

*Supplementary Materials*

# An Overview of *Aquatica* Fu et al., a Phylogeny of Aquatic Fireflies Using Mitochondrial Genomes, a Description of Two New Species, and a New Record of Aquatic Fireflies in China (Coleoptera: Lampyridae: Luciolinae)

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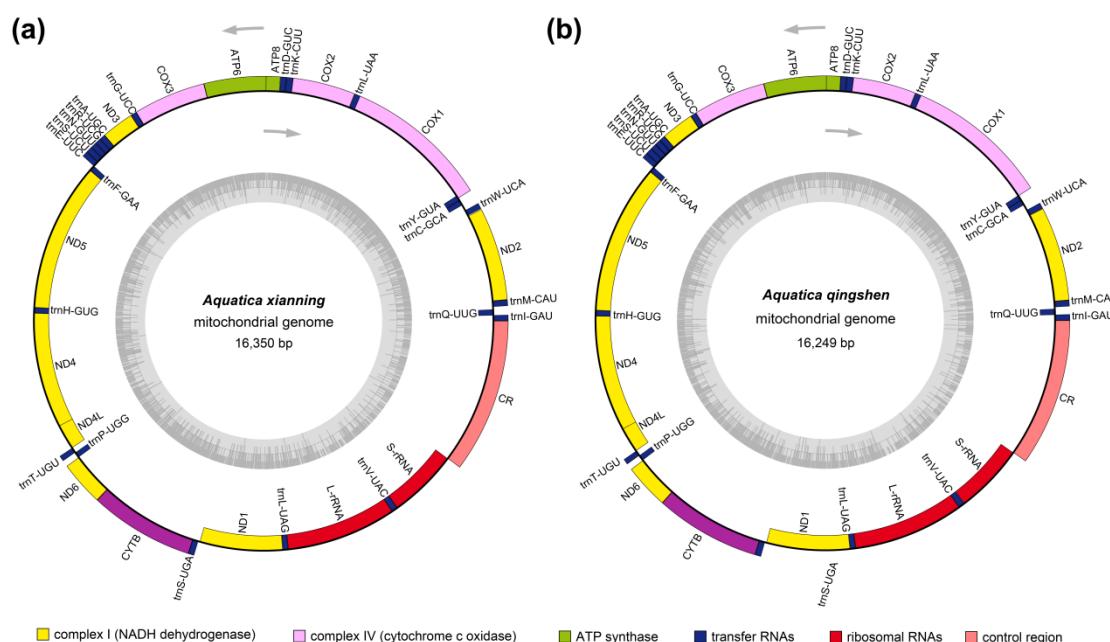
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**Figure S1.** Circular maps of 2 newly sequenced mitogenomes of *Aquatica xianning* sp. nov. and *Aquatica qingshen* sp. nov. Genes are represented by different colored blocks, as presented in the legend below the maps. Colored blocks outside of each ring indicate that the genes were on the direct strand, while colored blocks in the rings indicate that the genes were located on the reverse strand.

**Table S1.** *Aquatica* species and distribution.

Species	Mainland China	Taiwan/ Formosa	Japan	Location of types	Larvae associated	Females associated	References for pictures of species
<i>A. ficta</i> (Olivier, 1909)	*	*		MNHN	✓	✓	[1,4,13]
<i>A. hydrophila</i> (Jeng et al., 2003)		*		NMNS	✓	✓	[1,16]
<i>A. lateralis</i> (Motschulsky, 1860)	*		*	ZMUM	✓	✓	[1,4,13]
<i>A. leii</i> (Fu et al. 2006)	*			NHMHAU	✓	✓	[1,13]
<i>A. qingshen</i> sp. nov.	*			NHMHAU	✓	✓	This study
<i>A. wuhana</i> (Fu et al. 2010)	*			NHMHAU	✓	✓	[1,13]
<i>A. xianning</i> sp. nov.	*			NHMMAU	✓	✓	This study

\* Distribution; ✓ confirmation

**Table S2.** *Aquatica* females and characteristics.

Species	1	2	3	4	5	6	7
<i>A. leii</i> (Fu et al. 2006)	E	H	In cop	strips	✓	✓	✓
<i>A. picta</i> (Olivier, 1909)	E	H	In cop	strips	✓	✓	✓
<i>A. hydrophila</i> (Jeng et al., 2003)	E	H	In cop	NI	NI	NI	NI
<i>A. lateralis</i> (Motschulsky, 1860)	E	H	In cop	strips	✓		
<i>A. qingshen</i> sp. nov.	E	H	In cop	strips	✓		✓
<i>A. wuhana</i> (Fu et al. 2010)	E	H	In cop	strips	✓	✓	✓
<i>A. xianning</i> sp. nov.	E	H	In cop.	strips	✓		✓

\* 1. Elytra. E = fully developed. 2. Hind wings. H = fully developed. 3. Evidence for association. 4. Bursa plates. 5. Median oviduct plate. 6. Spermatophore observed. 7. FAG observed. NI = not investigated.

**Table S3.** Matrix p-distance of 20 species of fireflies.

Species	<i>S. substriata</i>	<i>Pyr.rufa</i>	<i>Pyg.qingyu</i>	<i>Pt.maipo</i>	<i>N. cruciata</i>	<i>L. curtithorax</i>	<i>C. fulvocapitalis</i>	<i>C. costipennis</i>	<i>C. bilineatus</i>	<i>As. circumdata</i>	<i>Aq.wuhana</i>	<i>Aq.qingshen</i>	<i>Aq.xiamning</i>	<i>Aq.leii</i>	<i>Aq.lateralis chinese</i>	<i>Aq.lateralis japanese</i>	<i>Aq.ficta</i>	<i>Ab.terminalis</i>	<i>Ab.cerata</i>	<i>Ab.anceyi</i>
<i>Ab.anceyi</i>	0.0000																			
<i>Ab. cerata</i>	0.1940	0.0000																		
<i>Ab.terminalis</i>	0.1591	0.1133	0.0000																	
<i>Aq.ficta</i>	0.2660	0.1718	0.1778	0.0000																
<i>Aq.lateralis japanese</i>	0.2803	0.1828	0.1897	0.1280	0.0000															
<i>Aq.lateralis chinese</i>	0.2679	0.1769	0.1807	0.1300	0.0945	0.0000														
<i>Aq. leii</i>	0.2675	0.1729	0.1786	0.0036	0.1290	0.1303	0.0000													
<i>Aq. xianning</i>	0.2846	0.1917	0.1954	0.1415	0.1517	0.1517	0.1420	0.0000												
<i>Aq. qingshen</i>	0.2714	0.1815	0.1857	0.1267	0.1415	0.1418	0.1271	0.1084	0.0000											
<i>Aq.wuhana</i>	0.2622	0.1707	0.1791	0.1211	0.1430	0.1421	0.1215	0.1544	0.1395	0.0000										
<i>As. circumdata</i>	0.2925	0.2022	0.2084	0.2170	0.2270	0.2219	0.2181	0.2319	0.2177	0.2211	0.0000									
<i>C. bilineatus</i>	0.3021	0.2071	0.2155	0.2238	0.2351	0.2314	0.2248	0.2361	0.2298	0.2244	0.2406	0.0000								
<i>C. costipennis</i>	0.3024	0.2015	0.2128	0.2238	0.2343	0.2300	0.2251	0.2400	0.2264	0.2212	0.2357	0.0814	0.0000							
<i>C. fulvocapitalis</i>	0.2953	0.2120	0.2202	0.2292	0.2405	0.2360	0.2295	0.2481	0.2378	0.2274	0.2481	0.1632	0.1650	0.0000						
<i>L. curtithorax</i>	0.2507	0.1576	0.1629	0.1740	0.1858	0.1720	0.1751	0.1963	0.1803	0.1792	0.2069	0.2113	0.2119	0.2197	0.0000					
<i>N. cruciata</i>	0.2800	0.1838	0.1883	0.1509	0.1589	0.1629	0.1520	0.1612	0.1513	0.1626	0.2222	0.2352	0.2336	0.2462	0.1825	0.0000				
<i>Pt.maipo</i>	0.2641	0.1701	0.1772	0.1849	0.2006	0.1938	0.1857	0.2039	0.1941	0.1872	0.2098	0.1984	0.1949	0.2022	0.1780	0.1974	0.0000			
<i>Pyg.qingyu</i>	0.2151	0.1258	0.1333	0.1638	0.1804	0.1685	0.1642	0.1832	0.1678	0.1665	0.1947	0.2030	0.2001	0.2096	0.1484	0.1757	0.1682	0.0000		
<i>Pyr.rufa</i>	0.3839	0.2981	0.2984	0.3137	0.3248	0.3147	0.3136	0.3253	0.3147	0.3173	0.3138	0.3130	0.3142	0.3217	0.2980	0.3193	0.2984	0.2883	0.0000	
<i>S. substriata</i>	0.2659	0.1733	0.1754	0.1827	0.1898	0.1861	0.1827	0.1989	0.1895	0.1876	0.2144	0.2202	0.2163	0.2259	0.1751	0.1929	0.1855	0.1649	0.3097	0.0000

P-distances mentioned in main text are marked in different colours. Red in yellow shade shows genetic distance between *Aq. leii* and *Aq.ficta*; Blue in yellow shade shows genetic distance between *Aq.lateralis Chinese* and *Aq.lateralis Japanese*; green shows genetic distance between *Aq. xianning* and other firefly species; brown shows genetic distance between *Aq. qingshen* and other firefly species.