Artefacts made of the Mediterranean mollusc Spondylus gaederopus have been in the focus of archaeological research since the discovery and publication of the hoard of Bernburg, Germany, in 1885 by Rudolf Virchow. They are considered to be one of the first long-distance exchange goods in Europe, as the distribution of Spondylus artefacts spread between the Adriatic/Aegean Sea up to the Paris Basin during the Neolithic. While the dataset covers sites with Spondylus between the Palaeolithic and the Iron Age, the artefacts are described in detail for the time period between 5500 and 5000 BC.

**Keywords:** Neolithic; Trade and Exchange; Spondylus gaederopus; Prehistoric Archaeology; Economic Archaeology

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In this study, a total of 489 sites were recorded (Figure 1), but due to the question of early exchange systems, only 194 sites with 8037 artefacts were included into this dataset in detail. These sites were selected because they coincide with the area of the widest distribution between 5500 and 5000 BC. Since research about artefacts made of Spondylus gaederopus has been conducted for more
than one hundred years and the literature covers different research traditions in Europe, the heterogeneous data had to be homogenized.

**Spatial coverage**
The dataset covers Europe, Cyprus and Turkey and around 7,550,000 sq km.

**Description**
Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, France, Germany, Greece, Hungary, Italy, Malta, Moldova, Poland, North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Turkey, and Ukraine.

Geographic Coordinate system: World Geodetic System (WGS) 1984
Datum: World Geodetic System (WGS) 1984
Northern boundary: +52.90889 (decimal degrees)
Southern boundary: +34.71255
Eastern boundary: +35.27934
Western boundary: –6.23167

**Temporal coverage**
Sites containing artefacts made of *Spondylus gaederopus* were collected between the Palaeolithic of Spain and the Iron Age of Greece. A detailed analysis of artefacts was conducted for whole Europe between 5500 and 5000 BC.

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**(2) Methods**

**Steps**
As a first step, sites with artefacts made of *Spondylus gaederopus* were collected from the literature. Besides information about the type of site (e.g. cemetery, settlement), the cultural affiliation and the location were recorded. The archaeological cultures were connected to probabilities of belonging to a certain century. This was necessary for two reasons: 1) To extract the sites to be analysed and to recorded their *Spondylus* artefact in detail. A more specific review of the site and the artefacts was carried out if it dated with a probability of equal or more than 50% to the period between 5500 and 5000 BC – in such a case, the features and their related artefacts were documented. 2) Dating probabilities are an appropriate way to work with the data and create time slices because different chronological systems throughout Europe can be synchronized easily.

**Sampling strategy**
The provided dataset was acquired from the known literature covering an area from Turkey to Spain and from Cyprus to France during the Neolithic of Europe. With respect to the focus of research on prehistoric exchange, only the sites spanning the Aegean/Adriatic Sea up to the Paris Basin and the Ukraine were analysed in more detail. The collected data originates from archaeological surveys, scientific and rescue excavations, and discoveries by chance by local citizens.
Quality Control
The published data was controlled in detail by the author. Whenever possible, the artefacts were connected to certain features, including the stratigraphic sequence, relative chronology, radiocarbon dates and the original contexts.

Constraints
The extent of the distribution is difficult for several reasons:

1) Since Spondylus was used all over Europe, the deposition contexts of various cultures are different. While the shell is known from settlement excavations in the Balkans, it was deposited almost exclusively in graves in Central and Western Europe. As far as the analysis of the data is concerned, this fact is important because small finds are easier to recognize in graves than within settlements — especially if the excavated material is not sieved. Furthermore, different cultures have different practices to deposit Spondylus: while Spondylus was rarely discovered in the Cucuteni-Tripolye culture of Eastern Romania and Western/Central Ukraine, it was certainly known within the culture as the remarkable hoards of Cărăbuna in Moldova and Ariuşd in Romania show.

2) As a seashell, Spondylus gaederopus is fragile and dependent on the conditions of preservation: different environmental conditions all over the continent influence the preservation of the artefacts.

3) The intensity of archaeological investigation across the considered countries is inhomogenous. For instance, while the Aegean coast is very well studied, the Adriatic is not so much covered with systematic archaeological surveys or excavations. This aspect must be taken into account when looking at the shell’s distribution as a whole.

Due to different research traditions in Europe and the date of publication, the quality of the primary sources is heterogenous. In addition, some excavations are only published in preliminary reports and thus it is difficult to acquire information about the stratigraphic position or the context of particular Spondylus artefacts.

In the end, another issue is to safely identify the material of shell objects to be Spondylus gaederopus. It was shown recently [6, 20] that the identification as Spondylus is not always unambiguous and that wrong assignments occurred. Due to the huge amount of data, the researchers and the literature had to be trusted. If there are contradictions in different publications about the identification of Spondylus gaederopus, they are mentioned in the commentary field of the database.

(3) Dataset description
Object name
Spondylus_Neolithic.zip – A zip file containing the dataset.

| Dataset  | File Type  | Description |
|----------|------------|-------------|
| tbl_Artefacts | .xlsx, .csv, .shp | The dataset contains 8037 artefacts made of Spondylus gaederopus between 5500 and 5000 BC and a spatial extension between Turkey, Ukraine and France. The shape, position inside the grave and the measurements as well as the ID of the related site and feature are stored for every artefact. If the original source referred to “a few” or “many” Spondylus artefacts, at least two artefacts were incorporated into the database. If the singular was used in the literature, only one artefact was included. |
| tbl_Dating | .xlsx, .csv | The table contains the dating probabilities of different archaeological cultures in Europe. In order to reach meaningful statements about the temporospatial distribution of Spondylus gaederopus, different chronological systems had to be synchronized. Therefore, dating probabilities were used within the database. In every row, the culture and its probabilities to date into a certain century are recorded. It needs to be noted that if two or more archaeological cultures are merged together, the probability within a row can be larger than 100. However, even if two cultures have been combined, they are also listed separately. |
| tbl_Features | .xlsx, .csv, .shp | The dataset contains 424 features with artefacts made of Spondylus gaederopus. The type of feature (e.g. grave, layer, pit, etc.) and information about sex and age of the deceased are stored in the dataset. Furthermore, every feature is connected to a site. |
| tbl_References | .xlsx, .csv | The file contains references of published data stored in the spreadsheets tbl_Features, tbl_Sites and tbl_Dating (see fields “txtReference”). |
| tbl_Sites | .xlsx, .csv, .shp | The dataset contains 489 sites with artefacts made of Spondylus gaederopus. Every site has a unique ID and there is also a field txtIDShape. The column contains unique keys for the artefacts in a logical order (e.g. B1 = Ring (unspecific); B11 = Bracelet; B111 = Bracelet, complete; B112 = Bracelet, fragmented; B12 = Finger Ring; B13 = Earring; B21 = V-Klappe; B31 = Bead, without context; B4 = Pendant; etc.) |
| Spondylus.db | – This file is the SQLite database of the project, which was used to create the files tbl_Artefacts, tbl_Dating, tbl_Features, tbl_References, tbl_Sites and tbl_Artefacts. |
| DB_Structure.pdf | – A graphic showing the structure of the database. |
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Create.txt – Textfile with the create statements of the database.

Description.txt – Field description for the attributes of the files tbl_Artefacts, tbl_Dating, tbl_Features, tbl_References, tbl_Shares and tbl_Sites.

README.txt – Fundamental properties of the database.

Data type
Primary and secondary data, and processed data from originally published materials.

Format names and versions
.csv, .xlsx, .shp, .txt, .pdf, .db

Creation dates
June 2011 to March 2019.

Dataset Creator
Arne Windler

Language
English

License
Creative Commons — Attribution 4.0 International (CC BY 4.0)

Repository location
The full datasets are available at https://doi.org/10.5281/zenodo.2840333

Publication date
15.05.2019

(4) Reuse potential
The present dataset provides the current state of research concerning sites with artefacts made of Spondylus gaederopus as well as the largest dataset of Spondylus artefacts between 5500 and 5000 BC and the widest distribution in Europe. The dataset can be used to investigate one of the earliest examples of long-distance exchange in prehistoric Europe. The distribution of the sites can be analysed during the whole Neolithic and can be seen as a basis for an additional collection of Spondylus. The collection of artefacts and features for the time period between 5500 and 5000 BC can be a starting point to study exchange and use patterns during the Neolithic of Europe.

Competing interests
The author has no competing interests to declare.

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