Report of species diagnosis of a tuna at Queens Products B.V. on 23 December 2009

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Report C147/09

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Summary

On request of the Queens Products B.V. on 23 December a specimen of a Tuna has been identified as most likely Albacore (*Thunnus alalunga*).
The dorsal fins, gills and the upper and lower parts of the tail were already removed and hence not available for during species diagnosis. The animal was frozen. The body length (fork length) of the specimen was 97 cm. The distinguishing features were the length of the pectoral fin, which reached well beyond the second dorsal fin and measured 44 cm or 44% of the body length; and the - compared to other tuna species - elongated body shape with a largest depth slightly anterior to the second dorsal fin and the dark color of the anal finlets. It was not possible to look at the shape of the liver due to fact that the animal was frozen during examination. Too much of the tail was missing for examination of the posterior margin.
Based on the morphological features which were available during the diagnosis, there remains a small possibility that the species is *T. obesus*. The possibility that the specimens belongs to any other tuna species is excluded.

1 Introduction

According to a company in the same marketsegment as Queen Products B.V. part of the tuna filet sold by Queens Products B.V. does not consist of the species that is mentioned on the label. According to DNA analysis filets were not from the species on the label, Albacore (*Thunnus alalunga*), but from Yellowfin tuna (*T. albacares*). The present intention of Queens Products is to check by means of DNA analysis of different lots of filets the originating species. A Spanish expert on DNA analysis who has travelled to the Netherlands to collect samples, has requested species identification by an independent scientist on the basis of morphological features as back up of the findings by means of DNA analysis.

2 Method

A specimen, imported via airport Schiphol, was available on 23 December at location of the ordering customer at approximately 12:30. As the animal had been taken out of the freezer stores that morning, it was still frozen. Only the eyes, gill covers and pectoral fins were thawed. The dorsal and ventral fins, and the upper and lower lobes of the caudal (tail) fin were missing (cut off on board?: picture 1). Due to wear and tear of the remaining middle part, it was not possible to determine the posterior edge of the caudal fin. The gills were missing as well (picture 2). The finlets (these are the little fins between dorsal and caudal fin and between anal and caudal fin) were present.

Firstly it was ascertained that the fish belonged to the genus *Thunnus*. The animal had a typical tuna appearance; eight finlets between the second dorsal fin and caudal fin, as well as eight finlets between the anal fin and the caudal fin; 33 fin rays in the pectoral fin. Caudal keels at the tail were well developed (picture 3). The following measurements were taken: body fork length (length of the tip of the head to the tail fork; in cm), length of the left pectoral fin (in cm), length of the upper jaw (in mm) and the diameter of the eye (in mm). The number of finlets behind the second dorsal fin and the anal fin were counted. When the animal was cut behind the second dorsal fin in order to collect DNA samples, a note was made on the color of the muscle tissue (filet color).
Not al observations were made for the purpose of species diagnosis but were recorded anyway for completeness. Pictures were made of different parts of the animal.

3 Results

body length (fork length)	97cm
length pectoral fin	44cm
body circumference	73cm
length upper jaw	10,5cm
diameter eye	4,5cm
dorsal finlets	8
ventral finlets	8
no of rays pectoral fin	33

The color of the dorsal finlets was yellow with a black edge (picure 4). The color of the ventral finlets was dark grey with a white edge (picture 5). The body color was dark grey at the back, turning halfway the sides to light grey with white patches on the belly. The pectoral fin reached clearly beyond the (cut off) second dorsal fin (picture 6). The color of the part of the second dorsal fin that had not been cut away (the basis) was dark grey (picture 3). The color of the muscle tissue behind the second dorsal fin was light, pale salmon (picture 7). The length of the pectoral fin was 44% (44/97x100) of the body length.

4 Conclusion

Based on the length of the pectoral fin compared to the body length and the fact the pectoral fin reached well beyond the second dorsal fin (picture 6), the specimen can be identified as either Albacore (*T. alalunga*) or bigeye tuna (*T. obesis*). Although pectoral fin of this length is a diagnostic feature for adult specimens of T. alalunga, pectoral fins in specimens smaller than 110 cm of *T. obesus* may be as long as in *T. alalunga* (Carpenter and Niem, 2001).
The dark colored ventral finlets (picture 5) and a greatest body depth at a more posterior point compared to other tuna species (slightly before the second dorsal fin; see picture front page) indicate that the specimen belongs to the species Albacore (*T. alalunga*). Other tuna species are less elongated with a more anterior greatest body depth. The ventral finlets of *T. obesus* are light yellow with a black edge.
The species name of the examined specimen based of the morphological characteristics available is most likely T. *alalunga* .
Unfortunately it was not possible to examine the shape of the liver due to the frozen state of the specimen. Also by cutting away the upper and lower lobes of the tail a diagnostic characteristic was lost: *T. alalunga* has a white posterior edge on the tail.
With reference to the immediate cause of this examination (see introduction) a further conclusion is that the specimen belonged certainly not to the species *T. arbacares*.

References

Carpenter, K.E. and Niem, V.H., 2001. FAO species identification guide for fishery purposes – The living Marine Resources of the Western Central Pacific, Vol. 6. FAO, Rome: p. 3381-4218.

Justification

Rapport C147/09
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The scientific quality of this report has been peer reviewed by the a colleague scientist and the head of the department of IMARES.

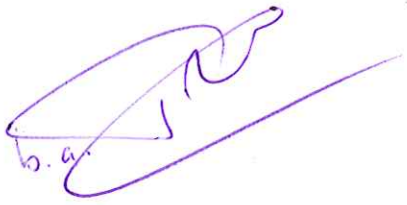
Approved: Ir. A.T.M. van Helmond

Signature:

Date: 28 December 2009

Approved: Drs. J. Asjes
Head of Ecology department

Signature:



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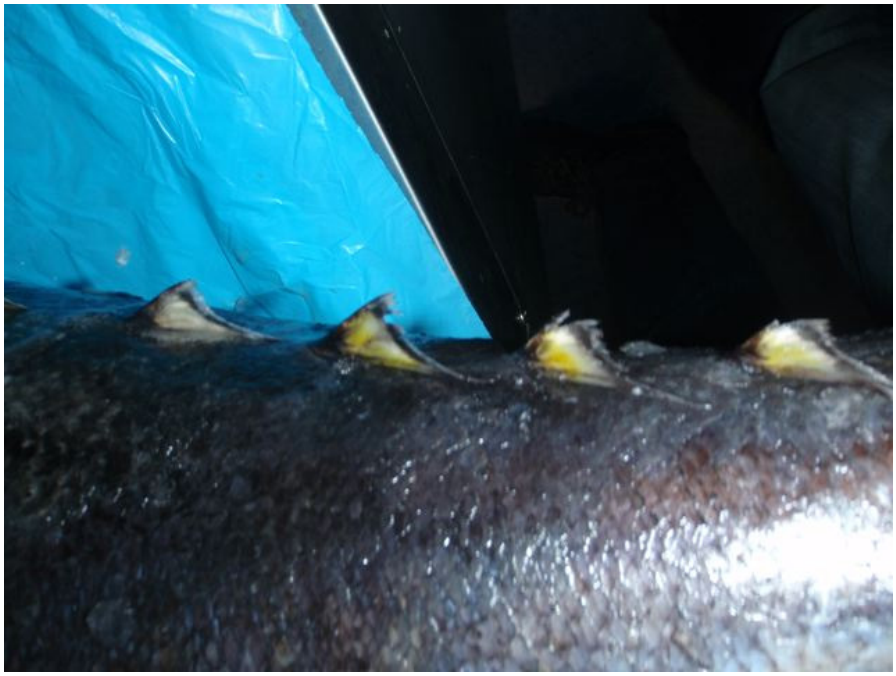
Number of appendix attachments: 7 pictures

Pictures

Picture 1. Dorsal fins were missing.

Picture 2. Gills were missing.

Picture 3. Well developed caudal keels.



Picture 4. Color dorsal finlets.

Picture 5: Color ventral finlets.

Picture 6: The pectoral fin reaches well beyond the second dorsal fin.

Picture 7: Color of the muscle tissue.