IUCN VIEWPOINT ON WETLAND CONSERVATION

Our wetlands are shrinking through drainage and reclamation projects and a vital resource is being destroyed. These important areas—comparable in value to forests and farmlands—are now so scarce that every effort must be made to preserve what still remains.

By wetlands we mean wet terrestrial and littoral ecosystems—marshes, bogs, fens and all stretches of water, whether fresh or salt, static or flowing, temporary or permanent. Important categories include estuaries and marine shallows (up to 6 metres deep), brackish and saline lagoons, natural and artificial lakes, small ponds or pot-holes, reservoirs, flooded gravel pits, rivers, streams, flood-meadows and swamps. These wetland habitats support a vast range of plant and animal life and serve a variety of important functions, the full values of which are even now only beginning to be recognised.

The major functions of wetlands can be summarised in the following listing :—

Water regime regulation	Recreational uses
Flood control	Educational uses
Erosion control	Plant production
Nursery areas for food fishes, crustacea, etc.	Scientific research
	Aesthetic enjoyment
Fish production	Wildlife habitat
Waterfowl production and maintenance	Landscape diversity

Despite the values represented by wetlands, these ecosystems have steadily been diminished in area through drainage, filling, stream " straightening" and scores of other usually unjustifiable attacks in the name of "land improvement".

The drainage of shallow lakes and marshes has long been regarded by many decision-makers as a step towards national prosperity, a view upheld by the yields of grain or the number of animals pastured, which provide visible proofs of success. Were this the full reckoning the case for drainage might be supportable, at least from the economic viewpoint; as it is there are many reasons to suggest that conversion to agriculture is neither the wisest nor most economical means or utilising the wetland resource.

If food production is the sole aim, then almost certainly there are other, better ways than schemes of this nature.

Drainage schemes designed to benefit agriculture must not only be "worthwhile", they must be more worthwhile than any other project with the same end in view. They must take into account the natural wetland assets which are going to be destroyed, and more especially the long-term effects of tampering with the water-table. This particular aspect is important, because the changes are often gradual, and the full effects may not be felt for 20 or 30 years. That is why so many projects fail to maintain their early promise.

Plentiful fresh water is one of the most valuable assets a nation can possess—but at the same time settled communities demand that water shall be kept safely in its place. This second requirement has been regarded as all-important, and drainage authorities have had an almost unlimited mandate for flood control works. Now the emphasis is beginning to change, and the primary problem is no longer the rapid disposal of water, but its conservation to meet the huge and growing demands of industrial, agricultural and domestic users. This new task is not made easier by the effects of long years of drainage and "land improvement", but at least we can learn from experience.

One essential lesson is that all drainage schemes are followed inevitably by repercussions farther downstream, the effects being felt eventually by a whole range of apparently unconnected interests.

Examples of the unforeseen results of drainage are found in almost every river system of Europe, and in many cases the ill-effects are still accumulating, since the cure to one problem is often the cause of several more. Usually the trouble begins with, or is aggrevated by, the drainage of marginal land on the upland gathering grounds, where the rainfall is heaviest, and the soil remains wet for most of the year. These boggy areas can often be "improved" without much difficulty to provide good summer grazing, and possibly some arable land, but by doing so the run off of rain and melting snow is greatly hastened. In their natural state such areas serve as regulators, absorbing water during wet periods and releasing it slowly in times of drought; drainage destroys this function and results in a much wider variation in river level along the middle and lower reaches. Sudden spates become more frequent, the volume of floodwater increases, and the farms and townships of the valley are faced with new threats of flooding. To correct this the river is embanked, and the channel may be straightened to help the water away. This in turn causes flooding downstream, and eventually the river is "corrected" along the greater part of its length. The riverside communities have thus had forced upon them a stereo-typed landscape, with fewer amenities and a greater poverty of plant and animal life. The embarkment of the river also prevents the low-lying fields from draining naturally, and so a new system of ditches and sluices is needed to keep them clear of water.

With the risk of flooding removed, it is tempting to improve the drainage still further, and to use as much of the low-land as possible for arable farming. This in itself is reasonable but, due to the sharper drainage, the loss of topsoil through erosion is proportionately greater. Erosion also results from drainage improvements along the sides of the valley, and, since the run-off is led to the river as quickly as possible, the particles of soil are never allowed to settle. Formerly, a good deal of this silt was dropped on the low-lying fields, where it formed a valuable fertilizer; now it is rushed to the sea and thrown down the banks and bars around the estuary, encumbering the channel and comprising a hazard to navigation. The loss of humus is especially serious because, unless great trouble is taken to replace it, the fertility of the fields will be reduced.

The rapid disposal of the surface water results also in a marked lowering of the river level during times of drought. This leads to higher concentrations of industrial and domestic waste, high enough in many cases to comprise a serious threat to fisheries and public health. The disposal of this nuisance entails either a complete

revision of the sewage system, or the building of balancing reservoirs to maintain the flow. Both solutions are costly, and the latter may involve considerable loss of farmland. The low level of the river may also make it difficult to maintain a constant supply of pure water to all those who require it. In some districts this problem is met by building still more reservoirs; in others, much greater reliance is being placed on boreholes and artesian wells. However, in certain areas these subsoil resources are fast being depleted. Subsoil water depends partly on the presence of surface water in swamps and lakes, the water being forced downwards and outwards under its own pressure into places not otherwise reached. If the surface water is removed by drainage, the effect is obvious. Subsoil water is also replenished by the infiltration of rain through the top-soil, but if the fields are honeycombed with land drains (or worse still covered with houses and roads) the water can no longer permeate.

The reclamation of coastal and estuarine marshes has further undesirable effects. Estuaries are among the most naturally fertile areas of the world, even more productive, acre for acre, than a field of wheat. The wheatfield, of course, produces more food for human consumption, because at present only a small part of the estuarine production reaches human mouths. The potential is nevertheless there, and, by interfering, we are throwing away the opportunity of exploiting new sources of food. On land, a crop is grown and harvested in the same field; in tidal estuaries there is constant movement and, although the harvest may be gathered in the deeper water, the primary source of productivity is centred in the marshes and mudflats. Estuaries must therefore be regarded as single units, comprising not only the mud and sand flats, but the marshes, the creeks, the open channels and the seaward approaches. If some of these components are cut off and reclaimed for agriculture, we must accept a loss of the basic energy on which much of our coastal fisheries may depend.

These chain reactions, set in motion by ill-considered drainage, are the strongest possible argument for reappraising the present policy of "land improvement". Farming has made great advances during the past century—advances which have made possible expanded population and higher standards of living, but paradoxically it is these same advances which threaten what we have gained. Water and food are both essential to us and the one cannot be considered except in context with the other; if more food now implies less water in the years to come, we can look forward not to better harvests, but to drought and failure. Mankind has already ruined the fertility of large areas of the northern hemisphere through wrongful husbandry, and the deserts and dust-bowls of his making continue to encroach. Only by placing the long-term productivity of the soil above all other issues can we hope to avoid the same mistake, and in this wetlands have a natural and vital role.