

Table S1 – Heritability estimates for different traits in European sea bass

Type	Trait	age or size	Mean (S.D.)	h ² ± S.E.	populations / rearing conditions	reference
Growth traits	Body weight	442 days	186 (34) g	0.31 ± 0.12	West Mediterranean / High temperature (19°C) in Semi-closed recirculation system	Saillant et al., 2006
	Body weight	608 days	198 (49) g	0.50 ± 0.19	West Mediterranean / Low temperature (13°C) in Semi-closed recirculation system	Saillant et al. 2006
	Body weight	570 days	175 (56) g	0.32 ± 0.12	West Mediterranean / High density in Semi-closed recirculation system	Saillant et al. 2006
	Body weight	570 days	188 (55) g	0.60 ± 0.22	West Mediterranean / Low density in Semi-closed recirculation system	Saillant et al. 2006
	Body weight	≈ 640 days	471 (102) g	0.20 ± 0.14	Commercial stock	Chatziplis et al., 2007
	Body weight	714 days	415 (119) g	0.40 ± 0.14	Atlantic / Semi-closed recirculation system	Dupont-Nivet et al., 2008
	Body weight	795 days	337 (94) g	0.44 ± 0.14	Atlantic / Concrete tank with borehole water in Italy	Dupont-Nivet et al. 2008
	Body weight	873 days	359 (72) g	0.39 ± 0.14	Atlantic / Semi-intensive estuarine ponds in Portugal	Dupont-Nivet et al. 2008
	Body weight	734 days	517 (139) g	0.38 ± 0.14	Atlantic / Floating cage in tropical waters in Israël	Dupont-Nivet et al. 2008
	Body weight	986 days	≈ 870 g	0.43 ± 0.21	Atlantic / Semi-closed recirculation system	Bardon et al., 2009
	Body weight	818 days	742 (233) g	0.63 ± 0.23	West Mediterranean / Semi-closed recirculation system	Saillant et al., 2009
	Body weight	341 days	48.3 (15.2) g	0.39 ± 0.03	West Mediterranean / Semi-closed recirculation system	Grima et al., 2010
	Body weight	≈ 254 days	40.6 (14.2) g	0.54 ± 0.20	Commercial and wild parents	Massault et al., 2010
	Body weight	588-850 days	192-647 g	0.31 - 0.34	West Mediterranean / Semi-closed recirculation system	Le Boucher et al., 2011
	Body weight	337-551 days	180 (54) g	0.38 ± 0.04	Atlantic, West North-East and South-East Mediterranean / Multi-site performance	Vandeputte et al., 2014
	Body weight	179-397 days	13.2 - 104.6 g	0.47 - 0.59	West Mediterranean / Semi-closed recirculation system	Ferrari et al., 2016
	Body weight	573 days	395 (127) g	0.41 ± 0.09	Commercial stock	Vandeputte et al., 2017
	Body weight	180 days	16.3 (6.0) g	0.54 ± 0.10	Atlantic, West North-East and South-East Mediterranean / Semi-closed recirculation system	Doan et al., 2017
	Standard Length	≈ 640 days	29.3 (N/A) cm	0.42 ± 0.19	Commercial stock	Chatziplis et al. 2007
	Standard Length	714 days	25.9 (2.2) cm	0.41 ± 0.15	Atlantic / Semi-closed recirculation system	Dupont-Nivet et al. 2008
	Standard Length	795 days	25.4 (2.4) cm	0.33 ± 0.12	Atlantic / Concrete tank with borehole water in Italy	Dupont-Nivet et al. 2008
	Standard Length	873 days	26.4 (1.7) cm	0.34 ± 0.13	Atlantic / Semi-intensive estuarine ponds in Portugal	Dupont-Nivet et al. 2008
	Standard Length	734 days	28.2 (2.9) cm	0.27 ± 0.11	Atlantic / Floating cage in tropical waters in Israël	Dupont-Nivet et al. 2008
	Standard Length	818 days	32.6 (3.1) cm	0.40 ± 0.16	West Mediterranean / Semi-closed recirculation system	Saillant et al. 2009
	Standard length	≈ 254 days	13.3 (1.6) cm	0.65 ± 0.22	Commercial and wild parents	Massault et al, 2010
	Fork length	573 days	N/A	0.38 ± 0.09	Commercial stock	Vandeputte et al. 2017
	Daily growth coefficient	420-714 days	1.18 (N/A)	0.19 ± 0.04	Atlantic / Semi-closed recirculation system	Dupont-Nivet et al., 2010
	Daily growth coefficient	423-795 days	0.86 (N/A)	0.26 ± 0.05	Atlantic / Concrete tank with borehole water in Italy	Dupont-Nivet et al. 2010
	Daily growth coefficient	420-873 days	0.76 (N/A)	0.35 ± 0.06	Atlantic / Semi-intensive estuarine ponds in Portugal	Dupont-Nivet et al. 2010
	Daily growth coefficient	513-734 days	1.25 (N/A)	0.16 ± 0.04	Atlantic / Floating cage in tropical waters in Israël	Dupont-Nivet et al. 2010
	Daily growth coefficient	180-431 days	0.94 (0.13)	0.47 ± 0.12	Atlantic, West, North-East and South-East Mediterranean / Semi-closed recirculation system	Doan et al. 2017
	Thermal Growth coefficient	341-370 days	0.08 (0.11)	0.19 ± 0.03	West Mediterranean / Semi-closed recirculation system	Grima et al. 2010
Thermal Growth coefficient	270-418 days	≈ 0.76	0.11 ± 0.06	West Mediterranean / Semi-closed recirculation system/ Plant-based diet	le Boucher et al. 2013	
Thermal Growth coefficient	270-418 days	≈ 0.96	0.33 ± 0.10	West Mediterranean / Semi-closed recirculation system/Marine diet	le Boucher et al. 2013	
Thermal Growth coefficient	337-551 days	0.94 (0.15)	0.43 ± 0.05	Atlantic, West North-East and South-East Mediterranean / Multi-site performance	Vandeputte et al. 2014	
Processing traits	Carcass %	986 days	N/A	0.57 ± 0.03	Atlantic, semi-closed recirculation system	Haffray et al., 2007

	Carcass %	337-551 days	86.1 (2.5) %	0.48 ± 0.06	Atlantic, West North-East and South-East Mediterranean / Multi-site performance	Vandeputte et al. 2014
	Carcass %	573 days	88.9 (1.9) %	0.57 ± 0.10	Commercial stock	Vandeputte et al. 2017
	Viscera %	818 days	10.5 (2.3) %	0.48 ± 0.15	West Mediterranean / Semi-closed recirculation system	Saillant et al. 2009
	Viscera %	573 days	10.0 (1.9) %	0.56 ± 0.11	Commercial stock	Vandeputte et al. 2017
	Visceral fat %	818 days	6.9 (2.0) %	0.68 ± 0.19	West Mediterranean / Semi-closed recirculation system	Saillant et al. 2009
	Fillet (skinless, trimmed) %	818 days	33.7 (2.4) %	0.25 ± 0.10	West Mediterranean / Semi-closed recirculation system	Saillant et al. 2009
	Fillet (skin on, untrimmed) %	337-551 days	55.4 (3.6) %	0.28 ± 0.04	Atlantic, West North-East and South-East Mediterranean / Multi-site performance	Vandeputte et al. 2014
	Fillet (skin on, untrimmed) %	573 days	57.4 (1.6) %	0.21 ± 0.08	Commercial stock	Vandeputte et al. 2017
	Head %	818 days	20.7 (1.9) %	0.87 ± 0.23	West Mediterranean / Semi-closed recirculation system	Saillant et al. 2009
	Head %	573 days	19.1 (1.6) %	0.44 ± 0.10	Commercial stock	Vandeputte et al. 2017
	Headless gutted carcass %	573 days	69.7 (1.2) %	0.32 ± 0.08	Commercial stock	Vandeputte et al. 2017
	Vertebral axis %	573 days	12.3 (1.3) %	0.21 ± 0.07	Commercial stock	Vandeputte et al. 2017
	Muscle fat content	714-873 days	N/A	0.61 - 0.75	Atlantic population, 4 sites	Haffray et al. 2007
	Muscle fat content	818 days	6.0 (1.8) %	0.28 ± 0.12	West Mediterranean / Semi-closed recirculation system	Saillant et al. 2009
	Muscle fat content	588-850-days	3.1 (N/A) %	0.63 - 0.78	West Mediterranean / Semi-closed recirculation system	le Boucher et al. 2011
	Muscle fat content	337-551 days	6.5 (2.8) %	0.47 ± 0.05	Atlantic, West North-East and South-East Mediterranean / Multi-site performance	Vandeputte et al. 2014
	Muscle fat content	431 days	3.21 (1.54) %	0.44 ± 0.13	Atlantic, West North-East and South-East Mediterranean / Semi-closed recirculation system	Doan et al. 2017
Feed efficiency	Food conversion ratio	≈ 150-350 days	1.46 (0.32)	0.26 ± 0.06	West Mediterranean / Juvenile fish in individual aquaria	Besson et al., 2018
	Weight loss at fasting	371-392, 415-436 days	0 (0.95)	0.23 ± 0.04	West Mediterranean / Semi-closed recirculation system	Grima et al. 2010
	Compensatory growth	393-414, 437-458 days	0 (0.79)	0.19 ± 0.04	West Mediterranean / Semi-closed recirculation system	Grima et al. 2010
Body shape and deformities	Global Spine deformities	986 days	81% deformed	0.21 ± 0.04	Atlantic / Semi-closed recirculation system	Bardon et al. 2009
	Internal deformities	734 days	53% deformed	0.27 ± 0.05	Atlantic / Floating cage in tropical waters in Israël	Karahan et al., 2013
	Internal deformities	714 days	82% deformed	0.22 ± 0.04	Atlantic / Semi-closed recirculation system	Karahan et al. 2013
	Internal deformities	873 days	57% deformed	0.26 ± 0.05	Atlantic / Semi-intensive estuarine ponds in Portugal	Karahan et al. 2013
	Internal deformities	795 days	54% deformed	0.30 ± 0.05	Atlantic / Concrete tank with borehole water in Italy	Karahan et al. 2013
	External deformities	734 days	54% deformed	0.24 ± 0.05	Atlantic / Floating cage in tropical waters in Israël	Karahan et al. 2013
	External deformities	714 days	65% deformed	0.28 ± 0.05	Atlantic / Semi-closed recirculation system	Karahan et al. 2013
	External deformities	873 days	45% deformed	0.28 ± 0.05	Atlantic / Semi-intensive estuarine ponds in Portugal	Karahan et al. 2013
	External deformities	795 days	52% deformed	0.16 ± 0.03	Atlantic / Concrete tank with borehole water in Italy	Karahan et al. 2013
	Lordosis	986 days	48% deformed	0.33 ± 0.06	Atlantic / Semi-closed recirculation system	Bardon et al. 2009
	Scoliosis	986 days	73% deformed	0.13 ± 0.04	Atlantic / Semi-closed recirculation system	Bardon et al. 2009
	Relative warp score	≈ 200g	N/A	0.40 - 0.55	Atlantic, West North-East and South-East Mediterranean / Multi-site performance	Costa et al., 2010
	Lateral line shape	377 days	N/A	0.22 ± 0.06	Atlantic, West North-East and South-East Mediterranean / tropical cages	Costa et al., 2015
	Scale anomalies	377 days	18.7% abnormal	0.10 ± 0.06	Atlantic, West North-East and South-East Mediterranean / tropical cages	Costa et al. 2015
	Condition coefficient (K)	714 days	2.33 (0.24)	0.45 ± 0.15	Atlantic / Concrete tank with borehole water in Italy	Dupont-Nivet et al. 2008
	Condition coefficient (K)	795 days	1.99 (0.16)	0.45 ± 0.15	Atlantic / Concrete tank with borehole water in Italy	Dupont-Nivet et al. 2008
	Condition coefficient (K)	873 days	1.93 (0.13)	0.51 ± 0.18	Atlantic / Semi-intensive estuarine ponds in Portugal	Dupont-Nivet et al. 2008

	Condition coefficient (K)	734 days	2.25 (0.25)	0.26 ± 0.11	Atlantic / Floating cage in tropical waters in Israël	Dupont-Nivet et al. 2008
	Condition coefficient (K)	337-551 days	2.08 (0.14)	0.49 ± 0.05	Atlantic, West North-East and South-East Mediterranean / Multi-site performance	Vandeputte et al. 2014
	Condition coefficient (K)	573 days	N/A	0.50 ± 0.09	Commercial stock	Vandeputte et al. 2017
Welfare, behaviour, health	Hypoxia avoidance	255 days	16.50%	0.19 ± 0.10	West Mediterranean / Semi-closed recirculation system	Ferrari et al. 2016
	Risk taking	276, 286, 304 days	18.40%	0.45 ± 0.14	West Mediterranean / Semi-closed recirculation system	Ferrari et al. 2016
	Post-stress cortisol	356 and 400 days	708 (196) ng/ml	0.34 ± 0.09	West Mediterranean / Semi-closed recirculation system	Vandeputte et al., 2016
	Post-stress cortisol	≈ 254 days	319 (141) ng/ml	0.08 ± 0.06	Commercial and wild parents	Volckaert et al., 2012
	Critical swimming speed	451 and 456 days	4.76 (0.86) BL/s	0.48 ± 0.08	West Mediterranean / Semi-closed recirculation system	Vandeputte et al. 2016
	NNV survival	220 days	73% survival	0.26 ± 0.11	Atlantic, West North-East and South-East Mediterranean / Semi-closed recirculation system	Doan et al. 2017
	NNV resistance	≈ 10 g	52% survival	0.27 - 0.43	Commercial stock	Palaiokostas et al., 2018
Reproduction	Sex tendency	370 days	18.2% females	0.62 ± 0.12	Atlantic / Semi-closed recirculation system	Vandeputte et al. 2007
	Sex tendency	488 days	50.2% females	0.47	West Mediterranean / Semi-closed recirculation system	Palaiokostas et al., 2015

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