Identification and Field Evaluation of the Female Sex Pheromone of the Sand *Salix* Carpenterworm, *Holcocerus arenicola* Staudinger (Lepidoptera: Cossidae)

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Extracts of female sex pheromone glands of the sand *Salix* carpenterworm moth, *Holcocerus arenicola*, a serious pest of desert thicket, were analyzed by gas chromatography (GC) and gas chromatography-mass spectrometry (GC-MS). Based on comparison of retention times and mass spectra of synthetic standards, four compounds were identified as *cis*-7-tetradecen-1-ol (*Z*7–14:OH), *cis*-5-tetradecen-1-yl acetate (*Z*5–14:OAc), *cis*-7-tetradecen-1-yl acetate (*Z*7–14:OAc), and *cis*-9-hexadecen-1-yl acetate (*Z*9–16:OAc) with the ratio of 24:39:100:43. Electroantennographic (EAG) analyses of these standard chemicals and their analogues showed that *Z*7–14:OAc elicited the largest male EAG response, followed by *Z*5–14:OAc and *Z*9–16:OAc. In field trials, traps baited with either *Z*7–14:OAc or *Z*5–14:OAc captured males while *Z*7–14:OH-, *Z*9–16:OAc- or solvent-baited traps caught no males. *Z*7–14:OAc as a single component was significantly more attractive than *Z*5–14:OAc alone. The combination of *Z*7–14:OAc and *Z*5–14:OAc showed an evidently synergistic effect and attracted much more males than the individual compounds in the field. Addition of *Z*7–14:OH to the blend of *Z*7–14:OAc and *Z*5–14:OAc enhanced slightly the trap catches. We conclude that the major components of the sex pheromone of *H. arenicola* are *Z*7–14:OAc and *Z*5–14:OAc. Currently, a triangle trap baited with the synthetic compounds *Z*7–14:OAc, *Z*5–14:OAc, and *Z*7–14:OH in a 1:0.4:0.25 ratio at 825 μg/trap dosage can be effectively used to monitor the *H. arenicola* population level and catch the males within the desert regions in China.

Key words: Holcocerus arenicola, *cis*-5-Tetradecen-1-yl Acetate, *cis*-7-Tetradecen-1-yl Acetate