



Norfish Dataset

**Danish Sound**

**Herring Fishery 1368–1790**

*Supporting Documentation*

Poul Holm, John Nicholls



*The bounty of the Danish Sound. Olaus Magnus, Historia de Gentibus Septentrionalibus (History of the Northern Peoples), 1555*



# Danish Sound Herring Fishery 1368-1790

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## Summary

**Dataset Title:** Danish Sound Herring Fishery 1368-1790  
**Norfish Case Study:** Danish Sound Herring Fishery 1368-1790  
**Large Marine Ecosystem:** 23: Baltic Sea  
**Subject:** Herring catches, Baltic Sea, Danish Sound 1368-1790

**Author:** Poul Holm; John Nicholls  
Norfish Project  
Centre for Environmental Humanities  
Trinity College Dublin

**Data Provider:** Poul Holm  
Norfish Project  
Centre for Environmental History  
Trinity College Dublin

**Data Editors:** John Nicholls  
Norfish Project  
Centre for Environmental History  
Trinity College Dublin

**Extent:** 423 records

**Keywords:** Herring catches; Norfish; Denmark; Baltic Sea

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## Sources and Chronology

“The whole Sound contains such plentiful shoals that sometimes boats striking them have difficulty in rowing clear and no fishing-gear but the hands is needed to take them.”

(Saxo Grammaticus, *Gesta Danorum*, c. 1200, Preface 2:4)

“THE herring is taken oft-times in such multitudes, in the beginning of Auttumn, near the Coasts of the Southern Gothland, about Schoningia, that of antient right belongs to the Kingdome, and is salted in infinite Vessels and transported; that it will suffice amongst Salt-fish to feed the greatest part of Europe. For there comes together upon long and large Banks, in their Houses, and Tents, for two moneths time, from all Countries, Merchants of divers sorts, to buy these Herrings for money, or by exchange, and to carry them away in their ships. Sometimes it falls out that they may be had for a very small price, because there is such plenty, and they come in such huge sholes to the shores, that not onely the Fisher-mens Nets are broken, but in that great Troop, an Ax, or Spear, thrown into the Thrung of Fishes, will stay fast there, and this is a huge gain for the Kings Fiscal.”

Olaus Magnus, *Historia de Gentibus Septentrionalibus* (Rome, 1555), 20: 22  
[A compendious history of the Goths, Svvedes, & Vandals, and other northern  
nations written by Olaus Magnus. London, 1658.  
[<http://name.umd.umich.edu/B26436.0001.001>]

The veracity of the statements by Saxo and Olaus, separated by three centuries, may be questioned but it does raise the spectre of popular qualitative impressions of the importance of the herring fishery in medieval and early modern Denmark. Exploring quantitative information for this period is beset by a lacuna of data points.

The series for this dataset provides few given data points and requires a large amount of extrapolation to fill annual values for the Danish Sound (Øresund). It was, nevertheless, perhaps the most important fishery of the Middle Ages. It did decline after the mid-sixteenth century for reasons still unknown.

The Øresund was of vital strategic importance as it provided the conduit between the North Sea and the Baltic Sea; the Danish Crown held the territorial advantage that enabled

financial gain from taxing passing trade vessels into and out of the Baltic; in fact, the Danish Sound Toll records provide a great deal of detail about the import of herring from the North Atlantic herring fisheries, particularly the Dutch and Norwegians bound mostly for the Hanseatic Baltic ports. They do not, however, contain any information about the actual Danish herring fishery that took place in the Sound. The evidence for this fishery is patchy and while it is possible to assess the scale of the fishery at certain times, there is no sequential data.

### **Mid to late 14<sup>th</sup> century**

Early sources date back to the mid to late 14<sup>th</sup> century. The Pound Toll records of Lübeck document the share of the exports from the Sound going to the city. While it is the case that care should be exercised in assuming the completeness and complete reliability of these records (Burkhardt 2012, p.215) they are nonetheless an extraordinary source of detailed statistical information that enables comparison and analysis for specific annual values.

### **Landings for 1368/9**

For the 1368/9 herring fishing season, Weibull (1966, p.82) provides the figures of Lübeck's herring imports; Lübeck paid 530 marks at the Scanian fair while Wendian and Prussian towns paid 906 marks. This indicates a total of 122,000 barrels exported to the Baltic.

While westwards trade is unknown, it is known that Sluis imported an average of 20,280 barrels annually between 1374-80, and in the 1382/3 season some 22,026.5 barrels (of which 3,356.5 were brought by Hanse merchants of the east (osterlinge). In Damme, osterlinge brought 7,344 barrels (Degrijse 1957; Jahnke 2000, pp.254, 421). Holm (1996) argues that total westwards trade was around 50,000 barrels. These combined figures of eastern and western flowing trade indicate a total production of around 172,000 barrels of herring per annum or about 17,000 metric tonnes.

### **Landings for 1398-1400**

At the end of the 14<sup>th</sup> century archival data, as reviewed by Weibull (1966, p.82), shows that for the period 1398 to 1400, Lübeck's toll books document annual herring imports of an average of 68,159 barrels. The total Baltic catch is shown as 181,000 barrels, with a total trade of 230,000 barrels, or about 23,000 metric tonnes.

### **Landings for 1494**

For 1494, the Danish bailiff's records of the fishery uniquely provide detailed records as published by Schäfer (1887); this data was summarised by Ventegodt (1990) leading to the understanding that customs were paid on 50,601 barrels in total (47,323.25 barrels in Falsterbo and 3,277.5 barrels in Skanør). With the Danish royal taxation and levy systems known as kongesild and kongekøb, as well as fisher's privileges of one barrel free of tax, total production may have been around 60,000 barrels. Furthermore, the tax account lists 433 booths at Falsterbo and 168 at Skanør. In addition, 161 vrager tegn were identified. Amounting to a total of 762 vessels, it may be concluded that the combined crews were about 3,800 people.

In addition, 174 females paid a registration fee to work as gutters, and 132 citizens of Falsterbo and Skanør and 179 from other places had vogntegn (license to drive cart loads from the shore to the salteries). Licenses were paid for 26 barges to bring the fish from the saltery to merchant ships. There were some 200 merchants with their assistants and coopers. This amounts to some 900 people involved in salting, transportation, and trade. In all, about 5,000 people engaged in the two central locations of Falsterbo and Skanør (Ventegodt 1990 16). From these values we calculate a CPUE/boat of 78.75 barrels (1,181.25 ol) and a CPUE/fisher of 15.75 barrels. The CPUE/boat conforms with the observed CPUE of the Gilleleje fishers in the 19th century who used similar technologies.

To derive estimates of the total Øresund fishing population and landings we used the proportion of Falsterbo production to total Danish production as reported by Trebau in 1537; the total number of herring fishers by 1536, with Falsterbo proportioned at 30%, indicate a total Danish production of around 2,500 fishers (Schäfer 1887, pp.126-129).

1494 was a poor year according to Caspar Weinrich who wrote in his Danziger Chronik: "Item diesen herbest war auf Schonen auf 1000 last noch hering nicht gesaltzen als zuvor und noch war er zu Dantzke geben vor 27 mark." Here we see that 1,000 lasts were sold cheaply for a mere 27 marks (Ibid.). The total output in 1494 may be calculated as 200,000 barrels or 20,000 metric tonnes, derived from the Falsterbo's production share of 60,000 (Ibid.).

## Landings for 1523

A single sheet found in the accounts by Tyge Krabbe submitted to the Danish crown provides landings information for 1523:

"Thette antwordet her Tygge Krabbe myn herres nade.

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"Item sagde Hermandt Tilmand, lubeske fogitt paa Falstherboo ffore bode borgemesther aff Kiøge oc for hans Jenssen Radtman ibidem oc ffore flere, at ther wor udj fiordt paa Ffalstherboo 7 twsyndh femhwnndritt och 15 bode, ungeferligt 5 Karle paa hwer baade, oc 3 vool sildt aff hwer karll til konningskiøb, løber 100 twsyndt 15 ½ twsyndt 45 voll sildt.

"Summa Summarum løber 100 twsyndt 15 ½ twsyndt 45 voll sildt; thet giør 7 ½ twsyndt 200 oc 3 tnr. Sildt. Regnendes udj lester thet giør 641 ½ lest oc 5 tnr."

(Nye danske magazin 1836)

Effectively, the quote highlights how Tillemann, Lübeck's representative at Falsterbo, reported that in 1523 there were 7,515 boats, with an average of 5 men per boat, i.e. 37,575 fishers. Each paid 3 ol (240) of herring in kongekøb (tax), an amount of 115,545 ol of herring (9,243,600 pieces). This amounts to 7,703 barrels of herring (with 1,200 herrings to the barrel), or 641.5 lasts and 5 barrels.

Tillemann's statement may be seen in light of the disruption caused by Frederik I's coup against King Christian II in January 1523. Regular Danish accounting of the autumn 1523 fishery may have been disrupted as a consequence of the upheaval and the court may have needed an independent statement from the German side. It is uncertain if Tillmann's information pertained to the entire Sound or to Falsterbo alone. The witnesses to Tillmann's statement are the mayor and patricians of the city of Køge, so the truthfulness of his evidence was confirmed by citizens from the opposite coast of the Sound.

If the Falsterbo figure is for total active Sound fishers at a comparable 1494 CPUE value, the production in 1523 may be derived as 591,806 barrels, or about 625,000 barrels if each fisher brought home 1 untaxed barrel. However, if the numbers only represent Falsterbo proper, then we may use its share of total production as reported by Trebau (1537) to arrive at a staggering 2,191,875 barrels and 139,166 fishers. As these latter figures do not make demographic sense in a country of no more than 600,000 people, and the computed CPUE(boat) of 405 ol would be an extremely poor result relative to Kronborg len figures, and the reported number of 37,575 fishers is a credible but staggering trebling of the 1494 figure, the former is the likely figure. Therefore, a reasonable figure of about 625,00 barrels or 62,500 metric tonnes may be adopted for 1523.

### Landings for 1536



The Danish inspector at Falsterbo, Franz Trebau, estimated that in 1536 total output at the Sound, on Bornholm, and at the Limfjord surpassed 360,000 barrels, of which 96,000 in Falsterbo (Schäfer 1887). By the 1494 CPUE rate, there would have been some 22,857 fishers in the herring fishery, probably about 20,000 of them in the Sound region. If each brought home 1 barrel of untaxed herring, the total production would have been some 380,000 barrels or 38,000 metric tonnes.

### **Landings after 1580**

By 1580 the fishery had fallen into chronic decline; while it is most likely that some level of local fishing would have occurred for local consumption, there is no evidence for any extensive fishery emerging again through the 17<sup>th</sup> and 18<sup>th</sup> centuries. By the Swedish-Danish peace treaty of 1658, Denmark ceded the county of Scania to Sweden and no complete records of the Sound fishery is therefore available until modern times. The earliest complete records are only available from 1915 (Historisk statistik 1959; Fiskeri-Beretning, 1888-1915). They show that 74% of all catches of herring were landed in Swedish ports while 26% were landed in Danish ports. Earlier records are available for the Danish coast from 1888. We calculated total landings 1888-1915 based on Danish records and the ratio of 74/26. Total landings fluctuated year on year: 1888 745 MT herring; 1890 13,225 MT; 1895 980 MT; 1900 1,234 MT; 1905 2096 MT; 1915 7,849 MT. In the absence of quantitative data for earlier periods, a nominal figure of 5000 metric tonnes per annum has been included to represent the likely local effort throughout this period (1582-1790).

### **Poor harvest years**

Recording of poor harvests are known in qualitative rather than quantitative terms. Poor herring landings are reported in: 1402, 1411, 1416, 1425, 1436, 1466, 1469, 1474/1475, 1494, but there are no corresponding values provided (Jahnke 2000, p. 103). These values have been adjusted to reflect the years of poor production by reducing output by 50% in each affected year.

### **Own consumption**

Fishers were permitted to take home one barrel of herring for their own consumption which was exempt from taxation (Schäfer 1887, p.84). These values have been calculated into the figures included in this dataset.





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## Conversions and Calculation Rates

In the case of the Danish Sound fishery, the following conversions may be applied:

1 metric tonne = 10 barrels of herring

1 barrel of herring = 15 ol

CPUE/boat = 78.75 (Catch Per Unit of Effort)

CPUE/fisher = 15.75 (Catch Per Unit of Effort)

## Other Processes

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 the Data Fields section of this document.

## Data Fields

Darwin Core Field Name	Description
<b>occurrenceID</b>	A globally unique "per record" identifier based upon the concatenated institutionCode, collectionCode, catlogNumber and ID fields (TCD_Norfish_DanSouHolNicHer_1)
<b>type</b>	Description of data series type. (Dataset)
<b>modified</b>	Most recent date the data was modified; ISO 8601 metric date/time standards apply. (2020-12-30)
<b>license</b>	Data licensing conditions that apply. ( <a href="http://creativecommons.org/licenses/by/4.0/legalcode">http://creativecommons.org/licenses/by/4.0/legalcode</a> )
<b>bibliographicCitation</b>	Author citation for the dataset. (Holm, P. and Nicholls, J. 2020. Norfish: Danish Sound Herring Fishery 1520-1790. Dublin: TCD)
<b>references</b>	Denotes the link where more detailed information about the dataset is held. ( <a href="http://www.vliz.be/imis?module=project&amp;proid=5064">http://www.vliz.be/imis?module=project&amp;proid=5064</a> )
<b>institutionCode</b>	Identifies the institution which owns the data - Trinity College Dublin. (TCD)
<b>collectionCode</b>	Code of the project or research group. (Norfish)
<b>datasetName</b>	Name of the dataset. (Danish Sound Herring Fishery 1520-1790)
<b>basisOfRecord</b>	Specifies the nature of the observed or researched specimens or data. (HumanObservation)
<b>dataGeneralizations</b>	Source data that informs the provenance of the data. (Sources: Weibull, C. 1966. Lübecks sjöfart och handel på de nordiska rikena 1368 och 1398-1400. Studier i Lübecks pundtollböcker. Scandia. p.82; Degrijse,

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Roger. 1957. Schonense en Vlaamse Kaakharing in de 14de Eeuw, Bijdragen voor de Geschiedenis der Nederlanden. 12. Pp.100-107; Jahnke, C. 2000. Das Silber des Meeres: Fang und Vertrieb von Ostseehering zwischen Norwegen und Italien (12.-16. Jahrhundert). Köln Weimar, Wien: Bohlau. pp.254, 421; Holm, Poul. 1996. Catches and Manpower in the Danish Fisheries, c1200-1995. In, editor(s) P. Holm & D. J. Starkey. The North Atlantic fisheries, 1100-1976: national perspectives on a common resource. Esbjerg: Fiskeri- og Søfartsmuseet (Fiskeri- og Søfartsmuseets studierie; 7). (Studia Atlantica; 1). pp177 – 206.)

**catalogNumber** Identifier of the data within the institution and project – “Dan” refers to Danish, “Sou” refers to Sound, “Hol” refers to Holm, “Nic” refers to Nicholls, “Her” refers to herring.  
(DanSouHolNicHer)

**occurrenceRemarks** Comments about the occurrence record.  
(Danish common name for herring is "sild")

**recordedBy** Researchers who recorded the data.  
(Poul Holm)

**organismQuantity** Quantity of fish represented in the record shown in Kg live weight.  
(17200000)

**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)



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<b>locationID</b>	Marine Region unique identifier. ( <a href="http://marineregions.org/mrgid/3296">http://marineregions.org/mrgid/3296</a> )
<b>locality</b>	Local name for the overall location or region. (Dansk Øresund (Danish Sound))
<b>locationAccordingTo</b>	MRGID location identifier based on the <a href="http://marineregions.org/mrgid">marineregions.org/mrgid</a> system. (MRGID)
<b>locationRemarks</b>	Description of location identifier. (NOAA described Large Marine Ecosystem)
<b>decimalLatitude</b>	Latitude shown in decimal notation based on the WGS 84 (EPSG:4326) geodetic datum standard. (55.77361111)
<b>decimalLongitude</b>	Latitude shown in decimal notation based on the WGS 84 (EPSG:4326) geodetic datum standard. (12.72722222)
<b>coordinateUncertaintyInMeters</b>	The smallest circle (radius) in metres from the ground zero point depicted by the decimalLatitude and decimalLongitude fields. In this instance, "46000" depicts a radius of c. 46 Km.
<b>georeferenceRemarks</b>	Remarks indicating the geographic area identified – Large Marine Ecosystems are used. (23: Baltic Sea)
<b>scientificNameID</b>	The WoRMS LSID associated with the scientificName, based on the Marine Species database ( <a href="http://urn:lsid:marinespecies.org:taxname:126417">urn:lsid:marinespecies.org:taxname:126417</a> )
<b>scientificName</b>	Scientific name of the animal based upon the vernacularName. (Clupea harengus)
<b>kingdom</b>	Together with taxonRank assists in determining broader animal characteristics for darwinCore search engines. (Animalia)
<b>taxonRank</b>	Together with kingdom assists in determining broader animal characteristics for darwinCore search engines.



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	(species)
<b>scientificNameAuthorship</b>	Based on the scientificNameID field and discoverable through the WoRMS database. (Linnaeus, 1758)
<b>vernacularName</b>	Literal common name applied to the animal involved. In this case, all values are sild – the Danish common name for herring.
<b>conversion</b>	Conversion factor applied to derive catchMT. (10 barrels = 1 metric tonne)
<b>barrels</b>	Number of barrels of herring. (172000)
<b>catchMT</b>	Derived metric tonnes value based on the calculated fields as shown in the conversion field, or as shown in the codes field. (17200)
<b>trafficLight</b>	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.
<b>codes</b>	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	Given values with minimal conversion
amber	Calculated values based on given vessel numbers for specific ports
red	Calculated values capacity trended from Scottish herring fishery annual export figures

## Appendix 2

### Codes

Codes	Explanation
a	Given values
b	Extrapolated values based on average between available points
c	Assumed value of 5000 MT
d	Adjusted values based on known low production year