

Growth models adopted by the SCRS for major species

Spp.	Area/Sex	Parameters	Reference	n	L range	Method
ALB	N. and S. Atlantic Sexes combined	$L_t = 124.74(1 - e^{-0.23(t+0.9892)})$ (used as default growth curve in the North)	BARD (1981)	352	46-113	Spines
ALB	North Atlantic Sexes combined	$L_t = 122.80(1 - e^{-0.217t})$ (used to compute catch-at-age) ages=8; $\bar{\sigma} = 3.593$; Ratio $\sigma = 1.391$	ANON. (1996)			MULTIFAN (size-freq. analysis)
ALB	South Atlantic Sexes combined	$L_t = 142.28(1 - e^{-0.145(t+0.674)})$	LEE and Yeh (1993)	353	85-117	Spines
ALB	South Atlantic Sexes combined	$L_t = 147.5(1 - e^{-0.126(t+1.89)})$	LEE and Yeh (2007)	344 125	51-130 81-117	Spines Vertebra
ALB	Mediterranean	$L_t = 194.7(1 - e^{-0.258(t+1.354)})$	Magalofonou (2000)	1136	57-92	Spines
YFT	Atlantic Sexes combined	$L_t = 37.8 + 8.93t + (137.0 - 8.93t)(1 - e^{-0.808t})^{7.49}$	GASCUEL et al. (1992)	?	?	?
BET	All Atlantic Sexes combined	$L_t = 217.3(1 - e^{-0.18(t+0.709)})$	HALLIER et al. (2005)	625 tags 255 otoliths	37-124 (tags) 29-190 (otoliths)	Otoliths and Tagging
SKJ	Equatorial Sexes combined	$L_t = 80.0(1 - e^{-0.322t})$	BARD and Antoine (1986)	341	40-65	Tagging
SKJ	Cap Vert - Senegal Sexes combined	$L_t = 97.258(1 - e^{-0.251t})$	HALLIER and GAERTNER (2005)	222	40-65	Tagging; Meta-analysis
SKJ	W-Atlantic Caribbean Sexes combined	$L_t = 94.9(1 - e^{-0.340t})$	Pagavino and Gaertner (1995)	?	38-96	MULTIFAN (size-freq. analysis)
SKJ	W-Atlantic South-Brazil Sexes combined	$L_t = 87.078(1 - e^{-0.22(t+2.071)})$	Vilela and Castello. (1991)	?	?	Spines
BFT	East Atlantic and Mediterranean Sexes combined	$L_t = 318.85(1 - e^{-0.093(t+0.97)})$	CORT (1991)	192	172-302	Spines
BFT	West Atlantic Sexes combined	$L_t = 382.0(1 - e^{-0.079(t+0.707)})$	TURNER and Restrepo (1994)	903	50-300	Tagging
BUM	Atlantic	$L_t = 113.506 e^{-7.731} e^{-0.039t}$ (time units in days)	PRINCE et al. (1991)	24	1-100	Otoliths

BUM	Atlantic Adults > 110 days	$L_t = 210.45(1 - e^{-1.533(t+0.1505)})$	PRINCE et al. (1991)	95	100-212	Otoliths
WHM	Atlantic	N/A				
SAI	Atlantic	N/A				
SWO	N. Atlantic Sexes combined	$DWT_t = 305.56 e^{-4.6235 e^{-0.30582t}}$ (DWT = dressed weight in lbs)	ANON. (1989)	85	7-360 lbs	Tagging
SWO	N. Atlantic Sexes combined	$L_t = \left[464.54^{3.2678} - (464.54^{3.2678} - 0.0001^{3.2678}) e^{-0.0023(3.2678)t} \right]^{\frac{1}{3.2678}}$	Arocha et al. 2003	4209	63-262	Spines
SWO	N. Atlantic Males	$L_t = \left[300.0^{3.921} - (300.0^{3.921} - 0.001^{3.2678}) e^{-0.00465(3.921)t} \right]^{\frac{1}{3.921}}$	Arocha et al. 2003	1817	63-246	Spines
SWO	N. Atlantic Females	$L_t = \left[375.49^{2.976} - (375.49^{2.976} - 0.0001^{2.976}) e^{-0.00734(2.976)t} \right]^{\frac{1}{2.976}}$	Arocha et al. 2003	2392	74-262	Spines
SWO	S. Atlantic	N/A				
SWO	Mediterranean Sexes combined	$L_t = 238.58(1 - e^{-0.185(t+1.404)})$	TSERPES and Tsimenides (1995)	1100	62-210	Spines

REFERENCES

- ANON, 1989. Report of the Second ICCAT Swordfish Workshop. ICCAT Col. Vol. Sci. Pap. 29: 71-162.
- ANON. 1996. Report of the Final Meeting of the ICCAT Albacore Research Program. ICCAT Col. Vol. Sci. Pap., XLIII: 1-140
- AROCHA, F., C. Moreno, L. Beerkircher, D.W. Lee, and L. Marcato. 2003. Update on growth estimates for swordfish, *Xiphias gladius*, in the northwestern Atlantic. ICCAT Col. Vol. Sci. Pap., 55 (4): 1416-1429
- BARD, F.X. 1981. Le thon germon (*Thunnus alalunga*) de l'Océan Atlantique. PhD Thesis presented at the University of Paris, 333 p.
- BARD, F.X. and L. Antoine. 1986. Croissance du listao dans l'Atlantique est. Proc. ICCAT Intl. Skipjack Yr. Prog. 1: 301-308
- CORT, J.L. 1991. Age and growth of the bluefin tuna (*Thunnus thynnus*) in the Northeast Atlantic. Col.Vol.Sci.Pap. ICCAT, 35 (2): 213-230.
- GASCUEL, D., A. Fonteneau and C. Capisano. 1992. Modélisation d'une croissance en deux stances chez l'albacore (*Thunnus albacares*) de l'Atlantique est. Aquatic Living Resources 5 (2): 155-172.
- HALLIER, J. P., and D. Gaertner (2005) Estimated growth rate of the Skipjack tuna (*Katsuwonus pelamis*) from tagging surveys conducted in the Senegalese area (1996-1999) within a meta-analysis framework. ICCAT-SCRS/2005/052
- HALLIER, J.P., B. Stequert, O. Maury, and F.X. Bard. (2005). Growth of bigeye tuna (*Thunnus obesus*) in the eastern Atlantic ocean from tagging-recapture data and otolith readings. ICCAT Col. Vol. Sci. Pap. 57(1): 181-194.
- LEE, L.K. and S.Y. Yeh. 1993. Studies on the age and growth of South Atlantic albacore (*Thunnus alalunga*) specimens collected from Taiwanese longliners. ICCAT Col. Vol. Sci. Pap., XL (2): 354-360.
- LEE, L.K. and S.Y. Yeh. 2007. Age and growth of south Atlantic albacore – a revision after the revelation of otolith daily ring counts. ICCAT Col. Vol. Sci. Pap., LX (2): 443-456.
- MEGALOFONO, P. 2000. Age and growth of Mediterranean albacore. J. Fish. Biol. 57(3): 700-715.
- PAGAVINO, M. and Gaertner, D. 1995. Ajuste de una curva de crecimiento a frecuencias de tallas de atun Listado (*Katsuwonus pelamis*) pescado en el Mar Caribe suroriental. ICCAT Col.Vol.Sci.Pap. ICCAT, 44 (2) : 303-309
- PRINCE, E.D., D.W. Lee, J.R. Zweifel, and E.B. Brothers. 1991. Estimating age and growth of young Atlantic blue marlin, *Makaira nigricans*, from otolith microstructure. Fish Bull 89: 441-459
- TSERPES, G., and N. Tsimenides. 1995. Determination of age and growth of swordfish, *Xiphias gladius* L. 1758, in the eastern Mediterranean using anal-fin spines. Fish. Bull. 93: 594-602.
- TURNER, S.C. and V.R. Restrepo. 1994. A review of the growth rate of West Atlantic bluefin tuna, *Thunnus thynnus*, estimated from marked and recaptured fish. ICCAT Col. Vol. Sci. Pap. ICCAT, 42: 170-172.
- VILELA, M. J. A., and Castello, J. P. 1991. Estudio de la edad y del crecimiento del barrilete (*Katsuwonus pelamis*) en la región sur y sudeste de Brasil. Frente Marítimo, 9: 29-35