

PROGRESS REPORT ON CANADIAN EXPERIMENTS ON VALIDATING
AGE-DETERMINATION METHODS FOR GROUND FISH SPECIES

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S. J. Westrheim

Fisheries Research Branch
Department of Fisheries and Oceans
Pacific Biological Station
Nanaimo, British Columbia V9R 5K6

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INTRODUCTION

In recent years, evidence has accumulated which indicates that traditional age-determination methods employing scales or otoliths underestimated the true ages of several groundfish species (for example, Beamish 1979; Bennet et al. 1982; Chilton and Beamish 1982). Furthermore, few age-determination validation studies have been reported (Beamish and McFarlane 1983), and presumably few have been undertaken.

At the Pacific Biological Station (Nanaimo, B.C.) age determination of rockfish (Sebastes) and sablefish (Anoplopoma fimbria) by otolith cross-sections indicated that conventional surface readings were too low. To prove this, field studies were undertaken in which specimens were inoculated with oxytetracycline (OTC), tagged, and released. OTC produces a "mark" on the bony structures which can be detected under ultraviolet light. Thus if a tagged fish is recaptured after, say, 3 years at liberty, there should be three annuli beyond the OTC mark. This method can confirm longevity, but not necessarily true age, unless age is known at time of tagging. The unresolved problem is interpretation of the center of the otolith where the first one or two annuli are found. However, for old fish (ca. 30-60 yr), an error of ± 1 or 2 years is relatively unimportant.

This report provides a brief progress report on the six groundfish species undergoing OTC/tagging studies by personnel at the Pacific Biological Station.

RESULTS

The six species involved in the 1977-83 OTC/tagging experiments are English sole (Parophrys vetulus), lingcod (Ophiodon elongatus), rock sole (Lepidopsetta bilineata), sablefish (Anoplopoma fimbria), yellowtail rockfish (Sebastes flavidus), spiny dogfish (Squalus acanthias) (Table 1). All were tagged in the Charlotte-Vancouver Region. Tagging with OTC-injections began in 1977, on sablefish, and are continuing.

Recaptures, by year, are shown in Table 1 for each species.

Following are the maximum ages "validated" for each species:

Species	Structure	Maximum age
Lingcod	fin ray	14
Sablefish	otolith	46
<u>S. flavidus</u>	otolith	34
Spiny dogfish	fin spine	70

Otoliths from recaptured English sole and rock sole have not been examined yet.

REFERENCES

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Table . Releases and recaptures of six groundfish species tagged and OTC-injected off Canada, 1977-83.

Species	INPFC area	Year	No. released	No. recaptured in year							Total
				1 ^a	2	3	4	5	6	7	
English sole	Charlotte	1983	5376	38	112	-	-	-	-	-	150
Lingcod	Vancouver	1982	7092	1353	694	-	-	-	-	-	2047
		1983	135	18	-	-	-	-	-	-	18
Rock sole	Charlotte	1982	10030	51	54	16	-	-	-	-	121
Sablefish	Charlotte	1978	6318	69	129	106	69	26	17	-	416
		1981	8318	166	316	185	-	-	-	-	667
	Vancouver	1977	5278	6	14	38	62	44	22	6	192
		1978	3678	8	113	132	33	19	13	-	318
<u>Sebastes flavidus</u>	Charlotte ^a	1981	2137	1	2	-	-	-	-	-	3
	Vancouver	1980	5974	4	3	2	1	-	-	-	10
		1982	3072	5	-	2	-	-	-	-	7
Spiny dogfish	Vancouver	1980	1460	3	9	6	7	-	-	-	25
		1981	3573	13	83	82	-	-	-	-	178
		1982	7981	67	92	-	-	-	-	-	159
		1983	812	7	-	-	-	-	-	-	7

^aYear 1 = year of tagging.

^b2186 tagged in 1980. No recaptures.