### Introduction

## Background

Taraxacum officinale, commonly referred to as the dandelion, is an almost stemless, lactiferous, perennial herb. *(The Biology of Canadian Weeds - Taraxacum officinale)* From a seed, it blooms and form a “puffball”. In terms of its emergence and growth, laboratory and field studies discussed the impact of climatic factors on the growth of dandelions. laboratory studies were conducted on the relationship between the germination rate and light and temperature. *(Light, temperature and duration of storage govern the germination and emergence of Taraxacum officinale seed)* Field studies had also conducted on the same topic, providing credibility for the conclusion. *(Effects of day length and temperature on flowering in Taraxacum platycarpum and T. officinale)* Laboratory experiments also provided insights on the drought tolerance of dandelions. *(DROUGHT TOLERANCE IN THE ALPINE DANDELION, TARAXACUM CERATOPHORUM (ASTERACEAE), ITS EXOTIC CONGENER T. OFFICINALE, AND INTERSPECIFIC HYBRIDS UNDER NATURAL AND EXPERIMENTAL CONDITIONS)* The emergence and growth are also affected by geographic factors. Studies had researched on the average space and gaps for seed germination. Soil pollution is also being considered. Based on the findings, we are able to determine different factors and draw a safe theoretical conclusion based.

In terms of the dispersal status, being a wind-dispersed plant, dandelion dispersal is considered a passive process. Past studies have analyzed the structure of the seeds and the effects of humidity to the structure, which impacted on the dispersal speed. Experiments studied the aerodynamics of the seeds, demonstrating the effects of wind speed and wind directions. *(Dandelion Seed Dispersal: The Horizontal Wind Speed Does Not Matter for Long-Distance Dispersal - it is Updraft!)* The above factors that affect emergence and dispersal are considered in this paper.

Because of its strong adaptivity and simplicity for dispersal, dandelion is labeled as an invasive species. “Invasive species” is a relative concept, which is defined as the ones that are 1) non-native to the ecosystem under consideration, and 2) whose introduction is likely to cause economic or environmental harm, or harm to human health. Existing terminologies have divided the invasion process into consecutive stages, classified species according to their negative impacts and providing an “invasive species impact rank” to make better evaluations. Based on past studies and the existing ranking standards, we further subdivide the criteria, considering factors of plant characteristics, human and environment as well as location to form a critical evaluating system.

Having noticed that the existing evaluation system for invasive species is not mature enough, we constructed this model in the hope of building a more critical and holistic evaluation system. Starting from an invasive species, dandelion, and studying the factors that affect its growth and dispersion, we hoped to obtain an evaluation system that can be applied in general terms.