

Are seagulls endangering earthworms during fall tillage?

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Quite often, ploughing inadvertently encourages seagulls to visit fields where earthworms become easy prey. Knowing the benefits of earthworms for their soil, some farmers are concerned that when the number of earthworms is seriously reduced so is the soil's fertility.

This fear is pertinent, but not very well documented. However, some studies on the seagull problem have been done. One is from Ontario, the only one it seems, that is relevant in the Canadian context.

The Great Lakes area, in south-western Ontario, is densely inhabited by seagulls. While 141,000 pairs were inventoried in 1967, the seagull population was around 648,000 in 1984, then reduced to 569,000 pairs in 1986. Depending on areas visited, researchers have estimated that 350,000 pairs could now be feeding on earthworms, especially during ploughing times.

Since the seagull population has raised the concern of farmers, Agriculture Canada initiated a study in 1985 under the direction of Dr. Tomlin.

The study provided some interesting numbers. In one field experiment, ploughing brought 11% of the estimated earthworm population to the soil surface.

A seagull weighs, on average, 485 grams. If its' needs were only met by earthworms it would require a worm biomass of 300 grams. The Ontario researchers estimated that in the Great Lakes Region, seagulls could visit 20% of all ploughed fields, and that they would only intensively feed on 20% of those fields.

So, even though seagulls could prey on 11% of earthworms exposed to the soil surface by ploughing, 90% of the earthworms would still be present to increase the soil population. Furthermore, birds don't usually feed on cocoons whose production can vary from ten to 100 per earthworm. The authors of the study estimated that even a 50 to 75% reduction in earthworm population could still be tolerable.

A Swiss study came to the same conclusion. Even if earthworms are an important part of a seagull's diet (close to 90% of the bird weight), and that ploughing gives them abundant food when other sources are scarce, seagulls generally only feed on a quarter to a third of the available earthworms, which represents only 10% of the soil earthworm biomass.

Also, ploughing time is quite short, and seagulls prefer to visit fertile soils where abundant earthworm populations already have the potential to repopulate the soil quickly. Soil with low earthworm populations, which are not usually visited by seagulls, will possibly act as a refuge for colonization of other fields by earthworms.

As minimum tillage is recommended more for soil conservation, it will minimize the amount of earthworms exposed to birds. No-till is also recognized as being beneficial to earthworms, and snow cover in the winter considerably diminishes earthworm vulnerability to bird predation.

The fact that numerous seagulls come to visit ploughed fields is a sign of soil fertility and earthworms are likely very abundant. At the same time, birds can also feed on insects and larvae which helps to minimize crop pests.

For farmers who still wish to limit the impact of bird predation on earthworms in their soil should consider the following field operation plans:

Soil tillage is probably more detrimental to earthworm populations in the spring than in fall because spring is an intensive period for reproduction. Farmers chisel plowing pasture sod after the first forage cut to prepare soil for cereals or other crops should wait for the soil to dry for optimum results in controlling perennial weeds, and to allow earthworms to burrow deeper into the soil and not be hurt by the tillage machinery.

Farmers wanting to experiment with exotic practices can always try working their fields at night. This will considerably reduce earthworm predation by birds because most birds feed during the day.

Recent studies also demonstrate that soil tillage at night can reduce weed infestations. In fact, when tillage brings weed seeds to the soil surface, germination is only activated by an infrared spectrum of light.