

Citizen science and berry yield monitoring – methods, applications and contribution to climate change adaptation



Citizen science and climate change adaptation

- To develop adaptation strategies, we need to gather information how changes in global temperatures affect local environments and ecosystems
- Citizens who get involved in gathering the information improve their science literacy, develop increased understanding of environmental issues that affect them directly, and, in the best cases, ***become motivated to take direct, positive personal action***

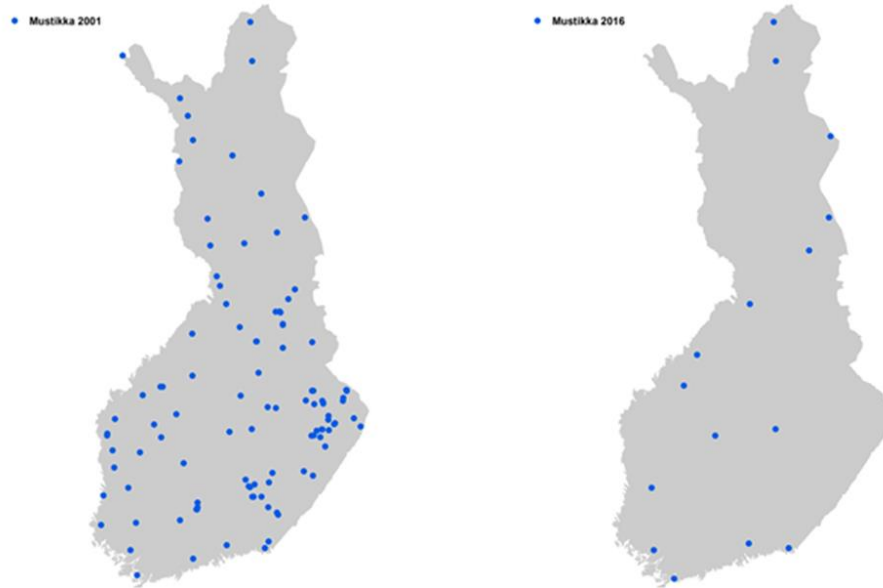
How?

Five 1 m² observation squares in a monitoring forest stand. Flowers, raw berries and ripe berries are counted from each square during the growing season



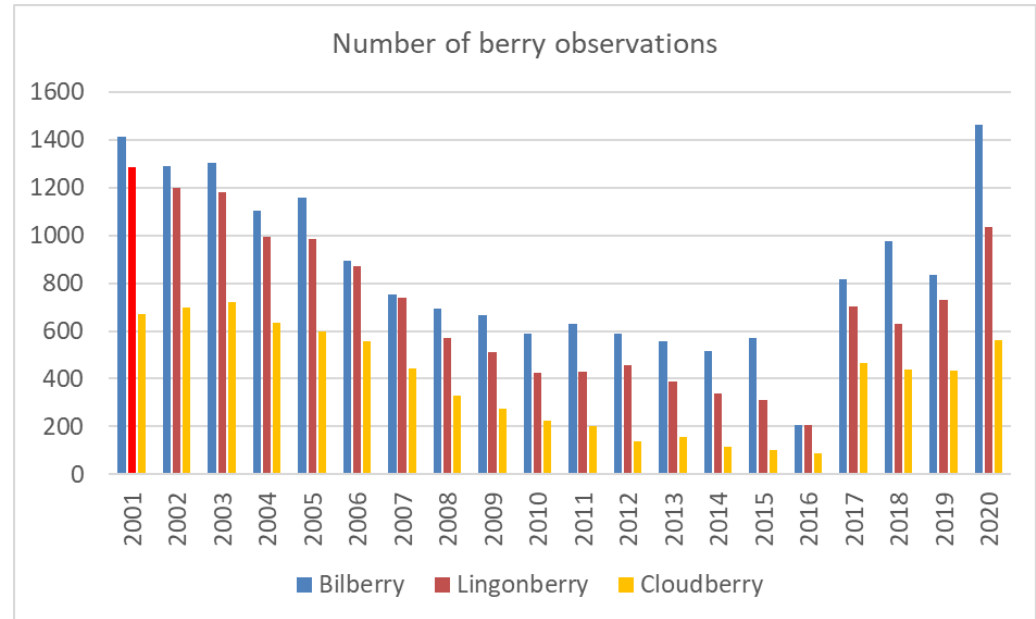
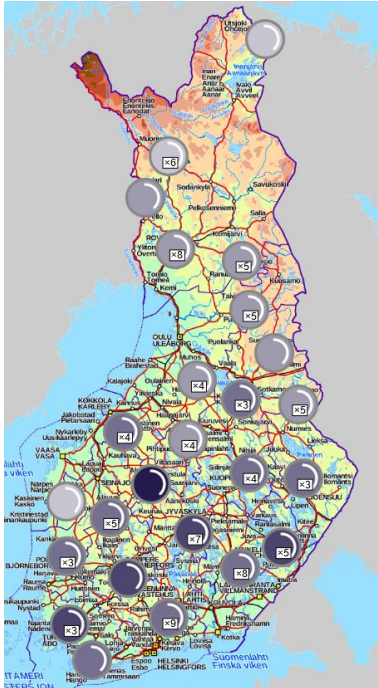
Who?

1997→ 2016 observations done mostly by field workers of Luke/Metla

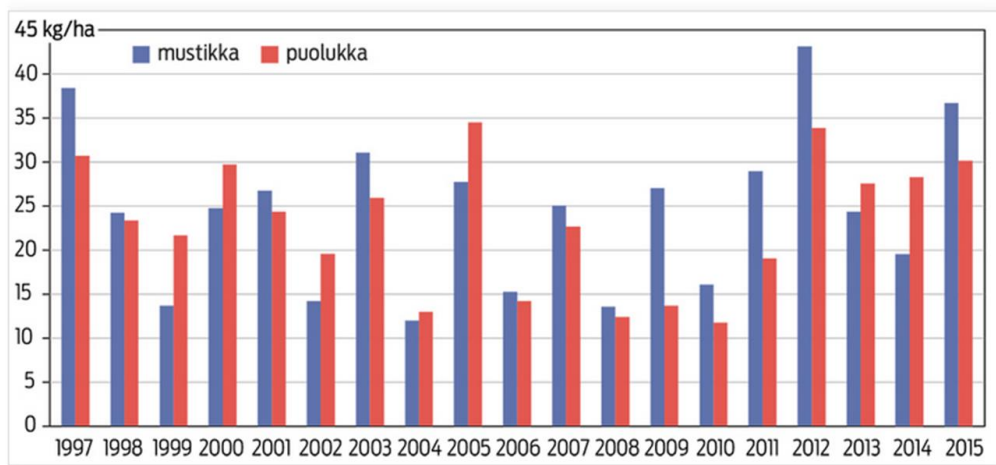


Citizen science concept 2017 →

Thanks to mobile devices with internet/positioning properties, wide citizen participation is possible → marjahavainnot.fi – platform



Yield estimations



$$\bar{y}_j = \frac{(N_{Mj}\bar{x}_{Mj}w_M + N_{Pj}\bar{x}_{Pj}w_P)}{N_j} \times 10c \quad (1)$$

where

\bar{y}_j = mean annual berry yield (kg ha⁻¹) in year j
($j=1997, \dots, 2008$)

N_{Mj} = number of stands on medium or more fertile site types in year j (see Table 1)

\bar{x}_{Mj} = average number of ripe berries (berries per m²) on stands which belonged to medium or more fertile site types in year j

w_M = weight of one ripe berry on medium and more fertile site types (g)

N_{Pj} = number of stands on rather poor or poorer site types in year j (see Table 1)

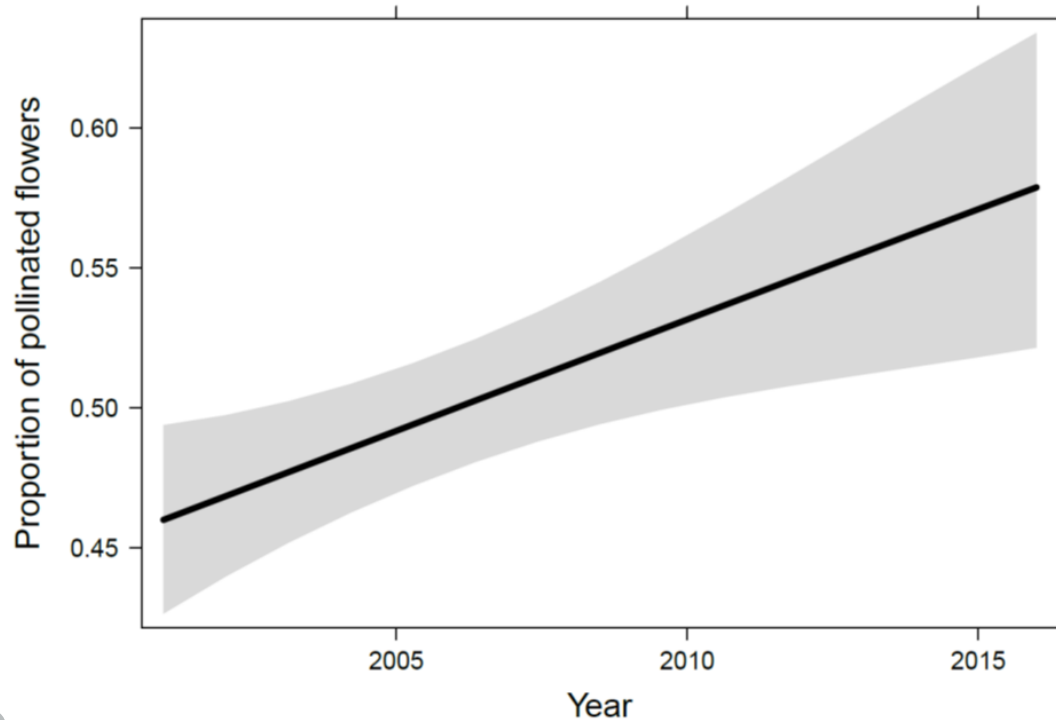
\bar{x}_{Pj} = average number of ripe berries (berries per m²) on stands which belonged to rather poor or poorer site types in year j

w_P = weight of one ripe berry on rather poor and poorer site types (g)

N_j = $N_{Mj} + N_{Pj}$ (i.e. number of stands in year j ; see Table 1)

c = coverage of a species (%)

Monitoring of pollination success



Climate change?

Thank you!

