Wetland
ecosystem services

Factsheet 7
in a series of 10

Wetland products

Rice planting in coastal paddyfields, South Korea. Photo © Sandra Hails

Wetlands generate a huge variety of plant, animal and mineral products used and valued by people all over the world, whether in local, rural communities or in far-off cities in foreign countries. Wetland products range from food staples, such as fish and rice, to timber for building, fuelwood, vegetable oil, salt, medicinal plants, stems and leaves for weaving, and fodder for animals. The harvesting and use of these products is carried out at all sorts of intensities and scales, from low-intensity subsistence users, to intensive, commercial exploitation involving multinational corporations.

Arguably the most important wetland product at a global level, fish is the main source of protein for one billion people and accounts for at least 15% of animal protein in the diets of a further two billion.

While the global significance of fish as a basic food commodity and a highly valued economic resource is widely appreciated, few people realize that two-thirds or more of all the fish we consume are dependent on coastal wetlands – such as estuaries and mangroves – at some stage in their life cycle. For example, 75% of the United States' commercial fish and shellfish stocks depend on estuaries. These coastal ecosystems themselves depend on freshwater wetlands upstream to maintain water quality and provide the basis for food chains that culminate in human consumption of seafood. Also covered by the Ramsar Convention's definition of 'wetland', coral reef systems provide critical hatchery and nursery grounds for global fisheries.

For at least 150 million people worldwide, fish provide not only vital nutrition, but also a source of employment and income. Most of those who rely on fish for their livelihoods are in less economically advantaged parts of the world; overall, 80% of global fishery production takes place in developing countries.

2006 saw worldwide production of fish for food reaching 110 million tonnes, taking both 'capture fisheries' (i.e. wild-caught fish) and aquaculture production (i.e. farmed fish) into account.

In brief...

- Sustainably managed wetlands provide us with a vast array of products, among them food, building materials, textiles and medicines.
- The economic beneficiaries of wetland products range from local communities to multinational corporations.
- At least two-thirds of all the fish consumed worldwide are dependent on coastal wetlands, which provide spawning, nursery and feeding grounds.
- Rice, which is essentially dependent on highly managed wetlands, accounts for one-fifth of global calorie consumption and up to 70% in parts of Asia.
- Conversion of mangroves to ponds for unsustainable aquaculture production has resulted in massive loss of ecosystem services.

Wetland products...

Fishermen hauling in their nets, Lake Tanganyika, Zambia.
Photo © David Rogers

Aquaculture has grown rapidly over the past 50 years and will soon overtake capture fisheries as the leading source of production. From less than 1 million tonnes per year in the early 1950s, production in 2006 reached about 52 million tonnes, with a value of US$78.8 billion. World aquaculture is heavily dominated by the Asia–Pacific region, which accounts for about 90% of the quantity and nearly 80% in terms of value, due in large part to the dominant position of China in this sector. The growth of aquaculture has had a significant impact on some wetlands. For example, it is estimated by some experts that more than a third of the world's mangroves have been lost in the past 20 years, with aquaculture – especially intensive shrimp farming – implicated as one of the main culprits.

Rice is a food staple for 3 billion people worldwide and represents about one-fifth of global calorie consumption, rising to 70% in some Asian countries such as Bangladesh, Cambodia and Vietnam.

At least 100 Ramsar Sites around the world include rice-field habitats that play important ecological roles and support a range of biodiversity, including internationally important populations of migratory waterbirds. However, threats to rice paddies as sustainable wetland systems stem from inappropriate water management, introduction of invasive alien species, use of high levels of harmful agricultural chemicals, and the impact of conversion to other land uses. The need to tackle these problems was recognized in a 2008 Resolution adopted by Ramsar member governments.

The sago palm in Asia provides some communities with their principal source of carbohydrate or is an alternative to rice at certain times of the year, while palms in Africa's wetlands provide essential oils for cooking. Ironically, however, industrial-scale production of palm oil threatens the biodiversity of wetland ecosystems in parts of south-east Asia, Africa and other developing country regions. Certain wetland plants provide a whole range of products, such as the nipa palm in Asia that is a source of fodder, alcohol, vinegar and sugar. In the Pak Phanang River Basin of southern Thailand, coastal villagers earn the most important part of their income from nipa sugar production, obtaining more than one tonne of sugar per hectare per month (during 8 months of the year and from over 3,200 hectares).

Honey is collected in many mangrove forests around the world. In Cuba, for example, up to 30,000 hives are moved to track the seasonal flowering of the *Avicennia* mangrove, which begins in April in the southwest of the island, lasting until August in the northeast.

Other products commonly derived from mangroves include fuelwood, salt (produced by evaporating seawater), animal fodder, traditional medicines (e.g. from mangrove bark), fibres for textiles, dyes and tannins. In southern Thailand, for instance, many coastal communities exploit mangroves for fuelwood, timber, honey, resins, crabs and shellfish. A study of one village calculated the mean annual value per household from direct use of the mangrove forest to be around US$924. This figure does not include the other ecosystem services provided to local communities by mangroves, such as fishery support and shoreline stabilization.

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