

In 1998 a special bridge was constructed to help dormice to cross a new road being built through a key area of forest in Yamanashi Prefecture. It consists of a large gantry of the type normally used to support overhead road signboards, with space allowed for branches, nest boxes and ropes to be installed in a passageway 8.9 m above the road. This is enclosed in steel mesh to prevent debris falling on the traffic below and also to protect small mammals from attack by owls. Ropes and creepers link the bridge to roadside trees and shrubs. Within 4 weeks dormice built breeding nests on the bridge and Japanese wood mice *Apodemus argentatus* were living up there the following year. Both species produced young in the nest boxes, with traffic flowing underneath. Camera surveillance suggests that these small mammals also regularly used the bridge as an alternative to making a risky dash across the road at ground level.

Such bridges are expensive but arboreal species are small and therefore bridges for their benefit can be small too, substantially reducing costs. Subsequent experiments focused on smaller suspended bridges to enable arboreal animals to cross above roads without descending to the ground. In 2007 the first arboreal animal pathway was built, effectively creating an animal footbridge for species living in the treetops. It consists of three thin cables linked by a series of triangular supports along their length. The base of the triangle forms the floor of the pathway, made of metal mesh that does not trap snow or form icicles in the winter (which could fall and damage cars below). The apex of the triangle has a rope along which dormice can travel, hanging below it in the manner characteristic of *yamane*. At intervals along the bridge small metal shelters offer protection from owls and bad weather. Ropes and creepers link the pathway to the forest canopy either side of the road.

Despite its highly artificial nature, being all-metal and nothing like the normal surfaces to which arboreal animals are accustomed, video cameras showed that the pathway was used over 800 times in 3 months by four mammal species (dormouse, wood mouse, marten and squirrel). They could easily have run across the road (it is 13 m wide) yet chose to travel some distance to the bridge and use it rather than chance coming to the ground. In October 2011 another animal pathway was constructed. The first dormouse used it within 7 hours.

Clearly these arboreal animal pathways are welcomed and used by the animals they are intended to benefit. Their construction was also a major success in terms of public involvement, with cooperation also from local governments, a communications company and construction company engineers. The bridges also highlighted important issues regarding forest animals, wildlife conservation and the need for a sensitive approach to road building. The project has won several major awards

from the Japanese Government and the construction industry.

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Twenty years of Defra's Darwin Initiative

The Darwin Initiative, run by the UK Department for Environment, Food and Rural Affairs (Defra), recently celebrated its 20th anniversary. Launched at the Earth Summit in Rio in 1992, the Darwin Initiative funded its first projects in 1993. Since that time the Initiative has provided over GBP 87 million in funding to projects seeking to support biodiversity conservation, and is one of the few bilateral programmes to focus specifically on biodiversity. The original remit of the Darwin Initiative was to support developing countries to achieve their commitments under the newly signed Convention on Biological Diversity (CBD).

The Darwin Initiative is a demand-led fund reliant on applications to shape its impact. The Initiative's agenda has gone through various reviews and evaluations to ensure that it is shadowing Defra's emerging priorities and is capable of supporting key policy areas. As an example, in 2008 the Initiative was expanded to include CITES and the Convention on Migratory Species (CMS), in recognition of the policy importance of these conventions for achieving sustainable use of biodiversity and because the Initiative is one of the few funding opportunities open to projects supporting these conventions. The Initiative's remit was further expanded in 2009 to include a specific focus on the UK's Overseas Territories, coincident with the launch of the government's Overseas Territories Biodiversity Strategy. This move ear-marked GBP 1.5 million from the Initiative's funds for work in the UK's Overseas territories, 'recognising the unique problems faced by these remote territories in preserving their biodiversity and ecosystems' (Defra, 2009, *Darwin Initiative 12th Annual Report*).

Although significantly smaller than other funding mechanisms supporting the CBD, the Darwin Initiative has made substantial progress towards the sustainable use of biodiversity and the fair and equitable sharing of benefits arising from genetic resources. An evaluation, commissioned by the Initiative in 2010, reviewed the Initiative's contribution to the CBD's 2010 target. The conclusions of the review highlighted that 'in its eighteen years, the Darwin Initiative has funded a remarkable range of projects

concerned with the conservation of biodiversity... It has addressed often neglected topics or groups of species and some of its projects have had considerable success in often challenging situations'.

Since 1992 756 projects have been funded by the Darwin Initiative in 155 countries. The focus and scope of these projects varies from micro fungi to whale sharks, and from Arctic ecosystems to tropical peat forests. The one variable these projects have in common is scientific rigour, as demonstrated by the 2,225 peer reviewed articles produced by the projects, and the capacity built in developing countries to meet their commitments under the three biodiversity conventions (CBD, CITES and CMS; 394 Masters and 151 PhDs completed).

The Darwin Initiative's impact is, however, measured by more than its academic outputs. The critical measure is the success it has had in biodiversity conservation. Examples include the establishment of a second population of the Seychelles paradise flycatcher on La Digue in the Seychelles, work undertaken to reduce the decline of vultures in India, Nepal and Pakistan, and strengthening of protected area management and support to indigenous groups to govern their natural resources. The Initiative has also been the funder of numerous discoveries, including new taxa such as the dung beetle *Canthidium darwini* (Kohlmann & Solis, 2009, *Zootaxa*, 2219, 31–37), the orchid *Lagopsis darwiniana* (Pyak et al., 2007, *Kew Bulletin*, 62, 107–111) and a genus, *Darwininitium*, of land snail (Budha et al., 2012, *ZooKeys*, 175, 19–26.).

The UK Government's support for the Darwin Initiative is critical for its success and, throughout the last 20 years, regardless of political persuasion, governments have universally supported it. The Initiative has now retained its commitment from the UK Government for a further term despite the current economic climate. Additional funding from the Department for International Development (DFID), in particular, has secured the survival of the Initiative for the next few years.

The addition of DFID funding to the Darwin Initiative brings with it another change in emphasis to project funding: economic development. Economic benefits to local communities and poverty alleviation in developing countries have often been outcomes of successful Darwin Initiative projects because of the inextricable links between biodiversity and livelihoods. From 2012, however, economic benefits will receive more focus, particularly with reference to the driving forces behind biodiversity loss. DFID's core mandate is enshrined in the UK's 2007 International Development Act, with all projects funded by DFID required to meet the requirements of Official Development Assistance. Projects must directly enhance the welfare and economic development of poor people in low income countries. A new funding round for the Darwin Initiative is expected in summer 2012, in which the focus on economic

development and human welfare in low income countries will become apparent. To find out more about the Darwin Initiative visit <http://www.defra.gov.uk/darwin>

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A rhino success story in West Bengal, India

Conservation efforts for the greater one-horned rhino in the State of West Bengal, India, have been exemplary, as we learned during a visit there in February 2012. Rhino numbers have been steadily rising in both the 80 km² Gorumara National Park and 216 km² Jaldapara Wildlife Sanctuary. In 1985 there were only eight rhinos in Gorumara and 14 in Jaldapara but by the 2004 census they had reached 25 and 96, and there are now 40 and 150 rhinos in these two protected areas, respectively. From 1994 to 2011 only nine rhinos were recorded to have been poached in West Bengal. Jaldapara is now home to the third largest rhino population in Asia. This is a major success story at a time when most news about rhinos has been desperately bad, especially from Vietnam, Cameroon, South Africa and Zimbabwe. What can other countries learn about rhino protection from this little-known region that receives so few foreign visitors and little foreign or NGO assistance?

Both the Central and State governments have put generous and well-allocated funds into Gorumara and Jaldapara: over USD 5,000 per km² per year, one of the highest for any government rhino protected area. This permits the unusually high figure of more than one person per km² for patrolling and habitat management and considerable resources for local communities. West Bengal officials recognize that rhinos are a cultural heritage of the State and attract many Indian tourists. They are also aware that to save rhinos the local people must receive direct benefits.

The State government's Forest Department has established numerous eco-development projects benefiting the villagers that live on the fringes of these protected areas. Eco-development committees hold regular meetings with forest staff to discuss how to spend funds. Additional money comes from a percentage of the tourist revenue received from the two protected areas. The Forest Department has set up eco-lodges that employ local staff and has established other tourist enterprises, such as handicraft making and demonstrations of tribal dancing, to bring money to the villagers. To deter people from relying on the forest officials have encouraged other livelihoods such as tailoring and piggyeries. The government provides funding for injury and death caused by large animals, and there is also compensation for damage to crops, livestock and houses, which is not always the case in India. The Department also provides