

**OCCURRENCE OF *Solanum rostratum* DUNAL IN NORTHERN BALUCHISTAN – FIRST TIME RECORDED IN PAKISTAN (SHORT COMMUNICATION)**

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**ABSTRACT**

*Solanum rostratum* Dunal is native to the United States of America, northern and central Mexico. This species has been observed in various localities in Zhob district of northern part of Baluchistan Province of Pakistan. These observations represent first record of this species from Baluchistan or Pakistan. Its description and illustrations are provided for easy identification.

**Keywords:** *Solanum rostratum*, invasive plants, weeds, Zhob, Baluchistan, Pakistan.

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## INTRODUCTION

Invasive weeds represent one of the most significant causes of habitat degradation in terrestrial ecosystems. Invasive weeds also have a major economic impact as their removal or control in cultivated land involves significant labour or input in the form of weedicides. Once established in a new habitat invasive weeds often suppress the native vegetation owing to allelopathic effects. Pakistan has witnessed spread of *Parthenium hysterophorus* over vast areas in the past decades. This paper reports the occurrence of an alien invasive *Solanum rostratum* in the northern districts of Baluchistan, Pakistan. The plant is not documented in Stewart's annotated catalogue (1972) nor in the account of the family Solanaceae in the flora of Pakistan (Nasir, 1985) and thus represents a new record for Baluchistan and Pakistan.

*Solanum rostratum* is a fast-growing, vigorous weed native to Mexico and the United States which is naturalized and invasive in Europe, Asia and Oceania (CABI, 2015). *Solanum rostratum* was recorded for the first time in India in 1976 (Deva, 1976). In China it was recorded for the first time from Liaoning province in 1981 and it has spread over a large area in northern China in the provinces of Beijing, Hebei, Jilin, Liaoning, Shanxi provinces and Xinjiang Uygur Autonomous Region (Zhao *et al.*, 2013). Lin and Tan (2007) recorded an average fruit set of 72.7 per plant in Urumqi county of Xinjiang with a range of 12-1915 and each fruit producing an average number of 41 seeds with a range of 8-81. The average number of seed produced per plant was recorded as 2980.5 with a range of 492-78500 (Lin and Tan, 2007).

### Taxonomy *Solanum rostratum* Dunal

Annual, prostrate herb spreading to c. 1 m (Fig. 1a). Stem densely spiny and stellately hairy. Leaves 3-12 x 2.5-8 cm, petiolate, ovate to elliptic-ovate or elliptic-obovate, sometimes oblong, spiny and stellately hairy, bi-pinnatisect, lobes

unequal, ultimate segments somewhat rounded. Petiole 1.3-5 cm. Flowers yellow, in pedunculate cymes bearing up to 9 flowers. Peduncle about 2.5-5.5 cm. Flowers pedicellate, about 1.5-2-3.4 cm across (Fig. 1b). Pedicel c. 3-5 mm; fruiting pedicel 7-18 mm. Calyx 6-8 mm, prickly and densely stellately hairy, lobes 3-5 x 1 mm, linear, acute, persisting in fruit. Corolla, c. 1.4 cm long, lobes 4-9 x 2-9 mm, ovate-triangular, short acuminate, externally stellately hairy. Stamens unequal; filament 1-2 mm; anthers 5-9-11 x 1-2 mm, dehiscent by apical pores. Carpel c. 14 mm, style 13 mm, ovary c. 1 mm. Berry 1.3-2 x 0.8-1.3 cm (Fig. 1c). Seeds black, 2.5 x 2 mm.

### Specimen Examined:

Baluchistan, bypass Road, Zhob, Kamran Ishaq, 13 May 2015 (RAW 100211).

*Solanum rostratum* is the only species of *Solanum* found in Pakistan that has yellow flowers; all other *Solanum* spp. have blue to bluish-pink flowers. It is also easily recognized by its berry that is enclosed by the prickly calyx. *Solanum rostratum* resembles the native *Solanum surrattense*, as both species are prostrate in habit, have prickly and lobed leaves, woody rootstock and often grow in dry wastelands. However, *S. rostratum* has, yellow flowers, unequal stamens, up to 10 flowers per inflorescence and somewhat narrower pale green leaves, while *S. surrattense* has purple flowers, larger berries, compact anthers, up to 4 flowers per inflorescence and broader bright-green leaves. *Solanum elaeagnifolium* has already become invasive in Baluchistan Pakistan and owing to its extensive perenniating root system, it poses serious problems in cultivated areas particularly in vegetable crops like tomato.

*Solanum rostratum* populations have also been observed in Sawara Bridge area (30 kilometers Zhob to Quetta Road), Zhob city, Silyaza village (08 kilometers Zhob to Dera Ismail Khan Road) and in Airport Area, Baluchistan Residential College, Zhob.

Zhob is situated at an altitude of 1400 meters above sea level. The ecosystem of the area is semi-desert and the climate is temperate with scattered rains. The soil is gravelly sandy-loam and hard. The temperature of the Zhob reaches a maximum of 40°C in June and July and a minimum of -7°C in December and January. The area receives heavy rains in monsoon season and some light rains in winter. The region is also somewhat windy. *Solanum rostratum* has mainly been observed in dry wastelands along roadsides, dry stream beds and in anthropogenic sites such as play grounds. The associated species are *Peganum harmala*, *Withania coagulans*, *Solanum surratense*, *Chrysopogon aucheri*, *Citrullus colocynthis*, *Astragalus anisacanthus*, *Launaea procumbens* and *Salvia santolinifolia*.

*Solanum rostratum* seeds might have been introduced through vegetable seed imports from other countries. According to a local seed retailer most of vegetable seed being sold in Zhob including that of solanaceous crops (eggplant, chilies, and tomato) is imported from neighbouring Afghanistan, India and also from USA. *Solanum rostratum* was the ancestral host plant of the Colorado potato beetle (*Leptinotarsa decemlineata*) which is one of the most notorious insect pests of potatoes (Alyokhin *et al.*, 2013).

The occurrence of *S. rostratum* in fields and orchards and its occurrence at anthropogenic sites in Zhob necessitates targeted search and monitoring of existing populations in order to check the further spread of this invasive in Pakistan.

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Fig. 1a: *Solanum rostratum* Habit, b: flower, c: fruiting calyces