10.1071/MF12171_AC

Supplementary Material: *Marine and Freshwater Research*, 2013, **64**, 185–200

Supplementary Material

Methods used to compare the life-history strategy of *Hippocampus comes* with other teleosts via nMDS

We compared the life-history strategy of *H. comes* relative to other teleosts using vital rates published for tropical (Winemiller 1989) (n = 71) and temperate (King and McFarlane 2003) (n = 43) fish species. We selected the following five life-history traits common to all species for analysis: maximum standard length (fork length, mm), fecundity (brood size), egg size (mean diameter of mature oocytes, mm) generation time (time to fork length at first maturity, years) and type of parental investment. For temperate fishes, generation time was calculated as the time to first maturity using K and Linf values in King and McFarlane (2003) via the Von Bertalanffy growth equation, whereas generation times for tropical species were taken from Winemiller (1989). We used observed values of time to first maturity (L_M) for *H. comes* and *H. guttulatus* (Curtis and Vincent 2006). Parental investment was scored from 0 to 14, and assigned on the basis of the following three factors: (1) the protective placement of zygotes or larvae, (2) the time invested by parents in the protection of zygotes or larvae and (3) the nutritive contribution to larvae by parents (Winemiller 1989). Species were ordinated in a two-dimensional space using non-metric multidimensional scaling, which does not require data to conform to assumptions of normality. nMDS is designed to preserve the distance between dissimilarities in low-dimensional ordination space (Clarke 1993).

Publisher: CSIRO; Journal: MF:Marine and Freshwater Research
Article Type: research-article; Volume: 64; Issue: ; Article ID: MF12171
DOI: 10.1071/MF12171; TOC Head:

Table S1. Life-history strategies of temperate and tropical fishes, described by (A) Winemiller (1989), (B) Winemiller (2003), (C) King and McFarlane (2003) and (D) McCann and Shuter (1997) and used to contextualise vital rates of *Hippocampus comes* in Fig. 8

n.a., not available

Life-history strategy	Symbolic notation	Description	Example species	Source
Equilibrium tropical or equil temperate	Et/E	Larger-bodied, large oocytes, low fecundity (small clutches), extended gestation, acyclic spawning, substantial parental investment per offspring	Freshwater stingray (*Potamotrygon* sp.)/spiny dogfish (*Squalus acanthias*)	A/B
Intermediate temperate	I	Similar population dynamics to opportunistic strategists, with rapid and high amplitude changes in biomass; lifespan greater than for intermediate strategists and shorter than for periodic strategists, typically 10–20 years, shorter lifespans than for periodic opportunists	Pacific hake (*Merluccius productus*)	C
Intermediate seasonal	Mt	Intermediate between Ot and St	n.a.	A
Opportunistic, tropical or opportunistic temperate	Ot/O	Small-bodied, low fecundity (small clutches), rapidly maturing, regular iterative spawning, low parental investment per offspring, short-lived	Guppy(*Poecilia reticulata*)/Pacific sardine (*Sardinops sagax*)	A/B, C
Periodic	P	Larger-bodied, highly fecund, longer lifespans, infrequent recruitment events	Sablefish (*Anoploma fimbria*)	B, C
Salmonic, temperate	S	Larger-bodied, low fecundity (small clutches), opportunistic strategists with a freshwater and marine phase	Sockeye salmon (*Oncorhynchus nerka*)	C, D
Seasonal tropical	St	High fecundity (large clutches), slower maturation (long generation time), cyclic annual reproduction, low parental investment per offspring	Stout sardine (*Steindachnerina argentea*)	A