ETHNobotanical Use Of Typha domingensis Pers. (TyphaCaeae) In An Arid Zone: Sistan, Iran

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ABSTRACT

Typha domingensis is a species with economic importance in Sistan (Zabol), Iran. The distributions of this species are the aquatic environments in the wet (north Iran), semiarid (northeastern Iran), and arid zones (centre and southeastern Iran).

Hamun had been a shallow lake in Sistan (Iran and Afghanistan). T. domingensis had a vast and dense distribution around and inside of the lake, but the lake dried up since several years ago (1996), and currently the region is a dry desert. In this situation T. domingensis grows only rarely now. Since Iranian part of Sistan have had periodical dryness in Hamun in several years ago (1969 - 1975), it seems that the lake perhaps have a chance to come back again.

The indigenous people of many villages around the former lake are still dependent on this plant, using it for making "pardeh" (a kind of curtain). Thus, they provide the plant from the another part of Hamun Lake in Afghanistan.

When the lake had water, many people fished and hunted wild birds. They had manufactured some kinds of boats for these purposes from T. domingensis, which can be found in a few local museums or in costal regions of the old lake at present.

Key words: ethnobotany, fishing, Hamun lake, Iran, livelihood, Sistan, traditional boats, Typha domingensis, Typhaceae

RESUMEN

Typha domingensis es una especie de importancia económica en Sistan (Zabol), Irán. La especie se distribuye en los ambientes acuáticos de las zonas húmedas (norte de Irán), semiaridas (noroeste de Irán), y áridas (centro y sureste de Irán).


La población indígena de varios poblados alrededor del lago aún es dependiente de esta planta, usándola para fabricar las "pardeh" (un tipo de cortinas). La planta la consiguen de la parte afgana del lago Hamun en Afganistán. Cuando el lago tenía agua, muchas personas pescaban y cazaban aves silvestres. Sabían fabricar uno tipo de botes de T. domingensis, para estos propósitos, que hoy se pueden encontrar en algunos museos locales o en las regiones costeras del viejo lago.

Palabras clave: etnobotánica, pesca, lago Hamun, Irán, medios de vida, Sistan, botes tradicionales, Typha domingensis, Typhaceae

INTRODUCTION

An arid climate is one of the main preconditions for the development of endorheic (closed) basins. The deserts in Iran are mostly located in vast basins in the central parts of the country, often surrounded by mountains. These central Persian desert basins are connected with smaller basins. Separated by the lower east Persian Mountains, the basin of Sistan leads to south Afghanistan (Breckle 2002).

West, south and central Afghanistan is drained by the Farah Rud, Khash Rud, Helmand and Arghandad Rivers, which discharge into the swampy inland lakes at the Afghan-Iranian border (Hamun-e-Saberi, Hamun-e-Puzak) (Breckle 1986).
The vast Iranian desert areas have total annual precipitation between 100 to 200 mm. The main period of precipitation is during winter and spring. The summers are dry and hot; and autumn also is an arid season. The global solar radiation in all the Iranian desert areas is very high (Breckle 2002).

Despite the high number of halophytic species, the associations have low diversity, are often monotonous and repeat themselves over vast expanses (Breckle 2002). The flora of Sistan region is not rich and vast areas of it are almost bare of vegetation. It contains some halophytes and xerophytes species such as some species of *Suaeda*, *Salsola*, *Seidlitzia*, *Anabasis*, *Haloxylon*, *Tamarix*, and etc.

The situation of *Typha* species is different, and this is because of the former Hamun Lake. The lake has been dry since 1996. Around this lake a great amount of *Typha domingensis* grew which had created some reed-brake areas. Common use of this plant formed during the long times that the plant grew in large numbers. In this paper this close relationships between indigenous people of Sistan and *T. domingensis* will be discussed.

It is approximately 8 years that the Iranian part of Hamun is dried, because of the scarcity of precipitation. When the lake had adequate water, the indigenous inhabitants of this region obtained food by hunting, fishing and agriculture. But at present their livelihood is changing because of the dryness of Hamun.

Among all the types of plants used by these people, *T. domingensis* had a main role in their livelihood, both in the past and also at present. They use different parts of this plant in their everyday life. They named it “*lukh*” and different parts of the plant were named based on their applications, which will be discussed in this paper.

This survey is part of the results of the author’s extensive research on the use of plants by some Sistanian, a group of roughly people divided into several villages, within which about fifty persons in seven villages were observed and interviewed.

**MATERIALS AND METHODS**

The material and the information of this study were collected in the course of ethnobotanical research among selected indigenous people of Sistan since the spring of 2003. The villages, which were studied, consist of Shibabad, Azadi, Lotfollah, Kooh-khaje, Edimi, Takht-e-Eralat, and Gamshad. Materials collected in this study include field notes based on direct observation, type -recordings of informal and indepth interviews, and also photographs and sketches. Also, several voucher specimens, which were collected and deposited in the Farabi Herbarium (FAR), are listed below:

**Iran**: Sistan & Baluchestan Province, around of Zabol, shore of Hamun lake, 478 m, date, S. Parsapajouh & F. Ghahremaninejad 482, 483, 484, 486; **Afghanistan**: Shore of Hamun lake, S. Shahraki 487.
RESULTS AND DISCUSSION

TYPHACEAE AND ITS HABITAT IN IRAN

The genus *Typha* includes nearly 14-16 species widely distributed in wetlands of the world. It is a very widespread species occurring in the tropics and warmer regions generally of both the Old World and the New World (Townsend 1985). The genus has 12 species in Iran (Hamdi & Assadi 2003). Several Persian names are used for its species including: “Kar-e-pou”, “Gorz, Lukho”, and “Toui” (Parsa 1960).

*T. domingensis* is an extremely variable species, with practically a cosmopolitan distribution in tropical and temperate regions around the globe (Thieret & Luken 1996). It is distributed widely in Iran. The distributional areas are the aquatic environments in the wet (north Iran), semi arid (northeastern Iran), and arid zones (central and southeastern Iran). The species is grown from an altitudes between 70 m (Ardabil province: Parsabad) to 1300 m (Khorassan province: Neishabur) based on 32 specimens from Iranian herbaria (FAR, FUMH, TARI, and TUH).

*T. domingensis* is one of the species of this genus that tolerates deep water, up to 1.5 m, although the ideal depth for its growth is 22 cm (Grace 1989). A short and concise description of the species follows:


Rhizome rather stout, 5-20 mm wide. Flowering stem 1-3 m tall and c. 1.5 cm wide at the base. Leaves up to 30 cm long or more. Male and female inflorescences separated by a gap of mostly 1-3 (6) cm. Male spike 17-35 (40) cm X 1-1.5 cm. Female spike (7.5) 18-23 (30) X (0.8) 1.5-2 cm at maturity. Fruit c. 1.5 mm, narrowly ovoid. Seed c. 1.25 mm, yellow, linear-cylindrical.

Flowering: April-May; Fruiting: June-July.

TYPHA SPECIES AND ITS HUMAN USE

Most species of the genus *Typha* have common uses in many ethnic groups around the world. People use *Typha* species for edible purposes, which Morton (1975), Townsend (1985), Thieret & Luken (1996), Balick & Cox (1996), and Arenas & Scarpa (2003) have described in essays. Moreover, people use some of these species for certain household crafts such as baskets (Ertuğ 2000), matting, and other purpose (Townsend 1985).

The information on use of *T. domingensis* mentions the use of rhizomes, in some cases, tender stalks and flowers as a source of food (Arenas & Scarpa 2003). Furthermore, the young plants of *T. domingensis* are grazed by water buffalo and other domestic animals in the marshes, and the rushes are used for building huts, making matting and other purposes. A yellow amorphous food product is prepared by mixing parts of the plant with sugar, and this substance, known as “Qurrait”, is sold in southern markets of Iraq and eaten by some people.
The young male inflorescence has also been reported to be eaten by people in the northern province of Arbil, Iraq. The rootstock of this species is also sometimes consumed as food in times of scarcity (Townsend 1985).

**TYPHA DOMINGENSIS AND INDIGENOUS PEOPLE OF SISTAN**

The ethnographic data collected in this study shows that *T. domingensis* is used among the indigenous inhabitants of Sistan for purposes such as transport, fishing, covering the floor, doors and windows, craft (e.g. some sorts of baskets) and human feeding. These uses will be described separately below:

**Fishing**

As it is mentioned before, Sistan is an arid zone, situated in southeastern Iran (Fig.1). There was a shallow lake, Hamun, (nearly 2 m depth) in this area which was dependent on seasonal precipitation. The main source of its water was from rivers in Afghanistan. The livelihood of the ethnic groups of this region was in some extent dependent on the alimentary resources of this lake. Fishing was an important resource and *T. domingensis* has an important role in this activity. The people took fish in simple traps locally called “book” (Fig.2). These traps were deployed in shallow water of Hamun, and a type of net (locally called “dom”) was situated in the open–end of two sticks – “madake”, which lead fish into it, and secured it. These kinds of traps are made from long and thick stems of *T. domingensis* locally called “kholak”, bound with the cord “booki” made from the young leaves.

![Fig. 1 Sistan, Iran](image-url)
Transport
Traditionally the Sistanian people around Hamun built certain boats using *T. domingensis* locally called “tootan” (Fig.3a and 3b), however, boating is discouraged now due to the dryness of the lake Hamun, even though most of the men of this region still know to make boats. In general, the manufacturing and application of the “tootan” was very common until 7–8 year ago, as long as Iranian part of Hamun had water. Manufacture of this “tootan” was very easy and rapid, and each man could make one for his own use. This kind of boat was in fact an ideal vehicle in shallow parts of Hamun for hunting wild birds, fishing and also transporting and porting loads. People utilized long and thick leaves of *T. domingensis* ("toot"), for the construction of “tootan”. A paddle (“pachoo”) was cut from the thick stem of *Tamarix aphylla*. Each “tootan” had only one “pachoo” with which the boatman controlled the “tootan”, constantly pressing the “pachoo” on the bottom of the lake (Fig.4). The length of “pachoo” was between 5 to 6 m.

The length of each “tootan” was between 3.5 to 5 m, and its width between 0.7 to 1.30 m, depending on its application. Normally the “tootan” for hunting and fishing was smaller and suitable for one or two persons and their equipments, and the larger boats used for transporting larger loads.
A small “tootan” was constructed of three “balima”, and a large one was constructed of five “balima”. Each “balima” was made of a set of long and thick leaves of *T. domingensis* (“toot”) bound with cord (“chilak”) made out of younger “toot” (Fig. 5). Two of the very narrow “balima” (“changak”) were also placed on the two parts of “tootan” to act as handles. The durability of each “tootan” was very short, lasting approximately one month.

**Fig. 4** A boatman with his paddle

**Fig. 5** Up: one *balima*; middle: three *balima*, a *tootan*; down: the profile of a *tootan*

**Covering**
Two mains sorts of covering are manufactured in this region using *T. domingensis*. The first one is a kind of mat called “aseef”, made with wide leaves of this plant. The other is a kind of curtain locally named “pardeh” or “pardeh- kholaki” manufactured from the stems of *T. domingensis* locally named “kholak”. This kind of curtain has a very important economic role in the life of people around Hamun. They make different sizes of “pardeh” to be sold, owing to the fact that almost all of the doors and windows in this region need this “pardeh” to protect from structures from intense sunlight and blowing sand. Furthermore, there is some demand from the other regions and cities of the country for this traditional plant product, because of its low cost and usefulness. The outsiders call this product “hassir” most commonly. The economic importance of this “pardeh” for the local people is to the extent that they buy their required “kholak” from the other parts of Hamun Lake in Afghanistan, which still has adequate water for the plants to survive.
To make “pardeh”, the people need some simple tools, consisting of two forked branches of *Tamarix aphylla*, they fix two branches with almost 1-meter distance from each other, and put a narrow board on them. So this board fixed on two branches of *T. aphylla*, become a bed for a “kholak” to be constantly bound with the others, in order to be constructed “pardeh” (Fig.6). The width of “pardeh” can be different. There are 1.30 m, 1.60 m, and 2.00 m varieties (Fig. 7 and 8). So to manufacturing them, first of all, they have to prepare separate long “kholak” stems in these 3 sizes (Fig. 9, 10 and 11).

The length of each “pardeh” can be between 30 to 50m. It can be prepared during 2 to 3 days, by 5-6 persons who are usually the members of a nuclear family. The “pardeh” will be sold per square meter.
Fig. 8 (a, b & c) the process of making *pardeh*
Fig. 9  Separating of different sizes of the *kholak* stems

Fig. 10  Measuring of different sizes of the *kholak* stems

Fig. 11  Driness of hamun
Craft

The most common crafts made from the young of leaves *T. domingensis* are several sorts of baskets for storing and for carrying. Their local names are “sele” (a box for storing) and “songoorag” (a kind of basket with two handles for carrying).

In addition to all of the above uses, it is also interesting to mention that the inflorescence of *T. domingensis* (“bolak”) is traditionally used to fill pillows and bolster in this region. Also, people occasionally would like to eat the inside of its stems (“tootak”), which taste sweet.

CONCLUSION

Sistan is an arid zone with limited plant diversity. The *Typha domingensis*, previously growth around the former Hamun Lake, is a very important plant in the life of the indigenous people of this era. Both in the previous time when Iranian Hamun Lake had water and at present that this lake is dried. During times, the usage of *T. domingensis* in the everyday life of these people had become very common. They had made several products of this plant for different purposes such as fishing, transporting, covering, and caring. They also formed certain economic upon fabricating a sort of product “pardeh” which export to almost all of the other parts of the country. Considering the dryness of Hamun Lake, and therefor the impossibility of agriculture and husbandry for these people, in the major of villages around the former Hamun Lake, we can observe that the livelihood of inhabitants is exclusively depended on fabricating “pardeh” to be sold. This dependence proposes some questions about the sustainability and the durability of this economy. Now a day, that the lake is dried, paying some money, they provide their required *T. domingensis* from the another part of Hamun Lake in Afghanistan, which has yet, the adequate water. This is an economic exchange based on an informal and complex procedure threat the durability of this economic exchange and therefore the sustainability of such a livelihood. So, now, after approximately seven years of dryness of Iranian part of Hamun Lake, these people try roughly and hardly to continue their life depending exclusively on *T. domingensis* hoping the revival of Hamun Lake.

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