EXTINCTION OF FLAX-WEEDS IN SWEDEN

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ABSTRACT

Basing on herbarium materials the extinction of four narrowly specialized flax-weeds *Cuscuta epilinum*, *Lolium remotum* and *Spergula maxima* in Sweden is documented.

KEY WORDS: Flax weeds, *Cuscuta epilinum*, *Lolium remotum*, *Spergula maxima*, Sweden, extinction.

INTRODUCTION

Flax-weeds are the old group of highly specialized and very specific weeds accompanying flax crops, being not known in the wild. As such they were classified as *anthropophyta anthropogena* (Mirek 1991). They have originated from closely related wild forms during long, lasting several thousand years, unintentional selection by using primitive methods of flax seeds cleaning, mainly windowing (Zinger 1909, Sinskaia and Bestuzheva 1931). Also, some biological features of flax have clearly affected their evolutionary differentiation (Sinskaia and Bestuzheva 1931). The most typical representatives of flax-weeds in Europe are: *Camelina alyssum* (Mill.) Thell., *Cuscuta epilinum* Weihe, *Lolium remotum* Schrk. and *Spergula maxima* Weihe (Rothmaler 1946, Hjelmqvist 1950).

After the World War II, very selective methods of flax seeds cleaning were introduced to maximize yields and profits. In the effect a rapid decline of flax-weeds was observed. In different parts of Europe this process was noted in almost the same period, closely related to the moment of introducing the modern methods of treatment against flax-weeds (Mirek 1976).

MATERIALS AND METHODS

In present paper the process of extinction of four flax-weed species in Sweden is described, basing on the herbarium materials from: GT – Göteborg, LD – Lund, S – Stockholm, UPS – Uppsala (acronyms according to Holmgren et al. 1990). Totally, 998 herbarium sheets were analysed (*Camelina alyssum* – 449, *Cuscuta epilinum* – 265, *Lolium remotum* – 205, *Spergula maxima* – 76). The earliest herbarium materials go back to the beginning of the 19th century.

EXTINCTION

The latest collection data enable the moment of very extinction of all four species in Sweden to be precisely assessed. It falls in the end of the forties and the very beginning of the

Fig. 1. Number of herbarium specimens of four flax – weeds *Camelina alyssum*, *Cuscuta epilinum*, *Lolium remotum* and *Spergula maxima* collected in consecutive periods, as an indicator of their extinction in Sweden on the turn of forties and fifties. In brackets: number of specimens analysed.

fifties (Fig. 1). The last specimens of *Camelina alyssum* and *Spergula maxima* were collected in 1948, *Lolium remotum* in 1951, and *Cuscuta epilinum* in 1954. It is almost at the same time as in the other West and Central European countries including Poland, Czech and Slovakia (Mirek 1976). However, in a few rural and neglected regions of eastern Poland some of flax-weeds survived till late sixties (Mirek 1976 and unpublished data). Thus, one can suppose that all of the obligatory flax-weeds analysed here have disappeared completely over their whole ranges. In the reviewed herbarium material of *Camelina alyssum* (Mill.) Thell. s. l. originating from the whole range of the species I have not found specimens collected later than in 1970 (Mirek, unpublished data).

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STRESZCZENIE

Opierając się na badaniach materiałów zielnikowych stwierdzono wymieranie czterech chwastów lnowych (*Camelina alyssum*, *Cuscuta epilinum*, *Lolium remotum*, *Spergula maxima*) na terenie Szwecji z końcem lat czterdziestych i początkiem lat pięćdziesiątych naszego stulecia (Ryc. 1.). Łącznie przebadano 998 arkuszy zielnikowych z czterech głównych zielników szwedzkich: GT, LD, S i UPS (akronimy wg Holmgren i in. 1990). Ostatnie zbiory poszczególnych gatunków wskazujące na przybliżony czas ich wymarcia pochodzą z lat: 1948 – *Camelina alyssum* i *Spergula maxima*, 1951 – *Lolium remotum* i 1954 – *Cuscuta epilinum*.

SŁOWA KLUCZOWE: chwasty lnowe, *Camelina alyssum*, *Cuscuta epilinum*, *Lolium remotum*, *Spergula maxima*, Szwecja, wymieranie.