

# AGEING WITH ALCIAN BLUE DUYING TECHNIQUES FOR SOME ELASMOBRANCHS IN ISKENDERUN BAY, EASTERN MEDITERRANEAN

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## Abstract

In this study, the vertebrae of the common eagle ray (*Myliobatis aquila*) and backchin guitarfish (*Rhinobatos cemiculus*) were used for ageing. A total of 10 *M. aquila* (females and males) and 10 *R. cemiculus* (females and males) were sampled. Age determinations were carried out using vertebral sections. Alcian blue dyeing techniques were used to enhance the visibility of the band on vertebrae.

**Keywords:** *Biodiversity, Eastern Mediterranean, Elasmobranchii*

## Introduction

Chondrichthyan fish are of low productivity compared to teleost fishes. Because of low productivity, target or non-target chondrichthyan species are most affected by commercial fisheries. For this reason, most of elasmobranchs are listed in IUCN Red Data Book. Impact of commercial fisheries on chondrichthyan fish population around the world is currently the focus of considerable international concern of both academics or non-governmental organizations for conservations and management of stocks. One of the most important points in fish and fisheries biology is age determination. Particularly if it is necessary to determine fish population structure, age determination has crucial importance. Bone of chondrichthyan species has not calcium, therefore their age determination is not easy relative to teleost fishes. For this reason, chondrichthyan stocks management strategies become harder. Age determination in chondrichthyan species can be done using some staining techniques which can make growth bands visible. Different staining techniques have been using to make growth bands visible. However success of the age determination varies for each technique. Numerous techniques have been used in the attempts to enhance the visibility of growth bands in vertebrae of elasmobranchs. All of these techniques show that the success of each technique is often species specific and that slight modifications in the technique may enhance the results. Alcian blue staining technique have used to enhance the visibility of the cartilage skeleton of mouse embryos and cartilage and related tissues in the trunk and fins of teleosts. However, the techniques have used to first time on elasmobranchs vertebrae successfully [1].

## Material and Methods

This study was conducted on the north-eastern Mediterranean coast of Turkey. Samples were collected by using commercial gill-net (44 mm mesh size), trawling (44 mm stretch length) and longline fishery. In this study A total of 10 *M. aquila* (females and males) and 10 *R. cemiculus* (females and males) were sampled. Age determinations were carried out using vertebral sections. Eight to ten vertebrae were removed from the widest portion of the body, just behind the gill slits for each specimen. Remaining muscle tissue was removed from each centrum using a knife and to remove excess connective tissue, the centra were soaked in 5% sodium hydrochloride for one day and then rinsed in distilled water. The vertebrae were preserved in 70% ethanol until the examination. The diameter of examined vertebrae was measured to the nearest 0.01 mm for each sample, using a manual caliper. The sections were mounted on microscope slides using transparent acrylic glue and were polished with sandpaper until approximately 0.5 mm in thickness. In this study alcian blue dyeing techniques were used to enhance the visibility of the band on vertebrae. The section was soaked in alcian blue solution (16 ml 100% ethanol, 2 mg alcian blue and 4 ml glacial acetic acid in 0.8 ml distilled water) for 12 h. In order to determine the age (A), the sections were viewed in a stereo microscope (X10 magnification) with both transmitted and reflected light for identification of growth rings. Images of the vertebrae were captured with a digital camera (Kodak, 6.0 MP) and the images were examined using PhotoshopTM 7.0.

## Results and Discussion

Alcian blue dyeing techniques were used to enhance the visibility of the band on vertebrae and were stained and age bands on the vertebrae (Fig.1) were observed to be quite visible.

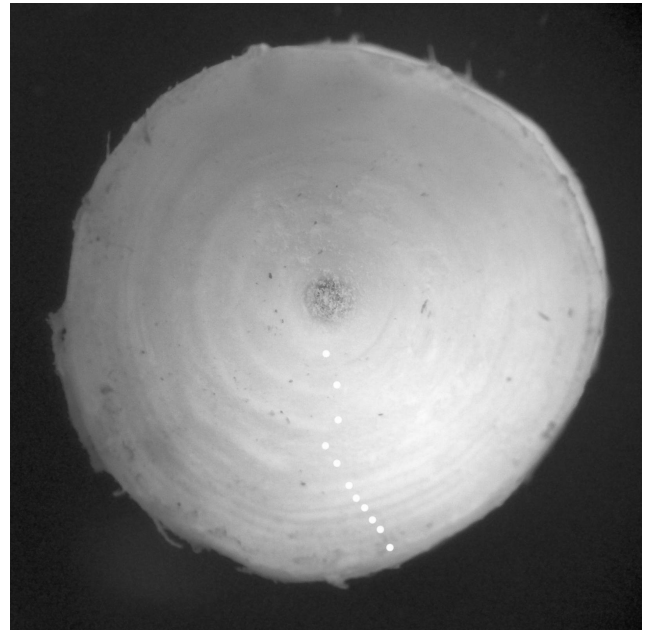


Fig. 1. Age marks on the vertebrae for *Rhinobatos cemiculus*

*Rhinobatos rhinobatos* percentage of readable vertebrae was 84% [1], for this study they were 90%. Thus it can be claimed the alcian blue staining technique can be used successfully for the age determination of elasmobranchs vertebrae [2].

## References

- 1 - Basusta, N., Demirhan, S.A., Çiçek, E., Basusta, A., Kuleli, T., Age and growth of the common guitarfish, *Rhinobatos rhinobatos* (Linnaeus, 1758), in Iskenderun Bay (northeastern Mediterranean, Turkey). *Journal of Marine Biological Association of the United Kingdom* (2008). 88 (4) 837-842.
- 2 - Basusta, N., Demirhan, S.A., Çiçek, E., Basusta, A., 2008. Alcian Blue Staining Technique for Age Determination of Chondrichthyan Fish. *JMBA Global Marine Environment*. 18.