

Supplementary Information for Watanabe and Payne (2023)

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Fig. S1. Phylogenetic tree of elasmobranchs

Fig. S2. Phylogenetic tree of teleosts

Table S1. Intraspecific Q_{10} of resting metabolic rate for elasmobranchs and teleosts.

Species	Temperature range (°C)	Q_{10}
Elasmobranch		
California horn shark <i>Heterodontus francisci</i>	14–22	2.07
Cleannose skate <i>Rostroraja eglanteria</i>	20–28	1.68
Common eagle ray <i>Myliobatis aquila</i>	10–25	1.99
Lemon shark <i>Negaprion brevirostris</i>	22–30.7	1.75
Lesser sandshark <i>Acroteriobatus annulatus</i>	15–25	2.05
Nurse shark <i>Ginglymostoma cirratum</i>	23–30	2.64
Port Jackson shark <i>Heterodontus portusjacksoni</i>	16–23.6	2.68
Round stingray <i>Urobatis halleri</i>	15–27	3.09
Thorny skate <i>Amblyraja radiata</i>	5–13	2.57
Whitespotted bamboo shark <i>Chiloscyllium plagiosum</i>	15–30	2.38
Teleost		
<i>Ameiurus nebulosus</i>	10–30	2.39
<i>Anguilla japonica</i>	13–30	3.02
<i>Catostomus commersonii</i>	10–20	2.72
<i>Chaenocephalus aceratus</i>	2–10	1.64
<i>Cirrhinus cirrhosus</i>	20–30.5	3.00
<i>Cyprinus carpio</i>	10–35	1.64
<i>Exodon paradoxus</i>	20–30	3.03
<i>Gadus morhua</i>	5–15	1.80
<i>Gambusia affinis</i>	20–30	1.67
<i>Lampetra fluviatilis</i>	4.4–16	3.70
<i>Lampetra planeri</i>	5.3–15.6	3.82

<i>Limanda limanda</i>	5–15	2.79
<i>Macrhnathus aculeatus</i>	21–30	1.61
<i>Micropterus salmoides</i>	15–30	1.82
<i>Microstomus kitt</i>	5–15	1.69
<i>Mugil cephalus</i>	14.5–28.5	2.43
<i>Myxine glutinosa</i>	7–15	1.57
<i>Oncorhynchus mykiss</i>	5–26	2.02
<i>Oncorhynchus nerka</i>	5–25	2.06
<i>Orthodon microlepidotus</i>	5–30	2.13
<i>Petromyzon marinus</i>	5–20	3.00
<i>Platichthys flesus</i>	5–15	2.35
<i>Platichthys stellatus</i>	9–20	2.75
<i>Pleuronectes platessa</i>	5–20	1.87
<i>Salmo salar</i>	6–18	2.33
<i>Pseudopleuronectes americanus</i>	5–24	5.40
<i>Salvelinus fontinalis</i>	5–20	2.05
<i>Salvelinus namaycush</i>	9.1–22.1	2.74
<i>Scyliorhinus canicula</i>	7–17	2.00
<i>Sebastes diploproa</i>	10–20	1.65
<i>Thymallus arcticus</i>	4–12	1.89

Table S2. Lifestyle of elasmobranchs and teleosts used in the analysis (Model 2 in Fig. 3a, b). Species are listed in the same order as phylogenetic trees (Figs. S1, S2).

Species no.	Species	Lifestyle
Elasmobranch		
1	Greenland shark <i>Somniosus microcephalus</i>	benthopelagic
2	Pacific sleeper shark <i>Somniosus pacificus</i>	benthopelagic
3	Spiny dogfish <i>Squalus acanthias</i>	benthopelagic
4	California horn shark <i>Heterodontus francisci</i>	demersal
5	Port Jackson shark <i>Heterodontus portusjacksoni</i>	demersal
6	Whitespotted bamboo shark <i>Chiloscyllium plagiosum</i>	benthopelagic
7	Epauvette shark <i>Hemiscyllium ocellatum</i>	benthopelagic
8	Nurse shark <i>Ginglymostoma cirratum</i>	benthopelagic

9	Lesser spotted dogfish <i>Scyliorhinus canicula</i>	demersal
10	Swell shark <i>Cephaloscyllium ventriosum</i>	demersal
11	Draughtsboard shark <i>Cephaloscyllium isabella</i>	benthopelagic
12	Leopard shark <i>Triakis semifasciata</i>	demersal
13	Gummy shark <i>Mustelus antarcticus</i>	demersal
14	Scalloped hammerhead shark <i>Sphyrna lewini</i>	pelagic
15	Bonnethead shark <i>Sphyrna tiburo</i>	benthopelagic
16	Blacktip shark <i>Carcharhinus limbatus</i>	benthopelagic
17	Whitetip reef shark <i>Triaenodon obesus</i>	benthopelagic
18	Blacktip reef shark <i>Carcharhinus melanopterus</i>	benthopelagic
19	Lemon shark <i>Negaprion brevirostris</i>	benthopelagic
20	Bull shark <i>Carcharhinus leucas</i>	benthopelagic
21	Blacknose shark <i>Carcharhinus acronotus</i>	benthopelagic
22	Little skate <i>Leucoraja erinacea</i>	demersal
23	Thorny skate <i>Amblyraja radiata</i>	demersal
24	Cleannose skate <i>Rostroraja eglanteria</i>	demersal
25	Marbled electric ray <i>Torpedo marmorata</i>	benthopelagic
26	Lesser sandshark <i>Acroteriobatus annulatus</i>	demersal
27	Large tooth sawfish <i>Pristis pristis</i>	demersal
28	Bat ray <i>Myliobatis californica</i>	demersal
29	Common eagle ray <i>Myliobatis aquila</i>	benthopelagic
30	Cownose ray <i>Rhinoptera bonasus</i>	benthopelagic
31	Atlantic stingray <i>Hypanus sabinus</i>	demersal
32	Brown stingray <i>Bathytoshia lata</i>	demersal
33	Ribbontail stingray <i>Taeniura lymma</i>	benthopelagic
34	Round stingray <i>Urobatis halleri</i>	demersal

	Teleost	
1	<i>Anguilla rostrata</i>	demersal
2	<i>Anguilla anguilla</i>	demersal
3	<i>Anguilla japonica</i>	demersal
4	<i>Anguilla australis</i>	benthopelagic
5	<i>Rhinichthys osculus</i>	demersal
6	<i>Phoxinus phoxinus</i>	demersal
7	<i>Abbottina rivularis</i>	benthopelagic
8	<i>Pseudorasbora parva</i>	benthopelagic
9	<i>Coreius guichenoti</i>	benthopelagic
10	<i>Rhodeus ocellatus</i>	benthopelagic
11	<i>Hypophthalmichthys nobilis</i>	benthopelagic
12	<i>Hypophthalmichthys molitrix</i>	benthopelagic
13	<i>Mylopharyngodon piceus</i>	demersal
14	<i>Ctenopharyngodon idella</i>	benthopelagic
15	<i>Opsariichthys bidens</i>	benthopelagic
16	<i>Zacco platypus</i>	benthopelagic
17	<i>Schizothorax wangchiachii</i>	benthopelagic
18	<i>Onychostoma sinum</i>	benthopelagic
19	<i>Spinibarbus sinensis</i>	benthopelagic
20	<i>Procypris rabaudi</i>	benthopelagic
21	<i>Carassius auratus</i>	benthopelagic
22	<i>Rhodeus sinensis</i>	benthopelagic
23	<i>Cyprinus carpio</i>	benthopelagic
24	<i>Epalzeorhynchus frenatum</i>	benthopelagic
25	<i>Labeo rohita</i>	benthopelagic
26	<i>Cirrhinus mrigala</i>	demersal
27	<i>Danio rerio</i>	benthopelagic
28	<i>Ictalurus punctatus</i>	demersal
29	<i>Oncorhynchus mykiss</i>	benthopelagic
30	<i>Oncorhynchus nerka</i>	pelagic
31	<i>Salmo trutta</i>	pelagic
32	<i>Salvelinus alpinus</i>	benthopelagic
33	<i>Salvelinus fontinalis</i>	benthopelagic
34	<i>Coregonus albula</i>	benthopelagic
35	<i>Mallotus villosus</i>	pelagic

36	<i>Gadus macrocephalus</i>	demersal
37	<i>Gadus ogac</i>	demersal
38	<i>Gadus morhua</i>	benthopelagic
39	<i>Boreogadus saida</i>	demersal
40	<i>Merlangius merlangus</i>	benthopelagic
41	<i>Melanogrammus aeglefinus</i>	demersal
42	<i>Pollachius virens</i>	demersal
43	<i>Eleginus gracilis</i>	demersal
44	<i>Encheliophis homei</i>	benthopelagic
45	<i>Sparus aurata</i>	demersal
46	<i>Chrysophrys auratus</i>	benthopelagic
47	<i>Scolopsis bilineata</i>	benthopelagic
48	<i>Dicentrarchus labrax</i>	demersal
49	<i>Argyrosomus japonicus</i>	benthopelagic
50	<i>Micropogonias undulatus</i>	demersal
51	<i>Leiostomus xanthurus</i>	demersal
52	<i>Ammodytes tobianus</i>	demersal
53	<i>Myoxocephalus scorpius</i>	demersal
54	<i>Myoxocephalus octodecemspinosus</i>	demersal
55	<i>Arctiellus atlanticus</i>	demersal
56	<i>Agonus cataphractus</i>	demersal
57	<i>Cyclopterus lumpus</i>	benthopelagic
58	<i>Lycodes eudipleurostictus</i>	demersal
59	<i>Lycodes pallidus</i>	demersal
60	<i>Zoarces americanus</i>	demersal
61	<i>Anarhichas lupus</i>	demersal
62	<i>Lumpenus lamprataeformis</i>	demersal
63	<i>Notothenia neglecta</i>	benthopelagic
64	<i>Notothenia rossii</i>	demersal
65	<i>Lepidonotothen nudifrons</i>	demersal
66	<i>Trematomus hansonii</i>	demersal
67	<i>Trematomus pennellii</i>	demersal
68	<i>Trematomus nicolai</i>	demersal
69	<i>Trematomus bernacchii</i>	demersal
70	<i>Pagothenia borchgrevinki</i>	pelagic
71	<i>Sander lucioperca</i>	pelagic

72	<i>Sander vitreus</i>	benthopelagic
73	<i>Lepomis gibbosus</i>	benthopelagic
74	<i>Micropterus salmoides</i>	benthopelagic
75	<i>Paracirrhites forsteri</i>	benthopelagic
76	<i>Paracirrhites arcatus</i>	benthopelagic
77	<i>Neocirrhites armatus</i>	benthopelagic
78	<i>Kuhlia sandvicensis</i>	benthopelagic
79	<i>Typhlogobius californiensis</i>	demersal
80	<i>Ostorhinchus cyanosoma</i>	benthopelagic
81	<i>Ostorhinchus doederleini</i>	benthopelagic
82	<i>Scomber japonicus</i>	pelagic
83	<i>Scomber scombrus</i>	pelagic
84	<i>Platichthys flesus</i>	demersal
85	<i>Pleuronectes platessa</i>	demersal
86	<i>Limanda limanda</i>	demersal
87	<i>Microstomus kitt</i>	demersal
88	<i>Seriola lalandi</i>	benthopelagic
89	<i>Aphanius dispar</i>	demersal
90	<i>Oreochromis niloticus</i>	benthopelagic
91	<i>Forsterygion lapillum</i>	benthopelagic
92	<i>Pomacentrus moluccensis</i>	benthopelagic
93	<i>Acanthochromis polyacanthus</i>	benthopelagic
94	<i>Chromis atripectoralis</i>	benthopelagic
95	<i>Dascyllus aruanus</i>	benthopelagic
96	<i>Chelon labrosus</i>	demersal
97	<i>Liza aurata</i>	pelagic
98	<i>Rhinomugil corsula</i>	pelagic
99	<i>Mugil curema</i>	benthopelagic
100	<i>Mugil cephalus</i>	benthopelagic

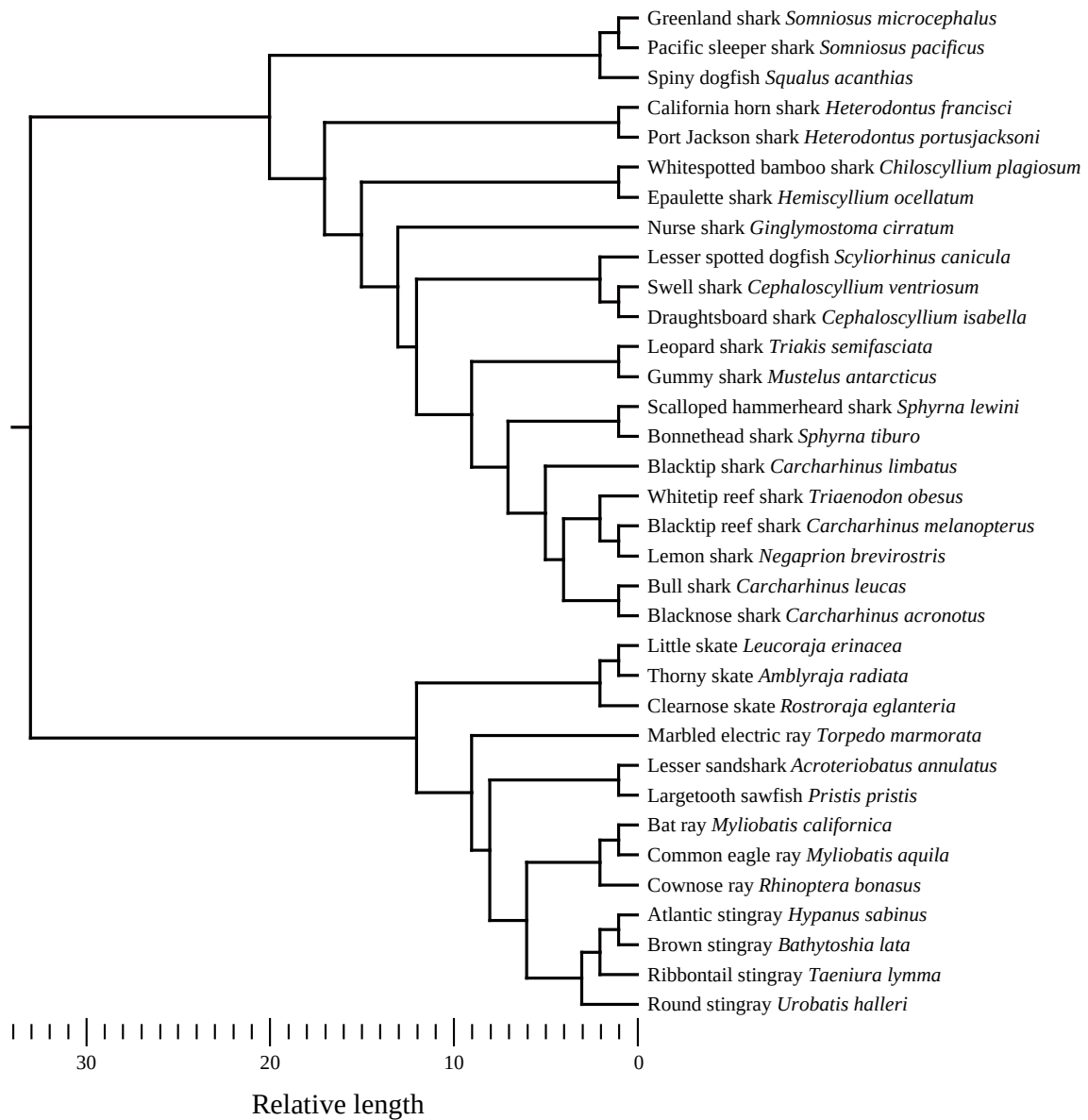


Fig. S1. Phylogenetic tree of elasmobranchs used in the analyses.

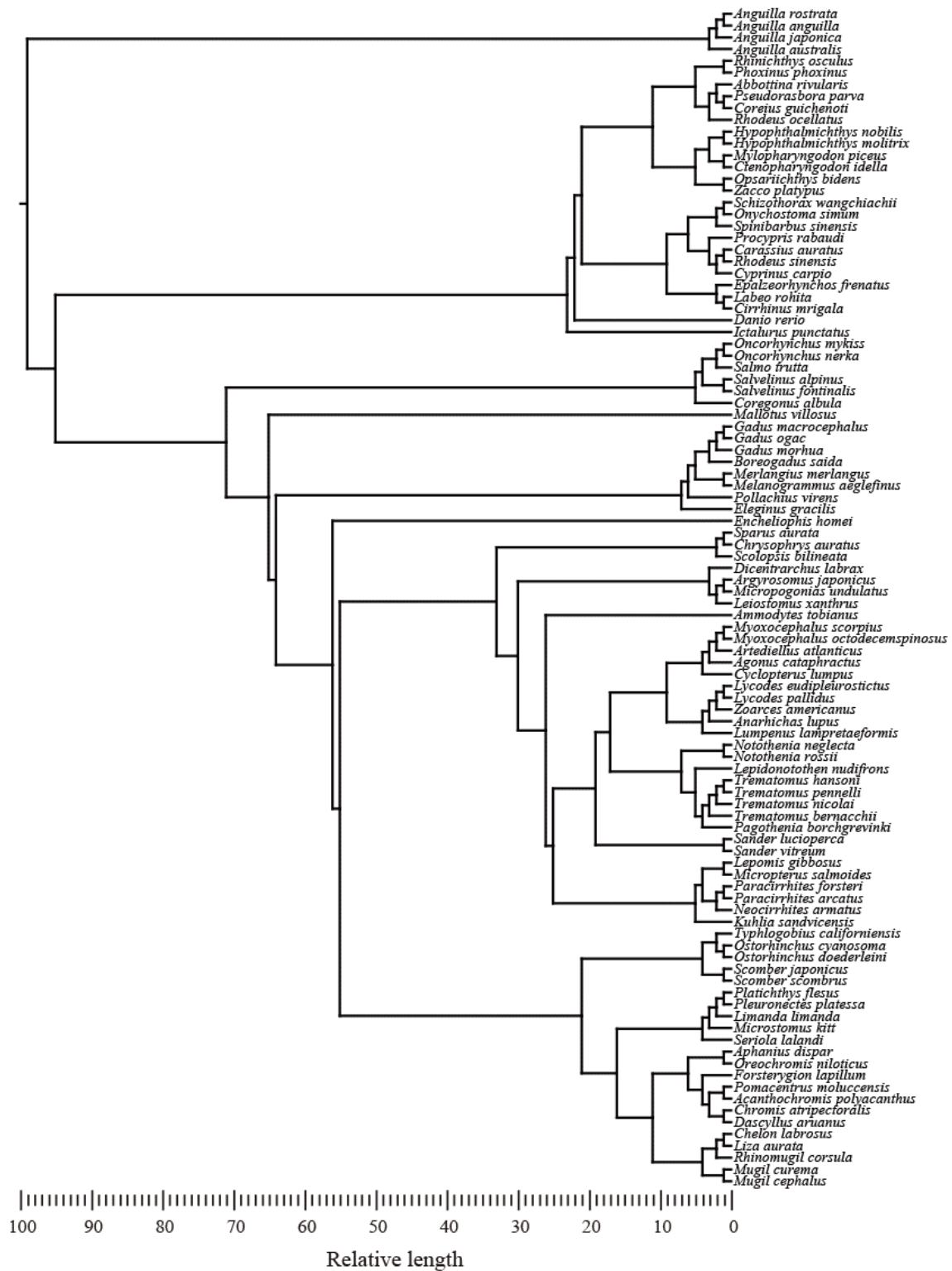


Fig. S2. Phylogenetic tree of teleosts used in the analyses.