Weight-Length Relationships of Seven Fish Species (Teleostei: Sparidae, Mullidae, Carangidae) of Western Mediterranean Sea (Oran Bay, Algeria)

Lotfi Bensahla Talet[1*], **Malika Gherram[2]** and **Ahmed Bensahla Talet[2]**

[1]*University of Oran1 Ahmed BENBELLA Laboratoire Réseau de Surveillance Environnementale (L.R.S.E), Faculty of Natural Sciences and Life. Department of Biology. Es-sénia 31000 Oran Algeria*

[2] *University of Oran1 Ahmed BENBELLA. Laboratoire d'Aquaculture et de Bio remédiation (Aquabior), Faculty of Natural Sciences and Life, Department of Biology. Es-sénia, 31000 Oran. Algeria*

[*]btlotfi77@hotmail.fr

Abstract **-** No information currently exists on the weight-length relationships of Sparidae: Axillary seabream *Pagellus acarne* (Risso, 1827), bogue *Boops boops* (Linnaeus, 1758); Mullidae: Red mullet *Mullus barbatus* (Linnaeus, 1758), surmulet *Mullus surmuletus* (Linnaeus, 1758) and Carangidae: Atlantic horse mackerel *Trachurus trachurus* (Linnaeus,1758), Mediterranean horse mackerel *Trachurus mediterraneus* (Steindachner 1863), Blue jack mackerel *Trachurus picturatus* (Bowdich 1825), seven commercial fish species of Oran Bay in Western Mediterranean Sea. Data are presented for the first time for that region of the Mediterranean Sea to contribute and help comparative growth studies. Samples were collected from commercial catches at Oran Bay fisheries in Algeria. The values of the slope b in the length-weight relationship, $W=aL^b$ ranged from 2.841 to 3.296. The coefficients of correlation r^2 were comprised between 0.85 and 0.97. "a" and "b" parameters were compared with other fishing sites for the same fish species with Froese plot [Log a=f(b)].

*Keywords***:** Weight-Length relationship; *Pagellus acarne; Boops boops; Mullus barbatus; Mullus surmuletus; Trachurus trachurus; Trachurus mediterraneus; Trachurus picturatus;* Oran Bay, Algeria.

1. Introduction

Oran Bay provides a significant proportion of the o1verall marine fish production in Algeria and is considered as one of the most important fishery grounds in Algerian coasts (Bensahla Talet and Boutiba, 2000). Sparidae, Mullidae and Carangidae are three fish families widely consumed by local people. In this study, we targeted seven species from those families: *Pagellus acarne, Boops boops, Mullus barbatus, Mullus surmuletus, Trachurus trachurus, Trachurus mediteraneus* and *Trachurus picturatus* because they represent the most dominant species caught from Oran Bay.

Many studies have been already done concerning the weight-length relationships: 40 fish species from Greek waters (Moutopoulos and Stergiou, 2002); 39 species from Turkish waters (Sangun *et al*., 2007). For Algerian

waters, some works have already been done on *B. boops* (Chali-Chabane, 1988 *in* Djabali *et al.*, 1993); *T. mediterraneus; T. trachurus* (Korichi, 1988 *in* Djabali *et al.*, 1993) but to our knowledge no such study was done for *P. acarne, M. barbatus, M. surmuletus* and *Trachurus picturatus* about WLRs (Weight–Length Relationships) so our aim is to remedy this deficiency and providing the missing data. Length-weight regressions have been used frequently to estimate weight from length because direct weight measurements can be time-consuming in the field (Sinovcic *et al.*, 2004). In sampling programs, it is usually easier to measure length because of bobbing motion of the fishing boat, than weight. Also, weight cannot be measured easily in underwater visual censuses (Morey *et al.*, 2003). These data are essential to estimate growth rates, length and age structures (Kolher *et al.*, 1995) and also to other components like conversion of growth in length to growth in weight (Pauly, 1993). Also, this relationship provides useful tool for fish species dynamics and allows morphological comparison between fish populations in a given geographic region in relation to different environmental scenarios (Gonçalves *et al.*, 1997; Ritcher *et al.*, 2000).

2. Material and Methods

A total of 4.070 fish specimens were collected for the three fish families: Sparidae, Mullidae and Carangidae. Samples of *P. acarne, B.boops, M. barbatus, M. surmuletus, T. trachurus, T. mediteraneaus* and *T. picturatus* were obtained from fish landings in Oran Bay (Fig.1) between April 2008 and August 2011, mainly caught using midwater and bottom trawl at depths ranging from 130 to 350 m.

The most abundant species in the present study was *T. mediteraneus* (1.795), followed by *P. acarne* with (844) individuals, *T. trachurus* (769), *M. barbatus* (369), *B. boops* (111), *T. picturatus* (94) and *M. surmuletus*, (88).

Specimens were measured to the nearest 1 mm (total length, L_t) and weighed to the nearest 0.1 g (weight, W_t). The relationship between weight and length of a fish is usually expressed by the equation $W=aL^b$ (Ricker, 1973) where W is the body weight (g), L is the total length (cm), "a" is the intercept and " b" is the slope (allometry coefficient) (Beverton and Holt, 1996). The parameters "a" and "b" of the weight-length relationships were estimated by the least-square method from logarithmically transformed data to correct for non-linearity and heterogeneous variances: $\text{Log } W_t = b \text{ Log } L_t + \text{Log } a$.
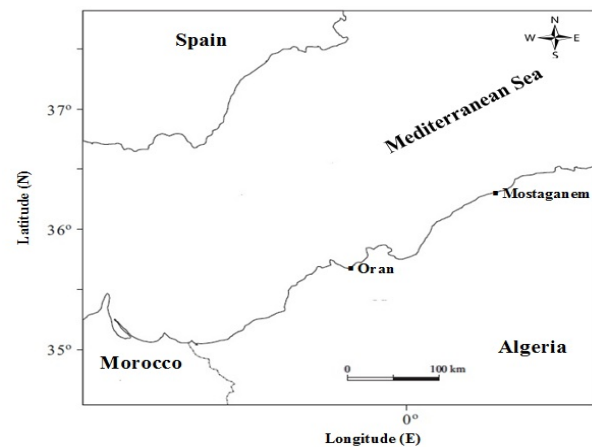

Fig. 1. Map of Study Area showing location of Oran Bay.

The association degree between weight-length variables was calculated by the determination coefficient (r^2) and analyzed with ANOVA. Values of the exponent "b" provide information on fish growth. If b=3, so increase in weight is isometric. When the value of "b" is other than 3, so weight increase is allometric, (positive allometric if b>3, or negative allometric if b<3). The null hypothesis of the isometric growth (H_0: b =3) was tested by t–test, using the statistic formula: $ts = (b-3)/S_b$, where S_b is the standard error of the slope, for $\alpha=0.05$ (Morey *et al.*, 2003). All calculations were done using Microsoft EXCEL 2007© and STATISTICA 6.0© software. It is important to highlight that

our data are not representative of a particular time or period of the year and for comparison purposes are considered only as mean annual. Froese (2000) has suggested that plotting of log a versus b (Fig. 3) for all known weight-length relationships of a species results in a linear relationship, and that this relationship can be used to identify outliers. In this paper, we have applied this method to all species.

Table 1 shows the results of W-L relationship for the fish species studied. The sample varied between 88 to 1795 specimens and b values varied between 2.842 and 3.296. All relationships were highly significant (ANOVA, $P < 0.001$) and r^2 values ranged from 0.854 to 0.978 indicating a positive correlation between total weight (W_t) and total length (L)

3. Results

Table 1. Estimated parameters of the weight-length relationship ($W = aL^b$) for seven fishes from Oran Bay (Algeria). (W in g, L in cm).

Species	n	L_t (min-max)	W_t(min-max)	a	b ± s.e (b)	r^2	Growth
Pagellus acarne	844	11.9-26.3	27.0-234.0	0.00890	3.100*± 0.020	0.959	+ allometric
Boops boops	111	14.4-24.0	25.9-123.1	0.00504	3.192*± 0.029	0.94	+ allometric
Mullus barbatus	369	10.9-23.2	20.4-149.2	0.01670	2.842*± 0.028	0.854	- allometric
Mullus surmuletus	88	12.0-22.5	20.7-109.7	0.01070	2.970 ± 0.043	0.978	0 isometric
Trachurus picturatus	94	13.8-20.3	18.7-60.70	0.00458	3.161*± 0.015	0.962	+ allometric
Trachurus mediterraneus	1795	13.2-35.0	16.9-344.4	0.00589	3.094*± 0.030	0.948	+ allometric
Trachurus trachurus	769	14.2-23.5	20.7-97.70	0.00310	3.296*± 0.027	0.932	+ allometric

n: sample size, **a**: intercept, **b**: slope, **s.e (b)**: standard error of b, **r^2**:coefficient of determination,*****:significant t-test ($P < 0.05$).

4. Discussion

The comparison of b values for the species appearing both in this study and those obtained by other authors in the Mediterranean Sea had suggested inter-regional differences. "b" values for *P. acarne* ranged from 2.84 to 3.26, for *B. boops* from 2.87 to 3.19, for *M. barbatus* from 2.83 to 3.28, for *M. surmuletus* from 2.97 to 3.25, *T. picturatus* from 3.04 to 3.16, *T. mediterraneus* from 2.82 to 3.30 and *T. trachurus* from 3.27 to 3.29.

W-L relationships parameters can vary between stocks and even between areas as stated by (Sparre *et al*., 1989; Andrade and Campos, 2002). These differences in b-values can be attributed to the combination of one or more of the following factors: a) differences in the number of specimen examined, b) area/season effect and c) differences in the observed length ranges of the specimen caught. Dulcic and Kraljevic (1998) stated that temperature, food quantity, quality and size), sex and stage of maturity are responsible for the differences in parameters of WL relationship. In addition, Froese (2006) stated that small specimens have a different WLR relationship than larger specimens.

Concerning the type of growth, isometric growth was found in *M. surmuletus*, negative allometry for *M. barbatus*, and positive allometry in Sparidae: *P. acarne*, *B. boops* and carrangidae: *T. picturatus*, *T. mediterraneus*, *T. trachurus* (Fig. 2). All relationships were significant (t-test, $P < 0.05$) except for *M. surmuletus.*
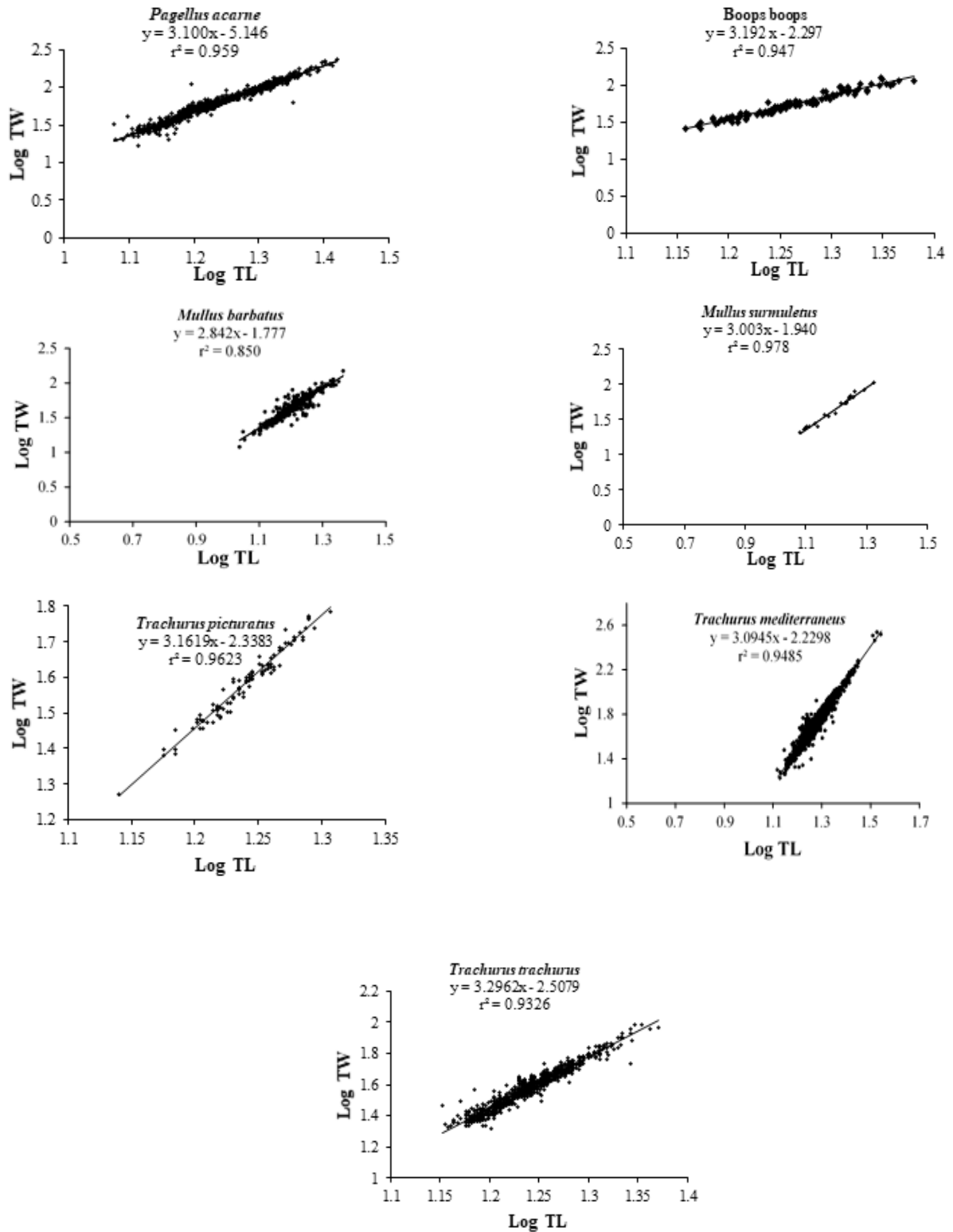
Pagellus acarne
y = 3.100x - 5.146
r² = 0.959

Boops boops
y = 3.192 x - 2.297
r² = 0.947

Mullus barbatus
y = 2.842x - 1.777
r² = 0.850

Mullus surmuletus
y = 3.003x - 1.940
r² = 0.978

Trachurus picturatus
y = 3.1619x - 2.3383
r² = 0.9623

Trachurus mediterraneus
y = 3.0945x - 2.2298
r² = 0.9485

Trachurus trachurus
y = 3.2962x - 2.5079
r² = 0.9326

Fig. 2. Weight-length relationships for seven fish species from the W. Mediterranean Sea (Oran Bay-Algeria).

Table 2. Estimated parameters for the Weight-Length relationship (W = aL^b) for *P. acarne, B. boops*, *M. barbatus, M. surmuletus, T. picturatus, T. mediterraneus* and *T. trachurus* given by several authors. (W in g, L in cm).

	Author	Locality	n	Lt	Wt	a	b ± se(b)	r²	All
P .acarne	Present study	Oran Bay, Algeria	844	11.9-26.3	27-234	0.0089	3.10±0.020	0.95	+
	Ceyhan *et al.*, 2009	Turkey	46	12.1-16.5	-	0.0094	3.26±0.11	0.95	+
	Sangun *et al.*, 2007	Turkey	83	11.0-17.0	16.49-57.43	0.0186	2.84±0.146	0.91	-
	Moutopoulos and Stergiou, 2002	Kyclades Greece	96	-	15.3-62.6	0.0150	2.93	0.97	0
B .boops	Present study	Oran Bay, Algeria	111	14.4-24	25.9-123.1	0.0050	3.19±0.029	0.94	+
	Korichi, 1988 *in* Djabali *et al.*, 1993	Bousmail Bay, Algeria	-	-	-	0.0097	3	-	0
	Petrakis and Stergiou, 1995	Evvoikos Greece	256	9.6 -24.3		0.0148	3.09	0.94	0
	Ceyhan *et al.*, 2009	Aegean Sea, Greece	32	16.5 – 27.0	-	0.0085	3.09±0.137	0.94	0
	Sangun *et al.*, 2007	NE Mediterranean	172	11.20–21.1	10.66-110.76	0.0072	3.08±0.096	0.93	0
	Abdallah, 2002	Egypt	284	3.7 - 14.6	-	0.007	3.13	0.97	+
	Cherif *et al.*, 2008	Gulf of Tunis,Tunisia	243	12-26	-	0.007	3.06±0.027	0.98	0
M. barbatus	Present study	Oran Bay, Algeria	369	109-232	20.4-149.2	0.022	2.84±0.028	0.85	-
	Gökçe *et al.*, 2007	Turkey	111	8-19.6	6-90	0.0091	3.10 ± 0.10	0.97	+
	Sangun *et al.*, 2007	Turkey	451	8.2-22.0	4.96-106.40	0.0032	3.06±0.051	0.94	0
	Moutopoulos and Stergiou, 2002	Kyclades	15	19.1-29	-	0.0177	2.83	0.75	-
	Vassilopoulou and Papaconstantinou,1992a	Aegean Sea	438	7.5-17.5	-	0.0073	3.28	0.97	+
	Vassilopoulou and Papaconstantinou , 1992a	Aegean Sea	472	7.5-17.5	-	0.0105	3.15	0.98	+
	Papaconstantinou *et al.*, 1994	Aegean Sea	2206	5-24	-	0.0000157	2.99	0.93	0
	Cherif *et al.*, 2008	Gulf of Tunis,Tunisia	1763	6.3-25	-	0.005	3.23	0.99	+
	Gökçe *et al.*, 2007	Aegean Sea	111	8-19.6	6–90	0.0091	3.1	0.97	+
	Abdallah, 2002	Egypt	512	3.6 - 15.7	-	0.012	3	0.92	0
M. surmuletus	Present study	Oran Bay, Algeria	220	120-210	20.7-108.2	0.0000113	3.00±0.014	0.97	0
	Ceyhan *et al.*, 2009	Turkey	120	13.1-25.1	-	0.0069	3.21±0.044	0.97	+
	Gökçe *et al.*, 2007	Turkey	38	7.3-18.6	6–82	0.0131	2.97 ± 0.13	0.98	-
	Moutopoulos and Stergiou., 2002	Kyclades	257	13.8- 32	-	0.014	2.95	0.94	0
	Moutopoulos and Stergiou, 1998	Kyclades	42	14-32	-	0.0176	2.9	0.92	0
	Vassilopoulou and Papaconstantinou, 1992b	Aegean Sea	451	10-20	-	0.00909	3.25	0.97	+
	Abdallah, 2002	Egypt	122	5.4 - 20.8	-	0.0110	3.03	0.73	0
T. picturatus	Present study	Oran Bay, Algeria	94	14.2-23.5	20.7-97.7	0.0045	3.16±0.015	0.96	+
	Merella *et al.*, 1997	Balearic Islands, Spain	180	4-23.9	-	0.0089	2.86	0.99	-
T. mediterraneus	Present study	Oran Bay, Algeria	1795	13.2-35	16.9-344.4	0.0058	3.09	0.94	0
	Korichi, 1988 *in* Djabali *et al.*, 1993	Bousmail Bay, Algeria	-	-	-	0.01420 F	3	-	0
			-	-	-	0.01270 M	3	-	0
	Cherif *et al.*, 2008	Gulf of Tunis,Tunisia	462	8.8-30	-	0.007	3.01	0.99	0
	Moutopoulos and Stergiou., 2002	Kyclades	191	17.3-34.1	-	0.0144	2.82	0.92	-
	Pešić *et al.*, 2012	Montenegro	730	8.9-31.3	-	0.0073 M 0.0088 F	3.02 2.95	- -	0 -
	Ozdemir and Duyar, 2013	Turkey	526	9.4-15.1	4.6-25.2	0.0032	3.30	0.89	+
T. trachurus	Present study	Oran Bay, Algeria	769	13.8-20.3	18.7-60.7	0.0031	3.29	0.93	+
	Korichi, 1988 *in* Djabali *et al.*, 1993	Bousmail Bay, Algeria	-	-	-	0.001270 M	3	-	0
			-	-	-	0.001500 F	3	-	0
	Cherif *et al.*, 2008	Gulf of Tunis,Tunisia	229	9-32	-	0.007	2.98	0.99	0
	Moutopoulos and Stergiou, 2002	Kyclades	12	15.8-28	-	0.00339	3.27	0.96	+

n: sample size, a: intercept, b:slope, s.e (b): standard error of b, r²:coefficient of determination, All: allometry (0: isometric, -: negative allometeric,+: positive allometric).

Froese (2000) has suggested that a plot of **log a** versus **b** (Fig.3) for all known weight- length relationships of a species results in a linear relationship, and this relationship can be used to identify outliers. In this paper, we have applied this method to all species. This led to the detection of outliers, where the respective point deviated more than two standard deviations from the regression line. One outlier was detected for *B.boops* and one for *M. barbatus* off the seven studied species.
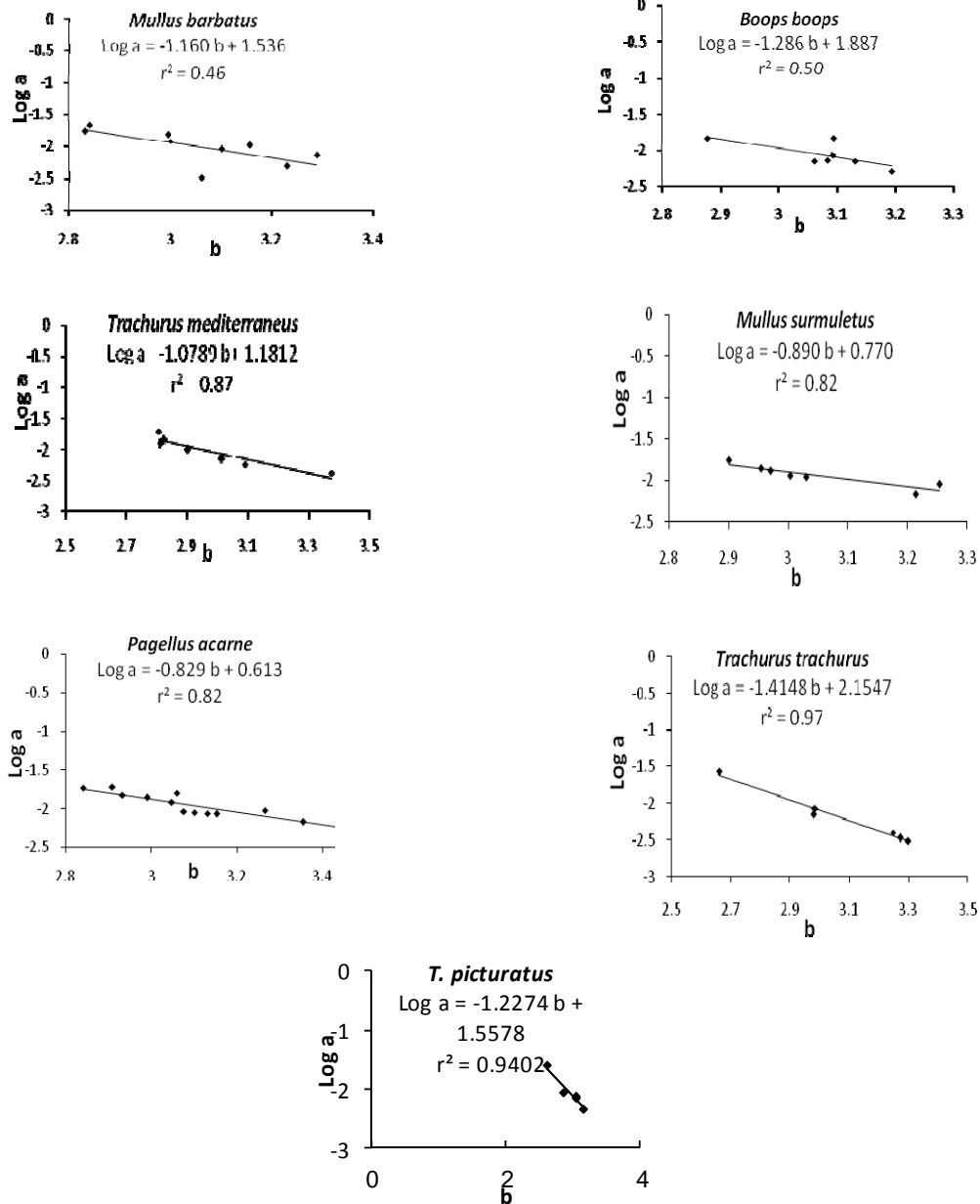

Fig. 3. Plots of log a versus b for available weight- length relationships of seven fish species in the Mediterranean waters.

However, these results are important by the fact that they contribute to enrich the available data on species living in the Mediterranean and constitute the first reference on W-L relationships for four species from Algerian waters (*Pagellus acarne; Mullus barbatus; Mullus surmuletus; Trachurus picturatus*).

5. Conclusion

For Algerian waters, scarce data exist on the relation between weight and length for species cited previously we can cite works of Korichi 1988 (*T. mediterraneus* and *T. trachurus*) and Chali-Chabane, 1988 (*B. boops*). Concerning Oran Bay data are presented for the first time in this paper helping comparative studies in this field to explain differences in growth trend (WL) found between different fish populations. Further studies will target a large number of species occupying the area to understand the inter-population and shape variations using the outliers method.

References

Abdallah, M. (2002). Length-Weight Relationship of Fishes Caught by Trawl off Alexandria, *Egypt. Naga, the ICLARM Quarterly,* **25**(1) January-March: 19-20.

Andrade, H.A. and **Campos, R.O.** (2002). Allometry coefficient variations of the length-weight relationship of skipjack tuna (Katsuwonus pelamis) caught in the southwest South Atlantic. *Fisheries Research.,* **55**, 307-312.

Bensahla Talet, A. and **Boutiba, Z.** (2000) *La pêche à Oran de 1995 à 1999. Actes des 4èmes journées tunisiennes des sciences de la mer: 17-19 novembre 2000, Mehdia (Tunisie).*18-23 p.

Beverton, R.J.H. and **Holt, S.J.** (1996) *On the Dynamics of Exploited Fish Populations.* Chapman and Hall. London, 533 p.

Ceyhan, T., Akyol, O. and **Erdem, M.** (2009) Length-Weight Relationships of Fishes from Gökova Bay, Turkey (Aegean Sea). *Turkish Journal of Zoology.* **33:** 69-72.

Chali-Chabane, F. (1988). *Contribution à l'étude biologique et dynamique de bogues, Boops boops (Linné, 1758) de la baie de Bou-Ismail. Thèse de Magister. Ministère aux Universités,* Institut des Sciences de la Mer et de l'aménagement du Littoral, Alegria. 111 p.

Cherif, M., Zarrad, R., Gharbi, H., Missaoui, H. and **Jarboui, O.** (2008) Length-weight relationships for 11 fish species from the Gulf of Tunis (SW Mediterranean Sea, Tunisia). *Pan-American Journal of Aquatic Sciences,* **3** (1): 1-5.

Djabali, F., Mehailia, A. Koudil, M. and **Brahmi, B.**, (1993). Empirical equations for the estimation of natural mortality in Mediterranean teleosts. *Naga ICLARM Quarterly.* **16**(1):35-37.

Dulcic, J. and **Kraljevic, M.** (1996) Weight-length relationships for 40 fish species in the eastern Adriatic (Croatian waters). *Fisheries Research,* **28**: 243-251.

Froese, R. (2006). Cube law, condition factor and weight–length relationships: history, meta-analysis and recommendations. *Journal of applied ichthyology,* **22**(4): 241-253.

Froese, R. (2000). Evaluating length–weight relationships. *In: FishBase 2000: Concepts, Design and Data Sources.* R. Froese and D. Pauly (Eds). ICLARM, Los Baños, Laguna, Philippines, p. 133.

Gökçe, G., Aydin, I. and **Metin, C.** (2007) Length–weight relationships of 7 fish species from the North Aegean Sea,Turkey. *International Journal of Nature and Engineering. Sciences,* **1**: 51-52 (2007).

Gonçalves, J.M.S., Bentes, L., Lino, P.G., Ribeiro Canário, A.V.M. and **Erzini, K.** (1997) Weight-length relationships for selected fish species of the small-scale demersal fisheries of the south and south-west coast of Portugal. *Fisheries Research,* **30**:253-256.

Kolher, N., Casey, J. and **Turner, P.** (1995) Length-weight relationships for 13 species of sharks from the western North Atlantic. *Fisheries Bulletin*, **93**: 412-418.

Korichi, H.S. (1988) *Contribution à l'étude biologique des deux espèces de saurels: Trachurus trachurus (Linné, 1758) et Trachurus mediterraneus (Steindachner, 1868) et de la dynamique de Trachurus trachurus (Linné, 1758) en baie de Bou-Ismail (Alger).* Thèse de Magister. ISMAL. Alger. 203 p.

Merella, P., Quetglas, A., Alemany, F. and **Carbonell, A.** (1997) *Length-Weigth relationship for fishes and cephalopods from the Balearic Islands (Western Mediterranean). NAGA.* The ICLARM Quarterly. July-December 1997.3 p.

Morey, G., Moranta, J., Massuti, E., Grau A., Linde, M., Riera, F. and **Morales-Nin, B.** (2003) Weight-length relationships of littoral to lower slope fishes from Western Mediterranean. *Fisheries Research.* **62**: 89-96.

Moutopoulos, D.K. and **Stergiou, K.I.** (1998) Length-weight

and length relationships for seven fish species of the Aegean Sea. *Proceedings of the 20th meeting of the Hellenic Society of Biological Sciences,* **20**: 207-208.

Moutopoulos, D.K. and Stergiou, K.I. (2002). Length–weight and length–length relationships of fish species from the Aegean Sea (Greece). *Journal of Applied Ichthyology.* **18** (2002), 200–203.

Ozdemir, S. and Duyar, H.A. (2013). Length-Weight Relationships for Ten Fish SpeciesCollected by Trawl Surveys from Black Sea Coast, Turkey. *International Journal of Chemical, Environmental & Biological Sciences (IJCEBS),* 1(2): 405-407.

Papaconstantinou, C., Politou, C.Y., Caragitsou, E., Stergiou, K.I., Mytilineou, CH., Vassilopoulou, V., Fourtouni, A., Karkani, M., Kavadas, S., Petrakis, G., Siapatis, A., Chatzinikolaou, P. and **Giagnisi, M.** (1994). *Investigations on the abundance and distribution of demersal stocks of primary importance in the Thermaikos Gulf and the Thracian Sea (Greece). National Centre for Marine Research, Athens, Greece,* Technical Report, North Aegean Series 4/ 1994, 356 p.

Pauly, D. (1993). Fishbyte Section. Editorial. *Naga. ICLARM Quart.* **16**: 26.

Pešić, A., Joksimović, A., Đurović, D., Mandic, M., Marković, O. and **Ikica, Z.** (2012). Biological Characteristic of Mediterranean Horse Mackerel (Trachurus Mediterraneus, Steindachner, 1868) from the Montenegrin Shelf (Southern Adriatic). *Water Resource Management,* **2**(3): 29-33.

Petrakis, G. and **Stergiou, K.I.** (1995). Weight–length relationships for 33 fish species in Greekwaters. *Fisheries Research,* **21**:465–469.

Sangun, L., Akamca, E. and **Akar, M.** (2007). Weight-Length Relationships for 39 Fish Species from the North-Eastern Mediterranean Coast of Turkey. Turkish. *Journalof Fisheries and Aquatic Sciences,* **7**: 37-40.

Sinovcic, G., Franicevic, M., Zorica, B. and **Ciles-Kec, V.** (2004). Length-weight and length-length relationships for 10 pelagic fish species from the Adriatic Sea (Crotia). *Journal of Applied Ichthyology,* **20**: 156-158.

Ricker, W.E. (1973*). Linear regressions in fishery research. Journal of Fisheries Research. Board Can.***30**: 409-434.

Ritcher, H., Luckstadt, C., Focken, U. and **Becker, K.** (2000). An improved procedure to assess fish condition on the basis of length–weight relationships. *Archive of Fishery and Marine Research,* **48**: 255-264.

Sparre, P., Ursin, E. and **Venema, S.C.** (1989) *Introduction to tropical fish stock assessment. Part I. Manual.* FAO Fisheries Technical Paper No. 306.

Vassilopoulou, V. and **Papaconstantinou, C.** (1992a) *Aspects of the biology of red mullet (Mullus barbatus) in the Aegean Sea.* FAO Fisheries Report 477:115-126.

Vassilopoulou, V. and **Papaconstantinou, C.** (1992b). *Preliminary biological data on the striped red mullet (Mullus surmuletus) in the Aegean Sea.* FAO Fisheries Report 477:85-96.

علاقات الوزن ـ الطول لسبعة أنواع من الأسماك (عظميات: سباريداي، وموليداي، وكارانجيداي) في غرب البحر الأبيض المتوسط ـ خليج وهران، الجزائر

لطفي بن سهلة ثالث¹، ومليكة غرام²، وأحمد بن سهلة ثالث²

¹*مختبر شبكة الحراسة البيئية(LRSE) ـجامعة وهران١ أحمد بن بلة، ٣١٠٠٠ وهران الجزائر

²مختبر تربية المائيات البيولوجية (AQUABIOR)ـ جامعة وهران١ أحمد بن بلة، ٣١٠٠٠ وهران الجزائر

*btlotfi77@hotmail.fr

المستخلص. لا توجد معلومات حاليا عن علاقات الطول بالوزن لعائلة سباريداي: المرجان الأبيض (*Pagellus acarne* (Risso, 1827)، والبوقة (*Boops boops* Linnaeus,1758)، وموليداي: روجي الرمل (*Mullus barbatus* Linnaeus,1758)، روجي الحجر (*Mullus surmuletus* Linnaeus,1758)، وكارانجيداي : الخورير الأزرق *Trachurus mediterraneus* (Steindachner 1863)، والصوريل (*Trachurus picturatus* Bowdich,1825)، والخوريل (Trachurus trachurus, Linnaeus 1758) المستخرجة من خليج وهران في الأبيض المتوسط الغربي. ويعرض هذا البحث للمرة الأولى بخصوص هذه المنطقة من البحر الأبيض المتوسط للمساهمة والمساعدة في دراسات مقارنة النمو. تم جمع العينات من مصائد الأسماك في خليج وهران في الجزائر. قيم الميل ب في العلاقة طول الوزن $W = aL^b$، تراوحت بين ٢,٨٤١ و ٣,٢٩٦ . أما معاملات الارتباط r^2 فتراوحت قيمتها ما بين ٠,٨٥ و ٠,٩٧. تمت مقارنة المعاملات "أ" و "ب" مع مواقع الصيد الأخرى لأنواع الأسماك نفسها باستعمال المعادلة البيانية [Froese plot Log a=*f*(b)].

الكلمات الدالة: علاقة الطول بالوزن ;*Trachurus mediterraneus* ; *Trachurus picturatus*; *Mullus barbatus*; *Mullus surmuletus*; *Trachurus trachurus*; *Boops boops*; *Pagellus; acarne*; خليج وهران، الجزائر.