CAPTURE OF GYPSY MOTH, *Lymantria dispar* (L.), AND *Lymantria mathura* (L.) MALES IN TRAPS BAITED WITH DISPARLURE ENANTIOMERS AND OLEFIN PRECURSOR IN THE PEOPLE'S REPUBLIC OF CHINA

THOMAS M. ODELL, CHONG-HUA XU, PAUL W. SCHAEFER, BARBARA A. LEONHARDT, DE-FU YAO, and XIANG-DE WU

2 USDA, Forest Service, Northeastern Forest Experiment Station
Center for Biological Control of Northeastern Forest Insects & Diseases
Hamden, Connecticut 06514

3 Chinese Academy of Forestry
Beijing, People's Republic of China

4 USDA, ARS, Beneficial Insects Research Laboratory
Newark, Delaware 19713

5 USDA, ARS, Agriculture Environmental Quality Institute
Beltsville, Maryland 20705

6 Forest Insect and Pest Control Station
Hunan County, Mengjiaang, Heilongjiang Province, People's Republic of China

(Received December 5, 1989; accepted July 22, 1992)

Abstract—Pheromone traps baited with (+)-disparlure, cis-7,8-epoxy-2-methylocta-decane, captured males of *Lymantria dispar*, *L. monacha*, and *L. mathura* in northeastern People's Republic of China. *L. dispar* responded to the addition of olefin to (+)-disparlure-baited traps in a negative dose-response manner. Observations on site and seasonal capture of *L. dispar* and *L. mathura* are discussed.

Key Words—*Lymantria dispar*, gypsy moth, *Lymantria mathura*, Lepidoptera, Lymantriidae, pheromone, disparlure, cis-7,8-epoxy-2-methylocta-decane.

INTRODUCTION

Under a 1982 scientific agreement between the Chinese Academy of Forestry and the U.S. Department of Agriculture, Wallner et al. (1984) tested the attrac-
tiveness of (+)-disparlure and its olefin precursor to gypsy moth, Lymantria dispar L., in two widely separated sites in the People’s Republic of China (PRC). Their results indicated that the male response of Chinese gypsy moth was similar to that of North American gypsy moth, although there were significant differences between sites in male responses to the olefin precursor. During these 1982 tests no other lymantriid species were captured, although L. mathura (L.) had been observed feeding in one site (Dunhua) and L. monacha (L.) was known to be native to the area. L. mathura has not been reported as being attracted to (+)-disparlure and its analogs, whereas L. monacha has (Kovalev et al., 1980; Klimetzek et al., 1976; Vité et al., 1976; Schneider et al., 1974).

In 1983, under the same scientific agreement, a team of U.S. and PRC scientists traveled to Heilongjiang Province, in northeastern People’s Republic of China, to investigate the natural enemy complex, biology, and behavior of the gypsy moth, L. dispar, and to continue the pheromone investigations initiated in 1982 (Wallner et al., 1984). We report here on a further test to clarify the effect of the olefin component and (+)-disparlure on capture of L. dispar in northeastern China, and on attempts to detect populations of L. mathura and L. monacha using (+)-disparlure baited traps.

METHODS AND MATERIALS

U.S. Department of Agriculture 3.8-liter milk carton pheromone traps (Schwalbe, 1981) were used in all tests. Traps were placed in six forest sites at the Provincial Forest Production Farm, Mengjiagang, Hunan County, Heilongjiang Province, PRC, in 1983. Gypsy moth larvae were collected in these sites three to four weeks prior to trap placement.

To determine the relative attractiveness of (+)- and (+)-disparlure and its cis olefin precursor [2-methyl-Z-7-octadecane], 36 traps were hung on July 21 in a 12-year-old Larix sp. plantation. The traps were arrayed in a complete randomized design with 15 m between each trap. Traps were hung from wood lathing nailed to tree trunks so that they were 0.6 m from the tree and 2 m above the ground. This test included seven disparlure/olefin treatments: 0.1 mg (+)-disparlure; 0.1 mg (+)-disparlure with 0.001 mg olefin; 0.1 mg (+)-disparlure with 0.01 mg olefin; 0.1 mg (+)-disparlure with 0.1 mg olefin; 0.1 mg (±)-disparlure; 0.1 mg (−)-disparlure; and 0.1 mg olefin. Each treatment was replicated five times. One unbaited trap completed the 36-trap design. Each trap contained a Vapona pesticide strip. The solutions of disparlure-related compounds were provided by B.A. Leonhardt, U.S. Department of Agriculture, Beltsville, Maryland. They were transported from the United States to the PRC in sealed ampules. In the Mengjiagang Biological Control Laboratory, the given amounts of each treatment were applied, each in 100μl of hexane, to cotton