

## **The Selangor Declaration Conservation of Fireflies**

*Participants from 13 countries met at the Second International Firefly Symposium in Selangor, Malaysia from 2<sup>nd</sup> to 5<sup>th</sup> 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 5<sup>th</sup> August 2010.*

The ability of fireflies to produce light has been used to the benefit mankind in biomedical research, yet little is known of the diversity of fireflies in many regions of the world because research on the taxonomy of fireflies 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. 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.
2. 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.
3. 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.
4. Fireflies are 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 systems, increased use of pesticides in agro-ecosystems and increased 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.
5. Intervention is greatly needed from governments to preserve existing habitats for the conservation of fireflies. The restoration of habitats is not always possible, requires many years and requires high financial inputs.

6. The habitats of fireflies are a refuge for many forms of wildlife including mammals, birds, reptiles, amphibians and numerous species of invertebrates. Conservation of these habitats, therefore, has the potential to conserve a wide range of fauna.

We urge governments, local authorities and government agencies worldwide to take decisive and concrete action at the regional, national and local level to:

1. First and foremost, protect the habitats of fireflies so as to preserve these iconic creatures and other fauna for the enjoyment of future generations.
2. Undertake rehabilitation of degraded firefly habitats to enable gradual recovery of populations.
3. Develop management plans for firefly ecotourism sites that enable them to be managed sustainably and in a manner that is ecologically sound.
4. Promote the involvement of local communities in firefly ecotourism and ensure they are beneficiaries of the economic returns.
5. Ensure local communities are equipped with knowledge of the habitats, life cycle and ecology of fireflies and are fully involved in conservation efforts.
6. Promote education on firefly conservation at the level of schools, and create awareness among the public on the natural history and conservation of fireflies.

We strongly recommend that governments, local authorities, agencies and corporations support the allocation of human and financial resources for:

1. Inventory and documentation of firefly species in highly diverse, under-researched areas such as Asia, Africa and tropical America.
2. Taxonomic research on fireflies at both the morphological and molecular level, which forms a basis for our understanding of the world's poorly-documented firefly fauna.
3. Research on fireflies that provides key information on all aspects of their classification, genetics, biology, ecology, behaviour, physiology, conservation and utilisation in biomedical research.
4. The development and application of low environmental impact techniques that minimise degradation of firefly habitats yet enable the development of infrastructure for the benefit of human communities.
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.
6. 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 5<sup>th</sup> day of August, 2010, by  
the participants of the Second International Firefly Symposium  
and Third International Firefly Research Network Meeting  
in Subang, Selangor, Malaysia

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