

Dynamical Monitoring of *Spartina alterniflora* Loisel Invasion Using

Remote Sensing Data in Beihai, Guangxi

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Abstract: *Spartina alterniflora* Loisel is a perennial herb, which originally is living in the intertidal zone in Atlantic coast and Gulf of Mexico. It was introduced to China in 1979 because it accelerates sediment accretion and can act as a seawall. However, the exceptional adaptability and reproductive ability of this species has led to its extensive dispersal into habitats where it has negative impacts on native species. It was in the first 16 invasive species list of 2003. In Guangxi Zhuang Autonomous Region, *Spartina alterniflora* Loisel was planted in Dandou, Beihai and Dangjiang, Hepu in 1979, and then expanded rapidly into mangrove protected areas, the local mangrove and mudflat ecosystem was threatened.

To obtain the distribution and trends of *Spartina alterniflora* Loise, we collected the high spatial resolution remote sensing imagery of 2009 and 2011. The data of 2009 is obtained from Google Map, and the resolution is about 1m. We also get the Aerial imagery by UAV. Through the field survey, the imagery signs of this species in different growth stages were established. Through human-computer interaction, the distribution of *Spartina* of 2009 and 2011 was mapped in Beihai, Guangxi.

The following conclusions can be get: (1) The area of *Spartina alterniflora* Loise in 2011 is 357.2 ha, and it mainly distributed in the 149 km coastal beach east of Beihai City from Xicun Port to Yingluo Port. The length of coastal zone which this species have invaded is 25% of the whole coastal zone. (2) More than 70% of the species is concentrated in Dandou Sea, and other relative concentrated regions includes Haitang village, Laoya Port, Danchang, Qingtou Mountain, Yingpan Port, Bailong Port and so on. (3) Compared with the monitoring results of 2009 (300 ha), the "*Spartina*" distribution area increased 57.2ha (19.07%). The expansion trends was obvious, especially in east-to-west(Beihai) direction, in south-to-north direction of Laoya port, Yingluo Port, Haitang Village.

Keyword: *spartina alterniflora*, remote sensing monitoring, Beihai