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Radiological study of the harbour porpoise pectoral fin (*Phocoena phocoena*) in Galicia (NW Spain)

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INTRODUCTION

Harbour porpoises from the Iberian Peninsula and North Africa have been proposed to be classified as a new subspecies, ***Phocoena phocoena meridionalis***. The population is low and the species was catalogued as **endangered** in Spain in 2020.

To improve the anatomical knowledge of the proposed subspecies, samples of either one or both pectoral fins were collected by the regional stranding network from dead stranded animals found along the Galician coast (NW Spain).

Fig. 1. Juvenile male, TL 118,5cm, estimated age <6months (8).

Fig. 2. Physically mature male, TL 165cm, estimated age 7 years (8).

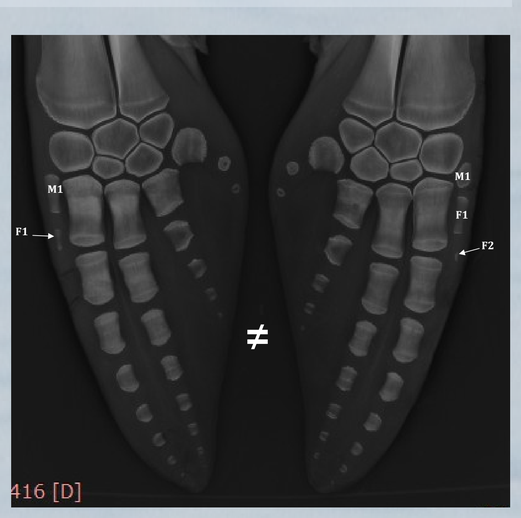

Fig. 3. Structural asymmetry between left and right flippers. Physically mature female, TL186cm, estimated age >10 years (8).

RESULTS

The digit region displayed variability among individuals concerning the number of phalanges in each finger, but maintaining **hyperphalangy** in the second and third digits.

Variations in the conformation of the carpus and digits were also found (Fig. 4,5,6), as well as asymmetry between left and right flippers (Fig. 3). All these anomalies have been previously described in cetaceans (3,4,6).

No differences were found in the osteological pattern between males and females, but growth plates closed **earlier** in **males** (TL 143,5 cm) than in females (TL 186 cm) (6). **Open growth plates** (Fig. 1) were noted in **smaller sized** individuals. It was determined that the maturation sequence of the long bones occurs in **proximodistal** direction, but in the fingers it also occurs **craniocaudal**.

The most common phalangeal formula was I1 II6 III6 IV3 V1/2, same as previously described for harbour porpoises from other regions (1,2,5)

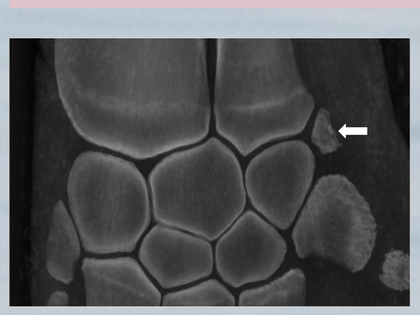

Fig. 4. Accesory carpal bone in proximal row. Physically mature male from fig 2., TL 165cm, estimated age 7 years (8).

Fig. 5. Fusion of CI and C3 bones. Juvenile male, TL 135cm, estimated age 1-2 years (8).

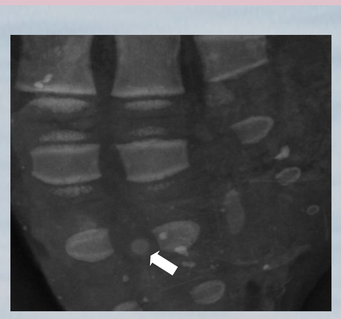

Fig. 6. Possible polyphalangy (3) **between F2 in digits I and II. Juvenile male, TL 142cm, estimated age 2-3 years** (8).

MATERIALS AND METHODS

Since 2010, the flippers from **45 animals** were collected and examined in mediolateral projection by using a DR radiology equipment.

Radiological data about bone growth were correlated with individuals of estimated age and the same total body length. Age was estimated using available Gompertz growth curves from harbour porpoises in the North West Iberian Peninsula (8).

CONCLUSIONS

The osteological structure of the pectoral fin in harbour porpoises from Galician waters is similar to the ones studied in other species of odontocetes, but shows **individual variations**.

Radiology is a relatively cheap, non-invasive method to study bone structure in cetaceans, and can be used to **estimate the age** of live and dead individuals when **correlating** the **total body length** and the **presence/absence of growth plates** (5,9).

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