

Olson, P.D., Caira, J.N., Jensen, K., Overstreet, R., Palm, H.W., Beveridge, I. Evolution of the trypanorhynch tapeworms: parasite phylogeny supports independent lineages of sharks and rays. *International Journal for Parasitology* doi:10.1016/j.ijpara.2009.07.012

Supplementary File 1: Matrices of morphological characters and host associations.

	MORPHOLOGICAL CHARACTERS:	HOST ASSOCIATIONS:		
	[0000000001111111111222222222233333333333444444]			
	[123456789012345678901234567890123456789012345]			
<i>Heteronybelinia estigmene</i> (Nyb3)	10000000000001100000010000000909999900000900	16	24	01
<i>Kotorella pronosoma</i> (Ovr-08)	100000001000001100000010000010919999900000900	9AGQ	45	01
<i>Kotorella</i> sp. (Nyb8)	1?0000000000001100000010000000909999900000900	9	4	0
<i>Nybelinia aequidentata</i> (Nyb7)	1?0000000000001100000010000000909999900000900	9	4	0
<i>Nybelinia africana</i> (Nyb5)	100000000000001100000010000000909999900000900	6H	12	1
<i>Nybelinia queenslandensis</i> (Nyg)	100000000000001100001010000000909999900000900	6	2	1
<i>Nybelinia sphyrnae</i> (Nyb4)	1?0000000000001100000010000000909999900000900	7	2	1
<i>Tentacularia coryphaenae</i> (Ten)	100000000000001100001110001000909999900000900	6	2	1
<i>Dollfusiella geraschmidti</i> (Dfsp)	0?0100101100000100110100111111000099000000000	DS	4	0
<i>Dollfusiella martini</i> (Dolm)	010100101101000100110100111111000099000000000	16ABDMPR	245	01
<i>Dollfusiella michiae</i> (Dmic1)	0?0100101110000100110100111111020099000000000	9Q	4	0
<i>Dollfusiella ocallaghani</i> (Doca1)	0?0100101101000100110000111?01020099000000000	69ABR	24	01
<i>Dollfusiella spinulifera</i> (Doll)	0?0100101101000100110100111111020099000000000	09	4	0
<i>Dollfusiella</i> sp. (Dolb)	0?0100101110000100110100111111020099000000000	9	4	0
<i>Dollfusiella</i> sp. (Dolb3)	0?0100101110000100110100111111020099000000000	9	4	0
<i>Halysiorhynchus macrocephalus</i> (Haly2)	0?0001101111000100110100100011112101000000000	9OQ	4	0
<i>Mecistobothrium johnstonei</i> (NT44E)	0?0100101111000100011101111111110099000000000	9	4	0
<i>Oncomegas australiensis</i> (Onco1)	0?0100101101000100110011111011010099000000000	A	4	0
<i>Oncomegas</i> sp. (Omeq1)	0?0100101101000100110011111011010099000000000	A	4	0
<i>Oncomegoides celatus</i> (NT108A&33D)	0?01001011????010011000011111112109900000?000	9	4	0
<i>Parachristianella baverstocki</i> (Pbav1)	0?0100101100000100110100111011110099000000000	9ARQ	4	0
<i>Parachristianella indonesiensis</i> (Pbav5)	0?0100101100000100110100111011110099000000000	9Q	4	0
<i>Parachristianella monomegacantha</i> (Pmon2)	010100101100000100110100111011110099000000000	9AMQRT	45	01
<i>Paronomegas araya</i> (Pmeg)	0?0100101101000100110001111011010099000000000	E	4	0
<i>Prochristianella clarkeae</i> (Pcla1)	0?0100101100000100110100111011120099000000000	19QRSW	49	02
<i>Prochristianella hispida</i> (DNA-01-97)	0101001011????000100110000111011110099000000000	9	4	0
<i>Prochristianella macracantha</i> (Proch2)	0?0100101100000100110100111111120099000000000	9	4	0
<i>Prochristianella</i> sp. (Proch)	0?0100101100000100110100111111120099000000000	9	4	0
<i>Rhinopterocola megacantha</i> (DNA-01-100L)	0?0000101100000101100000101011110099000000000	0	4	0

<i>Shirleyrhynchus aetobatidis</i> (Shir)	0?0000101100000101100100101011110099010000000	9A	4	0
<i>Tetrahynchobothrium</i> sp. (Ttm)	??01?0101?????0???1110?010111092999990000?900	6	2	1
<i>Tetrahynchobothrium</i> sp. (Trhy)	0?010010101?000100110001100100929999900000900	9	4	0
<i>Trimacracanthus aetobatidis</i> (Tria)	010100101100000100110100111011110099010000000	9ABDR	24	01
<i>Trygonicola macropora</i> (Tryg)	0?0000101111000100110100100011112110100000000	9A	4	0
<i>Fossobothrium perplexum</i> (Onsp1A)	0?1100011110010100101010100111122099000000000	8	3	0
<i>Iobothrium elegans</i> (NT33A)	??11000111?????0???1000?010011111011000000?000	9	4	0
<i>Otobothrium carcharidis</i> (Ocar1)	??1100011110011????000110101111111099000000000	6	2	1
<i>Otobothrium mugilis</i> (NT99A)	111100010110011100000010011111111099010100000	7	2	1
<i>Otobothrium propecysticum</i> (Otsp)	0?11000?0110011100000010101111121099000100000	7	2	1
<i>Parotobothrium balli</i> (Paran)	011100010110001100000110000010929999900000900	6	2	1
<i>Poecilancistrum caryophyllum</i> (MS05-71-1)	011100011111000100000110100111112099000000000	6	2	1
<i>Proemotobothrium linstowi</i> (Prol)	0?1100011110010?00100110101111112099000100000	6AQ	24	01
<i>Proemotobothrium</i> sp. (Proe)	??11?0011?????0???1001?010111111209900010?000	9	4	0
<i>Pseudotobothrium arii</i> (Poto)	01110001110100110010011011111120099010100010	6	2	1
<i>Pseudotobothrium dipsacum</i> (Otb3)	?111?0011?????0???1001?010011112009900000?000	?	?	?
<i>Callitetrahynchus gracilis</i> (CalglCtgCalls)	010100011110010000000110100111111100100000000	467B	24	1
<i>Dasyrhynchus giganteus</i> (MS05-48-4)	010100011111011000101010101111112110000000000	67	2	1
<i>Diesingium lomentaceum</i> (Dies)	0?0100011110010000000111100111111120100000000	B	2	1
<i>Floriceps saccatus</i> (Flos)	?101?0011?????0???0001?010011111110110000?000	6K	28	1
<i>Floriceps minacanthus</i> (Flo)	010100011110010100000110100111111101100000000	6	2	1
<i>Grillotia erinaceus</i> (Geri)	010100011111010000100111101111112099000000100	1269J	2470	01
<i>Grillotia pristiophori</i> (GripA)	0?010001111000010010011111111110099000000000	I	6	0
<i>Grillotia rowei</i> (1393536)	?101?0011?????0???1000?010011111209900000?000	1	4	0
<i>Hornelliella annandalei</i> (Horn1)	0?0100011110010000100000101111111120001001000	69CV	245	01
<i>Lacistorhynchus dollfusi</i> (Ldol)	01010001111001010000111111111111100100100000	BIJKR	24678	01
<i>Paragrillotia similis</i> (TE-51)	0101000?1111010100000010100111112120000001100	G	5	1
<i>Protogrillotia</i> sp. (NT113A)	??01?0011?????0???0000?010111111209900000?000	6	2	1
<i>Pseudogilquinia microbothria</i> (Dmag1)	?101?00?1?????1???1001?010111111211000000?000	7	2	1
<i>Pseudogilquinia pillersi</i> (Das)	?101?0011?????1???1001?010111111212000000?000	?	?	?
<i>Pseudolacistorhynchus heroniensis</i> (Ghe)	?101?00111?????0???0001?0111111111099000100000	C	5	1
<i>Pterobothrium lintoni</i> (Plin)	010001011110000000100110100111111099000000000	9OR	4	0
<i>Pterobothrium platycephalum</i> (Ptp11)	??00010111?????0???1001?010011111109900000?000	9	4	0
<i>Aporhynchus</i> sp. (Apor)	0?00009991111000109990109999999999999999999991	F	0	1
<i>Chimaerarhynchus rougetae</i> (Chir)	0?0000001111100010000100100111110111000000000	23	0	1
<i>Gilquinia squali</i> (Gsq)	010000001111100110000110111111110099000000000	12BFU	024	01
<i>Gymnorhynchus isuri</i> (Gymn)	010000001101000010001000101111112110001010000	56	12	1
<i>Hepatoxylon trichiuri</i> (Hep)	100110020110000000001210000100909999900000900	5HL	01	1
<i>Molicola uncinatus</i> (Moli)	010000001111100100001010111111110099001000000	H	1	1
<i>Sagittirhynchus aculeatus</i> (Gng1)	0?0000001111100010000000101111110099000000000	3	0	1

<i>Sphyrnocephalus viridis</i> (Sph)	100100020110000000001210000100909999900000900	345HL	01	1
<i>Vittirhynchus squali</i> (Gng2)	0?0000001111100000000000111111110100000000000	2	0	1

^aHost family (from FishBase, 2004): 0, Rhinopteridae; 1, Rajidae; 2, Squalidae; 3, Centrophoridae; 4, Dalatiidae; 5, Lamnidae; 6, Carcharinidae; 7, Sphyrnidae; 8, Pristidae; 9, Dasyatidae; A, Myliobatidae; B, Triakidae; C, Stegostomidae; D, Urolophidae; E, Potamotrygonidae; F, Etmopteridae; G, Ginglymostomidae; H, Alopiidae; I, Pristiophoridae; J, Torpedinidae; K, Hexanchidae; L, Somniosidae; M, Orectolobidae; O, Gymnuridae; P, Parascylliidae; Q, Rhynchobatidae; R, Rhinobatidae; S, Urotrygonidae; T, Plesiobatidae; U, Scyliorhinidae; V, Hemiscylliidae; W, Callorhynchidae.

^bHost orders (from FishBase, 2004): 0, Squaliformes; 1, Lamniformes; 2, Carcharhiniformes; 3, Pristiformes; 4, Rajiformes; 5, Orectolobiformes; 6, Pristiophoriformes; 7, Torpediniformes; 8, Hexanchiformes; 9, Chimaeriformes.

^cHost class: 0, Batoidea; 1, Selachimorpha; 2, Holocephali.