

tainably) from the environment. So why should we attempt to conserve what is left of natural areas world-wide? For four very good reasons:

Because we don't know what we would be losing if we did not.

Because we don't know what we will need.

Because we don't know what we will want and love.

And because the world will be a less varied and much poorer place if we lose these species and their ecosystems.

From 1–10 February 1988, scientists and conservationists, policymakers and bureaucrats, gathered in San José, Costa Rica, to form policy for a new edition of the *World Conservation Strategy*, which was first published in 1980. The scientists were attending technical workshops that addressed the future of the International Union for Conservation of Nature and Natural Resources (IUCN). The event was the 17th General Assembly of IUCN (the world's

largest scientific conservation organization), and genetic diversity was only one of the numerous topics that were debated. Indeed much of the information presented and garnered at these Assemblies has been shown to appear only months or years later in the popular media. The 17th General Assembly of IUCN featured an opening address by the Vice-President of IUCN, HRH The Duke of Edinburgh, and another by the latest Nobel Peace Prize Winner, President Oscar Arias of Costa Rica*.

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* See also the more detailed account which it is hoped to publish in the Conferences & Meetings section of our Summer issue.—Ed.

Ecosystem Theory and Application

In his recent review of the above book in this Journal (Vol. 14, No. 3, pp. 283–4), Dr Mark O. Hill focused his attention on a claimed lack of any coherent account of ecosystem theory and application, on the variety of subjects treated in 20 chapters, and on the predominant individuality of the contributions. He concluded that readers had to look elsewhere for knowing what an ecosystem really is, and for disquisitions on productivity, nutrient cycling, and trophic webs.

In this present note we would like to point out that we have experienced the book as a useful source-book and a veritable storehouse of refreshing diversity for both field- and class-work, as well as for library purposes. There is no shortage of well-documented textbooks aimed at synthesis and enabling the student to visualize the whole. This book's main intention has been to report on the investigations into various particular questions of ecosystems theory, while still containing a significant amount of diverse practical material. It is correct that the book is directed to an audience of students, specialists, or general readers with an educated interest in the discipline of ecology. It reunites so many different perspectives on ecosystem analysis and serves to pin-point the area. We feel therefore that it is more an enlightening cross-roads book than just a collection of chapters presented to an international congress and added to subsequently by the Editor. In other words, the more the individuality, the larger the choice.

For example, the Odums' papers give comprehensive studies on ecosystems (E.P. Odum), and on systems ecology and the enmergy method (H.T. Odum). Four chapters describe various types of ecosystems. The M.J. Winterbourn one on stream ecosystems is very penetrating, provides us with useful leads, and opens up ways to other fundamental studies on the subject. In addition, one can find chapters on geobotanical descriptions, applied ecology, biospherical ethic, and macroecology from an economic perspective.

As already stated by Dr Hill, several chapters are individually first-rate syntheses. But if the book does not present a picture of the terrestrial Biosphere as an entity, the separate parts of which are linked in a dynamic way as a result of constant changes in their living components, this is not so much a shortcoming as a presentation of its stimulating diversity.

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Go Back for the Future to Rehabilitate Landscape

The landscape as we know it in much of Western Europe is rapidly disappearing with the changing environment—largely as a result of our human ignorance. The landscape is made up of everything we see: vegetation and fields, woodlands and hedgerows, rivers, lakes and ponds, plants, animal wildlife, villages, towns and cities—not forgetting far too many carelessly wasteful humans. Satisfaction of Man's needs with large-scale farming techniques, endless quarrying and mining, and the construction of seemingly new motorways, has involved the uprooting of many of our hedgerows. These formed our field and village boundaries for centuries, supporting a marvellous diversity of plant and animal life, but we wonder for how much longer they will continue to do this?

Hedgerows are now rarely replanted when damaged or destroyed, but instead are being replaced by unsightly posts and rail fencing. Admittedly, this is cheaper than replanting hedgerows; but in the long-run it is far more costly in

terms of devastation of wildlife habitats and natural amenities and beauty.

Badgers (*Meles taxus*) are one of the species which are worst hit and are now rarely seen in the English countryside. Not only are their setts being destroyed and Badgers harmed by our urban development etc., while a lot of them are killed by cars, but they are also taken for sport such as Badger baiting. Fortunately now some farmers are getting the message and are starting to take care of their hedgerows, so that in some cases fencing has been removed and replanting of hedgerows has taken place.

In our County of Cheshire we are encouraging farmers to carry out as much replanting as possible, whether it be of hedges or trees. In some cases we actually carry out the planting free of charge, but the farmer has to agree to maintain the trees himself after the first twelve months. In most of these cases, the farmer is entitled to a Forestry or Countryside Commission grant which is very encouraging.



FIG. 1. Groups of local schoolchildren being useful in clearing-up or conservation work.

Some farmers will only allow the planting to be done in hedgerows, whereas others set aside corners of fields in the hope of forming small woodland areas.

Trees and woodland areas all over the country are being felled to provide land for farming, roadways, and buildings for housing or industry. Unfortunately there is not always compensatory replanting, or, if there is, it is often delayed for far too long. There are numerous buildings throughout the country, many being in inner city areas, which could be renovated for housing or industrial needs, but instead are just neglected and remain eyesores.

If we do care about our Environment, we have to make drastic changes now. Our building industry should be encouraged to look more closely at the possibilities of renovating derelict buildings, or at least build new properties on derelict land instead of constructing new housing estates in our fast-disappearing countryside. However, there are numerous other areas throughout the County where planting could take place. The majority of roadside verges and roundabouts only boast vegetation such as grass and wild flowers; yet given the chance, the same verges would be capable of supporting trees and shrubs.

Tree-planting would help to reduce the ugliness and bareness of our roadways, and planting with shrubs would also provide more habitats for our animal wildlife, as well as constituting natural screens for unsightly buildings, refuse tips, quarries, etc. At present I am working on two major projects in the County of Cheshire—mainly tree- and shrub-planting, though currently they are only at an

experimental stage. For the past 18 months I have been carrying out surveys on a 36-miles' (c. 58 km) stretch of a dual carriageway (one of our main tourist routes) and drawing up plans for planting its verges, embankments, central reservations, and roundabouts—mainly to help construct more wildlife habitats, but also to help to create a better, scenic route for tourism.

While carrying out my surveys I have come across some problems where trees have been planted by local people thinking they were doing the 'right thing', but what they had not taken into consideration was the fact that they had planted the wrong species of trees for that area, or had planted trees where, in one case, if they became established, they would block out one of the most scenic views in all Cheshire!

Some tree- and shrub-planting has already taken place on a four-acres' (c. 1.6 ha) 'roundabout', which is to be turned into an unofficial Nature reserve. Already it has attracted many species of flora and fauna. We hope to be able to finish off planting trees in time to mark this European Year of the Environment (EYE).

I am also carrying out surveys on 30 acres (c. 12 ha) of Liverpool University farmland, where we hope to re-establish all of the original hedgerows which have been replaced by fencing. This work, hopefully, will be carried out soon—to a Woodland Management Plan which has already been drawn up. I was asked by the University to have a look at an ex-Council refuse tip which they had recently acquired but had no actual use for. This we turned into a Nature reserve, which was officially opened by a local bigwig to coincide with National Tree Week 1986. Numerous trees have already been planted on the tip and further planting is under way. The reserve is visited frequently by groups of local schoolchildren who also help in conservational tasks such as tree-planting and digging out derelict poles etc. (Fig. 1). These school age-groups range from six years upwards.

It is gratifying to note and warmly acknowledge the success we have had in obtaining grants and gifts of materials and money towards realization of our various projects as encouraged by your Journal—including generous support from our County Council who seem to appreciate what we are trying to achieve. Let us hope that more and more people will even join in such enterprises— not just in Cheshire but also in other counties and countries all over the world where such rehabilitation of Nature cries out to be done and can bring such tangible rewards.

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Proposed 'Debt for Conservation' Plan

Examples of a severely degraded ecobiome—tropical dry forest—will be given a new lease on life by a 'debt for conservation agreement' between the Costa Rican government, environmentalists, and the international banking community, according to Costa Rica's Minister of Natural Resources and Mines, Dr Alvaro Umana. Tropical biologists believe that the conservation of this tropical dry forest (which contains a considerable proportion of the genetic diversity of the region) is critical, for although it once covered much of the Pacific coast of Central America, only about 2% of it remains today.

Costa Rica's Guanacaste region retains a small portion

of intact primary tropical dry forest, currently protected in Santa Rosa National Park. The Costa Rican National Park Service proposes to use this original 'seed source' to restore over 70,000 hectares of degraded pastureland to tropical dry forest, but it needs money to buy the land and pay for the management of the proposed 'Guanacaste National Park'. It is here that the 'debt for conservation' plan may come into play. Dr Umana has suggested '... that the (conservation) donors who want to help preserve our natural heritage should use their dollars to buy some of Costa Rica's debt.'

The mechanism works as follows: Anyone, including the