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Fire Situation in the Islamic Republic of Iran

Introduction

The Islamic Republic of Iran is sparsely forested with around one percent forest cover and an additional six percent of other wooded land. The majority of Iran's forests are found in the north around the Caspian coastal plain and on the northern slopes of the Alborz mountain range. The Zagros range in the western part of the country also has significant areas of forest, though much of the Zagros has been converted to grazing land. The majority of forests are closed broad-leaved deciduous forest, with the dominant species including *Quercus castaneifolia* and *Carpinus* spp. At high elevations *Juniperus* spp. forest is common. Around 60 percent of Iran is arid desert or semi-desert, where vegetation is primarily sparse *Acacia* and *Prosopis* scrub. Iran has an extensive conservation network comprising seven national parks and around 60 other protected areas. These encompass approximately 12 percent of the country's forests.

Fire environment, fire regimes, and the ecological role of fire

Every year Iran experiences pasture fires that impinge upon the sparse forest resources. The losses caused by forest fires are estimated to be equal to the total area of reforestation. The fire season depends on location and associated climatic conditions. In the northern part of Iran most fires occur from August until the end of December when there is a decrease in humidity and increase in winds, while the eastern part of the country is more prone to fires in summer and winter. In central and southern Iran there is an increase in temperature and drought from March until September, so the worse fire season occurs then.

The recorded fires are mainly pasture fires and the land is able to recover, although grazing is obviously affected for some time and there is always the concern that fires will spread to forested areas. Fires that start in or around forests are mainly surface fires and seldom crown fires. Fires in coniferous forests are the most significant. Fire suppression is difficult due to high winds and temperatures and extremely dry conditions. Helicopters are used to move personnel over difficult terrain as it may take hours or days to reach the fires and terrain may be impassable for ground vehicles. The army, police and local communities are all mobilized during fire suppression activities but generally only hand tools are used.

Some fires are transboundary, i.e. along borders with Iraq, and are difficult to access and to control. In fact, the situation in Iran is unusual in that conflicts at border areas and unmapped landmine fields exacerbate the fire control situation.

Some of the most fire-prone areas are outlined as follows:

Kordestan (Western Iran)

Most forest fires occurred during the war, resulting from landmines triggered by cattle or by artillery fire. Mined areas are not cleared and no maps are available of their location, and mine detectors are not effective. Now most of the fires in this region are caused by arson.

There were 300 fires in 1997 during which 1 500 ha of forest and pasture were burnt and 400 hectares of forest. Most of these fires are in the mountains and with difficult access. It can take up to two days to reach them.

Golestan (North East Iran)

This is the most important forest area, next to the Caspian Sea area. There were 52 fires in 1998, seven in natural forests and the remainder in pastures. The fires in this region are mainly caused by arson. Records show an average of 20 to 70 fires in a 10-year inventory.

Khuzestan

There is a high occurrence of wildfires in this state where the climate is characterized by extremely high temperatures. In 1998, 5 000 ha of pasture was burnt in five fires and there were also 9 fires in natural forests, burning 300 ha. Most fires are caused by arson and are mostly pasture fires.

Narrative summary of wildfire effects on people, property, and natural resources

Fires are a very important problem and uncontrolled pasture fires are particularly devastating with associated losses of fodder. Fires destroy lots of investments and rehabilitation is very costly; most are caused by human activities.

Previously good forest is now degraded, due to both human activities and climatic conditions. Some areas are now deserts and the forest area is much reduced; thus, the impact of uncontrolled fires can be very serious. Land management issues include unlimited grazing by cattle causing damage both to pastures and natural regeneration in forests (the main source of reforestation), conversion of forested land to agriculture, cutting trees illegally, overlogging, wrong production systems and damage due to wood collection for fuel, fencing and cattle food. Pasture is an important natural resource for cattle food but the land is degraded and productivity is reduced; thus, there is a continuous need for more land and water resources to maintain the same level of production.

Between 1991-1997 there were 3 063 fires, during which 13 700 ha burned. In 1998 there were 998 fires and the burned area was estimated at 206 713 hectares, mostly shrubs. Losses were estimated at more than 5.6 million Rials, including 8 761 tons of cattle feed lost.

Few deaths are directly attributed to fires but injuries and deaths do occur because of landmines, which makes firefighters and foresters wary of fighting fires in the border regions.

Fire Management Agencies in Iran

Fire management responsibilities are under the jurisdiction of the Office of Protection and Conservation of the Ministry of Jihad-e-Sazandegi, Forest and Range Organization. The Office of Protection and Conservation has been in operation since 1993 and is in charge of managing forest protection, including fires and other natural phenomena including earthquakes, winds, extremes of temperature and droughts.

Wildfire Database

Data on fires are collected every year using standard forms filled in for each Province. Forms are revised every year. The number of fires and area burnt of both forest and range land is recorded every year but the collection system needs some improvement. All data are sent to the Office of Protection and Conservation in Tehran.

The causes of fires are different in the various states and provinces. They include land-use change (vegetation conversion), conflict and resulting arson, carelessness of hunters and picnickers, landmines, smuggling of opium and oil through Iran and refugee activity. No database is available on the causes of fire.

According to the ECE/FAO database on forest fires the average number of fires per year is 130 and the average area burnt per year is 5 400 ha (maximum 33 000 ha in 1993). The number of fires seems to be increasing (Alexandrian and Esnault 1998; Table 1).

Use of prescribed fire

During the last 25 years, forest plantations were established to meet local needs for timber and for environmental protection. By 1999 the total planted area reached 2.2 million ha (Mohammad, 1999). The species planted are generally limited to indigenous and exotic pine species such as *Pinus nigra, P. sylvestris, P. brutia, P. taeda, P. elliottii* and *P. pinea* (Jafari and Hossinzadeh, 1997). Despite high fuel accumulations in these plantations and prevailing drought conditions there are no prescribed burning programs underway.

The management plan recognizes the importance of fire and in Golestan 156 km of green strips have been planted in the forest and 936 ha of protection channels 1 m deep have been dug between the farms and forest, serving, as fire/fuel breaks.

Tab.1. Wildfire database for Iran for the period 1982-1995. Source: Alexandrian and Esnault (1998).

Year	Total number of fires on forest, other wooded land, and other land (rangeland) Nº.	Total area burned on forest, other wooded land, and other land (rangeland) ha	Area of forest burned ha	Area of Other wooded land burned ha	Human causes %	Natural causes %	Unknown causes %
1982	15	3 141					
1983	n.a.	7 431					
1984	30	1 508					
1985	75	2 233					
1986	79	8 426					
1987	10	5 407					
1988	73	611					
1989	116	407					
1990	16	1 133					
1991	146	288					
1992	100	3 923					
1993	192	33 379					
1994	143	6 119					
1995	722	1 977					

Public policies affecting wildfire impacts

The Congress in Iran makes the law on important subjects. Protection and conservation are the most important topics under consideration. Support for fire protection is through the Congress but there is a movement for more direct involvement of the Islamic Council, which is responsible for the prevention of forest fires and conversion of agriculture lands. The Council is newly established and is responsible for helping the governors of the states with forest protection. There are also local councils for forest protection that work with local staff and the community and coordinate with the Islamic Council in helping fire suppression.

A law was passed in 1965 and approved by Congress that the penalty for arsonists is a prison sentence of 5-6 years. Also, if the police do not provide assistance in preventing or fighting fires then they can also be punished. There is a proposal to use police to patrol the forests. These laws have succeeded in decreasing the number of fires and area burnt.

Sustainable land use practices used in Iran to reduce wildfire hazards and wildfire risk

Forest protection is one of the most important objectives of the Forest and Range Organization and several improvements are being undertaken in this field. In the Hyracian (Caspian) Region animals are gradually being removed from the forests and being settled outside forested lands. Traditional husbandry is being converted into industrial husbandry through rehabilitation projects with emphasis on the prohibition of grazing. In other regions, grazing is being prohibited to enhance forest regeneration and to prevent accidental fires. In protected areas, fuelwood is replaced by petroleum.

In Shiraz a model programme has started to help reclaim semi-arid areas by planting walnut and peach trees, using drip irrigation. The land is then apportioned and given to government staff in return for management of the trees. To physically protect the forest in areas of urban/forest interface, individual households are being relocated outside the forests and recreational areas are being provided and designated as ecotourism zones.

Community involvement in fire management activities

Prevention is well recognised as being cost-effective and local communities are involved in prevention activities. Public awareness campaigns include brochures, TV, radio and prayers. Specific information is provided during

the fire season through the use of fire risk signposts. The most senior member of the community is trained, as are voluntary students. In the provinces all members of the community, including nomads and hunters, are trained in fire prevention.

Police are responsible for helping people to fight fire and provide transport. Fire alerts are communicated through a dedicated telephone number.

There is a lack of personnel and facilities, including vehicles. Community involvement is therefore essential in fire suppression activities.

References

Alexandrian, D., and F. Esnault. 1998. Public policies affecting forest fires in the Mediterranean Basin. In: Proceedings of FAO Meeting on Public Policies Affecting Forest Fires, Rome 28-30 October 1998, p. 39-58. FAO Forestry Paper 138, FAO, Rome.

Jafari, M. and A. Hossinzadeh. 1997. Present status of afforestation in I.R. of Iran. (cited from four articles on forests). Technical Publication No. 176. Research Institute of Forests and Rangeland, Iran. Pp. 52-70

Mohammad Ali H. Mirsadeghi (in cooperation with Bizhan Biglarbeigi, Jamshid Agha Zamani, Morteza Ebrahimi Rastaghi and Majid Saifollahian) 1999. Some forest data of Iran. Forest and Range Organization, Iran. FRA 2000 country report.

This country report has been published in the pages of the FAO FRA Global Forest Fire Assessment 1990-2000. Bibliographic source:

Allard, G. 2001. The fire situation in Islamic Republic of Iran. In: FRA Global Forest Fire Assessment 1990-2000. Forest Resources Assessment Programme, Working Paper 55, p. 198-202. FAO, Rome, 495 p.
http://www.fire.uni-freiburg.de/programmes/un/fao/Wp55_eng.pdf

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