

# Annex I

Table A1.1. Input data (before balancing) with the species included, main assumptions and references.

1. Dolphins	value	source	additional notes
B	0.0063 t km <sup>-2</sup>	Bearzi and Fortuna, 2006, Giovanni Bearzi (Thetys Research Institute) Pers. Comm.	Species: <i>Tursiops truncatus</i> . Sum of the mean number of individuals in the Gulf of Trieste (Bearzi and Fortuna, 2006), Croatian area and western Northern Adriatic Sea area (Giovanni Bearzi, Pers. Comm.), weighting on surfaces. Data transformed using a mean individual weight of 0.24 t (Giovanni Bearzi, Pers. Comm.)
P/B	0.0537 y <sup>-1</sup>	Fortuna, 2006	
Q/B	14.000 y <sup>-1</sup>	Innes et al., 1987; Trites et al., 1997	Value for Odontoceti (Innes et al., 1987), corrected like in Trites et al. (1997). Values reported by Kastelein et al. (2002) for <i>T. truncatus</i> in captivity are similar.
GS	0.200	Coll et al., 2006	
DC	Table 2	Giovanni Bearzi (Thetys Research Institute) Pers. Comm.; Agazzi and Bearzi, 2005; Blanco et al., 2001; Fortuna, 2006	Qualitative diet for Croatian and west Northern Adriatic Sea areas (Giovanni Bearzi (Thetys Research Institute) Pers. Comm.) then weighted on the relative abundance of preyed species and corrected using other sources
2. Seabirds	value	source	additional notes
B	0.0106 t km <sup>-2</sup>	Matteo Griggio (Dept. Of Biology, University of Padova) and Lorenzo Serra (Ist. Naz. Fauna Selvatica) Pers. Comm.	Species: <i>Calonectris diomedea</i> , <i>Larus canus</i> , <i>Larus melanocephalus</i> , <i>Larus michaellis</i> , <i>Larus ridibundus</i> , <i>Phalacrocorax aristotelis</i> , <i>Phalacrocorax carbo</i> , <i>Podiceps cristatus</i> , <i>Podiceps nigricollis</i> , <i>Puffinus yelkouan</i> . For each species, number of individuals in Italian and Croatian areas, multiplied for mean individual body weight.
P/B	4.610 y <sup>-1</sup>	Coll et al., 2007	
Q/B	69.340 y <sup>-1</sup>		57.3% of the produced detritus is exported. It is the same percentage of diet based on imports and it was assumed to be proportional to the time passed outside the ecosystem.
GS	0.125		
DC	Table 2	Matteo Griggio (Dept. Of Biology, University of Padova) and Lorenzo Serra (Ist. Naz. Fauna Selvatica) Pers. Comm.; Coll et al., 2007	Import represents feeding on land or absence from the modelled area for a period of the year (weighted on biomass of different species)
3. Sharks	value	source	additional notes
B	0.0110 t km <sup>-2</sup>	Unpublished MEDITS trawl surveys data (1996-1998) from prof. C. Piccinetti (BES, University of Bologna)	Species: <i>Mustelus asterias</i> , <i>Mustelus mustelus</i> , <i>Scyliorhinus canicula</i> , <i>Scyliorhinus stellaris</i> , <i>Squalus acanthias</i> , <i>Squalus blainville</i> . Trawl surveys.
P/B	0.400 y <sup>-1</sup>	Dulčić and Kraljević, 1997; Filiz and Mater, 2002; Froese and Pauly, 2007; Zupanović, 1961	Z=M+F. M from eq. B3 in “Empirical models for the estimation of production, P/B, mortality, and other parameters”, version 4-04 may 2004, downloaded from <a href="http://freenet-homepage.de/virtualhandbook/">http://freenet-homepage.de/virtualhandbook/</a> ; see also Pauly (1980) and Brey (1999). Resulting M then divided by 2, because it is probably overestimated (Rodríguez-Cabello and Sanchez, 2005). F=Y/B. Results integrated using Beverton and Holt equation for total mortality of fishes growing according to the Von Bertalanffy growth function (see Christensen et al. (2005), p. 28), applied to data from Visentin (2007) on the lengths of the sharks found in Chioggia fish market.
Q/B	3.077 y <sup>-1</sup>		Empirical eq. 19 in Christensen et al. (2005)
GS	0.150	Coll et al., 2007; Link et al., 2006	
DC	Table 2	Cortés, 1999; Froese and Pauly, 2007	

4. Rays	value	source	additional notes
B	0.00492 t km <sup>-2</sup>	Unpublished MEDITS trawl surveys data (1996-1998) from prof. C. Piccinetti (BES, University of Bologna)	Species: <i>Dasyatis centroura</i> , <i>Dasyatis pastinaca</i> , <i>Myliobatis aquila</i> , <i>Raja asterias</i> , <i>Raja clavata</i> , <i>Raja miraletus</i> , <i>Raja montagui</i> , <i>Torpedo marmorata</i> , <i>Torpedo torpedo</i> . Trawl surveys.
P/B	0.724 y <sup>-1</sup>	Abdel Aziz, 1992; Filiz and Bilge, 2004; Froese and Pauly, 2007; SIBM, 2006; Ungaro, 2001	Z=M+F. M from eq. B3 in "Empirical models for the estimation of production, P/B, mortality, and other parameters", version 4-04 may 2004, downloaded from <a href="http://freenet-homepage.de/virtualhandbook/">http://freenet-homepage.de/virtualhandbook/</a> ; see also Pauly (1980) and Brey (1999). Resulting M then divided by 2, because it is probably overestimated (Rodriguez-Cabello and Sanchez, 2005). F=Y/B.
Q/B	4.137 y <sup>-1</sup>		Empirical eq. 19 in Christensen et al. (2005)
GS	0.150	Coll et al., 2007; Link et al., 2006	
DC	Table 2	Froese and Pauly, 2007; Ismen, 2003; Stergiou and Karpouzi, 2002; Vannucci, 2005	
5. European hake	value	source	additional notes
B	0.0277 t km <sup>-2</sup>	Unpublished MEDITS trawl surveys data (1996-1998) from prof. C. Piccinetti (BES, University of Bologna)	Species: <i>Merluccius merluccius</i> . Trawl surveys.
P/B	1.180 y <sup>-1</sup>	FAO Adriamed-Merluccius merluccius, 2006; Ungaro et al., 2001	Z=M+F. M from eq. B3 in "Empirical models for the estimation of production, P/B, mortality, and other parameters", version 4-04 may 2004, downloaded from <a href="http://freenet-homepage.de/virtualhandbook/">http://freenet-homepage.de/virtualhandbook/</a> ; see also Pauly (1980) and Brey (1999). F from FAO Adriamed-Merluccius merluccius (2006)
Q/B	4.120 y <sup>-1</sup>	FAO Adriamed-Merluccius merluccius, 2006; Froese and Pauly, 2007; Ungaro et al., 2001	Empirical eq. 19 in Christensen et al. (2005)
GS	0.150	Coll et al., 2007; Link et al., 2006	
DC	Table 2	Carpentieri et al., 2005; FAO Adriamed-Merluccius merluccius, 2006; Stergiou and Karpouzi, 2002; Ungaro et al., 2001	
6. Zoobenthivorous fish - hard bottom	value	source	additional notes
B	0.0790 t km <sup>-2</sup>	Unpublished MEDITS trawl surveys data (1996-1998) from prof. C. Piccinetti (BES, University of Bologna). Visual census data: Orlado Bonaca and Lipej, 2005; Mazzoldi, unpublished data	Species: <i>Diplodus puntazzo</i> , <i>Diplodus sargus</i> , <i>Diplodus vulgaris</i> , <i>Gaidropsarus mediterraneus</i> , <i>Gobius bucchichi</i> , <i>Gobius cobitis</i> , <i>Gobius cruentatus</i> , <i>Gobius paganellus</i> , <i>Labrus merula</i> , <i>Mullus surmuletus</i> , <i>Sciaena umbra</i> , <i>Scorpaena notata</i> , <i>Scorpaena porcus</i> , <i>Serranus scriba</i> , <i>Symphodus cinereus</i> , <i>Symphodus melops</i> , <i>Symphodus ocellatus</i> , <i>Symphodus roissali</i> , <i>Symphodus rostratus</i> , <i>Symphodus tinca</i> . Trawl surveys and visual census (using mean species weight and assuming habit area in Eastern Adriatic from 0 to 100 m distance from coast = 437 km <sup>2</sup> ).

P/B	0.888 y <sup>-1</sup>	Andaloro, 1981; Azevedo and Simas, 2000; Dulcic and Kraljevic, 1997; Froese and Pauly, 2007; Gordoa and Molí, 1997; Gordoa et al., 2000; Moutopoulos and Stergiou, 2002; Pallaoro and Jardas, 2003; Pauly, 1978; Pauly et al. 1998; Siblot-Bouteflika, 1976; Stergiou and Moutopoulos, 2001; Valle et al., 2003; Zorica et al., 2005; Zorica et al., 2006	Z=M+F. M and F calculated (M from eq. B3 in “Empirical models for the estimation of production, P/B, mortality, and other parameters”, version 4-04 may 2004, downloaded from <a href="http://freenet-homepage.de/virtualhandbook/">http://freenet-homepage.de/virtualhandbook/</a> - see also Pauly (1980) and Brey (1999); F=Y/B).
Q/B	6.408 y <sup>-1</sup>		Empirical eq. 17 and 19 in Christensen et al. (2005).
GS	0.300	Coll et al., 2007; Link et al., 2006	
DC	Table 2	Arculeo et al., 1993; Azevedo and Simas, 2000; Bell and Harmelin-Vivien, 1983; Costa, 1988; Dulcic, 1999; Froese and Pauly, 2007; Harmelin-Vivien et al., 1989; Khoury, 1984; Pallaoro and Jardas, 1990; Pinnegar and Polunin, 2000; Sala and Ballesteros, 1997; Stergiou and Karpouzi, 2002	
<b>7. Zoobenthivorous fish - soft bottom</b>	value	source	additional notes
B	0.0940 t km <sup>-2</sup>	Unpublished MEDITS trawl surveys data (1996-1998) from prof. C. Piccinetti (BES, University of Bologna)	Species: <i>Blennius ocellaris</i> , <i>Callionymus lyra</i> , <i>Callionymus maculatus</i> , <i>Callionymus pbaeton</i> , <i>Callionymus risso</i> , <i>Chelidonichthys lucernus</i> , <i>Deltentosteus quadrimaculatus</i> , <i>Dicentrarchus labrax</i> , <i>Diplodus annularis</i> , <i>Eutrigla gurnardus</i> , <i>Gobius niger</i> , <i>Lepidotrigla cavillone</i> , <i>Lepidotrigla dieuzeidei</i> , <i>Litobogonathus mormyrus</i> , <i>Merlangius merlangus</i> , <i>Mullus barbatus</i> , <i>Pagellus acarne</i> , <i>Pagellus erythrinus</i> , <i>Pagrus pagrus</i> , <i>Pomatoschistus marmoratus</i> , <i>Pomatoschistus minutus</i> , <i>Pomatoschistus norvegicus</i> , <i>Serranus hepatus</i> , <i>Sparus aurata</i> , <i>Trigla lyra</i> , <i>Trigloporus lastoviza</i> , <i>Umbrina cirrosa</i> . Trawl surveys.
P/B	1.002 y <sup>-1</sup>	Andaloro, 1983; Baron, 1985; Bolje, 1992; Campillo, 1992; Dulcic and Kraljevic, 1997; Fabi and Giannetti, 1985; FAO Adriamed-Merlangius merlangus, 2006; FAO-Adriamed Mullus barbatus, 2006; FAO-Adriamed Pagellus erythrinus, 2006; Fonds, 1973; Froese and Pauly, 2007; Giovanardi and Rizzoli, 1984; Gordoa and Molí, 1997; Ismen et al., 2004; Kallianiotis et al., 2005;	Z=M+F or directly from reference. M and F calculated (M from eq. B3 in “Empirical models for the estimation of production, P/B, mortality, and other parameters”, version 4-04 may 2004, downloaded from <a href="http://freenet-homepage.de/virtualhandbook/">http://freenet-homepage.de/virtualhandbook/</a> - see also Pauly (1980) and Brey (1999); F=Y/B) or directly from reference.

Q/B	6.306 y <sup>-1</sup>	Kraljevic et al., 1996; Labropoulou et al., 1998; Matic-Skoko et al., 2004; Merella et al., 1997; Pauly et al., 1998; Piccinetti and Jukic, 1988; Stergiou et al., 1997; Valle et al., 2003; Vrgoc, 2000	Empirical eq. 17 and 19 in Christensen et al. (2005).
GS	0.300	Coll et al., 2007; Link et al., 2006	
DC	Table 2	Artuz, 2005; Bell and Harmelin-Vivien, 1983; FAO-Adriamed Mullus barbatus, 2006; FAO Adriamed-Pagellus erythrinus, 2006; Froese and Pauly, 2007; Frogia, 1988; Labropoulou and Eleftheriou, 1997; Labropoulou and Machias, 1998; Labropoulou and Markakis, 1998; Labropoulou et al., 1998; Moreno-Amich, 1994; Olaso and Rodriguez-Marin, 1995; Papaconstantinou et al., 1989; Pinnegar and Polunin, 2000; Rijavec and Lupanovic, 1965; Stergiou and Karpouzi, 2002	Diets of <i>C. lucernus</i> , <i>M. merlangus</i> and <i>M. barbatus</i> were integrated with unpublished data made available by prof. C. Piccinetti (BES, University of Bologna)
<b>8. Mackerel</b>	value	source	additional notes
B	1.330 t km <sup>-2</sup>	Azzali et al., 2002; unpublished MEDITS trawl surveys data (1996-1998) from prof. C. Piccinetti (BES, University of Bologna)	Species: <i>Scomber scombrus</i> , <i>Scomber japonicus</i> . Acoustic surveys gave total biomass for both species together. Relative abundance of species from trawl surveys.
P/B	0.620 y <sup>-1</sup>	Froese and Pauly, 2007; Sinovcic, 2001	Z=M+F. M and F calculated (M from eq. B3 in "Empirical models for the estimation of production, P/B, mortality, and other parameters", version 4-04 may 2004, downloaded from <a href="http://freenet-homepage.de/virtualhandbook/">http://freenet-homepage.de/virtualhandbook/</a> - see also Pauly (1980) and Brey (1999); F=Y/B).
Q/B	6.506 y <sup>-1</sup>		Empirical eq. 19 in Christensen et al. (2005)
GS	0.150	Link et al., 2006	
DC	Table 2	Cabral and Murta, 2002; Froese and Pauly, 2007; Santic et al., 2004	
<b>9. Horse mackerel</b>	value	source	additional notes

B	1.280 t km <sup>-2</sup>	Azzali et al., 2002; unpublished MEDITS trawl surveys data (1996-1998) from prof. C. Piccinetti (BES, University of Bologna)	Species: <i>Trachurus mediterraneus</i> , <i>Trachurus trachurus</i> . Acoustic surveys gave total biomass for both species together. Relative abundance of species from trawl surveys.
P/B	0.570 y <sup>-1</sup>	Alegria-Hernandez, 1983; Dulcic and Kraljevic, 1997; Froese and Pauly, 2007; Santic et al., 2002; Santic et al., 2003a	Z=M+F. M and F calculated (M from eq. B3 in “Empirical models for the estimation of production, P/B, mortality, and other parameters”, version 4-04 may 2004, downloaded from <a href="http://freenet-homepage.de/virtualhandbook/">http://freenet-homepage.de/virtualhandbook/</a> - see also Pauly (1980) and Brey (1999); F=Y/B).
Q/B	5.941 y <sup>-1</sup>	Alegria-Hernandez, 1983; Dulcic and Kraljevic, 1997; Froese and Pauly, 2007; Santic et al., 2003a	Empirical eq. 19 in Christensen et al. (2005)
GS	0.150	Link et al., 2006	
DC	Table 2	Froese and Pauly, 2007; Santic et al., 2003b; Santic et al., 2004	
<b>10. Other small pelagics</b>	value	source	additional notes
B	0.439 t km <sup>-2</sup>	Azzali et al., 2002; unpublished MEDITS trawl surveys data (1996-1998) from prof. C. Piccinetti (BES, University of Bologna)	Species: <i>Alosa fallax</i> , <i>Sardinella aurita</i> , <i>Sprattus sprattus</i> . Acoustic and trawl surveys. Biomass of <i>A. fallax</i> and <i>S. aurita</i> from trawl surveys was increased in the same proportion as sprat biomass increases from trawl to acoustic surveys.
P/B	1.889 y <sup>-1</sup>	Froese and Pauly, 2007; Sinovcic, 2001	Z=M+F; M and F calculated (M from eq. B3 in “Empirical models for the estimation of production, P/B, mortality, and other parameters”, version 4-04 may 2004, downloaded from <a href="http://freenet-homepage.de/virtualhandbook/">http://freenet-homepage.de/virtualhandbook/</a> - see also Pauly (1980) and Brey (1999); F=Y/B) or directly from reference.
Q/B	8.294 y <sup>-1</sup>		Empirical eq. 19 in Christensen et al. (2005)
GS	0.300		As sardines
DC	Table 2	Froese and Pauly, 2007	
<b>11. Anchovies</b>	value	source	additional notes
B	9.490 t km <sup>-2</sup>	Azzali et al., 2002	Species: <i>Engraulis encrasicolus</i> . Acoustic surveys.
P/B	1.155 y <sup>-1</sup>	Cingolani et al., 2004b; Froese and Pauly, 2007; Sinovcic, 2001	Z=M+F. M and F calculated (M from eq. B3 in “Empirical models for the estimation of production, P/B, mortality, and other parameters”, version 4-04 may 2004, downloaded from <a href="http://freenet-homepage.de/virtualhandbook/">http://freenet-homepage.de/virtualhandbook/</a> - see also Pauly (1980) and Brey (1999); F=Y/B) or directly from reference. Chosen average Z from different available values.
Q/B	12.440 y <sup>-1</sup>	Froese and Pauly, 2007; Interreg III, 2006; Libralato et al., 2006	Empirical eq. 17 and 19 in Christensen et al. (2005), plus field measures and value from another model. Average of extreme values chosen.
GS	0.300	Coll et al., 2007	
DC	Table 2	Interreg III, 2006; Stergiou and Karpouzi, 2002; Tudela et al., 2002	
<b>12. Sardines</b>	Value	source	additional notes
B	6.280 t km <sup>-2</sup>	Azzali et al., 2002	Species: <i>Sardina pilchardus</i> . Acoustic surveys.
P/B	0.870 y <sup>-1</sup>	Cingolani et al., 2004a; Froese and Pauly, 2007; Sinovcic, 1984; Sinovcic, 2001	Z=M+F. M average of values taken from Cingolani et al. (2004a) and calculated from eq. B3 in “Empirical models for the estimation of production, P/B, mortality, and other parameters”, version 4-04 may 2004, downloaded from <a href="http://freenet-homepage.de/virtualhandbook/">http://freenet-homepage.de/virtualhandbook/</a> - see also Pauly (1980) and Brey (1999); F from Cingolani et al. (2004a)

Q/B	8.709 y <sup>-1</sup>	Froese and Pauly, 2007; Sinovcic, 2001	Empirical eq. 19 in Christensen et al. (2005)
GS	0.300	Coll et al., 2007	
DC	Table 2	Bode et al., 2004; Froese and Pauly, 2007; Stergiou and Karpouzi, 2002	
<b>13. Nectobenthic zooplanktivorous fish</b>	value	source	additional notes
B	0.0610 t km <sup>-2</sup>	Unpublished MEDITS trawl surveys data (1996-1998) from prof. C. Piccinetti (BES, University of Bologna). Visual census data: Orlando Bonaca and Lipej, 2005; Mazzoldi, unpublished data	Species: <i>Atherina boyeri</i> , <i>Boops boops</i> , <i>Cepola macrophthalmia</i> , <i>Chromis chromis</i> , <i>Hippocampus</i> spp., <i>Micromesistius poutassou</i> , <i>Oblada melanura</i> , <i>Spicara maena</i> , <i>Spicara smaris</i> , <i>Spondyltoma cantharus</i> , <i>Syngnathus acus</i> , <i>Trisopterus minutus</i> . Trawl surveys and visual census (using mean species weight and assuming habit area in Eastern Adriatic from 0 to 100 m distance from coast = 437 km <sup>2</sup> ).
P/B	1.162 y <sup>-1</sup>	Alegria-Hernandez, 1989; Bartulovic et al., 2004; Curtis and Vincent, 2006; Dulcic and Kraljevic, 1995; Dulcic and Kraljevic, 1997; Dulcic et al., 2000; Dulcic et al., 2003; Froese and Pauly, 2007; Giannetti and Gramitto, 1988; Kaya et al., 2001; Pallaoro et al., 1998; Ragonese and Bianchini, 1998	Z=M+F or directly from reference. M and F calculated (M from eq. B3 in "Empirical models for the estimation of production, P/B, mortality, and other parameters", version 4-04 may 2004, downloaded from <a href="http://freenet-homepage.de/virtualhandbook/">http://freenet-homepage.de/virtualhandbook/</a> - see also Pauly (1980) and Brey (1999); F=Y/B) or directly from reference.
Q/B	6.442 y <sup>-1</sup>		Empirical eq. 17 and 19 in Christensen et al. (2005).
GS	0.200	Coll et al., 2007; Link et al., 2006	
DC	Table 2	Bell and Harmelin-Vivien, 1983; Froese and Pauly, 2007; Gramitto, 1999; Jukic, 1972; Stergiou and Karpouzi, 2002	
<b>14. Omnivorous fish</b>	value	source	additional notes
B	0.0229 t km <sup>-2</sup>	Unpublished MEDITS trawl surveys data (1996-1998) from prof. C. Piccinetti (BES, University of Bologna). Visual census data: Orlando Bonaca and Lipej, 2005; Mazzoldi, unpublished data	Species: <i>Aidablennius sphyinx</i> , <i>Coryphoblennius galerita</i> , <i>Chelon labrosus</i> , <i>Liza aurata</i> , <i>Liza ramado</i> , <i>Liza saliens</i> , <i>Lipophrys canevae</i> , <i>Lipophrys dalmatinus</i> , <i>Mugil cephalus</i> , <i>Parablennius gattorugine</i> , <i>Parablennius incognitus</i> , <i>Parablennius rouxi</i> , <i>Parablennius sanguinolentus</i> , <i>Parablennius tentacularis</i> , <i>Parablennius zvonimiri</i> , <i>Salaria pavo</i> , <i>Sarpa salpa</i> , <i>Tripterygion delaisi</i> , <i>Tripterygion melanurus</i> , <i>Tripterygion tripteronotus</i> . Trawl surveys and visual census (using mean species weight and assuming habit area in Eastern Adriatic from 0 to 100 m distance from coast = 437 km <sup>2</sup> ).
P/B	1.624 y <sup>-1</sup>	Djabali et al., 1993; Dulcic and Kraljevic, 1997; Froese and Pauly, 2007; Koutrakis and Tsikliras, 2003; Morovic, 1964; Pauly, 1978; Valle et al., 2003	Z=M+F. M and F calculated (M from eq. B3 in "Empirical models for the estimation of production, P/B, mortality, and other parameters", version 4-04 may 2004, downloaded from <a href="http://freenet-homepage.de/virtualhandbook/">http://freenet-homepage.de/virtualhandbook/</a> - see also Pauly (1980) and Brey (1999); F=Y/B).
Q/B	15.040 y <sup>-1</sup>		Empirical eq. 17 and 19 in Christensen et al. (2005).

GS	0.350	Coll et al., 2007; Link et al., 2006	
DC	Table 2	Blanco et al., 2003; Froese and Pauly, 2007; Goldschmid et al., 1984	
<b>15. Benthic piscivorous fish</b>	value	source	additional notes
B	0.00424 t km <sup>-2</sup>	Unpublished MEDITS trawl surveys data (1996-1998) from prof. C. Piccinetti (BES, University of Bologna)	Species: <i>Belone belone</i> , <i>Conger conger</i> , <i>Dentex dentex</i> , <i>Lichia amia</i> , <i>Lophius budegassa</i> , <i>Lophius piscatorius</i> , <i>Sarda sarda</i> , <i>Scorpaena scrofa</i> , <i>Seriola dumerili</i> , <i>Serranus cabrilla</i> , <i>Trachinotus ovatus</i> , <i>Trachinus araneus</i> , <i>Trachinus draco</i> , <i>Uranoscopus scaber</i> , <i>Zeus faber</i> . Trawl surveys.
P/B	0.837 y <sup>-1</sup>	Bradai and Bouain, 1988; Dulcic and Kraljevic, 1997; Dunn, 2001; FAO Adriamed–Lophius Budegassa, 2006; Flores-Hernandez, 1990; Froese and Pauly, 2007; Kozul et al., 2001; Landa and Pereda, 1997; Landa et al., 2001; Moutopoulos and Stergiou, 2002; Samsun et al., 2006; Sinovic et al., 2004; Tserpes and Tsimenides, 2001; Vrgoc et al., 2006	Z=M+F or directly from reference. M and F calculated (M from eq. B3 in “Empirical models for the estimation of production, P/B, mortality, and other parameters”, version 4-04 may 2004, downloaded from <a href="http://freenet-homepage.de/virtualhandbook/">http://freenet-homepage.de/virtualhandbook/</a> - see also Pauly (1980) and Brey (1999); F=Y/B) or directly from reference.
Q/B	3.304 y <sup>-1</sup>		Empirical eq. 17 and 19 in Christensen et al. (2005).
GS	0.150	Coll et al., 2007; Link et al., 2006	
DC	Table 2	Froese and Pauly, 2007; Harmelin-Vivien et al., 1989; Labropoulou and Eleftheriou, 1997; Olaso and Rodriguez-Marin, 1995; Stergiou and Karpouzi, 2002; Velasco et al., 1996	Diet of <i>L. budegassa</i> was integrated with unpublished data made available by prof. C. Piccinetti (BES, University of Bologna)
<b>16. Flatfishes</b>	value	source	additional notes
B	0.00745 t km <sup>-2</sup>	Unpublished MEDITS trawl surveys data (1996-1998) from prof. C. Piccinetti (BES, University of Bologna)	Species: <i>Arnoglossus laterna</i> , <i>Arnoglossus thori</i> , <i>Buglossidium luteum</i> , <i>Citharus linguatula</i> , <i>Lepidorhombus bosci</i> , <i>Lepidorhombus whiffiagonis</i> , <i>Microchirus variegatus</i> , <i>Pegusa impar</i> , <i>Pegusa lascaris</i> , <i>Platichthys flesus</i> , <i>Psetta maxima</i> , <i>Scophthalmus rhombus</i> , <i>Solea solea</i> , <i>Synapturichthys kleinii</i> . Trawl surveys.
P/B	1.033 y <sup>-1</sup>	Arneri et al., 2001; Cau and Deiana, 1983; Deniel, 1984; Deniel, 1990; Dulcic and Kraljevic, 1997; Froese and Pauly, 2007; Frogia and Giannetti, 1985; Giovanardi and Piccinetti, 1981; Giovanardi and Piccinetti, 1984; Merella et al., 1997; Piccinetti and Giovanardi, 1984; Vassilopoulou and Papaconstantinou, 1994	Z=M+F or directly from reference. M and F calculated (M from eq. B3 in “Empirical models for the estimation of production, P/B, mortality, and other parameters”, version 4-04 may 2004, downloaded from <a href="http://freenet-homepage.de/virtualhandbook/">http://freenet-homepage.de/virtualhandbook/</a> - see also Pauly (1980) and Brey (1999); F=Y/B) or directly from reference.
Q/B	6.975 y <sup>-1</sup>		Empirical eq. 19 in Christensen et al. (2005)
GS	0.300	Coll et al., 2007; Link et al., 2006	

DC	Table 2	Bell and Harmelin-Vivien, 1983; Costa, 1988; Froese and Pauly, 2007; Giovanardi and Piccinetti, 1981; Morte et al., 1999; Rodriguez, 1996; Stergiou and Karpouzi, 2002	Diet of <i>S. solea</i> was integrated with unpublished data made available by prof. C. Piccinetti (BES, University of Bologna)	
<b>17. Squids</b>	value	source	conversion factors	additional notes
B	0.00704 t km <sup>-2</sup>	Krstulovic Sifner et al., 2005; unpublished MEDITS trawl surveys data (1996-1998) from prof. C. Piccinetti (BES, University of Bologna)	4.162 J mgWW <sup>-1</sup> (Brey, 2001)	Species: <i>Alloteuthis media</i> , <i>Illex coindetii</i> , <i>Loligo forbesi</i> , <i>Loligo vulgaris</i> . Biomass densities in western and eastern Northern Adriatic Sea, weighted on surfaces.
P/B	3.506 y <sup>-1</sup>	FAO Adriamed - <i>Loligo vulgaris</i> , 2006; Riedl, 1991		Production of <i>Loligo vulgaris</i> (Z=M+F, M from eq. B2 in "Empirical models for the estimation of production, P/B, mortality, and other parameters", version 4-04 may 2004, downloaded from <a href="http://freenet-homepage.de/virtualhandbook/">http://freenet-homepage.de/virtualhandbook/</a> ; see also Brey, 1999). Value slightly increased to obtain GE=0.13 (Boyle, 2002).
Q/B	26.967 y <sup>-1</sup>	Okey and Mahmoudi, 2002		Value corrected to account for temperature difference, with empirical equation from Opitz (1996)
GS	0.350	Coll et al., 2007; Okey and Mahmoudi, 2002		
DC	Table 2	Baccetti et al., 1991; Coelho et al., 1997; Fao Adriamed - <i>Loligo vulgaris</i> , 2006; Guerra and Rocha, 1994; Riedl, 1991; Folco Gioni (Dept. of Biology, University of Padova) and Stefano Cannicci (Dept. of Animal Biology and Genetics "Leo Pardi", University of Firenze) Pers. Comm.		
<b>18. Benthic cephalopods</b>	value	source	conversion factors	additional notes
B	0.029 t km <sup>-2</sup>	Krstulovic Sifner et al., 2005; unpublished MEDITS trawl surveys data (1996-1998) from prof. C. Piccinetti (BES, University of Bologna)		Species: <i>Eledone cirrhosa</i> , <i>Eledone moschata</i> , <i>Octopus vulgaris</i> , <i>Rondeletiola minor</i> , <i>Sepietta oweniana</i> , <i>Sepietta</i> spp, <i>Sepia elegans</i> , <i>Sepia officinalis</i> , <i>Sepia orbignyana</i> , <i>Sepioloa affinis</i> , <i>Sepioloa intermedia</i> , <i>Sepioloa ligulata</i> , <i>Sepioloa robusta</i> , <i>Sepioloa</i> spp. Biomass densities in western and eastern Northern Adriatic Sea, weighted on surfaces.
P/B	3.000 y <sup>-1</sup>	Coll et al., 2007; FAO Adriamed - <i>Sepia officinalis</i> , 2006; Okey and Mahmoudi, 2002; Opitz, 1996; Riedl, 1991		Production for <i>Eledone moschata</i> and <i>Sepia officinalis</i> from empirical equation from Hoenig (1983, cited in Christensen et al., 2005, p. 39) is around 2 y <sup>-1</sup> . Opitz (1996), Okey and Mahmoudi (2002) and Coll et al. (2007) are giving values around 3 y <sup>-1</sup> , and this value was chosen since the empirical equation was based on rough age data.
Q/B	6.000 y <sup>-1</sup>	Boyle, 2002		Assumed GE=0.5 (also in agreement with results from Coll et al., 2007)
GS	0.135	Coll et al., 2007; Okey and Mahmoudi, 2002		



DC	Table 2	Baccetti et al., 1991; Castro and Guerra, 1990; FAO Adriamed - Sepia officinalis, 2006; Pinczon du Sel and Daguzan, 1992; Quetglas et al., 1998; Riedl, 1991; Rodhouse and Nigmatullin, 1996; Folco Giomi (Dept. of Biology, University of Padova) and Stefano Cannicci (Dept. of Animal Biology and Genetics "Leo Pardi", University of Firenze) Pers. Comm.		
<b>19. Crustacea 1</b>	value	source	conversion factors	additional notes
B	5.384 t km <sup>-2</sup>	Pranovi and Giani, 1997	10.215 gWW gC <sup>-1</sup> (Brey, 2001)	Computed as difference of crustacean biomass (in reference) and Crustacea 2 biomass (in model). In reference, station depths were weighted according to Northern Adriatic bathymetry.
P/B	2.894 y <sup>-1</sup>	Moodley et al., 1998		Computed subtracting Crustacea 2 total production (from model) to total crustacean production in reference
Q/B	17.785 y <sup>-1</sup>	Pinnegar and Polunin, 2004		Value corrected to account for temperature difference, with empirical equation from Opitz (1996)
GS	0.500	Link et al., 2006		
DC	Table 2	Baccetti et al., 1991; Folco Giomi (Dept. of Biology, University of Padova) and Stefano Cannicci (Dept. of Animal Biology and Genetics "Leo Pardi", University of Firenze) Pers. Comm.		
<b>20. Crustacea 2</b>	value	source	conversion factors	additional notes
B	1.010 t km <sup>-2</sup>	Coll et al., 2007		
P/B	7.908 y <sup>-1</sup>			Assumed GE=0.154 as in Coll et al. (2007)
Q/B	51.181 y <sup>-1</sup>	Coll et al., 2007		Value corrected to account for temperature difference, with empirical equation from Opitz (1996)
GS	0.275			
DC	Table 2	Baccetti et al., 1991; Coll et al., 2007; Folco Giomi (Dept. of Biology, University of Padova) and Stefano Cannicci (Dept. of Animal Biology and Genetics "Leo Pardi", University of Firenze) Pers. Comm.		
<b>21. Mantis shrimp</b>	value	source	conversion factors	additional notes
B	0.00356 t km <sup>-2</sup>	Unpublished MEDITS trawl surveys data (1996-1998) from prof. C. Piccinetti (BES, University of Bologna)		Species: <i>Squilla mantis</i> . Trawl surveys.
P/B	1.500 y <sup>-1</sup>	Coll et al., 2007		

Q/B	4.560 y <sup>-1</sup>			
GS	0.300	Okey and Mahmoudi, 2002		
DC	Table 2	Coll et al., 2007; Folco Giomi (Dept. of Biology, University of Padova) and Stefano Cannicci (Dept. of Animal Biology and Genetics "Leo Pardi", University of Firenze) Pers. Comm.		Predation on benthic invertebrates sorted between groups proportionally to their biomasses. Gastropod biomass taken from Barausse et al. (2007)
<b>22. Non commercial bivalves</b>	value	source	conversion factors	additional notes
B	24.900 t km <sup>-2</sup>	Pranovi and Giani, 1997	0.435 gWW (gWW+shell) <sup>-1</sup> (Brey 2001), also for catches	Weighted station depths according to Northern Adriatic bathymetry; diminished to account for commercial bivalves, whose biomass was roughly extrapolated from Coll et al. (2007) and Zucchetto et al. (2003)
P/B	1.415 y <sup>-1</sup>	Moodley et al., 1998		Based on <i>Corbula gibba</i>
Q/B	6.350 y <sup>-1</sup>	Opitz, 1996		Value corrected to account for temperature difference, with empirical equation from Opitz (1996)
GS	0.650	Coll et al., 2007; Link et al., 2006		
DC	Table 2	Baccetti et al., 1991; Folco Giomi (Dept. of Biology, University of Padova) and Stefano Cannicci (Dept. of Animal Biology and Genetics "Leo Pardi", University of Firenze) Pers. Comm.		
<b>23. Commercial bivalves</b>	value	source		conversion factors
EE	0.900		0.435 gWW (gWW+shell) <sup>-1</sup> (Brey 2001), also for catches	Species: <i>Aequipecten opercularis</i> , <i>Atrina fragilis</i> , <i>Callista chione</i> , <i>Chamelea gallina</i> , <i>Chlamys flexuosa</i> , <i>Chlamys glabra</i> , <i>Chlamys varia</i> , <i>Glossus humanus</i> , <i>Laevicardium crassum</i> , <i>Laevicardium oblongum</i> , <i>Mytilus galloprovincialis</i> , <i>Pecten jacobaeus</i> , <i>Solen</i> spp.
P/B	1.415 y <sup>-1</sup>	Moodley et al., 1998		Based on <i>Corbula gibba</i> (as non commercial bivalves)
Q/B	6.350 y <sup>-1</sup>	Opitz, 1996		Value corrected to account for temperature difference, with empirical equation from Opitz (1996)
GS	0.650	Coll et al., 2007; Link et al., 2006		
DC	Table 2	Baccetti et al., 1991; Folco Giomi (Dept. of Biology, University of Padova) and Stefano Cannicci (Dept. of Animal Biology and Genetics "Leo Pardi", University of Firenze) Pers. Comm.		
<b>24. Gastropods</b>	value	source		conversion factors
EE	0.900		0.418 gWW (gWW+shell) <sup>-1</sup> (Brey 2001), also for catches	No reliable biomass estimates
P/B	1.735 y <sup>-1</sup>	Opitz, 1996; Pinnegar and Polunin, 2004		Assuming GE=0.178, as in both references

Q/B	9.716 y <sup>-1</sup>	Pinnegar and Polunin, 2004		Value corrected to account for temperature difference, with empirical equation from Opitz (1996)
GS	0.600	Link et al., 2006		
DC	Table 2	Baccetti et al., 1991; Folco Giomi (Dept. of Biology, University of Padova) and Stefano Cannicci (Dept. of Animal Biology and Genetics "Leo Pardi", University of Firenze) Pers. Comm.		
<b>25. Filter feeding invertebrates</b>	value	source	conversion factors	additional notes
B	7.652 t km <sup>-2</sup>	Moodley et al., 1998	0.043 gC gWW <sup>-1</sup> (Moodley et al., 1998)	Calculated as "rest"
P/B	0.761 y <sup>-1</sup>			
Q/B	3.804 y <sup>-1</sup>			Assuming GE=0.2
GS	0.450	Coll et al., 2007; Link et al., 2006		
DC	Table 2	Baccetti et al., 1991; Folco Giomi (Dept. of Biology, University of Padova) and Stefano Cannicci (Dept. of Animal Biology and Genetics "Leo Pardi", University of Firenze) Pers. Comm.		
<b>26. Echinoderms</b>	value	source	conversion factors	additional notes
B	8.847 t km <sup>-2</sup>	Moodley et al., 1998	26.7 gWW gC <sup>-1</sup> (Brey, 2001)	
P/B	0.803 y <sup>-1</sup>			
Q/B	2.514 y <sup>-1</sup>	Pinnegar and Polunin, 2004		Value corrected to account for temperature difference, with empirical equation from Opitz (1996)
GS	0.450	Coll et al., 2007; Link et al., 2006		
DC	Table 2	Baccetti et al., 1991; Folco Giomi (Dept. of Biology, University of Padova) and Stefano Cannicci (Dept. of Animal Biology and Genetics "Leo Pardi", University of Firenze) Pers. Comm.		Also, weighted different taxa according to biomasses from Pranovi and Giani (1997)
<b>27. Polychaetes</b>	value	source	conversion factors	additional notes
B	26.989 t km <sup>-2</sup>	Moodley et al., 1998	15.2124 gWW gC <sup>-1</sup> (Brey, 2001)	
P/B	1.644 y <sup>-1</sup>			
Q/B	14.270 y <sup>-1</sup>	Arreguín-Sánchez et al., 1993; Pinnegar and Polunin, 2004		Average of values corrected to account for temperature difference, with empirical equation from Opitz (1996)
GS	0.550	Coll et al., 2007; Link et al., 2006		Mean value
DC	Table 2	Baccetti et al., 1991; Folco Giomi (Dept. of Biology, University of Padova) and Stefano Cannicci (Dept. of Animal Biology and Genetics "Leo Pardi", University of Firenze) Pers. Comm.		

28. Jellyfish	value	source	conversion factors	additional notes
B	1.020 t km <sup>-2</sup>	Malej and Malej, 2004	0.0049 gC gWW <sup>-1</sup> (Malej, 1989)	1984 for the Northern Adriatic Sea (a low value was chosen, since <i>Pelagia noctiluca</i> in the 90's was less abundant than in the 80's, but no quantitative data was available)
P/B	14.813 y <sup>-1</sup>	Malej, 1989; Malej and Malej, 1992		
Q/B	44.439 y <sup>-1</sup>	Malej, 1989		
GS	0.200			
DC	Table 2	Coll et al., 2007		
29. Zooplankton	value	source	conversion factors	additional notes
B	3.279 t km <sup>-2</sup>	Cabrini et al., 2002; Fonda Umani et al., 2003	Mesozooplankton: 5.6 gWW gDW <sup>-1</sup> ; 2.222 gDW gC <sup>-1</sup> (Brey, 2001). Microzooplankton: 5.556 gWW gDW <sup>-1</sup> ; 2.174 gDW gC <sup>-1</sup> (Link et al., 2006)	Computed as sum of microzooplankton (1996-1998) and mesozooplankton (in 1999-2000)
P/B	90.557 y <sup>-1</sup>	Benovic, 2000; Pinnegar and Polunin, 2004		Computed as mean weighted on biomasses of microzooplankton and mesozooplankton P/B's
Q/B	197.759 y <sup>-1</sup>			Computed from P/B's choosing GE=0.5 for microzooplankton and GE=0.3 for mesozooplankton (Pinnegar and Polunin, 2004).
GS	0.243	Christensen et al., 2005; Link et al., 2006		Computed as mean weighted on biomasses of microzooplankton and mesozooplankton GS's
DC	Table 2	Fonda Umani and Beran, 2003; Fonda Umani et al., 2005; Link et al., 2006		Detritus percentage in diet taken from Link et al. (2006), value similar to the one in Coll et al. (2007). Cannibalism and bacterivory slightly increased to account for HNAN presence.
30. Pelagic bacteria	value	source	conversion factors	additional notes
B	4.014 t km <sup>-2</sup>	Danovaro, 2003; La Ferla et al., 2002	10 gWW gC <sup>-1</sup> (Link et al., 2006)	
P/B	127.241 y <sup>-1</sup>			
Q/B	760.018 y <sup>-1</sup>	Danovaro, 2003; La Ferla et al., 2002		Calculated as (input P/B)/GE, with GE=P/Q from La Ferla et al. (2002). Q/B from La Ferla et al. (2002) was computed with equation 2 using P/B and R/B from the same reference, and GS from Link et al. (2006)
GS	0.200	Link et al., 2006		
DC	Table 2			
31. Macroalgae and phanerogams	value	source	conversion factors	additional notes
EE	0.1	Christensen et al., 2005		No reliable biomass estimates
P/B	1.699 y <sup>-1</sup>	Duarte and Chiscano, 1999; Guidetti et al., 2002; Khailov and Burlakova, 1969; Munda 1990; Munda, 1993	7.7 gWW gDW <sup>-1</sup> for <i>P. oceanica</i> (Arreguín-Sánchez et al., 1993); 4.4 gWW gDW <sup>-1</sup> for <i>Z. marina</i> , 5 gWW gDW <sup>-1</sup> for <i>C. nodosa</i> (Brey, 2001)	Considered only biomass above ground. Phanerogams: <i>Cymodocea nodosa</i> , <i>Posidonia oceanica</i> , <i>Zostera marina</i> . P/B's of macroalgae and of phanerogams weighted on biomasses and assuming a covered bottom surface ratio of about 1.87, following bathymetric considerations on vegetated bottom
32. Phytoplankton	value	source	conversion factors	additional notes
B	12.760 t km <sup>-2</sup>	MEDAR group, 2002	10 gWW gC <sup>-1</sup> , 400 gWW gChl-a <sup>-1</sup> (Link et al., 2006)	Averaged over 1990-1998
P/B	169.279 y <sup>-1</sup>	Giordani et al., 1999; MEDAR group, 2002		Averaged over 1990-1998
33. Discard	value	source	conversion factors	additional notes
B	0.058 t km <sup>-2</sup>			consumed in 10 days, linear decaying (hence it equals discard production · 10/365/2)
34. Detritus	value	source	conversion factors	additional notes

B	361.930 t km <sup>-2</sup>	Danovaro et al., 2001; Degobbi et al., 2003; Giani et al., 2003	10 gWW gC <sup>-1</sup> (Opitz, 1996)	calculated as particulate organic matter (in water and 1 cm sediment) subtracted the biomass of phytoplankton and pelagic bacteria
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