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### RESULTS OF AN INITIAL FIELD SURVEY FOR OTTERS (*Lutra lutra*) IN JORDAN

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**Abstract:** An initial field survey for signs of the Eurasian otter, in accordance with the 'Standard Method', was carried out between September and October 2000 in four of the eight permanent watercourses of Jordan. At 7 of the 13 sites surveyed, signs (spraints, footprints) of the otter were found. The results indicate that at least the Rivers Yarmuk and Jordan host an otter population over most of those stretches forming the borders to Syria, Israel, and Palestine. The importance of this population is discussed in the light of its position at the southeastern border of the Mediterranean-Arab range of the Eurasian otter. First agreements for further activities to study the ecology of the otter in this area are introduced.

Keywords: Eurasian otter, *Lutra lutra*, Jordan, distribution

#### INTRODUCTION

Little knowledge has been available so far about the distribution of the Eurasian otter (*Lutra lutra*) in the Hashemite Kingdom of Jordan. The IUCN/SSC Otter Action Plan (FOSTER-TURLEY et al., 1990) classifies the species in this country as threatened and as "restricted to the rivers Jordan, Yarmouk, and Zarqa, the only permanent waterways in the Kingdom". Information about the otter in the most recent publication on the mammals of Jordan (AMR, 2000) is based mainly on anecdotal data: "it was observed in the upper reaches of the River Jordan and the Yarmuk River".

The II World Conservation Congress of IUCN, held in Amman on October 4-11, 2000, offered the opportunity to carry out a first field survey in Jordan. This took place from September 29 until October 2, 2000.

#### MATERIAL, METHODS AND STUDY AREA

The survey technique used followed the guidelines for the 'Standard Method' for otter surveys recommended by the IUCN/SSC Otter Specialist Group (REUTHER et al., 2000). Stretches of riverbank of up to 600m were investigated for signs (spraints, footprints) of otters.

Since the rivers Jordan and Yarmuk form the border to Israel and Syria, access to the rivers was not possible for regular distances of 3-5km between the survey sites. However, a special permit for these restricted military areas made it possible to investigate the banks on the Jordanian side of these watercourses at several places.

Localisation of ten survey sites was undertaken using a GPS receiver (Magellan Blazer 12) using the geodetic datum WGS 84 and measuring the geographic coordinates as recommended by REUTHER et al. (2000). Coordinates for another three survey sites were taken from a topographic map. The data were processed using the Information System for Otter Surveys (ISOS) of Aktion Fischotterschutz and transferred to a 10x10km UTM grid, which forms the basis of ISOS. The watercourses of Jordan were superimposed on digitised maps using GIS ARCView (ESRI®) software.

The watercourses surveyed covered four of the eight rivers of Jordan that permanently have water (SALAMEH and BANNAYAN, 1993). The River Yarmuk, forming the border to Syria and Israel, and which flows from east to west, was investigated at three sites between the village of Aqraba and the Al 'Adasiha reservoir, close to its confluence with the River Jordan. The River Jordan, forming the border to Israel and the Palestinian territories, was surveyed at six sites between the confluence of the River Yarmuk in the north and its river mouth at the Dead Sea. The River Zarqa, forming the border between the Jordanian administrative regions of Irbid and Al Balqa, flowing from east to west, was investigated at three sites at its lower and middle stretch only. One survey site was investigated in the Mujib Nature Reserve in the Wadi al Mawjib, located approximately in the middle of the eastern shore of the Dead Sea and flowing from east to west.

The River Yarmuk is mainly a mountainous stream following the very steep valley formed by the Golan Heights. Large parts of its banks are covered by dense vegetation consisting of *Salix* sp., *Tamarix* sp., *Phragmites australis*, *Arundo donax*, and *Typha* sp. Its floor is mainly rocky. A number of dams form reservoirs for storing drinking water and for the irrigation of adjacent farmland (mainly for the production of citrus fruits). Because of the border situation, agricultural utilisation in the river valley is at a low level so far, but is increasing since access to the valley for residents was recently increased. Despite the agricultural use, no other sources of pollution are visible. The water is very clear and, as earlier studies have shown (KRUPP and SCHNEIDER, 1989), numerous fish species are to be found.

The River Jordan, located between 200 and 400m below sea level, is a typical lowland river, in most parts not wider than 5-10m. Most of its banks are covered by very dense vegetation consisting of *Salix* sp., *Tamarix* sp., *Phragmites australis*, *Arundo donax*, and *Typha* sp. Since the water is very muddy the condition of the floor can only be estimated, but appears to consist mainly of mud and sand. Although a restricted military area, most of the adjacent grounds are utilised for intensive farming of oranges, other citrus fruits, and bananas. A large amount of water is taken from the river for irrigation purposes (and sometimes for fish farming) at numerous sites. Agriculture, water pumping (frequently connected with a high degree of pollution by oil and petrol), and wastewater from urban areas are obvious sources of pollution. Several species of fresh water fishes are common in the River Jordan basin, including *Acanthobrama lissneri*, *Barbus canis*, *Clarias gariepinus* and *Tilapia zilli* (KRUPP and SCHNEIDER, 1989).

The River Zarqa is also primarily a mountain river. A dam near the village Dayr Alla (Al-Rwyha dam), forming a small reservoir, destroys most of its lower part which is marked by very low water levels and intensive use of the river banks by domestic stock (mainly sheep and goats). Upstream from the dam the river is mainly natural, fast flowing with very clear water, and little agriculture use of the adjacent land for a stretch of 2-3km. River banks are mostly rocky and vegetation of *Nerium oleander*, *Phragmites* sp. and *Typha* sp. is limited to short sections. In the highest reach, in the mountain area of Jarash, another, very high dam, the King Talal Dam, forms the largest reservoir in Jordan, which is used for storing irrigation water.

A very narrow canyon of high sandstone cliffs forms the lower stretch of the Wadi al Mawjib. Because of its protected status as a Nature Reserve, the only human impact visible were visitors walking along the few, narrow riverbanks, or directly in the water. Visibility in the water is up to 2m and many fishes and crayfish could be observed. Vegetation is sparse and mainly rocks and rock walls form the riverbanks.

## RESULTS

Signs of otters were found at 7 of the 13 survey sites investigated (Figure 1), i.e. 54% of the sites were positive. Spraints only occurred at 3 sites, footprints only at 1 site, and spraints and footprints at 3 sites. On the River Yarmuk, all three sites surveyed were found to be positive whilst, on the River Jordan, four out of the six sites surveyed were positive. However, all three sites investigated on the River Zarqa, as well as the one site surveyed on the Wadi al Mawjib, were negative.

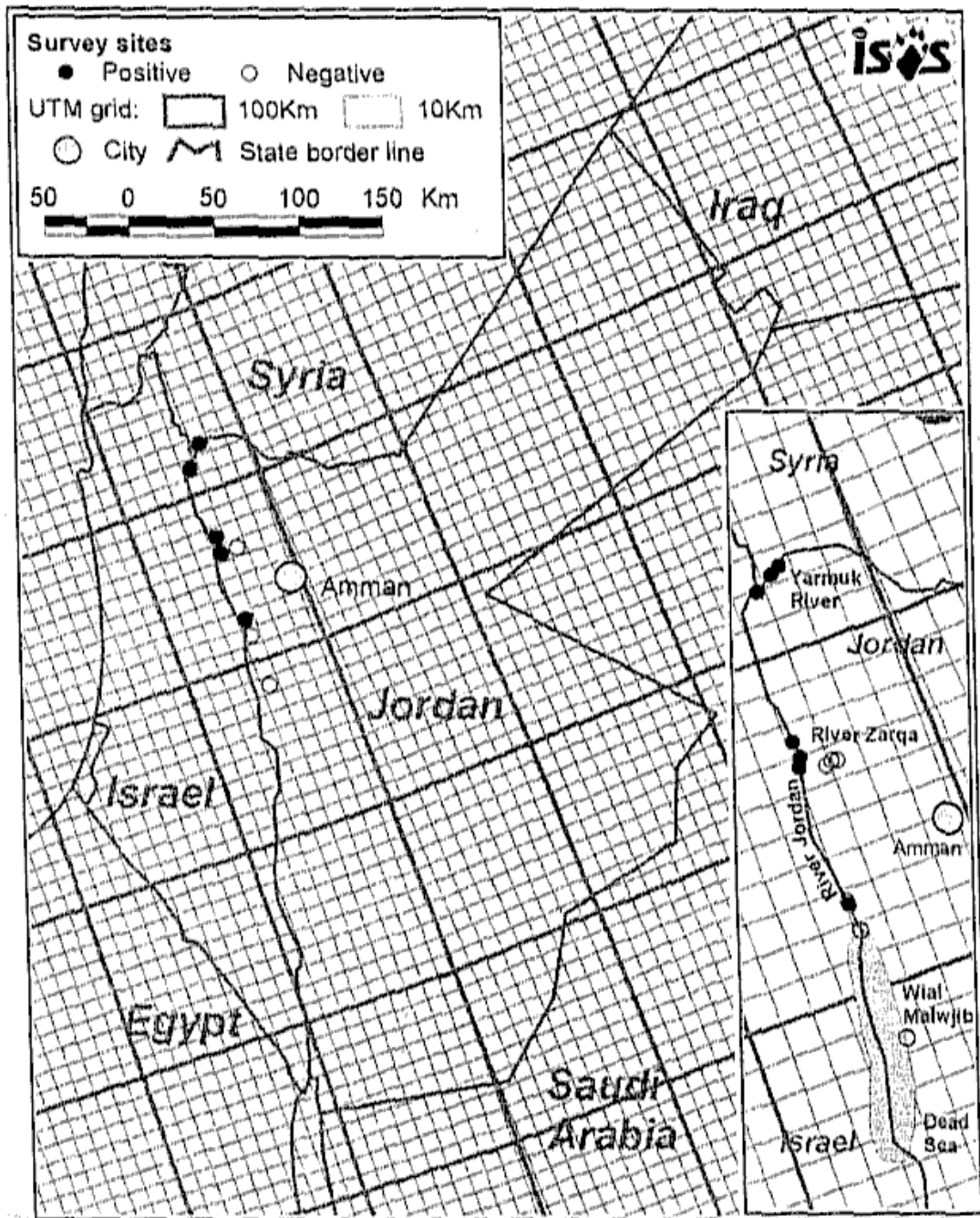


Figure 1. Result of the initial otter field survey in Jordan

**DISCUSSION**

The overall result of 54% of positive sites should not be used for comparisons with other survey results because of the low number of sites investigated and because of the irregular distribution of the survey sites (see also REUTHER et al., 2000).

The Jordanian otter population is of great importance. Together with the Israeli otter population, which is mainly concentrated in the northern part of Israel (DOLEV, pers. comm.; REUTHER pers. obs.), it forms the southeastern border of the Mediterranean-Arab range of the Eurasian otter. Although nothing is known about otters in Egypt and Libya, it seems unlikely that there a connection exists with the otter occurrences observed in the west of the northern parts of Africa, i.e. in Morocco (MACDONALD and MASON, 1984, AULAGNIER, 1985), Algeria (MACDONALD et al., 1985), and Tunisia

(MACDONALD and MASON, 1983, REUTHER, pers. obs.). The same is probably true for the neighbouring southern areas of Saudi-Arabia, formed mainly of desert.

It will be important, therefore, to collect further information on otter distribution in Syria and the Lebanon as these countries could form a distribution bridge to the otter populations known to occur in Turkey (EROGLU, in prep.), and those assumed to occur in Iran (FOSTER-TURLEY et al., 1990). If such a connection is not found, the Jordanian-Israeli otter population would be ranked as an isolated population what this would further increase the importance of conservation measures.

As a result of this first field survey, and the points mentioned above, the possibility of a training course in Europe was agreed which will be offered to a student of the Jordan University of Science and Technology in Irbid and a member of the staff of the Jordanian Royal Society for the Conservation of Nature. They will be trained in the Standard Method for otter surveys, spraint analysis, and other research techniques for otters. The knowledge gained will be used for a more detailed survey and for studies to increase knowledge about the otter's ecology in its Mediterranean-Arab range. It is also planned to initiate a field survey in Syria and, if the political situation allows, in Lebanon.

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## Resumen: Resultados de un relevamiento primario de nutrias (*Lutra lutra*) en Jordania

Siguiendo la metodología standard entre Octubre y Setiembre de 2000 se llevó a cabo un relevamiento primario de signos de nutria europea en 4 de los 8 cursos de agua permanentes de Jordania. En 7 de los 13 sitios relevados se encontraron signos de nutrias (fecas, huellas). Los resultados indican que al menos los ríos Yarmuk y Jordán albergan una población de nutrias en la mayor parte de los límites con Siria, Israel y Palestina. La importancia de esta población se discute a la luz de su posición en el límite sudeste del rango árabe - mediterráneo de la nutria europea.