

El Bosque Mediterráneo en el Norte de África. Jesús Charco. Agencia Española de Cooperación Internacional, Madrid (Avenida Reyes Católicos, 4. 28040 Madrid, Spain). 1999. Pp. 370. Many color and black-and-white photographs, maps, figures, tables. No price quoted. ISBN 84-7232-825-2.

This magisterial work is far enough outside the normal scanning pattern of Western Hemisphere readers that it needs some attention here. Charco has produced one of the most splendid studies of a Third World region's forests and its conservation problems. North Africa still has large forested areas in the Atlas Mountains and a few scraps remain in the coastal lowlands of Morocco, Algeria and Tunisia. However, the vast majority of the historic forest area is gone, almost all the rest is degraded, and deforestation is proceeding.

The forests of the Atlas are largely evergreen (cedar, pine, a few fir) higher up and largely oak lower down. The oaks are diverse, each species having its preferred habitat. Some fascinating conifers occur at low altitudes; *Tetraclinis articulata*, a strange cypress-like plant, covers thousands of hectares. Fragments of wild olive forests and riparian groves exist. Among the most fascinating trees is the argan (*Argania spinosa*), endemic to Morocco (almost exclusively in the southwest), valuable for timber, fuel, forage, and the high-quality oil of the fruit. Its value has protected it, but not well enough; like all other trees, it is under assault. It grows in a strange subtropical forest at the west end of the Atlas, where its usual cohorts are other endemics or are Canary Island species that still have a tiny mainland foothold.

The book is arranged by forest type, as defined by dominant tree. More specifically, the system is the "phytosociology" of Braun-Blanquet and followers, which is almost universal in European botany though relatively little known in the Western Hemisphere. For each forest type, common species are indicated — not only other trees, but also shrubs, herbs, and fauna. Rare and endangered plants and animals receive attention. Ethnobotanists will find full accounts of the uses of the trees and of the varying levels of preservation that they have received.

Northwest Africa has known agriculture and stock raising for 7,000 years. For 3,000 of those years, states and cities have been present. The impact on the forest, especially the lowland forest, has been among the most severe found anywhere in the world. The Roman Empire exploited the forests and exterminated the native elephant. After its fall, unstable governments and an emphasis on animal husbandry led to progressive decline. The twentieth century saw the extermination of the lion, the Nile crocodile, and most other large animals, though a few leopards may survive. Deer have been kept available by stocking. The larger birds are similarly impacted. Even small animals are often endangered.

On the other hand, Charco's extremely thorough searches through the lands in question give us a more hopeful picture than the earlier classic works of Mikesell (1961) and McNeill (1992). He and others have found remote and cliff-girt areas where magnificent forests still cover thousands of hectares. Astonishing relictive forests are still turning up in remote areas. A stand of dragontrees (*Dracaena draco*), previously believed endemic to the Canary Islands, was found in southwest Morocco as recently as 1995.

Charco is emphatic in pointing out that human agency has done the damage. On the other hand, local systems have developed reasonably good ways of managing much of the landscape. Cultivation between standing trees, nondestructive

cork extraction from cork oaks, rational though thorough utilization of argan trees, careful terracing of slopes, and many other devices reduced the human impact. Religious beliefs and sanctions preserved forests in many places. The problem today is that very rapid population growth has gone along with equally rapid modernization, complete with roads, big dams, unregulated logging, and the rest of the litany. Yet economic growth, which would have brought pressures for more rational exploitation of resources, remains slow and uneven in the region. In addition, Algeria has been racked by warfare.

Recently, a revisionist view blames desertification on climate change. Charco provides many photographs of forests surviving in cemeteries, sacred sites, and reserves, and regenerating with wild abandon in fenced-off plots. It is clear that the damage is indeed the result of logging, firewood collection, and, above all, stock rearing — not climate change. The result, in loss of valuable plant products alone, has been catastrophic. To this one may add the loss of topsoil; much former forest is now eroded to bare rock. Water runs off where once it seeped into groundwater. Wildlife and wild herbs are gone. The economy has lost an incalculable amount of wealth. It is truly staggering to contemplate how much richer the three countries would be if they had been able to exploit the forests in anything like a sustainable manner. The time is not too late; protection would allow the forests to recover, eventually, in much of their former habitat.

To a Californian, this book is thought-provoking (at the very least). The southern half of California is a near-perfect geographic match for northwest Africa. We too are using our environment in a destructive, non-sustainable way. The same desertification that affects North Africa is not far off, unless dramatic changes occur. One wonders if North Africa's poverty and instability will be duplicated here.

This book is illustrated with hundreds of photographs, charts, diagrams, and tables. Several color photographs are presented for every forest type. The quality of these pictures is high. They are taken to show the vegetation and its fate, not just to fill up space with something "pretty" (as is the case in all too many books). The book lacks an index, but excellent organization and the many visual aids make up for that.

In short, this is a book that everyone interested in forest use and management will want to see. Have no fear if your Spanish is limited; the photographs speak for themselves.

This and many other ecological and ethnobotanical works are available from the *Libreria Agricola*, Fernando VI, 2. 28004 Madrid — a bookstore worth knowing, especially if (like me) you can order books for your university library.

LITERATURE CITED

MCNEILL, J. 1992. *The Mountains of the Mediterranean World*. Cambridge University Press, Cambridge.

MIKESELL, MARVIN. 1961. *Northern Morocco: A Cultural Geography*. University of California Press, Berkeley. University of California Publications in Geography, 14.

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