Supplementary Material for Manuscript: Archaeological evidence of resource utilisation of walrus, *Odobenus rosmarus*, over the past two millennia: A systematic review protocol

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Table S1. The number of hits from scoping searches of four research platforms for zooarchaeological literature that may contain walrus. Search conducted in English on the 10th of August 2023 (e.g. Walrus* AND NISP*).

Search Terms		Number of hits			
1	**2**	**Google scholar**	**Web of Science**	**Scopus**	**JSTOR**
Walrus	NISP	399	0	0	46
	Zooarchaeology	1,090	12	13	54
	Archaeology	10,200	17	21	790
	Artefact	3,580	3	8	146
Odobenus rosmarus	NISP	136	0	0	13
	Zooarchaeology	705	6	5	15
	Archaeology	1,020	4	11	51
	Artefact	987	2	2	21

Table S2. The number of hits from scoping searches of two research platforms (Google Scholar, JSTOR) for zooarchaeological literature that may contain walrus. Search conducted in 22 non-English languages on the 10th of August 2023 and the 9th of January 2024, respectively.

Language	Inclusion criteria	Search Terms		Number of hits	
		Walrus	**Topic**	**Google scholar**	**JSTOR**
English	Majority of scientific publications	walrus	Archaeology	10,200	790
			Artefact	3,580	146

Language	Region	Term	Archaeology term	Count 1	Count 2
Mandarin	Ivory imports	海象	考古学	97	0
			人工制品	259	0
Korean	Ivory imports	바다코끼리	고고학	113	0
			인공물	39	0
Indonesia	Ivory imports	anjing laut*	Arkeologi	865	0
			Artefak	660	1
Arabic	Ivory imports	الفظ	علم الآثار	207	1
			قطعة أثرية	23	0
Russian	Arctic territories	Морж	Археология	1,280	0
			Артефакт	238	0
French	Arctic territories (Canada)	morse	Archéologie	7,690	241
			Artefact	20,800	875
Norwegian	Arctic territories	hvalross	Arkeologi	8	1
			Artefakt	18	0
Northern Sámi	Arctic territories	morša	Not included*	2	1549***
Faroese	Arctic territories	walrus	Fornfrøð	0	0
			Vørur	4	0
Icelandic	Arctic territories	rostungur	Fornleifafræði	17	1
			Gripur	47	0
Swedish	Arctic territories	valross	Arkeologi	52	0
			Artefakt	19	0
Finnish	Arctic territories	mursu	Arkeologia	3	1
			Artefakti	15	0
Danish	Arctic territories	hvalros	Arkæologi	106	2
			Artefakt	18	0
Greenlandic	Arctic	Aaveq	Not	391	7

	territories		included*		
Iñupiaq	Arctic territories	Iuġuaq, yuġġuaq, aivik, tuugaak (walrus tusk, ivory)	Not included*	0	0
Chukchi	Arctic territories	рыркы	Not included*	11	0
Inuit/Inuktut	Arctic territories	Aiviq/ᐊᐃᕕᖅ	Not included*	240	16
Yup'ik	Arctic territories	Ayveq/Aivuk/Asveq	Not included*	57	18
Aleut	Arctic territories	amgadaq	Not included*	29	0
Dutch	Walrusing	Walrus	Archeologie	658	33
			Artefact	3,580	146
Spanish	Basque walrusing	Morsa	Arqueología	840	13
			Artefacto	504	3
Japanese	Ivory imports	セイウチ	考古学	76	0
			アーティファクト	23	0
Totals:				38,989	2,908

No distinction between walrus and seal

**English data not included in counts

***Also a common surname

Table S3. Metadata of data variables to be extracted adopted from Buss et al. 2023 [104] with some minor adjustments (see main text for details).

Data Heading	Data Type	Description	Essential/Optional

4Oceans_datetime	Date time stamp	Datetime stamp of when the data were added into the main database (generated automatically)	Essential
4Oceans_ID	Integer	Unique identifier of row (generated automatically)	Essential
4Oceans_Input_by	varchar	The full name of the researcher or volunteer inputting the data	Essential
Publication_ID	Integer	Unique identifier for the linked publication (generated automatically)	Essential
Publication_Title	varchar	The title of the report, thesis or manuscript where the NISP data were obtained	Essential
Publication_Year	numeric	The year that the report was published or made openly available	Essential
Publication_Author(s)	varchar	Authors of publications where data are extracted	Essential
Publication_FileName	varchar	The filename - if saved locally in the 4Oceans project	Optional
Corresponding_author_name	varchar	The name of the corresponding author (or equivalent)	Optional
Corresponding_author_email	varchar	The email of the corresponding author (or equivalent)	Optional
Publication_DOI	varchar	The publication DOI (if applicable)	Optional
Publication_URL	varchar	The publication URL (if applicable)	Optional
Publication_unpublished_citation	varchar	Appropriate citation for unpublished literature that is available in the public domain (discovered using forward or backward chasing of the peer-reviewed literature)	Optional
Publication_citation	varchar	Published zooarchaeology reference(s); the preferred style is BMC. Found at: https://www.biomedcentral.com/getpublished/writing-resources/references	Essential
Publication_archaeological_reference	varchar	Archaeological source(s) providing chronological and/or contextual data if not provided in the original reference file; the preferred style is 'BMC'.	Optional

Publication_faunal_analyst_name	varchar	The full name(s) of who did the identifications and/or reporting	Optional
Publication_faunal_analyst_email	varchar	The email address(es) of the publication analyst (if differing from the corresponding author(s).	Optional
Publication_IP_status	varchar	The intellectual property status of the data in the row: published; other public access; author permission; institution permission; under embargo; permission requested; permission unavailable; permission declined; ambiguous; no access	Essential
Site_ID	integer	Unique identifier of site (generated automatically)	Essential
Site_name	varhcar	The published or accepted name of the archaeological site, in the local language. When no site name is provided, this will be automatically generated using the first author's last name appended with the publication year and a sequential numeric value for each site related with this publication.	Essential
Site_code	varchar	Some heritage agencies assign these; in other cases they are inventions of our own; left blank if irrelevant	Optional
Site_latitude	geo	Numeric value between -90.00 and 90.00 representing the latitude of the site.	Essential
Site_longitude	geo	Numeric value between -180.00 and 180.00 representing the longitude of the site.	Essential
Site_georef	varchar	A text description of how the georeference was discovered; for example, a national archaeological database; or an excavation report map plus Google Earth. If provided by the primary source, enter 'as authors record'.The entry should indicate the level of precision.	Essential

Site_location_QC	Integer	1. Faunal remains without location data (e.g. museum specimens with unknown provenance) will be classified as spatially uninformative (0). 2. Faunal remains associated with a broad spatial scale (e.g. country, province, state) will be classified as data quality (1). 3. Faunal remains lacking a site-specific georeference, but that can be located to within 1 degree of latitude and longitude (for example, attributed to a known modern settlement without specific site coordinates), or where specific site coordinates are provided but of a resolution of 1 degree latitude and longitude, will be classified as data quality (2). 4. Faunal remains associated with specific site coordinates (or described location that can be used to derive such coordinates) with precision below 1.0 degree latitude and longitude will be classified as data quality (3).	Essential
Site_name_contemporaneous	varchar	The modern name of the settlement in which the zooarchaeological data were recorded; often applicable when an assemblage is from a town or large village; leave blank if not known or irrelevant	Optional
Site_country	varchar	Self-evident, except that we will sometimes use nations within political unions (e.g. Scotland within Great Britain)	Essential
Site_country_code	varchar	Automatic assignment of global standardized alpha-3 country codes (where applicable)	Essential
Site_ province	varchar	The name of the province/region/state/county or equivalent as locally defined	Optional
Site_ province_level	varchar	Level of provincial data as locally defined (e.g. region, state, province, county)	Optional

Site_notes	varchar	Open text column for additional important notes on the site	Optional
Assemblage_type	varchar	The type of assemblage that was excavated (e.g. shipwreck, settlement). 'unknown' for entries with no obvious type.	Essential
Assemblage_ID	integer	Unique identifier of assemblage (generated automatically)	Essential
Assemblage_name	varchar	If sites have multiple assemblages related to different time periods/chronologies/contexts. This field will split the site data into the assemblages as locally defined. If only one assemblage exists, entry will consist of the site name appended by a number (e.g. London_1)	Essential
Assemblage_date	varchar	The best reported archaeological date of the assemblage, in the terminology used locally (e.g.Late Dorset; Middle Woodland; 14th century; early 14th century)	Essential
Assemblage_Start_date_CE	Numeric	The numerical start date of the assemblage in years CE; N.B. unless an alternative approach is justified, follow this default model for converting early/mid/late terminology: early 14th C = 1300-1350; mid 14th C = 1325-1375; late 14th C = 1350-1400	Essential
Assemblage_End_date_CE	Numeric	The numerical end date of the assemblage in years CE; N.B. unless an alternative approach is justified, follow this default model for converting early/mid/late terminology: early 14th C = 1300-1350; mid 14th C = 1325-1375; late 14th C = 1350-1400	Essential
Assemblage_Chronology	varchar	Will be automatically generated as the following: Start_date_CE - End_date_CE	Essential
Assemblage_Chronological_m ethod	varchar	A description of the chronological method that was used to date the assemblage. If unavailable please	Essential

		complete this field with "Indeterminate"	
Assemblage_Chronological_method_QC	Integer	1. Assemblages with no reported date will be classified as temporally uninformative (0). 2. Assemblages with an estimated date, but when the dating method used is not clearly reported, will be classified as data quality (1). 3. Sites (and associated assemblages) that were dated using typology, stratigraphy and/or chronometric methods, but without quantified and up-to-date estimates of error, will be classified as data quality (2). 4. Sites using chronometric methods that report primary data (e.g. radiocarbon assays that can be recalibrated) will be classified as data quality (3).Where uncalibrated radiocarbon dates are available they will be recalibrated following current best practice in downstream analysis.	Essential
Assemblage_Chronology_notes	varchar	Open text field for any other comments related to the chronology of the assemblage	Optional
4Oceans_chronology	varchar	Automatically generated lumped dating info from chronological information above.	Essential
Assemblage_DataType	varchar	Whether the NISP data are coming from zooarchaeological data, artefacts, both, or other	Essential
Assemblage_NISP_Data_Available	boolean	Notes as to whether NISP data are available for a given assemblage	Essential
Assemblage_Total_NISP	Integer	Sum of all NISP with taxonomic information recorded/reported at the given assemblage (this also includes the sum of NISP attributed to the category 'large pinniped' (i.e. excluding unidentified))	Essential
Assemblage_NISP_Walrus_Age	varchar	An indication as to whether the NISP relate to juvenile, adult, or, unknown aged walruses. Options are "Adults only", "Juveniles only", "mixed", OR "Unknown"	Essential

Assemblage_Total_NISP_Level	varchar	The level that the total NISP was recorded. E.g.) All taxa grouped; Mammalia taxa only; Pinniped taxa only	Essential
Assemblage_Total_Unidentified_Specimens	Integer	If available, the sum of all mammal specimens recorded for a given assemblage that were not further taxonomically identified (taxonomic identified specimens will include specimens identified under the category 'large pinniped')	Essential
Assemblage_Total_Unidentified_Specimens_level	varchar	Essential field if Assemblage_Total_Unidentified_Specimens is completed. The level that the total of unidentified specimens was recorded. E.g) All taxa grouped; Mammalia only; pinnipeds only	Optional
Assemblage_Total_Specimens	Integer	Automatically generated sum of all NISP and unidentified specimens recorded at a given assemblage	Optional
Assemblage_Total_Specimens_level	varchar	Essential field if Assemblage_Total_Specimens is completed. The level that the total of identified and unidentified specimens was recorded. E.g) Mammalia only; pinnipeds only. If there is a discrepancy between unidentified and identified, enter 'mixed taxonomic levels'.	Optional
Assemblage_skeleton	varchar	Comment about whether there was a full or partial skeleton included in NISP data. Possible values - Yes - full, Yes - partial, No, Unknown	Essential
Assemblage_sieved	Boolean	Was the archaeological site sieved to identify faunal material.	Optional

Assemblage_type	varchar	Context; Feature; Phase; Period. Definitions as follows: context – a defined stratigraphic unit relating to a single deposition event with associated chronological information; Feature – a single functional or architectural unit often in the form of a solid feature made up of several contexts; Phase – a logical collection of archaeological contexts (and/or features) recorded during an archaeological excavation with an associated chronological range; Period – either a collection of archaeological phases whereby faunal data has been aggregated among multiple phases, or a series of faunal remains associated with a broad time period with no other contextual information (e.g. Middle Woodland period).	Essential
Assemblage_type_details	varchar	List the reported code or codes for the periods, phases, features or contexts included within this given assemblage.	Optional
Assemblage_timespan	Integer	1. Assemblages with a chronological range of >500 years will be classified as temporally uninformative (0). 2. Assemblages with a chronological range of 301-500 years will be classified as data quality (1). 3. Sites with a chronological range of 201-300 years will be classified as data quality (2). 4. Sites with a chronological range of ≤200 years will be classified as data quality (3).	Essential
Assemblage_notes	varchar	Open text column for additional important notes on the assemblage	Optional
Assemblage_radiocarbon_dates	varchar	Measurement and uncertainty of calibrated radiocarbon dates of a given assemblage	Optional
Assemblage_uncalibrated_radiocarbon_dates	varchar	Measurement and uncertainty of uncalibrated radiocarbon dates of a given assemblage. This column is essential if the variable	Optional

		Assemblage_radiocarbon_dates is completed.	
Assemblage_radiocarbon_labc ode	varchar	Laboratory code (unique identifier) of where the radiocarbon dating was carried out. This column is essential if the variable Assemblage_radiocarbon_dates is completed.	Optional
Assemblage_radiocarbon_datin g_notes	varchar	Additional notes regarding radiocarbon dating including the material and object that the dating was carried out on. This column is essential if the variable Assemblage_radiocarbon_dates is completed.	Optional
Taxon_ID	Integer	Unique identifier of taxon	Essential
Taxon_name_publication	varchar	Verbatim name (scientific if both scientific and common name provided) of the taxon as provided by the author of the original publication	Essential
Taxon_NISP	numeric	Total number of specimens recorded for that given taxon within a given assemblage	Essential
Taxon_present	boolean	True of False indicator of whether a taxon was present within the given assemblage. This will always be true if NISP data are provided but may also be true if an object or artefact made out of walrus bone or ivory is referred to in the text described.	Essential
Taxon_present_details	varchar	When a taxon is present but not as NISP (e.g. one artefact made out of walrus ivory was reported in the text).	Optional

Taxon_classification_QC	Integer	1. Faunal identifications classified as 'Unidentified marine mammal or pinniped' will be classified as taxonomically uninformative (0). 2. Faunal identifications classified as 'Unidentified large pinniped' or equivalent will be classified as data quality (1). 3. Faunal identifications of greater taxonomic resolution (e.g. walrus, hooded seal) based on zooarchaeological assessments alone will be classified as data quality (2). 4. Faunal identifications to a scientific taxon made using ZooMS, aDNA or specific morphological criteria will be classified as data quality (3).	Essential
Taxon_GBIF	numeric	GBIF code for associated taxonomic level reported in taxon_level.	Optional

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