



IUCN SSC Firefly Specialist Group

October 12, 2023

**Concern about the impact of Expressway Expansion Work to an important firefly habitat in Guangzhou, Guangdong, China.**

We are concerned about the planning and construction of the "Shenhai-Expressway, Huocun-Shangshan Section Reconstruction and Expansion Project" in Guangzhou, Guangdong, China. The expansion from six lanes to twelve lanes, will destroy the habitat of ten firefly species. Preservation of firefly habitats is the foundation of protecting firefly populations. We sincerely hope that Chinese Government Departments can recognize, treasure and preserve this rare, complex habitat of ten firefly species.

As an important ecological indicator, fireflies play an important role in regional biodiversity, water quality and environmental health. The preservation and continuation of its population is always an important topic of ecological researches.

As a result of human activities and land development, together with the light pollution caused by artificial light at night, water pollution and pesticide outflow, the firefly habitats have been severely reduced. Numbers of fireflies in China have declined sharply in recent decades.

This section of the expressway is also known as the Guangzhou North Second Ring Expressway. The bright headlights of passing vehicles, together with the scattered street lights, are serious threat to the firefly populations. It is the dense vegetation, ponds, and wetlands here that protect them. This habitat of ten species of fireflies in urban Guangzhou is particularly precious.

During the survey for one and a half months from May 1st to June 15th, 2023, ten species of fireflies have been recorded here, including *Luciola curtithorax*, *Curtos fulvocapitalis*, *Rhagophthalmus* sp., and an unknown species. Little is known about the ecology of



these species and currently it is almost impossible to preserve them through artificial breeding and habitat creation.

These fireflies are highly dependent on their particular habitats, and they are not capable to escape when their habitats is being destroyed. Most of the time (half a year to a year), they are in the larval stage, with very limited mobility. The aquatic species, *Aquatica lei*, adults of which only fly for about a week for mating, and remain as larvae, living only in the ponds. Among the firefly species we found, adult females of the unknown *Rhagophthalmus sp.*, *Pyrocoelia analis*, *Pyrocoelia lunata*, *Diaphanes sp.* and the unknown species, are all wingless. As the female lays the eggs and thus contributes to the following generation, such lack of mobility restricts them to the one area. Destroying their habitat would destroy their subpopulations in the area.

For these ten species of fireflies that are highly dependent on habitat and difficult to move away, how can they be preserved in this large scale expressway expansion project? The construction work would cause irreparable ecological losses.

We provide some references on the contradiction between protecting fireflies and construction works:

- (1) The Japanese Government gave up building railways in order to protect fireflies, and through the joint efforts of local governments, scientific research institutions and private groups, many firefly watching locations were established which attract large numbers of tourists every years;

(2) XinXian Trail (a firefly habitat) in New Taipei City was paved with cement or asphalt during the renovation project after typhoon damage, and this activity was questioned as a threat to the fireflies. Finally, the construction plan was integrated with firefly protection elements.



In order to protect this precious home of fireflies, we are very willing to provide professional assistance, and we hope:

1. The Chinese Government can prudently review the construction plan of the expressway expansion, to try to retain the firefly habitats, or to develop firefly tourism as in other regions of China.
2. The firefly habitat in this area can be further protected in the future, for example:
  - (1) Take measures to deal with the light pollution problem of the existing highway and reduce impacts to firefly reproduction;
  - (2) Establish a firefly protection core zone

We sincerely hope that in this firefly habitat, in the next year, the year after, and in the future, the amazing light will continue to shine in the dark night.

Sincerely,

Members of the IUCN SSC Firefly Specialist Group

Appendix 1: Ecological survey of fireflies next to the Guangzhou Expansion Expressway in Guangdong, China



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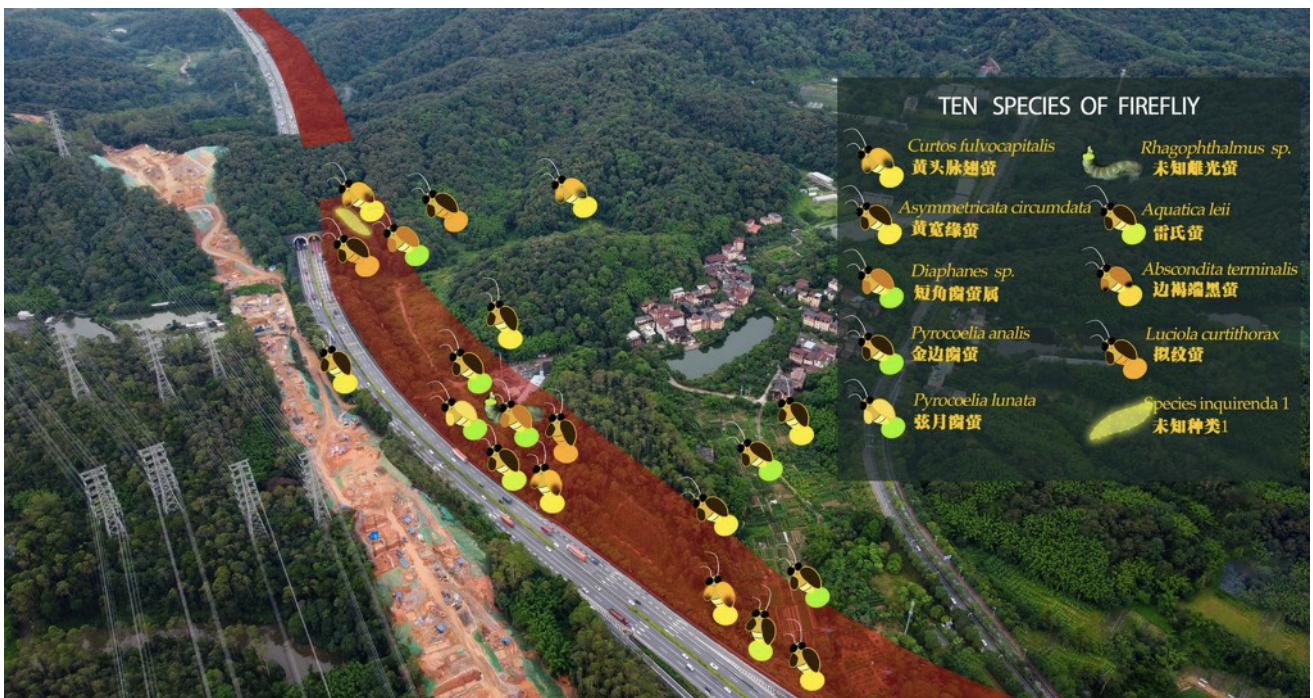
FIREFLY  
Specialist Group

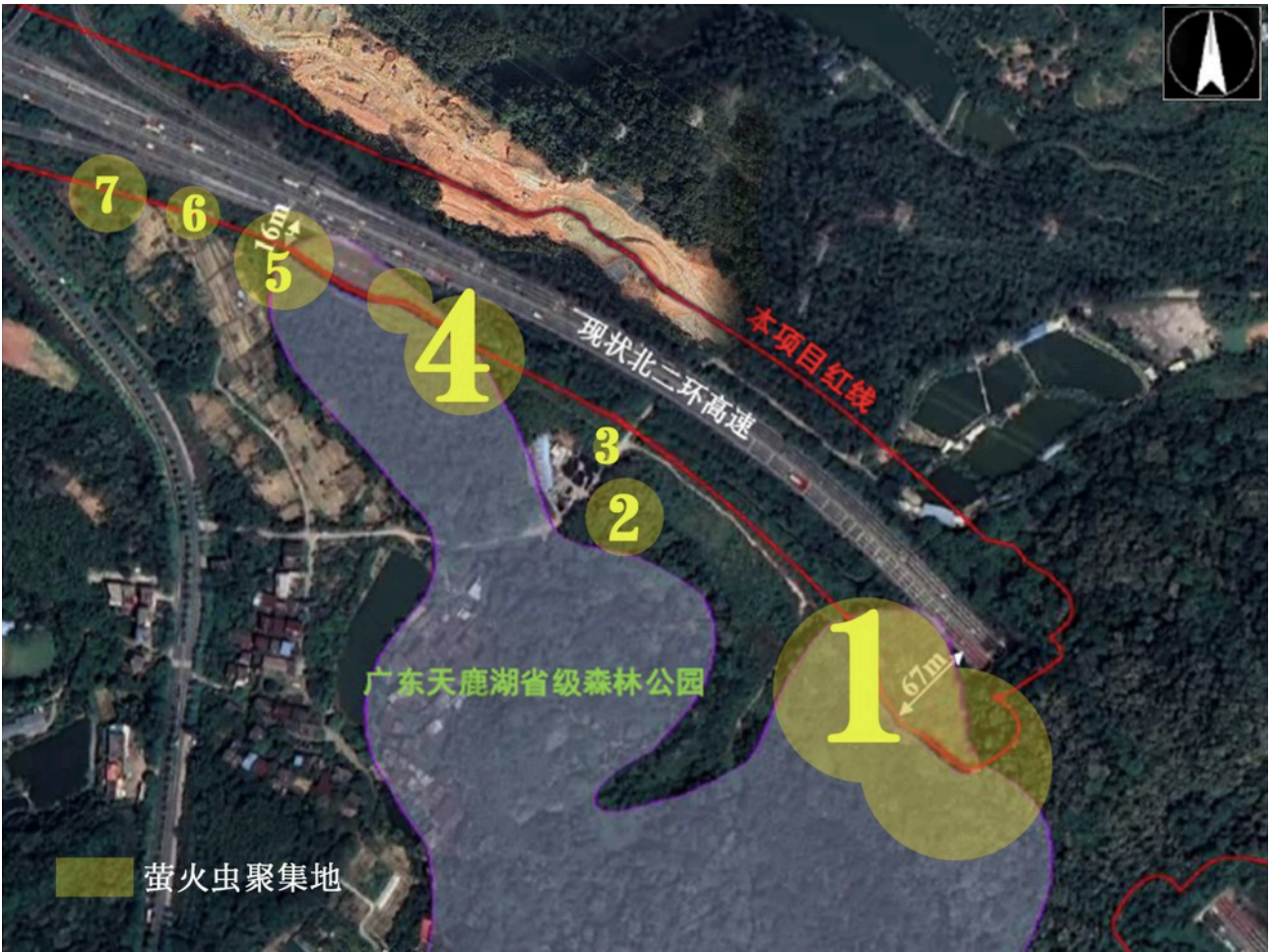
附件1:

## 中国广东广州扩建高速旁的萤火虫生态调查 (2023.5-6)

2023年5-6月，IUCN 萤火虫组会员雷萍对该地进行了一个月的调查，当时正值大多数萤火虫的繁殖季节，成百上千的萤火虫在夜里闪烁着静谧的亮光。

调查者发现除了这里生活着边褐端黑萤 *Abscondia terminalis*、金边窗萤 *Pyrocoelia analis*、弦月窗萤 *Pyrocoelia lunata*，还有已被列入中国的《国家保护的有重要生态、科学、社会价值的陆生野生动物名录》的黄宽缘萤 *Asymmetricata circumdata*、雷氏萤 *Aquatica leii*。更有至今生活习性仍未知的拟纹萤 *Luciola curtithorax*、黄头脉翅萤 *Curtos fulvocapitalis*、有待研究的全身全光虫（未知种类）、短角窗萤属 *Diaphanes sp.*、雌光萤科 *Rhagophthalmus sp.*，共计10种萤火虫族群。





图示为萤火虫栖息地与工程红线图的关系（备注：项目红线为永久占地，不代表施工面积）  
黄色代表萤火虫聚集栖息地，阿拉伯数字代号对应下文展示序列，下文将附图展示：

萤火虫栖息地1: 广东天鹿湖森林公园一角（生态红线内），植物群落类型为南亚热带常绿阔叶林植被，该群落物种丰富、结构复杂。在这里，黛蒴锥林下，我们看见了黑夜中最明亮的橙色光芒，拟纹萤成百上千地闪烁在两侧林间的灌木叶间、蕨类植物上。更有的就在半空中急急地明灭，原是被挂在蜘蛛网上难以逃脱，如果耐心用眼睛搜寻会见缓慢移动的绿色光点：短角窗萤属的幼虫；而在金毛狗蕨群落处（隧道口边），是滑翔高飞的黄头脉翅萤……。

茂密的树林为萤火虫遮挡了来自于高速公路的人造光，丰富的植物群落形成了“安全”的庇护空间。这里密集分布着——两种习性未知的萤火虫：拟纹萤 *Luciola curtithorax*、黄头脉翅萤 *Curtos fulvocapitalis*；

——短角窗萤属 *Diaphanes* sp.、未知种类 *Species inquirenda 1*





萤火虫栖息地2:这片小小的竹林，掩映着黄宽缘萤 *Asymmetricata circumdata* 的幼虫与成虫。是时恰值6月中旬，日落时分，黄宽缘萤一只一只地暗黑中升起.....



***Asymmetricata circumdata***





萤火虫栖息地3：这里，是外来入侵植物霸道的天地，也是对面开山工程的泥头车途经之地。在这里，调查者发现了雌光萤科（*Rhagophthalmus sp.*）的一雌成虫，因暂未找到其雄虫，故无法明晰其具体种类，仍需后续持续的观察和调研。与此同时，我们不时会在这里遇见金边窗萤（*Pyrocoelia analis*）、边褐端黑萤（*Abscondita terminalis*）的光芒在空中划过。



***Pyrocoelia analis***

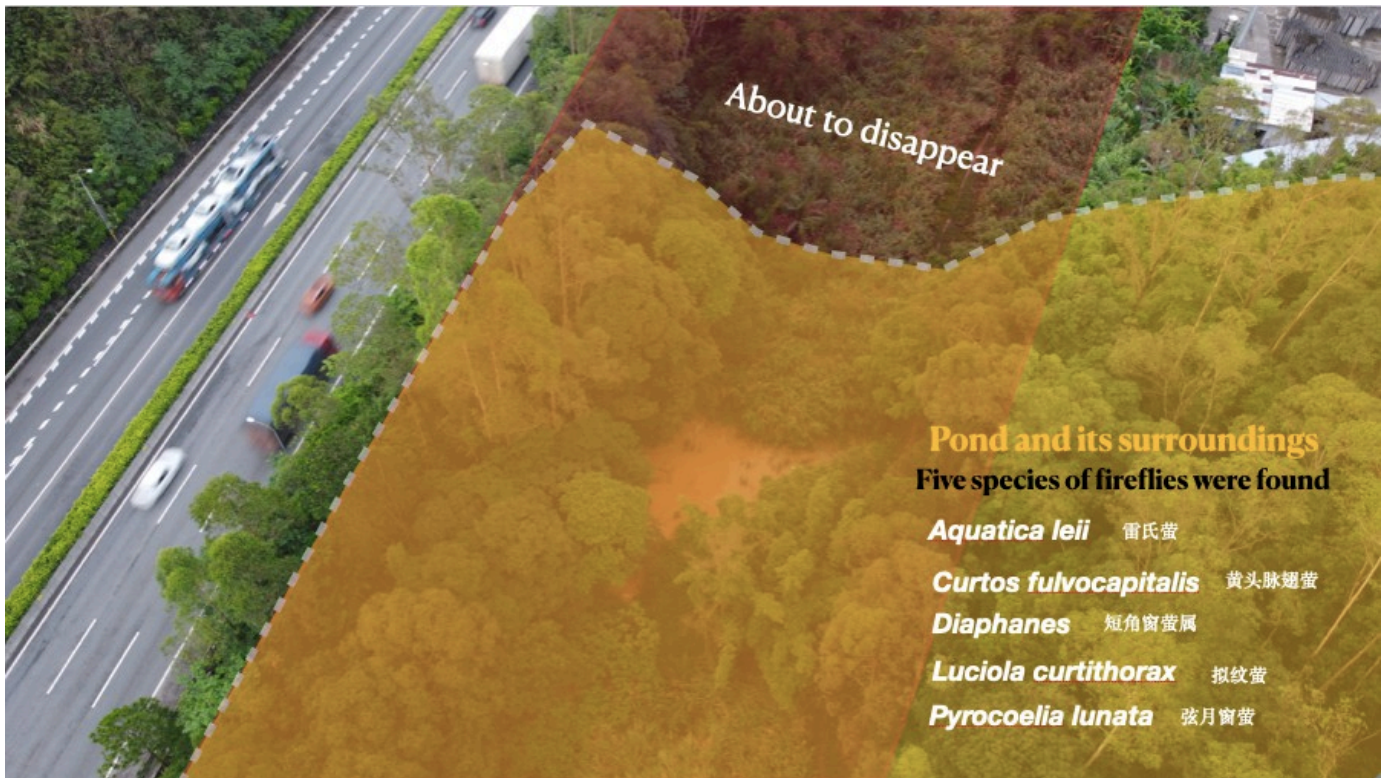


***Abscondita terminalis***



萤火虫栖息地4:池塘及周边, 蛙声与高速路的噪音不相上下, 紧挨高速路边的泥塘里生活着水生萤火虫雷氏萤 *Aquatica leii*, 池塘周边的草丛里、竹林下则分布着星星点点的弦月窗萤 *Pyrocoelia lunata*和短角窗萤属 *Diaphanes sp.*的幼虫, 在这层层叠叠的丛林间是拟纹萤 *Luciola curtithorax*、黄头脉翅萤 *Curtos fulvocapitalis*飞舞的天地.....

如果池塘消失了, 变成了高速公路的一部分, 那么它们...?



*Curtos fulvocapitalis*



*Diaphanes* sp.



池塘 (Pond)



@pingxi photography

萤火虫栖息地5: 黄头脉翅萤 *Curtos fulvocapitalis* 的聚集地, 位于原高速公路方圆50米内:



萤火虫栖息地6:黄头脉翅萤 *Curtos fulvocapitalis* 的聚集地, 位于原高速公路方圆50米内:



萤火虫栖息地7: 在这里，我们调查发现这里主要密集分布有陆生萤火虫-黄宽缘萤 *Asymmetricata circumdata* 、少量水生萤火虫-雷氏萤 *Aquatica leii*



——IUCN 萤火虫组会员雷萍  
2023年8月1日