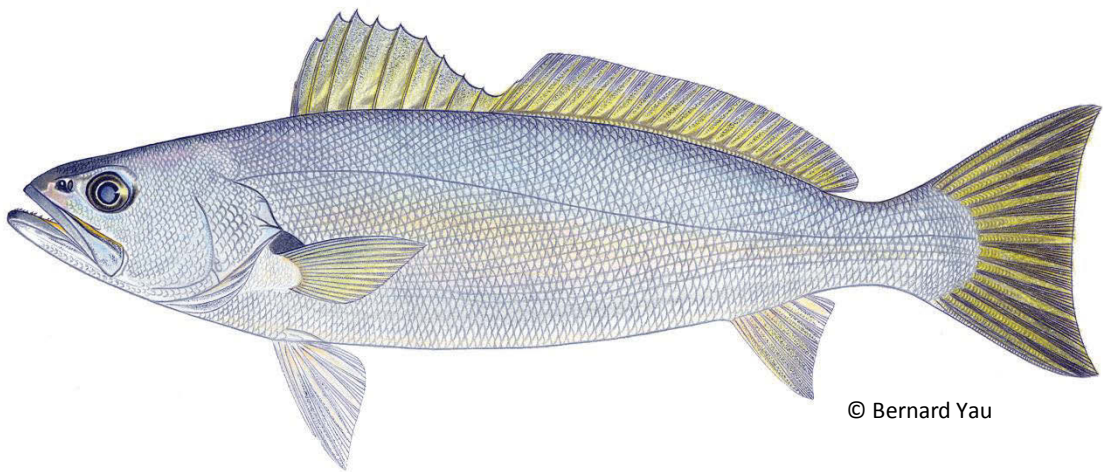


**Life History Characteristics and Fishery of  
Teraglin, *Atractoscion aequidens* in New South  
Wales, Australia**

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## **Preface**

The contents contained within this thesis are my own work with guidance from Professor William Gladstone (University Technology Sydney) and Dr John Stewart (Fisheries NSW). The design of the research presented was personally conceptualised with the guidance of my supervisors.

This thesis contains 5 chapters. Chapters 1 (Introduction) and 2 (Fisheries) are descriptive chapters. Two chapters are data chapters (Chapter 3 and 4) prepared as stand-alone journal manuscripts (unpublished). For this reason there will be some repetition in the content. To prevent unnecessary duplication a single reference list will be provided.

# Table of Contents

Acknowledgements .....	2
Preface .....	3
Table of Contents.....	4
List of Figures.....	6
List of Tables .....	8
Thesis Abstract.....	9
Chapter 1: General Introduction .....	10
1.1 Research problem.....	10
1.2 Sustainable Fisheries Management .....	11
1.3 Introduction to Sciaenids .....	13
1.4 Reproduction.....	17
1.5 Age and growth .....	19
1.6 Aims and objectives.....	20
Chapter 2: Description of Sciaenid and <i>Atractoscion aequidens</i> fisheries .....	21
Abstract.....	21
2.1 Global fisheries.....	22
2.2 South African fisheries.....	24
2.3 Queensland fishery.....	25
2.4 NSW recreational fishery .....	25
2.5 NSW commercial fishery.....	26
2.5.1 Landings .....	27
2.5.2 Length frequency distributions .....	31
2.6 Further research .....	32
2.7 Conclusion .....	32
Chapter 3: Reproductive biology of <i>Atractoscion aequidens</i> in New South Wales, Australia. ....	34
Abstract.....	34
3.1 Introduction .....	35
3.2 Methods and Materials .....	37
3.2.1 Sample collection and study sites .....	37
3.2.2 Macroscopic staging and gonad histology.....	40
3.2.3 Maturity .....	42
3.2.4 Fecundity and oocyte development.....	42
3.3 Results.....	44
3.3.1 Length distribution and sex ratios.....	44
3.3.2 Spawning period.....	46
3.3.3 Maturity .....	50
3.3.4 Fecundity.....	51
3.3.5 Oocyte development .....	53

3.4 Discussion.....	55
3.4.1 Length distribution and sex ratios.....	55
3.4.2 Spawning season .....	57
3.4.3 Maturity .....	59
3.4.4 Fecundity.....	61
3.4.5 Conclusion.....	62
Chapter 4: Age, growth and mortality rates of <i>Atractoscion aequidens</i> in New South Wales, Australia.....	63
Abstract.....	63
4.1 Introduction .....	64
4.2 Methods.....	66
4.2.1 Sampling sites and data collection.....	66
4.2.2 Otolith processing .....	69
4.2.3 Age estimation and marginal increment analysis.....	69
4.2.4 Growth and longevity .....	71
4.2.5 Length and age composition.....	71
4.2.6 Mortality estimates .....	72
4.3 Results.....	74
4.3.1 Otolith processing and age estimation.....	74
4.3.2 Marginal increment analysis.....	77
4.3.3 Growth and longevity .....	79
4.3.4 Length and age composition.....	82
4.3.5 Mortality estimates .....	85
4.4 Discussion.....	87
4.4.1 Age estimation and marginal increment analysis.....	87
4.4.2 Growth and longevity .....	89
4.4.3 Length and age composition.....	92
4.4.4 Mortality estimates .....	94
4.4.5 Conclusion.....	95
Chapter 5: General Discussion .....	96
5.1 Reproductive biology.....	97
5.1.1 Sex ratios.....	97
5.1.2 Spawning period.....	98
5.1.3 Length/age at maturity.....	99
5.2 Age and growth .....	100
5.2.1 Growth rates .....	100
5.2.2 Commercial age distribution and fishing mortality.....	101
5.3 Management implications .....	102
5.4 Further research .....	103
5.5 Conclusion.....	104
Appendix A .....	107
Appendix B.....	108
References cited .....	110

## List of Figures

Figure 2.1. Total commercial catch landings in NSW for *Atractoscion aequidens* from 1947/48 to 2013/14. Source Fisheries NSW commercial database.

Figure 2.2. Percentage of catch in NSW for *Atractoscion aequidens* by zone pooled periods 1947-1967, 1967-1987 and 1987-2014. Source Fisheries NSW commercial database.

Figure 2.3. Ocean zones in the Ocean Trap and Line Fishery for reporting commercial landings in NSW.

Figure 2.4. Commercial fishery length frequency distributions for *Atractoscion aequidens* in NSW by pooled by periods 1972-2003, 2004-2009 and 2010-2014. n values indicated on graph.

Figure 3.1. Map of NSW coast showing the locations of sites where *Atractoscion aequidens* was sampled. Dashed line indicates the separation of north and south areas (see text for explanation).

Figure 3.2. Length frequency distributions of *Atractoscion aequidens* collected from fishery-dependent samples for north and south regions: (a) females, (b) males, (c) regions pooled. The minimum legal length of *Atractoscion aequidens* in NSW is 38 cm TL (~35 cm FL).

Figure 3.3. Mean GSI ( $\pm$  S.E) by month of male and female *Atractoscion aequidens* (samples from north and south regions combined).

Figure 3.4. Change in the relative occurrence of Stage 2-5 gonads in samples of female *Atractoscion aequidens* from Jan 2011 to August 2012 based on macroscopic staging of gonads with samples pooled across regions and number of samples in each month shown above.

Figure 3.5. Histological sections under 4x magnification of *Atractoscion aequidens* ovarian tissue illustrating a) Stage 1 (immature); b) Stage 2 (developing/resting); c) Stage 3 (ripe); d) Stage 4 (running ripe); e) Stage 5 (spent). A, atretic oocyte; CA, cortical alveolar oocyte; H, hydrated oocyte; PG, primary growth oocyte; POF, postovulatory follicle; VG, vitellogenic oocyte.

Figure 3.6. Histological sections under 4x magnification of *Atractoscion aequidens* testicular tissue illustrating a) Stage 1 (immature); b) Stage 2 (developing/resting); c) Stage 3 (ripe); d) Stage 4 (running ripe); e) Stage 5 (spent SC, spermatocytes; SG, spermatogonia; ST, spermatids; SZ, spermatozoa; T, seminiferous tubule.

Figure 3.7. Length at maturity with fitted logistic curves for *Atractoscion aequidens* in NSW for a) females and b) males.

Figure 3.8. Exponential relationship between fork length (cm) and batch fecundity for female *Atractoscion aequidens* a) northern sites (n=17) and b) southern sites (n=19).

Figure 3.9. Oocyte size frequency for a) stage 2 'developing/resting', b) stage 3 'ripe', c) stage 4 'running ripe' and d) stage 5 'spent' *Atractoscion aequidens* female gonads stored in ethanol solution.

Figure 4.1. Map of NSW coast showing the locations of sites where *Atractoscion aequidens* was sampled. Dashed line indicates the separation of north and south sampling sites (see text for explanation).

Figure 4.2. Sectioned otoliths of *Atractoscion aequidens* viewed using reflected light at x2 magnification a.) 51.8 cm FL Female age 1, b): 63.4 cm FL Female age 3, c): 77.5 cm FL female age 10.

Figure 4.3. Age-bias plot of *Atractoscion aequidens* comparing mean ( $\pm$ SE) first age count against mean re-read.

Figure 4.4. Relationship between a) fork length (cm) and otolith weight (g) and b) age class and otolith weight (g). n=1,468 (outliers removed).

Figure 4.5. Mean marginal increments ( $\pm$ S.E) for *Atractoscion aequidens* age class 1-2 (n=867), and age class 3 -14 (n=367).

Figure 4.6. Frequency of otolith edge states for *Atractoscion aequidens* (n=1,490) in each month, pooled by sex and region.

Figure 4.7. von Bertalanffy growth function fitted to a) males and females, b) north and south and c) pooled size at age data for *Atractoscion aequidens* in NSW.

Figure 4.8. Mean size-at-age of a) males and females, and b) north and south *Atractoscion aequidens* in NSW.

Figure 4.9. Length frequency distributions from the north (n=5,490) and south (n=1,803) regions of *Atractoscion aequidens* collected from the long-term monitoring program run by Fisheries NSW.

Figure 4.10. Estimated age distributions derived from the age-length key for commercially caught *Atractoscion aequidens* in NSW a.) pooled, b.) north and c.) south. d) Age composition of samples from the recreational fishery (recreational catch is raw proportions only, n=151).

Figure 4.11. Catch curves of *Atractoscion aequidens* in NSW a.) pooled, b.) south and c.) north.

## List of Tables

Table 3.1. Macroscopic and microscopic features of male and female gonads of *Atractoscion aequidens*. Pictures of macroscopic appearance of stages in Appendix A.

Table 3.2. Fork length (FL, in cm) of *Atractoscion aequidens* from the north and south regions.

Table 3.3. Summary of results of analysis of covariance testing for the effects of region on batch fecundity of *Atractoscion aequidens* with length and body weight as covariates.

Table 4.1. Fork length (FL, in cm) of *Atractoscion aequidens* from the north and south regions. Data by regions is pooled for all male and females sampled in the region. Rec frames are *Atractoscion aequidens* caught by recreational anglers.

Table 4.2. *Atractoscion aequidens* growth parameters generated from von Bertalanffy growth function.

Table 4.3. Age-length key for *Atractoscion aequidens* pooled by regions for fish sampled between January 2011 and June 2012.

Table 4.4. Mortality rates based on estimated age distributions of *Atractoscion aequidens* in the NSW commercial fishery.



## Thesis Abstract

Teraglin (*Atractoscion aequidens*, family Sciaenidae) is a coastal schooling species of fish found in eastern Australian waters and in the South Atlantic Ocean off the coast of Africa. In Australia, they are found from southern Queensland to Montague Island in southern New South Wales (NSW) in depths of 20-80 m over broken gravel and reef. Despite a long history of exploitation this is the first study of the life history characteristics of *A. aequidens* in NSW where they are targeted by both commercial and recreational fisheries. The aim of this study was to describe age compositions, growth rates, and reproductive characteristics in NSW and to compare results to the other *A. aequidens* populations. Fishery-dependant samples were collected from fishermen's co-operatives at major ports of commercial landings between January 2011 and June 2012. Sampling sites were divided into north (30.30° S, 153.12° E) and south regions (32.18° S, 152.51° E) corresponding to two distinct regions of the East Australian Current (EAC). *Atractoscion aequidens* was found to be fast-growing, reaching approximately 40 cm fork length (FL) in the first year of life with a maximum age in excess of 10 yr. Females were estimated to grow to a larger asymptotic length (84 cm FL) than males (69 cm FL). Length/age at which 50% of the population matures is approximately 35 cm FL and 1 yr. In South Africa, the same species matures at 90 cm FL and 5 yr. In NSW, *A. aequidens* displays year-round batch spawning behaviour with asynchronous oocyte development and indeterminate fecundity. Batch fecundity estimates ranged from 32,431 ( $\pm 2,370$ ) for a 43 cm fish to 673,813 ( $\pm 2,929$ ) for a 71.5 cm fish. Fish from the south region were on average larger than those from the north. The commercial fishery in NSW is predominantly based on young fish < 3 yr. With the majority of the fishery based on young fish and with the species capable of growing to a relatively large size and old age, there is a concern the species is experiencing an excessive fishing mortality rate. There are many examples of declines of sciaenid fisheries due to lack of life history information. This study of the species' life history characteristics and fisheries provides a basis for development of a quantitative assessment which will contribute to effective management of *A. aequidens* for sustainable fisheries.