

Preliminary results of age validation studies for rock sole  
(Lepidopsetta bilineata) in Hecate Strait (Charlotte Area)

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by

Jeff Fargo

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Department of Fisheries and Oceans

Fisheries Research Branch

Pacific Biological Station

Nanaimo, British Columbia, Canada V9R 5K6

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## INTRODUCTION

The importance of validating age determination methods has been emphasized by Beamish and McFarlane, 1983. Results of catch-at-age analysis are used for stock assessment of rock sole (Lepidopsetta bilineata) in Hecate Strait (Charlotte Area), but until recently validation of age determination methods for the species had not been undertaken.

In May of 1982, rock sole in Hecate Strait were tagged and injected with oxytetracycline (OTC) for the purpose of validating age determination methods. This report summarizes preliminary results of age validation studies at the Pacific Biological Station for rock sole. I will discuss four areas of results for our OTC age validation work:

- 1) Identification of the OTC mark with regard to ageing technique.
- 2) Preferred area for reading otolith burn sections.
- 3) Identification of growth checks using the break and burn ageing technique (Chilton and Beamish 1982).
- 4) Time at liberty estimated using the break and burn technique vs actual time at liberty from tagging.

## METHODS

In May of 1982, 10,612 rock sole were tagged, given intramuscular injections of 25 mg of oxytetracycline per kg of body weight, and released in Hecate Strait (Harling et al. 1982).

Tag recoveries from the commercial fishery in Hecate Strait were reported by department port samplers at the major ports of landing. Information collected for each recovered fish included: date/area of recovery, length (cm), sex, and maturity information. Two otoliths were taken from each fish whenever possible. Otoliths from 9 tagged fish recovered between April 1984 and August 1985 were processed by the age determination unit at the Pacific Biological Station. Age readers examined each pair of otoliths knowing only the month of recapture. Each pair of otoliths was examined to determine the quality of the OTC mark on both surface and cross-section. After identification of the OTC mark, each fish was aged using the break and burn technique and time at liberty was estimated using methodology described in (Beamish et al. 1983) for sablefish (Anoplopoma fimbria) age validation studies.

## RESULTS

The OTC mark on each pair of otoliths was much more easily discerned on the otolith cross section than on the otolith surface. An OTC mark was identified for 8 of the 9 fish in the study.

The dorsal margin of the otolith burn section was found to be the clearest area for estimating the age of the fish as well as estimating time at liberty after OTC injection (Fig. 1).

On two pairs of otoliths, growth checks were observed between the time of OTC injection and the otolith edge. The checks, in each case, were identified as checks by the readers.

Time at liberty was estimated correctly for all 8 fish where an OTC mark was detected (Table 1). Eight of the fish in the study were at liberty for 2 years while one fish was at liberty for 3 years. The age range of the fish involved was 6-11 years. Criteria for identifying annuli and growth checks using the break and burn technique on rock sole otoliths were supported by these preliminary results.

## DISCUSSION

The small sample size for this study did not warrant an elaborate experiment with regard to age validation and comparison of techniques. However, the range of ages (6-11) in this study compares well with commercial fishery samples used for catch-at-age analysis (4-15). Fish should continue to be recovered from this tagging experiment for another 2-3 years, allowing us to repeat observations for ages 6-11 as well as to add observations for older age groups in the population.

In summary, it is important to note that readers were able to distinguish growth checks as well as estimate time at liberty accurately. Thus, their estimated ages for fish from the commercial fishery using the break and burn technique are probably close approximations to the true ages.

## REFERENCES

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Table 1. Estimated time at liberty and release/recovery information for OTC injected rock sole from the May 1982 Hecate Strait tagging experiment.

Tag No.	Date of release ddmmy	Date of recapture ddmmy	Estimated age <sup>1</sup>	No. years at liberty	Expected No. annuli after OTC mark	Observed No. annuli after OTC mark
F7782354	010582	--1084	10	2	2	2
F7782664	010582	--0584	9	2	2	2
F7783883	020582	--0484	7	2	2	2
F8233070 <sup>2</sup>	070582	--0584	8	2	-	-
78233437	070582	160585	11	3	3	3
F8233703	070582	270484	9	2	2	2
F8234952	070582	110984	10	2	2	2
F8234251	080582	100584	8	2	2	2
F8239100	100582	230384	6	2	2	2

1) Ages estimated using the break and burn technique.

2) No OTC mark was visible on the otolith for this fish.

A



B

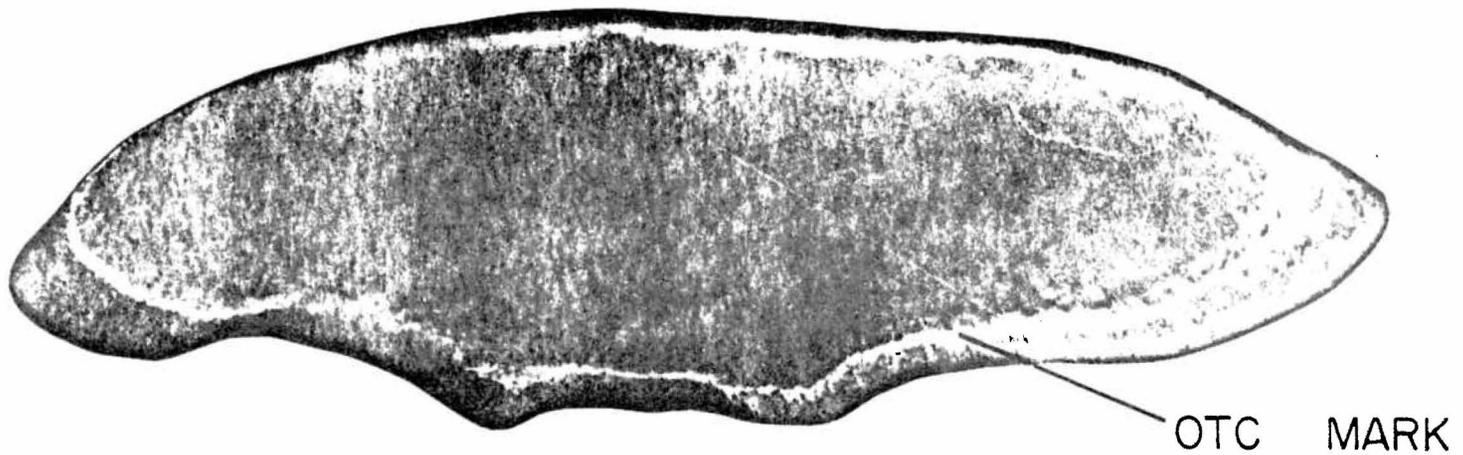


Fig. 1. A) Burned cross section of an otolith from an OTC injected rock sole (dashed lines indicate preferred area for reading). B) Cross section of an otolith from an OTC injected rock sole showing OTC mark under ultraviolet light,