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IENE 2016 Declaration

Ecological design and maintenance for habitats related to transport infrastructures

We, the participants of the IENE 2016 International Conference, acknowledge that:

- Habitats related to Transport Infrastructures (HTI; see definition at the end of the document) include road verges, trees, retention ponds, wildlife bridges and other areas typically managed by transport authorities for multiple purposes.
- HTI are often inhabited by many species of wild flora and fauna. They have a potential role on biodiversity conservation but they can also play a key role for traffic safety, driving comfort and proper infrastructure functioning.
- Improper HTI design or maintenance may produce negative effects on biodiversity and landscape by the spread of toxics, proliferation of alien invasive species, propagation of forest fires and increase wildlife mortality.
- Evidence-based ecological design and management of HTI will help to provide opportunities to reinforce Green Infrastructure² and to achieve the global Aichi Targets of the Strategic Plan for Biodiversity 2011-2020 by reducing biodiversity loss.

An ecological design and maintenance of Habitats related to Transport Infrastructures may reduce impacts on biodiversity and support local wildlife communities

- HTI provide refuges, food and other resources for many organisms that potentially can have either negative or positive effects on surrounding ecosystems.
- Undesirable effects can be reduced through appropriate ecological design and adapted maintenance considering surrounding environment and natural values.
- Biodiversity in highly humanised landscapes such as croplands or peri-urban areas can benefit from ecological management of HTI. These areas can provide valuable habitats to some species, offer ecosystem services (e.g. support to pollinators) and contribute to the creation of ecological linkages.
- Territory is sensible to HTI design and maintenance and both, ecological components and people facts, are key factors to be considered for a proper integration.
- Careful design and maintenance practices must be undertaken to avoid unforeseen effects. Wildlife attraction to HTI may be an inappropriate strategy for biodiversity protection in certain sensible locations. It could cause an increase of wildlife road mortality or create 'ecological traps' and sinks that drain wildlife populations in surrounding habitats due to the impacts from infrastructure and traffic.
- A proper ecological management of HTI must contribute to avoid using toxic products (as some chemical pesticides or herbicides), shield adjacent inhabitants from traffic disturbances -such as noise, artificial lights and chemical pollutants- and reduce the risk of forest fire propagating.

- An early-awareness and eradication of alien invasive species along infrastructure corridors must be also priority criteria in HTI design and maintenance.
- HTI must be well adapted to the local ecological context (biological, geological or cultural features) by means of a holistic and dynamic comprehension of the ecosystems and ecological networks. It must be integrated in a wider landscape scheme to enhance beneficial and reduce adverse effects.
- The positive potential of HTI is presently limited by lack of knowledge about taxa-specific and ecosystem constraints. A win-win situation for people and biodiversity could be achieved by a better understanding of the potential role of HTI in each landscape.
- Well managed HTI can be cost-effective solutions to improve ecological connectivity, strengthen biodiversity and provide ecosystem services (e.g. control of the erosion, pollination, alien invasive species avoidance, etc.).
- In addition, HTI may improve traffic safety, and contribute providing a pleasant driving experience and conveys a sense of local landscape to road users.

Therefore we, the participants of the IENE 2016 International Conference, call for regional strategies that

- Set landscape ecological principles as the basis for the planning and design of HTI.
- Define new adapted objectives and goals for HTI design and maintenance, considering their role in biodiversity conservation and provision of ecosystem services.
- Recognise the importance of trees in HTI for the ecosystem services they provide in cultural landscapes as well as their role as habitat for small fauna.
- Include ecologically designed and maintained HTI in Green Infrastructure strategies and plans.
- Consider HTI in land use planning to improve the connections between wildlife habitats on both sides of infrastructure corridors, and enhance coordination between stakeholders from different types of infrastructures (rails, roads, pipelines, power-lines, canals, etc.).
- Support research and monitoring programmes to investigate both the potential negative and positive impacts of HTI design and maintenance on biodiversity.
- Develop ecological evidence-based guidelines for design and proper management of HTI and also consider HTI as object for schooling pedagogic programmes (universities, engineering schools...) to improve its social and ecological benefits.
- Establish long-term cooperation with adjacent land owners, municipalities and other key stakeholders (environmental authorities, conservation and hunting associations, scientist, etc.) to help transportation authorities and operators to identify arising conflicts and to find effective solutions.
- Finally, ensure that investment on HTI is not carried out at the expense of conservation in areas other than transportation infrastructure which enjoy fewer negative impacts and greater chances for biodiversity protection.

We request a strategic, large-scale and interdisciplinary approach to meet the above requirements and the expectations.

We urge that HTI are given more attention and that there is a stronger focus on biodiversity conservation in policies, planning, practices and research, both nationally and internationally and with the cooperation of all the stakeholders involved.

Definitions

¹ **Habitats related to Transport Infrastructures (HTI):** Green areas associated with transport infrastructures and usually managed by transport authorities and stakeholders. These areas include verges, resting sites, water retention ponds and other drainage elements, as well as wildlife crossings (such as ecoducts). These areas are inhabited by many animals, plants and other organisms which find refuge, food or other resources and can potentially have either negative or positive effects on natural ecosystems and landscape surrounding the infrastructures.

² **Green Infrastructure (GI):** 'A strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, GI is present in rural and urban settings' (European Commission, 2003). Benedict & McMahon (2006) also defined as 'an interconnected network of protected land and water that support native species, maintains natural ecological processes, sustains air and water resources and contribute to the health and quality of life for communities and people'.

References:

- Communication from the Commission to the European parliament, the Council, the European economic and social committee and the committee of the regions. Green infrastructure (GI) — Enhancing Europe's Natural Capital (COM/2013/0249 final; http://ec.europa.eu/environment/nature/ecosystems/index_en.htm).
- Benedict, M.A. & McMahon, E.T. 2006. Green Infrastructure: Smart Conservation for the 21st Century. Sprawl Watch Clearinghouse Monographs Series. 32 pp. Washington.

What IENE Declarations are?

Since 1996, IENE operates as an international and interdisciplinary arena to encourage and enable cross-boundary cooperation in research, mitigation and planning in the field of ecology and transportation infrastructures. The IENE biannual international conferences provide interdisciplinary forums for these activities aiming to presenting cutting-edge research, identifying urgent questions and problems, discussing effective solutions, and outlining the paths for upcoming activities in transport and infrastructure ecology.

Since 2012, a Declaration is produced in each conference focusing in a topic that requires particular attention from transport and nature stakeholders. The message is agreed among all participants and addressed to decision makers, planners, technicians and researchers as well as the general public, and claim for actions that contribute to find solutions to old or emerging conflicts, to gap lacks of knowledge and to reduce the pressures that transport infrastructure exerts on nature.

See also the previous IENE Declarations:

- **IENE Declaration 2012: Overcome Barriers: Europe-wide and now**
http://iene2012.iene.info/?page_id=320
- **IENE Declaration 2014: Roadless Areas**
<http://iene2014.iene.info/iene-2014-declaration/>