

GLOBAL RE-INTRODUCTION PERSPECTIVES

Re-introduction case-studies from around the globe



**Edited by
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Cover photo: Clockwise starting from top-left:

- Formosan salmon stream, Taiwan
- Students in Madagascar with tree seedlings
- Virgin Islands boa

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Conservation of the endemic Azraq killifish in Jordan

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Introduction

Aphanius sirhani is the only endemic vertebrate species in Jordan. It was described in 1983, after been misidentified since 1960s as an Arabian killifish (*Aphanius dispar*). The species was named after *wadi al sirhan* that includes Azraq Oasis, the only site where *A. sirhani* is known to occur, and so *A. sirhani* became known as the Azraq killifish. Early when it was collected in the 1960s - 1970s the species was recorded to be the most abundant species with "endless" numbers after Nelson, 1973. However, continuous water extraction from the oasis led the species to be "endangered of extinction" by 1989 due to its habitat loss that resulted mainly because of water extraction. Later, the species was thought to be extinct by the mid-1990s, and no further research was carried out until 2000 when the species was re-discovered, but in very low numbers. At that time, its status was declared as "at the edge of extinction", and added to IUCN Red List with a status of Critically Endangered by 2004. At this time the RSCN started a rescue mission to save the only endemic vertebrate of Jordan, through a long-term habitat and re-introduction (re- enforcement) project which is still running.

Goals

- Goal 1: To have a sustainable, free-range and easily managed population of *A. sirhani* in the Azraq wetland reserve.
- Goal 2: To reduce the threats on the endemic species mainly via the introduced alien species.



Aphanius sirhani - male

Success Indicators

- Indicator 1: Population sizes.
- Indicator 2: Distribution.
- Indicator 3: Age structure (focusing on number of juveniles).
- Indicator 4: Alien species population size, structure and distribution.
- Indicator 5: Habitat quality.

Project Summary

Feasibility: In this stage the species was deeply surveyed to identify its ecological and biological

survival needs. When so, habitat assessment was carried out to draw up the species optimum habitats built on the old wetland system. The species profile was enlarged as the only endemic vertebrate in Jordan, and it became well known to local communities as a part of their heritage. It is also integrated into the school curriculum.



Aphanis sirhani - female

Implementation: Implementation includes several stages as follow:

- **Baseline survey:** To collect the needed data, in 2000, 2001, and 2002.
- First stocking, to secure a group of individuals, and start up the captive-breeding program.
- Low scale captive breeding program includes aquariums and concrete pools.
- Large scale captive-breeding program, include semi natural habitats that are isolated and free of alien species.
- Releasing stage, include three trial releases, and the large scale release.
- Diversify the genetic pools of the species by targeting those who have aquarium specimens collected from Azraq earlier in 1990s.
- Secure the species outside Azraq and Jordan, in case of emergency. Specimens are kept at the Sharjah Wildlife Centre for Arabian Endangered Species in the United Arab Emirates.
- **Rehabilitation:** After the scientific understanding of the species ecological and biological needs, at the same time the old wetland system was traced back to the 1960s before water extraction, a large scale rehabilitation scheme took place. The habitats were drawn to resemble the exact old ecosystem (in smaller scale according to the available water amount) at the same time to apply the species survival requirements. Large pools were created, and the area of the water bodies in the wetland increased from 0.02 % of the original oasis up to 5.5%. The new habitats apply the needs of the species mainly by being shallow enough, having nesting sties and being free of alien species.

Post-release monitoring stage:

In 2002 the comprehensive baseline survey established the monitoring program parameters that were to be monitored annually.

These parameters were:

- Population size of ***A. sirhani***.
- Population structure of ***A. sirhani***.
- Catchability of alien species.
- Population size of alien species.



Newly restored habitat

- Population structure of alien species.

Major difficulties faced

- Understanding the species biological and ecological needs.
- Funding and resources.
- Gaining public support.
- Understand the old water system of the Azraq Oasis.
- Rehabilitation works needs a lot of experience and effort.
- Maintaining *A. sirhani* under artificial conditions reduces its productivity.

- Controlling the alien species mainly cichlids (tilapia).

Major lessons learned

1. Re-introduction is an effective tool, but it is only need to be used when necessary. It is too costly and needs a lot of efforts to be performed.
2. Adopting habitat approach by conserving the habitats and its related biodiversity is more effective than having species outside in captive programs and re-introduce them back to their habitats.
3. When practicing re-introduction, habitats conservation should always be in consideration, and work should focus on both species conservation and habitats.
4. Public awareness is effective tool, and can be more effective when dealing with endangered and endemic species because it helps in building the story of conservation.

Success of project

Highly Successful	Successful	Partially Successful	Failure
√			

Reasons for success/failure:

- Achieving program goal by having a viable population.
- Organizational commitment toward the conservation project.
- The project has gained national and international support on both the public and organizational level.