

ANCHOVIES FOR BATAVIA

DICK C. BRINKHUIZEN  
 Koninginnelaan 18 A. 9717 BT Groningen.  
 The Netherlands

**RESUMEN:** En el pecio del '*t Vliegende Hart*, buque de la Compañía Holandesa de las Indias orientales (VOC) hundido en 1735 a 12 millas al suroeste del puerto de Vlissingen (Flushing, Países Bajos) se recuperó un tonel de madera de roble. En su interior albergaba un contenedor de plomo que, a su vez, protegía a un recipiente de gres de 6 litros de capacidad. En esta vasija apareció una enorme cantidad de huesos de boquerón (*Engraulis encrasicolus*). Debido a su homogeneidad, sólo una muestra fué estudiada. Esta estaba formada por vértebras y huesos de la cintura escapular de donde deducimos que las anchoas fueron decapitadas. Para cuantificar la muestra, se contaron las vértebras y los huesos de la cintura, dividiendo a éstos también en izquierdos y derechos. En conjunto la vasija contenía entre 500 y 600 individuos. En términos de volumen, no obstante, el empaquetamiento de tal cantidad de anchoa fresca no es posible en un contenedor de 6 litros por lo que creemos que, previamente, los peces habrían sido salados en contenedores más grandes antes de trasladarse al que recuperamos. El peculiar empaquetado de esta mercancía indica su transporte a tierras distantes, presumiblemente a Batavia.

**PALABRAS CLAVE:** PAISES BAJOS, COMPAÑÍA HOLANDESA DE LAS INDIAS ORIENTALES, VOC, ARQUEOZOOLOGIA, RESTOS DE PECES, BOQUERON, *Engraulis encrasicolus*.

**SUMMARY:** From the wreck of '*t Vliegende Hart*, a ship of the Dutch East India Company (VOC), which in 1735 sank about 12 miles south-west of the port of Vlissingen (Flushing, the Netherlands) an oak-wood keg was retrieved. It held a leaden container which in its turn contained a stoneware jar with a capacity of six litres. In the storage jar was found a large quantity of fish remains. These were identified as bones of anchovy (*Engraulis encrasicolus*). Because the bones appeared to be homogeneous, only a sample was examined. It consisted of large numbers of vertebrae and bones from the pectoral girdle; hence the pot had contained beheaded anchovies. To quantify the fish, the vertebrae were counted, while bones from the pectoral girdle were counted and sorted into left and right. It was found that the pot had contained the trunks of 500 to 600 individuals. However, in terms of volume, packing such a number of fresh anchovies into a six-litre jar is impossible. Therefore the anchovies must have been salted and preserved in a larger vessel before being packed into the jar. The unusual method of packaging suggests that the fish was to be transported over a long distance, presumably to Batavia.

**KEYWORDS:** THE NETHERLANDS, DUTCH EAST INDIA COMPANY, VOC, ARCHAEOZOOLOGY, FISH REMAINS, ANCHOVY, *Engraulis encrasicolus*.

## I. INTRODUCTION

One of the many wrecks in Dutch coastal waters that are intensively visited by underwater archaeologists is that of *'t Vliegend Hart*, a ship of the Dutch East India Company (VOC). In a recent publication VAN DER HORST (1991) describes the ship and her foundering, and gives a survey of research findings and the finds of the last ten years.

In the year 1735, the Zeeland chamber of the VOC commissioned the ships *'t Vliegend Hart* and *Anna Catharina* for a voyage to the East Indies. From early January onwards, the two East Indiamen lay off Fort Rammekens, awaiting a favourable wind for their departure. In the morning of 3 February 1735 the weather cleared up, and around 2 pm the ships weighed anchor; the outward voyage had begun. However, through a combination of factors - incompetence of the pilot aboard the guiding pilot hooker, errors of judgement on the part of both captains of the East Indiamen, rapidly deteriorating weather conditions, and the low water level (at spring tide) - both ships ran aground on a sand bar in the fairway off Vlissingen (Flushing). Around 7 pm the *Anna Catharina* went down. The rising tide did lift *'t Vliegend Hart* off the sand bar, but she was holed and drifted westwards; she sank at 11.30 pm, 12 miles off the coast. In that year and the next, attempts were made to salvage the cargo of *'t Vliegend Hart*, which were partially successful. However, the major part of the cargo remained on and in the sandy seabed. In the course of time, the sad fate of the *Anna Catharina* and *'t Vliegend Hart* sank into oblivion. It was not until 1981, after four years of searching, that the final resting-place of *'t Vliegend Hart* was localised. Since then, diving expeditions have been made on a regular basis, and many objects relating to VOC trade and to life and work on board have been retrieved. One of the finds is an oak-wood keg with the initials WT carved into the lid (Figure 1).

## II. THE KEG AND ITS CONTENTS

The keg held a cylindrical leaden container, soldered up, which had two handles. To make it fit into the keg, the handles had been squashed against the wall of the cylinder. In its turn, the cylinder contained a stoneware storage jar with a capacity of six litres. The handles of this jar had been removed. The jar was closed with two slate discs, one of which fitted into the neck. Inside the jar were the remains of the original contents: a considerable number of fish bones.

## III. INVESTIGATION OF THE FISH REMAINS

The total weight of the remains amounted to 208.8 g. A sample was taken as it was assumed



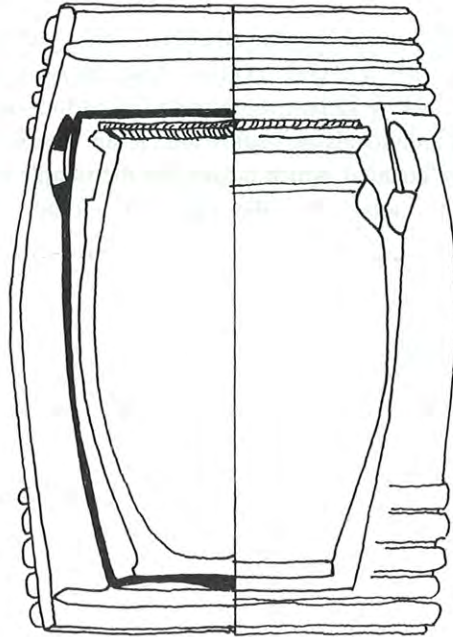


FIGURE 1 -Section across the kebab the anchovy remains (after VAN DER HORST, 1991).

that the various skeletal elements were distributed homogeneously throughout the material. This sample, weighing 19.5 g was sorted and investigated with the aid of a Wild stereo microscope (enlargement 6 x). All of the remains were found to be of anchovy (*Engraulis encrasicolus*). Table 1 lists the relevant skeletal elements and their frequencies. Remarkably, elements of the rostral and central part of the neurocranium, of the operculum, the palatoquadratum and the hyoid arch, and of the mandibula and maxilla were not encountered. Yet there were plenty of elements of the rear part of the neurocranium (supraoccipital, basioccipital and posttemporal), of the pectoral girdle (supracleithrum, cleithrum and coracoid), and of the trunk and tail (vertebrae, pterygiophores, fin rays, ribs and scales). Figure 2 schematically shows which parts of the skeleton were present. Evidently, the remains belonged to headless anchovies(1).

(1) Anchovies are gutted in a different way from herring. With a light twist, the head and attached entrails are pulled away. Only the last part of the gut, containing a particular enzyme, is left in place. The amount of enzyme, however, is much smaller than in herring. The salted anchovy therefore requires far more time to mature than herring; whereas herring is apt to go bad when kept for long periods, anchovy is at its best when well-matured (SCHOLTE-HOEK, s.a.: 15).

### IIIa. Number of individuals

The sample contained 2448 vertebrae altogether, viz. 56 first vertebrae, 43 urostyles and 2349 indeterminate vertebrae. In all, the vertebral column of an anchovy numbers 45 to 48 vertebrae (REDEKE, 1941: 72). Thus the 2448 vertebrae represent 51 to 54 individuals. The presence of 56 first vertebrae shows that at least 56 individuals are represented in the sample. Of the first pterygiophore of the dorsal fin 58 specimens were counted, which means that the sample contains remains of at least 58 individuals. This implies a total in the jar of some 500 to 600 individuals.

#### NUMBER

##### Head: unpaired and paired elements

Supraoccipital	3
Frontal	L 3 R 1
Basioccipital	22
Posttemporal	L 21 R 36

##### Pectoral girdle: paired elements

Cleithrum	L 29 R 36
Coracoid	L 26 R 32
Supracleithrum	L 21 R 24

##### Trunk

First pterygiophore of the dorsal fin	58
First vertebra	56
Urostyle	43
Hypural I	39
Indeterminate vertebrae	2349

TABLE 1 -The relevant skeletal elements of anchovy found in the sample, and their frequencies; L = left side, R = right side.

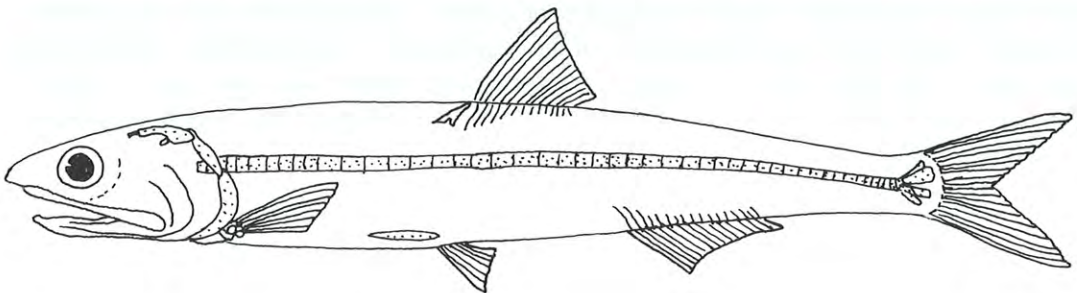


FIGURE 2 -Anchovy: schematic side view. The encountered skeletal elements are show stippled (drawing by J. Milojkovic).

Comparing the size of the retrieved skeletal elements with that of corresponding elements of anchovies of known length and weight, we find that these anchovies had originally been 14 to 16 cm long. The round weight of an individual in this length class is 35 to 40 g. Thus one kg contains some 25 to 30 individuals. This means that our 500 to 600 trunks required about 20 kg of unprocessed fish. As said before, the capacity of the storage jar was six litres. As the volume of 500 to 600 fresh anchovy trunks exceeds six litres, it is clear that they cannot have been put into the storage jar freshly caught. First they must have been packed in salt in a larger tub or barrel to mature, resulting in loss of volume. Later on, the matured anchovy trunks were repacked into the jar. During this repacking, skeletal elements that lay close to the surface of the body (cleithra, posttemporals, etc.) were sometimes left behind in the larger vessel. This explains the smaller numbers of such elements (Table 1). Also, it may be noted that of the paired elements the sample includes more specimens of the right than of the left side. This most probably is due to the fish-gutter's right- or left-handedness.

The argument that the anchovy must have been preserved for several months is supported by the foundering date of *'t Vliegende Hart*, 3 February. Until recently, it was in late April, as soon as the estuarine waters became warmer than the open North Sea, that shoals of anchovy coming from the south would migrate into the Dutch tidal inlets, to reproduce in the brackish water. When the temperature of the estuaries fell below that of the sea water, in October, they would disappear again. This means that the anchovy had been caught in the period between April and October (2). According to SMALLEGANGE (1696: 187), a great deal of anchovy was caught in the Oosterschelde off Bergen op Zoom and 'also salted in small Casks for Transportation' (3).

#### **IV. CONCLUSION**

The remains in the storage jar belong to trunks of anchovy packed in salt. The thorough way in which the fish had been packaged suggests that it was not meant for consumption on board. It is more likely that the keg was intended for a gourmet in Batavia (Java) and was brought along at his request. Alternatively, a member of the crew may have carried it on board for some private trading in the East Indies. According to VAN DER HORST (1991: 37) smuggling was practiced on virtually all outward-bound VOC ships.

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(2) -That is, if the anchovy were caught in Dutch waters.

(3) -Nowadays salted anchovy trunks, packed in large Lins, may be encountered in markets in Mediterranean countries. To prepare this product for consumption, the raw trunks are washed in water to remove the salt, and any remaining scales, as well as the vertebral column, ribs, fins and tail are removed. The resulting little fillet is very tasty. In the Netherlands the product is sold in delicatessens and at market stalls specialising in Mediterranean food. The price of these salted anchovy fillets is high, about 20 US\$ a kg



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