

研究報告

金門新歸化之入侵植物-互花米草 (禾本科)

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【摘要】互花米草 (禾本科) 原產北美洲與南美洲的大西洋沿岸，1979 年曾被中國引種作為促淤造陸和消浪護堤的植種，但現今卻入侵其他沿海地區，嚴重危害當地生態。2008 年調查時在金門沿海潮間帶被記錄野外族群，為金門禾本科一新歸化之入侵植物，本屬亦為金門新馴化屬。本報告描述其形態特徵、地理分布及生育地環境並提供彩色圖片。

【關鍵詞】禾本科、互花米草、歸化植物、入侵植物、金門

Research paper

Spartina alterniflora Loisel. (Poaceae), a Newly Naturalized and Invasive Plant in Kinmen

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【Abstract】 We document the naturalization and invasion of *Spartina alterniflora* Loisel. (Poaceae) in Kinmen. A taxonomic treatment, color photographs, and distribution of this species from the wild are provided to aid the identification of this alien plant. *S. alterniflora* is found on muddy banks, usually of the intertidal zone, native to eastern North and South America. This plant was intentionally introduced to China in 1979 for the purposes of erosion check, soil melioration and dike protection and now rapidly naturalized to the intertidal zone of southeastern China. During our field survey in 2008 we witnessed that the wild populations has adapted to the coast of Kinmen.

【Key words】 Poaceae, *Spartina alterniflora* Loisel., Naturalized plant, Invasive plants, Kinmen.

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I. INTRODUCTION

Spartina Schreb. is a genus of 17 species, most of which grow in moist to wet, saline habitats, both coastal and interior (Mobberley, 1956; Thompson, 1991). All is native to eastern North and South America. But now some species have extend rapidly in estuaries and coastal salt marshes in the Pacific coast of North America, Europe and New Zealand (Ayres and Strong, 2002). This plant was intentionally introduced to China in 1979 for the purposes of erosion check, soil melioration and dike protection and now widespread naturalized to the intertidal zone of southeastern China. (Chung, 1993; Wang *et al.*, 2006).

In recent years, there are many alien species naturalized and invaded in Kinmen (Tsai, 2002; Chang *et al.*, 2008). In our recent investigation of Kinmen, this aggressive species, *S. alterniflora*, was recorded. In Kinmen, there are a few locations where *S. alterniflora* naturalized in many coastal salt marshes and mud flats. However, these infestations are very dense and widespread as in China. The morphology description and illustration of this species are provided.

II. TAXONOMIC TREATMENT

Spartina alterniflora Loisel., Bijdr. 569. 1826. 互花米草 Figs. 1. and 2.

Rhizomatous; rhizomes elongate, flaccid, white, scales inflated, not or only slightly imbricate. Culms to 250 cm tall, (0.3) 5-15 (20) mm thick, erect, solitary or in small clumps, succulent, glabrous, having an unpleasant, sulphurous odor when fresh. Sheaths mostly glabrous, throat glabrous or minutely pilose, lower sheaths often wrinkled; ligules 1-2 mm; blades to 60 cm long, 3-25 mm wide, lower

blades shorter than those above, usually flat basally, becoming involute distally, abaxial surfaces glabrous, adaxial surfaces glabrous or sparsely pilose, margins usually smooth, sometimes slightly scabrous, apices attenuate. Panicles 10-40 cm, with 3-25 branches, often partially enclosed in the uppermost sheath; branches 5-15 cm, loosely appressed, not twisted, more or less equally subremote to moderately imbricate throughout the panicle, axes often prolonged beyond the distal spikelets, with 10-30 spikelets. Spikelets 8-14 mm, straight, usually divergent, more or less equally imbricate on all the branches. Glumes straight, sides usually glabrous, sometimes pilose near the base or appressed pubescent, hairs to 0.3 mm; lower glumes 4-10 mm, acute; upper glumes 8-14 mm, keels glabrous, lateral veins not present, apices acuminate to obtuse, occasionally apiculate; lemmas glabrous or sparsely pilose, apices usually acuminate; paleas slightly exceeding the lemmas, thin, papery, apices obtuse or rounded; anthers 3-6 mm. $2n = 62$.

Specimens examined

Kinmen county : Kincherng Township (金城鎮), Chiasu (夏墅), *elev. ca.* 1 m, near the intertidal zone, E 118°22'16.0", N 24°27'39.5", 25 Jul. 2008, Tseng 4496 (TCF); Kinhu Township (金湖鎮), Chiunglin (瓊林), *elev. ca.* 1 m, near the intertidal zone, E 118°22'16.0", N 24°27'39.5", 25 Jul. 2008, Tseng 4497 (TCF) (Fig. 3); Kinsa Township (金沙鎮), Guanau (官澳), *elev. ca.* 1 m, near the intertidal zone, E 118°24'41.1", N 24°31'17.1", 25 Jul. 2008, Tseng 4488 (TCF); Kinsa Township (金沙鎮), Tianpu (田埔), *elev. ca.* 1 m, near the intertidal zone, E 118°27'38.2", N 24°28'41.5", 25 Jul. 2008, Tseng 4481 (TCF).

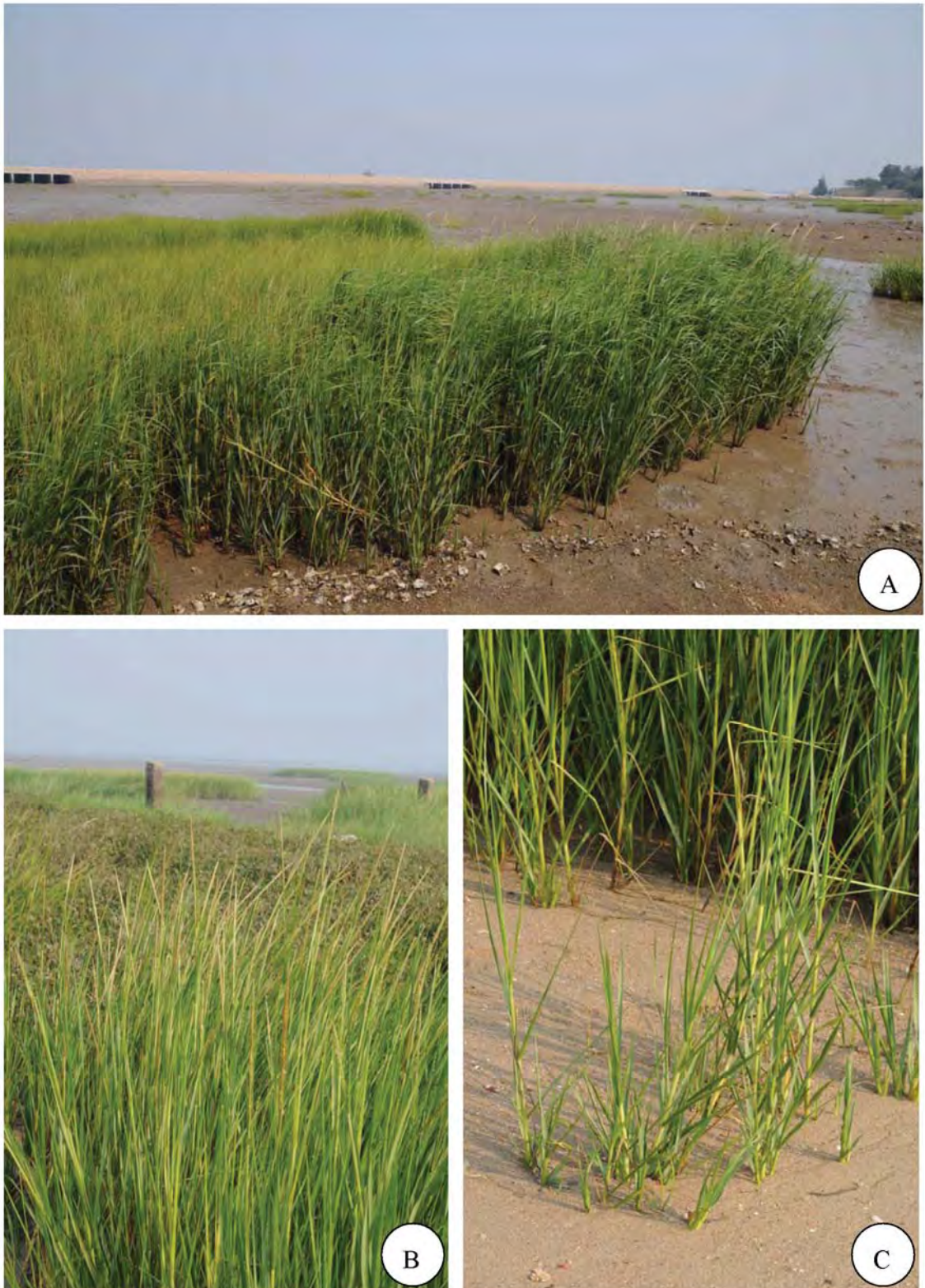


Fig. 1. *Spartina alterniflora* A. Habit, B. Plants with Flowers, C. Young Plants.

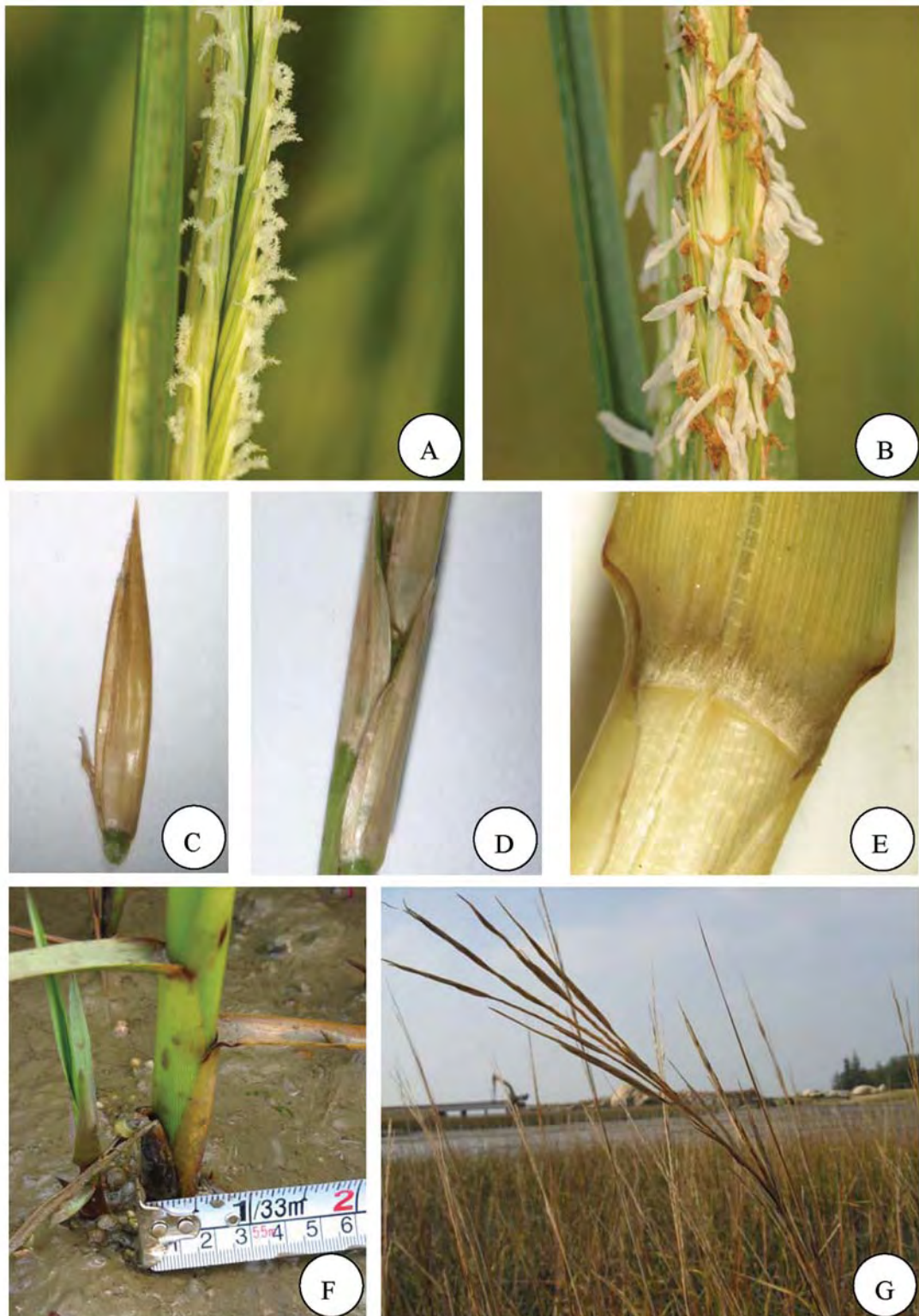


Fig. 2. *Spartina alterniflora* A. Pistils of Flowers, B. Stamens of Flowers, C. Florets, D. Spikelets, E. Ligule, F. Stems, G. Spikes in mature.

Notes on distribution

S. alterniflora Loisel. is native to the Atlantic and Gulf coasts of North America and South America, spreads rapidly in estuaries and coastal salt marshes in the Pacific coast of North America (Callaway and Josselyn, 1992; Ayres and Strong, 2002), Europe, New Zealand (Asher, 1990) and has naturalized to China, throughout the eastern China, from Guangxi (21°N) to Tianjin (39°N) (Wang *et al.*, 2006), and is still spreading rapidly in the east coast of China (Li *et al.*, 2007).

S. alterniflora is considered a serious threat to coastal ecosystems in Washington (Hedge *et al.*, 2003) and California (Ayres and Strong, 2002). It out-competes many of the native species in these habitats and frequently invades mud flats and channels, converting them to marshlands (Zhang, 2007). Pure *S. alterniflora* grows within the lower elevational marsh zones in its native range (Callaway and Josselyn, 1992). In Kinmen, during our field survey in 2008, it was found in the Kincherng Township (金城鎮), Chiasu (夏墅); Kinhu Township (金湖鎮), Chiunglin (瓊林); Kinsa Township (金沙鎮), Guanau (官澳); Kinsa Township (金沙鎮), Tianpu (田埔), Lieyu Town (烈嶼鄉), Shanglin (上林) and Lieyu Town (烈嶼鄉), Chingyenhu (清遠湖) occurs near the intertidal zone at an 1 m. a. s. l. (Fig. 4). The treatment of *S. alterniflora* to become serious invasive in Kinmen is extremely urgent.

III. REFERENCE

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Fig. 3. The specimen of *Spartina alterniflora*.

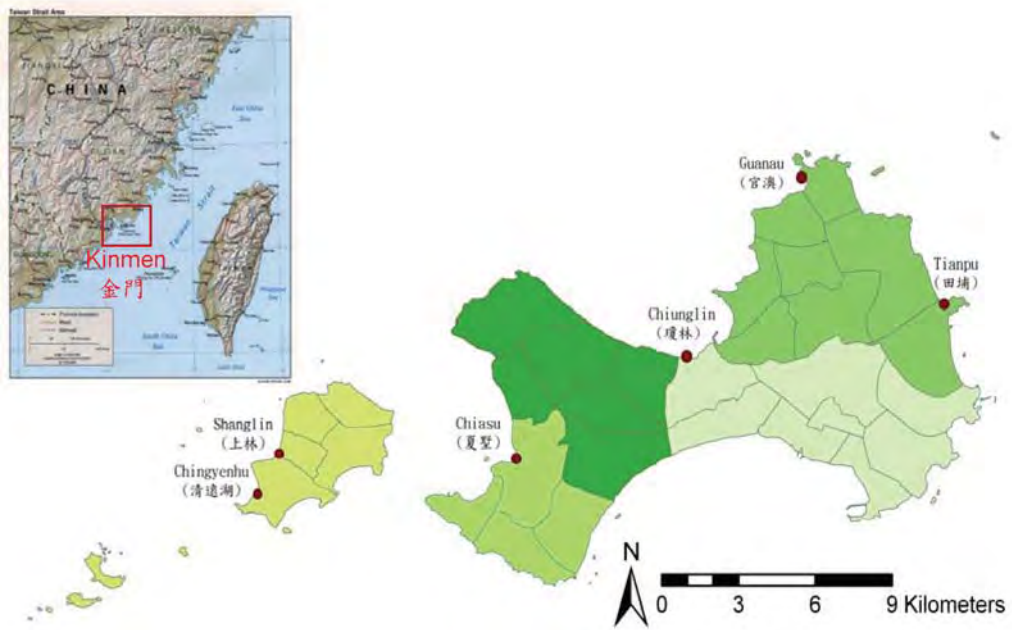


Fig. 4. Distribution of *Spartina alterniflora* in Kinmen.

