

Chapter Seven

HUMAN ACTIVITIES

7.1 The Importance of the Wadi Wurayah Catchment Area and its Surrounding

Wadi Wurayah Catchment area is administratively related to Fujairah Emirate surrounded geographically by Dibba City in the North and in south by the Khor Fakkan City which belongs to Sharjah Emirate.

Travel to Fujairah and the surrounding towns of Khor Fakkan, Kalba and Masafi has been made easy by the development of modern highways over the last 30 years. The Emirate has a small airport with regular flights to Middle Asia, Far East and some destination in the Middle East. Highways are vital due to the unavailability of any other means of transport (Figure 7.1).

The Emirate and its districts have started to move ahead with many infrastructure projects, with overall growth in urban development rising to an exceptional scale. Both national and expatriate populations are rising noticeably, especially the latter. The result of this development is the huge consumption of goods and services, production and distribution processes, all of which, obviously, have environmental impacts. The result of such development has forced environmental issues into focus; like sustainable management of water and energy resources, waste management and reduction, sustainable construction, marine protection, land and species conservation and sustainable agriculture.

The northern part of the Fujairah Emirate consists of a number of wadi Catchment areas or basins such as: Al-Ghazir, Al-Ghel, Al-Helah, Sharm, etc. (Figure 7.2). The Wadi Wurayah Catchment area middle point is located some 10 km southwest of the village of Bidiyah. The whole catchment is 129 km in area and has a maximum elevation of 956 m above mean sea level. The catchment comprises two main Wadi branches i.e. Wadi ash shamah sub – catchment and al Wurayah catchment proper, both of which have large pools and waterfalls. Together, both catchments are collectively called Wadi Wurayah which has an average width and length 11.2 km and 10.7 km respectively.

As a part of the Fujairah Emirate the Wadi Wurayah Catchment area and its hinterlands are also passed by the same impact of urban development.

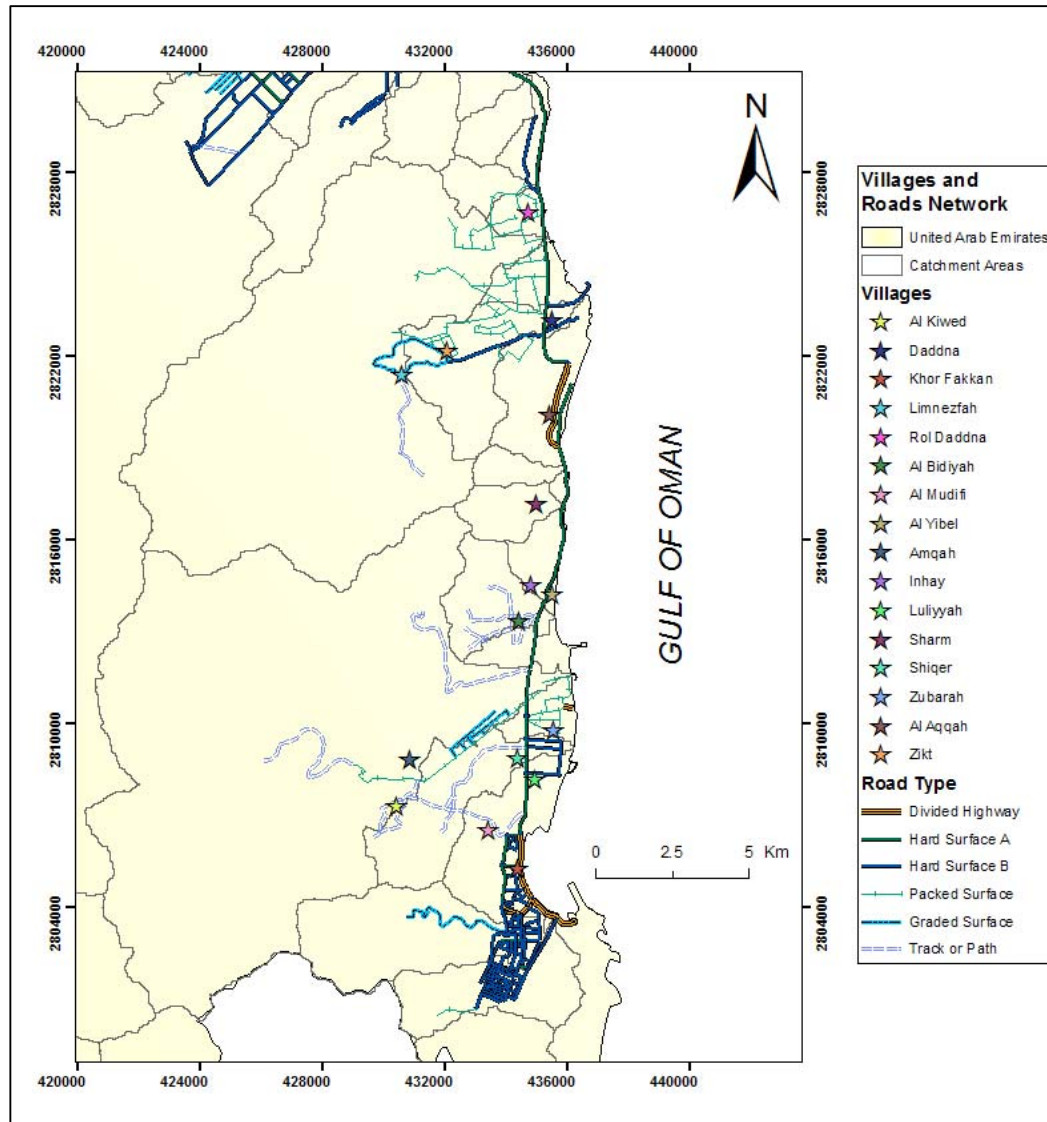


Figure 7.1 Location map of the roads, tracks and the settlement villages in the area of study (ALHOGARATY).

7.2 Environmental Stresses and Threats in the Wadi Wurayah and its Surrounding

The environmental stresses at Wadi Wurayah Catchment area and its hinterlands are resulting due to the presence of human activities in this area since the mid of the first decade of the second millennium till now. These activities varied between residential, agriculture and industrial, while the tourism industry is another activity started to take place in the beginning of 2000 which makes use of the beauty nature near to the coast or at the mountainous ridges. The following is a description of each activity according to type, location and threats.

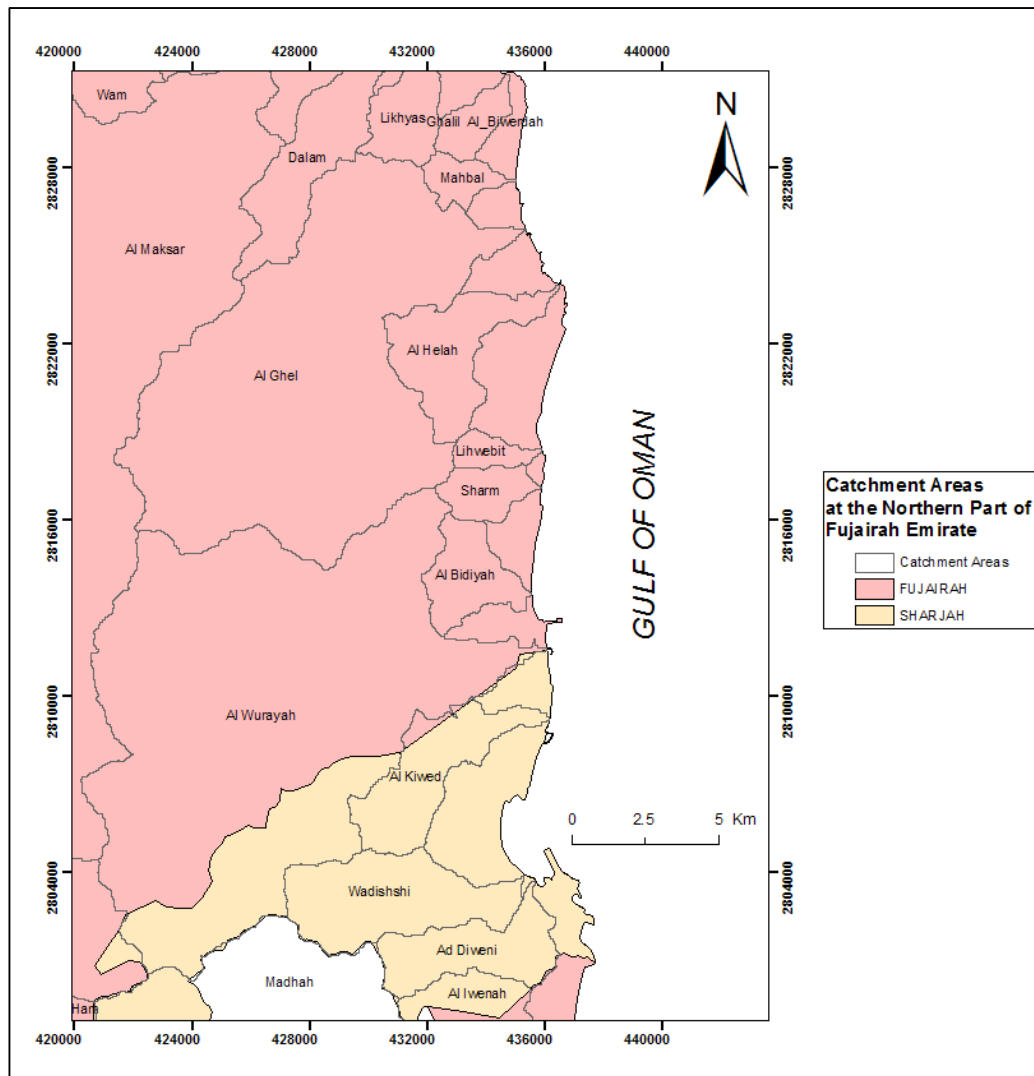


Figure 7.2 The Wadi Catchment areas in the northern part of the Fujairah Emirate (ALHOGARATY).

7.2.1 Traditional Activities

7.2.1.1 Grazing and Livestock

The historic presence of bedu camps in the Wadi Wurayah Area is ancient and like all areas of the Hajar Mountains, goats were the main domestic livestock used for milk, meat and skins. Donkeys were used as beast of burden until the availability of four-wheel drive vehicles. Since 1981 there have been no goat camps within the protected area even during winter. Goats observed in Wadi Wurayah are now feral and are not owned by anyone.

Even though the area had permanent settlements in the past, the majority of its residents used to migrate between the mountain area and the coastal area depending on the trading season to look after their palm plantations and to engage in fishing activities as well.



Picture 7.1 Gazing activities existing at the study area.

As previously mentioned, the Wadi Wurayah area is no longer exploited by goat herders; these days they keep their herds in fenced farms where they can be supplied

better quality food at lower costs. However, there are still remnant populations of domestic goats and donkeys which have become feral over time. These animals can pose problems to the freshwater environments; goats frequently defecate in water bodies, increasing ammonia and nitrate levels. Goats graze vegetation indiscriminately unlike the more selective gazelle and Tahr. As a result, certain plant species decrease which may be important food sources for native wildlife. Combined with drought and the disappearance of the potential predators (Arabian leopard, Caracal) due to human persecution, grazing by domestic and feral livestock threatens the natural vegetation.

Should this combination of stresses on the environment continue, the vegetation may not recover, ultimately leading to the total extirpation of the native flora, the disappearance of the endemic herbivore fauna (Arabian Tahr, Mountain Gazelle, gerbils, birds, insects) and their predators (Arabian Leopard, Caracal, Balford's Fox, Wild Cat, Raptor, etc.).

7.2.1.2 Honey Collection

Wadi Wurayah has been, and continues to be, used by local inhabitants from Masafi and Bidiyah for wild honey gathering. According to locals, this activity has become more intensive during the years with the arrival of Asian experts and the accessibility to the site due to a tarmac road that leads to the waterfall. The activity starts in May when honey gatherers search for wild honeycomb in crevices and caves that they will collect in autumn. The local honey gathering corporation is ruled by ancestral codes such as “the first to find a honey comb in spring marks the site with his proper sign/code (stone pile, rock, carving, branches) and nobody touches it”.

The quality of honey is said to be exceptionally good. This honey is not sold in the open market, as the gatherers and purchasers know each other and deals are done in private. Honey gatherers have generally had their production sold even before collection. Some of this production is given to dignitaries rather than sold. (Tougen et al 2006). Despite their ancient use of the area, honey collectors frequently put fire

to the vegetation in the Wadi, either to clear and facilitate the access or to kill the snakes they fear.



Picture 7.2 Farms used in commercial way as a source of honey production

7.2.2 Agriculture

Presence of permanent water resources in Wadi Wurayah has allowed a light variety of agriculture (mostly date palm cultivation) as the presence of abandoned oases. There is currently no more extension for agricultural activities within the upper areas. Intensive farming is concentrated in the down – stream part of the Wadi, near the coast. Number of farms took place near the dams and Wadis outlet in the area. Most of these farms dealing with Palm other are dealing with crops. Some of these could be seen as at the vicinity of the Wadis with yellowish dead trees especially near the coastline due to the phenomena of the salt-water intrusion (Figure 6.2).

Compared to other parts of the country, there is little ground water extraction within Wadi Wurayah catchment area and other neighbor Wadis. On the other hand, the

water overexploitation is one of the environmental stresses facing this area because of the extension of agricultural lands into the eastern part (downstream) of the Wadis.



Picture 7.3 One of the agricultural activities recorded in the study area.



Picture 7.4 Palm Trees has been recorded in the study area in different farms.

Water resources development within the catchment is currently restricted to agriculture, municipal well fields supplying the main towns of Khor Fakkan and Bidiyah and a bottled water factory near Bidiyah. The latter has suffered from a severe deterioration in its source quality over recent years, probably due to saline intrusion. However, because of gravity and topography, any deterioration of the general water situation in the lower catchment and coastal plain can never have a hydrological impact on either the surface or groundwater resources of the mid-upper catchment.



Picture 7.5 The impact of the salt-water intrusion recorded in different locations specially at farms located near the coast.

7.2.3 Commercial Activities

Most of the commercial activities are related to small shops dealing with food, beverages, fruits and vegetables, clothes, stationeries, traditional coffee shops and gas stations. The most famous settlement is the old market opposite to the narrow beach road of Bidiyah village.

Fishing represents another main activity to the residents at this area due to the role of the old harbor of Bidiyah.

In the vicinity of Bidiyah, there is a municipality rubbish dump resulting from these activities and it is important to find a new landfill for each city located at the northern part of Fujairah Emirate to be at the down stream away from the groundwater level and the existence of the good quality water.

7.2.4 Industrial Development

Near the border between Bidiyah and Khor Fakkan a small industrial area was recognized at the both sides of the entrance of the Wadi. Most of these activities are small and intermediate industries such as wood stores, car repairing workshops, steel and aluminum format workshops in addition to one factory dealing with the production of cement concretes (Figure 7.3).

In the vicinity of Bidiyah, there is a dump site for cement blocks, building site materials and other waste materials resulting from the above mentioned industries.



Picture 7.6 The Old Souk represents one of the commercial activities in the area.



Picture 7.7 Industrial activities at the coastal plain.



Picture 7.8 Quarry represents one of the environmental stresses in the study area.



Picture 7.9 The mineral water factory located at the outlet of Wadi Wurayah.

Abandoned quarries at the parking located above the main waterfall and in Wadi Shi to the South and Wadi Zikt to the north of the area show that the region was prospected for construction material production. The development of crushers, the construction of infrastructure (buildings, roads, etc.) and the nuisance (traffic, dust, noise) associated with it have a severe and irremediable impact on the site.

7.2.5 Residential Activities

It is easy to recognize different villages vary from small to big sizes according to the number of residence. These villages are located mainly at the vicinity of Wadis near the down streams to make use of the available groundwater. Mostly the residential areas consist of traditional houses, schools and governmental buildings (Figure 7.1).

A new artificial island (Pearl Island) located between Bidiyah and Al-Aqqa started to be constructed since 2006, which will represent the first residential resort at the Gulf of Oman coast.

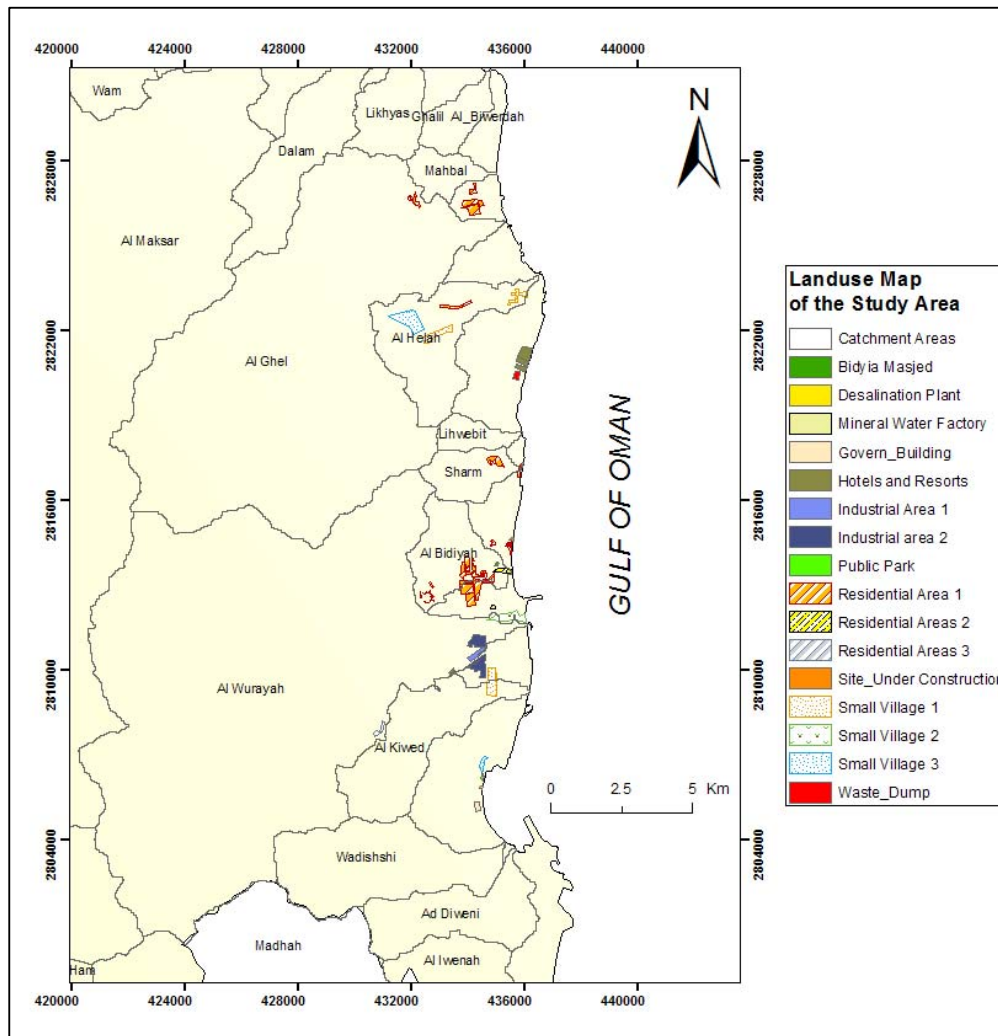


Figure 7.3 The land use map shows the distribution of the human activities in the area of the study (ALHOGARATY).

Most of these Residential areas are located in the narrow coastal plain of the area of the study, while small amount especially villas are located on at the foot of the mountainous ridges. However, since the area near the coast has already been developed, the impact on the pristine habitat upstream is negligible, with the exception of the introduction of feral cats and dogs and the trapping/poisoning of wild carnivores that are attracted by domestic livestock and garbage.



Picture 7.10 A new Artificial island in the Bidiyah Village.



Picture 7.11 Constructions are one of the booming activities in the study area.



Picture 7.12 Domestic wastes needs to be monitored.



Picture 7.13 Liquid and solid wastes dumped with illegal way.



Picture 7.14 Private tanker pollutes the an area by dumping untreated water



Picture 7.15 Vegetation flourished following the track of untreated water.



Picture 7.16 One of the villages located inside the Wadi Wurayah.



Picture 7.17 Small village near the outlet of the Wadi Wurayah at the coastal plain.

7.2.6 Tourism

7.2.6.1 Cultural Heritage

So far, 13 old settlements, two graveyards and one petroglyphs (rock carving) site were identified in the area (Figure 7.4). Two cairn sites were also discovered by WWF and EWS in the north part of the surveyed area. Peter Hellyer in Hornby (1996b) mentions the existence of old settlements starting to date to the Third Millennium BC in the vicinity of this Area. Cairns and tombs have been discovered on the northern edge of the Shimayliyyah Mountains. Stone-walled buildings from the Third Millennium BC have been excavated in Bidiyah and long collective graves from the Second Millennium BC were discovered in Bidiyah. A number of sites from the Iron Age (1,300-500BC) were identified at the study area in the mountains (Wadi Zikt, Wadi Asimah, and Wadi Awhalla) and on the coast (Dibba and Bidiyah). Since an extensive settlement continued without interruption for several thousand years until recent times, it is difficult to date the sites with precision without further archaeological investigations and proper excavations. The most famous archeological site is the Bidiyah Old Masjed.



Picture 7.18 The Bidiyah Old Masjed.

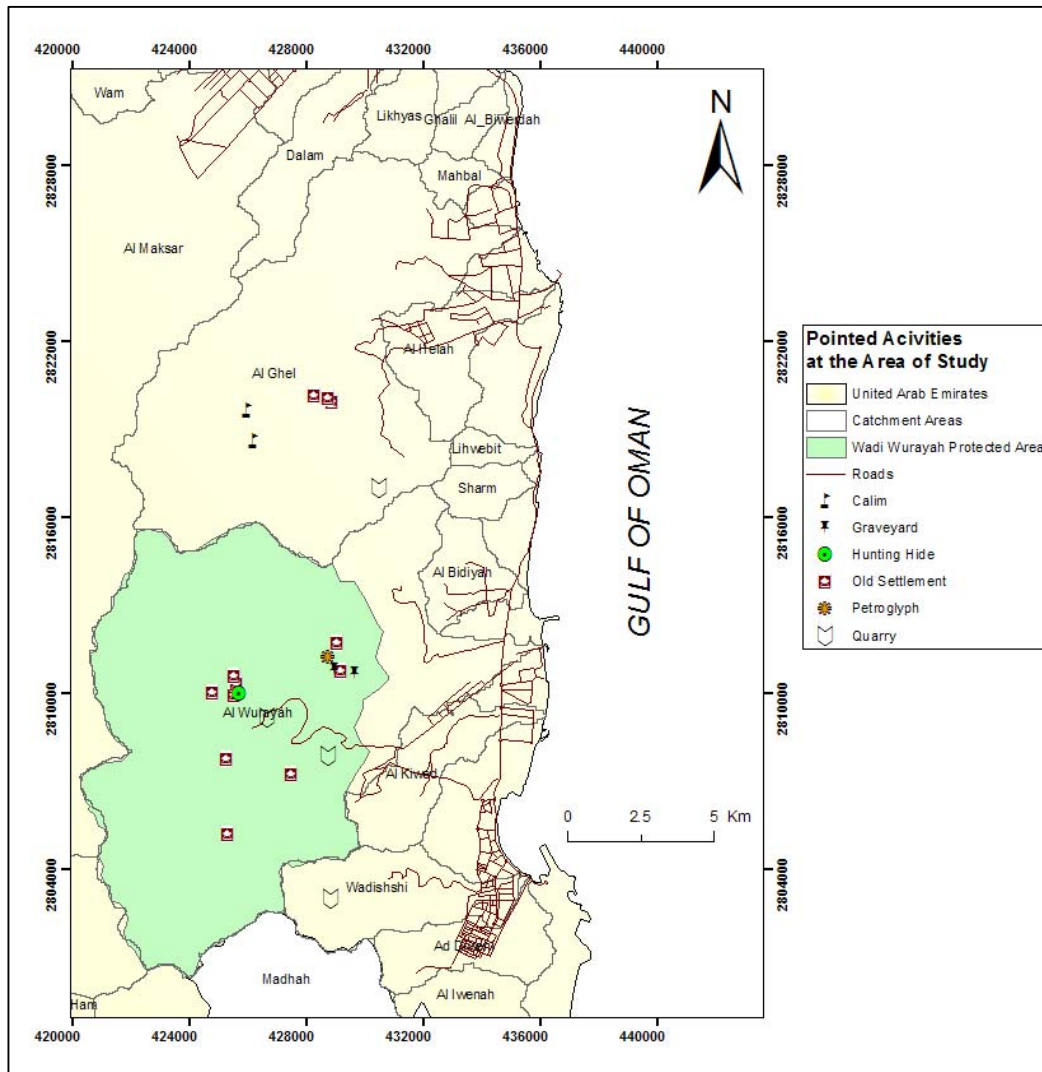


Figure 7.4 The map shows the recorded activities at the protected area and its surrounding (ALHOGARATY).

7.2.6.2 Hotels and Resorts

The area between Dibba in the north to the Bidiyah in the south passed by huge construction activities focused on hotels and resorts to make use of the spectacular natural merge between the coast and the mountains at that area. There is a different hotel's range of classes between 2-5 stars hotels in addition to small compounds of villas that represents 3 stars resorts.



Picture 7.19 Hotels and resorts are strong infrastructure for tourism industry in the study area which could support the futuristic ecotourism activities.

7.2.6.3 Camping, Safari Trips and Recreation

During summer and winter the touristic activities do not stop in this area where a lot of tourists are visiting these areas for camping and enjoying the nature beauty of this area. The touristic companies are organizing safari trips to spread the knowledge of the Arabian life in traditional style. The Emirate of Fujairah is supporting such type of entertainment and it has established an Authority of Tourism in order to improve this industry.

Until now Wadi Wurayah is the mostly visited for its permanent waterfalls and the beauty of the scenery. Locals and expatriates alike visit Wurayah, mostly during the week-end for a daily visit or an evening picnic. The access has been considerably facilitated during the last 10 years by the construction of a tarmac road in 1996 that leads to the main water fall. According to locals, in the past the distance from Bidiyah to the main waterfall was up to 8 hours, with access sometimes denied due to water levels. In arid lands, permanent water pools are a local tourist attraction and are

heavily frequented during week ends. As a result, the sites are often degraded with litter deposits, fires and vehicle tracks.



Picture 7.20 Many tourists are interesting to visit the Wadis for recreation.

Despite the Federal Law, Wildlife Hunting and poaching still occur in the Wadi Wurayah Catchment area and its hinterlands which represent one of the touristic activities and the exact figures are difficult to assess. On the basis of WWF_EWS social survey, declared hunters were only 12 of which only two men admitted to still hunting today (mostly Feral Goats, Arabian Tahr, Mountain Gazelle and Sand Partridge). Honey collectors often carry a gun and will, on the occasion shoot what they encounter. Bidiyah residents accuse Masafi residents and vice versa of coming to poach Tahrs and Gazelles in Wadi Wurayah. Hunting and poaching by non-residents is also suspected.

Hunting activity is higher during late spring and summer which is the permanent water bodies and are more predictable and vulnerable. When the temporary water pools are dry and wildlife that visit the permanent water bodies are more predictable and vulnerable. Caracal foxes and the elusive Arabian leopard are subject to

persecution and still trapped, poisoned or shot in prevision of their predation on domestic livestock (poultry and goats).

According to falconers, some workers expect to ameliorate their revenue by trapping any raptor species and trying to sell them to local falconers. Since the species is not favorable for falconry, the Bonelli Eagle was probably mistaken for a falcon, refused by the falconer and released by trapper who could not sell it.

7.2.7 Roads and Tracks

Roads are important for developing any human society. This is why the government of Fujairah provides large investment for the road construction near the coastline at the foothills of the mountains and the downstream of the Wadis or near the upstream. There are very few roads and tracks within the area connecting the villages with the small cities at the northern part of the Fujairah Emirate and also give an easy access to the two main dam in the area Al-Wurayah and Zikt.



Picture 7.21 Roads network support the development of the study area.

At Wadi Wurayah catchment area the government constructed a tarmac road which is leading from Bidiyah to the dam and to the main waterfall. The tarmac road crosses the main Wadi course and several of its branches. The tarmac road ends with a parking area situated above the main waterfall and tourist can climb down to the main waterfall. There are tracks that lead into the other Wadis, 1 km deep into some, and lead to areas of interest such as the main waterfall.



Picture 7.22 Tarmac road to Wadi Wurayah and its dam.

Habitat degradation represents another environmental threat. As a consequence of the construction of the tarmac road in 1996 and the citation of the site in tourist and off-road guides, the site has increasingly gained considerable recognition and has therefore been considerably degraded with tagging (painting) of the rocks, continuous and wide spread litter deposits and burning of native vegetation during the last couple of years. A large input of organic items of rubbish, including food and sewage, can increase nitrates and phosphates in the water therefore increasing algae and leading to eutrophic conditions a decrease in Dissolved Oxygen and survival of feral animals (goats, donkeys, dogs) and Red Foxes that compete with indigenous wildlife.

Graffiti is prevalent around the main waterfall pool, although this is predominantly an aesthetic problem; the aerosol paints used are toxic and usually discarded in the area when empty.

7.2.8 Socio-economic Settings

The eastern coastal communities in general and particularly in the areas between upstream and downstream of the most Wadis, the local community suffers from a number of negativities due to a shortage of resources and lack of skills caused by some factors such as:

- Isolation of the mountainous areas in the past from other cultures, which creates an isolated Bedouin society that, depends completely on the natural environments without trying to improve or initiate new conditions.
- The economic system depends mostly on the agricultural and other seasonal activities while a less focus is directed to trades and other activities.
- Due to the imbalance and inconsistency of natural resources in the region, the increase of population and lack of economic supplements increases adds pressure on the natural ecosystems which threaten the environment in the area specially at the hinterlands.
- The concentration of the development projects in the centers of cities while it is slow in villages and in the hinterlands, whose community are, is greater need than the ones in the centers, particularly those projects related to health, education and infrastructure.

7.3 Proposed Biosphere Reserve for Sustainable Environment

Arid areas are a fragile ecosystem and have the potential of being degraded due to impacts arising from unsustainable human use, so the rationale and reasons for zoning is to harmonize conservation, grazing, tourism, enterprise development and settlement. The areas are basically an open access property resource and zoning accompanied by by-laws will help bring sustainability and it is a sure way of fodder conservation 'in situ' for use during the dry season.

7.3.1 Zoning Considerations

In delineating use zones, the study considered the current status of the following variables for the area of the study:

1. Wildlife distribution and densities,
2. Seasonal waters use and distribution,
3. Settlement patterns and areas of exceptional resource values/tourism/culture etc
4. Resource conflict hotspots.

7.3.1.1 Core Zone

It also called preservation zone and it is referred to as the low intensity use zone. Best areas under this category have good wildlife habitat, water, and are usually the best places to find wildlife.

The purpose of this area is to be strictly protected and preserved in its pristine state and should only be used for wildlife conservation.

No developments should be allowed here. No major road network is allowed except well maintained game drive tracks to discourage off-road driving. There is no settlement and no grazing allowed here. Low impact tourist activities like bush walking may be allowed but no facilities may be allowed here. Continuous monitoring is done to maintain the integrity of the area.

7.3.1.2 Buffer Zone

It is also a low intensity multiple use zone. It is the transition zone between the core area and the high use or settlement area. The area is mainly used as dry season grazing area.

The purpose of this area is to be used as dry season grazing for livestock and as a wildlife dispersal area.

No settlements are allowed in this area. Communities are allowed to carry out cultural activities such as harvesting of herbal medicines on a controlled basis and to do rituals

with higher impact on the environment than those allowed in the core zone. Activities practiced here should be compatible with the core zone's conservation objectives. The zone will also deter encroachment into the core zone. Development of road network for tourism and other forms of access is allowed. Temporary campsites may be allowed but no permanent tourism facility may be erected here.

7.3.1.3 Transition Zone

It is the High intensity use zone which includes the lands outside the core and buffer zones but within the conservancy.

The purpose of this area is to provide the local community with space to practice their economic activities such as settlement areas, schools, shopping centers, as well as grazing.

On the other hand, to minimize environmental degradation, communities should be educated on better land management practices, soil and water conservation, and alternative income generation activities.

The permitted developments should emphasize activities that have minimal negative impact on the natural resource base/environment but yield benefits for the community. Communities to be advised on appropriate land and livestock management strategies to minimize environmental degradation enhance productivity and improve livelihoods.

According to what has been mentioned previously regarding the environmental stresses due to the distribution of the human activities at the area of the study. There will be a need to manage that area in sustainable manner in the light of the concept of the Man and Biosphere program released by the UNESCO since 1995 to foster sustainable economic and human development.

This proposed Biosphere Reserve will:

- Support rich biodiversity and natural hydro-ecological processes;
- Build and increase the local government capacity in designing and managing core, buffer and transition zones;

- Provide valuable environmental services and socio-economic opportunities to local communities; and
- Serve as a replicable example of sustainable ecosystem management for the UAE and the region.

Integrating the information representing the land use, human activities and inhabitant distribution and trends with the information about the declared protected area of Wadi Wurayah and its hinterlands which represent the presence of the fauna and flora at the area, a biosphere reserve consisting of the following three zones can be proposed in the light of UNESCO's MAB concept.

- The core area, which is the securely protected site for conserving biological diversity and monitoring minimally, disturbed ecosystems. Here it will be presented by the officially declared protected area of Wadi Wurayah and it should be used for undertaking non-destructive research and other low-impact uses (Figure 7.5).
- The area surrounding the protected area between the upstream and the downstream of the Wadi Wurayah and Wadi Zikt Catchment areas can represent as a buffer zone, which will be used for co-operative activities compatible with sound ecological practices, including environmental education, recreation, ecotourism, and applied and basic research. In other word, it is the area where only activities compatible with the conservation objectives can take place
- A flexible area of co-operation located at the downstream of the most remaining Wadis to the coastline of the Gulf of Oman which contain a variety of agricultural, economic, industrial activities, settlements and other uses will be proposed to be a transition area where sustainable resource management practices are promoted and developed in which local communities, management agencies, scientists, non-governmental organizations (NGO), cultural groups, economic interests and other stakeholders work together to manage and sustainably develop the area's resources.

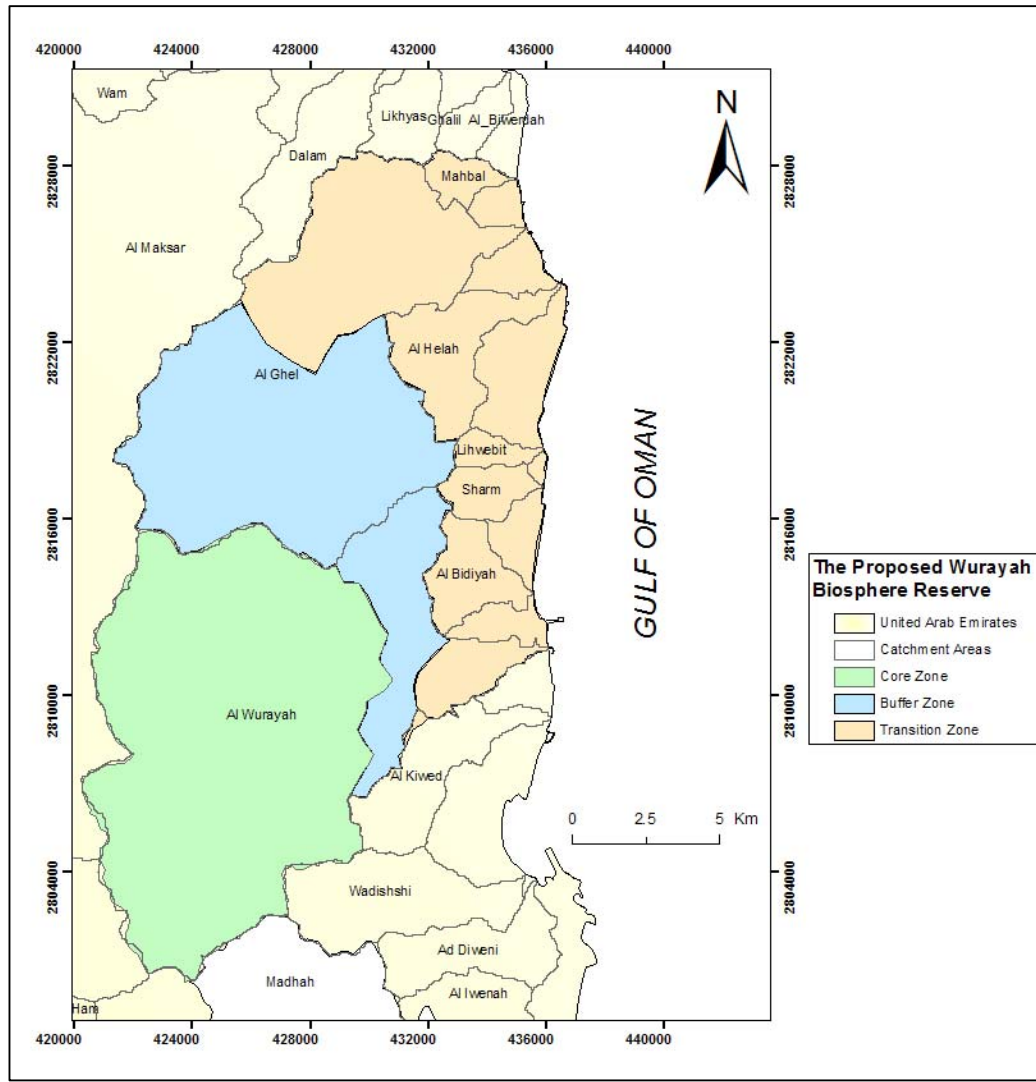


Figure 7.5 The boundaries of core, buffer and transition zones for the proposed Wurayah Biosphere Reserve (ALHOGARATY).