Fourth International Conservation Workshop

for

The Threatened Fauna of Arabia

Final Report

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Fourth International Conservation Workshop

for

The Threatened Fauna of Arabia

Endorsed by the IUCN/SSC Conservation Breeding Specialist Group

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Additional copies of Fourth International Conservation Workshop for the Threatened Fauna of Arabia can be ordered from the Breeding Centre for Endangered Arabian Wildlife; PO Box 24395; Sharjah; United Arab Emirates.

2003

Fourth International Conservation Workshop

for

The Threatened Fauna of Arabia

Contents

Arabian leopard

Section 1

Arabian Leopard Workshop Group

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The traditional CAMP and PHVA processes have been essential in developing the tools and network, which are available today. Together with CBSG, it was decided that it would be of little benefit to follow the same process again this year. In light of this, a new format for the workshop was followed and several presentations outlining the present situation within the region were presented as a general update from each region:

Towards a Conservation Strategy (Urs Breitenmoser)
Status Report: Oman (A. Spalton)
Status Report: Saudi Arabia (A. Khoja)
Status Report: UAE (C. Gross)
Status Report: Yemen (D. Mallon)
Captive Breeding Program (K. Budd)

These presentations were followed immediately by the first group discussion. The Ungulate and Leopard groups combined for a brief review and discussion of the current situation of each species in Arabia. A concern expressed during the previous CAMP workshop (2002)

was that specific people have information that pertains to both groups which is invariably ignored or forgotten once the groups have separated. The objective therefore for combining the groups was to try to ensure that information for each species is made available to all of the groups.

It was agreed to start the proceedings by reviewing the recommendations made by the group last year (CBSG, 2002).

Review: Actions 2002

Goal 1 – Gain information on distribution and ecology of the Arabian leopard

The CatSG online library has been established and can be accessed through www.ibackup.com (*user name:* catsglib, *password:* catsglib). Reference material can be submitted to catsgkib@kora.ch as either printed material or in a digital format (PDF preferred).

An online chat/discussion group has been formed and can be viewed at http://groups/msn.com/ArabianLeopard. The information is freely available for anyone to read but in order to submit and/or download any of the material you will need to register with the group's administrator.
All CAMP workshop delegates who attended the 2002 workshop were invited to join, however, several have failed to do so. Although the chat group does not yet function as it was initially intended, the general consensus seems to be that the means are in place for the rapid exchange and sharing of information. Unfortunately those participants that have submitted pieces have become de-motivated due to the lack of feedback.

The survey report of the KSA from the area north of Madina has not yet been published and as a result the author (Mr. Johanny) was reluctant to make the information available at the workshop.

The relevant pages from the Baboon survey conducted in KSA have been received and were distributed to all interested parties. They are included in appendix 1
No specific training material was produced during the past year not were any ranger workshops held.

There was some debate as to the benefits of hosting a training program that requires funding, organization and a limited time frame (hours or days) compared to actual fieldwork. There is no substitute for exposure to actual field techniques and it was agreed that rangers (Saudi Arabia) would ultimately learn more by spending a week in the mountains with an experienced survey team (Oman).

Goal 2 – Coordinated conservation strategy

Three of the four countries have submitted draft copies of the status reports to the IUCN Cat Specialist Group. Saudi Arabia, the only country not to have prepared a status report, will attempt to submit their report as soon as possible.

It was agreed that a deadline would be enforced on the 3rd day of the workshop. After which the responsibility would fall to each country to publish their Status Reports.

The UAE and Yemen failed to form their National Leopard Task Force. Oman has done so and the group met in September 2002 for the first time. Saudi Arabia was not included in the recommendation, as a group is already in place; however this group has not met since the last CAMP in February 2002.

Goal 3 – Secure prey base of the Arabian leopard

All available information about livestock management should be contained within the Status Reports from each country.

The summary of the diet research conducted in Oman has still not been published. A. Spalton will follow up.

Goal 4 – Define target groups for public awareness campaigns

No posters were produced in the UAE or Yemen.

In Oman four information panels have been produced and will be incorporated into a mobile display as well being displayed at several permanent locations; a pamphlet is also being produced. There is also some information about the Arabian leopard available on the following website www.oryxoman.com.
None of this material has been shared with the other range states due primarily to the absence of the Arabian Leopard Action Groups within the other countries. This material will be made available through the Arabian Leopard chat group website.

Goal 5 – Secure legal protection for the Arabian leopard

Copies of the GCC agreement were received or distributed before the workshop; however, Mr Fwaz Al-Baroudi was able to contact Mr Hani Tatwany during the course of the workshop. Copies (Arabic) were consequently made available and distributed to all interested parties.

It was agreed that the CAMP process and Status Reports have produced a good base from which to launch an appeal to the Federal Governments. This should be a top/down approach however the person/parties who can carry the message up still need to be identified.

Arabian Leopard CAMP 2003 – List of Actions

Old tasks (from 2002 action list)

	Action	Who	To whom	Deadline
	Finalise draft versions of country status reports (see list for details)	Authors (see list)	U. Breitenmoser	31.05.03
	Review reports and report back	All authors	First author	30.06.03
	Submit final version of reports	First authors	U. Breitenmoser	31.07.03
	Produce special issue of Cat News	Cat SG	-	30.08.03
	Produce inventory of educational material for each country	UAE: Jane Oman: Andrew KSA: Abdulrahman Jordan: Myyas Kuwait: Ohoud Yemen: Jane	Jane	31.05.03
	Simplified taxon data sheet for cats	Kevin & Jane		With final report
	Produce taxon data sheets for all cats in each country	All	To Jane and Kevin	31.10.03
	Prepare presentation on the extant cats for each country (PP, 15 min)	All		CAMP 2004

Special issue of CAT NEWS: **Status and Conservation of the Arabian Leopard**
Contents:
Preface
Introduction: Cat Specialist Group
Status report Oman: J. A. Spalton, Ali Salim Bait Said
Status report UAE[1]: J. A. Edmonds, K. J. Budd, C. Gross
Status report Yemen: D. Mallon, K. Nasher, N. Thowabah
Status report KSA: J. Judas, Abdullrahman Khoja, Ahmed Boug
Report Jordan: Myyas Qarqaz, Mohammad Abu Baker
Captive breeding programme: K. J. Budd, C. Gross, Abdulazis al Midfah, and others?
Review of the taxonomic and genetic status and the historical distribution: J. A. Spalton and others.
Framework for a conservation strategy: U. Breitenmoser and others.

Felid wish list 2004:

Day one: Arabian leopard update
Day two: Communication, Education and human dimension workshop
Day three: Review of cat species in all countries of Arabia

[1] Include questionnaire survey by Moaz Sawaf

A Framework for the Conservation of the Arabian Leopard

Conclusions form the Arabian leopard workshop at the 4th Conservation Assessment and Management Plan (CAMP) meeting, Sharjah, UAE, 23 – 26 February 2003

The Arabian leopard (*Panthera pardus nimr*) is a distinct sub-species of the leopard that originally roamed throughout the mountains of the Arabian Peninsula (Spalton et al., this issue). Today, the range of the Arabian leopard is fragmented into about 12 local occurrences in four countries (see status reports in this issue), of which probably none can be considered viable in the long-term. In the IUCN/SSC Red List, the Arabian leopard is listed as *Critically Endangered*. The causes for the decline identified during the four Sharjah CAMP meetings so far are the "classical" threats to the existence of large carnivore populations, namely (1) direct persecution, partly as a consequence of predator-livestock conflicts, (2) prey deletion, and (3) habitat deterioration and fragmentation. The status, the dynamic, and the mechanisms driving the decline are, however, not understood in detail for most of the extant populations. All experts from the range countries agree that the leopard has become rare, but nobody knows how fast the decline is and how much time is left to safe this unique leopard.

Urgent action is needed, both *in situ* and *ex situ*. A conservation-breeding programme was established some years ago (Budd et al., this issue) in order to secure the survival of the taxon at least in captivity. The conservation-breeding programme has made remarkable progress within a few years, but there are at present only two centres that produce leopards, and both the number of individuals and the captive gene pool are still small. To secure the survival of the wild populations, the legal protection must be implemented, local people must be informed and educated, and the habitat and the wild prey availability must be improved. But where and how should we start? In many cases, not even the distribution of the leopards is known in detail (see status reports in this issue). The only field project, so far, is ongoing in Oman [REFs]. In all other countries, a serious field survey is the point to start with.

Scenario for the recovery of the Arabian leopard

It is, however, not too early to think about a possible scenario for a recovery programme, including the reintegration of captive bread leopards in the wild population. The captive breeding programme will need some more years to be able to provide animals, but the preparations in the field will need at least the same amount of time. The ultimate aim of a recovery programme will be to restore a viable, self-sustaining population of the Arabian leopard in the wild. It is, at least from today's perspective, not realistic to propose the recovery of the leopard in the total of its historical range; too many of its original space has been taken over by the humans. What we propose is a meta-population approach, so to create a chain of populations along the coastline mountains of Arabia, which have, through habitat corridors, a limited exchange of individuals to allow the survival of each population and the maintenance of a sufficient genetic diversity. This seems, for most of the extant occurrences, not unrealistic. What is needed to reach this goal is (1) to stop the decline of the existing populations, (2) improve the habitat and the prey base within and **between** the areas occupied (so connect the populations through corridors), and (3) reintroduce leopards from the captive breeding programme to booster or connect the now isolated populations.

The framework

In regard to the conservation of the extant wild populations and the long-term recovery of the Arabian leopard, actions need to be taken on different levels, this is on the range level (historic or potential distribution area of the taxon), on the country level (the countries being the most important management units), and finally, in the field, with each of the remaining occurrences. Clearly, the institutions and individuals in charge of the actions are not the same on each level and differ from country to country. During the CAMP workshops organized yearly by Animal Management Consultancy (AMC) and hosted by the Environment and Protected Areas Authority, Sharjah (EPAA), a group of experts from all range countries and international organizations has formed with the aim to advance the conservation of the Arabian leopard. This group can develop a conservation strategy on the range level and facilitate action on the national or population level. However, most of the actions needed must be implemented and carried out on the country level and fall within the responsibilities of the national institutions. A strong commitment of the organizations in charge in each of the range countries is therefore crucial for the successful conservation of the Arabian leopard. To conserve an elusive and conflict-ridden species in a harsh environment as the mountain ranges of Arabia is not only an ambitious, but also a very difficult, complicated and long-lasting mission. In order to facilitate the definition of tasks and the co-ordination and the co-operation between the three levels and the different institutions involved, the expert group has, during the CAMP workshop 2003, developed a framework. The group recommends that the following documents should be drafted and implemented on the three levels identified:

Range level

Aim: To develop a **Conservation Strategy** for the restoration of a viable meta-population of the Arabian leopard in its historical range.
Responsible institutions: International expert group at the CAMP workshops.

Actions: To develop a GIS model with the potential (historic) and present distribution of the Arabian leopard including, as available, information on habitat and prey distribution, and corridors and barriers between the extant populations.

To develop a long-term strategy for the recovery of a viable population, considering meta-population considerations, including the need for habitat restoration and prey enhancement, the creation of additional protected areas, conflict resolution, and local re-introductions.

To create and maintain a captive population allowing the conservation of 98% of the known genetic diversity of the *Panthera pardus nimr* sub species.

To analyze the genetic status of each of the extant wild populations.

Country level

Aim: To develop a **National Action Plan** considering the present status of the Arabian leopard in the respective country (see status reports) and the recommendations of the global conservation strategy.

Responsible institutions: National authorities (GOs), national leopard board.

The national actions plan should address the following topics:

- Continued monitoring system for the leopard and its main prey species.
- Legal status and law enforcement.
- Identification of threats and resolution of conflicts.
- Public awareness, education, and involvement of local people.
- Creation of new protected areas if needed, and implementation of management plans for the existing protected areas.
- Cross-border co-operation where wild populations are shared by neighbouring countries.
- Incorporation of the national breeding facilities into the co-operative conservation breeding programme for the Arabian leopard, according to the recommendations of the Arabian leopard breeding group.

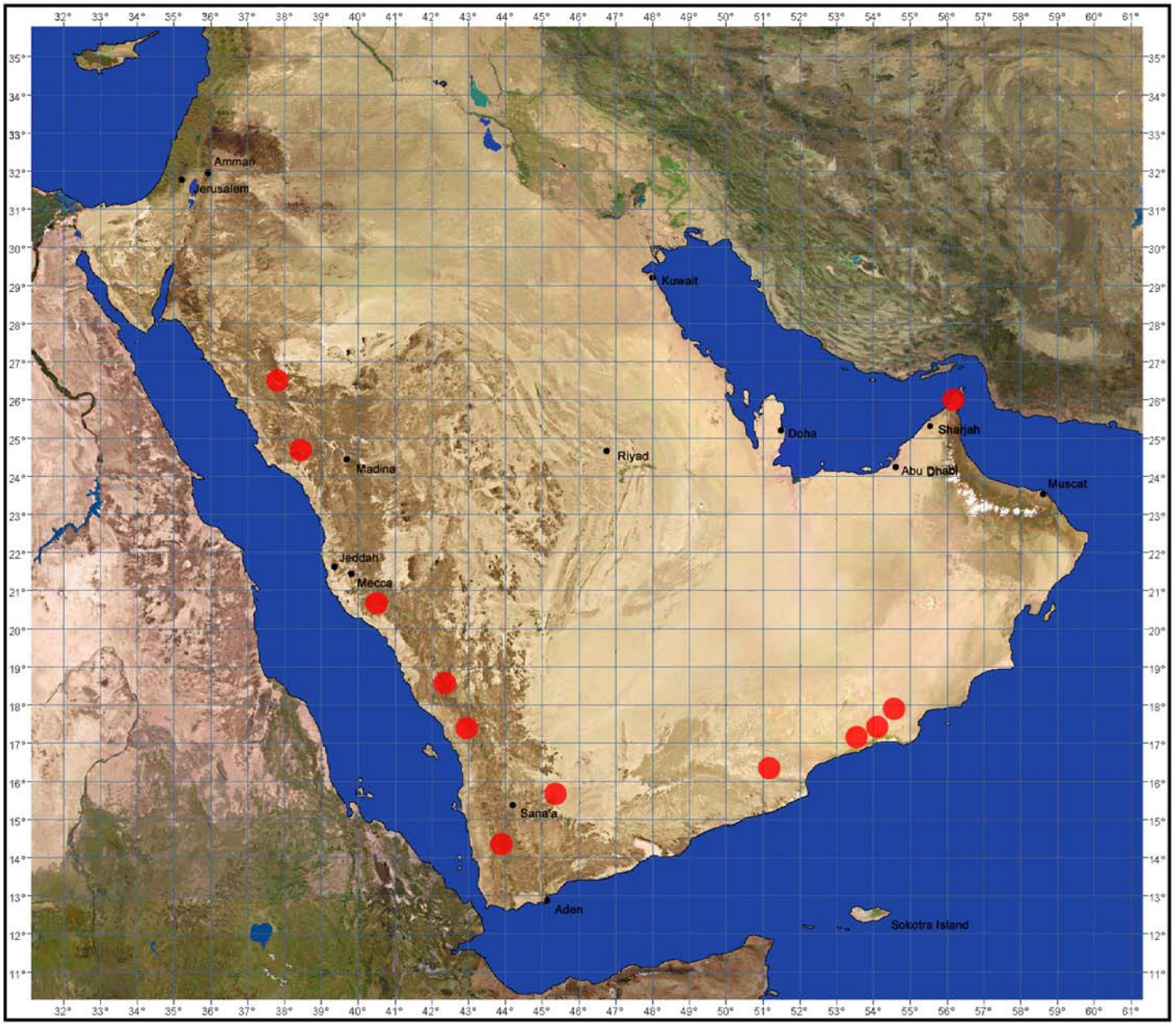
Population level

Aim: To outline **Field Procedures** (techniques, manpower, analysis and reporting) to secure field surveys to establish the status of each population and it's continued monitoring.

Responsible institutions: Wildlife research or management institutions, NGOs.

On the population level, the following actions should be carried out:

- Execute the surveys and the monitoring as identified in the national action plans in order to establish the population size and trends.
- Produce relevant ecological data (land tenure system, prey use and prey availability, etc.).
- Establish co-operation with local people in order to solve the conflicts identified.
- For the captive population, the following actions are required:
- Active participation of the captive breeding facilities in the all range countries in the captive breeding programme and start breeding in Yemen and KSA.
- Secure the capacity needed to host the captive population long-term (enlarge or improve the existing facilities, incorporate new institutions into the programme).



Panthera pardus nimr

N

0 100 200 300 400 500 Kilometers

Mapping by GIS Unit
Environmental Research & Wildlife Development Agency
PO Box 45553
Abu Dhabi
United Arab Emirates

Arabian ungulates

Section 2

UNGULATE GROUP REPORT

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Introduction

The ungulate group reviewed the status of all species across their range in the Arabian Peninsula and carried out a formal IUCN Red List process for each one. It was decided that there was no need to complete a new series of taxon data sheets, as most of the information collated at previous CAMP meetings remained relevant. It was reaffirmed that the long-term goal should be to ensure the presence of viable populations of all species in a representative sample of former habitats and range.

Arabian Oryx *(Oryx leucoryx)*

Distribution and Status

Oman

The free-ranging population in the Arabian Oryx Sanctuary numbered 100 males and 6 females in early 2003. This represents a sharp decline due to poaching. Numbers were c.450 in 1996 when poaching began. After a lull that followed the involvement of the military in wardening the AOS, poaching resumed in 1999. 36 (1:35) animals were caught and returned to captivity at Yalooni. In total 91 (4:87) are now present at Yalooni. There

are about 70 oryx at the Omani Mammal Breeding Centre near Muscat. Further releases into the wild have been halted until the problem of poaching has been solved. At least 200 are estimated to have been illegally caught for sale and exported and there is believed to be a high level of mortality during transport. A number of proposals to are under active consideration to improve the situation.

Saudi Arabia

About 500 in Mahazat as Sayd (fenced reserve of 2900 sq km) and around 200 free-ranging in Uruq Bani Ma'rid reserve (5500 sq km). The UBM population is now at or near carrying capacity. Proposed reintroduction at Harrat al Harrah has not yet been implemented. 223 captive animals are held at NWRC, Taif, and 11 at KKWRC. There are an unknown number in private collections.

United Arab Emirates

According to a questionnaire survey, there are >3400 animals in collections, about 90% of them in Abu Dhabi. Some collections that did not respond also hold oryx. Preliminary consideration is being given to the feasibility of establishing a free-ranging population in the UAE.

Bahrain

55 (22:33) at Al-Areen Wildlife Park including 15 (4:11) free-living on Hawar Island.

Jordan

Eight oryx remain out of the original 10 taken to Wadi Rum Protected Area as part of a release programme. These are still in the pre-release enclosure as no suitable area of habitat within the PA has been identified. Possible release sites between Wadi Rum PA and the Saudi border are being investigated. Around 60 oryx are left in the fenced reserve at Shaumari (a further 14 were lost recently during floods).

Syria

There is a managed population of 26 animals at Al Talila Reserve, 10 of which originated from Shaumari. A release programme is planned but the implementation schedule is unknown.

Qatar

At least 300 are in managed collections.

Kuwait

Kuwait Institute for Scientific Research is conducting a feasibility study for reintroduction including identification of areas of suitable habitat for a release. It is hoped to have a free-living population in 2-3 years time.

IUCN Red List Assessment
Endangered EN C1

Issues

Poaching Continuing poaching of the Oman population has caused a considerable setback to the reintroduction project and is the most important current issue. The potential market for wild-caught oryx is a long way from saturation. There was a long discussion on this very complex situation and in summary it was agreed that action was needed both in Oman to prevent poaching and in the UAE to prevent the sale of oryx. Several initiatives are currently under discussion.

Co-ordination Committee for the Conservation of Arabian Oryx (CCCAO). Meetings have already been held with representatives from range states. The secretariat is based at ERWDA and its first task will be to formulate a budget for the secretariat and a business plan. The intention is to focus on important conservation issues and a priority will be development of a Regional Action Plan for the Arabian oryx. CCCAO will also co-ordinate and collate information on practical issues concerning reintroduction. There was unanimous support for the role of CCCAO as the leading body co-ordinating Arabian oryx conservation.

Reintroduction Efforts to return the species to the wild have slowed overall, in view of the setback to the programme in Oman. Both populations in Saudi Arabia have increased in number, though there was some debate as to the extent that the oryx in the fenced reserve at Mahazat as-Sayd qualified as a wild population. In Uruq Bani Ma'arid the population is at or near carrying capacity. One of the main limiting factors there is the availability of shade and the provision of artificial trees was suggested as a possible way of increasing the amount of shade. Further release sites in Saudi Arabia are being sought. Jordan has oryx in a pre-release enclosure but an area of suitable habitat has yet to be identified. Projects in Syria, Kuwait and UAE are at varying stages of planning. It is possible to envisage the future establishment of an Empty Quarter metapopulation encompassing expanded populations from Uruq Bani Ma'arid and Oman and releases in the UAE. However, before this can be realised the long-term problem of protecting animals outside protected areas will need to be solved.

Captive breeding Reproduction of oryx in captivity is not a problem and at the global level, many are produced each year. In fact, in most European and American collections newly born males are routinely put down at birth. Given the small number of founders of the original captive herd, appropriate management to maximize the genetic diversity of individual captive herds is important. At a local level some collections are excellently managed whereas others are not, with inbreeding and no proper management. In theory exchange of animals should be a straightforward process and this takes place between some collections but this is not the case with all. It was agreed that a Regional Oryx Studbook was desirable, and that this would be best accomplished by starting with an informal meeting of collection managers. Declan O'Donovan offered to organise a meeting to discuss this and other issues surrounding oryx. The remit of the group would be extended to all ungulates.

Publicity and Awareness Websites have been set up in Saudi Arabia (www.arabianoryx.com), Oman (www.omanoryx.com), and Abu Dhabi (www.whiteoryx.org).

Oryx leucoryx

N

0 100 200 300 400 500 Kilometers

Mapping by GIS Unit
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Gazelles

Taxonomy

Results of genetic analyses at KKWRC were now available and showed the following:

Gazella gazella contains 6 genetically distinct subspecies units:
G. g. farasani (Farasan Islands, Saudi Arabia)
G. g. cora *(most of the Arabian Peninsula)*
G. g. muscatensis (originally known only from the Batinah region of Oman. Current status unknown; one captive herd at Al Areen WP)
G. g. erlangeri (specimens from unspecified localities in northern Yemen. Possibly also in adjoining areas of SW Saudi Arabia. Current status in the wild unknown. One captive herd at KKWRC)
G. g. gazella (northern part of the Arabian Peninsula - outside the CAMP workshop area
G. g. acaciae (c.20 animals in a tiny area in Wadi Araba, outside the CAMP workshop area

Gazella saudiya is a valid species, but systematic analysis of all supposed captive specimens showed they are either mis-identified or hybrids.

Gazella bilkis is not specifically distinct.

Gazella [subgutturosa] marica is a very distinctive taxon that may be more appropriately placed with *G. leptoceros*. Research on this is continuing.

IUCN Red List Assessments

Mountain gazelle *Gazella gazella*	Vulnerable	*VUA2ad
G. g. cora	Vulnerable	*VU C1
G. g. farasani	Vulnerable	VU D1+2
G. g. muscatensis	Data Deficient	*DD
G. g. erlangeri	Data Deficient	DD
Arabian sand gazelle *Gazella [s] marica*	Vulnerable	VU C2a(i)
Saudi gazelle *Gazella saudiya*	Extinct	*EX
Yemen gazelle *Gazella bilkis*	Extinct	EX

*Notes:
G. gazella. The status of the northern subspecies, Palestine mountain gazelle *(G.g. gazella)* has deteriorated sharply. Numbers have fallen from c. 10,000 to 3,000 by early 2003, a decline of 70% and qualifying for Endangered (EN A2ad). When calculated together with the decline in the mountain gazelle population in Oman, this results in a change in status for the species to Vulnerable (VU A2ad).

Although the decline in Oman is not quantified, a conservative estimate suggests that overall numbers of *G.g. cora* are below 10,000 mature individuals, and so a status of VU C1 is appropriate.
G.g. muscatensis: IUCN Red List regulations stipulate that a change to a lower category of threat should be made after conditions have been met for five years, so this taxon will still be listed as CR for the time being.

G. saudiya: On the same basis, this species remains EW for the time being.

Species Accounts

Reem or Arabian Sand Gazelle (*Gazella [subgutturosa] marica*)

Saudi Arabia

Four populations are known, all in protected areas. Total numbers estimated at 2650-3050. Two are in the north: Harrat al Harrah (600-1000) and Al Khunfah (<50 in 2002 aerial census). The population in Al Khunfah has declined due to poaching and animals straying out of the reserve. At Mahazat as Sayd the reintroduced population now numbers <1000 and at Uruq Bani Ma'arid also <1000. Captive: 1500 in an enclosure at Qasseem and around 360 at KKWRC, Riyadh. All these have either been genetically screened or are in the process of screening. An unknown number are in private collections.

Oman

In Dhofar, they occur from Mughshin north to the Saudi border and west to the Yemen border. Ranger records indicate some increase. Also from the Oman sector of the Empty Quarter south to the edge of the Arabian Oryx Sanctuary. Recently disappeared from the Barr al Hikman area and no longer occur in the Wahiba Sands. Size of the overall population is unknown but certainly declining due to poaching. A poacher caught with *reem* in May 2002 was recently sentenced to 5 years in jail.

Yemen

There are a few old records from the edge of the Empty Quarter. Current status is unknown. Some records from the 1980s-1990s of gazelles in eastern Yemen may refer to this species.

United Arab Emirates

A population occurs in the Umm al Zumur area and may number up to 1000. Fences along roads etc fortuitously enclose much of the area occupied. The area also contains plantations that the gazelles utilise for feeding. ERWDA will be funding a study of these gazelles probably involving radio-collaring. A large number, possibly 15,000, occurs on Sir Bani Yas Island but these were not included in the overall total as they probably have mixed origins. Captive herds are held at BCEAW and in many private collections.

Bahrain

The total population is >1,700. There are 100 in the reserve section of Al Areen WP, 350-400 on Hawar Island, 450-500 in the Protected Area in the south of Bahrain Island and c.700 on Umm al Nasan Island.

Jordan

Believed to still occur in the NE desert, but thought to be very few in number. Captive: 4 males are held at Shaumari and females are needed. KKWRC agreed to provide these, subject to satisfactory screening.

Syria

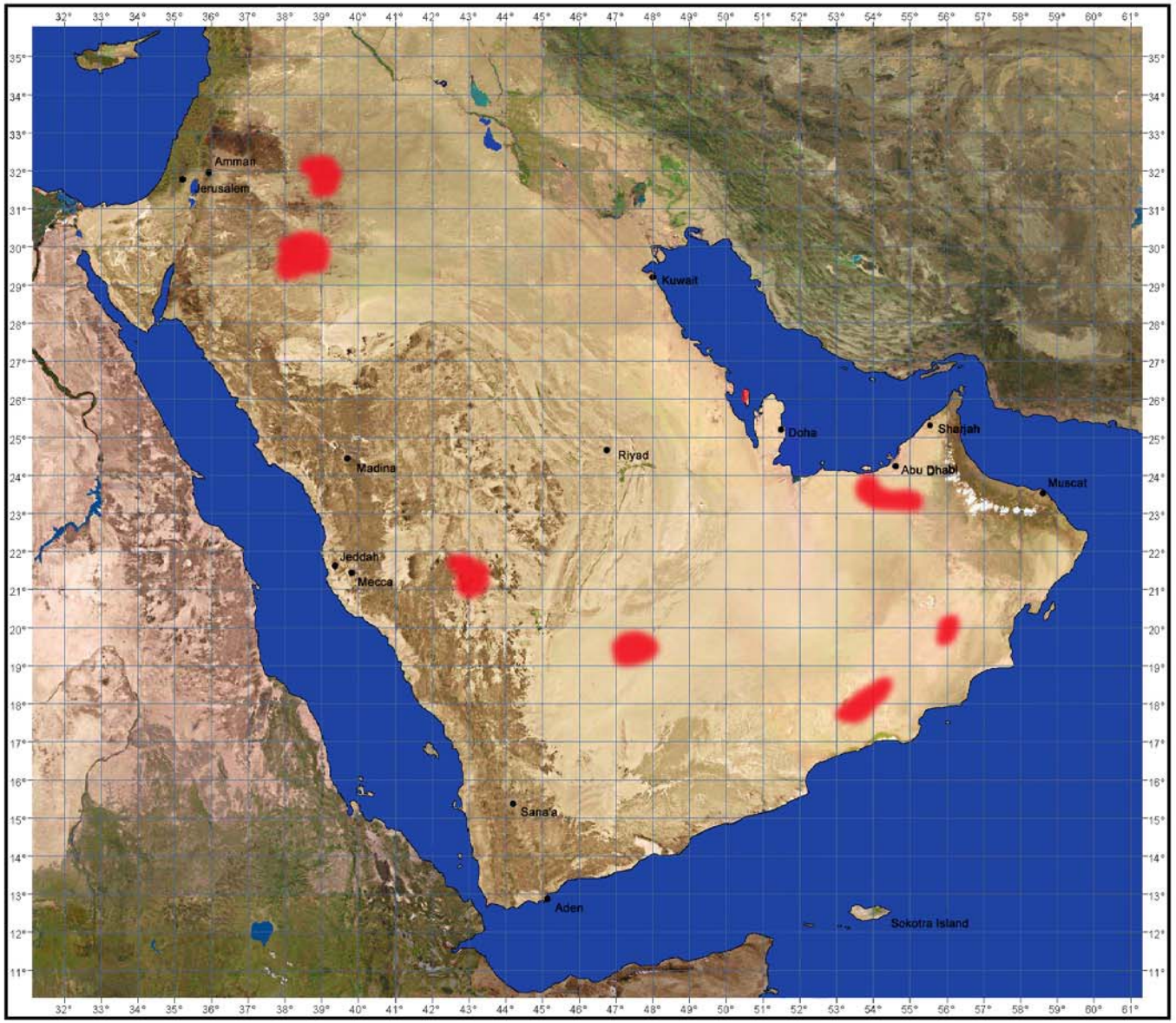
Some occur in the Jordan-Syria border area. Around 100 were estimated to occur there (Habibi 1998). .
A small captive herd of around 20 animals is present, including animals donated by KKWRC.

Qatar

No wild population. A captive herd is held at Al Wabra.

Kuwait

There are old records of occurrence from Kuwait but they have been extinct in the wild for many years. A feasibility study for reintroduction is currently under way by the Kuwait Institute of Scientific Research and it is hoped to begin a release programme within 2-3 years.



Gazella (subgutturosa) marica

N

0 100 200 300 400 500 Kilometers

Mapping by GIS Unit
Environmental Research & Wildlife Development Agency
PO Box 45553
Abu Dhabi
United Arab Emirates

Idmi or Mountain Gazelle (*Gazella gazella*)

Saudi Arabia

G.g. farasani: Farasan Islands (possibly up to 1000)
G.g. cora: There are reintroduced populations in the Ibex Reserve (240-300), and Uruq Bani Ma'arid (150-200). Scattered populations occur in Al-Khunfah protected area and down the western side of the country from Gulf of Aqaba to the Yemen border. Population size is small, possibly only c.100. Captive: About 240 at KKWRC, including 49 (22:27) *G. g. erlangeri*.

Oman

All idmi in Oman are regarded simply as *G. gazella*. The main population occurs in the Arabian Oryx Sanctuary and numbered 10,000-15,000 in 1996-98. These are subject to heavy poaching at present with around 4 reported cases per week. The area is also suffering from a drought that is presumed to have an adverse effect on the gazelles. Idmi are also known in Dhofar, including Jebel Samhan, the mountains around Muscat, Eastern Hajjar as far as Sur (including some in Wadi Sareen Tahr Reserve), and on Masirah Island. A few occur in the mountains northwest of Muscat, the area where *G.g. muscatensis* formerly occurred.

Yemen

There are scattered records from the western escarpment and localities in southern Yemen. No details of current distribution and numbers are available. Records from eastern Yemen during the 1990s may refer to idmi.

United Arab Emirates

Only known in the Jebel Ali area but the precise origin of these gazelles is unknown. Escapes from captivity may include animals of mixed parentage. Gazelles of mixed origins are known to have escaped or been released in places. Captive: There are herds at BCEAW, Sharjah; in Abu Dhabi (around 5,500), and in many private collections.

Bahrain

Al Areen Wildlife Park has 40 *G. g. cora* and 27 *G. g. muscatensis*. These are managed separately.

Jordan

Formerly occurred in the northern part of the Jordan Valley but there have been no records since 1986.

Qatar

A captive population is held at Al Wabra.

Issues and Recommendations

Taxonomy The confusion over taxonomy has largely been cleared up as a result of the work carried out at KKWRC and this clarifies a problem that had previously held up conservation efforts. Captive herds should be managed on this basis and existing herds screened to identify them genetically. KKWRC will provide the facility for genetic screening, subject to a small charge (protocol in 2002 CAMP report). All gazelles must be genetically screened before release into the wild.

Status. The species as a whole is considered Lower Risk but individual populations are subject to a variety of threats. Efforts should be made to identify wild populations of *G.g. erlangeri* and *G.g. muscatensis*. Farasan gazelle *G.g. farasani* has a restricted range on the Farasan Islands and is susceptible to chance events. It is advisable to establish reserve populations at KKWRC and Al Areen WP. The current status of gazelles in Yemen is unknown and surveys are urgently required.

Hybrids. Many collections, especially in the UAE contain animals of mixed origins that have interbred. Some of doubtful origin are known to have escaped or been released. Goitered gazelles (*G. subgutturosa subgutturosa*) are imported from Iran and chinkara (*G. bennettii*) from Pakistan or NW India. Idmi cross with chinkara and dorcas gazelle, and chinkara and dorcas will also hybridise. Fortunately, idmi and reem do not interbreed, but hybridisation between reem and the nominate form of goitered gazelle is a potential problem. At least one sighting of a Thomson's gazelle (*G. thomsoni*) running wild in the UAE was reported; this species does not interbreed so there should be no long-term problem.

Poaching. Both reem and idmi are subject to poaching in Oman and if unchecked will threaten their status.

Gazella gazella

N

0 100 200 300 400 500 Kilometers

Mapping by GIS Unit
Environmental Research & Wildlife Development Agency
PO Box 45553
Abu Dhabi
United Arab Emirates

Caprins

Arabian Tahr (*Hemitragus jayakari*)

Status and Distribution

Oman

Occurs sporadically in the Western and Eastern Hajar Mountains from Musandam almost to Sur. The population was estimated at 2,000 several years ago. Animals in Wadi Sareen Tahr Reserve are well protected by a permanent ranger force. A mobile ranger force in the rest of the Hajjar Mountains gives some protection to other populations. The habitat is difficult to access giving some protection from hunting though limited poaching at water holes has been reported. Tahr are not viewed as a desirable item in the live capture trade or private collections.

United Arab Emirates

Surveys and camera trapping by ERWDA on Jebel Hafit have shown an increase in the number of sightings, including one of a pregnant female and tracks of female and young. It is unclear whether this reflects an increase in the local tahr population or a movement of animals from the Oman side of the mountain to reach water and greenery around a new tourist development.
Work is being carried out on the possibility of making Jebel Hafit a protected area.

Captive

About 25 are held at the Oman Mammal Breeding Centre and 14 in Abu Dhabi. A small number previously held in Al Ain Zoo have recently been transferred elsewhere. Some tahr are held in small private collections in the Buraimi area.

IUCN Red List Assessment
Endangered EN C2a(i)

Issues

Status Current status is based on estimates of population size made several years ago and updated estimates for Oman are urgently needed, especially if these can be linked to annual monitoring to provide an indication of population trends.

Habitat. Habitat is increasingly fragmented by roads and 4WD tracks through the mountains that improve access to remote areas and increase disturbance.

Captive breeding Only a relatively small number of animals are in captivity and the small size of the wild population makes it risky to catch many more. It is therefore important to maximise effectiveness of breeding populations by exchange and establishment of herds in facilities with expertise.

Hemitragus jayakari

N

0 100 200 300 400 500 Kilometers

Mapping by GIS Unit
Environmental Research & Wildlife Development Agency
PO Box 45553
Abu Dhabi
United Arab Emirates

Nubian Ibex (*Capra nubiana*)

Status and Distribution

Saudi Arabia

Formerly distributed widely in the mountains of western and north-central Saudi Arabia. Currently an isolated population (250-300) occurs in the Ibex Reserve, south of Riyadh and small numbers (possibly as few as 100-150) remain in the western mountains. Known localities include Tubayq **(**near the Jordanian border), north of Medina, and south of Bahar. The population in the Ibex Reserve is monitored at monthly intervals. Surveys are needed in the rest of the range, especially the area north of Medina, to establish current distribution and status.

Oman

Occur in southern Oman from the Huqf escarpment to Dhofar. The Huqf population was estimated at around 600 in the early 1990s and is now isolated from those farther west. In Dhofar ibex are found on Jebel Samhan, Jebel Qara, and Jebel Qamr (numbers unknown). Part of the Huqf lies within the Arabian Oryx Sanctuary and Jebel Samhan is a protected area. The rocky terrain of the Huqf escarpment hinders vehicle access and offers some protection from poaching. Preliminary results of research on the Huqf ibex including radio-tracking data were presented to the III World Conference on Mountain Ungulates held in Zaragoza, Spain, in June 2002. There is a single observation from the Hajjar Mountains of northern Oman dating from 1967 (Harrison 1968) but it has never been established whether a wild population of ibex existed there. On ecological grounds it is difficult to imagine how they would have been able to share the habitat with Arabian tahr.

United Arab Emirates

There have been occasional reports of ibex in the Hajar mountains, but these have not been confirmed, and the remarks above on the possibility of a population in northern Oman also apply here.

Yemen

Occur in the mountains of southern Yemen from Ras Fartak near the border with Oman to the Hadramaut and Shabwa (Harrison & Bates 1991; Evans 1994; Al-Jumaily 1998). No estimate of numbers is available but populations appear to be scattered and are believed to be declining.

Jordan

Found in the mountains along the eastern side of the Rift Valley from the northern end of the Dead Sea south to the Saudi border. Three main populations are known: 1. Mujib Nature Reserve and surrounding area, Madaba (Wadi Zarqa Ma'in), Karak, Ghowr Al Mazra'ah. 2. Dana NR, Faynan, Wadi Araba. 3. Wadi Rum PA south to the Saudi border. Current numbers are unknown but are believed to be declining. It has not been established whether or not these three populations are isolated from each other. Captive-

bred animals released into Mujib NR have already successfully bred with wild ibex. No further releases are planned at present.

Captive

Saudi Arabia: 10 at NWRC, Taif (originating from San Diego). Breeding of these animals has been halted until fresh genetic material is available. United Arab Emirates: 94 in Al Ain Zoo and 14 at BCEAW, Sharjah. An unknown number are in small private collections. Bahrain: 104 at Al Areen. These are reproducing successfully and good production of young is expected. Jordan: 22 adults (8:14) and 6 young.

IUCN Red List Assessment
Endangered EN C2a

Issues and Recommendations

Status The main problem is the lack of accurate information on current distribution, population size and trends. This information is urgently needed in order to accurately assess conservation status and is also likely to have relevance for the Arabian leopard. Surveys in Yemen and Saudi Arabia are priorities. Known populations are fragmented but the extent of their isolation is unknown.

Genetics KKWRC research has shown some genetic distinctiveness between animals from the Ibex Reserve in central Saudi Arabia, northwest Saudi Arabia, and Sinai. Ibex samples from other parts of the range, especially Oman and Yemen, are needed by KKWRC for comparison with those already analysed. However, several existing collections already contain animals of mixed origins including some from Sinai and Sudan.

Captive breeding. Ibex breed well in captivity, but it is important to maximise the diversity of captive populations through exchange of individuals between institutions. This finding indicates the need for care in management and future release of captive animals.

Reintroduction. The success of captive breeding makes this is a feasible option in the future, though careful consideration should be given to the advice from KKWRC concerning genetic identity of separate populations.

Capra ibex nubiana

N

0 100 200 300 400 500 Kilometers

Mapping by GIS Unit
Environmental Research & Wildlife Development Agency
PO Box 45553
Abu Dhabi
United Arab Emirates

Other Species

One wild sheep (*Ovis ammon*) was shot on Jebel Akhdar in 1967 (Harrison 1968), but as specimens are commonly imported from Iran, it seems likely in the absence of any other reports that this was an escaped (or released) exotic. A male wild goat (*Capra aegagrus*) was obtained from a local Bedouin who claimed he had obtained it as a kid near Masafi in the UAE but this too is the sole evidence of the occurrence of the species and it is doubtful whether a wild population was ever present.

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Freshwater fish and Amphibians

Section 3

Freshwater Group Report

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Freshwater Group Executive Summary

In 2003 the Freshwater Group convened for a second time. While in the previous year the status of all known species of Arabian freshwater fishes had been reviewed, seven amphibian and two terrapin species were added to the agenda in 2003. The meeting began by reviewing progress towards implementing the recommendations of 2002.

During the last 12 months, several members of the freshwater group had an opportunity to conduct field surveys, investigating the status of several endemic species, which had not been recorded in the wild for many years or even decades. *Garra longipinnis*, which was previously only known from its type specimens, was re-discovered at three sites on the Saiq Plateau in the Jabal Akhdar Mountains of Oman and one site some 40 km further to the west. After all earlier efforts at finding this species had failed, this is the first confirmation of its continued existence since 1968. The Breeding Centre for Endangered Arabian Wildlife (BCEAW) received several life specimens, establishing the first captive population. *Garra dunsirei*, a species, which occurs at only one site, was observed in underground water systems at the bottom of Tawi Attayr sinkhole in the Dhofar region of Southern Oman. Individuals were collected and a captive population established at the BCEAW. Additionally, an unknown *Garra* species was discovered in the Dhofar region of Southern Oman. While the 2002 meeting expressed concern that *Garra ghorensis*, which is endemic to the Southern Dead Sea area of Jordan, might have been eradicated, several populations were recorded, confirming that the species still exists in the wild. *Garra ghorensis* is under severe pressure from construction work and the introduction of tilapiine cichlids. In situ and ex situ conservation programmes were proposed.

The isolated Hatta population of the gobiid fish *Awaous aeneofuscus* has a low population density. Because of recent damming of wadis it is now unable to reach the sea. The normal life cycle of *A. aeneofuscus* involves marine dispersal for spawning, which raises questions as to the population's reproduction.

Legislation relevant to the conservation of freshwater biota was briefly reviewed. It is usually inadequate and in need of upgrading in the face of present levels of threats, which increase rapidly. National delegates agreed to collate the existing laws and regulations in their countries of origin and present them at the next meeting. In order to improve communication and to insure unequivocal identification of fish species it is recommended to use scientific names in legal texts. Large size freshwater fish are vital for the reproductive success of fish populations. Their collection for human consumption is of particular concern and needs to be regulated.

In the past year Dubai Municipality did not release *Aphanius dispar* into any UAE wadis, following the recommendations made at the 2002 CAMP meeting and the fact that the wadis were dry. The species was only used in farms and irrigation channels in Dubai. Although *A. dispar* usually feeds on mosquito larvae, they are also known to prey on fish larvae once mosquito larvae are no longer present, which may result in harmful effects on other species. The group recommended further investigations into problems associated with *A. dispar* introductions.

Alien species from commercial fish farms pose an increasingly serious problem for indigenous freshwater biota. The fact that exotic species are deliberately released into natural water bodies is of major concern. Tilapiine cichlids are common in many water bodies throughout the Peninsula.

The group prepared a list of captive populations of endangered fish species currently held at the BCEAW, UAE, the Royal Society for the Conservation of Nature (RSCN), Jordan, and Chester Zoo. These include *Garra barreimiae*, *G. buettikeri*, *G. dunsirei*, *G. ghorensis*, *G.*

longipinnis, *Garra* sp., *Awaous aeneofuscus* and *Aphanius sirhani*. It is suggested to compile lists of live captive populations in systematic order and to record numbers and any transfers.

The Freshwater Group undertook the task of assessing the current status of seven amphibian and two terrapin species within the Arabian Peninsula. Conservation status was assigned in line with IUCN recommendations for inclusion in the Red List. The results are documented in Taxon Data Sheets.

Problem statements compiled in 2002 regarding threats to freshwater biota were re-assessed and amended to include relevance to amphibians and terrapins. Finally, the Group proceeded with formulating a revised list of Recommendations for Conservation. Species for which there is no information as to whether or not they still exist in the wild should receive the highest priority in future surveys. These surveys should assess the status of these species and obtain additional contemporary information. These species include *Acanthobrama hadiyahensis*, *Garra mumshaqa*, *G. lautior*, *Carasobarbus exulatus*, *Bufo scorteccii* and *Bufo hadramautinus*.

A standard protocol for captive breeding should be established. It was recommended that husbandry guidelines be developed for the reproduction of animals following standard zoo/aquarium protocols.

Finally, the group discussed the importance of incorporating freshwater invertebrates into the CAMP process. As most freshwater animals have similar conservation requirements, and in an effort to arrive at an ecosystem approach towards conservation, it was deemed desirable to extend the taxonomic scope of the working group. However, the inclusion of additional taxa may take valuable time away from progressing with work already started and with opinions divided, it was recommended to postpone a decision to the next meeting, which will have to focus on formulating comprehensive conservation strategies and detailed action plans.

Progress Review

The Freshwater Group began its meeting by reviewing the nine recommendations made at the 2002 CAMP meeting, recording activities and assessing the progress, which had been made with each recommendation.

1. Field surveys

Garra longipinnis***: This species, which had previously only been known from its type specimens, was re-discovered by GF on the Saiq Plateau in the Jabal Akhdar Mountains of Oman. After all earlier efforts at finding this species had failed, this is the first confirmation of its continued existence since 1968. GF found* G. longipinnis *at three sites: 1) in permanent pools in Wadi Bani Habib, a major tributary of Wadi Mu'aydeen at an elevation of ca 1850 m; 2) in a single large pool fed by a spring, within steep terraced fields below Al-Ain village; and 3) in Wadi Manakher in the SE of the Saiq Plateau in pools below wadi bank plantations at the village of Manakher. Apart from the Saiq Plateau, he found what appeared to be* G. longipinnis *in the main wadi bank falaj at Misfah al-'Abriyeen, a site some 40 km west of Wadi Mu'aydeen. GF also confirmed that* G. longipinnis *is clearly distinct from* G. barreimiae*, a species, which is widespread in Eastern Oman and in the UAE. Each of the sites, where* G. longipinnis *was found, is associated with human cultivation and other activity. GF submitted a detailed report and concluded that at present* G. longipinnis *is not under immediate threat from its association with human populations. The Breeding Centre for Endangered Arabian Wildlife (BCEAW) now holds several life specimens.***

Garra dunsirei***: ES and DE reported that this species is still present in underground water systems at the bottom of Tawi Attayr sinkhole in the Dhofar region of Southern Oman. Individuals were collected and a captive population established at BCEAW. The group determined that the population might be at risk because of future groundwater pumping projects.***

Unidentified *Garra* species: ES recorded an unknown *Garra* species in a wadi near Hasik, in the Dhofar region of Southern Oman. Individuals were collected and a captive population established at BCEAW. ES is currently producing a report with details on the species, to be distributed to all working group members.

***Garra ghorensis*:** NH re-assessed the status of this species, which is endemic to the Southern Dead Sea area of Jordan. While during the 2002 meeting concern was expressed that *G. ghorensis* might have been eradicated, he found several populations and confirmed that the species, which is considered critically endangered, because of its limited population size, still exists in the wild. Water engineering work has changed the streambed at the type locality (Ain al-Haditha) and tilapiine cichlids have been introduced, which are likely to pose a threat to the *G. ghorensis* population. NH pleaded for in situ and ex situ conservation programmes for this species.

***Awaous aeneofuscus*:** GF reported that the isolated Hatta population of this gobiid fish is rather small. At the time of his visit, the water in the main pool was very opaque, with a high sediment load. Two new dams have been built in two of the joining tributaries to the Hatta pools in the last ten years: one at Hatta, the tallest in the UAE, and one at Hadf. This has resulted in the loss of two of the largest tributaries to Wadi Qhafi, which requires water from all three tributaries to be able to connect to the Sea. This may suggest that the Hatta population is isolated and unable to reach the sea, which raises a few questions as to the population's reproduction. The normal life cycle of *A. aeneofuscus* involves marine dispersal. DE commented that, in captivity, the overall condition of *A. aeneofuscus*

deteriorated when reared in freshwater only. The possibility that, although *A. aeneofuscus* normally uses to migrate to the sea to breed, some populations may have adapted to reproduction in freshwater. DE also mentioned that captive *A. aeneofuscus* were observed to release, as a stress response, what is assumed to be a toxin, which resulted in the death of *Aphanius dispar* in the same aquarium. DE and DB discussed the possibility of collaboration in studying the captive breeding of *A. aeneofuscus*.

2. Standardisation of field techniques

FK reported that work on a standardised field protocol for fish collection and data recording at sampling sites is still in progress.

3. Field surveys, reports and collected specimens

DE is acting as co-coordinator and collator for field survey results, reports and collected specimens. BCEAW holds the specimens collected by GF and ES in the last year.

4. Legislation for freshwater habitats and fish

UAE legislation presently only covers marine fish. The National Commission for Wildlife Conservation and Development (NCWCD) is currently preparing the first National Biodiversity Report for the Kingdom of Saudi Arabia, which will contain a chapter on freshwater fishes. This report will provide important baseline information for the development of relevant legislation. It is recommended that national delegates collate information about existing legislation in their countries, which is relevant to freshwater biota in the Arabian Peninsula, and report the results at the next meeting. Although the role of indigenous freshwater fishes as a food source is almost negligible, they are occasionally caught for human consumption. In the UAE, GF observed *Garra barriemiae* being caught by local people, who construct small dams to trap the fish. In Western Saudi Arabia, foreign workers use to catch large specimens of *Barbus apoensis.* Individuals of this size are vital for the reproductive success of the population, and the introduction and enforcement of regulations is urgently needed.

5. Inclusion of scientific names of indigenous freshwater fishes in by-laws

Local names of freshwater fishes, if existing at all, are not well established. In order to improve communication and to ensure unequivocal identification of fish species it is recommended to use scientific names in laws and regulations.

6. The use of fish in mosquito control in the UAE

YK explained that in the past year Dubai Municipality did not release *Aphanius dispar* into any UAE wadis due to the recommendation made at the 2002 CAMP meeting and the fact that the wadis were dry. *Aphanius dispar* was only used in farms and irrigation channels in Dubai and is no longer being introduced into natural water bodies. YK requested the help of the group in identifying methods to reduce mortalities of *A. dispar* during transit. It is often difficult to decide whether the *A. dispar* population is natural or whether the species has been introduced. One possible method of finding out would be through DNA sequencing. There is also a need to look at the reminder of the UAE and the Arabian Peninsula. One deleterious effect highlighted was that, although *A. dispar* will

usually feed on mosquito larvae, they are also known to prey on fish larvae once mosquito larvae are no longer present, which may result in harmful effects on other species. The group recommended that further investigations be conducted to identify the problems associated with *A. dispar* introductions.

7. Commercial Fish Farming – potential threats

Potential threats of invasive species from commercial fish farms on the indigenous freshwater fauna of the Peninsula were discussed. The guppy (*Poecilia reticulata*), a non-native species, which is farmed for the aquarium trade, has been introduced into *Garra rufa* habitats in Jordan. This is the latest addition to a long list of alien species invading natural water bodies in this country. In the UAE, there are many private ponds breeding tilapiine cichlids (including *Oreochromis mossambicus*) and salmonids. PS offered to investigate reports of fish breeding ponds and farms in Abu Dhabi. In Saudi Arabia, tilapiines from fish farms invaded many natural freshwater bodies, posing a serious threat to the indigenous freshwater fauna. The transfer of exotic diseases is an additional threat from fish farms, a problem that needs more investigations in Arabia.

8. Yemeni contribution to Freshwater Group

Last year, it was recognized that, due to the importance of Yemen to freshwater fish biodiversity, a representative be invited to attend the following years meeting. With the absence of a delegate from Yemen in 2003, the group recommends attendance next year.

9. Captive Breeding Programmes

The group determined captive populations of fish species currently held at various centres and institutes:

BCEAW:

Garra buettikeri – individuals bred, producing approx. 100 juveniles. Total captive population = 250.

Garra dunsirei – 21 individuals in founder population, which have since bred once with a total of 15 offspring. Total population = 35.

Garra barreimiae – surface-dwelling form, total population >1,000; sub-terranean form, total population = 500.

Aphanius dispar – unmanaged, in ponds, total population > 2,000.

Garra longipinnis – individuals not yet breeding, total population = 9.

Awaous aeneofuscus. – 5 adults, 2 juveniles held, total population = 7.

Garra sp. – 40 individuals in founder population (3 adults only) adults have reproduced, total population = 250.

Royal Society for the Conservation of Nature (RSCN), Jordan:

Aphanius sirhani – species held in outdoor pools (200) and aquaria (120), total population = 320.

Garra ghorensis - total population = 60.

Chester Zoo:

Garra barreimiae – subterranean form

It is suggested to compile lists of live captive populations in systematic order and to record numbers and any transfers. Dubai Municipality had kept *Cyprinion microphthalmum* for use in mosquito control, but failed to breed them. BCEAW has also yet to succeeded in breeding *C. microphthalmum*. This may be a substrate problem as adult specimens feed on their eggs and newly-hatched fry.

The Freshwater Group undertook the task of assessing the current status of seven amphibian and two terrapin species within the Arabian Peninsula. Conservation status was assigned to each of these species in line with IUCN recommendations for inclusion in the Red List (see Taxon Data Sheets).

At the 2002 Meeting, a list of threats to the indigenous freshwater fish fauna was discussed, which resulted in the compilation of problem statements regarding threats being grouped and prioritised. In 2003, the Freshwater Group re-assessed these problem statements and amended them to include a relevance to amphibians and terrapins.

The Group identified the need to include the lack of a funding sources as a problem facing conservation initiatives for freshwater environments. Basic issues concerning regional co-operation were identified:

a) There is no effective mechanism to raise funding for regional activities;

b) There is no mechanism in place for regional co-operation;

c) There is a lack of internet-based communication facilities.

Consequently, the Group proceeded with formulating the revised list of recommendations for conservation of freshwater fishes, amphibians and terrapins:

1. Conduct field surveys

Species for which there is no information as to whether or not they still exist should receive the highest priority in future surveys. These surveys should assess the status of these species and obtain additional contemporary information. Each country was discussed in turn:

UAE: All fish species surveyed and their continued existence confirmed.

Oman: *Garra longipinnis*: previously in doubt, but population status now clarified.

Yemen: *Garra mamshuqa*: this species is only known from museum specimens.

Garra lautior: only known from museum specimens.

Carasobarbus exulatus: only known from museum specimens.

Bufo scorteccii: no recent data available.

Bufo hadramautinus: no recent data available.

Saudi Arabia: *Acanthobrama hadiyahensis*: only known from museum specimens.

Jordan: The inclusion of *Aphanius dispar richardsoni* as a subspecies of highest priority for field surveys was discussed. Although they are known to exist, their numbers are seriously declining.

It was also recommended that the current status of species found only in a single or few localities be assessed as a second priority group.

2. Standardisation of field survey techniques

The recommendations were kept as last year regarding survey techniques. In addition, it was suggested that a standard form of field data documentation should be designed as well as a standard protocol for electrofishing and sampling for DNA analysis. There is a need to include standard amphibian sampling techniques. AD agreed to supply relevant information on field surveying of aquatic amphibians and reptiles.

3. Field surveys, reports and collected specimens

It was recommended that any relevant scientific publications and reports, not already mentioned in the briefing book, be brought to the attention of DE for distribution to other working group members and for inclusion in next years briefing book. It was suggested to compile additional relevant literature, including sampling of specimens, sampling for DNA analyses, design of field protocols and compilation of data relevant for population dynamics.

4. Legislation for freshwater habitats and fish

It was decided that each group member should compile a list of the laws and regulations enacted in their country of residence, which are relevant to the conservation of freshwater habitats and associated biota.

5. Inclusion of scientific names of indigenous freshwater fish in by-laws

The group decided that the recommendation should remain unchanged. In view of the importance of the Yemeni and Omani contribution to freshwater faunal biodiversity, it was emphasised again that representatives from these countries be invited to next year's meeting.

6. The use of fish in mosquito control in the UAE

It is suggested that impact assessments be carried out before decisions are made on methods of mosquito control, in order to determine the solution with the least environmental impact, though some agencies might not have time to wait for survey results. The use of Methoprene was discussed as a control agent, which prevents mosquito larvae from moulting and pupating. The group recommended an evaluation of the techniques used; the design of protocols for future control schemes and follow-up assessments of impact on the environment. A need was identified to formulate

recommendations to support pest control departments in researching the most environmentally friendly methods for vector control.

7. Standardisation of captive breeding programmes

It was suggested that a standard protocol for captive breeding be established. The group recommended that husbandry guidelines be developed for the reproduction of animals following standard zoo/aquarium protocols. With relation to the management of captive stock, it was suggested that the international standard, 7-column accounting system for zoos and aquaria be followed.

8. Ecosystem approach towards conservation management

The importance of the Freshwater Group, currently focusing on fish, amphibians and terrapins, changing to a freshwater ecosystem approach, which would incorporate invertebrates, was discussed. It was recommended that specialists from other fields of freshwater conservation attend forthcoming CAMP meetings. Sub-groups (e.g. fish, amphibians, invertebrates) should concentrate on completing the taxa sheets for their particular groups. As most freshwater animals have similar conservation requirements, and in an effort to arrive at an ecosystem approach towards conservation, it was recommended to extend the scope of the group to key freshwater invertebrates. Such key species may include the ephemeral shrimps and dragonfly species with limited distributions. The group decided to leave the subject open for discussion next year. The importance of freshwater invertebrates as indicators of habitat quality was highlighted. Some invertebrate taxa are already IUCN listed, but their status may need re-evaluation in Arabia. It was also recognized that some invertebrate species are better documented than amphibians and, as there is no alternative forum for invertebrate discussion, it would be better for invertebrate biologists to join the present freshwater group. Next year, the working group needs to focus on deciding goals and actions; therefore there was a general concern in the group that the inclusion of additional taxa may take valuable time away from progressing with work already started. In conclusion to this matter, and with opinions divided, it was recommended to reach a decision by the next meeting.

9. Establishment of a freshwater e-mail group

The group recognized the need for a system of contact between working group members and the establishment of an e-mail group was suggested. NT agreed to initiate this group in order to maintain contact amongst members of the next 12 months.

The forthcoming meeting will have to focus on formulating a comprehensive conservation strategy and detailed action plans.

Conservation Assessment Management Plan
Taxon Data Sheet

This Assessment is a **Global Assessment**

1.Scientific Name: *Bufo dhufarensis* Parker,1931

1A. Synonyms:

Scientific synonym / ambiguities	Authority (date)
Bufo andersonii	Boulenger, 1883 (misidentification)

1B. Scientific nomenclature:

FAMILY: Bufonidae
ORDER: Anura
CLASS: Amphibia

1C. CommonNames: Dhofar toad

1D.Taxonomic level: Species

Notes:

2. Habitat

Primary

Notes on Habitat: In arid environments, incl. gravel plains

Life form (plant):

Niche:

Country(ies)

Oman	Yes
Saudi Arabia	Yes
United Arab Emirates	Yes
Yemen	Yes

Distribution

Historical distrib: South east, south and south west of Arabian peninsular. South of 25 degrees latitude.

Current countries: Saudi Arabia, Yemen, Oman and UAE

Geograph. extent:

Migration regions:

3. Approximate Area of Occurrence of the taxon in and around the area of study/ sighting/ collection

(Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary encompassing all known, inferred or projected sites of present occurrence of the taxon)

Occurrence area: ca 500 000

Notes (Occurrence)

4. Approximate Area of Occupancy of the taxon in and around the area of study/ collection

(Area of occupancy is defined as the area occupied by the taxon within the 'extent of occurrence')

Area of Occupancy: > 2,001 sq km

Notes (Occupancy):

5. Number of Subpopulations in which the taxon is distributed: 1

Is there a continuous declined in subpopulations / locations? [No]

Are there extreme fluctuations in subpopulations/ locations? [No]

Percentage of population that lives in most important subarea:

Notes (subpops)

6. Habitat status: Contiguous

6A. Is there any change in the habitat where the taxon occurs? [ ] (No)

If yes, describe: Stable in Area

6B. If decreasing, what has been the decrease in Habitat area?

approximate change (%): over how many years:

Notes on decrease:

6C. If stable or unknown, do you predict a decline in habitat?

approximate change (%): over how many years:

6D. State primary cause of change:

6E. Is there any change in the quality of the habitat where the taxon occurs? [ ] (No)

Type of change: Development Notes:

6F. Notes (general) on habitat::

7. Threats

		Rank	Past	Pres	Fut	Lead to decline	Under stood	Reversible	Have ceased	Notes
						Alien species				
2.2.	Predators		N	Y	Y	Y	Y	Y	N	Tilapia
						Pollution				
6.3.	Water pollution		N	Y	Y	Y	N	Y	N	Including insecticides

Number of locations for serious threat: 0

Comment:

8. Trade: 8A. Is the taxon in trade? [ ] (Yes)

Parts in Trade: Purpose Barter Local Natl Intl Comment

8C. Which form of trade (specified form) is resulting in a perceived or inferred population decline?

9-10. Population numbers and Trends

9A. Avg. age of parents in pop: Unknown

	Total Pop.	Mature	Breeding pairs
9B. Global Population:			
10A. Recent past trends:	Unknown	Unknown	
Rate of decline (past)			
For how many years?	years	years	
10B. Will population decline?	No	No	
. Predicted Rate (future)			
For how many years?	years	years	

Notes: Population level and trends to be investigated

11. Population Data quality

11A. Estimates base on: [ ] Census or monitoring [x] Field study [x] Informal sightings

[ ] Indirect information [x] Museum records [x] Literature

Notes: [ ] Hearsay/belief

11B. Qualifiers: *Observed, Infeerred, Suspected, Estimated, or Projected*

11C. Uncertainty *95% confidence, Minimum/Maximum values, Range of Opinion; Evidentiary; Precautionary; Subjective; Hypothetical; Point estimate; or Range estimate*

12. Recent Field Studies

Researcher names, Location, Dates, Topics:
Peter Cunningham and Gary Feulner, Musandam Area, UAE/Oman - survey

Part Two

13. Status (Red List)

Prior to Workshop	Status	Criteria	Red list version
13A Global:	None		
National:			

13B. Cites: 13C. Natl wildlife Legislation:
13D. Natl Red Data Book: 13E. Intl Red Data Book:
13F. Other legislation:
13G. Protected area presence:
13H. Endorsed protection plan:

Current (Workshop)	Status	Criteria	Red list version
Global:	Least Concern		Ver 3.1
National:			

Notes:

Part Three

14. Supporting Research Is research recommended for taxon? Yes

Specify: [x] Genetic research [x] Taxonomic research [x] Life history
[x] Survey studies [x] Limiting factor research [ ] Epidemiology [ ] Trade

14A. Is Population and Habitat Viability Assessment recommended? No
Notes:

15. Management recommendations for the taxon *Specify:*

[ ] Habitat management [ ] Wild pop management [x] Monitoring [ ] Translocation
[ ] Sustainable utilization [ ] Public education [ ] Genome Resource Banking
[ ] Limiting factor mgt. [x] Captive breeding [ ] Work in local communities
Notes:

Conservation Measures Recommended	**In place**	**Needed**	**Old in place**	**Old needed**

16. Captive management recommendations *If captive breeding recommended in Q15, is it for:*

Species recovery Education Reintroduction Benign introduction
Research Husbandry Sustainable use Preservation of live genome
Notes/other:

17. Do Captive stocks already exist? Yes

17A. Names of facilities: Breeding Centre for Endangered Arabian Wildlife, Sharjah, UAE

17B. No. in captivity: Males Females: Unsexed: Total Not known?

0 0 30 30

17C. Does a coordinated species management program exist for this species? No

If yes, specify :

17D. Is a coordinated Species Management Program recomended for range country(ies)? No

If yes, specify

18. Level of captive breeding/cultivation recommended

Ongoing ex situ program intensified or increased

19. Are techniques extablished to propagate the taxon?

Techniques known for this taxon and similar taxa

20. Other Comments

Part Four

21. Sources: Arnold (1980); Balletto et al. (1985); Cunningham & Feulner (1991); Schätti & Gasperetti (1994).

22. Compilers: Freshwater Group workshop, CAMP meeting 2003, Sharjah, UAE.

23. Reviews:

Bufo dhufarensis

Mapping by GIS Unit
Environmental Research & Wildlife Development Agency
PO Box 45553
Abu Dhabi
United Arab Emirates

Conservation Assessment Management Plan
Taxon Data Sheet

This Assessment is a **Global Assessment**

1.Scientific Name: *Bufo hadramautinus* Cherchi, 1963

1A. Synonyms: Scientific synonym / ambiguities Authority (date)

1B. Scientific nomenclature:

FAMILY: Bufonidae
ORDER: Anura
CLASS: Amphibia

1C. CommonNames: Hadramaut toad

1D.Taxonomic level: Species

Notes:

2. Habitat

Notes on Habitat: Freshwater pools, rocky areas

Life form (plant):

Niche:

Distribution

Historical distrib: Hadramaut

Current countries: Yemen

Geograph. extent: Hadramaut

Migration regions:

3. Approximate Area of Occurrence of the taxon in and around the area of study/ sighting/ collection

(Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary encompassing all known, inferred or projected sites of present occurrence of the taxon)

Occurrence area: < 100 sq km

Notes (Occurrence)

4. Approximate Area of Occupancy of the taxon in and around the area of study/ collection

(Area of occupancy is defined as the area occupied by the taxon within the 'extent of occurrence')

Area of Occupancy: < 10 sq km

Notes (Occupancy):

5. Number of Subpopulations in which the taxon is distributed: 1

Is there a continuous declined in subpopulations / locations? [ ]

Are there extreme fluctuations in subpopulations/ locations? [ ]

Percentage of population that lives in most important subarea:

Notes (subpops)

6. Habitat status: Contiguous

If yes, describe: unknown

6A. Is there any change in the habitat where the taxon occurs? [ ] (Yes)

6B. If decreasing, what has been the decrease in Habitat area?

approximate change (%): over how many years:

Notes on decrease:

6C. If stable or unknown, do you predict a decline in habitat?

approximate change (%): over how many years:

6D. State primary cause of change:

6E. Is there any change in the quality of the habitat where the taxon occurs? [ ] (Yes)

Type of change Notes:

6F. Notes (general) on habitat::

7. Threats

	Rank	Past	Pres	Fut	Lead to decline	Under stood	Reversible	Have ceased	Notes
					Intrinsic				
9.9. Restricted range		N	Y	Y	N	N	N	N	

Number of locations for serious threat: 0

Comment:

8. Trade: 8A. Is the taxon in trade? [ ] (Yes)

Parts in Trade: Purpose Barter Local Natl Intl Comment

8C. Which form of trade (specified form) is resulting in a perceived or inferred population decline?

9-10. Population numbers and Trends

9A. Avg. age of parents in pop: unknown

	Total Pop.	Mature	Breeding pairs
9B. Global Population:	unknown	unknown	
10A. Recent past trends:			
Rate of decline (past)			
For how many years?	years	years	
10B. Will population decline?	unknown	unknown	
. Predicted Rate (future)			
For how many years?	years	years	

Notes: Population numbers unknown. Small.

11. Population Data quality

11A. Estimates base on: [ ] Census or monitoring [ ] Field study [ ] Informal sightings

[ ] Indirect information [x] Museum records [x] Literature

Notes: [ ] Hearsay/belief

11B. Qualifiers: *Observed, Infeerred, Suspected, Estimated, or Projected*

11C. Uncertainty *95% confidence, Minimum/Maximum values, Range of Opinion; Evidentiary; Precautionary; Subjective; Hypothetical; Point estimate; or Range estimate*

12. Recent Field Studies

Researcher names, Location, Dates, Topics:

Part Two

13. Status (Red List)

Prior to Workshop	Status	Criteria	Red list version
13A Global:			
National:			

13B. Cites: 13C. Natl wildlife Legislation:

13D. Natl Red Data Book: 13E. Intl Red Data Book:

13F. Other legislation:

13G. Protected area presence:

13H. Endorsed protection plan:

Current (Workshop)	Status	Criteria	Red list version
Global:	Critically endangered	< 10 km sq	Ver 3.1

Notes:

Part Three

14. Supporting Research Is research recommended for taxon? Yes

Specify: [x] Genetic research [x] Taxonomic research [x] Life history
[x] Survey studies [x] Limiting factor research [ ] Epidemiology [ ] Trade

14A. Is Population and Habitat Viability Assessment recommended? Yes

Notes:

15. Management recommendations for the taxon *Specify:*

[x] Habitat management [x] Wild pop management [x] Monitoring [x] Translocation
[ ] Sustainable utilization [ ] Public education [x] Genome Resource Banking
[ ] Limiting factor mgt. [x] Captive breeding [x] Work in local communities

Notes:

Conservation Measures Recommended	**In place**	**Needed**	**Old in place**	**Old needed**

16. Captive management recommendations *If captive breeding recommended in Q15, is it for:*

Species recovery Education Reintroduction Benign introduction
Research Husbandry Sustainable use Preservation of live genome

Notes/other: Translocation may reduce risk of eradication of the single population

17. Do Captive stocks already exist? No

17A. Names of facilities:

17B. No. in captivity:	Males	Females:	Unsexed:	Total	Not known?
	0	0	0	0	

17C. Does a coordinated species management program exist for this species? No

If yes, specify

17D. Is a coordinated Species Management Program recomended for range country(ies)? No

If yes, specify

18. Level of captive breeding/cultivation recommended

Initiate ex situ Program within 3 years

:

19. Are techniques extablished to propagate the taxon?

Some techniques known for similar taxon

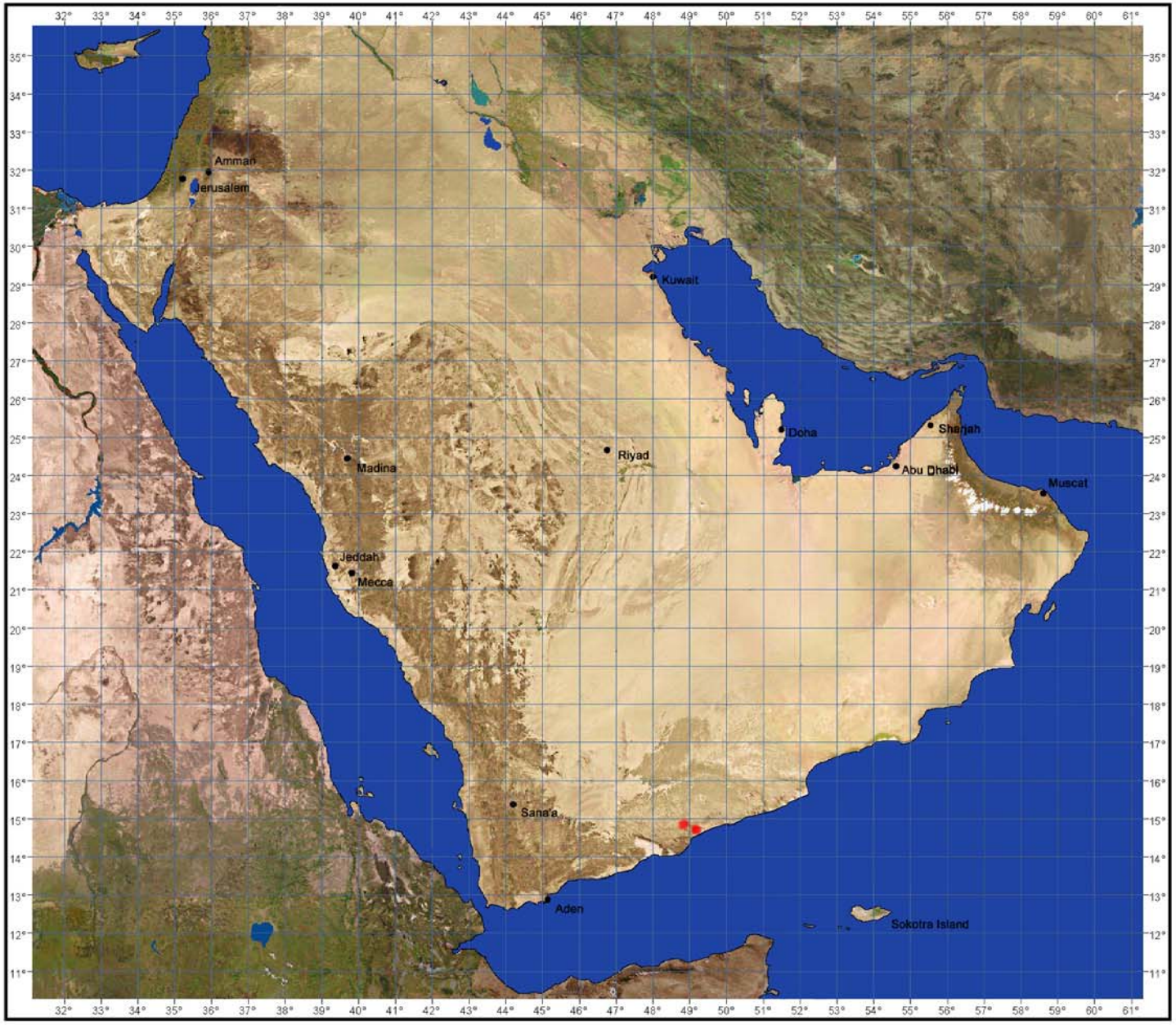
20. Other Comments*countries:*

Part Four

21. Sources: Balletto et al. (1985)

22. Compilers: Freshwater group workshop, CAMP meeting 2003, Sharjah, UAE

23. Reviews:



Bufo hadramutinus

N

0 100 200 300 400 500 Kilometers

Mapping by GIS Unit
Environmental Research & Wildlife Development Agency
PO Box 45553
Abu Dhabi
United Arab Emirates

Conservation Assessment Management Plan
Taxon Data Sheet

This Assessment is a **Global Assessment**

1.Scientific Name: *Bufo scorteccii* Balletto & Cherchi,1970

1A. Synonyms: Scientific synonym / ambiguities Authority (date)

1B. Scientific nomenclature:

FAMILY: Bufonidae
ORDER: Anura
CLASS: Amphibia

1C. CommonNames: Scortecci's toad

1D.Taxonomic level: Species

Notes:

2. Habitat

Notes on Habitat: Mountain pools and wadis

Life form (plant):

Niche:

Distribution

Historical distrib: Central Yemen

Current countries: Yemen

Geograph. extent: 1 location in Yemen highland

Migration regions:

3. Approximate Area of Occurrence of the taxon in and around the area of study/ sighting/ collection

(Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary encompassing all known, inferred or projected sites of present occurrence of the taxon)

Occurrence area: < 100 sq km

Notes (Occurrence)

4. Approximate Area of Occupancy of the taxon in and around the area of study/ collection

(Area of occupancy is defined as the area occupied by the taxon within the 'extent of occurrence')

Area of Occupancy: < 10 sq km

Notes (Occupancy):

5. Number of Subpopulations in which the taxon is distributed: 1

Is there a continuous declined in subpopulations / locations? [ ]

Are there extreme fluctuations in subpopulations/ locations? [ ]

Percentage of population that lives in most important subarea:

Notes (subpops)

6. Habitat status: Continuous

If yes, describe:

6A. Is there any change in the habitat where the taxon occurs? [ ] (Yes)

6B. If decreasing, what has been the decrease in Habitat area?

approximate change (%): over how many years:

Notes on decrease:

6C. If stable or unknown, do you predict a decline in habitat?

approximate change (%): over how many years:

6D. State primary cause of change:

6E. Is there any change in the quality of the habitat where the taxon occurs? [ ] (Yes)

Type of change Notes:

6F. Notes (general) on habitat::

7. Threats

	Rank	Past	Pres	Fut	Lead to decline	Under stood	Reversible	Have ceased	Notes
					Intrinsic				
9.9. Restricted range		N	Y	Y	N	N	N	N	

Number of locations for serious threat: 0

Comment:

8. Trade: 8A. Is the taxon in trade? [ ] (Yes)

Parts in Trade: Purpose Barter Local Natl Intl Comment

8C. Which form of trade (specified form) is resulting in a perceived or inferred population decline?

9-10. Population numbers and Trends

9A. Avg. age of parents in pop: unknown

	Total Pop.	Mature	Breeding pairs
9B. Global Population:	unknown	unknown	unknown
10A. Recent past trends:			
Rate of decline (past)			
For how many years?	years	years	
10B. Will population decline?	No	No	
. Predicted Rate (future)			
For how many years?	years	years	

Notes: Unknown numbers in population. Population is small

11. Population Data quality

11A. Estimates base on: [ ] Census or monitoring [ ] Field study [ ] Informal sightings

[ ] Indirect information [x] Museum records [x] Literature

Notes: [ ] Hearsay/belief

11B. Qualifiers: *Observed, Infeerred, Suspected, Estimated, or Projected*

11C. Uncertainty *95% confidence, Minimum/Maximum values, Range of Opinion; Evidentiary; Precautionary; Subjective; Hypothetical; Point estimate; or Range estimate*

12. Recent Field Studies

Researcher names, Location, Dates, Topics:

Part Two

13. Status (Red List)

Prior to Workshop	Status	Criteria	Red list version
13A Global:	None		
National:			

13B. Cites: 13C. Natl wildlife Legislation:

13D. Natl Red Data Book: 13E. Intl Red Data Book:

13F. Other legislation:

13G. Protected area presence:

13H. Endorsed protection plan:

Current (Workshop)	Status	Criteria	Red list version
Global:	Critically endangered	<10 km sq	Ver 3.1

Notes:

Part Three

14. Supporting Research Is research recommended for taxon? Yes

Specify: [x] Genetic research [x] Taxonomic research [x] Life history
[x] Survey studies [x] Limiting factor research [ ] Epidemiology [ ] Trade

14A. Is Population and Habitat Viability Assessment recommended? No

Notes:

15. Management recommendations for the taxon *Specify:*

[x] Habitat management [x] Wild pop management [x] Monitoring [x] Translocation
[ ] Sustainable utilization [x] Public education [x] Genome Resource Banking
[ ] Limiting factor mgt. [x] Captive breeding [ ] Work in local communities

Notes:

Conservation Measures Recommended	**In place**	**Needed**	**Old in place**	**Old needed**

16. Captive management recommendations *If captive breeding recommended in Q15, is it for:*

Species recovery Education Reintroduction Benign introduction
Research Husbandry Sustainable use Preservation of live genome

Notes/other: Translocation may reduce threat of eradication of the single known population

17. Do Captive stocks already exist? No

17A. Names of facilities:

17B. No. in captivity:	Males	Females:	Unsexed:	Total	Not known?
	0	0	0	0	

17C. Does a coordinated species management program exist for this species? No

If yes, specify

17D. Is a coordinated Species Management Program recomended for range country(ies)? No

If yes, specify

18. Level of captive breeding/cultivation recommended

Initiate Captive breeding programme within three years

19. Are techniques extablished to propagate the taxon?

Some techniques known for taxon or similar taxon

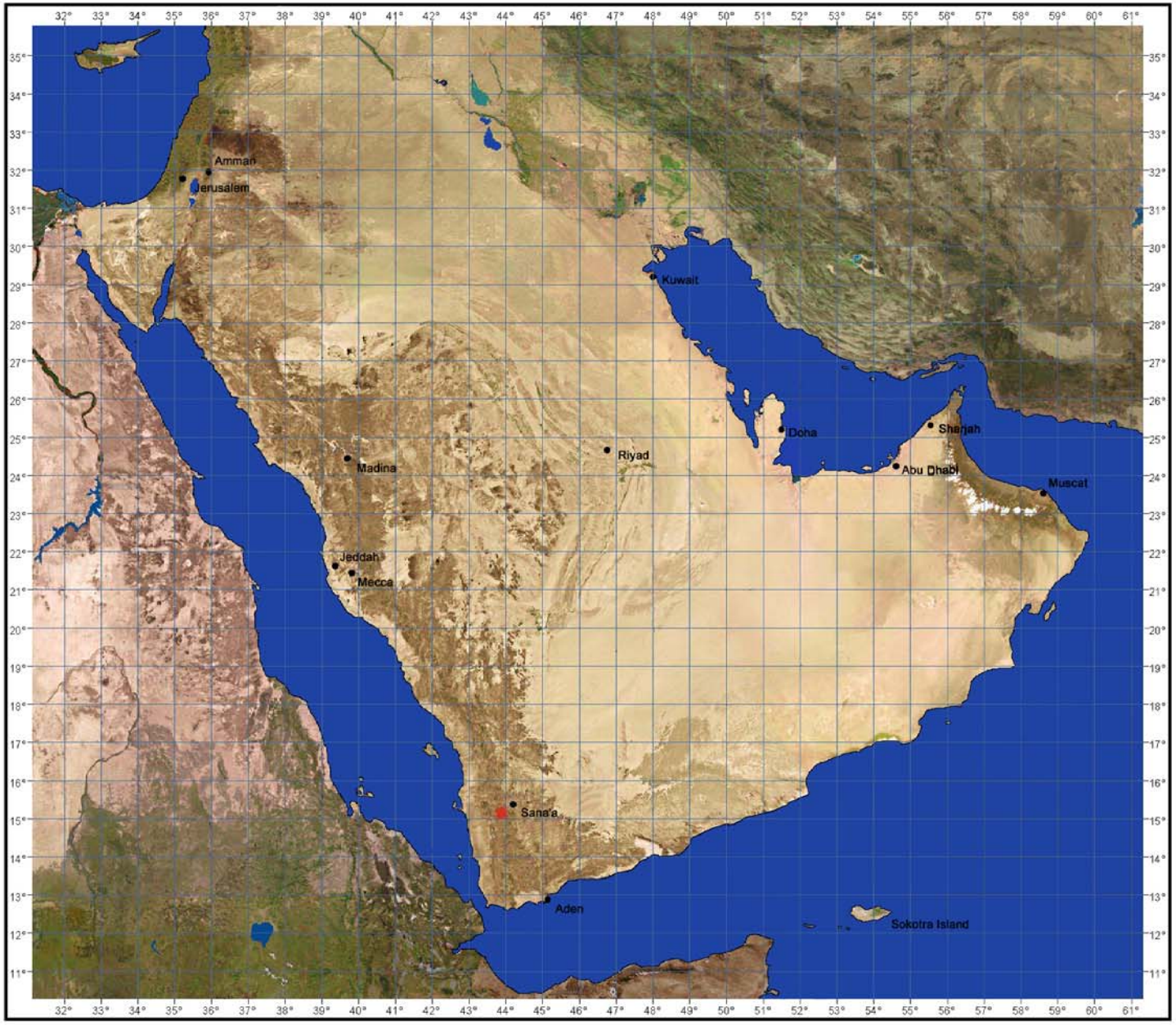
20. Other Comments*countries:*

Part Four

21. Sources: Balletto et al. (1985)

22. Compilers: Freshwater Group workshop, CAMP meeting 2003, Sharjah, UAE.

23. Reviews:



Bufo scorteccii

N

0 100 200 300 400 500 Kilometers

Mapping by GIS Unit
Environmental Research & Wildlife Development Agency
PO Box 45553
Abu Dhabi
United Arab Emirates

Conservation Assessment Management Plan
Taxon Data Sheet

This Assessment is a **Global Assessment**

1.Scientific Name: *Bufo tihamicus* Rulletto & Cherchi,1973

1A. Synonyms: Scientific synonym / ambiguities | Authority (date)

Bufo pentoni Anderson 1893 (misidentification)

1B. Scientific nomenclature:

FAMILY: Bufonidae
ORDER: Anura
CLASS: Amphibia

1C. CommonNames: Tihama toad

1D.Taxonomic level: Species

Notes:

2. Habitat **Country(ies)**

Primary

Saudi Arabia Yes
Yemen Yes

Notes on Habitat: Coastal zone to <400m altitude

Life form (plant):

Niche:

Distribution

Historical distrib: Tihama, Saudi Arabia; Yemen

Current countries: Saudi Arabia; Yemen

Geograph. extent: Tihama coastal plain south-west Saudi Arabia to southern Yemen

Migration regions:

3. Approximate Area of Occurrence of the taxon in and around the area of study/ sighting/ collection

(Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary encompassing all known, inferred or projected sites of present occurrence of the taxon)

Occurrence area: >20 000 sq km

Notes (Occurrence)

4. Approximate Area of Occupancy of the taxon in and around the area of study/ collection

(Area of occupancy is defined as the area occupied by the taxon within the 'extent of occurrence')

Area of Occupancy: 501-2000 sq km

Notes (Occupancy):

5. Number of Subpopulations in which the taxon is distributed: 1

Is there a continuous declined in subpopulations / locations? [ ]

Are there extreme fluctuations in subpopulations/ locations? [ ]

Percentage of population that lives in most important subarea:

Notes (subpops)

6. Habitat status: Fragmented

6A. Is there any change in the habitat where the taxon occurs? [ ] (Yes)

If yes, describe: Unknown

6B. If decreasing, what has been the decrease in Habitat area?
approximate change (%): over how many years:
Notes on decrease:

6C. If stable or unknown, do you predict a decline in habitat?
approximate change (%): over how many years:

6D. State primary cause of change:

6E. Is there any change in the quality of the habitat where the taxon occurs? [x] (Yes)
Type of change Unknown Notes:

6F. Notes (general) on habitat:: Increase in agricultural area may have an effect on habitat type available

7. Threats

		Rank	Past	Pres	Fut	Lead to decline	Under stood	Reversible	Have ceased	Notes
					Extraction					
1.3.6.	Groundwater extraction		N	Y	Y	N	N	N	N	Unknown

Number of locations for serious threat: 0
Comment:

8. Trade: 8A. Is the taxon in trade? [ ] (Yes)

Parts in Trade: Purpose Barter Local Natl Intl Comment

8C. Which form of trade (specified form) is resulting in a perceived or inferred population decline?

9-10. Population numbers and Trends

9A. Avg. age of parents in pop: unknown

	Total Pop.	Mature	Breeding pairs
9B. Global Population:	unknown	unknown	unknown
10A. Recent past trends:			
Rate of decline (past)			
For how many years?	years	years	
10B. Will population decline?	No	No	
. Predicted Rate (future)			
For how many years?	years	years	

Notes: No recent data available.

11. Population Data quality

11A. Estimates base on: [ ] Census or monitoring [ ] Field study [ ] Informal sightings
[ ] Indirect information [x] Museum records [x] Literature
Notes: No recent data available. Old data fragmentary. [ ] Hearsay/belief

11B. Qualifiers: *Observed, Infeerred, Suspected, Estimated, or Projected*

11C. Uncertainty *95% confidence, Minimum/Maximum values, Range of Opinion; Evidentiary; Precautionary; Subjective; Hypothetical; Point estimate; or Range estimate*

12. Recent Field Studies

Researcher names, Location, Dates, Topics:

No recent field studies

Part Two

13. Status (Red List) **Prior to Workshop** Status Criteria Red list version

13A Global: None

National:

13B. Cites: 13C. Natl wildlife Legislation:

13D. Natl Red Data Book: 13E. Intl Red Data Book:

13F. Other legislation:

13G. Protected area presence: Asir National Park, Saudi Arabia

13H. Endorsed protection plan:

Current (Workshop)	Status	Criteria	Red list version
Global:	Not evaluated		Ver 3.1
National:	Not evaluated		

Notes: Possibly under threat throughout entire range. No recent specimens have been found.

Part Three

14. Supporting Research Is research recommended for taxon? Yes

Specify:

[x] Survey studies	[x] Genetic research	[x] Taxonomic research	[x] Life history
	[x] Limiting factor research	[ ] Epidemiology	[ ] Trade

14A. Is Population and Habitat Viability Assessment recommended? Yes

Notes:

15. Management recommendations for the taxon *Specify:*

[x] Habitat management	[ ] Wild pop management	[x] Monitoring	[ ] Translocation
[ ] Sustainable utilization	[x] Public education	[ ] Genome Resource Banking	
[ ] Limiting factor mgt.	[x] Captive breeding	[ ] Work in local communities	

Notes:

Conservation Measures Recommended	**In place**	**Needed**	**Old in place**	**Old needed**
Management actions				
Management plans	N	Y	N	N

16. Captive management recommendations *If captive breeding recommended in Q15, is it for:*

Species recovery	Education	Reintroduction	Benign introduction
Research	Husbandry	Sustainable use	Preservation of live genome

Notes/other: Investigation into use in traditional medicines

17. Do Captive stocks already exist? No

17A. Names of facilities:

17B. No. in captivity:

Males	Females:	Unsexed:	Total	Not known?
0	0	0	0	

17C. Does a coordinated species management program exist for this species? No

If yes, specify

17D. Is a coordinated Species Management Program recomended for range country(ies)? No

If yes, specify :

18. Level of captive breeding/cultivation recommended

Initiate ex situ Program within 3 years

19. Are techniques extablished to propagate the taxon?

Some techniques known for taxon or similar taxon

20. Other Comments

Part Four

21. Sources: Baletto et al. (1985)

22. Compilers: Freshwater Group workshop, CAMP Meeting 2003, Sharjah, UAE.

23. Reviews:

Bufo tihamicus

N

0 100 200 300 400 500 Kilometers

Mapping by GIS Unit
Environmental Research & Wildlife Development Agency
PO Box 45553
Abu Dhabi
United Arab Emirates

Conservation Assessment Management Plan
Taxon Data Sheet

This Assessment is a **National / Regional Assessment**

1.Scientific Name: *Bufo viridis* Laurenti (1768)

1A. Synonyms: Scientific synonym / ambiguities Authority (date)

1B. Scientific nomenclature:

FAMILY: Bufonidae
ORDER: Anura
CLASS: Amphibia

1C. CommonNames: Green toad

1D.Taxonomic level: Species

Notes:

2. Habitat

Notes on Habitat: Wide range of wetland and arid habitats

Life form (plant):

Niche:

Distribution

Historical distrib: Jordan, south-west Arabia

Current countries: Jordan, Saudi Arabia

Geograph. extent: Jordan, south-west Arabia

Migration regions:

3. Approximate Area of Occurrence of the taxon in and around the area of study/ sighting/ collection

(Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary encompassing all known, inferred or projected sites of present occurrence of the taxon)

Occurrence area: 5000 - 20,000 sq km

Notes (Occurrence)

4. Approximate Area of Occupancy of the taxon in and around the area of study/ collection

(Area of occupancy is defined as the area occupied by the taxon within the 'extent of occurrence')

Area of Occupancy: 501 - 2000 sq km

Notes (Occupancy):

5. Number of Subpopulations in which the taxon is distributed: 2

Is there a continuous declined in subpopulations / locations? [No]

Are there extreme fluctuations in subpopulations/ locations? [No]

Percentage of population that lives in most important subarea:

Notes (subpops)

5b. Specific description of major subpopulations and locations

Area South west Arabia *Size:* 10000 *Sq km GIS lattitude* *longitude*
Notes Populaton (best est:) 0 *High:* 0 *Low:* 0 *Habitat:*
Notes
Area Jordan *Size:* 10000 *Sq km GIS lattitude* *longitude*
Populaton (best est:) 0 *High:* 0 *Low:* 0 *Habitat:*
Notes

6. Habitat status: Fragmented

6A. Is there any change in the habitat where the taxon occurs? [x] (Yes)
If yes, describe: Increase in Area

6B. If decreasing, what has been the decrease in Habitat area?
approximate change (%): over how many years:
Notes on decrease:

6C. If stable or unknown, do you predict a decline in habitat?
approximate change (%): over how many years:

6D. State primary cause of change: Irrigation of land, agriculture and artificial greenbelt followers have increased suitable habitat area

6E. Is there any change in the quality of the habitat where the taxon occurs? [x] (Yes)
Type of change development Notes:

6F. Notes (general) on habitat:: Factors determining habitat quality need to be evaluated: salinity, water quality, predation, parasite load?

7. Threats

		Rank	Past	Pres	Fut	Lead to decline	Under stood	Rever-sible	Have ceased	Notes
						Alien species				
2.2.	Predators		N	Y	Y	Y	Y	Y	N	Tilapia

Number of locations for serious threat: 0
Comment:

8. Trade: 8A. Is the taxon in trade? [ ] (No)

Parts in Trade:	Purpose	Barter	Local	Natl	Intl	Comment

8C. Which form of trade (specified form) is resulting in a perceived or inferred population decline?

9-10. Population numbers and Trends

9A. Avg. age of parents in pop: Unknown

	Total Pop.	Mature	Breeding pairs
9B. Global Population:			
10A. Recent past trends:	Increasing	Increasing	
Rate of decline (past)			
For how many years?	years	years	
10B. Will population decline?	No	No	
. Predicted Rate (future)			
For how many years?	years	years	

Notes:

11. Population Data quality

11A. Estimates base on:
[ ] Census or monitoring [x] Field study [x] Informal sightings
[ ] Indirect information [x] Museum records [x] Literature
Notes: [ ] Hearsay/belief

11B. Qualifiers: Observed *Observed, Infeerred, Suspected, Estimated, or Projected*

11C. Uncertainty *95% confidence, Minimum/Maximum values, Range of Opinion; Evidentiary; Precautionary; Subjective; Hypothetical; Point estimate; or Range estimate*

12. Recent Field Studies

Researcher names, Location, Dates, Topics:

A. Disi, Jordan (1993-2003) Looked at morphometrics, distribution, ecology, possible threats

Part Two

13. Status (Red List)

Prior to Workshop	Status	Criteria	Red list version
13A Global:	None		
National:			

13B. Cites: 13C. Natl wildlife Legislation:

13D. Natl Red Data Book: 13E. Intl Red Data Book:

13F. Other legislation:

13G. Protected area presence:

13H. Endorsed protection plan:

Current (Workshop)	Status	Criteria	Red list version
Global:	Least Concern		Ver 3.1
National:			

Notes:

Part Three

14. Supporting Research

Is research recommended for taxon? Yes

Specify:

[x] Genetic research [x] Taxonomic research [x] Life history

[x] Survey studies [x] Limiting factor research [ ] Epidemiology [ ] Trade

14A. Is Population and Habitat Viability Assessment recommended? No

Notes:

15. Management recommendations for the taxon

Specify:

[ ] Habitat management [ ] Wild pop management [x] Monitoring [ ] Translocation

[ ] Sustainable utilization [ ] Public education [ ] Genome Resource Banking

[ ] Limiting factor mgt. [x] Captive breeding [ ] Work in local communities

Notes:

Conservation Measures Recommended	**In place**	**Needed**	**Old in place**	**Old needed**

16. Captive management recommendations

If captive breeding recommended in Q15, is it for:

Species recovery	Education	Reintroduction	Benign introduction
Research	Husbandry	Sustainable use	Preservation of live genome

Notes/other:

17. Do Captive stocks already exist? No

17A. Names of facilities:

17B. No. in captivity:

Males	Females:	Unsexed:	Total	Not known?
0	0	0	0	

17C. Does a coordinated species management program exist for this species? No

If yes, specify

17D. Is a coordinated Species Management Program recomended for range country(ies)? No

If yes, specify

18. Level of captive breeding/cultivation recommended

Ongoing ex situ program intensified or increased

19. Are techniques extablished to propagate the taxon?

Techniques known for this taxon or similar taxon

20. Other Comments

Part Four

21. Sources: Balletto et al. (1985); Leviton et al. (1992); Disi et al. (2001); Disi (2002).

22. Compilers: Freshwater group workshop, CAMP meeting 2003, Sharjah, UAE.

23. Reviews:

Bufo viridis

Mapping by GIS Unit
Environmental Research & Wildlife Development Agency
PO Box 45553
Abu Dhabi
United Arab Emirates

Conservation Assessment Management Plan
Taxon Data Sheet

This Assessment is a **Global Assessment**

1.Scientific Name: *Bufo arabicus* Laurenti (1768)

1A. Synonyms:	Scientific synonym / ambiguities	Authority (date)
	Bufo viridus	Laurent, 1768 (misdidentification)

1B. Scientific nomenclature:

FAMILY: Bufonidae
ORDER: Anura
CLASS: Amphibia

1C. CommonNames: Arabian toad
1D.Taxonomic level: Species
Notes:

2. Habitat

Notes on Habitat: All environments of Arabia with some water availability
Life form (plant):
Niche:

Distribution

Historical distrib: West and south-east Arabia
Current countries: Saudi Arabia
Geograph. extent: West and south-east Arabia
Migration regions:

3. Approximate Area of Occurrence of the taxon in and around the area of study/ sighting/ collection

(Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary encompassing all known, inferred or projected sites of present occurrence of the taxon)

Occurrence area: 20,000 sq km
Notes (Occurrence)

4. Approximate Area of Occupancy of the taxon in and around the area of study/ collection

(Area of occupancy is defined as the area occupied by the taxon within the 'extent of occurrence')

Area of Occupancy: > 2001 sq km
Notes (Occupancy):

5. Number of Subpopulations in which the taxon is distributed: 3
Is there a continuous declined in subpopulations / locations? [No]
Are there extreme fluctuations in subpopulations/ locations? [No]
Percentage of population that lives in most important subarea:
Notes (subpops)

5b. Specific description of major subpopulations and locations

Area South east Arabia *Size:* 60000 *Sq km GIS lattitude* *longitude*
Notes Populaton (best est:) 0 *High:* 0 *Low:* 0 *Habitat:* Unknown
Notes
Area South west Arabia *Size:* 240000 *Sq km GIS lattitude* *longitude*
Populaton (best est:) 0 *High:* 0 *Low:* 0 *Habitat:* Unknown
Notes

6. Habitat status: Fragmented

6A. Is there any change in the habitat where the taxon occurs? [ ] (No)
If yes, describe:
6B. If decreasing, what has been the decrease in Habitat area?
approximate change (%): over how many years:
Notes on decrease:
6C. If stable or unknown, do you predict a decline in habitat? (No)
approximate change (%): over how many years:
6D. State primary cause of change:

6E. Is there any change in the quality of the habitat where the taxon occurs? [x] (Yes)
Type of change development Notes:
6F. Notes (general) on habitat::

7. Threats

		Rank	Past	Pres	Fut	Lead to decline	Under stood	Rever-sible	Have ceased	Notes
	Alien species									
2.2.	Predators		N	Y	Y	Y	Y	Y	N	Tilapia

Number of locations for serious threat: 0
Comment:

8. Trade: 8A. Is the taxon in trade? [ ] (No)
Parts in Trade: Purpose Barter Local Natl Intl Comment

8C. Which form of trade (specified form) is resulting in a perceived or inferred population decline?

9-10. Population numbers and Trends
9A. Avg. age of parents in pop: Unknown

	Total Pop.	Mature	Breeding pairs
9B. Global Population:			
10A. Recent past trends:	Stable	Stable	
Rate of decline (past)			
For how many years?	years	years	
10B. Will population decline?	No	No	
. Predicted Rate (future)			
For how many years?	years	years	

Notes:

11. Population Data quality
11A. Estimates base on: [ ] Census or monitoring [x] Field study [x] Informal sightings
[ ] Indirect information [x] Museum records [x] Literature
Notes: [ ] Hearsay/belief

11B. Qualifiers: Observed *Observed, Inferred, Suspected, Estimated, or Projected*

11C. Uncertainty *95% confidence, Minimum/Maximum values, Range of Opinion; Evidentiary; Precautionary; Subjective; Hypothetical; Point estimate; or Range estimate*

12. Recent Field Studies

Researcher names, Location, Dates, Topics:

Part Two

13. Status (Red List)

Prior to Workshop	Status	Criteria	Red list version
13A Global:	None		
National:			

13B. Cites: 13C. Natl wildlife Legislation:

13D. Natl Red Data Book: 13E. Intl Red Data Book:

13F. Other legislation:

13G. Protected area presence:

13H. Endorsed protection plan:

Current (Workshop)	Status	Criteria	Red list version
Global:	Least Concern		Ver 3.1
National:			

Notes:

Part Three

14. Supporting Research

Is research recommended for taxon? Yes

Specify:

[x] Genetic research	[x] Taxonomic research	[x] Life history	[x] Survey studies
[x] Limiting factor research	[ ] Epidemiology	[ ] Trade	

14A. Is Population and Habitat Viability Assessment recommended? No

Notes:

15. Management recommendations for the taxon

Specify:

[ ] Habitat management	[ ] Wild pop management	[x] Monitoring	[ ] Translocation
[ ] Sustainable utilization	[ ] Public education	[ ] Genome Resource Banking	
[ ] Limiting factor mgt.	[x] Captive breeding	[ ] Work in local communities	

Notes:

Conservation Measures Recommended	**In place**	**Needed**	**Old in place**	**Old needed**

16. Captive management recommendations

If captive breeding recommended in Q15, is it for:

Species recovery	Education	Reintroduction	Benign introduction
Research	Husbandry	Sustainable use	Preservation of live genome

Notes/other:

17. Do Captive stocks already exist? No

17A. Names of facilities:

17B. No. in captivity:

Males	Females:	Unsexed:	Total	Not known?
0	0	0	0	

17C. Does a coordinated species management program exist for this species? No

If yes, specify

17D. Is a coordinated Species Management Program recomended for range country(ies)? No

If yes, specify

18. Level of captive breeding/cultivation recommended

Ongoing ex situ program intensified or increased

19. Are techniques extablished to propagate the taxon?

Techniques known for this taxon or similar taxon

20. Other Comments

Part Four

21. Sources: Balletto et al. (1985); Leviton et al. (1992)

22. Compilers: Freshwater group workshop, CAMP meeting 2003, Sharjah, UAE.

23. Reviews:

Bufo arabicus

N

0 100 200 300 400 500 Kilometers

Mapping by GIS Unit
Environmental Research & Wildlife Development Agency
PO Box 45553
Abu Dhabi
United Arab Emirates

Conservation Assessment Management Plan
Taxon Data Sheet

This Assessment is a **Global Assessment**

1.Scientific Name: *Euphlyctis ehrenbergii* Peters,1863

1A. Synonyms:

Scientific synonym / ambiguities	Authority (date)
Rana cyanophlyctis	Schneider, 1799 (misidentification)

1B. Scientific nomenclature:

FAMILY: Ranidae
ORDER: Anura
CLASS: Amphibia

1C. CommonNames: Skittering frog
1D.Taxonomic level: Species
Notes:

2. Habitat
Primary

Notes on Habitat: Aquatic habitats, perennial waters

Country(ies)

Saudi Arabia	Yes
Yemen	Yes

Life form (plant):
Niche:

Distribution

Historical distrib: West and south west Saudi Arabia

Current countries: Saudi Arabia, Yemen

Geograph. extent: West and south west Saudi Arabia, Yemen

Migration regions:

3. Approximate Area of Occurrence of the taxon in and around the area of study/ sighting/ collection
(Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary encompassing all known, inferred or projected sites of present occurrence of the taxon)

Occurrence area: > 20,000 sq km
Notes (Occurrence)

4. Approximate Area of Occupancy of the taxon in and around the area of study/ collection
(Area of occupancy is defined as the area occupied by the taxon within the 'extent of occurrence')

Area of Occupancy: 501-2000 sq km
Notes (Occupancy): 2 phenotypes in the population

5. Number of Subpopulations in which the taxon is distributed: 1
Is there a continuous declined in subpopulations / locations? [ ]
Are there extreme fluctuations in subpopulations/ locations? [ ]
Percentage of population that lives in most important subarea:
Notes (subpops)

6. Habitat status: Fragmented

6A. Is there any change in the habitat where the taxon occurs? *If yes, describe:* Decreas
6B. If decreasing, what has been the decrease in Habitat area?
approximate change (%): < 20% over how many years: 5
Notes on decrease:
6C. If stable or unknown, do you predict a decline in habitat?
approximate change (%): over how many years:
6D. State primary cause of change:
6E. Is there any change in the quality of the habitat where the taxon occurs? [x] (Yes)
Type of change Decrease in quality Notes: Water abstraction, habitat modification, eutrophicaion
6F. Notes (general) on habitat::

7. Threats

		Rank	Past	Pres	Fut	Lead to decline	Under stood	Rever-sible	Have ceased	Notes
						Extraction				
1.3.6.	Groundwater extraction		N	Y	Y	Y	N	Y	N	
						Alien species				
2.2.	Predators		N	Y	Y	Y	N	Y	N	Tilapia introduction
						Pollution				
6.3.	Water pollution		N	Y	Y	Y	N	Y	N	

Number of locations for serious threat: 0
Comment:

8. Trade: 8A. Is the taxon in trade? [ ] (Yes)
Parts in Trade: Purpose Barter Local Natl Intl Comment

8C. Which form of trade (specified form) is resulting in a perceived or inferred population decline?

9-10. Population numbers and Trends
9A. Avg. age of parents in pop: 0 Years

	Total Pop.	Mature	Breeding pairs
9B. Global Population:			
10A. Recent past trends:	Declining	Declining	
Rate of decline (past)			
For how many years?	years	years	
10B. Will population decline?	No	No	
. Predicted Rate (future)			
For how many years?	years	years	

Notes:

11. Population Data quality
11A. Estimates base on: [ ] Census or monitoring [ ] Field study [ ] Informal sightings
[ ] Indirect information [x] Museum records [x] Literature
Notes: [ ] Hearsay/belief

11B. Qualifiers: Observed *Observed, Infeerred, Suspected, Estimated, or Projected*
11C. Uncertainty *95% confidence, Minimum/Maximum values, Range of Opinion; Evidentiary; Precautionary; Subjective; Hypothetical; Point estimate; or Range estimate*

12. Recent Field Studies

Researcher names, Location, Dates, Topics:

Part Two

13. Status (Red List)

Prior to Workshop	Status	Criteria	Red list version
13A Global:	None		
National:			

13B. Cites: 13C. Natl wildlife Legislation:

13D. Natl Red Data Book: 13E. Intl Red Data Book:

13F. Other legislation:

13G. Protected area presence:

13H. Endorsed protection plan:

Current (Workshop)	Status	Criteria	Red list version
Global:	Least Concern		Ver 3.1
National:	Least Concern		

Notes:

Part Three

14. Supporting Research Is research recommended for taxon? Yes

Specify:

[x] Survey studies	[x] Genetic research	[x] Taxonomic research	[x] Life history
	[x] Limiting factor research	[ ] Epidemiology	[ ] Trade

14A. Is Population and Habitat Viability Assessment recommended? No

Notes:

15. Management recommendations for the taxon *Specify:*

[x] Habitat management	[x] Wild pop management	[x] Monitoring	[ ] Translocation
[ ] Sustainable utilization	[x] Public education	[ ] Genome Resource Banking	
[ ] Limiting factor mgt.	[x] Captive breeding	[ ] Work in local communities	

Notes:

Conservation Measures Recommended	**In place**	**Needed**	**Old in place**	**Old needed**

16. Captive management recommendations *If captive breeding recommended in Q15, is it for:*

Species recovery	Education	Reintroduction	Benign introduction
Research	Husbandry	Sustainable use	Preservation of live genome

Notes/other:

17. Do Captive stocks already exist? Yes

17A. Names of facilities: Breeding Centre for Endangered Arabian Wildlife

17B. No. in captivity: Males Females: Unsexed: Total Not known?

7 11 0 18

17C. Does a coordinated species management program exist for this species? No

If yes, specify :

17D. Is a coordinated Species Management Program recomended for range country(ies)? No

If yes, specify

18. Level of captive breeding/cultivation recommended

Ongoing ex situ program intensified or increased

19. Are techniques extablished to propagate the taxon?

Techniques not known at all

20. Other Comments

Part Four

21. Sources: Balletto et al. (1985), Leviton et al. (1992)

22. Compilers: Freshwater group workshop, CAMP meeting 2003, Sharjah, UAE.

23. Reviews:

Euphlyctus ehrenbergii

N

0 100 200 300 400 500 Kilometers

Mapping by GIS Unit
Environmental Research & Wildlife Development Agency
PO Box 45553
Abu Dhabi
United Arab Emirates

Conservation Assessment Management Plan
Taxon Data Sheet

This Assessment is a **Regional Assessment**

1.Scientific Name: *Hyla savignyi* Audouin, 1829

1A. Synonyms: Scientific synonym / ambiguities Authority (date)

1B. Scientific nomenclature:
FAMILY: Hylidae
ORDER: Anura
CLASS: Amphibia

1C. CommonNames: Green tree frog

1D.Taxonomic level: Species

Notes:

2. Habitat

Primary

Notes on Habitat: Permanent water, vegetation, above 1400m

Life form (plant):

Niche:

Country(ies)

Jordan	Yes
Saudi Arabia	Yes
Yemen	Yes

Distribution

Historical distrib: Jordan, south west Arabia

Current countries: Jordan, south west Arabia

Geograph. extent: Jordan, south west Arabia

Migration regions:

3. Approximate Area of Occurrence of the taxon in and around the area of study/ sighting/ collection

(Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary encompassing all known, inferred or projected sites of present occurrence of the taxon)

Occurrence area: > 20,000 sq km

Notes (Occurrence)

4. Approximate Area of Occupancy of the taxon in and around the area of study/ collection

(Area of occupancy is defined as the area occupied by the taxon within the 'extent of occurrence')

Area of Occupancy: 501-2,000 sq km

Notes (Occupancy):

5. Number of Subpopulations in which the taxon is distributed: 2

Is there a continuous declined in subpopulations / locations? [ ]

Are there extreme fluctuations in subpopulations/ locations? [ ]

Percentage of population that lives in most important subarea:

Notes (subpops)

5b. Specific description of major subpopulations and locations

Area South west Arabia *Size:* 70000 *Sq km* *GIS lattitude* *longitude*

Populaton (best est:) 0 *High:* 0 *Low:* 0 *Habitat:*

Area Jordan *Size:* 160 *Sq km GIS lattitude* *longitude*
Notes Populaton (best est:) 0 *High:* 0 *Low:* 0 *Habitat:*
Notes

6. Habitat status: Fragmented

6A. Is there any change in the habitat where the taxon occurs? [x] (Yes)
If yes, describe: Decrease in Area
6B. If decreasing, what has been the decrease in Habitat area?
approximate change (%): < 20% over how many years: 5
Notes on decrease:
6C. If stable or unknown, do you predict a decline in habitat?
approximate change (%): over how many years:
6D. State primary cause of change: Loss of freshwater habitat
6E. Is there any change in the quality of the habitat where the taxon occurs? [x] (Yes)
Type of change Decrease in quality Notes:
6F. Notes (general) on habitat:: Deterioration of water quality, decrease in marginal vegetation

7. Threats

		Rank	Past	Pres	Fut	Lead to decline	Under stood	Rever-sible	Have ceased	Notes
					Alien species					
2.2.	Predators		N	Y	Y	Y	N	Y	N	Introduction of alien fish
					Pollution					
6.3.4.	Other pollution		N	Y	Y	Y	N	Y	N	Insecticides, herbicides
					Disasters					
7.7.	Other		N	Y	Y	Y	N	Y	N	Habitat destruction
					Other human					
10.5.	Fire		N	Y	Y	Y	N	Y	N	Burning of riparian vegetation

Number of locations for serious threat: 0
Comment:

8. Trade: 8A. Is the taxon in trade? [ ] (Yes)
Parts in Trade: Purpose Barter Local Natl Intl Comment

8C. Which form of trade (specified form) is resulting in a perceived or inferred population decline?

9-10. Population numbers and Trends

9A. Avg. age of parents in pop: 0 Years

	Total Pop.	Mature	Breeding pairs
9B. Global Population:	Unknown	Unknown	Unknown
10A. Recent past trends:			
Rate of decline (past)			
For how many years?	years	years	
10B. Will population decline?	No	No	
. Predicted Rate (future)			
For how many years?	years	years	

Notes:

11. Population Data quality

11A. Estimates base on: [ ] Census or monitoring [x] Field study [x] Informal sightings
[ ] Indirect information [x] Museum records [x] Literature

Notes:

11B. Qualifiers: Observed *Observed, Infeerred, Suspected, Estimated, or Projected*

11C. Uncertainty *95% confidence, Minimum/Maximum values,* [ ]

Hearsay/belief

12. Recent Field Studies

Researcher names, Location, Dates, Topics:

Disi, 1993-2003, Jordan - morphometrics, distribution, ecology, threats.

Al-Sorakhy & Amr, 2003, Jordan - plathelminths.

Part Two

13. Status (Red List)

Prior to Workshop	Status	Criteria	Red list version
13A Global:	None		
National:			

13B. Cites: 13C. Natl wildlife Legislation:

13D. Natl Red Data Book: 13E. Intl Red Data Book:

13F. Other legislation:

13G. Protected area presence:

13H. Endorsed protection plan:

Current (Workshop)	Status	Criteria	Red list version
Global:			Ver 3.1
National:	Vulnerable	habitat decline and multiple threats	

Notes:

Part Three

14. Supporting Research

Is research recommended for taxon? Yes

Specify:

[x] Genetic research [x] Taxonomic research [x] Life history

[x] Survey studies [x] Limiting factor research [ ] Epidemiology [ ] Trade

14A. Is Population and Habitat Viability Assessment recommended? No

Notes:

15. Management recommendations for the taxon

Specify:

[x] Habitat management [x] Wild pop management [x] Monitoring [ ] Translocation

[ ] Sustainable utilization [x] Public education [ ] Genome Resource Banking

[x] Limiting factor mgt. [x] Captive breeding [ ] Work in local communities

Notes:

Conservation Measures Recommended	**In place**	**Needed**	**Old in place**	**Old needed**

16. Captive management recommendations

If captive breeding recommended in Q15, is it for:

Species recovery	Education	Reintroduction	Benign introduction
Research	Husbandry	Sustainable use	Preservation of live genome

Notes/other:

17. Do Captive stocks already exist? No

17A. Names of facilities:

17B. No. in captivity:

Males	Females:	Unsexed:	Total	Not known?
0	0	0	0	

17C. Does a coordinated species management program exist for this species? No

If yes, specify

17D. Is a coordinated Species Management Program recomended for range country(ies)? No

If yes, specify

18. Level of captive breeding/cultivation recommended

Initiate ex situ Program within 3 years

19. Are techniques extablished to propagate the taxon?

Techniques known for this taxon or similar taxon

20. Other Comments

Part Four

21. Sources: Balletto et al. (1985); Disi et al. (2001); Disi (2002)

22. Compilers: Freshwater group workshop, CAMP meeting 2003, Sharjah, UAE.

23. Reviews:

Hyla savignyi

N

0 100 200 300 400 500 Kilometers

Mapping by GIS Unit
Environmental Research & Wildlife Development Agency
PO Box 45553
Abu Dhabi
United Arab Emirates

Conservation Assessment Management Plan
Taxon Data Sheet

This Assessment is a **National / Regional Assessment**

1.Scientific Name: *Mauremys caspica* Ginelin, 1774

1A. Synonyms: Scientific synonym / ambiguities | Authority (date)

1B. Scientific nomenclature:

FAMILY: Emydidae
ORDER: Testudines
CLASS: Reptilia

1C. CommonNames: Caspian terrapin

1D.Taxonomic level: Species

Notes:

2. Habitat

Primary

Notes on Habitat: Oasis pools and springs

Life form (plant):

Niche:

Country(ies)

Bahrain Yes
Saudi Arabia Yes

Distribution

Historical distrib: Eastern Saudi Arabia, Bahrain

Current countries: Saudi Arabia, Bahrain

Geograph. extent: Eastern Saudi Arabia, Bahrain

Migration regions:

3. Approximate Area of Occurrence of the taxon in and around the area of study/ sighting/ collection

(Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary encompassing all known, inferred or projected sites of present occurrence of the taxon)

Occurrence area: 5,001 - 20,000 sq km

Notes (Occurrence)

4. Approximate Area of Occupancy of the taxon in and around the area of study/ collection

(Area of occupancy is defined as the area occupied by the taxon within the 'extent of occurrence')

Area of Occupancy: < 10 sq km

Notes (Occupancy):

5. Number of Subpopulations in which the taxon is distributed: 5

Is there a continuous declined in subpopulations / locations? [ ]

Are there extreme fluctuations in subpopulations/ locations? [ ]

Percentage of population that lives in most important subarea:

Notes (subpops)

5b. Specific description of major subpopulations and locations

Area Bahrain *Size:* 5 *Sq kmGIS latitude 26˚16'N* *longitude 50˚37'E*
Populaton (best est:) 0 *High:* 0 *Low:* 0 *Habitat:*

Area Hofuf *Size:* 10 *Sq km GIS latitude 25˚22'N longitude 49˚34'E*
Notes Populaton (best est:) Less than 5km sq.0
High: 0
Low: 0
Habitat:
Notes
Area Qatif *Size:* 2 *Sq km GIS latitude 26˚33'N longitude 49˚58'E*
Populaton (best est:) 0 *High:* 0 *Low:* 0 *Habitat:*
Notes

6. Habitat status: Fragmented

6A. Is there any change in the habitat where the taxon occurs? [x] (Yes)
If yes, describe: Decrease in Area

6B. If decreasing, what has been the decrease in Habitat area?
approximate change (%): < 20% over how many years: 5
Notes on decrease:

6C. If stable or unknown, do you predict a decline in habitat?
approximate change (%): over how many years:

6D. State primary cause of change:

6E. Is there any change in the quality of the habitat where the taxon occurs? [x] (Yes)
Type of change Decrease in quality Notes: Agriculture, water abstraction

6F. Notes (general) on habitat::

7. Threats

		Rank	Past	Pres	Fut	Lead to decline	Understood	Reversible	Have ceased	Notes
						Extraction				
1.3.6.	Groundwater extraction		N	Y	Y	Y	N	Y	N	
						Alien species				
2.2.	Predators		N	Y	Y	Y	N	Y	N	Trichemys scripta and Tilapia introductions
						Disasters				
7.7.	Other		N	Y	Y	Y	N	Y	N	Aquarium trade
7.7.	Other		N	Y	Y	Y	N	Y	N	Genetic mixing.pollution
						Dynamics				
8.2.	Predators		N	Y	Y	Y	N	Y	N	Feral rats

Number of locations for serious threat: 0
Comment:

8. Trade: 8A. Is the taxon in trade? [x] (Yes)

Parts in Trade:	Purpose	Barter	Local	Natl	Intl	Comment
Live animal	Aquarium trade	N	Y	N	N	

8C. Which form of trade (specified form) is resulting in a perceived or inferred population decline?
Sub-populations are currently genetically distinct. Trade may result in decline and genetic pollution if specimens from different sub-populations are released into different sub-populations.

9-10. Population numbers and Trends

9A. Avg. age of parents in pop: 0 Years

	Total Pop.	Mature	Breeding pairs
9B. Global Population:	< 10,000		
10A. Recent past trends:	Declining	Declining	

Rate of decline (past)
For how many years? years years
10B. Will population decline? No No
. Predicted Rate (future)
For how many years? years years
Notes:

11. Population Data quality

11A. Estimates base on: [ ] Census or monitoring [x] Field study [x] Informal sightings
[ ] Indirect information [x] Museum records [x] Literature
Notes: [ ] Hearsay/belief

11B. Qualifiers: Observed *Observed, Infeerred, Suspected, Estimated, or Projected*

11C. Uncertainty *95% confidence, Minimum/Maximum values, Range of Opinion; Evidentiary; Precautionary; Subjective; Hypothetical; Point estimate; or Range estimate*

12. Recent Field Studies

Researcher names, Location, Dates, Topics:

Part Two

13. Status (Red List)

Prior to Workshop	Status	Criteria	Red list version
13A Global:	None		
National:			

13B. Cites: 13C. Natl wildlife Legislation:
13D. Natl Red Data Book: 13E. Intl Red Data Book:
13F. Other legislation:
13G. Protected area presence:
13H. Endorsed protection plan:

Current (Workshop)	Status	Criteria	Red list version
Global:			Ver 3.1
National:	Least Concern		

Notes: Least concern subject to further investigations of subpopulations

Part Three

14. Supporting Research Is research recommended for taxon? No

Specify: [x] Genetic research [x] Taxonomic research [x] Life history
[x] Survey studies [x] Limiting factor research [ ] Epidemiology [x] Trade

14A. Is Population and Habitat Viability Assessment recommended? Yes
Notes:

15. Management recommendations for the taxon *Specify:*

[x] Habitat management [x] Wild pop management [x] Monitoring [ ] Translocation
[ ] Sustainable utilization [x] Public education [x] Genome Resource Banking
[ ] Limiting factor mgt. [x] Captive breeding [ ] Work in local communities

Notes:

Conservation Measures Recommended	**In place**	**Needed**	**Old in place**	**Old needed**

16. Captive management recommendations *If captive breeding recommended in Q15, is it for:*

Species recovery	Education	Reintroduction	Benign introduction
Research	Husbandry	Sustainable use	Preservation of live genome

Notes/other:

17. Do Captive stocks already exist? Yes

17A. Names of facilities: Environmental protection Council, Bahrain.
Breeding Centre for Endangered Arabian Wildlife, Sharjah, UAE.

17B. No. in captivity:	Males	Females:	Unsexed:	Total	Not known?
	0	0	110	110	

17C. Does a coordinated species management program exist for this species? No

If yes, specify

17D. Is a coordinated Species Management Program recomended for range country(ies)? Yes

If yes, specify Saudi Arabia, Bahrain

18. Level of captive breeding/cultivation recommended

Ongoing ex situ program intensified or increased

19. Are techniques extablished to propagate the taxon?

Techniques known for this taxon or similar taxon

20. Other Comments

Part Four

21. Sources:

Gasperetti et al. (1993)
Fritz & Wischeif (1997)

22. Compilers: Freshwater group workshop, CAMP meeting 2003, Sharjah, UAE.

23. Reviews:

Mauremys caspica

N

0 100 200 300 400 500 Kilometers

Mapping by GIS Unit
Environmental Research & Wildlife Development Agency
PO Box 45553
Abu Dhabi
United Arab Emirates

Conservation Assessment Management Plan
Taxon Data Sheet

This Assessment is a **National / Regional Assessment**

1.Scientific Name: *Pelomedusa subrufa* Lacépède, 1788

1A. Synonyms: Scientific synonym / ambiguities Authority (date)

1B. Scientific nomenclature:

FAMILY: Pelomedusidae
ORDER: Testudines
CLASS: Reptilia

1C. CommonNames: Marsh terrapin

1D.Taxonomic level: Species

Notes:

2. Habitat

Primary

Notes on Habitat: Stagnant and slow flowing waters

Life form (plant):

Niche:

Country(ies)

Saudi Arabia Yes
Yemen Yes

Distribution

Historical distrib: South western Saudi Arabia

Current countries: Saudi Arabia, Yemen

Geograph. extent: South western Saudi Arabia, Yemen

Migration regions:

3. Approximate Area of Occurrence of the taxon in and around the area of study/ sighting/ collection

(Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary encompassing all known, inferred or projected sites of present occurrence of the taxon)

Occurrence area: > 20,000 sq km

Notes (Occurrence)

4. Approximate Area of Occupancy of the taxon in and around the area of study/ collection

(Area of occupancy is defined as the area occupied by the taxon within the 'extent of occurrence')

Area of Occupancy: 11-500 sq km

Notes (Occupancy):

5. Number of Subpopulations in which the taxon is distributed: 1

Is there a continuous declined in subpopulations / locations? [ ]

Are there extreme fluctuations in subpopulations/ locations? [ ]

Percentage of population that lives in most important subarea:

Notes (subpops)

6. Habitat status: Fragmented

6A. Is there any change in the habitat where the taxon occurs? *If yes, describe:* Decrease in Area[x]
[x] (Yes)
6B. If decreasing, what has been the decrease in Habitat area?
approximate change (%): < 20% over how many years: 5
Notes on decrease:
6C. If stable or unknown, do you predict a decline in habitat?
approximate change (%): over how many years:
6D. State primary cause of change: Water abstraction
6E. Is there any change in the quality of the habitat where the taxon occurs? [x] (Yes)
Type of change Decrease in quality Notes:
6F. Notes (general) on habitat::

7. Threats

		Rank	Past	Pres	Fut	Lead to decline	Under stood	Rever-sible	Have ceased	Notes
					Extraction					
1.3.6.	Groundwater extraction		N	Y	Y	Y	N	Y	N	

Number of locations for serious threat: 0
Comment:

8. Trade: 8A. Is the taxon in trade? [ ] (Yes)
Parts in Trade: Purpose Barter Local Natl Intl Comment

8C. Which form of trade (specified form) is resulting in a perceived or inferred population decline?

9-10. Population numbers and Trends
9A. Avg. age of parents in pop: Unknown

	Total Pop.	Mature	Breeding pairs
9B. Global Population:			
10A. Recent past trends:	Declining	Declining	
Rate of decline (past)			
For how many years?	years	years	
10B. Will population decline?	Yes	Yes	
. Predicted Rate (future)			
For how many years?	years	years	

Notes:

11. Population Data quality
11A. Estimates base on:
[ ] Census or monitoring [ ] Field study [ ] Informal sightings
[ ] Indirect information [x] Museum records [x] Literature
Notes: [ ] Hearsay/belief

11B. Qualifiers: *Observed, Infeerred, Suspected, Estimated, or Projected*
11C. Uncertainty *95% confidence, Minimum/Maximum values, Range of Opinion; Evidentiary; Precautionary; Subjective; Hypothetical; Point estimate; or Range estimate*

12. Recent Field Studies
Researcher names, Location, Dates, Topics:

Part Two

13. Status (Red List) **Prior to Workshop** Status Criteria Red list version

13A Global: None

National:

13B. Cites: 13C. Natl wildlife Legislation:

13D. Natl Red Data Book: 13E. Intl Red Data Book:

13F. Other legislation:

13G. Protected area presence:

13H. Endorsed protection plan:

Current (Workshop) Status Criteria Red list version

Global: Ver 3.1

National: Least Concern

Notes:

Part Three

14. Supporting Research Is research recommended for taxon? Yes

Specify: [x] Genetic research [x] Taxonomic research [x] Life history

[x] Survey studies [x] Limiting factor research [ ] Epidemiology [ ] Trade

14A. Is Population and Habitat Viability Assessment recommended? No

Notes:

15. Management recommendations for the taxon *Specify:*

[x] Habitat management [ ] Wild pop management [x] Monitoring [ ] Translocation

[ ] Sustainable utilization [ ] Public education [ ] Genome Resource Banking

[x] Limiting factor mgt. [x] Captive breeding [ ] Work in local communities

Notes:

Conservation Measures Recommended	**In place**	**Needed**	**Old in place**	**Old needed**

16. Captive management recommendations *If captive breeding recommended in Q15, is it for:*

Species recovery	Education	Reintroduction	Benign introduction
Research	Husbandry	Sustainable use	Preservation of live genome

Notes/other:

17. Do Captive stocks already exist? Yes

17A. Names of facilities: Breeding Centre for Endangered Arabian Wildlife, Sharjah, UAE.

17B. No. in captivity:	Males	Females:	Unsexed:	Total	Not known?
	0	0	13	13	

17C. Does a coordinated species management program exist for this species? No

If yes, specify

17D. Is a coordinated Species Management Program recomended for range country(ies)? No

If yes, specify

18. Level of captive breeding/cultivation recommended

:

Ongoing ex situ program intensified or increased

19. Are techniques extablished to propagate the taxon?

Techniques known for this taxon or similar taxon

countries:

20. Other Comments

Part Four

21. Sources: Gasperetti et al. (1993)

22. Compilers: Freshwater group workshop, CAMP meeting 2003, Sharjah, UAE.

23. Reviews:

Pelomedusa subrufa

N

0 100 200 300 400 500 Kilometers

Mapping by GIS Unit
Environmental Research & Wildlife Development Agency
PO Box 45553
Abu Dhabi
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Conservation Assessment Management Plan
Taxon Data Sheet

This Assessment is a **National / Regional Assessment**

1.Scientific Name: *Rana cf. ridibunda* Pallas,1771

1A. Synonyms: Scientific synonym / ambiguities Authority (date)

1B. Scientific nomenclature:

FAMILY: Ranidae
ORDER: Anura
CLASS: Amphibia

1C. CommonNames: Marsh frog

1D.Taxonomic level: Species

Notes:

2. Habitat **Country(ies)**

Primary

Bahrain Yes
Saudi Arabia Yes

Notes on Habitat Oases, mountainous wadis

Life form (plant):

Niche:

Distribution

Historical distrib: Saudi Arabia, Bahrain

Current countries: Saudi Arabia, Bahrain

Geograph. extent: South-west Saudi Arabia, East Saudi Arabia, Bahrain

Migration regions:

3. Approximate Area of Occurrence of the taxon in and around the area of study/ sighting/ collection

(Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary encompassing all known, inferred or projected sites of present occurrence of the taxon)

Occurrence area: > 20,000 sq km

Notes (Occurrence)

4. Approximate Area of Occupancy of the taxon in and around the area of study/ collection

(Area of occupancy is defined as the area occupied by the taxon within the 'extent of occurrence')

Area of Occupancy: 11-500 sq km

Notes (Occupancy):

5. Number of Subpopulations in which the taxon is distributed: 2

Is there a continuous declined in subpopulations / locations? [ ]

Are there extreme fluctuations in subpopulations/ locations? [ ]

Percentage of population that lives in most important subarea:

Notes (subpops)

5b. Specific description of major subpopulations and locations

Area Eastern Arabia *Size:* 20000 *Sq km GIS lattitude* *longitude*
Populaton (best est:) 0 *High:* 0 *Low:* 0 *Habitat:*

Area South west Saudi Arabia *Size:* 20000 *Sq km GIS lattitude* *longitude*
Notes Populaton (best est:) 0 *High:* 0 *Low:* 0 *Habitat:*
Notes

6. Habitat status: Fragmented

6A. Is there any change in the habitat where the taxon occurs? [ ] (Yes)
If yes, describe:
6B. If decreasing, what has been the decrease in Habitat area?
approximate change (%): over how many years:
Notes on decrease:
6C. If stable or unknown, do you predict a decline in habitat?
approximate change (%): < 20% over how many years: 5
6D. State primary cause of change: Water abstraction
6E. Is there any change in the quality of the habitat where the taxon occurs? [x] (Yes)
Type of change Decrease in quality Notes: Development, water abstraction, fertilisers, pollution by livestoc, eutrophication

6F. Notes (general) on habitat::

7. Threats

		Rank	Past	Pres	Fut	Lead to decline	Under stood	Rever-sible	Have ceased	Notes
					Extraction					
1.3.6.	Groundwater extraction		N	Y	Y	Y	N	Y	N	
					Alien species					
2.2.	Predators		N	Y	Y	Y	N	Y	N	Introduction of Tilapia
					Disasters					
7.7.	Other		N	Y	Y	Y	N	Y	N	Decline in water quality
7.7.	Other		N	N	Y	Y	N	Y	N	Possible export threat
					Other human					
10.2.	Research		N	Y	Y	Y	N	Y	N	Teaching purposes

Number of locations for serious threat: 0
Comment:

8. Trade: 8A. Is the taxon in trade? [ ] (Yes)
Parts in Trade: Purpose Barter Local Natl Intl Comment

8C. Which form of trade (specified form) is resulting in a perceived or inferred population decline?

9-10. Population numbers and Trends
9A. Avg. age of parents in pop: Unknown

	Total Pop.	Mature	Breeding pairs
9B. Global Population:			
10A. Recent past trends:	Declining	Declining	
Rate of decline (past)			
For how many years?	years	years	
10B. Will population decline?	No	No	
. Predicted Rate (future)			
For how many years?	years	years	

Notes:

11. Population Data quality

11A. Estimates base on: [ ] Census or monitoring [ ] Field study [x] Informal sightings
[x] Indirect information [x] Museum records [x] Literature
Notes: [ ] Hearsay/belief

11B. Qualifiers: Observed *Observed, Infeerred, Suspected, Estimated, or Projected*

11C. Uncertainty *95% confidence, Minimum/Maximum values, Range of Opinion; Evidentiary; Precautionary; Subjective; Hypothetical; Point estimate; or Range estimate*

12. Recent Field Studies

Researcher names, Location, Dates, Topics:

Part Two

13. Status (Red List)

Prior to Workshop	Status	Criteria	Red list version
13A Global:	None		
National:			

13B. Cites: 13C. Natl wildlife Legislation:
13D. Natl Red Data Book: 13E. Intl Red Data Book:
13F. Other legislation:
13G. Protected area presence:
13H. Endorsed protection plan:

Current (Workshop)	Status	Criteria	Red list version
Global:	Least Concern		Ver 3.1
National:	Least Concern		

Notes:

Part Three

14. Supporting Research

Is research recommended for taxon? Yes

Specify: [x] Genetic research [x] Taxonomic research [ ] Life history
[x] Survey studies [x] Limiting factor research [ ] Epidemiology [x] Trade

14A. Is Population and Habitat Viability Assessment recommended? Yes
Notes:

15. Management recommendations for the taxon

Specify:

[x] Habitat management [ ] Wild pop management [x] Monitoring [ ] Translocation
[ ] Sustainable utilization [x] Public education [ ] Genome Resource Banking
[ ] Limiting factor mgt. [x] Captive breeding [ ] Work in local communities
Notes:

Conservation Measures Recommended	**In place**	**Needed**	**Old in place**	**Old needed**

16. Captive management recommendations *If captive breeding recommended in Q15, is it for:*

Species recovery	Education	Reintroduction	Benign introduction
Research	Husbandry	Sustainable use	Preservation of live genome

Notes/other:

17. Do Captive stocks already exist? Yes

17A. Names of facilities: Breeding Centre for Endangered Arabian Wildlife, Sharjah, UAE

17B. No. in captivity: Males Females: Unsexed: Total Not known?
Not known

17C. Does a coordinated species management program exist for this species? No

If yes, specify

17D. Is a coordinated Species Management Program recomended for range country(ies)? No

If yes, specify

18. Level of captive breeding/cultivation recommended

Ongoing ex situ program intensified or increased

19. Are techniques extablished to propagate the taxon?

Techniques known for this taxon or similar taxon

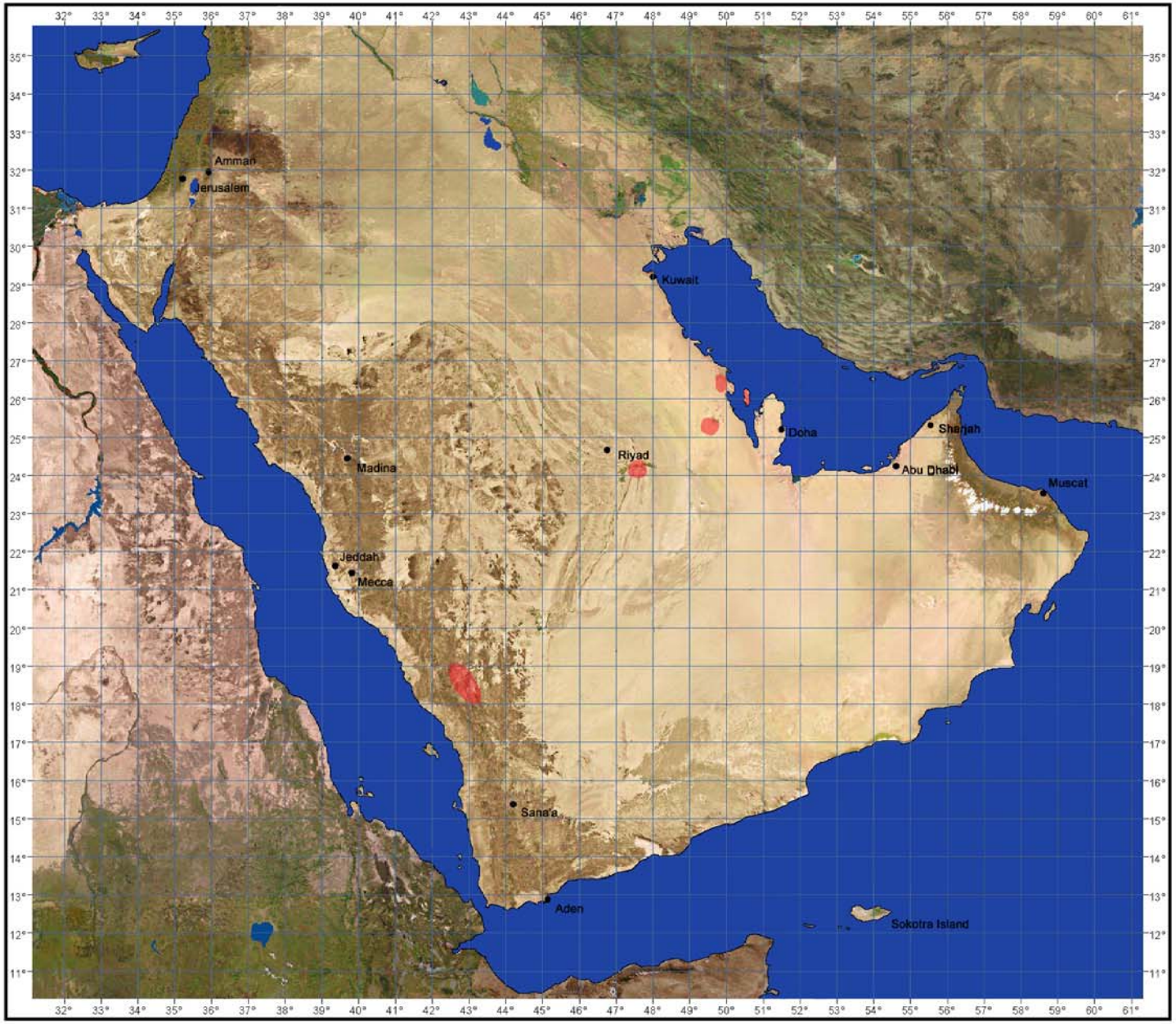
20. Other Comments

Part Four

21. Sources: Balletto et al. (1985); Gallagher (1971), Leviton et al. 1992

22. Compilers: Freshwater group workshop, CAMP meeting 2003, Sharjah, UAE.

23. Reviews:



Rana cf ridibunda

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Appendix 1 a

GCC Agreement

Cooperation Council for Arab States (Countries) of the Gulf

Agreement for the Preservation of Wildlife
and
Conservation of its Natural Habitats
in the
Arab Gulf States (Countries) of the Gulf Cooperation Council

Agreement for the Preservation of Wildlife and Conservation of its Natural Habitats in the Arab Gulf States (Countries) of the Gulf Cooperation Council

Introduction:

Due to the Countries members of the GCC Countries believes in the mutual destiny and common objectives that unify their people, and their endeavours to achieve full cooperation, integrity and solidarity between their citizens, which would enhance the efforts exerted in all felids aiming to implement the objectives towards a prosperous future and,

Their admissions that all type of wildlife are forming the infrastructure of the rural and human sustainable prosperity and for the long term economic development besides its main heritage importance for the Arab Nations, being the guardians of these resources which all mighty god has entrusted (given) them to protect and preserve for the future generations and,

By understanding that many type of wild life with all its species and Natural Habitats are facing serious threat to be destroyed due to the misuse and other different human activities that could lead to the deterioration of the wildlife natural habitats and,

In recognition of the importance of considering the preservation of all type of wild life in the strategies and objectives of National Planning and,

According to the seventh rule of the public policies and general principles to protect the environment and the mutual environmental work in the GCC countries,

They hereby agreed upon the following:

Article one (1)

General Provisions

Definitions:
The following expressions shall have the meaning given hereunder:

Cooperation Council:	The Cooperation Council for the Arab States of the Gulf which includes the United Arab Emirates, Bahrain, Saudi Arabia, Oman, Qatar and Kuwait.
The Supreme Council:	The Supreme Council of the Cooperation Council.
Ministers:	Ministers of the Environment Affairs within the Countries of the Council.
Secretariat General:	The Secretariat General of the Cooperation Council.
The Agreement:	Agreement for Preservation of the Wildlife and Natural Habitats within the GCC countries.
The Permanent Commission:	The commission responsible for following up with agreement implementation.
The Environmental Coordination Committee:	The Environmental Coordination Committee for the Countries of the Council.
The Secretariat:	The Secretariat of the agreement.
The Wildlife:	Living and non-living organisms, whether plants, animals, bacteria or mycetes in their natural habitat or elsewhere.
Preservations:	Group of rules, regulations and procedures maintaining to protect the wildlife, its production, regeneration and its sustainable use, and to rehabilitate it as well as its habitats which was deteriorated due to men and natural factors.
Trading:	It includes the Import and Export business, sales, exhibit, trade in and exchange.
The Habitat:	All Natural Habitats with diversities they contain.
Environmental system:	All Habitats with all assembles, groups of living diversities they contain whether plants, animals or other organisms that interact among one another and with its surrounding as whole integral system.
The Biodiversity:	All type of living things on earth, which include all species with its hereditary diversities and the whole environmental systems as well.
Productions:	Any Natural or artificial parts taken from a natural organism.

2. Objectives:

This agreement aimed to preserve the environmental systems and wildlife in a good and developing way, especially those types liable to the danger of extinction, particularly when density of those species exceed the international border of two or more neighbouring countries or whenever they migrate through those countries including the territorial waters and air space under their sovereignties.

3 The Countries Parties shall undertake according to this agreement to develop and apply policies and activities aiming to preserve the wild life and natural habitats and to rehabilitate them to guarantee its sustainable use by:

a) To enact, apply and develop suitable laws, legislations and policies.
b) To protect and manage appropriate areas of habitats which are suitable for a wild life whether are natural or not, to be as conservative areas according to the International Standards and National Laws.
c) To prevent the wild life and its environment from all threats as the pollution and the deterioration and to take the necessary measures for fight them and control them immediately whenever occurred, in order to minimize its effects.
d) To stipulate to carry out studies to evaluate the environmental impact of all developmental projects before starting with this projects and to find a mechanism to follow up with the implementation of the approved environmental measures and conditions in each country.
e) To pay attention for the environmental education to make aware of the importance of preserving the wild life, its Natural Habitats and its social, economical and environmental impacts especially for the primary preparatory and secondary educational levels.
f) To work towards raising awareness of the importance to preserve the Wild Life and its Natural Habitats by using different mass media.
g) To cooperate in the field of researches, exchange of experiences, the training of specialized staff and to solve the common problems related to the management of the natural resources.

Article 2
Protection of Natural Habitats

Each party in this agreement shall:

1. Issue the necessary legal policies to ensure the conservation and whenever needed to rehabilitate and well administrate the appropriate areas of Natural Habitats which are suitable for Wild Life, especially for those geographically isolated species, or the progenies colonized in the land of any country Party of this agreement.

2. Give priority to assure that the protected Natural Habitats are managed in a way that is liable to achieve the goal from this protection, and this will include:

    a) To prevent or restrict the human activities that could lead to any of the following: To destroy the nature of these Habitats
    To contaminate or poison it
    To deteriorate or to threat to deteriorate the bio-diversity of these habitats or its environmental reproduction
    b) To take the necessary measures to restore the bio-diversity of Habitats that was exposed to deterioration.

3. To coordinate and make efforts with other parties to protect the Natural Habitats in a suitable way especially whenever:

    a) This protection would be in a common border zone
    b) These habitats are important for the immigrant species as mentioned in the second and third appendix of this agreement.

Article 3

Protection of Natural Species

1. Each party in this agreement has to enact the necessary laws to protect the Natural Species listed in the three appendices attached herewith as follows:

a) The botanical group listed in the first appendix:
    1. To protect those species in their Natural Habitats wherever they are or suitable for their relocation
    2. To prohibit or to control the pull or cut of any of its parts, or to collect its grains except for the permitted scientific and research purposes

b) The zoological group listed in the second appendix:
    1. To protect those species in the their Natural Habitats wherever they are or suitable for their resettlement
    2. To prohibit all types of hunting or killing by pupose, destroying or collecting their eggs, or disturbing them especially during their reproduction and breeding seasons.

c) The zoological group listed in the third appendix:
    1. To assure that any utilization of the above species is performed in order to prevent any threatening towards the existence and sustain of those species in natural areas, by taking necessary measures such as:
        - To prohibit hunting or to determine the season where hunting will be allowed and to stipulate policies liable to rationalize their standards.
        - To prohibit and/or organise the use of these groups in order to enable those groups to reproduce satisfactorily

2. Each party in this agreement shall take all the necessary legal and administrative procedures towards:

a) Registration of all species stated in the first, second and third annexes that are legally permitted to be possessed.
b) Stipulation of breeding conditions for those species and enhancing its reproduction under capture
c) Prohibiting or regulating the release of those species in the natural areas
d) Prohibiting or regulating all types of local regional and international trading of those species listed in the first, second and third annexes or any of its productions or parts.

3. Prohibition from possessing any kind of animals mentioned in the third annex, or to kill it by any means that could lead to its extinction or by using any of the permitted tools except with a licence stipulating conditions that would regulate its possession or the use of these tools such licences or permissions shall be issued by the competent authorities within the countries Parties of the agreement.

4. Besides the measures stipulated in this agreement, the states parties shall undertake to coordinate its efforts to protect the migratory groups of those kind mentioned in the second and third appendices.

Article 4
Restrictive Measures

1. Each party of this agreement may at a national level; implement restrictive measures to regulate the trade of any wild species, its parts or produces which are stated in the first, second and third annexes, if those species are living on this country's land or territorial water or migrating through in a normal way, and to control the use of any of the species stated in the third appendix on this land.

2. Each state party of this agreement shall notify the permanent commission of any such local restrictive measures to be adopted and which species are full protected on its land rather than those listed in the first and second appendices.

Article 5
Supplementary Provisions

To implement the provisions of this agreement, each party should abide to:

1. To cooperate amongst the other countries Parties especially if this would enhance the efficiency of the adopted measure under this agreement provisions.

2. To encourage and coordinate the researches, and exchange of information and experience that could serve the goal of this agreement especially those related to the programs of reproduction of species under capture and the resettlement of those species in their Natural Habitats

3. To coordinate and integrate the efforts, and to exchange information about the transition of resettled species through the borders towards other state territories.

4. To work towards benefiting from the modern technology in exchanging information and networks among the concerned institutions in the countries parties to facilitate the exchange of information related to the agreement and its applications.

Article 6
The Permanent Commission

1. According to this agreement, a commission named the permanent commission for the agreement conserving the wild life and its natural habitats at the GCC countries shall be established.

2. The permanent commission shall be consisted by representatives from all countries of the council, provided that representation levels do not go for less than Director (Manager).

3. The duty of the permanent committee is to implement principles and objectives determined in this agreement. Therefore the committee shall carry the following responsibilities and competence:

a) To follow up with the implementation of this agreement
b) To facilitate carrying out extensive researches and studies about Natural Habitats of species, their density areas and their ordinary movement in such locations
c) To collect information and to prepare regional periodical reports about the wild species; its conditions, numbers, distributions and changes that could emerge and factors that might affect them
d) To analyse and publish the information mentioned in the above clauses A and B
e) To determine the wild life preservation requirements for species and to analyse the effectiveness of the preservation procedures adopted by the parties for the implementation of this agreement
f) To put and adopt and reconsider the preservation procedures pending on the best provided scientific proves which will include the following:

    1. To designate some areas as conservative areas to preserve and rehabilitate the biodiversities
    2. To set up the timing for starting and ending the hunting season
    3. To regulate the conditions of hunting aiming to avoid the intensification of Hunting activities in any area or region or for particular species
    4. To regulate the pasturing and to determine its locations and its timing
    5. To take other preservative procedures that the permanent committee may find them necessary to achieve the objectives of this agreement. This will include setting plans and programs liable to prevent the negative effects due to the development projects in the natural expansion areas for the Wild Life group of plants and animals as specified in the annexes attached to this agreement.

g) To carry a periodical review on the appendices attached to this agreement and to suggest their amendments upon the request of any of the countries Parties, which shall be approved by the Environmental Coordination Committee.
h) To review the measures adopted by the countries Parties in accordance with the clause (2) of the fourth Article of this agreement.

i) To prepare the suggested related budget for this agreement
j) To propose drafts of the bylaws and the financial and administrative systems for the permanent committee and to approve them from the ministers.
k) To aim at easing the amicably compromise to solve any conflicts that might occur between the parties during the application of this agreement according to the article nine thereof.

4. The permanent committee shall convene at least twice a year, other regular or extraordinary meetings could be arranged upon the request from one of the countries parties and the confirmation of another, the Cooperative Council General Secretariat shall call for the committee first meeting within a period not exceeding three months from the date this agreement will be put to effect.

5. The permanent committee shall form specialized sub-commissions or working groups whether temporary or permanently up to their needs to perform their functions properly.

6. According to this agreement provisions the countries parties shall apply the preservation procedures recommended by the permanent committee and confirmed by the ministers as follows:
l) The permanent committee shall notify all the countries parties of the preservation procedures.
m) The preservation procedures shall be binding to all states parties after 60 days from the notification date.

7. The permanent committee shall evaluate the implementation of the agreement after three years from the date the agreement came into force and at least once every six years after that

Article 7
The Secretariat

According to this agreement a secretariat shall be set up to perform the following functions:

1. To organise and prepare for the permanent committee meetings in coordination with the General Secretariat.

2. To prepare reports on activities it exerted to perform its functions according to this agreement and to submit them to the permanent committee.

3. To coordinate with the concerned authorities to preserve the wild life in the GCC countries and with the similar Regional and International Organizations and Conventions.

4. To coordinate for the exchange of information and data among the countries Parties in the agreement and to notify the concerned authorities with the same.

5. Any other assigned functions.

Article 8
Amendments

A party in this agreement could suggest to amend it by submitting an application to the entrusted body that will raise it to the Ministers for approval, the same provisions mentioned in the clause (2) of the tenth Article concerning the validity of this agreement shall be applied for this amendment.

Article 9
To settle conflicts

The permanent committee shall do its best to facilitate (ease) the amicably settlement to solve any conflicts that might arise during the application of this agreement. If it was hard to reach such settlement or to solve such conflicts through direct negotiations between concerned parties, then the committee shall raise the issue to the ministers.

Article 10
Validation

1. This agreement has to be approved by the Supreme Council and endorsed by the countries members as per their constitutional procedures

2. The agreement shall be enforced after 90 days from the endorsement of four countries of the GCC

Article 11
Reservations

1. A country when it comes to deposit the document of its agreement endorsement, it may take one or more reservation towards the species stated in the first, second and third annexes, or in relation to the measures and methods of killing, catching or using one or more species of those mentioned in this agreement.

2. A state party of the agreement may draw any reservation from her side at any time by notifying the secretary general in writing. This reservation shall be cancelled after 30days from the date of notification.

Article 12
Withdrawal

A country Party of the agreement has the right to withdraw from it at any time by issuing and official letter addressed to the Secretary General, such withdrawal shall be valid 180 days from the date the notification has been handed over to the Secretary General without effecting the validity of the agreement.

Article 13
The Deposit

1. The General Secretariat shall hold the deposit of this agreement and will send official copies of the endorsement documents to all country members of the GCC.

2. The General Secretariat shall notify the ministers and the countries members in the agreement as well, with the following:

a) The date the agreement entered into effect.
b) Any reservation on this agreement according to the clause (1) of the eleventh Article of the agreement.
c) The withdrawal of any reservation shall take place according to the clause (2) of the eleventh Article.
d) Any withdrawal from the agreement according to the twelfth Article of the agreement and the effective date of such withdrawal.

The Relation between the agreement to preserve the wild life in the Countries of the Council and the Cooperative Council:

The Supreme Council

The Ministerial Council

Ministers Responsible of the Environmental Affairs within the Countries of the Council

Environmental Coordination Committee

Permanent commission for the Agreement

Agreement Secretariat

Appendix 2 a

Arabian Leopard

Status Report presentation: Oman

Status Report: Sultanate of Oman

Authors: J.A. Spalton[1] & Ali Salim Bait Said[2]

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- [2]*Directorate General of Environment, Ministry of Regional Municipalities, Environment & Water Resources, PO Box 2035, Salalah 211, Sultanate of Oman.*

Status and Distribution Records

- To get the most accurate picture of the status of leopard in Oman only records where an animal has been photographed or its remains recovered are included in our principal database.
- Status in Musandam, Al Hajar Mountains and Dhofar are presented:

Musandam

- 1976: Female killed near Limah
- 1979: Animal killed in Wadi Maqalayli
- 1980: Eight leopards killed at different locations
- 1981: Male killed near Taf al Qarha
- 1990: Male killed near Khasab
- 1997: Two leopard trapped & killed

Al Hajar

- Undated: Skin recovered SW of Ibra
- 1976: Leopard shot near Nakhl

Dhofar

- 1947: Leopard collected Jabal Samhan
- 1947/48: Leopard collected Dhofar
- 1977: Remains of two collected
- 1985: Four trapped for captive breeding
- 1994: Skull found near Jibjat
- 1995-2000: 17 animals camera trapped in Jabal Samhan
- 2001-2002: Seven animals trapped for tracking
- 2002: Three leopards camera trapped in Jabals Qara & Qamar

Habitat

- Historically woodlands & grasslands of Qara & Qamar in Dhofar best habitat.
- However, huge increases in numbers of livestock have led to massive overgrazing of Dhofar's 'green mountains' and destruction of leopard habitat.

Causes of increase in livestock numbers

- Veterinary care
- Subsidized feed
- Improved water supplies
- Cash incomes
- Breakdown of tribal management of stock
- Intrusion of camels into cattle grazing areas year round

Habitat II

- In northern Oman habitat also degraded by livestock and development projects.
- Today best habitat is confined to the steep wooded slopes of Jebel's Qara and Qamar and the semi-desert of Jebel Samhan.

Prey Species

- Jebel Samhan has good populations of prey including ibex, Arabian gazelle, hyrax, porcupine and ground birds like partridge.
- Jebels Qara and Qamar support few ungulates but hyrax and small animals are very common.
- Al Hajar range is home to the Arabian tahr but few other prey species.
- In many areas the tahr's niche has been filled by semi-feral goats.

Domestic Stock

- In Dhofar numbers of camels have increased exponentially since 1970.
- In Jebel's Qara and Qamar domestic stock (cattle, camel, goat) live in close proximity to leopard and share ranges and trails. They show both spatial and temporal overlap.
- In Jebel Samhan there is less contact with domestic stock.

LEGAL STATUS

- **Penalty for hunting or capture of leopard is imprisonment for not less than 6 months and not exceeding 5 years and a fine not less than RO 1000 and not exceeding RO 5000.**

Royal Decree 114/2001

Conflicts

- Leopard kill domestic stock
- However, on some occasions leopard may be falsely accused. Wolf and hyena may also kill stock.
- The result is that on occasion people illegally shoot leopard.

A resolvable issue?

- Education / Public Awareness
- Employment opportunities
- Active response to cases of livestock killing
  - To verify
  - To demonstrate concern
- Compensation programmes?

Ongoing Work I

- **Camera trapping** to determine distribution and to investigate livestock killing.
- Graduate and school leaver staff carry out most of the field work.

Cameras in Jabals Qara & Qamar

- 10 traps deployed winter 2002-3
- Leopard at one site
- Caracal at most sites
- Does the leopard competitively exclude the caracal?
- Other species such as wolf, hyena, porcupine common.

Ongoing work II

- **Satellite tracking** - results of animals trapped and collared in 2001 being analyzed.
- One further collar to be recovered.
- Further collaring of leopard planned for Jebel Qamar to look at range in 'green jebel' and to investigate extent of interaction with humans and their livestock.

Death of leopard

- Male leopard died under sedation while being fitted with satellite collar
- Examination revealed massive fracture of right radius.
- Metal fragments show that fracture resulted from severe gunshot wounds.
- Animal weakened by injury and less able to cope with sedation.

Ongoing work III

- **Genetic studies** underway with Sultan Qaboos University.
  - Molecular scatology to differentiate large carnivore faeces.
  - To support investigations of livestock kills.
  - To look at species and sub species issues.

Ongoing work IV

- **Public awareness** and education materials produced and exhibited.
- Approval has been given to produce a film about the leopard and other educational materials.

Recommendations

- Survey & Research to continue
- Implementation of management plan for Jabal Samhan Reserve
- Public Awareness programs to continue
- Social Survey
- Collaboration with range states
- Surveys in Musandam
- Captive Breeding Programme to continue

Appendix 2 b

Arabian Leopard

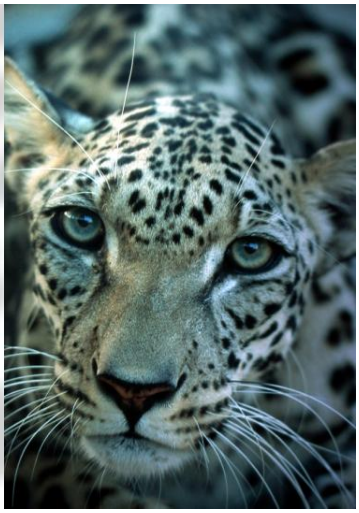
Status Report presentation: UAE

Status of the

Arabian leopard

Panthera pardus nimr

in the U.A.E

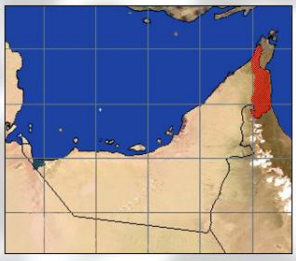


Status, distribution & development

- There is little or no literature upon which to base an estimate of the size and distribution of the historical population which is based primarily upon hearsay.
- However the general consensus is that the population has decreased dramatically if in fact any resident leopards remain.
- Human persecution, decline in prey species, loss of habitat and habitat fragmentation are the major threats.

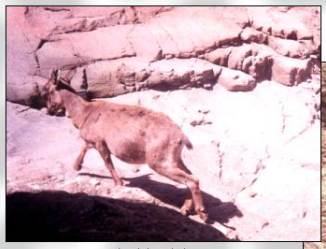
Habitat

- The vast majority of reports indicate that leopards prefer mountainous wadi's with permanent water.
- Water is a limiting factor and due to the predominantly arid environment substantially reduces the marginal habitat.
- No suitable protected areas and presently in place with the Emirates although an area of the Ru'us al-Jibal Mountains has been proposed.



Prey Species

- The consensus of the participants in previous CAMP workshops is that the traditional prey species are in a state of decline.
- Feral goats and sheep have therefore replaced these species as the leopards primary prey.



Arabian tahr

Feral goat

Domestic Animals

- There is very little proof to substantiate the claims that the loss of livestock in the U.A.E. is primarily due to the leopard.
- Throughout the leopards range goats are considered to be feral and there is some evidence to suggest that they are also targeted by hunters.
- There is no compensation system in place within the Emirates and current livestock management is unlikely to prevent a leopard from killing a animal.

Legal Status

- Listed under CITES appendix 1 since 1975 and listed as critically endangered in the global IUCN Red List.
- There is no well enforced legislation protecting the Arabian leopard within the Emirates and until recently there has also been poor enforcement of CITES regulations.
- At present very few of the leopard's prey species are listed under CITES or protected by any local legislation.

Conflicts & Public Awareness

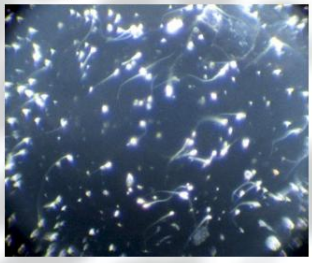
- The leopard's reputation amongst the people as an aggressive animal and a killer of livestock has lead to unjust persecution.
- The Arabian Leopard Trust (ALT) was extremely active promoting conservation issues within the U.A.E during the late 1990's, but has since closed.

People & Institutions

- The ALT was actively involved with the conservation issues surrounding the Arabian leopard between 1994 and 2001.
- Other than the work carried out at the Breeding Centre for Endangered Arabian Wildlife, Sharjah there are few other organisations in the UAE directly involved with the conservation of the Arabian leopard.

Ongoing Work and Research

- The has been no fieldwork specifically targeting the Arabian leopard since the blanket survey commissioned by the ALT in 1995
- The BCEAW is conducting reproductive research and in conjunction with Omaha's Henry Doorly Zoo have been conducting genetic studies.
- Collection and analysis of morphological data collected from captive species is being compiled.



Recommendations

- Intensive baseline surveys specifically targeting the Arabian leopard need to be conducted.
- Improved international cooperation and communication between the four range states to encourage movement of individuals on breeding loan agreement.
- Ensure the captive populations gene pool remains as diverse as possible.

Inventory

- 7.6 (13) at the BCEAW.
- 1.0 (1) at the Al Wathba Cheetah Centre.

Appendix 2 c

Arabian Leopard

Status Report presentation: Yemen

Arabian Leopard in Yemen

David Mallon
Karim Nasher
Nagi Thowabeh

Summary of Old Records

- Bury (1911) heard a leopard in Wadi Khatib
- Sanborn & Hoogstraal (1953) said leopards were widespread but scarce in the highlands. They bought skins in Ma'bar and Sana'a
- Scott (1942) said they occurred in the vicinity of Ta'izz. He saw one caged and obtained a skin in Sana'a, said to be of local origin
- Thesiger (1949) saw tracks in Wadi Makhia (N of Wadi Hadharamaut)
- Harrison (1964) said they were widespread but scarce in the hills north of Aden and listed 4 specimens: West of Beihan, Jebel Hasha, near Dhala, Mahfid, Aulaqi Kaur

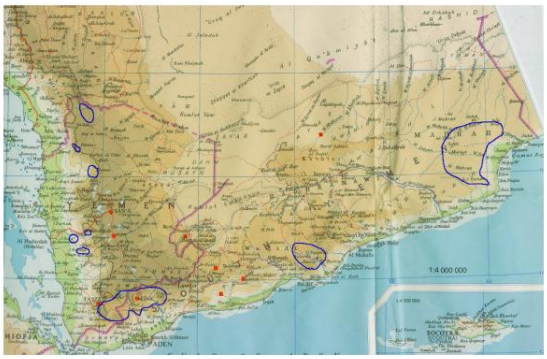
Recent Records (post-1990)

- Evans (1994) said leopards occurred in the hills above Wadi Hajar (central southern Yemen)
- Obadi (1993) reported leopards killed in Lodar area and said they occurred between Habil Jabr and the Al-Kaur mountains of Abyan province [this is approximately the same area referred to by Harrison
- Jennings (1992) reported 4 shot in "S and E Yemen" in recent years
- El Mashjary (1995) and Lagrot & Lagrot (1999) gave relatively detailed reports of leopards being captured or killed in Wa'ada/Al Wadi'a about 120 km north of Sana'a

Local Reports

- *7 areas of current presence*

1. Between Sa'dah and the Saudi border
2. Kufl Shammar in Hajja Governorate
3. Al Hayma, east of Manakha
4. Jebel Borah
5. Jebel Raymah
6. Highlands between Ta'izz and Aden
7. Al Mahra on the eastern border with Oman



Old records

Post-1990 records and reports

Prey

- Ibex: recorded in a few parts of the south and east. Rare.
- Gazelles: severely depleted by hunting
- Hamadryas Baboon: occur at several localities in the mountains. Can leopards prey on these?
- Small-medium prey: hyrax, hares, small carnivores, birds