



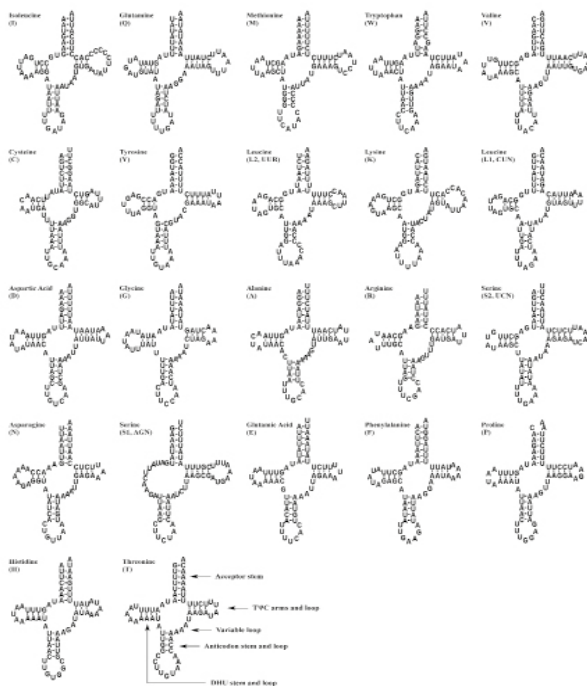
Supplementary Material

Comparative Mitgenome Analysis of *Anoplophora horsfieldi* and Other Chrysomeloidea, Cucujiformia Insects Reveals Conserved Mitgenome Organization and Phylogeny

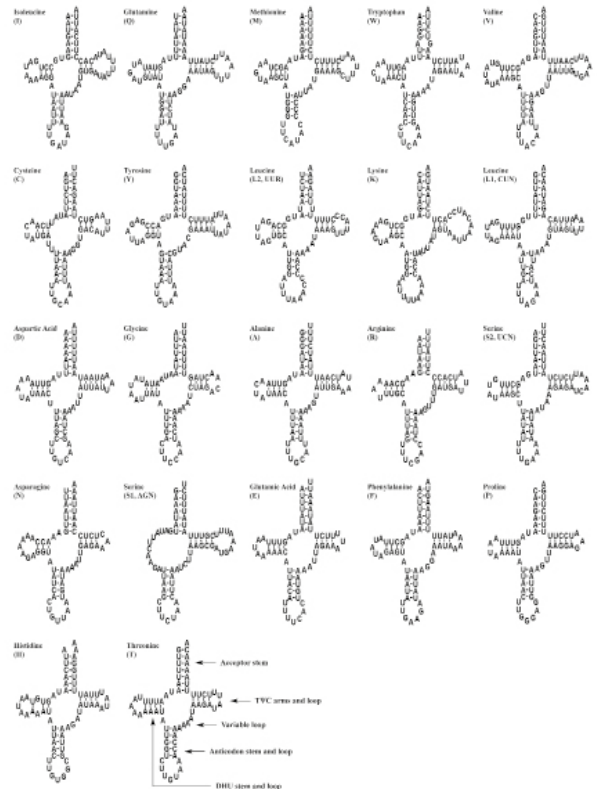
Haifen Qin^{1,2}, Yujia Liu¹, Yujie Zhang¹, Jingfeng Liu¹, Zhenkun Zhao^{1,2} and Lichun Jiang^{1,2*}

¹Key Laboratory for Molecular Biology and Biopharmaceutics, School of Life Science and Technology, Mianyang Normal University, Mianyang, Sichuan, 621000, P.R. China.

²Ecological Security and Protection Key Laboratory of Sichuan Province, Mianyang Normal University, Mianyang, Sichuan, 621000, P.R. China.



Supplementary Fig. S1. Putative tRNA secondary structures predicted from the 22 tRNA gene sequences found in the *Anoplophora chinensis* mitgenome.



Supplementary Fig. S2. Putative tRNA secondary structures predicted from the 22 tRNA gene sequences found in the *Anoplophora glabripennis* mitgenome.

* Corresponding author: jiang_lichun@126.com
0030-9923/2024/0005-2449 \$ 9.00/0



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Supplementary Table S1. Species mentioned in the present study with their GenBank accession number:

No.	Order	Suborder	Superfamily	Family	Subfamily	Tribes	Genus	Species	Species Accession no.
1	Coleoptera	Cucujiformia	Chrysomeloidea	Cerambycidae	Lamiinae	Lamiini	<i>Anoplophora</i>	<i>Anoplophora horsfieldi</i>	15,796 MN248534
2	Coleoptera	Cucujiformia	Chrysomeloidea	Cerambycidae	Lamiinae	Lamiini	<i>Anoplophora</i>	<i>Anoplophora horsfieldi</i>	15,837 MW364565
3	Coleoptera	Cucujiformia	Chrysomeloidea	Cerambycidae	Lamiinae	Lamiini	<i>Anoplophora</i>	<i>Anoplophora glabripennis</i>	15,774 NC_008221
4	Coleoptera	Cucujiformia	Chrysomeloidea	Cerambycidae	Lamiinae	Lamiini	<i>Anoplophora</i>	<i>Anoplophora chinensis</i>	15,805 NC_029230
5	Coleoptera	Cucujiformia	Chrysomeloidea	Cerambycidae	Lamiinae	Monochamini	<i>Monochamus</i>	<i>Monochamus alternatus</i>	15,874 NC_024652
6	Coleoptera	Cucujiformia	Chrysomeloidea	Cerambycidae	Lamiinae	Monochamini	<i>Monochamus</i>	<i>Monochamus alternatus</i>	14,649 JX987292
7	Coleoptera	Cucujiformia	Chrysomeloidea	Cerambycidae	Lamiinae	Batoцерini	<i>Batoцera</i>	<i>Batoцera lineolata</i>	15,418 JN986793
8	Coleoptera	Cucujiformia	Chrysomeloidea	Cerambycidae	Lamiinae	Batoцерini	<i>Batoцera</i>	<i>Batoцera lineolata</i>	15,420 MH521888
9	Coleoptera	Cucujiformia	Chrysomeloidea	Cerambycidae	Lamiinae	Agmini	<i>Psacothea</i>	<i>Psacothea hilaris</i>	15,856 FJ424074
10	Coleoptera	Cucujiformia	Chrysomeloidea	Cerambycidae	Lamiinae	Saperdini	<i>Thyestilla</i>	<i>Thyestilla gebleri</i>	15,505 NC_034752
11	Coleoptera	Cucujiformia	Chrysomeloidea	Cerambycidae	Cerambycinae	Cerambycini	<i>Aeolesthes</i>	<i>Aeolesthes oenochrous</i>	15,747 AB703463
12	Coleoptera	Cucujiformia	Chrysomeloidea	Cerambycidae	Cerambycinae	Cerambycini	<i>Massicus</i>	<i>Massicus raddai</i>	15,858 NC_023937
13	Coleoptera	Cucujiformia	Chrysomeloidea	Cerambycidae	Cerambycinae	Obrtini	<i>Obrtium</i>	<i>Obrtium</i> sp. NS-2015	15,680 KT945156
14	Coleoptera	Cucujiformia	Chrysomeloidea	Cerambycidae	Prioniinae	Prioniini	<i>Dorysthenes</i>	<i>Dorysthenes paradoxus</i>	15,922 NC_037927
15	Coleoptera	Cucujiformia	Chrysomeloidea	Cerambycidae	Prioniinae	Callipogonini	<i>Callipogon</i>	<i>Callipogon relicus</i>	15,742 NC_037698
16	Coleoptera	Cucujiformia	Chrysomeloidea	Cerambycidae	Lepturinae	Lepturini	<i>Anastrangalia</i>	<i>Anastrangalia sequens</i>	16,269 NC_038090
17	Coleoptera	Cucujiformia	Chrysomeloidea	Cerambycidae	Disteniinae		<i>Disteniazteca</i>	<i>Disteniazteca fimbriata</i>	9,776 JX221000
18	Coleoptera	Cucujiformia	Chrysomeloidea	Chrysomelidae	Galerucinae	Diabroticina	<i>Diabrotica</i>	<i>Diabrotica barberi</i>	16,366 NC_022935
19	Coleoptera	Cucujiformia	Chrysomeloidea	Chrysomelidae	Galerucinae	Diabroticina	<i>Diabrotica</i>	<i>Diabrotica virgifera virgifera</i>	16,650 KF658070
20	Coleoptera	Cucujiformia	Chrysomeloidea	Chrysomelidae	Galerucinae	Galerucites	<i>Galeruca</i>	<i>Galeruca daurica</i>	16,615 NC_027114
21	Coleoptera	Cucujiformia	Chrysomeloidea	Chrysomelidae	Galerucinae		<i>Palaosepharia</i>	<i>Palaosepharia posticata</i>	15,729 NC_033532
22	Coleoptera	Cucujiformia	Chrysomeloidea	Chrysomelidae	Galerucinae	Alicini	<i>Agasicles</i>	<i>Agasicles hygrophila</i>	15,917 NC_028332
23	Coleoptera	Cucujiformia	Chrysomeloidea	Chrysomelidae	Cassidinae		<i>Rhadnosa</i>	<i>Rhadnosa nigrocyanea</i>	17,965 NC_037218
24	Coleoptera	Cucujiformia	Chrysomeloidea	Chrysomelidae	Cassidinae		<i>Agonita</i>	<i>Agonita chinensis</i>	16,395 MH351622
25	Coleoptera	Cucujiformia	Chrysomeloidea	Chrysomelidae	Chrysomelinae	Chrysomelini	<i>Gonioцena</i>	<i>Gonioцena internedia</i>	18,064 MH563963
26	Coleoptera	Cucujiformia	Chrysomeloidea	Chrysomelidae	Chrysomelinae	Chrysomelini	<i>Gonioцena</i>	<i>Gonioцena internedia</i>	18,293 MH563962
27	Coleoptera	Cucujiformia	Chrysomeloidea	Chrysomelidae	Chrysomelinae	Chrysomelini	<i>Gastrohna</i>	<i>Gastrohna thoracica</i>	16,109 NC_036108
28	Coleoptera	Cucujiformia	Chrysomeloidea	Chrysomelidae	Bruchinae	Bruchini	<i>Acanthoscelides</i>	<i>Acanthoscelides obrectus</i>	16,130 NC_035677
29	Coleoptera	Cucujiformia	Chrysomeloidea	Chrysomelidae	Crioцerinae		<i>Crioцeris</i>	<i>Crioцeris duodecimpunctata</i>	15,880 AF467886
30	Coleoptera	Cucujiformia	Chrysomeloidea	Vesperidae	Philiinae	Philiini	<i>Spiniphilus</i>	<i>Spiniphilus spinicornis</i>	15,707 NC_029515

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Mitgenome Analysis of *Anoplophora horsfieldi*

No.	Order	Suborder	Superfamily	Family	Subfamily	Tribes	Genus	Species	Species Accession no.
31	Coleoptera	Cucujiformia	Chrysomeloidea	Orsodacnidae			<i>Orsodacne</i>	<i>Orsodacne lineola</i>	9,828 JX220994
32	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Dryophthorinae		<i>Stiophilus</i>	<i>Stiophilus zeamais</i>	18,517 KU757289
33	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Dryophthorinae		<i>Stiophilus</i>	<i>Stiophilus oryzae</i>	17,602 KX373615
34	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Dryophthorinae		<i>Stiophilus</i>	<i>Stiophilus zeamais</i>	18,105 KX373614
35	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Dryophthorinae		<i>Rhynchophorus</i>	<i>Rhynchophorus ferrugineus</i>	15,924 KT428893
36	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Dryophthorinae		<i>Sphenophorus</i>	<i>Sphenophorus</i> sp. BYU-CO246	15,052 GU176342
37	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Dryophthorinae		<i>Cyrtotrachelus</i>	<i>Cyrtotrachelus baqueti</i>	15,035 NC_039705
38	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Cryptorhynchinae		<i>Eucryptorrhynchus</i>	<i>Eucryptorrhynchus brandti</i>	15,597 KP455482
39	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Cryptorhynchinae		<i>Eucryptorrhynchus</i>	<i>Eucryptorrhynchus scrobiculatus</i>	15,195 KP455510
40	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Cryptorhynchinae		<i>Eucryptorrhynchus</i>	<i>Eucryptorrhynchus brandti</i>	15,122 NC_025945
41	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Cryptorhynchinae		<i>Eucryptorrhynchus</i>	<i>Eucryptorrhynchus brandti</i>	16,919 KR088970
42	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Cryptorhynchinae		<i>Eucryptorrhynchus</i>	<i>Eucryptorrhynchus scrobiculatus</i>	15,628 NC_026719
43	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Entiminae	Naupactini	<i>Naupactus</i>	<i>Naupactus xanthogrephus</i>	15,026 GU176345
44	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Entiminae	Tanymericini	<i>Sympiezomias</i>	<i>Sympiezomias velatus</i>	15,592 MF383367
45	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Entiminae	Cyphicerini	<i>Mylocerinus</i>	<i>Mylocerinus aurolineatus</i>	17,762 NC_040931
46	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Entiminae	Polydrusini	<i>Pachyrhinus</i>	<i>Pachyrhinus yasunatsui</i>	16,472 MF807224
47	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Curculioninae	Anthonomini	<i>Anthonomus</i>	<i>Anthonomus rubi</i>	17,476 NC_044714
48	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Curculioninae	Anthonomini	<i>Anthonomus</i>	<i>Anthonomus rectirostris</i>	17,676 NC_044713
49	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Curculioninae	Anthonomini	<i>Anthonomus</i>	<i>Anthonomus pomorum</i>	17,093 NC_044712
50	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Curculioninae	Anthonomini	<i>Anthonomus</i>	<i>Anthonomus eugeni</i>	17,257 NC_044711
51	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Curculioninae	Curculionini	<i>Curculio</i>	<i>Curculio davidi</i>	16,852 NC_034293
52	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Molytinae	Hyllobiini	<i>Hyllobitelus</i>	<i>Hyllobitelus xiaoi</i>	16,123 NC_022680
53	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Cyclominae		<i>Aegorhinus</i>	<i>Aegorhinus superciliosus</i>	15,121 NC_027577
54	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Platyopodinae		<i>Euplatypus</i>	<i>Euplatypus parallelus</i>	16,095 KX711704
55	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Alcidinae		<i>Alcidodes</i>	<i>Alcidodes juglans</i>	15,638 NC_041669
56	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Ceutorhynchinae		<i>Ceutorhynchus</i>	<i>Ceutorhynchus obscurus</i>	20,124 NC_045101
57	Coleoptera	Cucujiformia	Curculionoidea	Curculionidae	Scolytinae		<i>Scolytus</i>	<i>Scolytus</i> sp. BMNH 1274287	17,064 KT696206
58	Coleoptera	Cucujiformia	Curculionoidea	Atelabidae	Rhynchitinae		<i>Cyltorhynchites</i>	<i>Cyltorhynchites ursulus</i>	14,508 MHI 56809
59	Coleoptera	Cucujiformia	Curculionoidea	Brentidae	Apioninae		<i>Leptadaption</i>	<i>Leptadaption squamigerum</i>	18,562 MN459662
60	Coleoptera	Cucujiformia	Tenebrionoidea	Tenebrionidae	Tenebrionidae		<i>Tribolium</i>	<i>Tribolium castaneum</i>	15,881 AJ312413

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No. Order	Suborder	Superfamily	Family	Subfamily	Tribes	Genus	Species	Species Accession no.
61	Coleoptera Cucujiformia	Tenebrionoidea	Tenebrionidae	Tenebrionidae incertae sedis		<i>Tribolium</i>	<i>Tribolium confusum</i>	15,813 KP420018
62	Coleoptera Cucujiformia	Tenebrionoidea	Tenebrionidae	Tenebrionidae incertae sedis		<i>Tribolium</i>	<i>Tribolium castaneum</i>	15,883 KM009121
63	Coleoptera Cucujiformia	Tenebrionoidea	Tenebrionidae	Tenebrionidae incertae sedis		<i>Tribolium</i>	<i>Tribolium andax</i>	15,925 NC_024600
64	Coleoptera Cucujiformia	Tenebrionoidea	Tenebrionidae	Tenebrionidae incertae sedis		<i>Tribolium</i>	<i>Tribolium castaneum</i>	15,881 NC_003081
65	Coleoptera Cucujiformia	Tenebrionoidea	Tenebrionidae	Tenebrionidae incertae sedis		<i>Tribolium</i>	<i>Tribolium castaneum</i>	15,877 KM244661
66	Coleoptera Cucujiformia	Tenebrionoidea	Tenebrionidae	Tenebrioninae		<i>Tenebrio</i>	<i>Tenebrio molitor</i>	15,785 NC_024633
67	Coleoptera Cucujiformia	Tenebrionoidea	Tenebrionidae	Tenebrioninae		<i>Tenebrio</i>	<i>Tenebrio obscurus</i>	15,771 NC_037196
68	Coleoptera Cucujiformia	Tenebrionoidea	Tenebrionidae	Tenebrioninae		<i>Tenebrio</i>	<i>Tenebrio molitor</i>	15,784 KP994554
69	Coleoptera Cucujiformia	Tenebrionoidea	Tenebrionidae	Tenebrioninae		<i>Zophobas</i>	<i>Zophobas atratus</i>	15,494 NC_041101
70	Coleoptera Cucujiformia	Tenebrionoidea	Tenebrionidae	Pimeliinae		<i>Asbolus</i>	<i>Asbolus verrucosus</i>	15,828 NC_027256
71	Coleoptera Cucujiformia	Tenebrionoidea	Tenebrionidae	Diaperinae		<i>Ulmoides</i>	<i>Ulmoides dermestoides</i>	15,434 NC_025332
72	Coleoptera Cucujiformia	Tenebrionoidea	Tenebrionidae	Lagrinae		<i>Adelum</i>	<i>Adelum</i> sp. NCS-2009	16,449 FJ613422
73	Coleoptera Cucujiformia	Tenebrionoidea	Meloidae	Meloinae		<i>Epicauta</i>	<i>Epicauta chinensis</i>	15,717 KP692789
74	Coleoptera Cucujiformia	Tenebrionoidea	Meloidae	Meloinae		<i>Epicauta</i>	<i>Epicauta aptera</i>	15,645 NC_031820
75	Coleoptera Cucujiformia	Tenebrionoidea	Meloidae	Meloinae		<i>Epicauta</i>	<i>Epicauta gorkhani</i>	15,691 NC_036042
76	Coleoptera Cucujiformia	Tenebrionoidea	Meloidae	Meloinae		<i>Epicauta</i>	<i>Epicauta tibialis</i>	15,716 NC_036043
77	Coleoptera Cucujiformia	Tenebrionoidea	Meloidae	Meloinae		<i>Hycleus</i>	<i>Hycleus phaleratus</i>	16,003 NC_036045
78	Coleoptera Cucujiformia	Tenebrionoidea	Meloidae	Meloinae		<i>Hycleus</i>	<i>Hycleus chodschenkoi</i>	16,257 KT808466
79	Coleoptera Cucujiformia	Tenebrionoidea	Meloidae	Meloinae		<i>Hycleus</i>	<i>Hycleus marcupoli</i>	15,923 NC_036044
80	Coleoptera Cucujiformia	Tenebrionoidea	Meloidae	Meloinae		<i>Myilabris</i>	<i>Myilabris aulica</i>	15,758 NC_036046
81	Coleoptera Cucujiformia	Tenebrionoidea	Meloidae	Meloinae		<i>Lytta</i>	<i>Lytta caraganae</i>	15,633 KX161859
82	Coleoptera Cucujiformia	Tenebrionoidea	Mordellidae			<i>Mordella</i>	<i>Mordella atrata</i>	15,540 FJ859904
83	Coleoptera Cucujiformia	Coccinelloidea	Coccinellidae	Coccinellidae		<i>Coccinellini</i>	<i>Coccinella septempunctata</i>	18,965 JQ321839
84	Coleoptera Cucujiformia	Coccinelloidea	Coccinellidae	Coccidulinae		<i>Coccidulini</i>	<i>Coccidula ruga</i>	10,589 JX412767
85	Coleoptera Cucujiformia	Coccinelloidea	Coccinellidae	Chilocorinae		<i>Chilocorini</i>	<i>Chilocorus bipustulatus</i>	12,229 MN053054
86	Coleoptera Cucujiformia	Coccinelloidea	Coccinellidae	Coccidulinae		<i>Novini</i>	<i>Rodolia quadrimaculata</i>	12,660 MN053055
87	Coleoptera Cucujiformia	Coccinelloidea	Coccinellidae	Coccinellinae		<i>Coccinellini</i>	<i>Aiolocarta hexaspilota</i>	17,549 NC_042417
88	Coleoptera Cucujiformia	Coccinelloidea	Coccinellidae	Coccinellinae		<i>Coccinellini</i>	<i>Harmonia axyridis</i>	16,387 KR108208
89	Coleoptera Cucujiformia	Coccinelloidea	Coccinellidae	Coccinellinae		<i>Halysziini</i>	<i>Halyszia sedecimguttata</i>	15,766 KT780652

Mitgenome Analysis of *Anoplophora horsfieldi*

No. Order	Suborder	Superfamily	Family	Subfamily	Tribes	Genus	Species	Species Accession no.	
90	Coleoptera	Cucujiformia	Coccinelloidea	Coccinellidae	Coccinellinae	Coccinellini	<i>Cheltonemes</i>	<i>Cheltonemes sexmaculata</i>	17,192 KM244706
91	Coleoptera	Cucujiformia	Coccinelloidea	Coccinellidae	Coccinellinae	Coccinellini	<i>Propylea</i>	<i>Propylea japonica</i>	15,027 KM244660
92	Coleoptera	Cucujiformia	Coccinelloidea	Coccinellidae	Coccinellinae	Halyzini	<i>Halyzini</i> sp. HA		14,431 MG584728
93	Coleoptera	Cucujiformia	Coccinelloidea	Coccinellidae	Coccinellinae	Coccinellini	<i>Coccinella</i>	<i>Coccinella transversoguttata</i>	15,806 MG584726
94	Coleoptera	Cucujiformia	Coccinelloidea	Coccinellidae	Coccinellinae	Coccinellini	<i>Coelophora</i>	<i>Coelophora saucia</i>	11,942 MN053056
95	Coleoptera	Cucujiformia	Coccinelloidea	Coccinellidae	Coccinellinae	Coccinellini	<i>Calvia</i>	<i>Calvia championorum</i>	17,575 KX132085
96	Coleoptera	Cucujiformia	Coccinelloidea	Coccinellidae	Coccinellinae	Coccinellini	<i>Propylea</i>	<i>Propylea</i> sp. HSL-2016	15,915 KX132084
97	Coleoptera	Cucujiformia	Coccinelloidea	Coccinellidae	Epliachninae	Epliachnini	<i>Henosepilachna</i>	<i>Henosepilachna pusillanina</i>	16,216 NC_023469
98	Coleoptera	Cucujiformia	Coccinelloidea	Coccinellidae	Epliachninae	Epliachnini	<i>Henosepilachna</i>	<i>Henosepilachna vigintioctopunctata</i>	17,057 NC_041172
99	Coleoptera	Cucujiformia	Coccinelloidea	Coccinellidae	Epliachninae	Epliachnini	<i>Subcoccinella</i>	<i>Subcoccinella viginquatuor-punctata</i>	14,645 KT780695
100	Coleoptera	Cucujiformia	Coccinelloidea	Coccinellidae	Epliachninae	Epliachnini	<i>Afissula</i>	<i>Afissula</i> sp. XL-2019	15,339 MN053057
101	Coleoptera	Cucujiformia	Coccinelloidea	Coccinellidae	Epliachninae	Epliachnini	<i>Epliachna</i>	<i>Epliachna admirabilis</i>	17,445 MN053053
102	Coleoptera	Cucujiformia	Coccinelloidea	Coccinellidae	Symmini	<i>Cryptolaemus</i>	<i>Cryptolaemus montrouzieri</i>	10,914 KT878321	
103	Coleoptera	Cucujiformia	Coccinelloidea	Coccinellidae			<i>unclassified Coccinellidae</i>		16,631 KT780638
104	Coleoptera	Cucujiformia	Cucujioidea	Nitidulidae	Nitidulinae		<i>Aethina</i>	<i>Aethina tumida</i>	16,576 NC_036104
105	Coleoptera	Cucujiformia	Cucujioidea	Nitidulidae	Carpophilinae		<i>Carpophilus</i>	<i>Carpophilus dimidiatus</i>	15,717 MN604384
106	Coleoptera	Cucujiformia	Cucujioidea	Nitidulidae	Carpophilinae		<i>Carpophilus</i>	<i>Carpophilus pilosellus</i>	15,686 MN604383
107	Coleoptera	Cucujiformia	Cucujioidea	Laemophloeidae			<i>Cryptolestes</i>	<i>Cryptolestes pusillus</i>	15,502 NC_028204
108	Coleoptera	Cucujiformia	Cucujioidea	Laemophloeidae			<i>Cryptolestes</i>	<i>Cryptolestes ferrugineus</i>	15,511 NC_028203
109	Coleoptera	Cucujiformia	Cucujioidea	Laemophloeidae			<i>Cryptolestes</i>	<i>Cryptolestes turcicus</i>	15,517 KT070712
110	Coleoptera	Cucujiformia	Cucujioidea	Phloeostichidae			<i>Priastipha</i>	<i>Priastipha obscura</i>	16,603 EU877952
111	Coleoptera	Cucujiformia	Cucujioidea	Bothripteridae			<i>Dastarcus</i>	<i>Dastarcus helophoroides</i>	15,878 NC_024271
112	Coleoptera	Cucujiformia	Cucujioidea	Cucujidae			<i>Cucujus</i>	<i>Cucujus clavipes</i>	15,642 GU176341
113	Coleoptera	Cucujiformia	Cucujioidea	Erotylidae			<i>unclassified Erotylidae</i>	<i>Erotylidae</i> sp. BMNH 1274392	16,553 KT696227
114	Coleoptera	Cucujiformia	Clerioidea	Cleridae	Clerinae		<i>Trichodes</i>	<i>Trichodes sinae</i>	16,047 NC_033340
115	Coleoptera	Cucujiformia	Clerioidea	Chaetosomatidae			<i>Chaetosoma</i>	<i>Chaetosoma scaritides</i>	15,511 NC_011324
116	Coleoptera	Cucujiformia	Clerioidea	Prionoceridae			<i>Ilgia</i>	<i>Ilgia oculata</i>	15,805 NC_044896
117	Coleoptera	Cucujiformia	Lymexyloidea	Lymexylonidae	Melittominae		<i>Melittomma</i>	<i>Melittomma</i> sp. MEL01	9,674 JX412776
118	Coleoptera	Scarabaeiformia	Scarabaeoidea	Lucanidae	Lucaninae		<i>Prosopocoilus</i>	<i>Prosopocoilus gracilis</i>	16,736 KP735805
119	Coleoptera	Scarabaeiformia	Scarabaeoidea	Staphylinidae	Melolonthinae		<i>Cheironomus</i>	<i>Cheironomus jansoni</i>	17,249 NC_023246
120	Coleoptera	Staphyliniformia	Staphylinioidea	Staphylinidae	Staphinae		<i>Necrophila</i>	<i>Necrophila americana</i>	16,902 NC_018352

Supplementary Table S2. Nucleotide composition and skews rate in the forward strand of *Anoplophora horsfieldi* mitochondrial DNA by regions.

Gene/re-gion	Nucleotide frequency (%)				A+T	AT-skew	GC-skew
	T	C	A	G			
Total	39.57	12.47	39.74	8.22	79.31	0.002	-0.206
L-strand	44.45	9.54	37.40	8.61	81.85	-0.086	-0.052
H-strand	42.30	12.88	34.32	10.50	76.62	-0.104	-0.102
tRNA	38.07	12.18	40.78	8.98	78.84	0.034	-0.151
rRNA	40.03	13.25	40.85	5.88	80.88	0.010	-0.385
PCGs	44.79	10.74	33.50	10.96	78.30	-0.144	0.010
1 st	36.97	11.26	34.33	17.43	71.30	-0.037	0.215
2 nd	47.59	17.54	21.05	13.82	68.63	-0.387	-0.119
3 rd	49.82	3.42	45.14	1.62	94.96	-0.049	-0.358
ATP6	42.96	13.63	34.81	8.59	77.78	-0.105	-0.227
ATP8	49.36	9.62	38.46	2.56	87.82	-0.124	-0.579
COX1	39.99	14.84	30.40	14.78	70.38	-0.136	-0.002
COX2	40.70	14.53	33.72	11.05	74.42	-0.094	-0.136
COX3	40.68	13.31	32.70	13.31	73.38	-0.109	0.000
ND1	46.73	7.17	32.17	13.92	78.90	-0.184	0.320
ND2	47.18	10.39	35.41	7.02	82.59	-0.143	-0.193
ND3	48.86	9.94	33.81	7.39	82.67	-0.182	-0.148
ND4	49.32	7.07	32.56	11.05	81.88	-0.205	0.220
ND4L	50.35	6.25	33.33	10.07	83.68	-0.203	0.234
ND5	46.44	6.88	35.18	11.49	81.62	-0.138	0.251
ND6	47.02	9.72	38.49	4.76	85.52	-0.100	-0.342
Cytb	42.19	14.74	32.28	10.79	74.47	-0.133	-0.155
12S rRNA	38.56	13.68	41.54	6.22	80.10	0.037	-0.375
16S rRNA	40.93	12.96	40.46	5.66	81.38	-0.006	-0.392
Control region	42.52	10.50	43.92	3.06	86.44	0.016	-0.548
Overall	43.90	11.14	35.85	9.11	79.75	-0.103	-0.129

AT skew = (A% - T%)/(A% + T%); GC skew = (G% - C%)/(G% + C%).

Supplementary Table S3. Nucleotide composition and skews rate in the forward strand of *Anoplophora chinensis* mitochondrial DNA by regions.

Gene/re-gion	Nucleotide frequency (%)				A+T	AT skew	GC skew
	T	C	A	G			
Total	38.17	13.57	39.48	8.78	77.65	0.017	-0.214
L-strand	44.65	6.66	35.80	12.89	80.45	-0.110	0.318
H-strand	40.55	14.35	34.09	11.01	74.64	-0.087	-0.132
tRNA	37.28	10.17	40.04	12.52	77.32	0.036	0.104
rRNA	40.99	6.17	39.02	13.82	80.01	-0.025	0.383
PCGS	43.51	11.82	32.84	11.82	76.35	-0.140	0.000
1 st	36.01	12.43	33.37	18.19	69.38	-0.038	0.188
2 nd	47.36	17.65	20.92	14.07	68.27	-0.387	-0.113
3 rd	47.17	5.39	44.23	3.21	91.40	-0.032	-0.254
ATP6	40.15	15.85	35.11	8.89	75.26	-0.067	-0.281
ATP8	44.87	10.90	41.03	3.21	85.90	-0.045	-0.545
COX1	37.33	15.94	31.37	15.36	68.70	-0.087	-0.019
COX2	40.55	15.26	32.99	11.19	73.55	-0.103	-0.154
COX3	39.80	15.21	31.94	13.05	71.74	-0.110	-0.076
ND1	47.15	7.49	31.01	14.35	78.16	-0.206	0.314
ND2	43.72	14.44	33.43	8.41	77.15	-0.133	-0.264
ND3	47.16	12.50	31.82	8.52	78.98	-0.194	-0.189
ND4	48.80	6.84	31.43	12.93	80.23	-0.216	0.308
ND4L	50.00	6.94	30.90	12.15	80.90	-0.236	0.273
ND5	45.88	7.48	33.78	12.86	79.66	-0.152	0.264
ND6	46.03	9.33	38.89	5.75	84.92	-0.084	-0.237
Cytb	41.49	15.26	32.11	11.14	73.60	-0.128	-0.156
12S rRNA	40.55	6.97	37.69	14.80	78.23	-0.037	0.360
16S rRNA	41.32	5.66	39.83	13.20	81.15	-0.018	0.400
Control region	43.77	5.22	41.82	9.20	85.59	-0.023	0.276
Overall	42.97	10.78	35.00	11.25	77.97	-0.104	0.022

AT skew = (A% - T%)/(A% + T%); GC skew = (G% - C%)/(G% + C%).

Supplementary Table S4. Nucleotide composition and skews rate in the forward strand of *Anoplophora glabripennis* mitochondrial DNA by regions.

Gene/re- gion	Nucleotide frequency (%)				A+T	AT skew	GC skew
	T	C	A	G			
Total	38.71	13.07	39.62	8.59	78.34	0.012	-0.207
L-strand	44.69	6.99	35.10	13.23	79.79	-0.120	0.309
H-strand	41.50	13.04	35.57	9.88	77.07	-0.077	-0.138
tRNA	38.09	9.85	39.97	12.09	78.06	0.024	0.102
rRNA	40.85	6.23	38.94	13.98	79.79	-0.024	0.383
PCGS	43.88	11.47	33.14	11.51	77.02	-0.139	0.002
1 st	36.13	12.09	34.13	17.66	70.25	-0.028	0.187
2 nd	47.38	17.74	21.12	13.76	68.50	-0.383	-0.126
3 rd	48.13	4.57	44.18	3.11	92.32	-0.043	-0.190
ATP6	43.01	13.24	34.52	9.23	77.53	-0.109	-0.179
ATP8	46.15	10.26	41.03	2.56	87.18	-0.059	-0.600
COX1	38.24	15.17	31.50	15.10	69.73	-0.097	-0.002
COX2	40.26	15.26	33.58	10.90	73.84	-0.091	-0.167
COX3	40.46	14.76	31.17	13.61	71.63	-0.130	-0.040
ND1	46.23	7.54	31.03	15.19	77.26	-0.197	0.336
ND2	43.13	14.14	34.92	7.81	78.04	-0.105	-0.288
ND3	49.28	10.60	32.38	7.74	81.66	-0.207	-0.156
ND4	49.02	7.44	31.28	12.26	80.30	-0.221	0.244
ND4L	52.26	6.27	31.71	9.76	83.97	-0.245	0.217
ND5	45.39	7.48	34.99	12.15	80.37	-0.129	0.238
ND6	45.88	9.86	39.03	5.23	84.91	-0.081	-0.307
Cytb	42.46	14.74	31.93	10.88	74.39	-0.142	-0.151
12S rRNA	40.69	6.70	37.34	15.26	78.04	-0.043	0.390
16S rRNA	40.89	5.91	40.00	13.20	80.89	-0.011	0.381
Control region	42.87	8.25	45.11	3.77	87.98	0.025	-0.373
Overall	43.42	10.51	35.33	10.74	78.75	-0.105	-0.005

AT skew = (A% - T%) / (A% + T%); GC skew = (G% - C%) / (G% + C%).