SEDAR 22- DW-11

Observed length frequency distributions for blueline tilefish caught in the Gulf of Mexico from 1984 to 2009

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Abstract

This report documents the observed length frequency distributions for blueline tilefish collected by TIP samplers between 1984 and 2009 and outlines the differences in length frequency distributions between otolith samples and length samples. In some years, length samples collected from blueline tilefish fisheries had small sample sizes and may not have been representative of the actual length frequency distributions for blueline tilefish landings. There are significant differences in sample sizes and length frequency distributions between blueline tilefish otolith and length samples taken from 1984 to 2009. If age frequency distributions and growth curves are to be estimated from sub-samples of these otolith samples, it may be necessary to adjust the estimated age frequency distributions of growth curves by re-weighting them with the length frequency distributions of blueline tilefish length samples (Chih, 2009a, 2009b).

Materials and methods

All data used in this analysis came from the TIP database. Otolith samples were sub-samples of length samples. The lengths of otolith samples were included in the estimation of length frequency distributions. These otolith samples were sent to the Panama City Laboratory, SEFSC, NMFS for age determination. Otolith samples from the TIP database are the major source of age samples for the Panama City Laboratory age database. If the length distribution for otolith samples was significantly different from that for length samples, then the length distribution for age samples would also be significantly different from that for length samples. All lengths are reported as total length in centimeters.

Results and discussion

The majority of blueline tilefish length and otolith samples were collected from long line fisheries (Table 2) . Yearly length frequency distributions for samples collected from long line fisheries (with sample sizes larger than 200) are shown in Fig 2. Otolith sample sizes were considerably smaller than length sample sizes in all years (Table 1). The length frequency distributions for otolith samples were significantly different from those for length samples (Fig 3). These results demonstrate that age frequency distributions or growth

curves estimated from otolith samples or age samples may need to be re-weighted by the length frequency distribution for length samples (Chih, 2009a, 2009b).

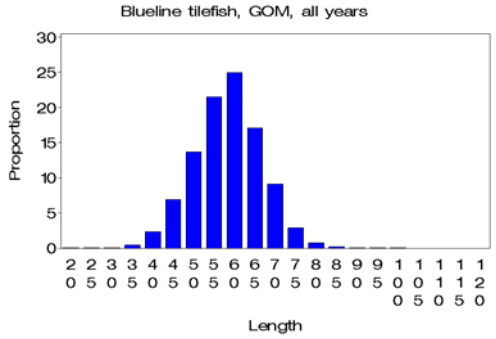
References

Chih, C.-P. 2009a. Evaluation of the sampling efficiency of three otolith sampling methods for commercial king mackerel fisheries. Transactions of the American Fisheries Society 138: 990-999.

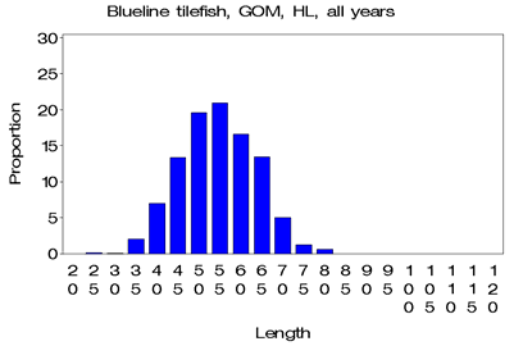
Chih, C.-P. 2009b. The effects of otolith sampling methods on the precision of growth curves. North American Journal of Fisheries Management 29: 1519-1528.

Fig 1. Length frequency distributions for blueline tilefish collected from the Gulf of Mexico from 1984 to 2009.

(a) All gear types



(b) Hand line



(c) Long line

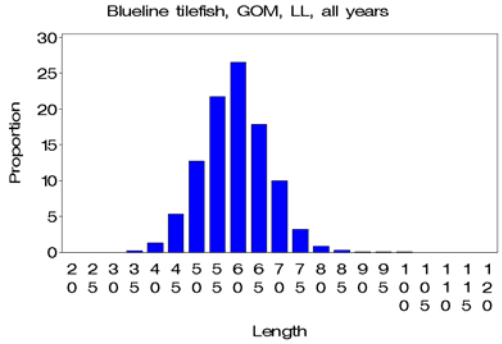
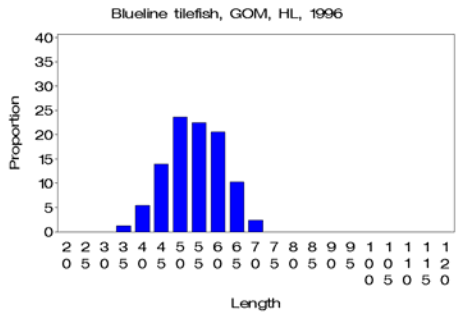
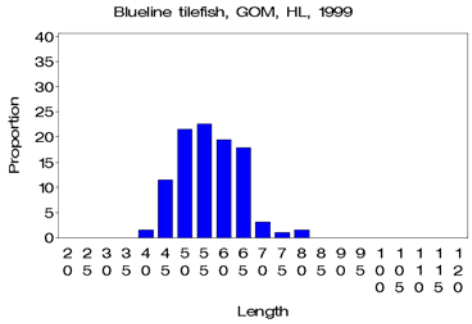


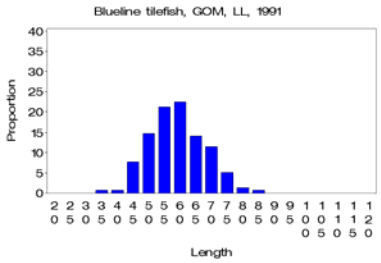
Fig 2. Yearly length frequency distributions for blueline tilefish collected from the Gulf of Mexico from 1984 to 2009 (only those years with sample sizes larger than 200 were included).

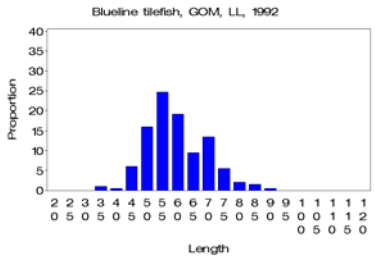
(a) Hand line

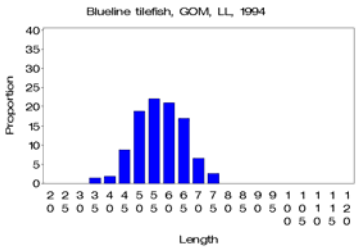


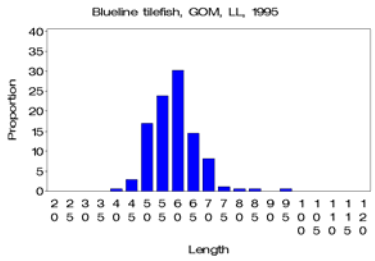


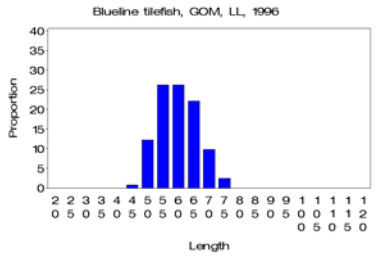
(b) Long line

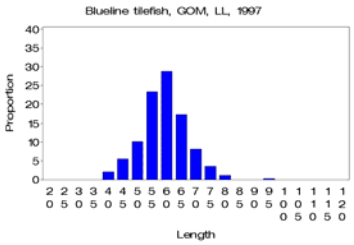


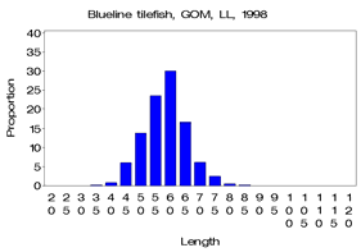












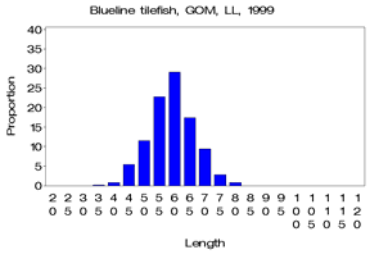
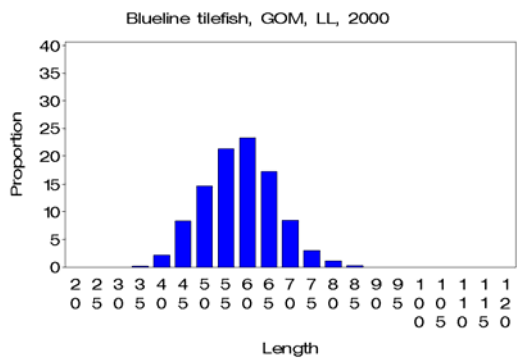
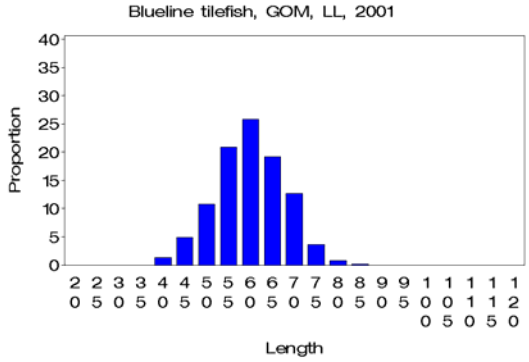
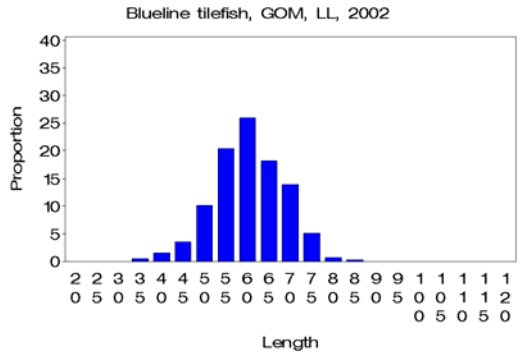
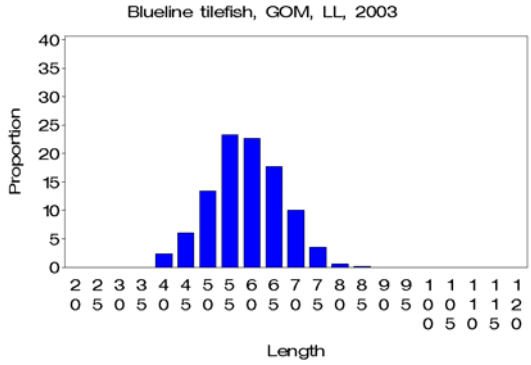


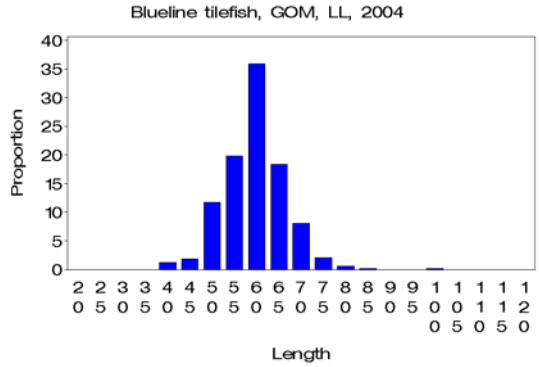
Fig 2 Continued.











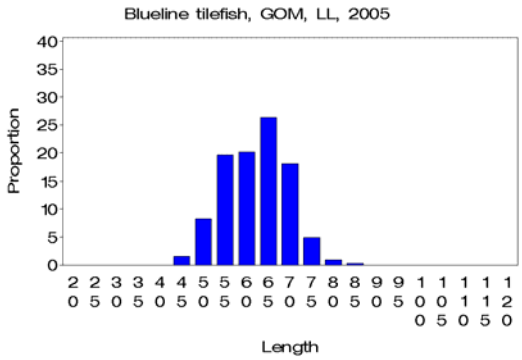
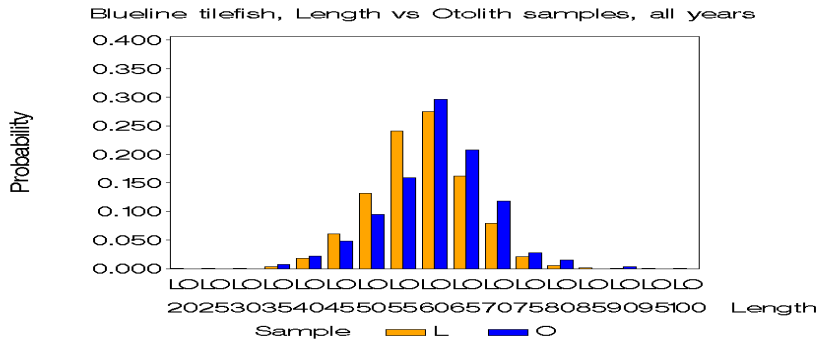
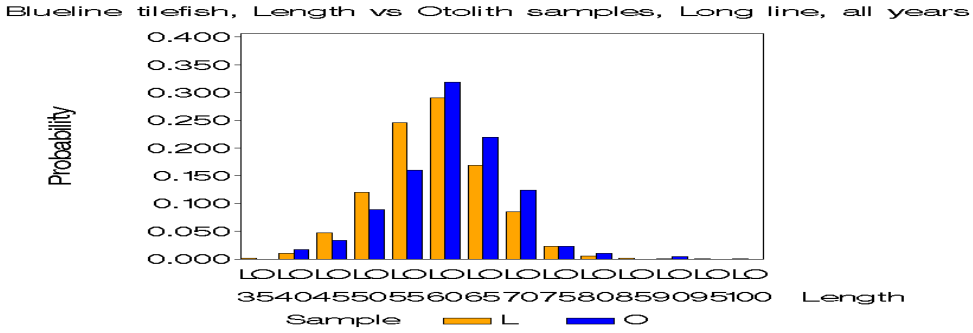


Fig 3. Comparisons of length frequency distributions for length (L) and otolith samples (O) collected from blueline tilefish fisheries from 1984 to 2009.

All gear types



(a) Long line



(b) Hand line

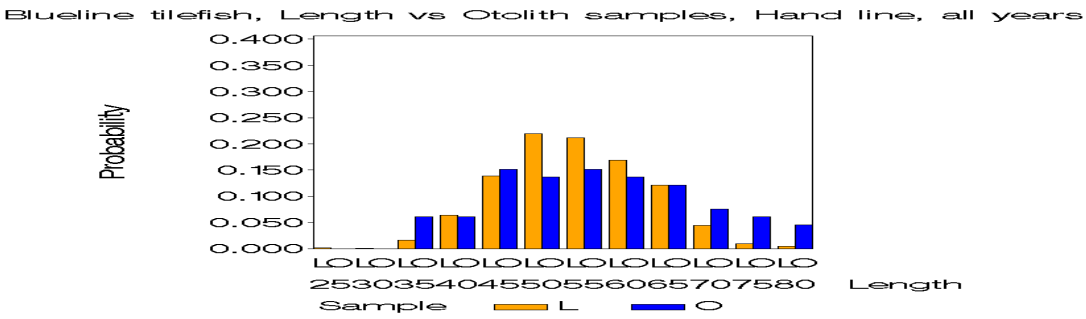


Table 1. Number of blueline tilefish otolith and length samples collected from blueline tilefish fisheries by TIP samplers from 1984 to 2009.

Year	Number of otolith samples	Number of length samples
1984		19
1985		4
1986		43
1987		4
1988		13
1990		52
1991		692
1992		589
1993		199
1994		666
1995		297
1996		598
1997	1	577
1998		1532
1999		1448
2000		2579
2001	27	1248
2002	3	880
2003	4	1028
2004	121	684
2005	18	387
2006	22	162
2007	88	92
2008	180	233
2009	76	86

Table 2. Number of blueline tilefish samples and sampling trips from 1984 to 2009.

Year	HL	LL	Total sampling trips
1984		1	1
1985	1	1	2
1986		3	3
1987	2	1	3
1988	1	1	2
1990	3	3	6
1991	12	12	24
1992	12	17	29
1993	7	15	22
1994	26	17	43
1995	12	11	23
1996	17	9	26
1997	13	27	40
1998	13	56	69
1999	19	43	62
2000	9	78	87
2001	9	59	68
2002	5	37	42
2003	1	51	52
2004	4	41	45
2005	6	30	36
2006	7	14	21
2007	3	19	22
2008	13	26	39
2009	6	27	33
Total	201	599	800

Year	HL	LL	Total number of samples
1984		19	19
1985	1	1	2
1986		43	43
1987	3	1	4
1988	7	6	13
1990	42	8	50
1991	148	543	691
1992	117	470	587
1993	63	136	199
1994	85	500	585
1995	33	264	297
1996	348	250	598
1997	73	488	561
1998	82	1450	1532
1999	243	1205	1448
2000	106	2473	2579
2001	92	1156	1248
2002	60	798	858
2003	26	996	1022
2004	13	671	684
2005	26	361	387
2006	14	148	162
2007	13	79	92
2008	64	169	233
2009	9	77	86
Total	1668	12312	13980