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## Comparative Study of the Length-Weight Relationships of Some Fish Species along the Turkish Coasts

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### Abstract

This study presents 738 length-weight relationships for 242 species found in Turkish seas. All length-weight relationships presented were collected from a total of 33 studies. These studies were all performed in Turkish coastal waters between 1997 and 2013. For all studies, the median of  $a$  value was calculated as 0.014 and the median of  $b$  value was calculated as 3.016.

**Keywords:** Weight-Length Relationships, Black Sea, Mediterranean Sea, Marmara Sea, Aegean Sea, Turkish marine waters.

### Introduction

Length weight relationship (LWR) studies have an important role in estimating population biomass, growth rate determination, determining the stock status of fishes and in many other subjects (Pauly, 1983; Safran, 1992; Petrakis & Stergiou, 1995; Gonçalves *et al.*, 1997; Stergiou & Moutopoulos, 2001; Morey *et al.*, 2003; Torcu-Koç *et al.*, 2006). These also carry a significant importance for Fishbase (Froese & Pauly, 2014). The number of these studies has been steadily increasing and this makes the functions of databases like Fishbase more comprehensible (Froese *et al.*, 2011). Despite this importance, the number of comparative studies on LWR has remained quite low. No studies other than Stergiou & Moutopoulos, (2001), Froese, (2006), Torcu-Koç *et al.*, (2008), Froese *et al.*, (2011) and Froese *et al.*, (2014) have been found in literature. Among these studies, Stergiou & Moutopoulos, (2001) has gathered the LWR data of fishes in Greek waters, and Torcu-Koç *et al.*, (2008) has gathered the LWR data of a limited number of lessepsian fishes in Turkish waters. Froese, (2006) and Froese *et al.*, (2014) had analysed the length-weight relationships of all fishes available on the Fishbase website using meta-analysis and Bayesian methods. Froese *et al.*, (2011), on the other hand, lists the important issues that must be considered during the preparation of length-weight relationships for publication.

Turkey is a country with four different marine systems. All four marine systems have different ecological characteristics. Even though there had been many LWR studies on those four seas, except for Torcu-Koç *et al.*, (2008) where LWR of 24 different lessepsian fish spe-

cies were gathered, no wide scale and comparative study was discovered. In this study, a total of 738 LWR for 242 different fish species were examined for Turkish marine waters.

### Materials and Method

All LWR in this study were gathered from a total of 33 studies performed between the years 1997-2013 in the seas of Turkey (Table 1). The studies were evaluated in four main marine regions: Black Sea, Marmara, Aegean and Mediterranean. Some of studies presented length and weight in units other than in centimeters and grams. According to Froese, (2006) this did not affect  $b$  value, but the intercept  $a$  needed to be converted with the following equation:

$$a' = a10^b \text{ (if length was given in mm and weight in g)}$$

Different length measurements types also affect  $a$  but not  $b$ ; especially, for the same sample,  $a$  increases from total- to fork to standard length (Froese, 2006). For this reason studies were classified for length type and analyzed separately. The descriptive statistics of  $a$ ,  $b$  and  $r^2$  values estimated by LWR were given for all length type separately. Both LWR parameters,  $a$  and  $b$ , were tested at the family level and compared per study area using one way variance analysis (ANOVA). In the cases when ANOVA results are significant, Duncan multiple comparison test was used to determine which group this difference comes from (Zar, 1999; Gündoğdu, 2014). To determine the similarities of families with regards to  $a$  and  $b$  values, hierarchical clustering based on Euclidian distance was applied and Ward's method was used (Gor-

don, 1999). The  $b$  value is 3 or around 3 for the majority of fishes (Tesch, 1968).  $b=3$  means the fish demonstrates isometric growth, and situations to the contrary are taken to be allometric growth ( $b<3$ : negative allometry,  $b>3$ : positive allometry). For determination of whether  $b$  value is different from 3, student t-test was applied.

Joint LWR equations on the family level for each length type were estimated with the help of the median values of the  $a$  and  $b$  parameters of each family. The correlation between  $a$  and  $b$  parameters was calculated with the help of the Pearson correlation multiplier for all species together. Froese, (2000) recommend the application of a scatter plot between  $\log(a)$  and  $b$  to demonstrate the interdependency between  $a$  and  $b$  parameters.

A scatter plot between  $\log(a)$  and  $b$  values was drawn for most reported species to determine the outlier values present in LWR, from, which outliers should be identified and those relationships must be considered problematic (Stergiou & Moutopoulos, 2001; Froese, 2000).

All statistical analysis was performed using the IBM SPSS v20 and R package software and the level of significance was determined as 5%.

## Results

The  $a$ ,  $b$ ,  $a'$ ,  $R^2$ , fishing method, year of sampling,  $L_{min}$ ,  $L_{max}$  location where study conducted and the season of sampling of each species, are given in Table 1, 2 and 3. The highest number of studies were performed in the Aegean Sea ( $n=15$ ) and the lowest number were performed in the Black Sea ( $n=3$ ) (Table 4). Table 1 shown that 236 species were studied with total length, table 2 shown that 40 species were studied with fork length and table 3 shown that 9 species were studied with disc width. The highest number of LWR studies were performed for Sparidae (13.7%,  $n=101$ ) and *Mullus barbatus* (2%,  $n=15$ ).

Graphs for  $b$  values for all length-weight relationships (for each length type separately) are shown in Figure 1 after excluding questionable records. The median values  $b$  was calculated as 3.05 for total length, 3.009 for fork length and 3.05 for disc width. For all LWR  $b$  values were not different from 3 ( $p>0.05$ ).

Three significantly different ( $p<0.05$ ) groups of species were formed as a result of the hierarchical clustering analysis based on the median values of  $a$  and  $b$  parameters after excluding questionable records (Fig. 2).

The LWR equation estimated from all studies was determined as,

$$W=0.009L^{3.05}(n=640,r^2=0.99, \text{ total length})$$

$$W=0.0165L^{3.009}(n=56,r^2=0.99, \text{ fork length})$$

$$W=0.0169L^{3.05}(n=13,r^2=0.99, \text{ disc width})$$

Significant ( $p<0.05$ ; Fig. 3) correlation value were calculated for all families as -0.417.  $\log(a)$ - $b$  scatter plot

for all families, it was discovered that the grouping is mostly around 3 (Fig. 3).

Some of species that have more than ten LWR and that have outliers are considered. It was determined that *M. merluccius* had two outliers and the others had one outlier each (Fig. 4).

Considering the seasons in which the studies were performed, it is noted that 25 studies were performed with samples gathered over a period of one year while the remaining 8 studies were performed only during a specific period of the year (Table 1, 2 and 3).

## Discussion

In Turkish waters 512 fish species have been reported (Bilecenoğlu *et al.*, 2014). Among these species, Gobiidae (43 species), Sparidae (21 species), Blenniidae (20 species) and Labridae (20 species) families are represented by the highest numbers of species. However, the numbers of species focused on by the studies gathered by this study doesn't match Bilecenoğlu *et al.*, (2014) except for Sparidae. The main reason for this is the preference of the trawling method of fishing for the studies gathered in this study, as this prevents the sampling of the fish species living in coastal waters. Considering catching methods of studies gathered in this study, most of studies used trawl as sampling method (Table 1, 2 and 3). For example, most species belonging to the Gobiidae family live in coastal waters. Thus, it is not possible for these species to be caught by sampling performed using trawl fishing methods (Miller, 1986). When the most heavily studied species are examined, it can be seen that these species match with the ones that are most heavily fished or that are most prominent among the fishes caught using the trawl fishing methods. In fact, the target species and by-catch compositions of fisheries in all four seas are parallel to these three species (Özbilgin & Tosunoğlu, 2003; Özbilgin *et al.*, 2006; Yazıcı *et al.*, 2006; Atar & Malal, 2010; Ceylan *et al.*, 2013).

$b$  value varies between 1.19 (*Cepola macroptalma*, from Demirel & Dalkara, 2012) and 4.15 (*Raja miraletus* from Filiz & Bilge, 2004) for all species. Also, 95% of these values vary between 2.99 and 3.028, which mean the median value of 3 accepted for all fish species is a relevant value. The study performed by Froese, (2006) on all fishes included in Fishbase demonstrates that a range close to this (2.94-3.07) is applicable for 95% of all fishes. Indeed, the t-test performed and given above shows that when all values are considered,  $b$  values aren't different from 3. This also matches the 2.5-3.5 range given by Froese, (2006) and Carlander, (1997) for the  $b$  value. However, there are also species with exceptional  $b$  values such as *C. macroptalma* and *R. miraletus*. It is already supposed that the families that these two mentioned species belong to were placed in different clusters as a result

**Table 1.** Parameters of the length-weight relationship [weight (in g) and length (in cm and total length)] of marine fish species from Turkish marine waters. (M, male; F, female; C, combined); Location= Place where study conducted (AS, Aegean Sea; BS, Black Sea; MS, Marmara Sea; Medit, Mediterranean Sea); Year= year of sampling; Season = sampling season (ASC, all seasons combined; F-W, Fall-Winter; W-S, Winter-Spring); FM= fishing method (T, trawl; L, Longline; BS, beach seine; GN, gill nets; TR, trammel); a= the intercept of the relationship provided by source; a' = the original standardized intercept corresponding to cm, g (this is calculated only for length given in mm); b= the slope of the relationship; = coefficient of determination; n= the sample size; Species are listed in alphabetical order.

| Season | Location | Species                         | N    | Sex | Year      | FM         | a       | a'     | b    | Source |                                 |
|--------|----------|---------------------------------|------|-----|-----------|------------|---------|--------|------|--------|---------------------------------|
| ASC    | MS       | <i>Aidablennius sphyinx</i>     | 12   | C   | 2007      | BS         | 0.00820 |        | 3.11 | 0.99   | Ozen et al. (2009)              |
| ASC    | Medit    | <i>Alepes djedaba</i> **        | 70   | C   | 1997-1998 | T-GN       | 0.00075 | 0.4883 | 2.82 | 0.86   | Taskavak and Bilecenoglu (2001) |
| ASC    | AS       | <i>Alosa fallax</i>             | 32   | C   | 2004-2005 | GN-TR      | 0.01020 |        | 2.93 | 0.88   | Karakulak et al. (2006)         |
| F-W    | BS       | <i>Alosa pontica</i>            | 227  | C   | 2004-2005 | T          | 0.00460 |        | 3.12 | 0.94   | Kalaycı et al. (2007)           |
| ASC    | AS       | <i>Anthias anthias</i>          | 16   | C   | 2005-2006 | T          | 0.02500 |        | 3.02 | 0.98   | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Aphanius fasciatus</i>       | 143  | C   | 1998-2001 | TR-GN-T-BS | 0.00600 |        | 3.53 | 0.97   | Ozaydin and Taskavak (2006)     |
| ASC    | AS       | <i>Apogon imberbis</i>          | 12   | C   | 2004-2005 | GN-TR      | 0.11350 |        | 2.12 | 0.69   | Karakulak et al. (2006)         |
| Winter | Medit    | <i>Apogon nigripinnis</i>       | 30   | C   | 2007-2008 | T          | 0.04840 |        | 2.49 | 0.98   | Erguden et al. (2009)           |
| ASC    | Medit    | <i>Apogon nigripinnis</i> **    | 22   | C   | 1997-1998 | T-GN       | 0.00002 | 0.0203 | 3.00 | 0.99   | Taskavak and Bilecenoglu (2001) |
| Fall   | AS       | <i>Apogon queketti</i>          | 11   | C   | 2011      | T          | 0.08690 |        | 3.06 | 0.92   | Yapıcı et al. (2015)            |
| Winter | Medit    | <i>Apogon queketti</i>          | 48   | C   | 2007-2008 | T          | 0.01570 |        | 3.06 | 0.95   | Erguden et al. (2009)           |
| Spring | AS       | <i>Argentina sphyraena</i>      | 238  | C   | 2003      | T          | 0.00620 |        | 2.93 | 0.93   | Filiz and Bilge (2004)          |
| ASC    | AS       | <i>Argentina sphyraena</i>      | 92   | C   | 2005-2006 | T          | 0.00426 |        | 3.08 | 0.98   | Ismen et al. (2007)             |
| ASC    | Medit    | <i>Argyroteleus hemigymnus</i>  | 27   | C   | 2009-2011 | T          | 0.00420 |        | 3.59 | 0.87   | Deval et al. (2014)             |
| ASC    | AS       | <i>Arnoglossus imperialis</i>   | 36   | C   | 2006-2008 | T          | 0.00390 |        | 3.30 | 0.94   | Ozekinci et al. (2009)          |
| ASC    | MS       | <i>Arnoglossus kessleri</i> *** | 24   | C   | 2000-2001 | L-BS       | 0.00004 | 0.1221 | 3.47 | 0.97   | Keskin and Gaygusuz (2010)      |
| ASC    | BS       | <i>Arnoglossus kessleri</i>     | 60   | C   | 2007      | T          | 0.02100 |        | 2.98 | 0.73   | Ak et al. (2009)                |
| ASC    | AS       | <i>Arnoglossus kessleri</i>     | 7    | C   | 2005-2006 | T          | 0.01850 |        | 2.74 | 0.96   | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Arnoglossus kessleri</i>     | 76   | C   | 2002      | T          | 0.01790 |        | 2.60 | 0.88   | Bayhan et al. (2008)            |
| ASC    | MS       | <i>Arnoglossus kessleri</i>     | 44   | C   | 2007      | BS         | 0.00673 |        | 3.15 | 0.97   | Ozen et al. (2009)              |
| ASC    | AS       | <i>Arnoglossus kessleri</i> *   | 32   | C   | 1997-2000 | T          | 0.00004 |        | 3.12 | 0.94   | Türker et al. (2008)            |
| ASC    | MS       | <i>Arnoglossus laterna</i> **   | 7    | C   | 2000-2001 | L-BS       | 0.00207 | 0.9682 | 2.67 | 0.98   | Keskin and Gaygusuz (2010)      |
| ASC    | AS       | <i>Arnoglossus laterna</i>      | 8    | C   | 2004-2005 | GN-TR      | 0.01500 |        | 2.75 | 0.99   | Karakulak et al. (2006)         |
| ASC    | MS       | <i>Arnoglossus laterna</i> *    | 328  | C   | 2009-2011 | T          | 0.01300 |        | 2.79 | 0.87   | Demirel and Dalkara (2012)      |
| ASC    | Medit    | <i>Arnoglossus laterna</i>      | 291  | C   | 2001-2003 | T-L        | 0.01220 |        | 2.84 | 0.95   | Sangun et al. (2007)            |
| ASC    | AS       | <i>Arnoglossus laterna</i>      | 1078 | C   | 2005      | T          | 0.00970 |        | 2.91 | 0.96   | Ozaydin et al. (2007)           |
| ASC    | Medit    | <i>Arnoglossus laterna</i>      | 594  | C   | 1999-2000 | T          | 0.00800 |        | 3.01 | 0.97   | Çiçek et al. (2006)             |
| ASC    | AS       | <i>Arnoglossus laterna</i>      | 796  | C   | 2002      | T          | 0.00730 |        | 3.01 | 0.97   | Bayhan et al. (2008)            |
| ASC    | AS       | <i>Arnoglossus laterna</i>      | 1805 | C   | 2005-2006 | T          | 0.00719 |        | 3.01 | 0.98   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Arnoglossus laterna</i>      | 1629 | C   | 2005-2006 | T          | 0.00710 |        | 3.05 | 0.97   | İlkyaz et al. (2008)            |
| F-W    | MS       | <i>Arnoglossus laterna</i>      | 58   | C   | 2006-2007 | T          | 0.00680 |        | 3.02 | 0.96   | Bok et al. (2011)               |

(continued)

Table 1. (Continued)

| Season | Location | Species                       | N    | Sex | Year      | FM         | a    | a'   | b       | Source |      |                             |
|--------|----------|-------------------------------|------|-----|-----------|------------|------|------|---------|--------|------|-----------------------------|
| ASC    | AS       | <i>Arnoglossus laterna</i>    | 721  | C   | 1998-2001 | TR-GN-T-BS | 6.8  | 21.9 | 0.00520 | 3.17   | 0.96 | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Arnoglossus laterna</i>    | 57   | C   | 2006-2008 | T          | 8.8  | 20.2 | 0.0046  | 3.18   | 0.98 | Ozekinci et al. (2009)      |
| ASC    | AS       | <i>Arnoglossus laterna</i>    | 328  | C   | 1997-2000 | T          | 55   | 205  | 0.0002  | 3.24   | 0.97 | Türker et al. (2008)        |
| ASC    | AS       | <i>Arnoglossus rueppelli</i>  | 13   | C   | 2006-2008 | T          | 7.5  | 16.2 | 0.0081  | 2.92   | 0.95 | Ozekinci et al. (2009)      |
| ASC    | AS       | <i>Arnoglossus thori</i>      | 6    | C   | 2002      | T          | 19.6 | 29.5 | 0.0442  | 2.16   | 0.95 | Bayhan et al. (2008)        |
| ASC    | AS       | <i>Arnoglossus thori</i>      | 20   | C   | 2005      | T          | 6.1  | 7.9  | 0.0288  | 2.48   | 0.98 | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Arnoglossus thori</i>      | 8    | C   | 2004-2005 | GN-TR      | 8.5  | 11.2 | 0.0068  | 3.12   | 0.96 | Karakulak et al. (2006)     |
| ASC    | AS       | <i>Arnoglossus thori</i>      | 371  | C   | 2005-2006 | T          | 29   | 51.3 | 0.0054  | 3.26   | 0.96 | İlkyaz et al. (2008)        |
| ASC    | AS       | <i>Arnoglossus thori</i>      | 15   | C   | 2006-2008 | T          | 8    | 13.1 | 0.0026  | 3.56   | 0.96 | Ozekinci et al. (2009)      |
| ASC    | AS       | <i>Arnoglossus thori</i> *    | 170  | C   | 1997-2000 | T          | 65   | 225  | 0.0001  | 2.95   | 0.93 | Türker et al. (2008)        |
| ASC    | MS       | <i>Atherina boyeri</i> **     | 606  | C   | 2000-2001 | L-BS       | 2.5  | 11.2 | 0.0005  | 0.7383 | 0.97 | Keskin and Gaygusuz (2010)  |
| F-W    | MS       | <i>Atherina boyeri</i>        | 14   | C   | 2006-2007 | T          | 7.6  | 11.7 | 0.0015  | 3.49   | 0.99 | Bok et al. (2011)           |
| ASC    | MS       | <i>Atherina hepsetus</i> **   | 65   | C   | 2000-2001 | L-BS       | 2.7  | 14.8 | 0.0004  | 0.6371 | 0.98 | Keskin and Gaygusuz (2010)  |
| Fall   | AS       | <i>Aulopus filamentosus</i>   | 11   | C   | 2011      | T          | 23.7 | 32.8 | 0.0065  | 3.10   | 0.99 | Yapıcı et al. (2015)        |
| ASC    | Medit    | <i>Balistes caprisicus</i>    | 123  | C   | 2001-2003 | T-L        | 5.9  | 40.9 | 0.0678  | 2.43   | 0.89 | Sangun et al. (2007)        |
| ASC    | MS       | <i>Belone belone</i> **       | 10   | C   | 2000-2001 | L-BS       | 3.4  | 12   | 0.0003  | 2.28   | 0.95 | Keskin and Gaygusuz (2010)  |
| ASC    | AS       | <i>Belone belone</i>          | 416  | C   | 1998-2001 | TR-GN-T-BS | 26   | 60.5 | 0.0003  | 3.37   | 0.93 | Ozaydin and Taskavak (2006) |
| ASC    | Medit    | <i>Blennius ocellaris</i>     | 31   | C   | 2001-2003 | T-L        | 6.8  | 17.2 | 0.0411  | 2.61   | 0.95 | Sangun et al. (2007)        |
| F-W    | MS       | <i>Blennius ocellaris</i>     | 15   | C   | 2006-2007 | T          | 11.2 | 13.7 | 0.0381  | 2.56   | 0.97 | Bok et al. (2011)           |
| ASC    | AS       | <i>Blennius ocellaris</i>     | 23   | C   | 2005      | T          | 9.2  | 14.3 | 0.0183  | 2.91   | 0.97 | Ozaydin et al. (2007)       |
| ASC    | Medit    | <i>Blennius ocellaris</i>     | 43   | C   | 1999-2000 | T          | 4.1  | 9.6  | 0.0172  | 2.89   | 0.97 | Çiçek et al. (2006)         |
| ASC    | AS       | <i>Blennius ocellaris</i>     | 36   | C   | 2005-2006 | T          | 7    | 14.2 | 0.0169  | 2.93   | 0.93 | Ismen et al. (2007)         |
| ASC    | AS       | <i>Blennius ocellaris</i>     | 204  | C   | 2005-2006 | T          | 23.9 | 45.1 | 0.0167  | 2.97   | 0.98 | İlkyaz et al. (2008)        |
| F-W    | AS       | <i>Boops boops</i>            | 32   | C   | 2006      | TR-L       | 21.4 | 16.5 | 0.0085  | 3.09   | 0.95 | Ceyhan et al. (2009)        |
| ASC    | Medit    | <i>Boops boops</i> *          | 124  | C   | 2012-2013 | T          | 10   | 20.2 | 0.0139  | 2.82   | 0.88 | Özvarol (2014)              |
| ASC    | Medit    | <i>Boops boops</i>            | 391  | C   | 1999-2000 | T          | 7.5  | 21.4 | 0.00800 | 3.05   | 0.95 | Çiçek et al. (2006)         |
| ASC    | Medit    | <i>Boops boops</i>            | 172  | C   | 2001-2003 | T-L        | 11.2 | 21.1 | 0.00720 | 3.08   | 0.93 | Sangun et al. (2007)        |
| ASC    | AS       | <i>Boops boops</i>            | 39   | C   | 2005      | T          | 11.3 | 16.7 | 0.00570 | 3.35   | 0.96 | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Boops boops</i>            | 378  | C   | 2005-2006 | T          | 24.5 | 37.4 | 0.00500 | 3.24   | 0.97 | İlkyaz et al. (2008)        |
| ASC    | AS       | <i>Boops boops</i>            | 518  | C   | 2004-2005 | GN-TR      | 10.2 | 32.1 | 0.00480 | 3.26   | 0.95 | Karakulak et al. (2006)     |
| ASC    | AS       | <i>Boops boops</i>            | 189  | C   | 2005-2006 | T          | 10.5 | 22   | 0.00450 | 3.24   | 0.96 | Ismen et al. (2007)         |
| ASC    | AS       | <i>Boops boops</i> *          | 1231 | C   | 1997-2000 | T          | 94   | 221  | 0.00011 | 2.92   | 0.87 | Türker et al. (2008)        |
| ASC    | Medit    | <i>Bothus podas</i>           | 90   | C   | 2001-2003 | T-L        | 6.2  | 15.7 | 0.00960 | 3.00   | 0.92 | Sangun et al. (2007)        |
| ASC    | Medit    | <i>Bothus podas</i>           | 1498 | C   | 1999-2000 | T          | 4.2  | 17.3 | 0.00900 | 3.10   | 0.98 | Çiçek et al. (2006)         |
| ASC    | AS       | <i>Bothus podas</i>           | 17   | C   | 2005      | T          | 11   | 18.7 | 0.00400 | 3.39   | 0.98 | Ozaydin et al. (2007)       |
| ASC    | Medit    | <i>Bregmaceros atlanticus</i> | 16   | C   | 2001-2003 | T-L        | 5.95 | 7.6  | 0.00320 | 3.29   | 0.83 | Sangun et al. (2007)        |

(continued)

Table 1. (Continued)

| Season | Location | Species                           | N   | Sex | Year      | FM         | a       | a'     | b    | Source |                                 |
|--------|----------|-----------------------------------|-----|-----|-----------|------------|---------|--------|------|--------|---------------------------------|
| ASC    | AS       | <i>Buglossidium luteum</i>        | 28  | C   | 2002      | T          | 0.02400 |        | 2.57 | 0.79   | Bayhan et al. (2008)            |
| F-W    | MS       | <i>Buglossidium luteum</i>        | 27  | C   | 2006-2007 | T          | 0.01950 |        | 2.62 | 0.97   | Bok et al. (2011)               |
| ASC    | AS       | <i>Buglossidium luteum</i>        | 123 | C   | 2005      | T          | 0.01500 |        | 2.82 | 0.89   | Ozaydin et al. (2007)           |
| ASC    | AS       | <i>Buglossidium luteum</i>        | 862 | C   | 2005-2006 | T          | 0.00910 |        | 3.06 | 0.96   | İlkyaz et al. (2008)            |
| ASC    | MS       | <i>Buglossidium luteum</i>        | 55  | C   | 2009-2011 | T          | 0.00500 |        | 3.02 | 0.90   | Demirel and Dalkara (2012)      |
| Spring | AS       | <i>Caelorinchus caelorhincus</i>  | 208 | C   | 2003      | T          | 0.00650 |        | 2.74 | 0.78   | Filiz and Bilge (2004)          |
| ASC    | AS       | <i>Caelorinchus caelorhincus</i>  | 332 | C   | 2005-2006 | T          | 0.00347 |        | 3.02 | 0.91   | Ismen et al. (2007)             |
| Fall   | AS       | <i>Callanthias ruber</i>          | 44  | C   | 2011      | T          | 0.02430 |        | 2.48 | 0.99   | Yapıcı et al. (2015)            |
| Winter | Medit    | <i>Callionymus filamentosus</i>   | 43  | C   | 2007-2008 | T          | 0.03230 |        | 2.51 | 0.93   | Erguden et al. (2009)           |
| ASC    | Medit    | <i>Callionymus filamentosus**</i> | 92  | C   | 1997-1998 | T-GN       | 0.00003 | 0.0181 | 2.84 | 0.96   | Taskavak and Bilecenoglu (2001) |
| ASC    | MS       | <i>Callionymus lyra</i>           | 99  | C   | 2009-2011 | T          | 0.02100 |        | 2.55 | 0.92   | Demirel and Dalkara (2012)      |
| F-W    | MS       | <i>Callionymus lyra</i>           | 87  | C   | 2006-2007 | T          | 0.00870 |        | 2.83 | 0.97   | Bok et al. (2011)               |
| ASC    | AS       | <i>Callionymus maculatus</i>      | 49  | C   | 2005-2006 | T          | 0.00660 |        | 3.13 | 0.98   | İlkyaz et al. (2008)            |
| ASC    | MS       | <i>Callionymus pusillus</i>       | 20  | C   | 2007      | BS         | 0.03137 |        | 2.00 | 0.98   | Ozen et al. (2009)              |
| ASC    | MS       | <i>Callionymus risso**</i>        | 13  | C   | 2000-2001 | L-BS       | 0.00137 | 0.6946 | 2.71 | 0.94   | Keskin and Gaygusuz (2010)      |
| ASC    | MS       | <i>Callionymus risso</i>          | 42  | C   | 2007      | BS         | 0.01407 |        | 2.71 | 0.97   | Ozen et al. (2009)              |
| F-W    | MS       | <i>Callionymus risso</i>          | 15  | C   | 2006-2007 | T          | 0.00790 |        | 2.93 | 1.00   | Bok et al. (2011)               |
| Spring | AS       | <i>Capros aper</i>                | 455 | C   | 2003      | T          | 0.02320 |        | 2.83 | 0.98   | Filiz and Bilge (2004)          |
| ASC    | AS       | <i>Capros aper</i>                | 35  | C   | 2005-2006 | T          | 0.01445 |        | 3.08 | 0.96   | Ismen et al. (2007)             |
| F-W    | Medit    | <i>Caranx crysos</i>              | 21  | C   | 2008-2009 | GN-TR      | 0.01000 |        | 3.00 | 0.94   | Gokce et al. (2010)             |
| ASC    | Medit    | <i>Centracanthus cirrus</i>       | 102 | C   | 1999-2000 | T          | 0.00810 |        | 3.04 | 0.95   | Çiçek et al. (2006)             |
| ASC    | MS       | <i>Cepola macrophthalmalma</i>    | 20  | C   | 2009-2011 | T          | 0.33900 |        | 1.19 | 0.85   | Demirel and Dalkara (2012)      |
| F-W    | MS       | <i>Cepola macrophthalmalma</i>    | 17  | C   | 2006-2007 | T          | 0.09340 |        | 1.51 | 0.84   | Bok et al. (2011)               |
| ASC    | AS       | <i>Cepola macrophthalmalma</i>    | 881 | C   | 2005      | T          | 0.07410 |        | 1.67 | 0.91   | Ozaydin et al. (2007)           |
| ASC    | AS       | <i>Cepola macrophthalmalma</i>    | 635 | C   | 2005-2006 | T          | 0.07160 |        | 1.65 | 0.97   | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Cepola macrophthalmalma</i>    | 136 | C   | 2005-2006 | T          | 0.03461 |        | 1.85 | 0.92   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Cepola macrophthalmalma</i>    | 254 | C   | 1998-2001 | TR-GN-T-BS | 0.02030 |        | 1.97 | 0.98   | Ozaydin and Taskavak (2006)     |
| ASC    | AS       | <i>Cepola rubescens</i>           | 356 | C   | 1997-2000 | T          | 0.13790 |        | 1.44 | 0.88   | Türker et al. (2008)            |
| ASC    | MS       | <i>Chalaroderma ocellata</i>      | 21  | C   | 2009-2011 | T          | 0.01800 |        | 2.86 | 0.90   | Demirel and Dalkara (2012)      |
| Fall   | AS       | <i>Champsodon nudivittis</i>      | 111 | C   | 2011      | T          | 0.00490 |        | 3.15 | 0.97   | Yapıcı et al. (2015)            |
| ASC    | AS       | <i>Chelidonichthys gurnardu</i>   | 304 | C   | 1997-2000 | T          | 0.00006 |        | 3.08 | 0.95   | Türker et al. (2008)            |
| ASC    | Medit    | <i>Chelidonichthys lastoviza</i>  | 28  | C   | 2012-2013 | T          | 0.02720 |        | 2.64 | 0.97   | Özvarol (2014)                  |
| ASC    | AS       | <i>Chelidonichthys lastoviza</i>  | 88  | C   | 2005-2006 | T          | 0.01056 |        | 3.00 | 0.92   | Ismen et al. (2007)             |
| ASC    | Medit    | <i>Chelidonichthys lastoviza</i>  | 75  | C   | 2001-2003 | T-L        | 0.00850 |        | 3.08 | 0.99   | Sanguun et al. (2007)           |
| ASC    | AS       | <i>Chelidonichthys lastoviza</i>  | 67  | C   | 2005-2006 | T          | 0.00800 |        | 3.13 | 0.97   | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Chelidonichthys lastoviza</i>  | 7   | C   | 2004-2005 | GN-TR      | 0.00430 |        | 3.33 | 0.85   | Karakulak et al. (2006)         |

(continued)

Table 1. (Continued)

| Season | Location | Species                            | N    | Sex | Year      | FM         | a    | a'      | b    | Source |                             |
|--------|----------|------------------------------------|------|-----|-----------|------------|------|---------|------|--------|-----------------------------|
| ASC    | AS       | <i>Chelidonichthys lastoviza</i> * | 128  | C   | 1997-2000 | T          | 780  | 0.00011 | 3.04 | 0.96   | Türker et al. (2008)        |
| ASC    | MS       | <i>Chelidonichthys lucerna</i> *** | 17   | C   | 2000-2001 | L-BS       | 6.3  | 0.00113 | 2.90 | 0.98   | Keskin and Gaygusuz (2010)  |
| ASC    | Medit    | <i>Chelidonichthys lucerna</i>     | 474  | C   | 2001-2003 | T-L        | 6.7  | 0.01660 | 2.74 | 0.95   | Sangun et al. (2007)        |
| ASC    | Medit    | <i>Chelidonichthys lucerna</i>     | 137  | C   | 1999-2000 | T          | 2.2  | 0.01350 | 2.85 | 0.99   | Çiçek et al. (2006)         |
| F-W    | Medit    | <i>Chelidonichthys lucerna</i>     | 3    | C   | 2008-2009 | GN-TR      | 9.5  | 0.01060 | 2.92 | 0.99   | Gokce et al. (2010)         |
| F-W    | MS       | <i>Chelidonichthys lucerna</i>     | 90   | C   | 2006-2007 | T          | 8    | 0.01000 | 2.98 | 0.98   | Bok et al. (2011)           |
| ASC    | AS       | <i>Chelidonichthys lucerna</i>     | 829  | C   | 2005-2006 | T          | 12.5 | 0.00960 | 2.93 | 0.98   | Ismen et al. (2007)         |
| ASC    | MS       | <i>Chelidonichthys lucerna</i>     | 352  | C   | 2009-2011 | T          | 10.5 | 0.00900 | 3.00 | 0.98   | Demirel and Dalkara (2012)  |
| ASC    | AS       | <i>Chelidonichthys lucerna</i>     | 121  | C   | 2005-2006 | T          | 24.1 | 0.00430 | 3.24 | 0.99   | İlkyaz et al. (2008)        |
| ASC    | MS       | <i>Chelon labrosus</i> **          | 6    | C   | 2000-2001 | L-BS       | 3.6  | 0.00071 | 3.18 | 1.00   | Keskin and Gaygusuz (2010)  |
| Spring | AS       | <i>Chimaera monstrosa</i>          | 17   | C   | 2003      | T          | 13.1 | 0.00280 | 2.82 | 0.98   | Filiz and Bilge (2004)      |
| Spring | AS       | <i>Chlorophthalmus agassizi</i>    | 378  | C   | 2003      | T          | 7.7  | 0.00270 | 3.37 | 0.98   | Filiz and Bilge (2004)      |
| ASC    | AS       | <i>Chromis chromis</i>             | 141  | C   | 2004-2005 | GN-TR      | 8.7  | 0.02750 | 2.70 | 0.79   | Karakulak et al. (2006)     |
| ASC    | AS       | <i>Citharus linguatula</i>         | 409  | C   | 1998-2001 | TR-GN-T-BS | 8.4  | 0.05400 | 2.31 | 0.92   | Ozaydin and Taskavak (2006) |
| ASC    | MS       | <i>Citharus linguatula</i>         | 108  | C   | 2009-2011 | T          | 7.3  | 0.02900 | 2.83 | 0.92   | Demirel and Dalkara (2012)  |
| ASC    | Medit    | <i>Citharus linguatula</i>         | 44   | C   | 2012-2013 | T          | 8    | 0.01330 | 2.78 | 0.92   | Özvarol (2014)              |
| ASC    | Medit    | <i>Citharus linguatula</i>         | 338  | C   | 2001-2003 | T-L        | 6.5  | 0.01140 | 2.82 | 0.98   | Sangun et al. (2007)        |
| ASC    | AS       | <i>Citharus linguatula</i>         | 1755 | C   | 2006-2008 | T          | 8.2  | 0.00610 | 3.07 | 0.97   | Ozekinci et al. (2009)      |
| ASC    | Medit    | <i>Citharus linguatula</i>         | 922  | C   | 1999-2000 | T          | 3.5  | 0.00580 | 3.08 | 0.98   | Çiçek et al. (2006)         |
| ASC    | AS       | <i>Citharus linguatula</i>         | 1513 | C   | 2005-2006 | T          | 8.9  | 0.00540 | 3.13 | 0.99   | İlkyaz et al. (2008)        |
| ASC    | AS       | <i>Citharus linguatula</i>         | 1724 | C   | 2005      | T          | 8.2  | 0.00530 | 3.12 | 0.96   | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Citharus linguatula</i>         | 716  | C   | 2002      | T          | 8.2  | 0.00480 | 3.14 | 0.99   | Bayhan et al. (2008)        |
| ASC    | AS       | <i>Citharus linguatula</i>         | 8    | C   | 2004-2005 | GN-TR      | 15.1 | 0.00090 | 3.73 | 0.95   | Karakulak et al. (2006)     |
| ASC    | AS       | <i>Citharus linguatula</i> *       | 1236 | C   | 1997-2000 | T          | 69   | 0.00002 | 3.26 | 0.98   | Türker et al. (2008)        |
| ASC    | MS       | <i>Clinirachus argentatus</i>      | 99   | C   | 2007      | BS         | 2.6  | 0.00602 | 3.09 | 0.97   | Ozen et al. (2009)          |
| Spring | AS       | <i>Conger conger</i>               | 22   | C   | 2003      | T          | 32.2 | 0.00050 | 3.24 | 0.96   | Filiz and Bilge (2004)      |
| ASC    | AS       | <i>Conger conger</i>               | 25   | C   | 2005-2006 | T          | 40.1 | 0.00039 | 3.32 | 0.95   | Ismen et al. (2007)         |
| ASC    | AS       | <i>Conger conger</i>               | 10   | C   | 2005      | T          | 37.2 | 0.00030 | 3.40 | 0.98   | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Conger conger</i>               | 8    | C   | 2004-2005 | GN-TR      | 20.9 | 0.00020 | 3.49 | 0.97   | Karakulak et al. (2006)     |
| ASC    | AS       | <i>Conger conger</i>               | 20   | C   | 2005-2006 | T          | 4.9  | 0.00010 | 3.60 | 0.99   | İlkyaz et al. (2008)        |
| ASC    | AS       | <i>Coris julis</i>                 | 35   | C   | 2004-2005 | GN-TR      | 13.4 | 0.00820 | 3.05 | 0.81   | Karakulak et al. (2006)     |
| ASC    | AS       | <i>Coris julis</i>                 | 183  | C   | 2005      | T          | 6.1  | 0.00680 | 3.11 | 0.98   | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Coris julis</i>                 | 16   | C   | 2005-2006 | T          | 16.4 | 0.00399 | 3.16 | 0.97   | Ismen et al. (2007)         |
| ASC    | Medit    | <i>Cynoglossus sinusarabici</i>    | 96   | C   | 2001-2003 | T-L        | 8.2  | 0.03080 | 2.41 | 0.91   | Sangun et al. (2007)        |
| Winter | Medit    | <i>Cynoglossus sinusarabici</i>    | 53   | C   | 2007-2008 | T          | 17.1 | 0.02390 | 2.52 | 0.98   | Erguden et al. (2009)       |
| ASC    | Medit    | <i>Cynoglossus sinusarabici</i>    | 235  | C   | 1999-2000 | T          | 4.5  | 0.00720 | 2.96 | 0.96   | Çiçek et al. (2006)         |

(continued)

Table 1. (Continued)

| Season | Location | Species                              | N    | Sex | Year      | FM    | a     | a'      | b      | Source |                                 |
|--------|----------|--------------------------------------|------|-----|-----------|-------|-------|---------|--------|--------|---------------------------------|
| ASC    | Medit    | <i>Cymoglossus sinusarabici</i> **   | 32   | C   | 1997-1998 | T-GN  | 13.3  | 0.0001  | 0.0024 | 2.48   | Taskavak and Bilecenoglu (2001) |
| ASC    | Medit    | <i>Dasyatis centroura</i>            | 4    | C   | 2009-2011 | T     | 141.1 | 0.00300 | 3.00   | 999.00 | Deval et al. (2014)             |
| ASC    | AS       | <i>Dasyatis pastinaca</i>            | 12   | C   | 2004-2005 | GN-TR | 29.2  | 0.11680 | 2.12   | 0.64   | Karakulak et al. (2006)         |
| Spring | AS       | <i>Dasyatis pastinaca</i>            | 29   | C   | 2003      | T     | 37.3  | 0.01490 | 2.81   | 0.85   | Filiz and Bilge (2004)          |
| ASC    | AS       | <i>Dasyatis pastinaca</i>            | 48   | C   | 2005-2006 | T     | 20.5  | 0.01259 | 3.30   | 0.99   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Dasyatis pastinaca</i>            | 14   | C   | 1999-2000 | T     | 40    | 0.00850 | 2.94   | 0.97   | Filiz and Mater (2002)          |
| ASC    | AS       | <i>Dasyatis pastinaca</i>            | 16   | C   | 2005      | T     | 44.2  | 0.00230 | 3.25   | 0.99   | Ozaydin et al. (2007)           |
| ASC    | Medit    | <i>Dasyatis pastinaca</i>            | 334  | C   | 1999-2003 | T     | 23.4  | 0.00200 | 3.24   | 0.97   | Yeldan and Avsar (2007)         |
| ASC    | AS       | <i>Dasyatis pastinaca</i>            | 71   | C   | 2005-2007 | T     | 37.5  | 0.00074 | 3.55   | 0.96   | Yigin and Ismen (2009)          |
| ASC    | AS       | <i>Deltentosteus quadrimaculatus</i> | 883  | C   | 2005-2006 | T     | 16.3  | 0.00400 | 3.41   | 0.95   | Ilkyaz et al. (2008)            |
| F-W    | AS       | <i>Dentex dentex</i>                 | 39   | C   | 2006      | TR-L  | 23.5  | 0.01050 | 3.06   | 0.98   | Ceyhan et al. (2009)            |
| Fall   | Medit    | <i>Dentex dentex</i>                 | 16   | C   | 2000      | L     | 31.4  | 0.08610 | 2.50   | 0.92   | Can et al. (2002)               |
| ASC    | AS       | <i>Dentex dentex</i>                 | 22   | C   | 2004-2005 | GN-TR | 16.8  | 0.01070 | 3.03   | 0.95   | Karakulak et al. (2006)         |
| F-W    | Medit    | <i>Dentex dentex</i>                 | 5    | C   | 2008-2009 | GN-TR | 15.9  | 0.00310 | 3.53   | 0.99   | Gokce et al. (2010)             |
| Fall   | Medit    | <i>Dentex gibbosus</i>               | 34   | C   | 2000      | L     | 17.68 | 0.03410 | 2.71   | 0.85   | Can et al. (2002)               |
| ASC    | AS       | <i>Dentex macrophthalms</i>          | 249  | C   | 2005-2006 | T     | 8.7   | 0.02100 | 2.89   | 0.99   | Ilkyaz et al. (2008)            |
| F-W    | AS       | <i>Dentex maroccanus</i>             | 8    | C   | 2006      | TR-L  | 18    | 0.11860 | 2.29   | 0.90   | Ceyhan et al. (2009)            |
| ASC    | AS       | <i>Dentex maroccanus</i>             | 146  | C   | 2005-2006 | T     | 14.2  | 0.02827 | 2.72   | 0.93   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Dentex maroccanus</i>             | 9    | C   | 2004-2005 | GN-TR | 18.9  | 0.00880 | 3.18   | 1.00   | Karakulak et al. (2006)         |
| ASC    | Medit    | <i>Diaphus metopoclampus</i>         | 7    | C   | 2009-2011 | T     | 6.6   | 0.01360 | 2.95   | 0.98   | Deval et al. (2014)             |
| F-W    | AS       | <i>Dicentrarchus labrax</i>          | 28   | C   | 2006      | TR-L  | 36.9  | 0.03590 | 2.68   | 0.96   | Ceyhan et al. (2009)            |
| F-W    | AS       | <i>Diplodus annularis</i>            | 159  | C   | 2006      | TR-L  | 14.8  | 0.01440 | 3.06   | 0.97   | Ceyhan et al. (2009)            |
| ASC    | MS       | <i>Diplodus annularis</i> **         | 7    | C   | 2000-2001 | L-BS  | 3.6   | 0.00134 | 1.7278 | 1.00   | Keskin and Gaygusuz (2010)      |
| ASC    | Medit    | <i>Diplodus annularis</i>            | 154  | C   | 2001-2003 | T-L   | 10.3  | 0.03700 | 2.68   | 0.90   | Sangun et al. (2007)            |
| F-W    | MS       | <i>Diplodus annularis</i>            | 15   | C   | 2006-2007 | T     | 7     | 0.02200 | 2.96   | 0.99   | Bok et al. (2011)               |
| ASC    | AS       | <i>Diplodus annularis</i>            | 159  | C   | 2002-2003 | L     | 9.5   | 0.01790 | 2.99   | 0.97   | Akyol et al. (2007)             |
| F-W    | Medit    | <i>Diplodus annularis</i>            | 33   | C   | 2008-2009 | GN-TR | 12.2  | 0.01730 | 2.97   | 0.91   | Gokce et al. (2010)             |
| ASC    | AS       | <i>Diplodus annularis</i>            | 108  | C   | 2005-2006 | T     | 8.8   | 0.01602 | 3.02   | 0.89   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Diplodus annularis</i>            | 1443 | C   | 2005-2006 | T     | 11.9  | 0.01230 | 3.13   | 0.96   | Ilkyaz et al. (2008)            |
| ASC    | Medit    | <i>Diplodus annularis</i>            | 89   | C   | 1999-2000 | T     | 7.9   | 0.01130 | 3.15   | 0.96   | Çiçek et al. (2006)             |
| ASC    | AS       | <i>Diplodus annularis</i>            | 372  | C   | 2004-2005 | GN-TR | 7.7   | 0.00680 | 3.32   | 0.98   | Karakulak et al. (2006)         |
| ASC    | MS       | <i>Diplodus annularis</i> *          | 81   | C   | 2009-2011 | T     | 10    | 0.00400 | 3.43   | 0.74   | Demirel and Dalkara (2012)      |
| ASC    | AS       | <i>Diplodus annularis</i> *          | 887  | C   | 1997-2000 | T     | 73    | 0.00051 | 2.82   | 0.87   | Türker et al. (2008)            |
| ASC    | MS       | <i>Diplodus puntazzo</i> **          | 18   | C   | 2000-2001 | L-BS  | 2.6   | 0.00114 | 1.6669 | 0.99   | Keskin and Gaygusuz (2010)      |
| ASC    | AS       | <i>Diplodus puntazzo</i>             | 7    | C   | 2004-2005 | GN-TR | 15.2  | 0.00440 | 2.66   | 0.98   | Karakulak et al. (2006)         |
| F-W    | AS       | <i>Diplodus sargus</i>               | 33   | C   | 2006      | TR-L  | 21.3  | 0.00610 | 3.04   | 0.98   | Ceyhan et al. (2009)            |

(continued)



Table 1. (Continued)

| Season | Location | Species                        | N   | Sex | Year      | FM    | a    | a'    | b       | Source |      |                                 |
|--------|----------|--------------------------------|-----|-----|-----------|-------|------|-------|---------|--------|------|---------------------------------|
| F-W    | Medit    | <i>Diplodus sargus</i>         | 26  | C   | 2008-2009 | GN-TR | 11.6 | 18.1  | 0.06080 | 2.50   | 0.93 | Gokce et al. (2010)             |
| Fall   | Medit    | <i>Diplodus sargus</i>         | 33  | C   | 2000      | L     | 14.9 | 26.7  | 0.03420 | 2.81   | 0.85 | Can et al. (2002)               |
| ASC    | Medit    | <i>Diplodus sargus</i>         | 36  | C   | 2001-2003 | T-L   | 11.2 | 25.3  | 0.01080 | 3.17   | 0.99 | Sangun et al. (2007)            |
| F-W    | AS       | <i>Diplodus vulgaris</i>       | 69  | C   | 2006      | TR-L  | 19.2 | 9.6   | 0.00690 | 3.21   | 0.99 | Ceyhan et al. (2009)            |
| ASC    | AS       | <i>Diplodus vulgaris</i>       | 93  | C   | 2004-2005 | GN-TR | 9    | 25    | 0.08580 | 2.43   | 0.65 | Karakulak et al. (2006)         |
| ASC    | AS       | <i>Diplodus vulgaris</i>       | 69  | C   | 2002-2003 | L     | 9.6  | 26.5  | 0.01450 | 3.03   | 0.99 | Akyol et al. (2007)             |
| Fall   | Medit    | <i>Diplodus vulgaris</i>       | 105 | C   | 2000      | L     | 13.2 | 27    | 0.01310 | 3.12   | 0.93 | Can et al. (2002)               |
| ASC    | AS       | <i>Diplodus vulgaris</i>       | 23  | C   | 2005-2006 | T     | 10.2 | 19.1  | 0.00925 | 3.14   | 0.94 | Ismen et al. (2007)             |
| F-W    | Medit    | <i>Diplodus vulgaris</i>       | 22  | C   | 2008-2009 | GN-TR | 11.7 | 17.9  | 0.00890 | 3.19   | 0.99 | Gokce et al. (2010)             |
| ASC    | AS       | <i>Diplodus vulgaris</i>       | 242 | C   | 2005-2006 | T     | 6.6  | 8.6   | 0.00380 | 3.53   | 0.98 | Ilkyaz et al. (2008)            |
| ASC    | AS       | <i>Dipturus oxyrinchus</i>     | 118 | C   | 2005-2006 | T     | 10   | 63.2  | 0.00423 | 3.29   | 1.00 | Ismen et al. (2007)             |
| ASC    | AS       | <i>Dipturus oxyrinchus</i>     | 179 | C   | 2005-2007 | T     | 14.9 | 100   | 0.00083 | 3.35   | 1.00 | Yigin and Ismen (2009)          |
| Spring | AS       | <i>Dipturus oxyrinchus</i>     | 8   | C   | 2003      | T     | 17.9 | 62.2  | 0.00070 | 3.40   | 0.99 | Filiz and Bilge (2004)          |
| ASC    | Medit    | <i>Dussumieria acuta**</i>     | 27  | C   | 1997-1998 | T-GN  | 14   | 16.9  | 0.00001 | 0.0062 | 0.88 | Taskavak and Bilecenoglu (2001) |
| Winter | Medit    | <i>Dussumieria elopsoides</i>  | 59  | C   | 2007-2008 | T     | 16.4 | 12.42 | 0.00550 | 3.12   | 0.99 | Erguden et al. (2009)           |
| ASC    | Medit    | <i>Echelus myrus</i>           | 14  | C   | 2001-2003 | T-L   | 30.9 | 67.5  | 0.01310 | 2.28   | 0.98 | Sangun et al. (2007)            |
| ASC    | Medit    | <i>Echelus myrus</i>           | 310 | C   | 1999-2000 | T     | 4.4  | 49.5  | 0.00410 | 2.66   | 0.97 | Çiçek et al. (2006)             |
| ASC    | AS       | <i>Echelus myrus</i>           | 39  | C   | 2005-2006 | T     | 7.3  | 12.2  | 0.00010 | 3.41   | 0.97 | Ilkyaz et al. (2008)            |
| ASC    | MS       | <i>Echichtchys vipera</i>      | 24  | C   | 2007      | BS    | 1.7  | 14.3  | 0.01664 | 2.71   | 0.99 | Ozen et al. (2009)              |
| F-W    | BS       | <i>Engraulis encrasicolus</i>  | 575 | C   | 2004-2005 | T     | 8    | 14.7  | 0.01740 | 2.60   | 0.85 | Kalaycı et al. (2007)           |
| ASC    | Medit    | <i>Engraulis encrasicolus</i>  | 392 | C   | 2001-2003 | T-L   | 7    | 17    | 0.01560 | 2.66   | 0.96 | Sangun et al. (2007)            |
| ASC    | AS       | <i>Engraulis encrasicolus</i>  | 212 | C   | 2005-2006 | T     | 8.1  | 14.8  | 0.00529 | 2.97   | 0.87 | Ismen et al. (2007)             |
| ASC    | Medit    | <i>Engraulis encrasicolus</i>  | 630 | C   | 1999-2000 | T     | 4.3  | 13.7  | 0.00370 | 3.18   | 0.96 | Çiçek et al. (2006)             |
| ASC    | AS       | <i>Engraulis encrasicolus</i>  | 28  | C   | 1997-2000 | T     | 85   | 134   | 0.00021 | 2.77   | 0.66 | Türker et al. (2008)            |
| ASC    | Medit    | <i>Ephinephelus marginatus</i> | 48  | C   | 2001-2003 | T-L   | 13.1 | 29.4  | 0.01160 | 3.07   | 0.91 | Sangun et al. (2007)            |
| F-W    | AS       | <i>Epinephelus aeneus</i>      | 36  | C   | 2006      | TR-L  | 21   | 16    | 0.00940 | 3.27   | 0.95 | Ceyhan et al. (2009)            |
| ASC    | AS       | <i>Epinephelus aeneus</i>      | 125 | C   | 2002-2003 | L     | 18.6 | 56.6  | 0.01780 | 2.86   | 0.94 | Akyol et al. (2007)             |
| Fall   | Medit    | <i>Epinephelus aeneus</i>      | 89  | C   | 2000      | L     | 17.4 | 67.5  | 0.01520 | 2.90   | 0.97 | Can et al. (2002)               |
| ASC    | Medit    | <i>Epinephelus aeneus</i>      | 24  | C   | 2001-2003 | T-L   | 16   | 42.2  | 0.01200 | 2.99   | 0.99 | Sangun et al. (2007)            |
| F-W    | AS       | <i>Epinephelus costae</i>      | 365 | C   | 2006      | TR-L  | 18.9 | 12    | 0.01020 | 3.21   | 0.94 | Ceyhan et al. (2009)            |
| Fall   | Medit    | <i>Epinephelus costae</i>      | 53  | C   | 2000      | L     | 14.2 | 55.4  | 0.08850 | 2.39   | 0.93 | Can et al. (2002)               |
| ASC    | AS       | <i>Epinephelus costae</i>      | 59  | C   | 2002-2003 | L     | 14.6 | 45    | 0.02660 | 2.74   | 0.97 | Akyol et al. (2007)             |
| ASC    | AS       | <i>Etmopterus spinax</i>       | 11  | U   | 2005-2009 | T     | 10.6 | 45    | 0.00230 | 3.23   | 0.95 | Ismen et al. (2009)             |
| ASC    | AS       | <i>Etmopterus spinax</i>       | 24  | C   | 2005-2006 | T     | 10.6 | 45    | 0.00172 | 3.27   | 0.92 | Ismen et al. (2007)             |
| Winter | Medit    | <i>Etrumeus teres</i>          | 61  | C   | 2007-2008 | T     | 16.7 | 13.46 | 0.00780 | 2.99   | 0.97 | Erguden et al. (2009)           |
| F-W    | MS       | <i>Eutrigla gurnardus</i>      | 67  | C   | 2006-2007 | T     | 9.6  | 22.8  | 0.01050 | 2.96   | 0.96 | Bok et al. (2011)               |

(continued)

Table 1. (Continued)

| Season | Location | Species                             | N   | Sex | Year      | FM   | a       | a'     | b    | Source                     |
|--------|----------|-------------------------------------|-----|-----|-----------|------|---------|--------|------|----------------------------|
| ASC    | AS       | <i>Eutrigla gurnardus</i>           | 7   | C   | 2005-2006 | T    | 0.01040 |        | 2.88 | İlkyaz et al. (2008)       |
| ASC    | MS       | <i>Eutrigla gurnardus</i>           | 633 | C   | 2009-2011 | T    | 0.00700 |        | 3.05 | Demirel and Dalkara (2012) |
| ASC    | AS       | <i>Eutrigla gurnardus</i>           | 23  | C   | 2005      | T    | 0.00390 |        | 3.33 | Ozaydin et al. (2007)      |
| ASC    | AS       | <i>Eutrigla gurnardus</i>           | 251 | C   | 2005-2006 | T    | 0.00250 |        | 3.42 | Ismen et al. (2007)        |
| Winter | Medit    | <i>Fistularia commersonii</i>       | 12  | C   | 2007-2008 | T    | 0.01120 |        | 2.50 | Erguden et al. (2009)      |
| ASC    | AS       | <i>Gadiculus argenteus</i>          | 331 | C   | 2005-2006 | T    | 0.01414 |        | 2.85 | Ismen et al. (2007)        |
| Spring | AS       | <i>Gadiculus argenteus</i>          | 110 | C   | 2003      | T    | 0.00560 |        | 3.24 | Filiz and Bilge (2004)     |
| ASC    | MS       | <i>Gaidropsarus mediterraneus**</i> | 8   | C   | 2000-2001 | L-BS | 0.00068 | 0.6958 | 3.01 | Keskin and Gaygusuz (2010) |
| F-W    | MS       | <i>Gaidropsarus mediterraneus</i>   | 56  | C   | 2006-2007 | T    | 0.00300 |        | 3.18 | Bok et al. (2011)          |
| ASC    | AS       | <i>Galeus melastomus</i>            | 93  | C   | 2005-2006 | T    | 0.00238 |        | 3.03 | Ismen et al. (2007)        |
| ASC    | AS       | <i>Galeus melastomus</i>            | 303 | U   | 2005-2009 | T    | 0.00160 |        | 3.18 | Ismen et al. (2009)        |
| Fall   | AS       | <i>Gnathophis mystax</i>            | 466 | C   | 2011      | T    | 0.00150 |        | 2.92 | Yapıcı et al. (2015)       |
| ASC    | BS       | <i>Gobius batrachocephalus</i>      | 184 | C   | 2007      | T    | 0.02400 |        | 2.74 | Ak et al. (2009)           |
| ASC    | MS       | <i>Gobius geniporus</i>             | 20  | C   | 2007      | BS   | 0.00646 |        | 3.21 | Ozen et al. (2009)         |
| ASC    | BS       | <i>Gobius melastomus</i>            | 73  | C   | 2007      | T    | 0.01000 |        | 3.03 | Ak et al. (2009)           |
| F-W    | BS       | <i>Gobius niger</i>                 | 227 | C   | 2004-2005 | T    | 0.01660 |        | 2.87 | Kalaycı et al. (2007)      |
| F-W    | MS       | <i>Gobius niger</i>                 | 286 | C   | 2006-2007 | T    | 0.01150 |        | 2.98 | Bok et al. (2011)          |
| W-S    | BS       | <i>Gobius niger</i>                 | 113 | C   | 2009-2011 | T    | 0.01130 |        | 3.00 | Demirhan and Can (2007)    |
| ASC    | BS       | <i>Gobius niger</i>                 | 208 | C   | 2007      | T    | 0.00900 |        | 3.04 | Ak et al. (2009)           |
| ASC    | MS       | <i>Gobius niger</i>                 | 83  | C   | 2009-2011 | T    | 0.00800 |        | 3.13 | Demirel and Dalkara (2012) |
| ASC    | AS       | <i>Gobius niger</i>                 | 447 | C   | 2005      | T    | 0.00750 |        | 3.15 | Ozaydin et al. (2007)      |
| ASC    | AS       | <i>Gobius niger</i>                 | 618 | C   | 2005-2006 | T    | 0.00650 |        | 3.21 | İlkyaz et al. (2008)       |
| ASC    | Medit    | <i>Gobius niger</i>                 | 272 | C   | 1999-2000 | T    | 0.00470 |        | 3.39 | Çiçek et al. (2006)        |
| ASC    | MS       | <i>Gobius paganellus</i>            | 161 | C   | 2007      | BS   | 0.01130 |        | 3.03 | Ozen et al. (2009)         |
| ASC    | MS       | <i>Gymnamodytes cicerellus**</i>    | 13  | C   | 2000-2001 | L-BS | 0.00012 | 0.2433 | 3.31 | Keskin and Gaygusuz (2010) |
| ASC    | AS       | <i>Gymnura altavela</i>             | 17  | C   | 2005      | T    | 0.04490 |        | 2.84 | Ozaydin et al. (2007)      |
| Spring | AS       | <i>Gymnura altavela</i>             | 9   | C   | 2003      | T    | 0.02680 |        | 2.96 | Filiz and Bilge (2004)     |
| ASC    | Medit    | <i>Gymnura altavela</i>             | 107 | C   | 1999-2003 | T    | 0.00900 |        | 3.23 | Yeldan and Avsar (2007)    |
| ASC    | AS       | <i>Helicolenus dactylopterus</i>    | 96  | C   | 2005-2006 | T    | 0.01628 |        | 3.04 | Ismen et al. (2007)        |
| Spring | AS       | <i>Helicolenus dactylopterus</i>    | 178 | C   | 2003      | T    | 0.00790 |        | 3.28 | Filiz and Bilge (2004)     |
| ASC    | AS       | <i>Hepttranchias perlo</i>          | 18  | C   | 2005-2009 | T    | 0.00470 |        | 2.90 | Ismen et al. (2009)        |
| ASC    | AS       | <i>Hepttranchias perlo</i>          | 14  | C   | 2005-2006 | T    | 0.00424 |        | 2.93 | Ismen et al. (2007)        |
| ASC    | AS       | <i>Hexanchus griseus</i>            | 7   | F   | 2005-2009 | T    | 0.00020 |        | 3.61 | Ismen et al. (2009)        |
| ASC    | AS       | <i>Hexanchus griseus</i>            | 5   | C   | 2005-2006 | T    | 0.00008 |        | 3.82 | Ismen et al. (2007)        |
| ASC    | AS       | <i>Hippocampus guttulatus</i>       | 200 | C   | 2000-2002 | TR   | 0.01000 |        | 2.47 | Gürkan and Taskavak (2007) |
| ASC    | BS       | <i>Hippocampus hippocampus</i>      | 163 | C   | 2007      | T    | 0.00400 |        | 2.95 | Ak et al. (2009)           |

(continued)

Table 1. (Continued)

| Season | Location | Species   | N    | Sex | Year      | FM    | a       | a'     | b    | Source |                                 |
|--------|----------|---|------|-----|-----------|-------|---------|--------|------|--------|---------------------------------|
| ASC    | AS       | <i>Hippocampus hippocampus</i>                  | 29   | C   | 2000-2002 | TR    | 0.00100 |        | 3.14 | 0.76   | Gürkan and Taskavak (2007)      |
| Spring | AS       | <i>Hoplostethus mediterraneus mediterraneus</i> | 137  | C   | 2003      | T     | 0.01490 |        | 2.95 | 0.98   | Filiz and Bilge (2004)          |
| ASC    | AS       | <i>Hoplostethus mediterraneus mediterraneus</i> | 599  | C   | 2005-2006 | T     | 0.00890 |        | 3.16 | 0.99   | Ismen et al. (2007)             |
| ASC    | Medit    | <i>Hymenocephalus italicus</i>                  | 76   | C   | 2009-2011 | T     | 0.00770 |        | 2.45 | 0.77   | Deval et al. (2014)             |
| Fall   | AS       | <i>Hymenocephalus italicus</i>                  | 91   | C   | 2011      | T     | 0.00340 |        | 2.89 | 0.86   | Yapıcı et al. (2015)            |
| ASC    | MS       | <i>Labrus viridis</i>                           | 72   | C   | 2007      | BS    | 0.01272 |        | 2.99 | 0.99   | Ozen et al. (2009)              |
| ASC    | Medit    | <i>Lagocephalus lagocephalus</i>                | 27   | C   | 2001-2003 | T-L   | 0.00660 |        | 3.30 | 0.85   | Sangun et al. (2007)            |
| Winter | Medit    | <i>Lagocephalus spadiceus</i>                   | 89   | C   | 2007-2008 | T     | 0.02040 |        | 2.90 | 0.94   | Erguden et al. (2009)           |
| ASC    | Medit    | <i>Lagocephalus spadiceus**</i>                 | 19   | C   | 1997-1998 | T-GN  | 0.00002 | 0.0186 | 2.95 | 0.97   | Taskavak and Bilecenoglu (2001) |
| Winter | Medit    | <i>Lagocephalus suezensis</i>                   | 86   | C   | 2007-2008 | T     | 0.02360 |        | 2.75 | 0.96   | Erguden et al. (2009)           |
| Fall   | AS       | <i>Lagocephalus suezensis</i>                   | 15   | C   | 2011      | T     | 0.01890 |        | 2.75 | 0.94   | Yapıcı et al. (2015)            |
| ASC    | Medit    | <i>Leiognathus klunzingeri</i>                  | 2212 | C   | 1999-2000 | T     | 0.00900 |        | 3.16 | 0.96   | Çiçek et al. (2006)             |
| ASC    | Medit    | <i>Leiognathus klunzingeri</i>                  | 632  | C   | 2001-2003 | T-L   | 0.00750 |        | 3.22 | 0.97   | Sangun et al. (2007)            |
| ASC    | Medit    | <i>Leiognathus klunzingeri**</i>                | 156  | C   | 1997-1998 | T-GN  | 0.00000 | 0.0065 | 3.27 | 0.96   | Taskavak and Bilecenoglu (2001) |
| Winter | Medit    | <i>Leiognathus klunzingeri</i>                  | 358  | C   | 2007-2008 | T     | 0.00260 |        | 3.71 | 0.92   | Erguden et al. (2009)           |
| ASC    | MS       | <i>Lepidogaster lepidogaster</i>                | 4    | C   | 2007      | BS    | 0.00415 |        | 3.60 | 0.99   | Ozen et al. (2009)              |
| ASC    | AS       | <i>Lepidopus caudatus</i>                       | 13   | C   | 2005-2006 | T     | 0.00047 |        | 3.05 | 0.99   | Ismen et al. (2007)             |
| Spring | AS       | <i>Lepidopus caudatus</i>                       | 40   | C   | 2003      | T     | 0.00040 |        | 3.11 | 0.99   | Filiz and Bilge (2004)          |
| ASC    | AS       | <i>Lepidorhombus boscii</i>                     | 2242 | C   | 2006-2008 | T     | 0.00390 |        | 3.25 | 0.99   | Ozekinci et al. (2009)          |
| ASC    | AS       | <i>Lepidorhombus boscii</i>                     | 521  | C   | 2005-2006 | T     | 0.00316 |        | 3.29 | 0.99   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Lepidorhombus whiffagonis</i>                | 12   | C   | 2006-2008 | T     | 0.07260 |        | 2.33 | 0.91   | Ozekinci et al. (2009)          |
| ASC    | MS       | <i>Lepidotrigla cavillone</i>                   | 143  | C   | 2009-2011 | T     | 0.03300 |        | 2.63 | 0.84   | Demirel and Dalkara (2012)      |
| ASC    | AS       | <i>Lepidotrigla cavillone</i>                   | 1428 | C   | 2005-2006 | T     | 0.00880 |        | 3.15 | 0.98   | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Lepidotrigla cavillone</i>                   | 855  | C   | 2005-2006 | T     | 0.00442 |        | 3.41 | 0.90   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Lepidotrigla cavillone</i>                   | 377  | C   | 1997-2000 | T     | 0.00011 |        | 2.98 | 0.89   | Türker et al. (2008)            |
| Spring | AS       | <i>Lesueurigobius friesii</i>                   | 17   | C   | 2003      | T     | 0.03920 |        | 2.13 | 0.72   | Filiz and Bilge (2004)          |
| F-W    | MS       | <i>Lesueurigobius friesii</i>                   | 580  | C   | 2006-2007 | T     | 0.01600 |        | 2.53 | 0.85   | Bok et al. (2011)               |
| ASC    | AS       | <i>Lesueurigobius friesii</i>                   | 149  | C   | 2005-2006 | T     | 0.00890 |        | 2.89 | 0.96   | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Lesueurigobius friesii</i>                   | 631  | C   | 2005      | T     | 0.00790 |        | 3.01 | 0.95   | Ozaydin et al. (2007)           |
| Fall   | AS       | <i>Lesueurigobius suerii</i>                    | 13   | C   | 2011      | T     | 0.00960 |        | 2.93 | 0.91   | Yapıcı et al. (2015)            |
| ASC    | Medit    | <i>Leucoraja circularis</i>                     | 6    | C   | 2009-2011 | T     | 0.00390 |        | 3.08 | 0.98   | Deval et al. (2014)             |
| F-W    | AS       | <i>Lithognathus mormyrus</i>                    | 141  | C   | 2006      | TR-L  | 0.00240 |        | 3.50 | 0.97   | Ceyhan et al. (2009)            |
| ASC    | MS       | <i>Lithognathus mormyrus**</i>                  | 41   | C   | 2000-2001 | L-BS  | 0.00097 | 1.2072 | 3.10 | 0.99   | Keskin and Gaygusuz (2010)      |
| F-W    | Medit    | <i>Lithognathus mormyrus</i>                    | 6    | C   | 2008-2009 | GN-TR | 0.01920 |        | 2.83 | 0.99   | Gokce et al. (2010)             |

(continued)

Table 1. (Continued)

| Season | Location | Species                           | N    | Sex | Year      | FM         | a       | a'     | b    | Source |                                 |
|--------|----------|-----------------------------------|------|-----|-----------|------------|---------|--------|------|--------|---------------------------------|
| ASC    | AS       | <i>Lithognathus mormyrus</i>      | 55   | C   | 2005-2006 | T          | 0.01180 |        | 3.01 | 0.98   | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Lithognathus mormyrus</i>      | 36   | C   | 2002-2003 | L          | 0.00980 |        | 3.04 | 0.95   | Akyol et al. (2007)             |
| ASC    | Medit    | <i>Lithognathus mormyrus</i>      | 39   | C   | 1999-2000 | T          | 0.00920 |        | 3.09 | 0.95   | Çiçek et al. (2006)             |
| ASC    | MS       | <i>Liza aurata</i> **             | 446  | C   | 2000-2001 | L-BS       | 0.00088 | 0.9151 | 3.02 | 0.96   | Keskin and Gaygusuz (2010)      |
| ASC    | Medit    | <i>Liza carinata</i> **           | 15   | C   | 1997-1998 | T-GN       | 0.00002 | 0.0162 | 2.86 | 0.94   | Taskavak and Bilecenoglu (2001) |
| ASC    | MS       | <i>Liza saliens</i> **            | 57   | C   | 2000-2001 | L-BS       | 0.00092 | 0.9371 | 3.01 | 0.99   | Keskin and Gaygusuz (2010)      |
| ASC    | AS       | <i>Lophius budegassa</i>          | 29   | C   | 2005-2006 | T          | 0.01160 |        | 3.08 | 0.99   | İlkyaz et al. (2008)            |
| ASC    | MS       | <i>Lophius piscatorius</i>        | 15   | C   | 2009-2011 | T          | 0.02200 |        | 2.85 | 0.81   | Demirel and Dalkara (2012)      |
| ASC    | AS       | <i>Lophius piscatorius</i>        | 15   | C   | 2005      | T          | 0.01990 |        | 2.97 | 0.99   | Ozaydin et al. (2007)           |
| ASC    | AS       | <i>Lophius piscatorius</i>        | 94   | C   | 1998-2001 | TR-GN-T-BS | 0.01460 |        | 2.93 | 0.97   | Ozaydin and Taskavak (2006)     |
| ASC    | AS       | <i>Lophius piscatorius</i>        | 445  | C   | 2005-2006 | T          | 0.01239 |        | 3.03 | 0.98   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Lophius piscatorius</i>        | 30   | C   | 2005-2006 | T          | 0.01010 |        | 3.11 | 0.99   | İlkyaz et al. (2008)            |
| F-W    | MS       | <i>Lophius piscatorius</i>        | 40   | C   | 2006-2007 | T          | 0.00010 |        | 2.49 | 0.88   | Bok et al. (2011)               |
| Winter | Medit    | <i>Leiognathus klunzingeri</i>    | 358  | C   | 2007-2008 | T          | 0.00260 |        | 3.71 | 0.92   | Erguden et al. (2009)           |
| ASC    | MS       | <i>Lepidogaster lepadogaster</i>  | 4    | C   | 2007      | BS         | 0.00415 |        | 3.60 | 0.99   | Ozen et al. (2009)              |
| ASC    | AS       | <i>Lepidopus caudatus</i>         | 13   | C   | 2005-2006 | T          | 0.00047 |        | 3.05 | 0.99   | Ismen et al. (2007)             |
| Spring | AS       | <i>Lepidopus caudatus</i>         | 40   | C   | 2003      | T          | 0.00040 |        | 3.11 | 0.99   | Filiz and Bilge (2004)          |
| ASC    | AS       | <i>Lepidorhombus boscii</i>       | 2242 | C   | 2006-2008 | T          | 0.00390 |        | 3.25 | 0.99   | Ozekinci et al. (2009)          |
| ASC    | AS       | <i>Lepidorhombus boscii</i>       | 521  | C   | 2005-2006 | T          | 0.00316 |        | 3.29 | 0.99   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Lepidorhombus whiffiagonis</i> | 12   | C   | 2006-2008 | T          | 0.07260 |        | 2.33 | 0.91   | Ozekinci et al. (2009)          |
| ASC    | MS       | <i>Lepidotrigla cavillone</i>     | 143  | C   | 2009-2011 | T          | 0.03300 |        | 2.63 | 0.84   | Demirel and Dalkara (2012)      |
| ASC    | AS       | <i>Lepidotrigla cavillone</i>     | 1428 | C   | 2005-2006 | T          | 0.00880 |        | 3.15 | 0.98   | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Lepidotrigla cavillone</i>     | 855  | C   | 2005-2006 | T          | 0.00442 |        | 3.41 | 0.90   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Lepidotrigla cavillone</i>     | 377  | C   | 1997-2000 | T          | 0.00011 |        | 2.98 | 0.89   | Türker et al. (2008)            |
| Spring | AS       | <i>Lesueurigobius friesii</i>     | 17   | C   | 2003      | T          | 0.03920 |        | 2.13 | 0.72   | Filiz and Bilge (2004)          |
| F-W    | MS       | <i>Lesueurigobius friesii</i>     | 580  | C   | 2006-2007 | T          | 0.01600 |        | 2.53 | 0.85   | Bok et al. (2011)               |
| ASC    | AS       | <i>Lesueurigobius friesii</i>     | 149  | C   | 2005-2006 | T          | 0.00890 |        | 2.89 | 0.96   | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Lesueurigobius friesii</i>     | 631  | C   | 2005      | T          | 0.00790 |        | 3.01 | 0.95   | Ozaydin et al. (2007)           |
| Fall   | AS       | <i>Lesueurigobius suerii</i>      | 13   | C   | 2011      | T          | 0.00960 |        | 2.93 | 0.91   | Yapıcı et al. (2015)            |
| ASC    | Medit    | <i>Leucoraja circularis</i>       | 6    | C   | 2009-2011 | T          | 0.00390 |        | 3.08 | 0.98   | Deval et al. (2014)             |
| F-W    | AS       | <i>Lithognathus mormyrus</i>      | 141  | C   | 2006      | TR-L       | 0.00240 |        | 3.50 | 0.97   | Ceyhan et al. (2009)            |
| ASC    | MS       | <i>Lithognathus mormyrus</i> * ** | 41   | C   | 2000-2001 | L-BS       | 0.00097 | 1.2072 | 3.10 | 0.99   | Keskin and Gaygusuz (2010)      |
| F-W    | Medit    | <i>Lithognathus mormyrus</i>      | 6    | C   | 2008-2009 | GN-TR      | 0.01920 |        | 2.83 | 0.99   | Gokce et al. (2010)             |
| ASC    | AS       | <i>Lithognathus mormyrus</i>      | 55   | C   | 2005-2006 | T          | 0.01180 |        | 3.01 | 0.98   | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Lithognathus mormyrus</i>      | 36   | C   | 2002-2003 | L          | 0.00980 |        | 3.04 | 0.95   | Akyol et al. (2007)             |
| ASC    | Medit    | <i>Lithognathus mormyrus</i>      | 39   | C   | 1999-2000 | T          | 0.00920 |        | 3.09 | 0.95   | Çiçek et al. (2006)             |

(continued)

Table 1. (Continued)

| Season | Location | Species                             | N    | Sex | Year      | FM         | a    | a'      | b      | Source |                                 |
|--------|----------|-------------------------------------|------|-----|-----------|------------|------|---------|--------|--------|---------------------------------|
| ASC    | MS       | <i>Liza aurata</i> **               | 446  | C   | 2000-2001 | L-BS       | 17.4 | 0.00088 | 0.9151 | 3.02   | Keskin and Gaygusuz (2010)      |
| ASC    | Medit    | <i>Liza carinata</i> **             | 15   | C   | 1997-1998 | T-GN       | 18.7 | 0.00002 | 0.0162 | 2.86   | Taskavak and Bilecenoglu (2001) |
| ASC    | MS       | <i>Liza saliens</i> **              | 57   | C   | 2000-2001 | L-BS       | 18.6 | 0.00092 | 0.9371 | 3.01   | Keskin and Gaygusuz (2010)      |
| ASC    | AS       | <i>Lophius budgassa</i>             | 29   | C   | 2005-2006 | T          | 45.4 | 0.01160 | 3.08   | 3.08   | İlkyaz et al. (2008)            |
| ASC    | MS       | <i>Lophius piscatorius</i>          | 15   | C   | 2009-2011 | T          | 18.2 | 0.02200 | 2.85   | 2.85   | Demirel and Dalkara (2012)      |
| ASC    | AS       | <i>Lophius piscatorius</i>          | 15   | C   | 2005      | T          | 67   | 0.01990 | 2.97   | 2.97   | Ozaydin et al. (2007)           |
| ASC    | AS       | <i>Lophius piscatorius</i>          | 94   | C   | 1998-2001 | TR-GN-T-BS | 48   | 0.01460 | 2.93   | 2.93   | Ozaydin and Taskavak (2006)     |
| ASC    | AS       | <i>Lophius piscatorius</i>          | 445  | C   | 2005-2006 | T          | 83   | 0.01239 | 3.03   | 3.03   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Lophius piscatorius</i>          | 30   | C   | 2005-2006 | T          | 9.6  | 0.01010 | 3.11   | 3.11   | İlkyaz et al. (2008)            |
| F-W    | MS       | <i>Lophius piscatorius</i>          | 40   | C   | 2006-2007 | T          | 54   | 0.00010 | 2.49   | 2.49   | Bok et al. (2011)               |
| ASC    | AS       | <i>Lophius piscatorius</i> *        | 23   | C   | 1997-2000 | T          | 440  | 0.00002 | 2.94   | 2.94   | Türker et al. (2008)            |
| Spring | AS       | <i>Macroramphosus scolopax</i>      | 43   | C   | 2003      | T          | 11.4 | 0.00790 | 2.86   | 2.86   | Filiz and Bilge (2004)          |
| ASC    | Medit    | <i>Macroramphosus scolopax</i>      | 124  | C   | 1999-2000 | T          | 9.2  | 0.00590 | 3.01   | 3.01   | Çiçek et al. (2006)             |
| ASC    | MS       | <i>Merlangius merlangus euxinus</i> | 234  | C   | 2009-2011 | T          | 24.5 | 0.01200 | 2.84   | 2.84   | Demirel and Dalkara (2012)      |
| ASC    | AS       | <i>Merlangius merlangus euxinus</i> | 23   | C   | 2005-2006 | T          | 19.1 | 0.01020 | 2.99   | 2.99   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Merlangius merlangus euxinus</i> | 100  | C   | 1998-2001 | TR-GN-T-BS | 31.7 | 0.00920 | 2.94   | 2.94   | Ozaydin and Taskavak (2006)     |
| F-W    | BS       | <i>Merlangius merlangus euxinus</i> | 904  | C   | 2004-2005 | T          | 22.7 | 0.00670 | 3.02   | 3.02   | Kalaycı et al. (2007)           |
| F-W    | MS       | <i>Merlangius merlangus euxinus</i> | 166  | C   | 2006-2007 | T          | 24.2 | 0.00470 | 3.15   | 3.15   | Bok et al. (2011)               |
| ASC    | BS       | <i>Merlangius merlangus euxinus</i> | 943  | C   | 2007      | T          | 29.5 | 0.00400 | 3.17   | 3.17   | Bok et al. (2011)               |
| F-W    | AS       | <i>Merluccius merluccius</i>        | 21   | C   | 2006      | TR-L       | 21.5 | 0.01990 | 2.96   | 2.96   | Ceyhan et al. (2009)            |
| ASC    | AS       | <i>Merluccius merluccius</i> *      | 2711 | C   | 2005      | T          | 48.8 | 0.98140 | 3.19   | 3.19   | Ozaydin et al. (2007)           |
| ASC    | Medit    | <i>Merluccius merluccius</i>        | 29   | C   | 2001-2003 | T-L        | 31   | 0.03370 | 2.35   | 2.35   | Sanguin et al. (2007)           |
| ASC    | MS       | <i>Merluccius merluccius</i>        | 715  | C   | 2009-2011 | T          | 52   | 0.01000 | 2.89   | 2.89   | Demirel and Dalkara (2012)      |
| ASC    | Medit    | <i>Merluccius merluccius</i>        | 31   | C   | 2012-2013 | T          | 28.7 | 0.00960 | 2.90   | 2.90   | Özvarol (2014)                  |
| ASC    | AS       | <i>Merluccius merluccius</i>        | 501  | C   | 1998-2001 | TR-GN-T-BS | 47   | 0.00500 | 3.15   | 3.15   | Ozaydin and Taskavak (2006)     |
| ASC    | AS       | <i>Merluccius merluccius</i>        | 22   | C   | 2004-2005 | GN-TR      | 41.1 | 0.00490 | 3.10   | 3.10   | Karakulak et al. (2006)         |
| ASC    | Medit    | <i>Merluccius merluccius</i>        | 567  | C   | 1999-2000 | T          | 29.9 | 0.00460 | 3.15   | 3.15   | Çiçek et al. (2006)             |
| ASC    | AS       | <i>Merluccius merluccius</i>        | 2041 | C   | 2005-2006 | T          | 66   | 0.00439 | 3.15   | 3.15   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Merluccius merluccius</i>        | 1499 | C   | 2005-2006 | T          | 9.6  | 0.00390 | 3.20   | 3.20   | İlkyaz et al. (2008)            |
| F-W    | MS       | <i>Merluccius merluccius</i>        | 319  | C   | 2006-2007 | T          | 44.8 | 0.00260 | 3.37   | 3.37   | Bok et al. (2011)               |
| ASC    | AS       | <i>Merluccius merluccius</i> *      | 166  | C   | 1997-2000 | T          | 372  | 0.00007 | 3.01   | 3.01   | Türker et al. (2008)            |
| W-S    | BS       | <i>Mesogobius batrachocephalus</i>  | 37   | C   | 2009-2011 | T          | 13.3 | 0.02030 | 2.75   | 2.75   | Demirhan and Can (2007)         |
| ASC    | AS       | <i>Microchirus ocellatus</i>        | 8    | C   | 2006-2008 | T          | 13.7 | 0.03260 | 2.73   | 2.73   | Ozekinci et al. (2009)          |
| ASC    | AS       | <i>Microchirus ocellatus</i>        | 6    | C   | 2005-2006 | T          | 19.8 | 0.00790 | 3.25   | 3.25   | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Microchirus variegatus</i>       | 29   | C   | 2006-2008 | T          | 15.5 | 0.01620 | 2.87   | 2.87   | Ozekinci et al. (2009)          |
| ASC    | AS       | <i>Microchirus variegatus</i>       | 10   | C   | 2004-2005 | GN-TR      | 14.6 | 0.01370 | 3.03   | 3.03   | Karakulak et al. (2006)         |

(continued)

Table 1. (Continued)

| Season | Location | Species                         | N    | Sex | Year      | FM    | a    | a'    | b       | Source |      |                            |
|--------|----------|---------------------------------|------|-----|-----------|-------|------|-------|---------|--------|------|----------------------------|
| ASC    | AS       | <i>Microchirus variegatus</i>   | 36   | C   | 2005-2006 | T     | 4.4  | 12.5  | 0.00440 | 3.31   | 0.96 | İlkyaz et al. (2008)       |
| ASC    | AS       | <i>Microchirus variegatus</i>   | 36   | C   | 2002      | T     | 7.3  | 9.6   | 0.00300 | 3.42   | 0.99 | Bayhan et al. (2008)       |
| ASC    | AS       | <i>Micromesistius poutassou</i> | 549  | C   | 2005-2006 | T     | 13.7 | 42.5  | 0.00350 | 3.20   | 0.99 | Ismen et al. (2007)        |
| ASC    | AS       | <i>Molva macrophthalma</i>      | 192  | C   | 2005-2006 | T     | 27.7 | 63    | 0.00050 | 3.42   | 0.98 | Ismen et al. (2007)        |
| ASC    | AS       | <i>Monochirus hispidus</i>      | 15   | C   | 2006-2008 | T     | 9.7  | 13.7  | 0.05650 | 2.43   | 0.94 | Ozekinci et al. (2009)     |
| ASC    | AS       | <i>Mullus barbatus*</i>         | 45   | C   | 1997-2000 | T     | 10   | 18.5  | 0.06100 | 3.35   | 0.98 | Türker et al. (2008)       |
| F-W    | Medit    | <i>Mullus barbatus</i>          | 8    | C   | 2008-2009 | GN-TR | 11   | 20.4  | 0.01840 | 2.84   | 0.99 | Gokce et al. (2010)        |
| ASC    | MS       | <i>Mullus barbatus</i>          | 94   | C   | 2009-2011 | T     | 9.6  | 22.7  | 0.01500 | 3.00   | 0.86 | Demirel and Dalkara (2012) |
| F-W    | BS       | <i>Mullus barbatus</i>          | 176  | C   | 2004-2005 | T     | 6.6  | 18.4  | 0.01110 | 2.96   | 0.98 | Kalaycı et al. (2007)      |
| ASC    | AS       | <i>Mullus barbatus</i>          | 3386 | C   | 2005-2006 | T     | 6    | 24.7  | 0.00762 | 3.09   | 0.96 | Ismen et al. (2007)        |
| ASC    | Medit    | <i>Mullus barbatus</i>          | 2021 | C   | 1999-2000 | T     | 3.8  | 21.5  | 0.00760 | 3.13   | 0.98 | Çiçek et al. (2006)        |
| ASC    | Medit    | <i>Mullus barbatus</i>          | 1565 | C   | 2012-2013 | T     | 8.7  | 21.5  | 0.00710 | 3.17   | 0.89 | Özvarol (2014)             |
| ASC    | BS       | <i>Mullus barbatus</i>          | 714  | C   | 2007      | T     | 6.1  | 21.9  | 0.00700 | 3.14   | 0.99 | Ak et al. (2009)           |
| ASC    | AS       | <i>Mullus barbatus</i>          | 1879 | C   | 2005-2006 | T     | 5.8  | 16.5  | 0.00600 | 3.22   | 0.98 | İlkyaz et al. (2008)       |
| W-S    | BS       | <i>Mullus barbatus</i>          | 432  | C   | 2009-2011 | T     | 6.8  | 14.6  | 0.00510 | 3.24   | 0.97 | Demirhan and Can (2007)    |
| F-W    | MS       | <i>Mullus barbatus</i>          | 99   | C   | 2006-2007 | T     | 10   | 15.7  | 0.00490 | 3.33   | 0.92 | Bok et al. (2011)          |
| ASC    | AS       | <i>Mullus barbatus</i>          | 76   | C   | 2004-2005 | GN-TR | 12.5 | 22.3  | 0.00490 | 3.27   | 0.94 | Karakulak et al. (2006)    |
| ASC    | Medit    | <i>Mullus barbatus</i>          | 451  | C   | 2001-2003 | T-L   | 8.2  | 22    | 0.00320 | 3.06   | 0.94 | Sangun et al. (2007)       |
| F-W    | AS       | <i>Mullus surmuletus</i>        | 120  | C   | 2006      | TR-L  | 17.2 | 13.1  | 0.01720 | 2.98   | 0.98 | Ceyhan et al. (2009)       |
| ASC    | MS       | <i>Mullus surmuletus**</i>      | 17   | C   | 2000-2001 | L-BS  | 4.7  | 9.4   | 0.00045 | 1.0920 | 0.99 | Keskin and Gaygusuz (2010) |
| F-W    | MS       | <i>Mullus surmuletus</i>        | 142  | C   | 2006-2007 | T     | 11   | 18    | 0.02400 | 2.72   | 0.89 | Bok et al. (2011)          |
| ASC    | Medit    | <i>Mullus surmuletus</i>        | 145  | C   | 1999-2000 | T     | 5.5  | 22.2  | 0.00820 | 3.11   | 0.98 | Çiçek et al. (2006)        |
| ASC    | AS       | <i>Mullus surmuletus</i>        | 601  | C   | 2004-2005 | GN-TR | 10.9 | 29.9  | 0.00680 | 3.19   | 0.98 | Karakulak et al. (2006)    |
| ASC    | MS       | <i>Mullus surmuletus</i>        | 354  | C   | 2009-2011 | T     | 8.5  | 23    | 0.00600 | 3.18   | 0.93 | Demirel and Dalkara (2012) |
| ASC    | AS       | <i>Mullus surmuletus</i>        | 59   | C   | 2005-2006 | T     | 11.2 | 23.8  | 0.00580 | 3.27   | 0.98 | İlkyaz et al. (2008)       |
| ASC    | Medit    | <i>Mullus surmuletus*</i>       | 45   | C   | 2012-2013 | T     | 13.7 | 24.5  | 0.00290 | 3.47   | 0.95 | Özvarol (2014)             |
| ASC    | AS       | <i>Mustelus asterias</i>        | 7    | C   | 2005-2009 | T     | 53.7 | 154   | 0.00060 | 3.40   | 1.00 | Ismen et al. (2009)        |
| ASC    | AS       | <i>Mustelus mustelus</i>        | 17   | C   | 2005      | T     | 51.4 | 95.5  | 0.00440 | 2.91   | 0.98 | Ozaydin et al. (2007)      |
| ASC    | AS       | <i>Mustelus mustelus</i>        | 70   | C   | 2005-2009 | T     | 46.8 | 152.2 | 0.00340 | 2.98   | 0.99 | Ismen et al. (2009)        |
| ASC    | AS       | <i>Mustelus mustelus</i>        | 148  | C   | 2005-2006 | T     | 5.8  | 11.6  | 0.00270 | 3.05   | 0.98 | İlkyaz et al. (2008)       |
| ASC    | AS       | <i>Mustelus mustelus</i>        | 26   | C   | 2005-2006 | T     | 58.9 | 152.2 | 0.00131 | 3.19   | 0.99 | Ismen et al. (2007)        |
| Spring | AS       | <i>Mustelus mustelus</i>        | 35   | C   | 2003      | T     | 38.3 | 97.5  | 0.00110 | 3.25   | 0.97 | Filiz and Bilge (2004)     |
| ASC    | AS       | <i>Mustelus mustelus</i>        | 24   | C   | 1999-2000 | T     | 38.3 | 97.5  | 0.00080 | 3.33   | 0.97 | Filiz and Mater (2002)     |
| ASC    | AS       | <i>Myliobatis aquila</i>        | 14   | C   | 2005-2006 | T     | 23.5 | 100   | 0.01252 | 3.02   | 0.97 | Ismen et al. (2007)        |
| Spring | AS       | <i>Myliobatis aquila</i>        | 14   | C   | 2003      | T     | 47.5 | 76.5  | 0.00080 | 3.34   | 0.93 | Filiz and Bilge (2004)     |
| ASC    | AS       | <i>Myliobatis aquila</i>        | 66   | C   | 2005-2007 | T     | 29.5 | 121   | 0.00027 | 3.56   | 0.92 | Yığın and Ismen (2009)     |

(continued)

Table 1. (Continued)

| Season | Location | Species                         | N    | Sex | Year      | FM         | a       | a'   | b     | Source |                                 |
|--------|----------|---------------------------------|------|-----|-----------|------------|---------|------|-------|--------|---------------------------------|
| Winter | Medit    | <i>Nemipterus randalli</i>      | 10   | C   | 2007-2008 | T          | 0.01300 | 15.3 | 10.05 | 2.69   | Erguden et al. (2009)           |
| ASC    | Medit    | <i>Nemipterus randalli</i>      | 143  | C   | 2012-2013 | T          | 0.01200 | 9.5  | 22    | 2.98   | Özvarol (2014)                  |
| W-S    | BS       | <i>Neogobius melanostomus</i>   | 99   | C   | 2009-2011 | T          | 0.00470 | 8.6  | 19.1  | 3.39   | Demirhan and Can (2007)         |
| ASC    | MS       | <i>Nerophis ophidion</i> **     | 177  | C   | 2000-2001 | L-BS       | 0.00020 | 9.7  | 21.2  | 2.75   | Keskin and Gaygusuz (2010)      |
| ASC    | AS       | <i>Nerophis ophidion</i>        | 11   | C   | 1998-2001 | TR-GN-T-BS | 0.00090 | 10.3 | 18.2  | 2.13   | Ozaydin and Taskavak (2006)     |
| ASC    | AS       | <i>Nerophis ophidion</i>        | 86   | C   | 2000-2002 | TR         | 0.00000 | 78   | 214   | 2.42   | Gürkan and Taskavak (2007)      |
| ASC    | Medit    | <i>Nettastoma melanurum</i>     | 75   | C   | 2009-2011 | T          | 0.00020 | 25.1 | 79.8  | 3.18   | Deval et al. (2014)             |
| ASC    | Medit    | <i>Nezumia aequalis</i>         | 72   | C   | 2009-2011 | T          | 0.00420 | 8.4  | 20.3  | 2.80   | Deval et al. (2014)             |
| Fall   | Medit    | <i>Oblada melanura</i>          | 22   | C   | 2000      | L          | 0.03220 | 15.6 | 27    | 2.70   | Can et al. (2002)               |
| ASC    | AS       | <i>Oblada melanura</i>          | 316  | C   | 2004-2005 | GN-TR      | 0.00340 | 9.1  | 19.8  | 3.46   | Karakulak et al. (2006)         |
| ASC    | MS       | <i>Oedalechilus labeo</i> **    | 41   | C   | 2000-2001 | L-BS       | 0.00115 | 2.5  | 13.2  | 2.83   | Keskin and Gaygusuz (2010)      |
| ASC    | AS       | <i>Ophidion barbatum</i>        | 9    | C   | 2004-2005 | GN-TR      | 0.07620 | 19.7 | 25.4  | 2.08   | Karakulak et al. (2006)         |
| ASC    | MS       | <i>Ophidion barbatum</i>        | 15   | C   | 2007      | BS         | 0.00291 | 7.3  | 17.7  | 3.24   | Ozen et al. (2009)              |
| ASC    | AS       | <i>Ophidion barbatum</i>        | 44   | C   | 2005-2006 | T          | 0.00175 | 9.5  | 20.2  | 3.32   | Ismen et al. (2007)             |
| ASC    | Medit    | <i>Ophisurus serpens</i>        | 41   | C   | 2001-2003 | T-L        | 0.00150 | 12.1 | 50.1  | 2.96   | Sangun et al. (2007)            |
| ASC    | Medit    | <i>Oxyurichthys petersii</i> ** | 112  | C   | 1997-1998 | T-GN       | 0.00001 | 6.1  | 12.2  | 3.06   | Taskavak and Bilecenoglu (2001) |
| Winter | Medit    | <i>Oxyurichthys petersii</i>    | 175  | C   | 2007-2008 | T          | 0.00640 | 19.2 | 13.3  | 2.86   | Erguden et al. (2009)           |
| ASC    | Medit    | <i>Pagellus acarne</i>          | 83   | C   | 2001-2003 | T-L        | 0.01860 | 11   | 17    | 2.84   | Sangun et al. (2007)            |
| ASC    | AS       | <i>Pagellus acarne</i>          | 334  | C   | 2005-2006 | T          | 0.01040 | 16.4 | 51.6  | 3.06   | İlkyaz et al. (2008)            |
| ASC    | Medit    | <i>Pagellus acarne</i>          | 901  | C   | 1999-2000 | T          | 0.00750 | 3.6  | 15.3  | 3.15   | Çiçek et al. (2006)             |
| ASC    | AS       | <i>Pagellus bogaraveo</i>       | 77   | C   | 2005-2006 | T          | 0.01560 | 10.1 | 19.8  | 2.93   | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Pagellus bogaraveo</i>       | 2355 | C   | 2005-2006 | T          | 0.00747 | 6.5  | 25.1  | 3.20   | Ismen et al. (2007)             |
| F-W    | AS       | <i>Pagellus erythrinus</i>      | 125  | C   | 2006      | TR-L       | 0.00620 | 30.9 | 18.6  | 3.04   | Ceyhan et al. (2009)            |
| ASC    | Medit    | <i>Pagellus erythrinus</i>      | 87   | C   | 2012-2013 | T          | 0.05110 | 11.6 | 21.5  | 2.51   | Özvarol (2014)                  |
| F-W    | Medit    | <i>Pagellus erythrinus</i>      | 43   | C   | 2008-2009 | GN-TR      | 0.04120 | 13.3 | 20.2  | 2.58   | Gokce et al. (2010)             |
| ASC    | AS       | <i>Pagellus erythrinus</i>      | 365  | C   | 2002-2003 | L          | 0.01760 | 12   | 30    | 2.89   | Akyol et al. (2007)             |
| ASC    | Medit    | <i>Pagellus erythrinus</i>      | 1787 | C   | 1999-2000 | T          | 0.01520 | 1.4  | 18.6  | 2.84   | Çiçek et al. (2006)             |
| ASC    | Medit    | <i>Pagellus erythrinus</i>      | 222  | C   | 2001-2003 | T-L        | 0.01450 | 7.9  | 31.58 | 2.91   | Sangun et al. (2007)            |
| ASC    | AS       | <i>Pagellus erythrinus</i>      | 1014 | C   | 2005-2006 | T          | 0.01340 | 12.1 | 42.3  | 2.98   | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Pagellus erythrinus</i>      | 169  | C   | 2004-2005 | GN-TR      | 0.01240 | 9.9  | 29.8  | 3.01   | Karakulak et al. (2006)         |
| ASC    | AS       | <i>Pagellus erythrinus</i>      | 2480 | C   | 2005-2006 | T          | 0.01050 | 7.2  | 27    | 3.06   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Pagellus erythrinus</i> *    | 181  | C   | 1997-2000 | T          | 0.00110 | 78   | 228   | 2.66   | Türker et al. (2008)            |
| Fall   | Medit    | <i>Pagrus caeruleostictus</i>   | 311  | C   | 2000      | L          | 0.06710 | 12.5 | 38.8  | 2.52   | Can et al. (2002)               |
| ASC    | Medit    | <i>Pagrus caeruleostictus</i>   | 684  | C   | 2001-2003 | T-L        | 0.01250 | 5.5  | 20.4  | 3.00   | Sangun et al. (2007)            |
| ASC    | AS       | <i>Pagrus caeruleostictus</i>   | 10   | C   | 2005-2006 | T          | 0.00280 | 6.5  | 23.7  | 3.48   | İlkyaz et al. (2008)            |
| ASC    | Medit    | <i>Pagrus pagrus</i>            | 127  | C   | 2012-2013 | T          | 0.01860 | 9.5  | 19    | 2.92   | Özvarol (2014)                  |

(continued)

Table 1. (Continued)

| Season | Location | Species                               | N   | Sex | Year      | FM    | a       | a'     | b    | Source                          |
|--------|----------|---------------------------------------|-----|-----|-----------|-------|---------|--------|------|---------------------------------|
| ASC    | AS       | <i>Pagrus pagrus</i>                  | 18  | C   | 2005-2006 | T     | 0.01710 | 1.1990 | 2.97 | İlkyaz et al. (2008)            |
| ASC    | MS       | <i>Parablennius sanguinolentus</i> ** | 10  | C   | 2000-2001 | L-BS  | 0.00082 | 1.1990 | 3.17 | Keskin and Gaygusuz (2010)      |
| ASC    | MS       | <i>Parablennius tentacularis</i> **   | 64  | C   | 2000-2001 | L-BS  | 0.00072 | 0.9601 | 3.13 | Keskin and Gaygusuz (2010)      |
| ASC    | Medit    | <i>Pelates quadrilineatus</i> **      | 76  | C   | 1997-1998 | T-GN  | 0.00001 | 0.0134 | 2.96 | Taskavak and Bilecenoglu (2001) |
| ASC    | Medit    | <i>Pempheris vanicolensis</i> **      | 46  | C   | 1997-1998 | T-GN  | 0.00001 | 0.0120 | 3.03 | Taskavak and Bilecenoglu (2001) |
| Spring | AS       | <i>Peristedion cataphractum</i>       | 11  | C   | 2003      | T     | 0.00480 | 2.97   | 2.97 | Filiz and Bilge (2004)          |
| ASC    | AS       | <i>Phycis blennoides</i>              | 359 | C   | 2005-2006 | T     | 0.00209 | 3.38   | 3.38 | Ismen et al. (2007)             |
| Spring | AS       | <i>Phycis blennoides</i>              | 12  | C   | 2003      | T     | 0.00170 | 3.55   | 3.55 | Filiz and Bilge (2004)          |
| ASC    | AS       | <i>Phycis phycis</i>                  | 59  | C   | 2004-2005 | GN-TR | 0.00520 | 3.19   | 3.19 | Karakulak et al. (2006)         |
| ASC    | BS       | <i>Platichthys flesus</i>             | 51  | C   | 2007      | T     | 0.00700 | 3.09   | 3.09 | Ak et al. (2009)                |
| Fall   | Medit    | <i>Pomadasy incisus</i>               | 106 | C   | 2000      | L     | 0.04650 | 2.60   | 2.60 | Can et al. (2002)               |
| ASC    | Medit    | <i>Pomadasy incisus</i>               | 23  | C   | 2001-2003 | T-L   | 0.01990 | 2.83   | 2.83 | Sangun et al. (2007)            |
| ASC    | MS       | <i>Pomatomus saltatrix</i>            | 17  | C   | 2009-2011 | T     | 0.38700 | 2.77   | 2.77 | Demirel and Dalkara (2012)      |
| F-W    | MS       | <i>Pomatomus saltatrix</i>            | 290 | C   | 2006-2007 | T     | 0.03250 | 2.53   | 2.53 | Bok et al. (2011)               |
| F-W    | BS       | <i>Pomatomus saltatrix</i>            | 143 | C   | 2004-2005 | T     | 0.01300 | 2.86   | 2.86 | Kalaycı et al. (2007)           |
| ASC    | BS       | <i>Pomatomus saltatrix</i>            | 14  | C   | 2007      | T     | 0.00300 | 3.34   | 3.34 | Ak et al. (2009)                |
| ASC    | MS       | <i>Pomatoschistus bathi</i> **        | 19  | C   | 2000-2001 | L-BS  | 0.00052 | 0.9141 | 3.25 | Keskin and Gaygusuz (2010)      |
| ASC    | MS       | <i>Pomatoschistus marmoratus</i>      | 71  | C   | 2009-2011 | T     | 0.00400 | 2.52   | 2.52 | Demirel and Dalkara (2012)      |
| ASC    | MS       | <i>Pomatoschistus minutus</i>         | 16  | C   | 2007      | BS    | 0.00363 | 3.19   | 3.19 | Ozen et al. (2009)              |
| ASC    | MS       | <i>Pomatoschistus pictus</i>          | 12  | C   | 2007      | BS    | 0.00599 | 3.12   | 3.12 | Ozen et al. (2009)              |
| ASC    | Medit    | <i>Raja asterias</i>                  | 113 | C   | 1999-2003 | T     | 0.00130 | 3.39   | 3.39 | Yeldan and Avsar (2007)         |
| F-W    | MS       | <i>Raja asterias</i>                  | 30  | C   | 2006-2007 | T     | 0.00000 | 3.24   | 3.24 | Bok et al. (2011)               |
| ASC    | MS       | <i>Raja clavata</i> *                 | 170 | C   | 2009-2011 | T     | 0.11300 | 2.42   | 2.42 | Demirel and Dalkara (2012)      |
| ASC    | AS       | <i>Raja clavata</i>                   | 112 | C   | 2005-2006 | T     | 0.01300 | 3.12   | 3.12 | Ismen et al. (2007)             |
| ASC    | Medit    | <i>Raja clavata</i>                   | 77  | C   | 1999-2003 | T     | 0.00370 | 3.08   | 3.08 | Yeldan and Avsar (2007)         |
| W-S    | BS       | <i>Raja clavata</i>                   | 27  | C   | 2009-2011 | T     | 0.00190 | 3.24   | 3.24 | Demirhan and Can (2007)         |
| ASC    | AS       | <i>Raja clavata</i>                   | 226 | C   | 2005-2007 | T     | 0.00163 | 3.32   | 3.32 | Yığın and Ismen (2009)          |
| Spring | AS       | <i>Raja clavata</i>                   | 37  | C   | 2003      | T     | 0.00160 | 3.30   | 3.30 | Filiz and Bilge (2004)          |
| ASC    | AS       | <i>Raja clavata</i>                   | 31  | C   | 1999-2000 | T     | 0.00160 | 3.29   | 3.29 | Filiz and Mater (2002)          |
| F-W    | MS       | <i>Raja clavata</i> *                 | 24  | C   | 2006-2007 | T     | 0.00001 | 2.87   | 2.87 | Bok et al. (2011)               |
| ASC    | AS       | <i>Raja miraletus</i>                 | 30  | C   | 2005-2006 | T     | 0.00891 | 3.22   | 3.22 | Ismen et al. (2007)             |
| ASC    | AS       | <i>Raja miraletus</i>                 | 12  | C   | 2005      | T     | 0.00630 | 2.95   | 2.95 | Ozaydin et al. (2007)           |
| ASC    | AS       | <i>Raja miraletus</i>                 | 52  | C   | 2005-2007 | T     | 0.00173 | 3.27   | 3.27 | Yığın and Ismen (2009)          |
| Spring | AS       | <i>Raja miraletus</i>                 | 13  | C   | 2003      | T     | 0.00010 | 4.15   | 4.15 | Filiz and Bilge (2004)          |
| ASC    | AS       | <i>Raja miraletus</i>                 | 13  | C   | 1999-2000 | T     | 0.00010 | 4.02   | 4.02 | Filiz and Mater (2002)          |

(continued)



Table 1. (Continued)

| Season | Location | Species                      | N    | Sex | Year      | FM     | a       | a'     | b    | Source |                                 |
|--------|----------|------------------------------|------|-----|-----------|--------|---------|--------|------|--------|---------------------------------|
| ASC    | AS       | <i>Raja radula</i>           | 49   | C   | 2005-2006 | T      | 0.01131 |        | 3.25 | 0.98   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Raja radula</i>           | 25   | C   | 2004-2005 | GN-TR  | 0.00300 |        | 3.22 | 0.94   | Karakulak et al. (2006)         |
| ASC    | AS       | <i>Raja radula</i>           | 204  | C   | 2005-2007 | T      | 0.00205 |        | 3.32 | 0.97   | Yigin and Ismen (2009)          |
| ASC    | Medit    | <i>Raja radula</i>           | 295  | C   | 1999-2003 | T      | 0.00120 |        | 3.36 | 0.99   | Yeldan and Avsar (2007)         |
| ASC    | Medit    | <i>Rhinobatos cemiculus</i>  | 262  | M   | 2010-2011 | L-T-GN | 0.00265 |        | 3.02 | 0.86   | Basusta et al. (2012)           |
| ASC    | Medit    | <i>Rhinobatos rhinobatos</i> | 20   | M   | 2010-2012 | L-T-GN | 0.00110 |        | 3.19 | 0.96   | Basusta et al. (2012)           |
| ASC    | AS       | <i>Rostroraja alba</i>       | 11   | C   | 2005      | T      | 0.00900 |        | 3.48 | 0.99   | Ozaydin et al. (2007)           |
| ASC    | AS       | <i>Rostroraja alba</i>       | 43   | C   | 2005-2006 | T      | 0.00662 |        | 3.20 | 0.99   | Ismen et al. (2007)             |
| Fall   | AS       | <i>Rostroraja alba</i>       | 12   | C   | 2011      | T      | 0.00210 |        | 3.21 | 0.99   | Yapici et al. (2015)            |
| ASC    | AS       | <i>Rostroraja alba</i>       | 126  | C   | 2005-2007 | T      | 0.00194 |        | 3.27 | 0.98   | Yigin and Ismen (2009)          |
| ASC    | MS       | <i>Salaria pavo</i>          | 14   | C   | 2007      | BS     | 0.01653 |        | 2.62 | 0.98   | Ozen et al. (2009)              |
| ASC    | MS       | <i>Sardina pilchardus**</i>  | 38   | C   | 2000-2001 | L-BS   | 0.00015 | 0.8262 | 3.74 | 0.86   | Keskin and Gaygusuz (2010)      |
| ASC    | AS       | <i>Sardina pilchardus</i>    | 87   | C   | 1997-2000 | T      | 0.00031 |        | 2.77 | 0.68   | Turker et al. (2008)            |
| ASC    | MS       | <i>Sardinella aurita**</i>   | 24   | C   | 2000-2001 | L-BS   | 0.00031 | 0.8518 | 3.44 | 0.81   | Keskin and Gaygusuz (2010)      |
| F-W    | MS       | <i>Sardinella aurita</i>     | 16   | C   | 2006-2007 | T      | 0.03330 |        | 2.27 | 0.88   | Bok et al. (2011)               |
| ASC    | AS       | <i>Sardinella aurita</i>     | 50   | C   | 2004-2005 | GN-TR  | 0.00620 |        | 3.08 | 0.91   | Karakulak et al. (2006)         |
| ASC    | Medit    | <i>Sargocentron rubrum**</i> | 38   | C   | 1997-1998 | T-GN   | 0.00002 | 0.0180 | 3.02 | 0.94   | Taskavak and Bilecenoglu (2001) |
| Fall   | Medit    | <i>Sargocentron rubrum</i>   | 57   | C   | 2000      | L      | 0.00910 |        | 3.27 | 0.86   | Can et al. (2002)               |
| ASC    | AS       | <i>Sarpa salpa</i>           | 80   | C   | 2004-2005 | GN-TR  | 0.00870 |        | 3.13 | 0.98   | Karakulak et al. (2006)         |
| F-W    | AS       | <i>Saurida undosquamis</i>   | 80   | C   | 2006      | TR-L   | 0.00420 |        | 3.37 | 0.95   | Ceyhan et al. (2009)            |
| Fall   | Medit    | <i>Saurida undosquamis</i>   | 100  | C   | 2000      | L      | 0.01170 |        | 2.80 | 0.90   | Can et al. (2002)               |
| F-W    | Medit    | <i>Saurida undosquamis</i>   | 79   | C   | 2008-2009 | GN-TR  | 0.01050 |        | 2.80 | 0.94   | Gokce et al. (2010)             |
| Winter | Medit    | <i>Saurida undosquamis</i>   | 304  | C   | 2007-2008 | T      | 0.00630 |        | 2.97 | 0.99   | Erguden et al. (2009)           |
| ASC    | AS       | <i>Saurida undosquamis</i>   | 80   | C   | 2002-2003 | L      | 0.00460 |        | 3.11 | 0.95   | Akyol et al. (2007)             |
| ASC    | Medit    | <i>Saurida undosquamis</i>   | 1801 | C   | 1999-2000 | T      | 0.00390 |        | 3.17 | 0.97   | Çiçek et al. (2006)             |
| ASC    | Medit    | <i>Saurida undosquamis</i>   | 416  | C   | 2001-2003 | T-L    | 0.00390 |        | 3.15 | 0.96   | Sangun et al. (2007)            |
| ASC    | Medit    | <i>Saurida undosquamis</i>   | 211  | C   | 2012-2013 | T      | 0.00370 |        | 3.19 | 0.97   | Özvarol (2014)                  |
| ASC    | MS       | <i>Sciaena umbra**</i>       | 12   | C   | 2000-2001 | L-BS   | 0.00069 | 0.9951 | 3.16 | 0.98   | Keskin and Gaygusuz (2010)      |
| ASC    | AS       | <i>Sciaena umbra</i>         | 24   | C   | 2004-2005 | GN-TR  | 0.00550 |        | 3.23 | 0.98   | Karakulak et al. (2006)         |
| ASC    | AS       | <i>Scomber japonicus</i>     | 25   | C   | 2004-2005 | GN-TR  | 0.00640 |        | 3.11 | 0.98   | Karakulak et al. (2006)         |
| ASC    | Medit    | <i>Scomber japonicus</i>     | 11   | C   | 2001-2003 | T-L    | 0.00560 |        | 3.11 | 0.95   | Sangun et al. (2007)            |
| ASC    | AS       | <i>Scomber japonicus</i>     | 45   | C   | 2005-2006 | T      | 0.00164 |        | 3.52 | 0.97   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Scomber scombrus</i>      | 100  | C   | 2005-2006 | T      | 0.00286 |        | 3.30 | 0.96   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Scomber scombrus</i>      | 54   | C   | 2004-2005 | GN-TR  | 0.00250 |        | 3.38 | 0.85   | Karakulak et al. (2006)         |
| ASC    | AS       | <i>Scomber scombrus</i>      | 52   | C   | 1997-2000 | T      | 0.00000 |        | 3.81 | 0.99   | Turker et al. (2008)            |
| ASC    | AS       | <i>Scophthalmus rhombus</i>  | 10   | C   | 2006-2008 | T      | 0.00290 |        | 3.42 | 0.98   | Ozekinci et al. (2009)          |

(continued)

Table 1. (Continued)

| Season | Location | Species                        | N    | Sex | Year      | FM         | 10   | 61   | a       | a'     | b    | Source |                             |
|--------|----------|--------------------------------|------|-----|-----------|------------|------|------|---------|--------|------|--------|-----------------------------|
| ASC    | BS       | <i>Scophthalmus maximus</i>    | 63   | C   | 2007      | T          | 10   | 61   | 0.00700 |        | 3.25 | 0.98   | Ak et al. (2009)            |
| ASC    | Medit    | <i>Scorpaena elongata</i>      | 114  | C   | 2009-2011 | T          | 5.6  | 42.1 | 0.02300 |        | 2.88 | 1.00   | Deval et al. (2014)         |
| ASC    | AS       | <i>Scorpaena notata</i>        | 113  | C   | 2005-2006 | T          | 5.8  | 20.2 | 0.03291 |        | 2.75 | 0.96   | Ismen et al. (2007)         |
| ASC    | AS       | <i>Scorpaena notata</i>        | 565  | C   | 2005      | T          | 8.4  | 17   | 0.02130 |        | 2.96 | 0.96   | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Scorpaena notata</i>        | 357  | C   | 2005-2006 | T          | 7.5  | 18.7 | 0.01670 |        | 3.06 | 0.96   | Ilkyaz et al. (2008)        |
| ASC    | AS       | <i>Scorpaena notata</i>        | 108  | C   | 2004-2005 | GN-TR      | 8.1  | 15.1 | 0.01650 |        | 3.02 | 0.88   | Karakulak et al. (2006)     |
| ASC    | AS       | <i>Scorpaena notata</i>        | 52   | C   | 1998-2001 | TR-GN-T-BS | 7.9  | 24.3 | 0.01400 |        | 3.09 | 0.97   | Ozaydin and Taskavak (2006) |
| ASC    | MS       | <i>Scorpaena porcus</i> **     | 45   | C   | 2000-2001 | L-BS       | 4.9  | 19   | 0.00158 | 1.9349 | 3.09 | 0.98   | Keskin and Gaygusuz (2010)  |
| ASC    | AS       | <i>Scorpaena porcus</i>        | 10   | C   | 2005-2006 | T          | 10   | 22   | 0.02555 |        | 2.88 | 0.99   | Ismen et al. (2007)         |
| ASC    | AS       | <i>Scorpaena porcus</i>        | 9    | C   | 2005-2006 | T          | 31.2 | 85.5 | 0.02150 |        | 2.96 | 0.97   | Ilkyaz et al. (2008)        |
| ASC    | AS       | <i>Scorpaena porcus</i>        | 255  | C   | 2004-2005 | GN-TR      | 8    | 27.3 | 0.02150 |        | 2.92 | 0.93   | Karakulak et al. (2006)     |
| ASC    | AS       | <i>Scorpaena porcus</i>        | 50   | C   | 1998-2001 | TR-GN-T-BS | 14.1 | 25.6 | 0.02010 |        | 3.00 | 0.96   | Ozaydin and Taskavak (2006) |
| F-W    | BS       | <i>Scorpaena porcus</i>        | 136  | C   | 2004-2005 | T          | 8.5  | 29.2 | 0.01730 |        | 3.03 | 0.98   | Kalaycı et al. (2007)       |
| ASC    | AS       | <i>Scorpaena porcus</i>        | 86   | C   | 2005      | T          | 8.6  | 27.2 | 0.01590 |        | 3.07 | 0.99   | Ozaydin et al. (2007)       |
| W-S    | BS       | <i>Scorpaena porcus</i>        | 470  | C   | 2009-2011 | T          | 4.6  | 17.5 | 0.01240 |        | 3.19 | 0.94   | Demirhan and Can (2007)     |
| ASC    | BS       | <i>Scorpaena porcus</i>        | 351  | C   | 2007      | T          | 5    | 34.2 | 0.00900 |        | 3.27 | 0.88   | Ak et al. (2009)            |
| F-W    | MS       | <i>Scorpaena porcus</i>        | 15   | C   | 2006-2007 | T          | 17.3 | 21.4 | 0.00670 |        | 3.34 | 0.94   | Bok et al. (2011)           |
| ASC    | AS       | <i>Scorpaena scrofa</i>        | 12   | C   | 2005      | T          | 10.5 | 28.3 | 0.04480 |        | 2.69 | 0.98   | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Scorpaena scrofa</i>        | 129  | C   | 1998-2001 | TR-GN-T-BS | 8.2  | 30.1 | 0.02910 |        | 2.80 | 0.99   | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Scorpaena scrofa</i>        | 15   | C   | 2004-2005 | GN-TR      | 12.3 | 39.1 | 0.01800 |        | 3.01 | 0.99   | Karakulak et al. (2006)     |
| ASC    | MS       | <i>Scyltorhinus canicula</i>   | 189  | C   | 2009-2011 | T          | 20   | 50   | 0.00400 |        | 2.87 | 0.87   | Demirel and Dalkara (2012)  |
| ASC    | AS       | <i>Scyltorhinus canicula</i>   | 1888 | U   | 2005-2009 | T          | 9.6  | 91.3 | 0.00170 |        | 3.17 | 0.98   | Ismen et al. (2009)         |
| ASC    | AS       | <i>Scyltorhinus canicula</i>   | 1501 | C   | 2005-2006 | T          | 9.6  | 62   | 0.00169 |        | 3.17 | 0.99   | Ismen et al. (2007)         |
| ASC    | AS       | <i>Scyltorhinus canicula</i>   | 113  | C   | 1999-2000 | T          | 17.5 | 52.5 | 0.00160 |        | 3.18 | 0.98   | Filiz and Mater (2002)      |
| Spring | AS       | <i>Scyltorhinus canicula</i>   | 637  | C   | 2003      | T          | 10.5 | 50.9 | 0.00120 |        | 3.26 | 0.99   | Filiz and Bilge (2004)      |
| ASC    | AS       | <i>Scyltorhinus canicula</i>   | 744  | C   | 2005-2006 | T          | 12.2 | 19.1 | 0.00120 |        | 3.29 | 0.96   | Ilkyaz et al. (2008)        |
| ASC    | AS       | <i>Scyltorhinus canicula</i>   | 187  | C   | 2005      | T          | 28.6 | 51.5 | 0.00060 |        | 3.44 | 0.95   | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Scyltorhinus canicula</i> * | 112  | C   | 1997-2000 | T          | 246  | 786  | 0.00002 |        | 3.10 | 0.86   | Türker et al. (2008)        |
| ASC    | AS       | <i>Scyltorhinus stellaris</i>  | 34   | C   | 2005      | T          | 14.5 | 71   | 0.00650 |        | 2.82 | 0.98   | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Scyltorhinus stellaris</i>  | 11   | C   | 2005-2006 | T          | 7    | 16.3 | 0.00200 |        | 3.23 | 1.00   | Ilkyaz et al. (2008)        |
| ASC    | AS       | <i>Scyltorhinus stellaris</i>  | 12   | U   | 2005-2009 | T          | 16.5 | 61.6 | 0.00090 |        | 3.37 | 1.00   | Ismen et al. (2009)         |
| ASC    | Medit    | <i>Serranus cabrilla</i>       | 126  | C   | 2001-2003 | T-L        | 7.1  | 18.9 | 0.06620 |        | 3.22 | 0.98   | Sangun et al. (2007)        |
| ASC    | Medit    | <i>Serranus cabrilla</i>       | 41   | C   | 1999-2000 | T          | 5.5  | 8.9  | 0.01310 |        | 2.90 | 0.91   | Çiçek et al. (2006)         |
| ASC    | AS       | <i>Serranus cabrilla</i>       | 714  | C   | 2005-2006 | T          | 47.1 | 88.3 | 0.01240 |        | 2.96 | 0.98   | Ilkyaz et al. (2008)        |
| ASC    | AS       | <i>Serranus cabrilla</i>       | 200  | C   | 1998-2001 | TR-GN-T-BS | 11.9 | 21.8 | 0.01220 |        | 2.99 | 0.94   | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Serranus cabrilla</i>       | 91   | C   | 2004-2005 | GN-TR      | 11.9 | 19.8 | 0.01120 |        | 3.00 | 0.68   | Karakulak et al. (2006)     |

(continued)

Table 1. (Continued)

| Season | Location | Species                       | N    | Sex | Year      | FM         | a       | a'     | b    | Source |                                 |
|--------|----------|-------------------------------|------|-----|-----------|------------|---------|--------|------|--------|---------------------------------|
| ASC    | AS       | <i>Serranus cabrilla</i>      | 974  | C   | 2005      | T          | 0.01110 |        | 2.99 | 0.98   | Ozaydin et al. (2007)           |
| F-W    | MS       | <i>Serranus cabrilla</i>      | 15   | C   | 2006-2007 | T          | 0.00910 |        | 3.19 | 0.98   | Bok et al. (2011)               |
| ASC    | Medit    | <i>Serranus cabrilla</i>      | 52   | C   | 2012-2013 | T          | 0.00910 |        | 3.05 | 0.96   | Özvarol (2014)                  |
| ASC    | AS       | <i>Serranus cabrilla</i>      | 34   | C   | 2005-2006 | T          | 0.00861 |        | 3.06 | 0.95   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Serranus cabrilla</i>      | 602  | C   | 1997-2000 | T          | 0.00071 |        | 2.63 | 0.87   | Türker et al. (2008)            |
| ASC    | MS       | <i>Serranus hepatus</i> *, ** | 5    | C   | 2000-2001 | L-BS       | 0.00153 | 1.5230 | 3.00 | 1.00   | Keskin and Gaygusuz (2010)      |
| ASC    | AS       | <i>Serranus hepatus</i>       | 78   | C   | 1997-2000 | T          | 0.04100 |        | 2.80 | 0.79   | Türker et al. (2008)            |
| ASC    | MS       | <i>Serranus hepatus</i>       | 379  | C   | 2009-2011 | T          | 0.03600 |        | 2.62 | 0.75   | Demirel and Dalkara (2012)      |
| F-W    | MS       | <i>Serranus hepatus</i>       | 111  | C   | 2006-2007 | T          | 0.03190 |        | 2.71 | 0.87   | Bok et al. (2011)               |
| ASC    | Medit    | <i>Serranus hepatus</i>       | 100  | C   | 2012-2013 | T          | 0.02880 |        | 2.73 | 0.73   | Özvarol (2014)                  |
| ASC    | AS       | <i>Serranus hepatus</i>       | 2543 | C   | 2005      | T          | 0.02410 |        | 2.79 | 0.95   | Ozaydin et al. (2007)           |
| ASC    | AS       | <i>Serranus hepatus</i>       | 143  | C   | 1998-2001 | TR-GN-T-BS | 0.01620 |        | 3.00 | 0.98   | Ozaydin and Taskavak (2006)     |
| ASC    | Medit    | <i>Serranus hepatus</i>       | 584  | C   | 1999-2000 | T          | 0.01610 |        | 3.03 | 0.97   | Çiçek et al. (2006)             |
| ASC    | AS       | <i>Serranus hepatus</i>       | 1285 | C   | 2005-2006 | T          | 0.01490 |        | 3.04 | 0.95   | İlkyaz et al. (2008)            |
| ASC    | Medit    | <i>Serranus hepatus</i>       | 573  | C   | 2001-2003 | T-L        | 0.01430 |        | 3.04 | 0.95   | Sanguin et al. (2007)           |
| ASC    | AS       | <i>Serranus scriba</i>        | 313  | C   | 2005      | T          | 0.00970 |        | 3.14 | 0.99   | Ozaydin et al. (2007)           |
| ASC    | AS       | <i>Serranus scriba</i>        | 311  | C   | 2004-2005 | GN-TR      | 0.00650 |        | 3.24 | 0.97   | Karakulak et al. (2006)         |
| ASC    | Medit    | <i>Serranus scriba</i>        | 8    | C   | 2001-2003 | T-L        | 0.00440 |        | 3.41 | 0.95   | Sanguin et al. (2007)           |
| F-W    | AS       | <i>Siganus luridus</i>        | 22   | C   | 2006      | TR-L       | 0.01450 |        | 3.03 | 0.96   | Ceyhan et al. (2009)            |
| Winter | Medit    | <i>Siganus luridus</i>        | 21   | C   | 2007-2008 | T          | 0.01360 |        | 2.92 | 0.95   | Erguden et al. (2009)           |
| F-W    | AS       | <i>Siganus rivulatus</i>      | 56   | C   | 2006      | TR-L       | 0.00980 |        | 3.04 | 0.88   | Ceyhan et al. (2009)            |
| Winter | Medit    | <i>Siganus rivulatus</i>      | 122  | C   | 2007-2008 | T          | 0.01700 |        | 2.82 | 0.89   | Erguden et al. (2009)           |
| F-W    | Medit    | <i>Siganus rivulatus</i>      | 5    | C   | 2008-2009 | GN-TR      | 0.01270 |        | 2.92 | 0.99   | Gokce et al. (2010)             |
| ASC    | Medit    | <i>Siganus rivulatus</i> **   | 355  | C   | 1997-1998 | T-GN       | 0.00000 | 0.0075 | 3.20 | 0.98   | Taskavak and Bilecenoglu (2001) |
| Winter | Medit    | <i>Sillago sihama</i>         | 23   | C   | 2007-2008 | T          | 0.00530 |        | 3.06 | 0.96   | Erguden et al. (2009)           |
| ASC    | Medit    | <i>Sillago sihama</i> **      | 108  | C   | 1997-1998 | T-GN       | 0.00000 | 0.0032 | 3.36 | 0.93   | Taskavak and Bilecenoglu (2001) |
| F-W    | MS       | <i>Solea kleinii</i>          | 20   | C   | 2006-2007 | T          | 0.03140 |        | 2.50 | 0.98   | Bok et al. (2011)               |
| ASC    | MS       | <i>Solea nasuta</i> **        | 5    | C   | 2000-2001 | L-BS       | 0.00050 | 0.8394 | 3.23 | 1.00   | Keskin and Gaygusuz (2010)      |
| ASC    | BS       | <i>Solea nasuta</i>           | 100  | C   | 2007      | T          | 0.01600 |        | 2.76 | 0.96   | Ak et al. (2009)                |
| F-W    | Medit    | <i>Solea solea</i>            | 13   | C   | 2008-2009 | GN-TR      | 0.04900 |        | 2.35 | 0.98   | Gokce et al. (2010)             |
| ASC    | AS       | <i>Solea solea</i>            | 44   | C   | 2002      | T          | 0.02320 |        | 2.73 | 0.74   | Bayhan et al. (2008)            |
| ASC    | AS       | <i>Solea solea</i>            | 130  | C   | 2006-2008 | T          | 0.01920 |        | 2.73 | 0.96   | Ozekinci et al. (2009)          |
| ASC    | MS       | <i>Solea solea</i>            | 53   | C   | 2009-2011 | T          | 0.00600 |        | 3.06 | 853.00 | Demirel and Dalkara (2012)      |
| F-W    | MS       | <i>Solea solea</i>            | 55   | C   | 2006-2007 | T          | 0.00430 |        | 3.17 | 0.93   | Bok et al. (2011)               |
| ASC    | AS       | <i>Solea solea</i>            | 79   | C   | 2005-2006 | T          | 0.00375 |        | 3.25 | 0.97   | Ismen et al. (2007)             |
| ASC    | AS       | <i>Solea solea</i>            | 72   | C   | 2005-2006 | T          | 0.00300 |        | 3.27 | 0.97   | İlkyaz et al. (2008)            |

(continued)

Table 1. (Continued)

| Season | Location | Species                        | N    | Sex | Year      | FM         | a    | a'    | b    | Source  |                                 |
|--------|----------|--------------------------------|------|-----|-----------|------------|------|-------|------|---------|---------------------------------|
| ASC    | AS       | <i>Solea solea</i>             | 74   | C   | 1998-2001 | TR-GN-T-BS | 20.4 | 37    | 3.39 | 0.00220 | Ozaydin and Taskavak (2006)     |
| ASC    | AS       | <i>Solea solea</i>             | 110  | C   | 2005      | T          | 19.7 | 31.9  | 3.20 | 0.00210 | Ozaydin et al. (2007)           |
| F-W    | AS       | <i>Sparus aurata</i>           | 59   | C   | 2006      | TR-L       | 26.7 | 14.6  | 2.89 | 0.01760 | Ceyhan et al. (2009)            |
| Fall   | Medit    | <i>Sparus aurata</i>           | 21   | C   | 2000      | L          | 16.9 | 32    | 2.68 | 0.04060 | Can et al. (2002)               |
| ASC    | Medit    | <i>Sparus aurata</i>           | 298  | C   | 2001-2003 | T-L        | 10.3 | 31.8  | 2.84 | 0.02200 | Sangun et al. (2007)            |
| ASC    | Medit    | <i>Sparus aurata</i>           | 13   | C   | 1999-2000 | T          | 15.5 | 27.9  | 2.99 | 0.01450 | Çiçek et al. (2006)             |
| ASC    | AS       | <i>Sparus aurata</i>           | 141  | C   | 2002-2003 | L          | 14.5 | 32.6  | 3.03 | 0.01220 | Akyol et al. (2007)             |
| ASC    | AS       | <i>Sparus aurata</i>           | 123  | C   | 2005-2006 | T          | 14.6 | 26.4  | 3.09 | 0.01000 | İlkyaz et al. (2008)            |
| ASC    | Medit    | <i>Sphyaena chrysoaenia**</i>  | 54   | C   | 1997-1998 | T-GN       | 12.6 | 23.1  | 2.63 | 0.00003 | Taskavak and Bilecenoglu (2001) |
| Winter | Medit    | <i>Sphyaena chrysoaenia</i>    | 67   | C   | 2007-2008 | T          | 32.2 | 28.93 | 3.41 | 0.00110 | Erguden et al. (2009)           |
| ASC    | Medit    | <i>Spicara flexuosa</i>        | 440  | C   | 2012-2013 | T          | 9    | 17.3  | 2.66 | 0.02600 | Özvarol (2014)                  |
| F-W    | Medit    | <i>Spicara maena</i>           | 17   | C   | 2008-2009 | GN-TR      | 13.3 | 17.9  | 2.80 | 0.02150 | Gokce et al. (2010)             |
| ASC    | AS       | <i>Spicara maena</i>           | 1081 | C   | 2005-2006 | T          | 15.2 | 59.3  | 2.97 | 0.01210 | İlkyaz et al. (2008)            |
| ASC    | MS       | <i>Spicara maena</i>           | 175  | C   | 2009-2011 | T          | 10.4 | 18    | 3.03 | 0.01000 | Demirel and Dalkara (2012)      |
| ASC    | AS       | <i>Spicara maena</i>           | 353  | C   | 2005-2006 | T          | 8.8  | 17.8  | 3.01 | 0.00984 | İsmen et al. (2007)             |
| ASC    | Medit    | <i>Spicara maena</i>           | 1381 | C   | 1999-2000 | T          | 4.2  | 17.8  | 3.12 | 0.00810 | Çiçek et al. (2006)             |
| ASC    | Medit    | <i>Spicara maena</i>           | 298  | C   | 2001-2003 | T-L        | 8.7  | 17.1  | 3.09 | 0.00800 | Sangun et al. (2007)            |
| ASC    | AS       | <i>Spicara maena</i>           | 830  | C   | 2004-2005 | GN-TR      | 11   | 22    | 3.51 | 0.00280 | Karakulak et al. (2006)         |
| ASC    | Medit    | <i>Spicara smaris</i>          | 176  | C   | 2001-2003 | T-L        | 7.5  | 16.9  | 2.59 | 0.02880 | Sangun et al. (2007)            |
| ASC    | Medit    | <i>Spicara smaris</i>          | 360  | C   | 1999-2000 | T          | 4.9  | 14.9  | 2.67 | 0.01950 | Çiçek et al. (2006)             |
| ASC    | AS       | <i>Spicara smaris</i>          | 130  | C   | 2004-2005 | GN-TR      | 11.5 | 18.7  | 2.88 | 0.01380 | Karakulak et al. (2006)         |
| ASC    | AS       | <i>Spicara smaris</i>          | 1449 | C   | 2005-2006 | T          | 8.2  | 18.6  | 2.92 | 0.01180 | İsmen et al. (2007)             |
| ASC    | BS       | <i>Spicara smaris</i>          | 528  | C   | 2007      | T          | 8.3  | 24.2  | 3.01 | 0.00900 | Ak et al. (2009)                |
| F-W    | MS       | <i>Spicara smaris</i>          | 403  | C   | 2006-2007 | T          | 5.9  | 17.7  | 3.08 | 0.00890 | Bok et al. (2011)               |
| ASC    | AS       | <i>Spicara smaris</i>          | 42   | C   | 2005-2006 | T          | 12   | 51.4  | 3.07 | 0.00770 | İlkyaz et al. (2008)            |
| F-W    | BS       | <i>Spicara smaris</i>          | 83   | C   | 2004-2005 | T          | 11.2 | 20    | 3.15 | 0.00630 | Kalaycı et al. (2007)           |
| ASC    | AS       | <i>Spicara smaris*</i>         | 139  | C   | 1997-2000 | T          | 105  | 157   | 2.86 | 0.00031 | Türker et al. (2008)            |
| ASC    | AS       | <i>Spondyliosoma cantharus</i> | 46   | C   | 2004-2005 | GN-TR      | 8.2  | 28.7  | 2.87 | 0.01920 | Karakulak et al. (2006)         |
| ASC    | AS       | <i>Spondyliosoma cantharus</i> | 45   | C   | 2005-2006 | T          | 9.6  | 22.7  | 3.18 | 0.00902 | İsmen et al. (2007)             |
| ASC    | MS       | <i>Sprattus sprattus**</i>     | 52   | C   | 2000-2001 | L-BS       | 3.8  | 5.5   | 3.53 | 0.00023 | Keskin and Gaygusuz (2010)      |
| F-W    | BS       | <i>Sprattus sprattus</i>       | 5087 | C   | 2004-2005 | T          | 5.6  | 12.6  | 2.87 | 0.00790 | Kalaycı et al. (2007)           |
| ASC    | AS       | <i>Squalus acanthias</i>       | 565  | C   | 2005-2009 | T          | 17.1 | 115   | 3.05 | 0.00370 | İsmen et al. (2009)             |
| Spring | AS       | <i>Squalus acanthias</i>       | 32   | C   | 2003      | T          | 27   | 70.5  | 3.11 | 0.00310 | Filiz and Bilge (2004)          |
| ASC    | AS       | <i>Squalus acanthias</i>       | 32   | C   | 1999-2000 | T          | 27   | 70.5  | 3.11 | 0.00310 | Filiz and Mater (2002)          |
| F-W    | MS       | <i>Squalus acanthias</i>       | 8    | C   | 2006-2007 | T          | 41   | 52    | 2.62 | 0.00003 | Bok et al. (2011)               |
| ASC    | AS       | <i>Squalus blainvillei</i>     | 299  | C   | 2005-2006 | T          | 21.5 | 117.5 | 3.06 | 0.00345 | İsmen et al. (2007)             |

(continued)

Table 1. (Continued)

| Season | Location | Species                         | N   | Sex | Year      | FM         | a    | a'    | b       | Source |      |                                 |
|--------|----------|---------------------------------|-----|-----|-----------|------------|------|-------|---------|--------|------|---------------------------------|
| ASC    | AS       | <i>Squalus blainvillei</i>      | 27  | C   | 2005-2009 | T          | 30.5 | 121.6 | 0.00300 | 3.07   | 0.99 | Ismen et al. (2009)             |
| F-W    | MS       | <i>Squalus blainvillei</i>      | 18  | C   | 2006-2007 | T          | 38   | 56    | 0.00004 | 2.48   | 0.96 | Bok et al. (2011)               |
| ASC    | Medit    | <i>Stephanolepis diaspros</i>   | 52  | C   | 2001-2003 | T-L        | 7.3  | 14.2  | 0.02760 | 2.83   | 0.98 | Sangun et al. (2007)            |
| Winter | Medit    | <i>Stephanolepis diaspros</i>   | 56  | C   | 2007-2008 | T          | 13.5 | 11.62 | 0.01460 | 3.08   | 0.98 | Erguden et al. (2009)           |
| ASC    | Medit    | <i>Stephanolepis diaspros**</i> | 207 | C   | 1997-1998 | T-GN       | 7.1  | 13    | 0.00001 | 0.0104 | 0.92 | Taskavak and Bilecenoglu (2001) |
| ASC    | Medit    | <i>Stomias boa</i>              | 52  | C   | 2009-2011 | T          | 10   | 25.9  | 0.00050 | 3.36   | 0.94 | Deval et al. (2014)             |
| ASC    | MS       | <i>Symphodus cinereus**</i>     | 173 | C   | 2000-2001 | L-BS       | 2.3  | 11.3  | 0.00093 | 1.4044 | 0.99 | Keskin and Gaygusuz (2010)      |
| ASC    | AS       | <i>Symphodus cinereus</i>       | 20  | C   | 2005      | T          | 4    | 7     | 0.01140 | 3.07   | 0.96 | Ozaydin et al. (2007)           |
| ASC    | AS       | <i>Symphodus cinereus</i>       | 8   | C   | 2005-2006 | T          | 9    | 45.5  | 0.00780 | 3.26   | 0.99 | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Symphodus doderleini</i>     | 15  | C   | 2005      | T          | 5.5  | 9.6   | 0.01100 | 3.12   | 0.96 | Ozaydin et al. (2007)           |
| ASC    | AS       | <i>Symphodus mediterraneus</i>  | 39  | C   | 2004-2005 | GN-TR      | 9.8  | 16.4  | 0.01730 | 2.90   | 0.94 | Karakulak et al. (2006)         |
| ASC    | AS       | <i>Symphodus mediterraneus</i>  | 39  | C   | 2005      | T          | 4.9  | 20.2  | 0.01270 | 3.08   | 0.98 | Ozaydin et al. (2007)           |
| ASC    | MS       | <i>Symphodus ocellatus**</i>    | 575 | C   | 2000-2001 | L-BS       | 1.8  | 10.7  | 0.00102 | 1.2263 | 0.98 | Keskin and Gaygusuz (2010)      |
| ASC    | AS       | <i>Symphodus ocellatus</i>      | 216 | C   | 2005      | T          | 4.7  | 9.2   | 0.00850 | 3.22   | 0.96 | Ozaydin et al. (2007)           |
| ASC    | MS       | <i>Symphodus roissali**</i>     | 22  | C   | 2000-2001 | L-BS       | 2.4  | 14.1  | 0.00069 | 1.6782 | 0.99 | Keskin and Gaygusuz (2010)      |
| ASC    | AS       | <i>Symphodus rostratus</i>      | 19  | C   | 2004-2005 | GN-TR      | 9.6  | 12.7  | 0.01770 | 2.84   | 0.84 | Karakulak et al. (2006)         |
| ASC    | AS       | <i>Symphodus rostratus</i>      | 36  | C   | 2005      | T          | 7.1  | 10.9  | 0.00490 | 3.46   | 0.98 | Ozaydin et al. (2007)           |
| ASC    | MS       | <i>Symphodus tinca**</i>        | 41  | C   | 2000-2001 | L-BS       | 2.1  | 15.5  | 0.00111 | 1.3910 | 0.99 | Keskin and Gaygusuz (2010)      |
| ASC    | AS       | <i>Symphodus tinca</i>          | 89  | C   | 2005      | T          | 6.7  | 23    | 0.01830 | 2.91   | 0.98 | Ozaydin et al. (2007)           |
| ASC    | AS       | <i>Symphodus tinca</i>          | 248 | C   | 2004-2005 | GN-TR      | 10   | 26.8  | 0.01090 | 3.05   | 0.97 | Karakulak et al. (2006)         |
| Fall   | Medit    | <i>Symphodus tinca</i>          | 10  | C   | 2000      | L          | 12.1 | 17.2  | 0.00210 | 3.68   | 0.99 | Can et al. (2002)               |
| ASC    | AS       | <i>Symphurus nigrescens</i>     | 182 | C   | 2005-2006 | T          | 7.7  | 12.7  | 0.00880 | 2.98   | 0.96 | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Symphurus nigrescens</i>     | 7   | C   | 2006-2008 | T          | 9.8  | 10.9  | 0.00750 | 3.15   | 0.91 | Ozekinci et al. (2009)          |
| Fall   | AS       | <i>Symphurus nigrescens</i>     | 10  | C   | 2011      | T          | 7.8  | 10.6  | 0.00270 | 3.50   | 0.96 | Yapıcı et al. (2015)            |
| ASC    | Medit    | <i>Synchiropus phaeton</i>      | 65  | C   | 2009-2011 | T          | 4.8  | 13.3  | 0.01910 | 2.35   | 0.97 | Deval et al. (2014)             |
| ASC    | MS       | <i>Syngnathus abaster**</i>     | 298 | C   | 2000-2001 | L-BS       | 2.1  | 12.6  | 0.00020 | 0.3034 | 0.90 | Keskin and Gaygusuz (2010)      |
| ASC    | MS       | <i>Syngnathus acus**</i>        | 15  | C   | 2000-2001 | L-BS       | 10.3 | 37.8  | 0.00040 | 0.4689 | 0.96 | Keskin and Gaygusuz (2010)      |
| F-W    | MS       | <i>Syngnathus acus</i>          | 17  | C   | 2006-2007 | T          | 21.3 | 28.4  | 0.00030 | 3.12   | 0.93 | Bok et al. (2011)               |
| ASC    | AS       | <i>Syngnathus acus</i>          | 202 | C   | 1998-2001 | TR-GN-T-BS | 6.1  | 20.7  | 0.00010 | 3.63   | 0.97 | Ozaydin and Taskavak (2006)     |
| ASC    | AS       | <i>Syngnathus acus</i>          | 570 | C   | 2000-2002 | TR         | 33   | 256   | 0.00000 | 3.54   | 0.95 | Gürkan and Taskavak (2007)      |
| ASC    | MS       | <i>Syngnathus typhle**</i>      | 375 | C   | 2000-2001 | L-BS       | 6.2  | 31.6  | 0.00020 | 0.3141 | 0.97 | Keskin and Gaygusuz (2010)      |
| ASC    | AS       | <i>Syngnathus typhle</i>        | 125 | C   | 2000-2002 | TR         | 40   | 258   | 0.00000 | 3.00   | 0.96 | Gürkan and Taskavak (2007)      |
| ASC    | Medit    | <i>Synodus saurus</i>           | 161 | C   | 1999-2000 | T          | 10.7 | 31    | 0.00730 | 3.02   | 0.96 | Çiçek et al. (2006)             |

(continued)

Table 1. (Continued)

| Season | Location | Species                         | N    | Sex | Year      | FM         | a    | a'    | b       | Source |      |                             |
|--------|----------|---------------------------------|------|-----|-----------|------------|------|-------|---------|--------|------|-----------------------------|
| ASC    | AS       | <i>Synognathus typhle</i>       | 14   | C   | 1998-2001 | TR-GN-T-BS | 7.5  | 20.3  | 0.00020 | 3.22   | 0.94 | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Torpedo marmorata</i>        | 20   | C   | 2005-2006 | T          | 13.2 | 28.6  | 0.05920 | 2.64   | 0.99 | Ismen et al. (2007)         |
| ASC    | AS       | <i>Torpedo marmorata</i>        | 12   | C   | 2005      | T          | 10.3 | 37    | 0.05350 | 2.64   | 0.98 | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Torpedo marmorata</i>        | 20   | C   | 1999-2000 | T          | 9.6  | 25    | 0.04880 | 2.69   | 0.96 | Filiz and Mater (2002)      |
| Spring | AS       | <i>Torpedo marmorata</i>        | 37   | C   | 2003      | T          | 9.2  | 34    | 0.02730 | 2.91   | 0.98 | Filiz and Bilge (2004)      |
| ASC    | AS       | <i>Torpedo marmorata</i>        | 35   | C   | 2005-2006 | T          | 8.1  | 14.1  | 0.02320 | 2.98   | 0.99 | İlkyaz et al. (2008)        |
| ASC    | AS       | <i>Torpedo marmorata</i>        | 22   | C   | 2004-2005 | GN-TR      | 16.4 | 38.9  | 0.01390 | 3.10   | 0.95 | Karakulak et al. (2006)     |
| ASC    | Medit    | <i>Torpedo nobiliana</i>        | 92   | M   | 2010-2013 | L-T-GN     | 12   | 35    | 0.01500 | 3.06   | 0.85 | Basusta et al. (2012)       |
| ASC    | AS       | <i>Trachinus draco</i>          | 32   | C   | 2004-2005 | GN-TR      | 4.4  | 35.2  | 0.02430 | 2.58   | 0.92 | Karakulak et al. (2006)     |
| ASC    | AS       | <i>Trachinus draco</i>          | 95   | C   | 2005-2006 | T          | 8.2  | 28.2  | 0.00520 | 3.10   | 0.97 | İlkyaz et al. (2008)        |
| ASC    | Medit    | <i>Trachinus draco</i>          | 54   | C   | 2001-2003 | T-L        | 9    | 20    | 0.00520 | 3.09   | 0.99 | Sangun et al. (2007)        |
| ASC    | BS       | <i>Trachinus draco</i>          | 338  | C   | 2007      | T          | 5    | 35    | 0.00400 | 3.43   | 0.88 | Ak et al. (2009)            |
| ASC    | AS       | <i>Trachinus draco</i>          | 45   | C   | 2005      | T          | 17.2 | 34.1  | 0.00400 | 3.18   | 0.96 | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Trachinus draco</i>          | 1025 | C   | 2005-2006 | T          | 15   | 37    | 0.00366 | 3.20   | 0.97 | Ismen et al. (2007)         |
| ASC    | MS       | <i>Trachurus mediterraneus</i>  | 496  | C   | 2009-2011 | T          | 7.5  | 18.5  | 0.01800 | 2.73   | 0.84 | Demirel and Dalkara (2012)  |
| ASC    | Medit    | <i>Trachurus mediterraneus</i>  | 373  | C   | 2001-2003 | T-L        | 7    | 19.1  | 0.01280 | 2.81   | 0.88 | Sangun et al. (2007)        |
| ASC    | Medit    | <i>Trachurus mediterraneus</i>  | 718  | C   | 1999-2000 | T          | 2.6  | 16    | 0.01080 | 2.86   | 0.98 | Çiçek et al. (2006)         |
| ASC    | AS       | <i>Trachurus mediterraneus</i>  | 31   | C   | 2004-2005 | GN-TR      | 14.2 | 26.6  | 0.00470 | 3.17   | 0.95 | Karakulak et al. (2006)     |
| ASC    | AS       | <i>Trachurus mediterraneus</i>  | 446  | C   | 2005-2006 | T          | 7.5  | 20.9  | 0.00318 | 3.37   | 0.96 | Ismen et al. (2007)         |
| ASC    | AS       | <i>Trachurus mediterraneus*</i> | 76   | C   | 1997-2000 | T          | 73   | 225   | 0.00041 | 3.10   | 0.97 | Türker et al. (2008)        |
| ASC    | MS       | <i>Trachurus trachurus*</i>     | 156  | C   | 2009-2011 | T          | 11.2 | 21    | 0.02700 | 2.95   | 0.77 | Demirel and Dalkara (2012)  |
| ASC    | AS       | <i>Trachurus trachurus</i>      | 264  | C   | 2004-2005 | GN-TR      | 10.5 | 24.3  | 0.01130 | 2.90   | 0.92 | Karakulak et al. (2006)     |
| F-W    | BS       | <i>Trachurus trachurus</i>      | 747  | C   | 2004-2005 | T          | 7.3  | 18.3  | 0.00860 | 2.98   | 0.96 | Kalaycı et al. (2007)       |
| F-W    | MS       | <i>Trachurus trachurus</i>      | 307  | C   | 2006-2007 | T          | 8    | 16.4  | 0.00560 | 3.13   | 0.92 | Bok et al. (2011)           |
| ASC    | AS       | <i>Trachurus trachurus</i>      | 159  | C   | 2005-2006 | T          | 13.7 | 24.5  | 0.00470 | 3.20   | 0.98 | İlkyaz et al. (2008)        |
| ASC    | AS       | <i>Trachurus trachurus</i>      | 1205 | C   | 2005-2006 | T          | 7.5  | 33    | 0.00467 | 3.20   | 0.97 | Ismen et al. (2007)         |
| ASC    | BS       | <i>Trachurus trachurus</i>      | 267  | C   | 2007      | T          | 6    | 15.7  | 0.00400 | 3.25   | 0.95 | Ak et al. (2009)            |
| ASC    | AS       | <i>Trachurus trachurus*</i>     | 174  | C   | 1997-2000 | T          | 78   | 243   | 0.00021 | 2.88   | 0.94 | Türker et al. (2008)        |
| ASC    | Medit    | <i>Trichurus lepturus</i>       | 84   | C   | 2001-2003 | T-L        | 20.5 | 58.8  | 0.00830 | 2.33   | 0.73 | Sangun et al. (2007)        |
| ASC    | AS       | <i>Trigla lyra</i>              | 26   | C   | 2005-2006 | T          | 25.6 | 125.1 | 0.01700 | 2.74   | 0.98 | İlkyaz et al. (2008)        |
| ASC    | MS       | <i>Trigla lyra</i>              | 27   | C   | 2009-2011 | T          | 16.5 | 32.3  | 0.01200 | 2.83   | 0.93 | Demirel and Dalkara (2012)  |
| ASC    | AS       | <i>Trigla lyra</i>              | 531  | C   | 2005-2006 | T          | 18.6 | 47.1  | 0.00915 | 2.94   | 0.97 | Ismen et al. (2007)         |
| F-W    | MS       | <i>Trigla lyra</i>              | 96   | C   | 2006-2007 | T          | 4.5  | 51    | 0.00620 | 3.05   | 0.99 | Bok et al. (2011)           |

(continued)

Table 1. (Continued)

| Season | Location | Species                             | N    | Sex | Year      | FM         | a       | a'     | b    | Source                          |
|--------|----------|-------------------------------------|------|-----|-----------|------------|---------|--------|------|---------------------------------|
| ASC    | MS       | <i>Trigloporus lastoviza</i>        | 44   | C   | 2009-2011 | T          | 0.04900 |        | 2.57 | Demirel and Dalkara (2012)      |
| ASC    | MS       | <i>Tripterygion delaisi</i>         | 7    | C   | 2007      | BS         | 0.00605 |        | 3.07 | Ozen et al. (2009)              |
| ASC    | MS       | <i>Tripterygion tripteronotus</i>   | 8    | C   | 2007      | BS         | 0.00593 |        | 3.16 | Ozen et al. (2009)              |
| Fall   | AS       | <i>Trisopterus capelanus</i>        | 695  | C   | 2011      | T          | 0.00710 |        | 3.17 | Yapıcı et al. (2015)            |
| ASC    | AS       | <i>Trisopterus minutus</i>          | 980  | C   | 2005-2006 | T          | 0.00650 |        | 3.18 | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Trisopterus luscus capelanus</i> | 14   | C   | 1997-2000 | T          | 0.00004 |        | 3.19 | Türker et al. (2008)            |
| ASC    | AS       | <i>Trisopterus minutus</i>          | 780  | C   | 2005      | T          | 0.00710 |        | 3.17 | Ozaydın et al. (2007)           |
| ASC    | AS       | <i>Trisopterus minutus</i>          | 158  | C   | 1998-2001 | TR-GN-T-BS | 0.00670 |        | 3.18 | Ozaydın and Taskavak (2006)     |
| ASC    | AS       | <i>Trisopterus minutus</i>          | 229  | C   | 2005-2006 | T          | 0.00563 |        | 3.20 | İsmen et al. (2007)             |
| ASC    | Medit    | <i>Upeneus moluccensis**</i>        | 265  | C   | 1997-1998 | T-GN       | 0.00001 | 0.0142 | 3.02 | Taskavak and Bilecenoglu (2001) |
| F-W    | Medit    | <i>Upeneus moluccensis</i>          | 5    | C   | 2008-2009 | GN-TR      | 0.00590 |        | 3.24 | Gokce et al. (2010)             |
| ASC    | Medit    | <i>Upeneus moluccensis</i>          | 975  | C   | 1999-2000 | T          | 0.00550 |        | 3.26 | Çiçek et al. (2006)             |
| ASC    | Medit    | <i>Upeneus moluccensis</i>          | 93   | C   | 2012-2013 | T          | 0.00530 |        | 3.23 | Özvarol (2014)                  |
| Winter | Medit    | <i>Upeneus moluccensis</i>          | 297  | C   | 2007-2008 | T          | 0.00340 |        | 3.44 | Erguden et al. (2009)           |
| ASC    | Medit    | <i>Upeneus moluccensis</i>          | 651  | C   | 2001-2003 | T-L        | 0.00240 |        | 3.56 | Sangun et al. (2007)            |
| Winter | Medit    | <i>Upeneus pori</i>                 | 210  | C   | 2007-2008 | T          | 0.01570 |        | 2.82 | Erguden et al. (2009)           |
| ASC    | Medit    | <i>Upeneus pori</i>                 | 1225 | C   | 1999-2000 | T          | 0.00870 |        | 3.05 | Çiçek et al. (2006)             |
| ASC    | Medit    | <i>Upeneus pori**</i>               | 102  | C   | 1997-1998 | T-GN       | 0.00000 | 0.0050 | 3.26 | Taskavak and Bilecenoglu (2001) |
| ASC    | AS       | <i>Uranoscopus scaber</i>           | 62   | C   | 2004-2005 | GN-TR      | 0.01560 |        | 3.00 | Karakulak et al. (2006)         |
| ASC    | MS       | <i>Uranoscopus scaber</i>           | 49   | C   | 2009-2011 | T          | 0.01500 |        | 3.06 | Demirel and Dalkara (2012)      |
| W-S    | BS       | <i>Uranoscopus scaber</i>           | 69   | C   | 2009-2011 | T          | 0.01500 |        | 3.05 | Demirhan and Can (2007)         |
| F-W    | MS       | <i>Uranoscopus scaber</i>           | 82   | C   | 2006-2007 | T          | 0.01090 |        | 3.15 | Bok et al. (2011)               |
| ASC    | Medit    | <i>Uranoscopus scaber</i>           | 92   | C   | 2001-2003 | T-L        | 0.01030 |        | 3.15 | Sangun et al. (2007)            |
| ASC    | AS       | <i>Uranoscopus scaber</i>           | 157  | C   | 2005      | T          | 0.01000 |        | 3.19 | Ozaydın et al. (2007)           |
| ASC    | AS       | <i>Uranoscopus scaber</i>           | 219  | C   | 2005-2006 | T          | 0.00970 |        | 3.21 | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Uranoscopus scaber</i>           | 71   | C   | 2005-2006 | T          | 0.00804 |        | 3.25 | İsmen et al. (2007)             |
| ASC    | BS       | <i>Uranoscopus scaber</i>           | 620  | C   | 2007      | T          | 0.00800 |        | 3.23 | Ak et al. (2009)                |
| ASC    | MS       | <i>Zebrus zebrus</i>                | 5    | C   | 2007      | BS         | 0.00973 |        | 2.94 | Ozen et al. (2009)              |
| ASC    | Medit    | <i>Zeus faber</i>                   | 261  | C   | 1999-2000 | T          | 0.03270 |        | 2.71 | Çiçek et al. (2006)             |
| ASC    | AS       | <i>Zeus faber</i>                   | 83   | C   | 2005-2006 | T          | 0.01770 |        | 2.95 | İlkyaz et al. (2008)            |
| ASC    | AS       | <i>Zeus faber</i>                   | 242  | C   | 2005-2006 | T          | 0.01477 |        | 2.99 | İsmen et al. (2007)             |
| ASC    | AS       | <i>Zeus faber</i>                   | 22   | C   | 2005      | T          | 0.01330 |        | 3.05 | Ozaydın et al. (2007)           |
| ASC    | AS       | <i>Zosterisessor ophiocephalus</i>  | 168  | C   | 1998-2001 | TR-GN-T-BS | 0.00440 |        | 3.31 | Ozaydın and Taskavak (2006)     |

**Table 2.** Parameters of the length–weight relationship [weight (in g) and length (in cm and fork length)] of marine fish species from Turkish marine waters. Sex: (M, male; F, female; C, combined); Location= Place where study conducted (AS, Aegean Sea; BS, Black Sea; MS, Marmara Sea; Medit, Mediterranean Sea) Year= year of sampling; Season = sampling season (ASC, all seasons combined; F-W, Fall-Winter; W-S, Winter-Spring); FM= fishing method (T, trawl; L, Longline; BS, beach seine; GN, gill nets; TR, trammel); a= the intercept of the relationship provided by source; b= the slope of the relationship; = coefficient of determination; n= the sample size; Species are listed in alphabetical order.

| Season | Location | Species                          | N    | Sex | Year      | SM        | a    | b    | Source |       |       |                             |
|--------|----------|----------------------------------|------|-----|-----------|-----------|------|------|--------|-------|-------|-----------------------------|
| ASC    | AS       | <i>Atherina boyeri</i>           | 138  | C   | 1998-2001 | TR-GN-TBS | 4.8  | 9.8  | 0.0048 | 3.165 | 0.98  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Boops boops</i>               | 1197 | C   | 1998-2001 | TR-GN-TBS | 10.7 | 23.5 | 0.0127 | 3.033 | 0.92  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Chelidonichthys lastoviza</i> | 366  | C   | 2005      | T         | 8.2  | 19.8 | 0.0124 | 3.008 | 0.974 | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Chelidonichthys lucerna</i>   | 85   | C   | 2005      | T         | 16.2 | 41.1 | 0.0057 | 3.019 | 0.977 | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Chelon labrosus</i>           | 94   | C   | 1998-2001 | TR-GN-TBS | 13.5 | 24.9 | 0.0533 | 2.523 | 0.97  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Chromis chromis</i>           | 27   | C   | 2005      | T         | 8.2  | 11.2 | 0.0144 | 3.066 | 0.953 | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Dentex dentex</i>             | 17   | C   | 2005      | T         | 17.8 | 29.7 | 0.0164 | 3.032 | 0.985 | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Dentex macrophthalinus</i>    | 51   | C   | 1998-2001 | TR-GN-TBS | 9.9  | 19.5 | 0.0178 | 3.051 | 0.97  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Diplodus annularis</i>        | 929  | C   | 1998-2001 | TR-GN-TBS | 7.9  | 16.8 | 0.0245 | 2.973 | 0.94  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Diplodus annularis</i>        | 2517 | C   | 2005      | T         | 5.1  | 16.1 | 0.019  | 3.046 | 0.93  | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Diplodus puntazzo</i>         | 27   | C   | 2005      | T         | 8.6  | 21.4 | 0.0423 | 2.775 | 0.996 | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Diplodus vulgaris</i>         | 63   | C   | 1998-2001 | TR-GN-TBS | 8    | 15.4 | 0.0184 | 3.094 | 0.98  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Diplodus vulgaris</i>         | 1615 | C   | 2005      | T         | 5.5  | 23.1 | 0.0344 | 2.841 | 0.95  | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Engraulis encrasicolus</i>    | 513  | C   | 1998-2001 | TR-GN-TBS | 10.5 | 14.9 | 0.0116 | 2.84  | 0.94  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Gobius niger</i>              | 727  | C   | 1998-2001 | TR-GN-TBS | 6    | 15.6 | 0.0134 | 2.914 | 0.94  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Lepidotrigla cavillone</i>    | 31   | C   | 1998-2001 | TR-GN-TBS | 8    | 21.1 | 0.0101 | 3.143 | 0.95  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Lepidotrigla cavillone</i>    | 1517 | C   | 2005      | T         | 3.8  | 15.3 | 0.0117 | 3.051 | 0.95  | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Lithognathus mormyrus</i>     | 35   | C   | 1998-2001 | TR-GN-TBS | 15.5 | 22   | 0.0094 | 3.181 | 0.96  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Liza aurata</i>               | 81   | C   | 1998-2001 | TR-GN-TBS | 15.7 | 27.8 | 0.0113 | 3.016 | 0.93  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Liza saliens</i>              | 329  | C   | 1998-2001 | TR-GN-TBS | 15.8 | 35   | 0.012  | 2.99  | 0.95  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Mullus barbatus</i>           | 479  | C   | 1998-2001 | TR-GN-TBS | 7.5  | 20   | 0.0102 | 3.176 | 0.96  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Mullus barbatus</i>           | 1910 | C   | 2005      | T         | 5.4  | 21.2 | 0.0089 | 3.233 | 0.981 | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Mullus surmuletus</i>         | 51   | C   | 1998-2001 | TR-GN-TBS | 8.4  | 17   | 0.0167 | 3.011 | 0.96  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Mullus surmuletus</i>         | 117  | C   | 2005      | T         | 7.4  | 21.9 | 0.0106 | 3.202 | 0.99  | Ozaydin et al. (2007)       |
| F-W    | AS       | <i>Pagellus acarne</i>           | 46   | C   | 2006      | TR-L      | 14.1 | 12.1 | 0.0088 | 3.112 | 0.952 | Ceyhan et al. (2009)        |
| ASC    | AS       | <i>Pagellus acarne</i>           | 335  | C   | 1998-2001 | TR-GN-TBS | 8.6  | 14.5 | 0.0942 | 2.086 | 0.95  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Pagellus acarne</i>           | 303  | C   | 2005      | T         | 9.4  | 17.5 | 0.0302 | 2.782 | 0.963 | Ozaydin et al. (2007)       |

(continued)



Table 2. (Continued)

| Season | Location | Species                        | N   | Sex | Year      | SM        | a    | b    | Source |       |       |                             |
|--------|----------|--------------------------------|-----|-----|-----------|-----------|------|------|--------|-------|-------|-----------------------------|
| ASC    | AS       | <i>Pagellus bogaraveo</i>      | 51  | C   | 2005      | T         | 8.8  | 17.9 | 0.0179 | 2.985 | 0.981 | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Pagellus erythrinus</i>     | 226 | C   | 1998-2001 | TR-GN-TBS | 9    | 25.2 | 0.0122 | 3.034 | 0.99  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Pagellus erythrinus</i>     | 495 | C   | 2005      | T         | 5.9  | 19.5 | 0.0178 | 2.855 | 0.972 | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Pagrus pagrus</i>           | 12  | C   | 2005      | T         | 10.3 | 15.7 | 0.0266 | 2.736 | 0.96  | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Sardina pilchardus</i>      | 388 | C   | 1998-2001 | TR-GN-TBS | 9.2  | 14   | 0.0046 | 3.109 | 0.89  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Sardinella aurita</i>       | 677 | C   | 1998-2001 | TR-GN-TBS | 13   | 24.2 | 0.0088 | 3.112 | 0.9   | Ozaydin and Taskavak (2006) |
| F-W    | AS       | <i>Sarpa salpa</i>             | 77  | C   | 2006      | TR-L      | 18.2 | 14   | 0.0942 | 2.086 | 0.929 | Ceyhan et al. (2009)        |
| ASC    | AS       | <i>Sarpa salpa</i>             | 93  | C   | 1998-2001 | TR-GN-TBS | 13.9 | 27.5 | 0.0302 | 2.782 | 0.99  | Ozaydin and Taskavak (2006) |
| F-W    | AS       | <i>Scomber japonicus</i>       | 16  | C   | 2006      | TR-L      | 26.7 | 20.5 | 0.0179 | 2.985 | 0.996 | Ceyhan et al. (2009)        |
| ASC    | AS       | <i>Scomber japonicus</i>       | 129 | C   | 1998-2001 | TR-GN-TBS | 12.5 | 26   | 0.0122 | 3.034 | 0.98  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Scomber scombrus</i>        | 50  | C   | 1998-2001 | TR-GN-TBS | 19   | 28.5 | 0.0178 | 2.855 | 0.91  | Ozaydin and Taskavak (2006) |
| F-W    | AS       | <i>Seriola dumerili</i>        | 14  | C   | 2006      | TR-L      | 24.1 | 22   | 0.0266 | 2.736 | 0.964 | Ceyhan et al. (2009)        |
| ASC    | AS       | <i>Sparus aurata</i>           | 72  | C   | 1998-2001 | TR-GN-TBS | 15.3 | 28   | 0.0046 | 3.109 | 0.97  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Sparus aurata</i>           | 10  | C   | 2005      | T         | 18   | 26.1 | 0.0088 | 3.112 | 0.989 | Ozaydin et al. (2007)       |
| F-W    | AS       | <i>Sphyræna chrysoænia</i>     | 57  | C   | 2006      | TR-L      | 21.9 | 19.2 | 0.0942 | 2.086 | 0.936 | Ceyhan et al. (2009)        |
| F-W    | AS       | <i>Sphyræna sphyraena</i>      | 78  | C   | 2006      | TR-L      | 27.1 | 21   | 0.0302 | 2.782 | 0.712 | Ceyhan et al. (2009)        |
| ASC    | AS       | <i>Spicara flexuosa</i>        | 765 | C   | 1998-2001 | TR-GN-TBS | 8.3  | 18   | 0.0179 | 2.985 | 0.9   | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Spicara maena</i>           | 194 | C   | 1998-2001 | TR-GN-TBS | 8.7  | 19.5 | 0.0122 | 3.034 | 0.99  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Spicara maena</i>           | 494 | C   | 2005      | T         | 9    | 18.1 | 0.0178 | 2.855 | 0.98  | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Spicara smarîs</i>          | 163 | C   | 1998-2001 | TR-GN-TBS | 8.3  | 16.8 | 0.0266 | 2.736 | 0.96  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Spicara smarîs</i>          | 27  | C   | 2005      | T         | 10   | 15.1 | 0.0046 | 3.109 | 0.963 | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Spondylitoma cantharus</i>  | 66  | C   | 2005      | T         | 8.4  | 18.5 | 0.0088 | 3.112 | 0.991 | Ozaydin et al. (2007)       |
| F-W    | AS       | <i>Trachurus mediterraneus</i> | 45  | C   | 2006      | TR-L      | 22.7 | 16.5 | 0.0942 | 2.086 | 0.963 | Ceyhan et al. (2009)        |
| ASC    | AS       | <i>Trachurus mediterraneus</i> | 549 | C   | 1998-2001 | TR-GN-TBS | 9.3  | 22.6 | 0.0302 | 2.782 | 0.98  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Trachurus mediterraneus</i> | 12  | C   | 2005      | T         | 6.8  | 16.3 | 0.0179 | 2.985 | 0.993 | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Trachurus trachurus</i>     | 575 | C   | 1998-2001 | TR-GN-TBS | 10.3 | 25.6 | 0.0122 | 3.034 | 0.97  | Ozaydin and Taskavak (2006) |
| ASC    | AS       | <i>Trachurus trachurus</i>     | 501 | C   | 2005      | T         | 6.1  | 16.9 | 0.0178 | 2.855 | 0.946 | Ozaydin et al. (2007)       |
| ASC    | AS       | <i>Trigla lucerna</i>          | 470 | C   | 1998-2001 | TR-GN-TBS | 12.7 | 34.4 | 0.0266 | 2.736 | 0.98  | Ozaydin and Taskavak (2006) |
| F-W    | AS       | <i>Upeneus moluccensis</i>     | 51  | C   | 2006      | TR-L      | 12.7 | 10   | 0.0046 | 3.109 | 0.929 | Ceyhan et al. (2009)        |

**Table 3.** Parameters of the length-weight relationship [weight (in g) and length (in cm and disk width)] of marine fish species from Turkish marine waters. Sex: (M, male; F, female; C, combined); Location= Place where study conducted (AS, Aegean Sea; BS, Black Sea; MS, Marmara Sea; Medit, Mediterranean Sea) Year= year of sampling; Season = sampling season (ASC, all seasons combined; F-W, Fall-Winter; W-S, Winter-Spring); FM= fishing method (T, trawl; L, Longline; BS, beach seine; GN, gill nets; TR, trammel); a= the intercept of the relationship provided by source; b= the slope of the relationship; n= the sample size; SM= coefficient of determination; n= the sample size; Species are listed in alphabetical order.

| Season | Location | Species                     | N   | Sex | Year      | SM     | a      | b      | Source                |
|--------|----------|-----------------------------|-----|-----|-----------|--------|--------|--------|-----------------------|
| ASC    | Medit    | <i>Dasyatis pastinaca</i>   | 417 | M   | 2010-2011 | L-T-GN | 0.0419 | 3.3169 | Basusta et al. (2012) |
| ASC    | AS       | <i>Dasyatis pastinaca</i>   | 31  | C   | 2005-2006 | T      | 0.0102 | 3.37   | İlkyaz et al. (2008)  |
| ASC    | Medit    | <i>Gymnura altavela</i>     | 104 | M   | 2010-2011 | L-T-GN | 0.017  | 2.7948 | Basusta et al. (2012) |
| ASC    | AS       | <i>Gymnura altavela</i>     | 9   | C   | 2005-2006 | T      | 0.0025 | 3.27   | İlkyaz et al. (2008)  |
| ASC    | AS       | <i>Myliobatis aquila</i>    | 39  | C   | 2005-2006 | T      | 0.0058 | 3.28   | İlkyaz et al. (2008)  |
| ASC    | Medit    | <i>Pteromylaeus bovinus</i> | 22  | M   | 2010-2011 | L-T-GN | 0.0194 | 2.9034 | Basusta et al. (2012) |
| ASC    | Medit    | <i>Raja clavata</i>         | 75  | M   | 2010-2011 | L-T-GN | 0.023  | 2.6421 | Basusta et al. (2012) |
| ASC    | AS       | <i>Raja clavata</i>         | 24  | C   | 2005-2006 | T      | 0.0335 | 2.89   | İlkyaz et al. (2008)  |
| ASC    | Medit    | <i>Raja miraletus</i>       | 22  | M   | 2010-2011 | L-T-GN | 0.0021 | 3.262  | Basusta et al. (2012) |
| ASC    | AS       | <i>Raja miraletus</i>       | 10  | C   | 2005-2006 | T      | 0.0346 | 2.82   | İlkyaz et al. (2008)  |
| ASC    | AS       | <i>Raja polystigma</i>      | 18  | C   | 2005-2006 | T      | 0.0218 | 3.05   | İlkyaz et al. (2008)  |
| ASC    | Medit    | <i>Rhinoptera marginata</i> | 17  | M   | 2010-2011 | L-T-GN | 0.01   | 2.1347 | Basusta et al. (2012) |
| ASC    | AS       | <i>Rostroraja alba</i>      | 5   | C   | 2005-2006 | T      | 0.0083 | 3.13   | İlkyaz et al. (2008)  |

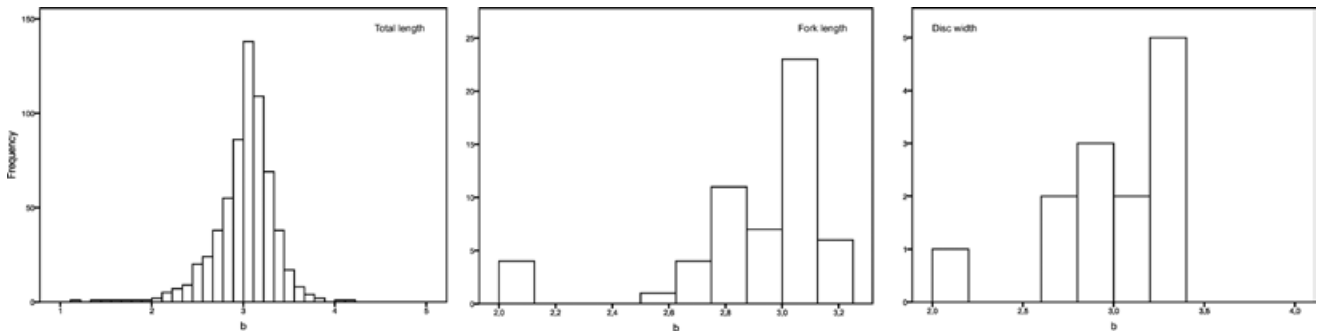
of the clustering analysis performed. As a result, the number of factors affecting the differences in  $b$  value is quite high. The feeding and the habitat of the fishes are only two among these many factors. Along with this, differences between geographic regions, sample size and similar factors may also cause this value to change (Tesch, 1968; Wootton, 1990). Indeed, the difference shown in Table 4 makes the effect of geographic region differences on the  $b$  parameter clear.

The  $a$  parameter indicates the point the logarithmic form of the LWR intercepts the axis. Thus the  $a$  value is directly related to the growth rate of the fish (Froese, 2006). In this sense, it can be seen that  $a$  increases as the  $b$  value decreases, thus having an inverse relationship (Fig. 3). When all LWR are considered, it can be seen that 95% of  $a$  values fall between the range of 0.0123-0.0187. The distribution roughly matches the log-normal distribution, but it is strongly inclined towards the left hand side. Also, the number of species with a very low  $a$  value is quite high (Table 1, 2 and 3). Froese, (2000), Stergiou & Moutopoulos, (2001) and Froese, (2006) have stated that if there are multiple studies for a species, if a scatter plot of  $\log(a)$  and  $b$  values acquired from the studies on said species, the detection of outliers becomes possible. Based on this, four species (*A. laterna*, *M. merluccius*, *C. linguatula* and *R. clavata*), that have six or more studies on them each were examined this way (Fig. 4). The circled outliers indicate the problematic studies for that species. These outliers also cause a drop in Froese, (2006) states that a more solid regression analysis performed after removing outlier observations would be strong enough to explain the variance 99%.

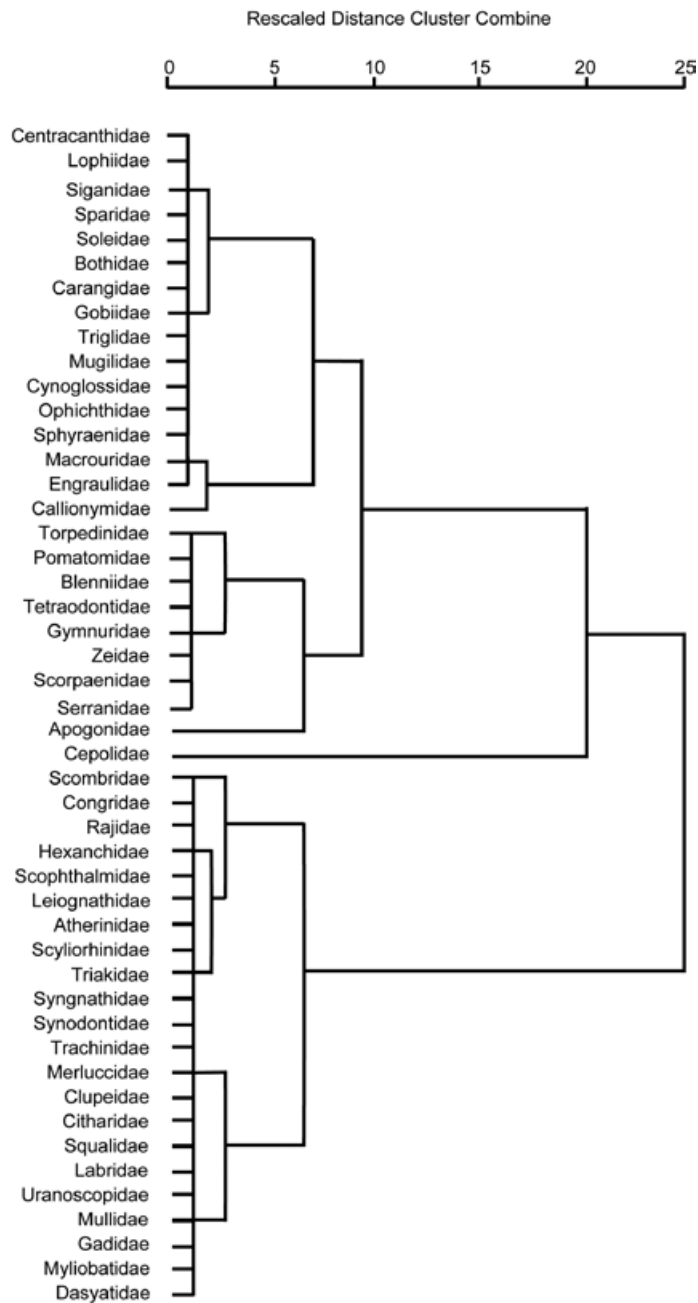
It can be seen in Figure 3 that when a scatter diagram for  $\log(a)$  and  $b$  is drawn most estimates are distributed at and around 3. This makes it possible to say that most of the species present in Turkish waters show an isometric growth. This conclusion is supported when the four families with the highest distribution stated for Turkey's fish fauna in Bilecenoğlu *et al.*, (2014). Again Fishbase records support this statement.

Another reason for the variance in estimates and outlier observations is the seasonal effects. It is not possible to sample all size classes of a species in studies performed at a certain part of the year. According to Froese *et al.*, (2011), a good LWR study can be possible only by year-long sampling, allowing all size classes to be sampled, and making it possible to make better estimates.

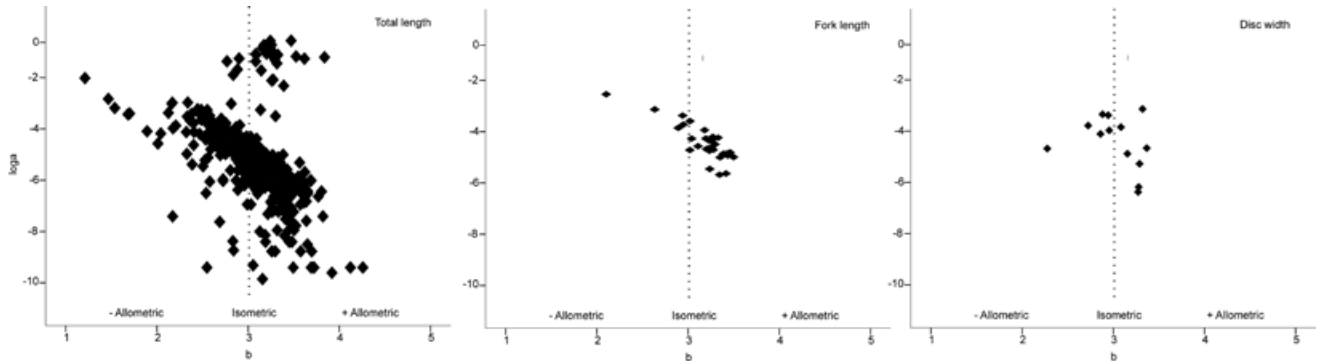
As a result, this study offers a collected list of the LWR parameters for most species prevalent in Turkey's seas. In addition, it will serve as an effective resource in demonstrating the factors that impact both parameters in general.



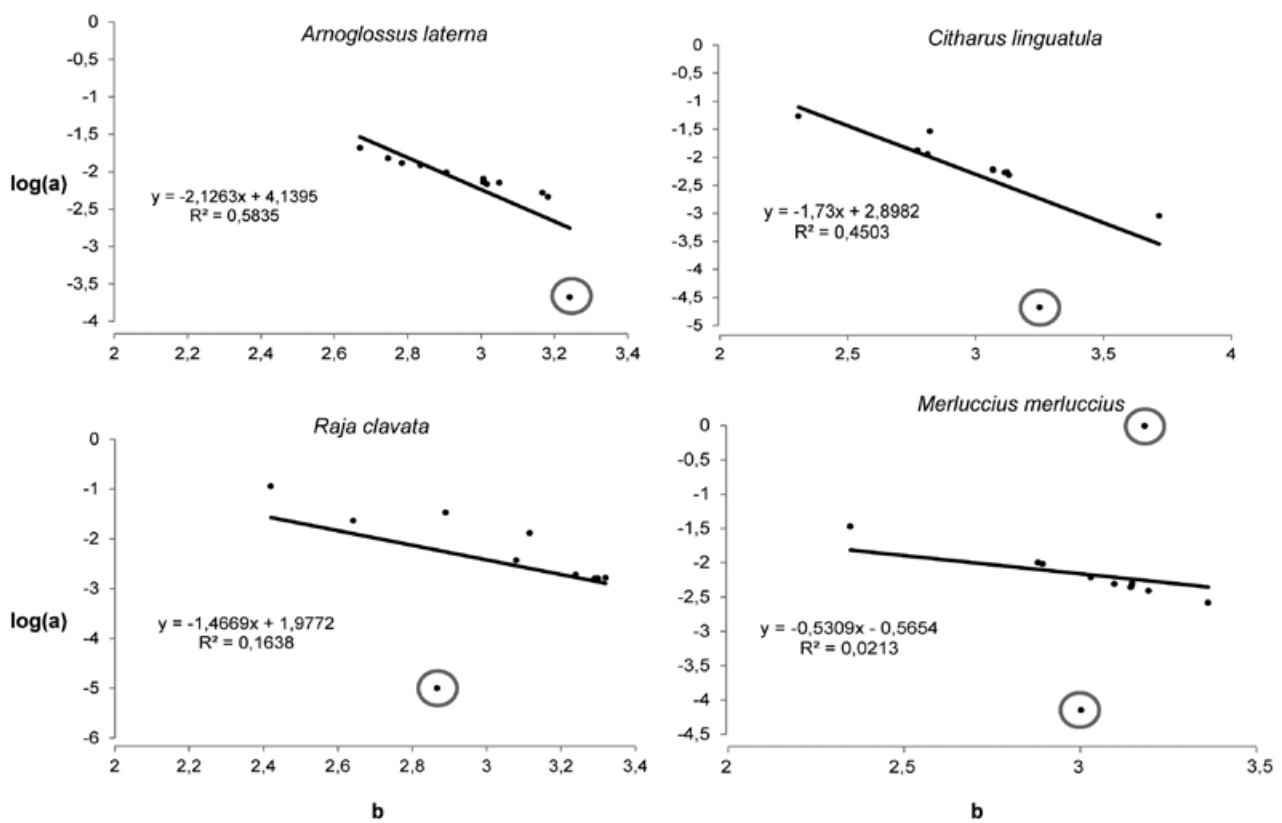
**Fig. 1:** Frequency distribution of exponent  $b$  based on 709 records for 242 species.



**Fig. 2:** Similarity dendrogram for LWR parameters based on families. The average and medians of  $a$  and  $b$  values of the clusters determined by hierarchical clustering; (the letters above indicate differences and questionable records were excluded) Cluster-1=0.016<sup>a</sup>, Cluster-2= 0.007<sup>b</sup>, Cluster-3=0.071<sup>c</sup>.



**Fig. 3:** Scatter plot of mean log a over mean b for 242 fish species. Areas of negative allometric, isometric and positive allometric change in body weight relative to body length are indicated.



**Fig. 4:** The  $\log(a)$  vs  $b$  graph of 4 species with more than 10 studies. The circled points are the outliers.

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