

# ERITREA GREENING

Green? Eritrea? That arid strip of land in north-east Africa? Yes, this small country has such an abundance of natural assets and kilometres of stunning coastal scenery that it deserves to be listed as one of the seven wonders of the world, say **Andrew Price** and **Virginie Tilot**. And with an approach to coastal development that is nothing short of revolutionary, Eritrea could serve as a shining example of modern ecotourism to us all.

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The 30 years before 1993 were a dark period in Eritrea's history. As the country struggled for independence from Ethiopia, many people lost their lives. Wildlife and the landscape suffered too. Scientists were able to undertake scant environmental research and, as a result, when the country gained its freedom, far less was known about the wellbeing of Eritrea's wild animals and places than those in other Red Sea states.

There was, however, one unexpected side-effect of the unrest. Very little development took place in Eritrea during those tumultuous three decades and, at a time when many maritime countries were indiscriminately polluting, reclaiming and altering their coasts, the country's shores remained untouched. As a result, the coastline here presents opportunities for ecologically sound development that few other nations enjoy.

On a map, Eritrea is pretty insignificant. Sandwiched between Sudan and Ethiopia, and with Djibouti at its south-eastern tip, it would appear to be nothing more than an arid sub-Saharan country. And, indeed, much of Eritrea is parched, especially along the coastal plains that border stretches of the Red Sea. One major town is Massawa, where at least once, in August 2006, temperatures have soared to an overwhelming 49°C. (Extraordinarily, this mother of all heat waves happened at night.) It's not surprising,

therefore, that access to fresh water is the country's number one priority.

Through desalination, a modest amount of water (around 1 000 cubic metres daily) is produced at the Hirgigo electricity power plant near Massawa. Most Eritrean towns and villages, however, depend on rainfall and groundwater for their supply, just as they have always done. In areas higher than 2 000 metres, such as around the capital Asmara, there is more than enough water, but the coastal plains receive a meagre one or two centimetres of rain a year. In the south, water has to be trucked between 45 and 100 kilometres to supply the villages between Tio and Mersa Fatma.

If ecotourism ever takes off in Eritrea, hotels will have to be self-sufficient. Instead of placing additional demands on the country's limited supplies, they will need to generate their own water through desalination. Meanwhile, the Eritrean government is prioritising the provision of water in its strategy to make its 1 300-kilometre coastline more usable.

Notwithstanding the lack of water, Eritrea is endowed with significant natural assets. The Red Sea itself is a vital artery for the transport of goods in and out of Assab, the country's major port. (Since Eritrea's independence, Ethiopia no longer has a port of its own.) This vast body of water also presents plentiful raw

ABOVE Mangroves line a creek near the village of Gonforor on the Buri Peninsula. Here fishermen traditionally abstain from fishing in the inlet's productive waters to help prevent overharvesting.

ABOVE, LEFT With three decades of war a thing of the past and a trove of untapped ecotourism opportunities, Eritrea's younger generation faces a hopeful future.

OPPOSITE Dissei Island's rich biodiversity on land and at sea have earned it a classification as a protected area.



MAANS BOOYSEN

## THE WORLD'S BIGGEST BREEDING COLONY OF CRAB PLOVERS, A SPECIES RECORDED ONLY IN THE ARABIAN REGION, OCCURS ON DELGUS ISLAND

**ABOVE** Crab plovers. Surveys of Eritrea's sea and shore birds recorded more than 70 species, over half the number found throughout the Red Sea region.

**OPPOSITE** The coastal plains receive little rain, and water is either trucked to villages or drawn from wells. Water provision has been prioritised by the government.

material for desalination, although the energy and financial resources needed to drive the process are unavailable. One option is geothermal power. On the Buri Peninsula, east of Asmara, tectonic activity beneath the surface results in heat emerging from the ground as steam. Harnessed correctly, this cost-effective heat source could be used to generate power for a desalination plant and for the wider community. Geothermal power produces no greenhouse gases or other polluting emissions, so is also environmentally friendly.

Another natural asset, for which the Red Sea is perhaps best known, is its coral reefs. One of the world's 10 prime marine biodiversity hotspots, the reefs are home to some 220 coral species, a spectacularly high number when compared to the 500 or so that occur in the entire Indian Ocean. For this reason, Red Sea coral reefs are a major attraction for divers and marine biologists alike. And now that the secrets of Eritrea's reefs are starting to be revealed, the number of corals may be even higher, say biologists and coral taxonomic experts.

Scattered along the shores of the Arabian Gulf are mangroves that are often considered by coastal engineers and developers to be worthless, fit for nothing except in-filling as a foundation for hotels and resorts. But clumps of mangroves act as important nursery and feeding areas for a diversity of marine life and birds, notably the Goliath heron and pink-backed pelican. Mangrove leaves also serve as fodder for the camels that plod up and down the coast, and the trees' bulk helps to protect and stabilise the

ground. The roots filter and remove nutrients from water, including sewage effluents, which could degrade nearby coral reefs.

Eritrean biologist Gezae Tekie, working alongside Geographic Information Systems' specialist Legasse Abraham and other scientists on the country's Coastal, Marine and Island Biodiversity (ECMIB) project, has recently updated the distributional range of mangroves in the Red Sea. By far the most common and most tolerant of environmental extremes is the species *Avicennia marina*, which is easily recognised by its snorkel-like breathing roots, or pneumatophores, that radiate in lines along the shore. *Rhizophora mucronata*, with its characteristic aerial roots, is less common, as is *Ceriops tagal*. Records suggest that an additional species may have occurred in the past. Given that only four mangrove species are recognised for the Red Sea in its entirety, you could say that Eritrea is well endowed with biodiversity.

The country's wildlife is also of international significance. Worldwide, there are seven species of sea turtles. Of these, five are found in Eritrean waters, most commonly the green and hawksbill turtles. In May 2005, biologist Yohannes Teclamarium and colleagues on the ECMIB project, with turtle biologist Nick Pilcher, recorded the first-ever sighting of an olive ridley turtle attempting to nest along the Red Sea.

The birdlife is just as remarkable. For example, the world's biggest breeding colony of crab plovers, a species recorded only in the Arabian region, occurs on Delgus Island in Assab Bay, where some

1 600 nests can be found. Surveys conducted in 2005 and 2006 by ornithologist Dawit Semere and other ECMIB project members recorded more than 70 species of shore- and seabirds, over half the number known for the entire Red Sea. At least 24 species breed on Dahlak and other offshore islands, where an estimated 200 000 individuals are present. In contrast, just 10 offshore islands are occupied by humans.

Despite the paucity of people, one of the greatest potential threats to coastal birds is posed by temporary human settlements, especially in regions where camps have been established on beaches for the processing of sea cucumbers, or *bêche-de-mer*, a highly prized delicacy. Birds' eggs may be taken by fishermen for food.

Current government thinking is that, in order to make the country's coastline an example to the world, an integrated approach to development is vital. With the help of the ECMIB Project, an Integrated Coastal Area Management (ICAM) plan has been developed and is likely soon to receive endorsement at the highest government level.

Ecotourism is one of the possible development options. Despite the arguments of those who question the motives of many ecotourism operatives, the reefs along Egypt's southern Sinai coast attract divers and tourists from afar with very little damage, except in localised areas. The dilemma instead is whether coastal development and conservation are able to exist hand in hand. Part of the answer lies in having sound environmental regulations in place before tourism seriously gets going. The Eritrean government has realised the importance of a coastal setback zone – a standard horizontal distance (about 100 metres or so) landward of a 'datum' point – where no structural development will be allowed.



As Kaleab Negussie, the manager of the ECMIB project, explains, 'Such (coastal) area is public property.' The setback zone will be a key feature of the future ICAM plan, as it will help to prevent coastal-use conflicts. 'After all,' Negussie adds, 'it is far easier to put regulations in place before development begins in earnest than to get the various coastal users to agree to and accept them later.'

A rigidly enforced setback zone will also help to conserve mangrove species that, if intact and healthy, contain flora and fauna of great interest to ecotourists. Actually, these green areas are also shown to enhance the value of hotel investments. In addition, as construction (including roads) is set back from the shoreline, the mangroves will protect it against storms, wave erosion, sea-level





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ABOVE Plentiful fish and at least 220 species of coral occur in the Red Sea, making it one of the world's 10 prime marine biodiversity hotspots.

TOP Camels browse on mangroves on the Red Sea coast. New stands of the trees have been planted to replenish those denuded by livestock, and to help bring desert areas into agricultural production.

rise and so on. The setback zone is a cunning tool; the costs are small and the payback can be real and long-lasting.

The second visionary approach of government and the ICAM strategy is to declare and, more importantly, establish Eritrea's Red Sea coast as a multiple-use protected area. It will be subject to the strictest coastal and environmental control, especially the vast region from the north of Mersa Gulbub, including the many-islanded Dahlak Archipelago, to a point near M'edr, and a second, smaller area further south. The smaller region encompasses the bay complex in and around Assab, extending south almost to the border with Djibouti. Within these two specially protected areas, which will be sandwiched between 'green' conservation areas, nodes of development will be permitted, and indeed encouraged.

Outside their boundaries, less stringent environmental regulations will apply.

It's a revolutionary approach. In normal circumstances, special areas are proclaimed as protected areas only after they've been justified as truly outstanding – for socio-cultural, economic or scientific reasons. This 'justification' involves exhaustive surveys and takes a long time. And in many cases, by the time the surveys have been completed, would-be protected areas are lost to overzealous, short-sighted developers with little concern for the damage their ventures may inflict on the environment. Eritrea's approach to the development and management of protected areas is similar to that adopted in the southern Sinai: 'Declare now, survey in detail and fully justify later'.

Eritrea has enormous potential for carefully planned tourism: the spectacular Red Sea coast, volcanic features reminiscent of a moonscape, and unexpected fauna (such as camels on the beach), as well as ostriches, gazelles and baboons. Traditional management of resources can still be seen, such as at the narrow mangrove creek near the village of Gonforor on the west side of the Buri Peninsula. Here, fishermen voluntarily abstain from fishing in the creek's rich waters and nursery grounds, which could easily become overharvested. And in M'edr, visitors can see the age-old sustainable management of the mangroves by local people.

Surrounded by wealthier countries both in Africa and on the Arabian Peninsula, Eritrea may lack financial resources. But its rich natural assets are the envy of many and, if coupled with a strictly enforced protected area system, they could make the country one of the world's hottest eco-destinations in the future. ■

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