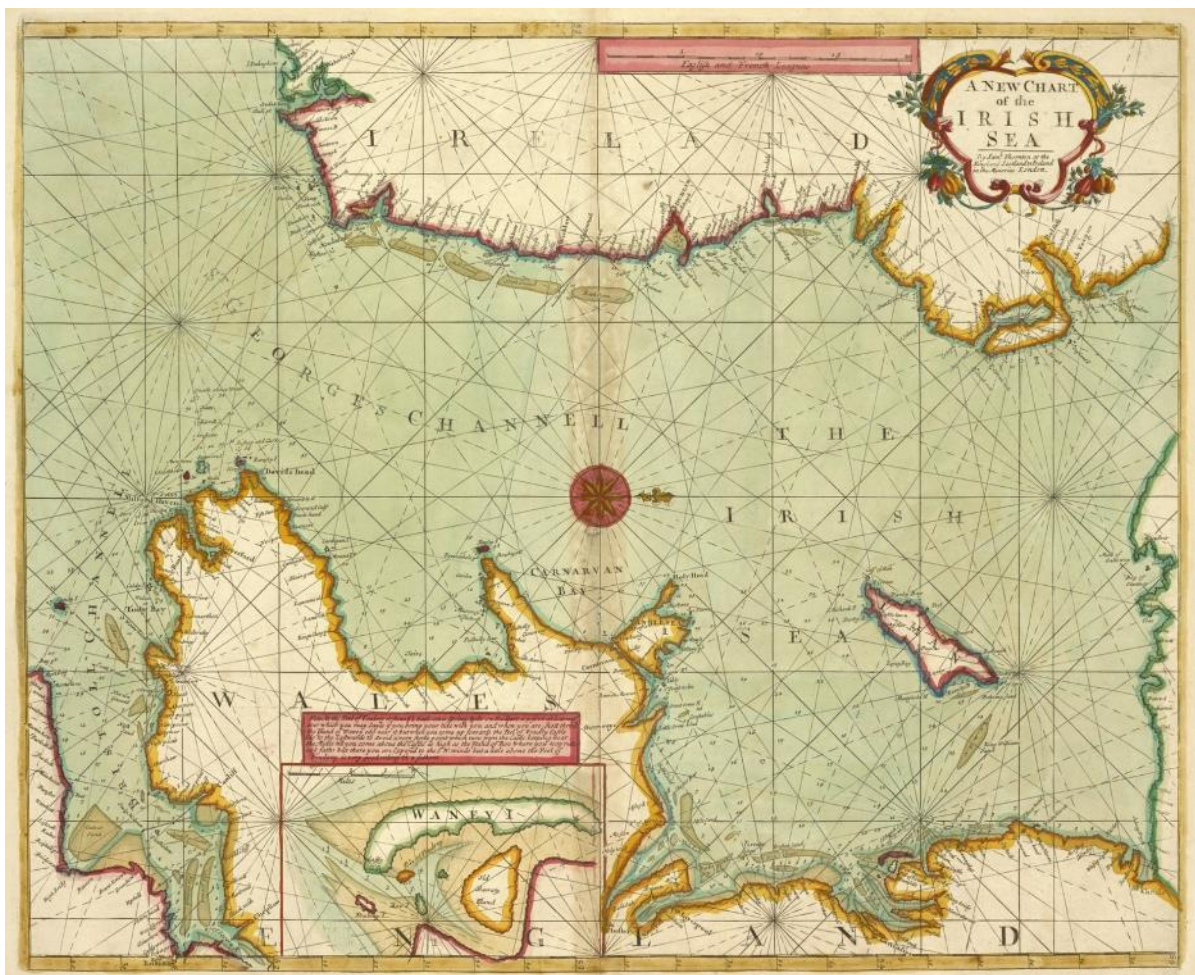


Norfish Dataset 05

Irish Herring Fishery 1520-1790

Supporting Documentation

Patrick Hayes



"A New Chart of the Irish Sea" depicting the Irish, Welsh and English coasts c. 1700.

(Thornton 1702)

Summary

Dataset Title: Irish Herring Fishery 1520-1790
Norfish Case Study: Irish Herring Fishery 1520-1790
Large Marine Ecosystem: 24: Celtic-Biscay Shelf
Subject: Landings, Catches, Exports, Ireland, Herring, 1520-1790

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Extent: 271 records

Keywords: Atlantic Herring Catches, Traded Volumes, Domestic Consumption, NorFish, Ireland

Citations:

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Contents

Summary	2
Contents	3
Objectives	4
Sources	4
Conversion Rates	5
Process	7
Data Fields	8
Bibliography	12
Appendix 1	13
Appendix 2	13

Objectives

The Irish herring fisheries were highly productive at the beginning of the sixteenth century and were one of the largest industries in Ireland at that time (Hayes, 2021). The fishery suffered a decline towards the end of the sixteenth century due to a mixture of persistent warfare, environmental change and shifts in market conditions. The fishery recovered in the seventeenth century but was severely disrupted during the 1641 Rebellion and Confederate period in Ireland. Large scale herring fishing again resumed in the later seventeenth century and continued to fluctuate over the next century, before briefly becoming one of the most productive herring fisheries in Europe in the later eighteenth century.

This dataset's main objective is to establish a quantitative series to indicate the volume of herring extracted from Irish waters from 1520 to 1790. This series was constructed by obtaining trade data from a variety of sources and combining this with estimates of domestic consumption. All units and volumes found in the different sources were converted to a standard measure of tonnes live weight. Due to source availability, we cannot precisely estimate total extractions of herring for every year, but this dataset aims to estimate minimum extractions each year. The authors hope this series can allow us to understand the herring fishery's economic significance and appreciate what factors caused it to fluctuate over the three centuries covered.

Sources

Total extractions have been calculated based on export volumes and domestic consumption estimates, derived from various source materials and population estimates. This section will cover sources century by century and end with the sources used to reach the domestic consumption figures.

Sixteenth-Century Sources:

Data from this century is mostly derived from British Customs Accounts and Port Books. Bristol was the largest importer of fish from Ireland during the sixteenth century, and Port Books from here have been transcribed and published by Jones and Flavin (2009). Further data about Irish fish imports was collected from the Welsh Port Books (Lewis, 1927) and the Chester Customs Accounts (Wilson, 1969). While the data from these sources do not represent the totality of Irish fish exports, they do indicate the general trends in that trade.

The Irish State Papers provided one further datapoint as in 1590 the Lord Deputy reported that Irish merchants had '8,000 to 10,000' barrels of herring waiting for export (Lord Deputy to Burghley, 26 January 1589-90, SP 63/150 f.40).

Seventeenth-Century Sources:

Data for the seventeenth century comes from the Irish State Papers and Irish customs records. Woodward (1999) compiled Irish customs statistics for the seventeenth century and provided complete export data for four years (1616, 1621, 1626 and 1640). Export data from 1665 and 1669 can be found detailed in the Irish State Papers (Mahaffy, 1907, pp. 695-696).

Eighteenth-Century Sources:

From 1698 complete export/import figures are provided by the Irish Customs 15 Ledgers. These ledgers have been compiled and digitized by Walsh, Magennis, and Kane (2018). From 1771 to 1790 export figures are provided by the First Report of the Commissioners of Inquiry into the State of the Irish Fisheries (1837).

Demographic Data:

No precise census data exists for Ireland in the period covered by this dataset, but population estimates have been made by Gillespie (1991) and Cullen (1975). These demographic figures were combined with domestic consumption estimates to provide an estimate of total extractions. See the following section for a full explanation of how domestic consumption per capita was calculated.

Conversion Rates

Conversion factors were used to convert disparate historical units to a standard measure of, tonnes live weight (TLW), or the fish's weight when they were alive. The table below contains the full list of conversions, and the sources used to reach these figures.

Unit	Herring Type	Period	Source	TLW (kg)
Barrel	Herring White	16th / 17th Century	Herring LW Data from "Species Dashboard, Herring." (Marine Institute of Ireland, 2020) https://shiny.marine.ie/speciesdash/ .	157.82
Barrel	Herring Red	16th / 17th Century	Herring LW Data from "Species Dashboard, Herring." (Marine Institute of Ireland, 2020) https://shiny.marine.ie/speciesdash/ .	140.29

Barrel	Herring	From 1698 onwards this is the only unit	1818 (312) Sess. 1818. (Ireland.) A bill for the further encouragement and better regulation of the Irish fisheries.	168.38
Last	Herring White	16th Century	Herring LW Data from "Species Dashboard, Herring." (Marine Institute of Ireland, 2020) https://shiny.marine.ie/speciesdash/ .	1893.89
Mease	Herring Red	16th Century	Herring LW Data from "Species Dashboard, Herring." (Marine Institute of Ireland, 2020) https://shiny.marine.ie/speciesdash/ .	105.22
Hogshead	Herring White	Early Modern	Evan Jones and Susan Flavin, eds., Bristol's trade with Ireland and the Continent, 1503-1601: the Evidence of the Exchequer Customs Accounts (Dublin: Four Courts Press, 2009)	315.65
Pipe	Herring White	Early Modern	Allen, R. C. Unger, R. W. Parker S. McWhinnie, S. and McLenaghan, D. W. 2018. Allen - Unger Global Commodity Prices Database. 2018. Standardized Measures. Accessed May 07, 2018. http://www.gcpdb.info/data.html .	663.60
Kilderkin	Herring White	Early Modern	Herring LW Data from "Species Dashboard, Herring." (Marine Institute of Ireland, 2020) https://shiny.marine.ie/speciesdash/ .	78.91
C	Herring Red	Early Modern	Herring LW Data from "Species Dashboard, Herring." (Marine Institute of Ireland, 2020) https://shiny.marine.ie/speciesdash/ .	21.04
Mease	Herring White	Early Modern	Herring LW Data from "Species Dashboard, Herring." (Marine Institute of Ireland, 2020) https://shiny.marine.ie/speciesdash/ .	87.68
Hogshead	Herring Red	14-16th Century	Allen, R. C. Unger, R. W. Parker S. McWhinnie, S. and McLenaghan, D. W. 2018. Allen - Unger Global Commodity Prices Database. 2018. Standardized Measures. Accessed May 07, 2018. http://www.gcpdb.info/data.html .	264.97
Last	Herring Red	14-16th Century	Herring LW Data from "Species Dashboard, Herring." (Marine Institute of Ireland, 2020) https://shiny.marine.ie/speciesdash/ .	2104.32
Tuns	Herring White	Early Modern	K P Wilson, ed., Chester Customs Accounts, 1301-1566 (Liverpool: Record Society of Lancashire and Cheshire, 1969)., p. 155.	1412.31
M	Herring Red	Early Modern	K P Wilson, ed., Chester Customs Accounts, 1301-1566 (Liverpool: Record Society of Lancashire and Cheshire, 1969)., p. 154.	210.43
Pipe	Herring Red	Early Modern	Herring LW Data from "Species Dashboard, Herring." (Marine Institute of Ireland, 2020) https://shiny.marine.ie/speciesdash/ .	420.86
Piece	Herring Red	Early Modern	Herring LW Data from "Species Dashboard, Herring." (Marine Institute of Ireland, 2020) https://shiny.marine.ie/speciesdash/ .	0.175
Barrel	Herring	17th Century	Herring LW Data from "Species Dashboard, Herring." (Marine Institute of Ireland, 2020) https://shiny.marine.ie/speciesdash/ .	157.82

Table 1: Conversion rates and factors for deriving metric liveweight of herring

Capital Domestic Consumption Calculations:

Per capita consumption of herring was calculated using import and export figures, combined with population estimates. Years in which imports exceeded exports by 90 per cent or more were isolated. The level of importation in these years was taken to represent a minimum of domestic demand for herring. The volume of imports in those years was then divided by the population estimate for that year. The average of these years was 1.68kg of herring per person per year. In years where imports were less than 90 per cent of exports, this average was applied and multiplied by the population figures to estimate domestic consumption.

Process

Total extractions from 1520 to 1601 are calculated from trade figures and estimates of domestic consumption. For the sixteenth century, trade figures are mostly derived from the importation of Irish fish as recorded in British Customs Accounts and Port Books. These sources do not reflect the totality of the Irish fish trade, but they are the best that can be achieved given the lack of sources for this period. Toward the end of the sixteenth century, the Irish herring fishery experienced a near-total collapse. A large factor in this was the Nine Years War, which took place from 1593 to 1603. In this period, most years have purposefully been left blank in the dataset to reflect the disruption caused by the war. For a fuller discussion of this period, see Hayes (2021).

Total extractions from 1602 to 1698 are calculated using scattered export figures and estimates of domestic consumption. While trade figures for this period are scarce, they do at least represent the totality of fish exports from Ireland in this period. The period from 1641 to 1659 was left blank in this dataset due to the disruption caused by the 1641 Rebellion and subsequent Confederate Period in Ireland. These years saw widespread violence and disruption to all aspects of ordinary life in Ireland. While some fishing may have taken place during these years, it is almost impossible to quantify it due to the interruption caused by violence and the administrative confusion during these years.

Trade data from 1698 to 1770 was derived from the Customs 15 Ledgers. These ledgers are extremely detailed records of all imports and exports from Ireland over the eighteenth century.

Trade figures from 1771 to 1790 were provided by the First Report of the Commissioners of Inquiry into the State of the Irish Fisheries (1837). Total extractions were calculated by combining the export figures from these sources with the corresponding estimates of domestic consumption. As outlined above, these trade figures were also used to estimate the per capita domestic consumption of herring. Demographic data for this period

has been estimated by Gillespie (1991) and Cullen (1975). There were no significant disruptions to the fisheries that needed to be factored in over the eighteenth century, so no further years have been excluded from the figures.

The marine species information that informs the dataset is obtained from the World Register of Marine Species (WoRMS 2020) which validates common species names, scientific names and sources.

The Metadata system underpinning the dataset is based on Darwin Core (OBIS 2017; 2020), which provides static formulations of all data fields as outlined in this document's Data Fields section.

Data Fields

Darwin Core Field Name	Description
occurrenceID	A globally unique "per record" identifier based upon the concatenated institutionCode, collectionCode, catlogNumber and ID fields (TCD_Norfish_IreHayHer_1)
type	Description of data series type. (Dataset)
modified	The most recent date the data was modified; ISO 8601 metric date/time standards apply. (2021-01-05)
license	Data licensing conditions that apply. (http://creativecommons.org/licenses/by/4.0/legalcode)
bibliographicCitation	Author citation for the dataset: (Hayes, P. 2020. Norfish: Irish Herring Fishery 1520-1790. Dublin: TCD)
references	Denotes the actual source literature, document or archival material used to determine the underlying data. (http://www.vliz.be/imis?module=project&proid=5064)
institutionCode	Identifies the institution which owns the data - Trinity College Dublin. (TCD)
collectionCode	Code of the project or research group.

	(Norfish)
datasetName	Name of the dataset. (Irish Herring Fishery 1520-1790)
basisOfRecord	Specifies the nature of the observed or researched specimens or data. (HumanObservation)
dataGeneralizations	General information about the source of the record. (Domestic consumption estimated, and export figures calculated from interpolated step value between two nearest amber figures.)
catalogNumber	Identifier of the data within the institution and project – “Ire” refers to Ireland, “Hay” refers to Hayes, “Her” refers to Herring. (IriHayHer)
occurrenceRemarks	Comments about the occurrence record. (Domestic consumption estimated and export figures calculated from interpolated step value between two nearest orange figures.)
recordedBy	Researchers who recorded the data. (Patrick Hayes)
organismQuantity	Quantity of fish represented in the record shown in Kg live weight. (8285162)
organismQuantityType	organismQuantity unit of measurement. (biomass in kilograms (kg))
occurrenceStatus	Stipulates the physical presence or absence of animals relating to the record. (present)
eventDate	Actual date and time at which an occurrence was recorded. ISO 8601 metric date/time standards apply. (1520)
year	Year taken from the eventDate field. (1520)
locationID	Marine Region unique identifier :

	(http://marineregions.org/mrgid/14836)
locality	Local name for the overall location or region. (Irish Sea, Celtic Sea, Atlantic Ocean)
locationAccordingTo	MRGID location identifier based on the marineregions.org/mrgid system. (MRGID)
locationRemarks	Description of location identifier. NOAA described Large Marine Ecosystem. (Coast off Ireland)
decimalLatitude	Latitude shown in decimal notation based on the WGS 84 (EPSG:4326) geodetic datum standard. (52.254588)
decimalLongitude	Latitude shown in decimal notation based on the WGS 84 (EPSG:4326) geodetic datum standard. (-9.825903)
coordinateUncertaintyInMeters	The smallest circle (radius) in metres from the ground zero point depicted by the decimalLatitude and decimalLongitude fields. In this instance, "400000" depicts a radius of c. 400 Km.
georeferenceRemarks	Remarks indicating the geographic area identified – Large Marine Ecosystems are used. (24: Celtic-Biscay Shelf)
scientificNameID	The WoRMS LSID associated with the scientificName, based on the Marine Species database. (urn:lsid:marinespecies.org:taxname:126417)
scientificName	Scientific name of the animal based upon the vernacularName (Clupea harengus)
kingdom	Together with taxonRank assists in determining broader animal characteristics for darwinCore search engines (animalia)
taxonRank	Together with kingdom assists in determining broader animal characteristics for darwinCore search engines (species)

scientificNameAuthorship	Based on the scientificNameID field and discoverable through the WoRMS database (Linnaeus, 1758)
vernacularName	Literal common name applied to the animal involved. In this case, all values are scadán – the Irish common name for cod. (scadán)
identificationRemarks	Comments about identification of the species. (The Irish name for herring is scadán, but the English word is typically used as well)
conversion	Conversion formulae to determine <i>exportMT</i> . (1 barrel = 157.82 kg)
exportMT	Derived metric tonnes value based on the calculated fields as shown in the conversion field, or as shown in the codes field. (2044)
trafficLight	Traffic Light coding system denotes level of certainty, and/or level of accuracy that can be described for each record; see Appendix 1 for details.
codes	Explanation codes that highlight the process for each record; see Appendix 2 for details.

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Appendix 1

Traffic Light System

Traffic Light	Explanation
green	Original values derived from sources is given.
amber	Calculated values based on two or more given values from sources.
red	Calculated or estimated values based on trends, qualitative reports or simple extrapolations. Specific method is stated per record based on the accompanying codes.

Appendix 2

Codes

Codes	Explanation
a	Exports have been estimated using interpolated step values between the two nearest orange values
b	Domestic consumption has been estimated based on import and export figures and population estimates
c	No export data was estimated for this year because there was a known war that disrupted trade.