This is an electronic appendix to the paper by Swain and Taylor 2003. Structural rRNA characters support monophyly of raptorial limbs and paraphyly of limb specialization in water fleas. *Proc. R. Soc. Lond.* B **270**, 887—896. (DOI 10.1098/rspb.2002.2297.)

Electronic appendices are refereed with the text. However, no attempt has been made to impose a uniform editorial style on the electronic appendices.

Electronic Appendix A
Table 1
Orders, Families, Genera, Species and sampling location of taxa included in this study.

Order	Family	Genus and Species	Sampling location
Anostraca	Artemiidae	*Artemia franciscana*	Transcience coporation, Maryland
	Polyartemiidae	*Polyartemiella hazeni*	Teller, Alaska
	Streptocephalidae	*Streptocephalus dorothae*	Triops Educational Science Inc., Florida
	Chirocephalidae	*Eubranchipus neglectus*	Windsor, Ontario, Canada
	Branchinectidae	*Branchinecta paludosa*	Bathurst Island, Nunavut, Canada
Notostraca	Triopsidae	*Lepidurus acticus*	Igloolik, Nunavit, Canada
	Triopsidae	*Triops longicaudatus*	Triops Educational Science Inc., Florida
Laevicaudata	Lynceidae	*Lynceus brachyurum*	Cow Creek, North Dakota
Spinicaudata	Limnadiidae	*Limnadia* sp.	Mount Hampton, Western Australia, Australia
	Cyclestheriidae	*Cyclestheria hislopi*	Karumba, Queensland, Australia
	Caenestheriidae	*Caenestheriella setosa*	Zap, North Dakota
Haplopoda	Leptodoridae	*Leptodora kindti*	Douglas Lake, Michigan
Onychopoda	Cercopagidae	*Bythotrephes longimanus*	Postsee, Germany
	Cercopagidae	*Cercopagis pengoi*	Lake Ontario, 4-Mile Creek State Park, New York
	Podonidae	*Evadne nordmanni*	Grantley Harbor, Teller, Alaska
	Podonidae	*Podon leuckarti*	Grantley Harbor, Teller, Alaska
	Polyphemidae	*Polyphemus pediculus*	Wild Goose Lake, Michigan
Ctenopoda	Holopediidae	*Holopedium amazonicum*	Flying Pond, Maine
	Sididae	*Sida crystallina*	Wild Goose Lake, Michigan
	Sididae	*Diaphanosoma* sp.	North Dike, South Carolina
	Sididae	*Latonopsis occidentalis*	Chicot Lake, Louisiana
Anomopoda	Daphniidae	*Ceriodaphnia rotunda*	Greeleyville, South Carolina
	Daphniidae	*Daphnia ambigua*	Tucker Pond, Rhode Island
	Daphniidae	*Daphnia dentifera*	Deep Lake, Mendon Park, New York
	Daphniidae	*Daphnia longicephala*	Fleurieu Peninsula, South Australia, Australia
	Daphniidae	*Daphnia magna*	Crescent Lake, Nebraska
	Daphniidae	*Daphnia occidentalis*	Northern, Western Australia, Australia
	Daphniidae	*Daphnia pulicaria*	Java Lake, New York
	Daphniidae	*Daphniopsis ephemeralis*	Long Point, Ontario, Canada
	Daphniidae	*Daphniopsis truncata*	Perth, Western Australia, Australia
	Daphniidae	*Scapholeberis rammneri*	Ann Arbor, Michigan
	Daphniidae	*Simocephalus serrulatus*	First Sister Lake, Michigan
	Moinidae	*Moina affinis*	Valle Santiago, Mexico
	Macrothricidae	*Ofryoxus gracilis*	Raven Lake, Ontario, Canada

Table 2
Genbank accession numbers of sequences used in this study

Taxa	18S V4	18S V7	28S V1-V3	28S V5-V7
Artemia franciscana	-	-	-	AY137143
Polyartemiella hazeni	-	-	-	AY137140
Streptocephalus dorothae	-	-	-	AY137142
Eubranchipus neglectus	-	-	-	AY137139
Branchinecta paludosa	-	-	-	AY137141
Lepidurus acticus	-	-	-	AY137138
Triops longicaudatus	-	-	-	AY137137
Lynecus brachyurum	-	-	-	AY137136
Limnadia sp.	AF070114 †	AF070509 †	AF532886 ‡	AY137135
Cyclestheria hislopi	AF070098 †	AF070492 †	AF532878 ‡	AY137133
Caenestheriella setosa	AF070095 †	AF070489 †	AF532879 ‡	AY137134
Leptodora kindti	AF070113 †	AF070508 †	AF532877 ‡	AY137130
Bythotrephes longimanus	AF070094 †	AF070488 †	AF532876 ‡	AY137131
Cercopagis pengoi	AY137172-75*	AY137184-87*	AF532902	AY137132
Evadne nordmanni	AF532896	AF532900	AF532903-06*	AY13716-67*
Podon leuckarti	AF532895	AY137188-91*	AF532901	AY137144-47*
Polyphemus pediculus	AF070119 †	AF070514 †	AF532875 ‡	AY137148-51*
Holopedium amazonicum	AF070110 †	AF070504 †	AF532874 ‡	AY137129
Sida crystallina	AF070121 †	AF070516 †	AF532873 ‡	AY137128
Diaphanosoma sp.	AY137176-78*	AY137192-95*	AF532907-10*	AY137152-55*
Latonopsis occidentalis	AF532897	AY137180-83*	AY137168-71*	AY137127
Ceriodaphnia rotunda	AF532893	AF532898	AF346520 £	AF346520 £
Daphnia ambigua	-	-	-	AF346513 £
Daphnia dentifera	-	-	-	AF346511 £
Daphnia longicephala	-	-	-	AF346516 £
Daphnia magna	AF070104†	AF070499†	AF532883 ‡	AF346515 £
Daphnia occidentalis	-	-	-	AF346510 £
Daphnia pulicaria	-	-	-	AF346514 £
Daphniopsis ephemeralis	AF070100 †	AF070495 †	AF532884 ‡	AF346518 £
Daphniopsis truncata	AF070107 †	AF070501 †	AF532885 ‡	AF346517 £
Scapholeberis rammneri	AF070120 †	AF070515 †	AF532880 ‡	AY137126
Simocephalus serrulatus	AF532894	AF532899	AF346520 £	AF346520 £
Moina affinis	AF070116 †	AF070511 †	AF532882 ‡	AY137156-59*
Ofryoxus gracilis	AF070117 †	AF070512 †	AF532881 ‡	AY137160-63*

† From Crease and Taylor, 1998
‡ From Taylor *et al.*, 1999
£ From Omilian and Taylor, 2001
* These sequences are from cloned PCR products

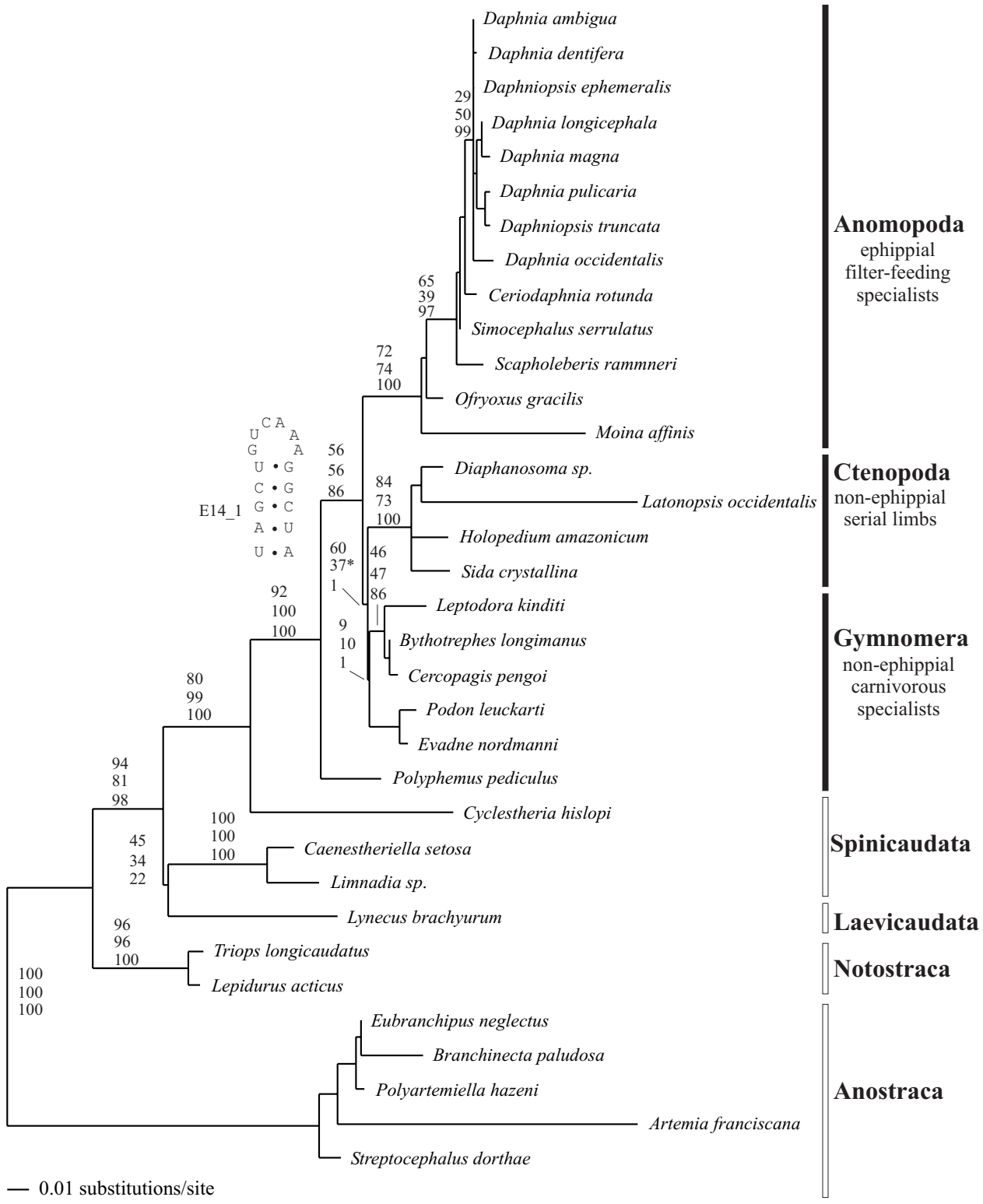

Figure 6: NJ tree showing the branchiopod relationships for all 35 taxa based on the V5-V7 28S rDNA sequences. Support values are listed vertically from top to bottom: ME (1,000 iteration minimum-evolution using maximum-likelihood DNA distance), MP (1,000 iteration maximum-parsimony using gaps as a fifth character state), and Bayesian.

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TCGTCCAAGTCTCCATGAATGGGGCCAGCAACCCAGAGAGGGTGTCAGGCCCGTGG-----
GACGAGCCGCGACCGTGTATTGGGTCTCT----
CCTTAGAGTCGGGTTGCTTGAGAGTGCAGCCCTAAGCGGGAGGTAAACTCCTTCTAAGGCTAAATACGGCCACGAGACCGAT
AGCGAACAAGTACCGCGAGGGAAAGTTGAAAAGAACTTTGAAGAGAGAGTTCAATAGTGCGTGAAACCGTTCAGGGGGTTAA
ACGGGTGGGCCCTCGAAGGTCGAA-CG-CCCCCTACTCCTGTTCC-TGTTGCGCTGGCA-CGTGCTGCTTTT---------
CGATCTCGCTACGAG-------------ACGGAGCTTGGTGCGG--TATGCC--TGGAC-
TGCAGGGGCCGCTAGTTAGGGG--GCCAGTAGGACTCCGCAACCGGCTGGGTTTTA--------------AG---
TCGTCAGAAGGGTTCTGGAGGAA----G-CCTCCTC--TGGGGGTGAAATCCGGGATTCCGGGCGATCT---TC--CCG-
GCCGTG------AACCAGAATTCCCCC-GTCTGGCGTCTGGGACGAGTTC-TGGCA------ACAGG-ACT----G--
TCGGTTC--------------------TGGGCGTCACCGT----------------------
GGGGACACCGCGGAGAGTAGA---
GTCGGGTCCCACCCGACCCGTCTTGAAACACGGACCAAGGAGTCTAACATGTGCGCGAGTCGTCGGGTA-CT-ACTAAACC-
--CGAAGGCGCAATGAAAGTGAAGACTGTGC---------------CTCGTCGCCG-
GTCTAGGGGAGATCCCGTTCTGCTTC-------G--GTAGCTCGGGCGCATCCCCGGGGCGTCGAAG---CCGCGTT-----
------------------------------
GCCGGCTAGACGAACCAAGAGCGTACACGTTGGGACCCGAAAGATGGTGACCTATGCCTGGCCAGGACGAAGCCAGGGGAAA
CCCTGGTGGAGGTCCGCAGCGATTCTGACGTGCAAATCGATCGTCGGAGTTGGGTATAGGGGCGAAAGACTAATCGAACCAT
CTAGTAGC--XXX--TGCCTATACCGGGCCGCTGGTG-----------GCAGAGCA--CGTCTCCC-TGCAGAAGGG--
AGTACGCTTAGGCCCCAGCGAGTAGGGGGGTCGCAGCGGTGCGCGCAGAAGGGTC-
TGGGCGTGAGCCTGCCTGGAGCCGCCGCTGGTGCAGATCTTGGTGGTAGTAGCAAATACTCCAGAGGGATCCTGGAGGACTG
ACGCGGAGAAGGGTTTCATGTGAACAGTGGTTGGACATGAGTCAGTCGATCCTAAGCCGCAGGTGAAATCCGTCCCAGGG--
-------------------------------AACGGCGTGTTTCTTTCT------------------------------
TTTTCC-----------------------------------------------AAAGGAA---------------------------
-------------------------------------------------------ATGT-----------------------------
-------------------------------------------------------------------TACAAGCGCC-G-
CTGGGT--AAGGCGAAAGGGAATCCGGTTCTAATTCCGGAACCCGGTTACGGATACGATC---------GAGTGCCCGT---
CA------------------CTC--
GTCACGGCAACGTGAAAAAGCCCGGAGAAGCTGTCCGGAGCCCCGGGAAGAGTTTTCTTTTCTGCATGAGGGGCCGAAACCC
TGGAATTCTGTCGTGGAGCGATAGGGTATTGG-----------------------
CCCCGAAGAGCGCCGCAGTTCTGCGGCGTCCGTGG--GTTCT-GGCTGGCCCTTGAAAATCCGG-GTG-AGGGCTA------
-------------CGCGATTGT----------
TTCGTACCGGCTCGTACCGATATCCGCATCAGGTCTCCCAGGTGAACAGCCTCTAGTCGATAGATGAATGTAGGTAA
           Limnadia_sp
TTTAACGAGGACCTATTGGAGGGCAAGTCTGGTGCCAGCAGCCGCGGTAACTCCAGCTCCAATAGCGTATATTAAAGTTGTT
GCGGTTAAAAAGCTCGTAGTTGGATTCCGGT-CGCGGCCGGGTGGTGCC-----GCCTCATGG---TG---CGC---
ACTGCCTAGG----------------------CCGGACAATCAGCCGGACTA----------------------------
----------------------------------------------------------------------------------
----------------------------------------------------------------------------------
-----------TCCGGGGTGCTCTTAACCGGGTGTCCTGGGTGGCCGGT-ACGTTT-
ACTTTGAACAAATTAGAGTGCTCAAAGCAGGT-GCAT----
TGCGCCTGAATATCACAGCATGGAATGATGGAATAGGACCTCGGTCTTATTTTGTTGGTTT---TCT-----
GGACCCGAGGTAA--X--
CTCTTTCTTGATTCGGTGGGTGGTGGTGCATGGCCGTTCTTAGTTGGTGGAGCGATTTGTCTGGTTAATTCCGATAACGAAC
GAGACTCTAGCCTGCTAAATAGGTGGCGGGTC----------------------------------------------------
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--------------CTACCCGTCCGTCAC--------
TCTTCTTAGAGGGACAAGCGGCGTCCAGCCGCATGACAGTGAGCAATAACAGGTCTGTGATGCCCTTAGATGTCCTGGGCCG
CACGCGCGCTACACTGAAGGAATCAGCGTGTC-----CTCCCTGTCCGAAAGGACCGGGTA--XX--
CTAAGCGGAGGAAAAGAAACTAACAAGGATTCCCNTAGTAGCGGCGAGCGAAGAGGGAAAAGCCCAGCACCGAACCTCGC--
----ACTTC-G----GGTGTCGCGGAATGTGGTGTTCAGGAGGACCGTGCGCGTCTGTCCGG-T-A---
TCGTCCAAGTCTCCATGAATGGGGCCAGCAACCCAGAGAGGGTGTCAGGCCCGTGG-----
GACGAGCCGCGACCGTGTATTGGGTCTCT----
CCTTAGAGTCGGGTTGCTTGAGAGTGCAGCCCTAAGCGGGAGGTAAACTCCTTCTAAGGCTAAATACGGCCACGAGACCGAT
AGCAAACAAGTACCGCGAGGGAAAGTTGAAAAGAACTTTGAAGAGAGAGTTCAAGAGTGCGTGAAACCGTTCAGGGGGTTAA
ACGGGTGGGCCCTCGAAGGTCGAA-CG-GTCCCCACTCCCGTCAC-TCGTAGGCCGGTC-CGCGCCG-TCTT---------
CGAT-TCCTTATGGA--------------ACGG----TGGTGCG---TTTGC----GGTT-
TACGGGGGCCGCTAGCTGGGGA--CCCAGTAGGACTCCGCAACCGGTTGGGC--AG--------------GG---
CCGTCAGAAGGGTTCTGGAGGAA----G-GTTCCTT--TGGAGGTGGATTCCGGGATTCCGGGCGGTCC---TC--TCG-
ACCGTG------AACCAAATTTCTCCC--------------------TT---------------------------------
-----------------------------TCACGGG----------------------GTAGAATGCGCGGAGAGTAGA---
GTCGGGTCCCACCCGACCCGTCTTGAAACACGGACCAAGGAGTCTAACATGTACGCGAGTCGTCGGGTA-CT-ACTAAACC-
--CGAAGGCGCAATGAAAGTGAAGGCCGC-C---------------TTCGTTGGCG-
GCCGAGGGGAGATCCCGTTCTGTTCC-------G--GTAGCTCGGGCGCATCCCCGGGGCGTCGAAG---CCGCGTT-----
------------------------------
GCCGGCTAGACGAACCAAGAGCGTACACGTTGGGACCCGAAAGATGGTGACCTATGCCTGGCCAGGACGAAGCCAGGGGAAA
CCCTGGTGGAGGTCCGCAGCGATTCTGACGTGCAAATCGATCGTCTGAGTTGGGTATAGGGGCGAAAGACTAATCGAACCAT
CTAGTAGC--XXX--TGCCTATACCGGGCCGTTGGTG-----------GCAGAGCA--CGCCTCGC-TTTAGTGTCG--
AGTGCGCTGAGGCCCCAACGAGTAGGGGGGTCGCAGCGGTGCGCGCAGAAGGGTC-
TGGGCGTGAGCCTGCCTGGAGCCGCCGCTGGTGCAGATCTTGGTGGTAGTAGCAAATACTCCAGAGGGATCCTGGAGGACTG
ACGCGGAGAAGGGTTTCATGTGAACAGTGGTTGGACATGAGTCAGTCGACCCTAAGCCGCAGGTGAAATCCGTCCCAGAG--
-------------------------------AACGGCGTGTTTCTTTCT------------------------------
TTCACT-------------------------------------------AGAAGAA---------------------------
-----------------------------------------------------ATGTG---------------------------
-------------------------------------------------------------------TTGAAGCGCC-G-
CTGGGT--AAGGCGAAAGGGAATCCGGTTCTAATTCCGGAACCCGGTCATGGATGCGATC---------AAGTGCCCGT---
CA------------------CTT--
GTCACGGTAACGTGAAAAAGCCCGGAGAAGCTGTCTGGAACCCCGGGAAGAGTTTTCTTTTCTGCATGAGGGACCGAAACCC
TGGAATTCTGTCGTGGAGCGATAGGGTATTGG------------------------
TCCCGAAGAGCGCCGCAGTTCTGCGGCGTCCGTGG--GTTTC-AGCCGGCCCTTGAAAATCCGG-GTG-AGGGCTA------
-------------CGCGATTGT----------
TTCATACCGGCTCGTACCGATAACCGCATCAGGTCTCCCAGGTGAACAGCCTCTAGTCGATAGATGAATGTAGGTAA
;
End;
begin paup;
delete 7 10 17 19;
exclude 125-161 221-418 494-507 560-576 589-593 705-1020 1033-1042 1184-1189 1269-
1287 1334-1341 1396-1401 1622-1768 1789-2043 2054-2059 2126-2135 2164-2201 2260-
2311 2482-2488 2511-2558 2768-3104 3156-3202 3401-3435 3442-3455;
end;

[!Likelihood settings from best-fit model (TrN+I+G) selected by hLRT in Modeltest
Version 3.06]

BEGIN PAUP;
Lset  Base=(0.2450 0.2319 0.3060)  Nst=6  Rmat=(1.0000 2.9304 1.0000 1.0000
6.0059)  Rates=gamma  Shape=0.6790  Pinvar=0.5407;
END;
```

```
[begin mrbayes;
set autoclose=yes;
Lset  basefreq= estimate  Nst=6  revmat= estimate  Rates=invgamma  Shape=estimate
covarion=yes;
mcmc ngen=100000 printfreq=1000 samplefreq=10 nchains=4 savebrlens = yes
startingtree=random;
END;]
```

For Morphometrics file see Treebase.org S839.

For Structure files in DCSE format (readable by DCSE, Wordpad and BBedit) see hotlink at www.buffalo.edu/~djtaylor/publications.htm.