

Supplementary information to de Lussanet and Muller: The smaller your mouth, the longer your snout

List of the measured parameters. Most specimens were borrowed from the collection of the Museum Naturalis, Leiden (NL), indicated by the collection no. Some of these specimens were old (dating back to the 19th century). Where possible, we followed the scientific nomenclature from fishbase.org. In cases where the collection name was outdated or incorrect, the collection name is listed as well. *Siphostoma californiense* is not listed in fishbase.org, but could possibly be *Syngnathus californiensis*. Specimens of the same species are ordered by snout length (l). R was estimated, based on the centres of rotation in Fig. 1, as $R = 0.75H$ for *C.scutatus* and *Hippocampus*, and $R = L$ in the other specimens. The smallest and largest *S. acus* are the filmed ones. Parameter r was neglected. For the filmed specimens we also computed the optimal snout length numerically, using the exact centres of rotation and by computing the volumes and moments of inertia as a series of 50 elliptical discs from the neck joint to the tip of the snout. These simulations gave the same result (i.e. well within the measurement error). All measurements are in millimetres.

Species	Collection name	Collection no.	SL	l	h	w	L	H	W
<i>Hippocampus abdominalis</i>		7255	262	27.08	3.38	2.64	13.6	18.37	10.0
<i>Hippocampus comes</i>		3923B	146	18.81	2.66	1.84	7.9	10.69	5.9
<i>Hippocampus erectus</i>	<i>H. punctulatus</i>	23497A	239	27.43	4.29	3.60	13.5	17.24	10.6
<i>Hippocampus guttulatus</i>		5167C	70	11.97	2.00	1.12	5.1	7.97	3.3
<i>Hippocampus guttulatus</i>		5167D	80	12.46	1.99	1.36	6.0	8.78	4.1
<i>Hippocampus guttulatus</i>		5167E	90	13.78	2.25	1.36	7.0	9.70	5.0
<i>Hippocampus guttulatus</i>		5167I	140	19.39	3.31	2.08	9.6	13.48	6.9
<i>Hippocampus guttulatus</i>	<i>H. longirostris</i>	3911	135	19.71	2.45	1.60	7.2	10.01	5.2
<i>Hippocampus guttulatus</i>		5167F	130	20.60	3.27	1.68	8.9	12.97	6.1
<i>Hippocampus guttulatus</i>		5167G	130	20.78	3.48	2.24	9.9	13.69	7.1
<i>Hippocampus guttulatus</i>		5167H	135	21.85	3.21	1.84	9.0	13.35	6.1
<i>Hippocampus guttulatus</i>		5167A	180	22.41	3.34	2.00	10.3	14.40	7.3
<i>Hippocampus hippocampus</i>	<i>H. brevirostris</i>	3915A	74	9.49	1.65	1.20	4.9	7.36	3.2
<i>Hippocampus hippocampus</i>		19506A	99	12.22	2.03	1.60	6.2	7.60	5.0
<i>Hippocampus hippocampus</i>	<i>H. europaeus</i>	16444A	155	15.74	3.29	2.40	9.6	12.36	7.4
<i>Hippocampus kuda</i>		17484	186	27.32	4.03	3.04	11.4	14.51	9.0
<i>Hippocampus mohnikei</i>		3924	86	11.03	1.88	1.20	5.9	8.53	4.1
<i>Syngnathus abaster</i>	<i>S. bucculentus</i>	24370A	102	10.89	1.22	1.26	3.6	3.42	3.7
<i>Syngnathus abaster</i>	<i>S. agassizi</i>	3873	142	13.86	1.83	0.40	3.2	2.25	4.6
<i>Syngnathus abaster</i>	<i>S. cuvieri</i>	3877A	137	14.49	1.56	1.36	4.4	4.32	4.5
<i>Syngnathus abaster</i>		15809C	119	15.84	1.44	1.00	4.3	4.5	4.1
<i>S. acus (1st-day juvenile)</i>		-	25	1.86	0.694	0.66	1.4	1.18	1.2
<i>Syngnathus acus</i>		-	314	33.87	3.41	2.44	8.7	9.85	7.7
<i>Syngnathus acus</i>		-	309	35.07	3.08	2.25	8.5	9.48	7.7
<i>Syngnathus acus</i>		-	320	35.75	3.08	2.25	9.2	9.48	7.7
<i>Syngnathus acus</i>		-	485	54.20	5.80	3.00	29.0	15.8	12.9
<i>Hippichthys cyanospilus</i>	<i>Syngnathus cyanospilus</i>	7228	116	12.69	1.59	1.22	3.9	4.32	3.6
<i>Hippichthys penicillus</i>	<i>Syngnathus argyrostictus</i>	3849	120	15.84	1.56	0.72	4.0	4.41	3.7
<i>Nerophis lumbriciformis</i>		-	141	8.28	1.65	1.42	3.3	3.60	3.0
<i>Nerophis maculatus</i>		23761	214	10.17	1.09	1.09	2.8	2.88	2.8
<i>Nerophis maculatus</i>	<i>Syngnathus annulatus</i>	3856	219	10.8	1.21	1.37	3.0	3.06	3.0
<i>Syngnathoides biaculeatus</i>	<i>Syngnathus biaculeatus</i>	3864D	199	32.5	2.91	1.40	8.0	8.75	7.3
<i>unknown (see caption)</i>	<i>Siphostoma californiense</i>	11585A	257	29.67	2.15	0.60	6.10	6.44	5.8
<i>Centriscus scutatus</i>		10452B	75	31.42	1.25	1.40	4.20	6.11	2.9
<i>Macrorhamphosus scolopax</i>		-	151	65.1	4.35	6.9	21	31.57	14