# REFERENCES

## 1.2. Cold snaps in autumn trigger wintering

The timing of colonies to start wintering matters for overwintering success. It is assumed that the process of wintering is indirectly triggered i.e. by decreasing temperatures in autumn [[**30**](https://royalsocietypublishing.org/doi/full/10.1098/rsos.210618#RSOS210618C30)]. If warm periods stretch into late autumn or early winter, sudden cold spells could hit underprepared colonies. Cold spells with adequate duration and intensity during late autumn trigger colony wintering at the right time, reducing the likelihood of colony loss over winter. We assume a negative correlation of cold snaps in autumn with honey bee colony winter mortality.

## 1.3. Hive hygiene in early winter

During the winter months, food stores are consumed by long-lived winter bees. Since bees do not defecate inside the hive to reduce pathogen dispersion, their faeces accumulate in their rectum. Regular snaps of warm weather during the coldest months help bees to leave the hive and defecate. The more regular these mild winter weather conditions occur, the better the hygiene of the hive can be maintained, increasing the bees' vitality [[**26**](https://royalsocietypublishing.org/doi/full/10.1098/rsos.210618#RSOS210618C26)]. Such snaps of warm weather also facilitate the movement of the winter cluster to the food stores (see below). We therefore assume a negative correlation of regular warm weather conditions during winter with colony mortality.