

The Selangor Declaration Conservation of Fireflies

From the [Proceedings of the Second International Firefly Symposium, Selangor, Malaysia 2010](#)

*Participants from 13 countries met at the Second International Firefly Symposium in Selangor, Malaysia from 2nd to 5th August 2010. They included experts in the fields of taxonomy, genetics, biology, behaviour, ecology and conservation of fireflies as well as members of government agencies, non-governmental organisations, educational institutions, corporations and the public. The theme of the symposium was 'Firefly Conservation: From Science to Practice.' The following declaration was made in conjunction with the symposium at the Third International Firefly Research Network Meeting on 5th August 2010 and updated by the same body **on the 25th November 2014.***

THE ABILITY OF FIREFLIES to produce light has inspired wonder and benefited mankind through biomedical research, yet little is known of the diversity of fireflies in many regions of the world because firefly research has not been sufficiently emphasised or adequately funded. As a result, in-depth research has focused on a limited number of species. At the same time, firefly populations are declining across the world, and there is an urgent need for conservation of their habitats. This reflects a decline in the health of the environment and a global trend of increasing biodiversity loss. Governments, local authorities and government agencies need to take measures to preserve the habitats of fireflies and support research, which ultimately provides valuable information to aid in conservation. Protection of the habitats of fireflies contributes to the conservation of many other species of wildlife and a better quality of life for human beings. Fireflies have the potential to be used in education to enhance environmental and conservation awareness. Fireflies have also in recent years become ecotourism icons. Ecotourism needs to be managed sustainably with good, ecologically sound guidelines. Local communities should be involved in the ecotourism industry, be beneficiaries of its economic returns and be involved in conservation.

We, the participants of the Second International Firefly Symposium and Third International Firefly Research Network Meeting recognise and advocate that:

- 1.0 Fireflies are a part of our biodiversity heritage and are iconic insects that have been the subject of much investigation in the sciences, an inspiration in the arts and a part of local cultures, folklores and traditions because of their ability to produce light. This ability has also enabled their genes and enzymes to be used in biomedical research for the benefit of mankind.
- 1.1 The world's firefly diversity is still poorly understood, and studies on their physiology and behaviour have focused on only a small number of species. Taxonomic research on fireflies has been poorly funded and given insufficient priority, but is greatly needed since it forms the basis for our understanding of their diversity and is crucial for the development of other aspects of firefly research.
- 1.2 Fireflies have been a source of ecotourism revenue for many communities in different parts of the world and have the potential to bring similar benefits to other local communities. Fireflies

and their natural habitats also enhance quality of life and contribute to economies through the promotion of aesthetically pleasing landscapes that have greater appeal.

- 1.3 Fireflies are bio-indicators of the health of the environment and are declining across the world as a result of degradation and loss of suitable habitat, pollution of river and water systems, increased use of pesticides in agro-ecosystems, non-regulated commercial harvesting and increased ecological light pollution in areas of human habitation. The decline of fireflies is a cause for concern and reflects the global trend of increasing biodiversity loss.
 - 1.4 Intervention is greatly needed from governments to provide guidelines for preserving existing habitats and restoring degraded habitats for the conservation of fireflies.
 - 1.5 The habitats of fireflies are a refuge for many forms of wildlife including mammals, birds, reptiles, amphibians and numerous species of invertebrates and flora. Recognizing that habitat conservation and/or restoration is a long-term commitment, we believe this to be a worthwhile goal with the potential to conserve a wide range of flora and fauna.
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- 2.0 We urge governments, local authorities and government agencies worldwide to take decisive and concrete action at the regional, national and local level to:
 - 2.1 First and foremost, protect the habitats of fireflies so as to preserve these iconic creatures and other fauna and flora for the enjoyment of future generations.
 - 2.2 Undertake rehabilitation of degraded firefly habitats to enable gradual recovery of populations.
 - 2.3 Develop management plans for firefly ecotourism sites that enable them to be managed sustainably and in a manner that is ecologically sound.
 - 2.4 Promote the involvement of local communities in firefly ecotourism and ensure they are beneficiaries of the economic returns.
 - 2.5 Ensure local communities are equipped with knowledge of the habitats, life cycle and ecology of fireflies and are fully involved in conservation efforts.
 - 2.6 Develop guidelines prohibiting commercial harvesting of wild fireflies for biochemical extraction, as synthetic alternatives are now widely available. Similarly, harvesting of wild fireflies for public or private entertainment, hobby trade or social functions should be discouraged.
 - 2.7 Protect the genetic integrity of current firefly populations by discouraging/prohibiting release of non-native or captive-bred fireflies outside their natural range.
 - 2.8 To recognize that pesticides uses and release of biochemical controls in agricultural, urban or residential areas may impact firefly larval or adult, locally, regionally or in nearby ecologically sensitive habitats.
 - 2.9 Promote environmental education about firefly conservation in schools, and create awareness among the public on the natural history and conservation of fireflies.
 - 3.0 We strongly recommend that governments, local authorities, agencies and corporations support the allocation of human and financial resources for:
 - 3.1 Inventory and documentation of firefly species in highly diverse, under-researched areas such as Asia, Africa and tropical America.
 - 3.2 Taxonomic research on firefly diversity at both the morphological and molecular level, which forms a basis for our understanding of the world's poorly-documented firefly fauna.

- 3.3 Research on fireflies that provides key information on all aspects of their classification, genetics, biology, ecology, behaviour, physiology, conservation and utilization in biomedical research.
- 3.4 The development and application of low environmental impact techniques that minimize degradation of firefly habitats together with environmental impact assessment yet enable the development of infrastructure for the benefit of human communities.
- 3.5 Collaboration and the sharing of research findings among researchers, and communication of research findings to government authorities and agencies to aid the cause of firefly conservation.
- 3.6 Environmental education on the ecology and conservation of fireflies at the level of schools, local communities and the public, as a tool for inculcating environmental responsibility.

Dated this 5th day of August, 2010, by the participants of the Second International Firefly Symposium and Third International Firefly Research Network Meeting in Subang, Selangor, Malaysia

Revised: 25th day of November, 2014, by the participants of the Third International Firefly Symposium and Fourth International Firefly Research Network Meeting in Gainesville, Florida, U.S.A.