October 2005

Correction sheet to NERI report no. 527: The impact on skylark numbers of reductions in pesticide usage in Denmark.

Correction

Regretfully a sign error occurred during the process of handling the results from ESMERLEDA resulting in the values in Tables 4-7 having reversed signs in the original report. The corrected tables are presented below in the corrected Tables 4-7. The consequence of this error is that the Pesticide (P), Herbicide (H) & (DH), and Unsprayed Margin Scenario (UM) were calculated using reversed changes in the area of crops present in the landscape. The overall effect of this error was to calculate the scenarios based on an increase in winter wheat of approximately 2-3% of the total crop area, whereas this figure should have been a decrease by the same degree. Since the results of the main scenarios are of particular interest, these three scenarios have been re-run using the corrected figures and are presented below. The UM scenario is run without the assumption of fertiliser-free margins and is therefore based on the original technical scenario T13. In all other aspects these scenarios and their analysis is identical to those presented in the original report.

Results

Simulation results for the corrected scenarios are presented in New Table 0 (below). The overall result of new alteration to the area of crops (largely increasing spring crops at the expense of winter wheat), was to generally increase the total population size, including the non-breeding floating population proportion, for all scenarios. Hence, as with the original simulations, the addition of unsprayed field margins was clearly the most beneficial scenario, providing more than 5x the increase compared to the Pesticide scenario (P). However, unlike the original scenarios all three scenarios gave positive results although scenario H was not significantly different from the baseline. Whereas the original version of the P & H scenarios contained two negative elements (tramline removal and increase in winter wheat), the corrected scenarios contain a positive element (decrease in winter wheat) and a negative element (removal of tramlines). Since the over all effect is slightly positive this indicates that the impact of removal of tramlines in the pesticide-reduced scenarios was more than outweighed by the positive benefit of decreasing the area of winter wheat in favour of spring crops.

Implications

The changes as a result of correction of the input error show that contrary to the previous conclusions, a reduction in pesticides via direct taxation reducing the number of pesticide application will pro-

vide a benefit to skylarks. However, this benefit is very small when compared to that obtained from unsprayed margins.

The fact that the change in crop areas, although small, had a noticeable impact underlines the importance of crop structure and crop type to skylark success, and indicates that to predict trends with certainty, the emphasis must be placed on generating realistic patterns of future crop management.

New Table 0: Overall mean statistics for the results of the baseline and three main scenarios. Population size is the overall mean maximum annual population size. Floating population proportion is the mean proportion of adults not breeding on May 15th. No chicks per breeding female is a mean of the total annual output of young surviving to day 18 divided by the number of females that attempted breeding. Difference between baseline and scenario population size is simply dependent on overlap of the 95% confidence limits and due to pseudo-replication is not considered to be a reliable test.

Main Scenario	Total Population Mean	95% c.i.	Floating Population Proportion	95% c.i.	No. Chicks per breeding female	95% c.i.	Diff. Pop. Size cf Baseline	Population Size Relative Change to Baseline
Baseline (B)	14997	271	0.21	0.022	2.61	0.071	N/A	N/A
Pesticide (P)	15429	151	0.23	0.010	2.71	0.074	Yes	1.03
Herbicide (H)	15320	178	0.24	0.010	2.74	0.075	No	1.02
Unsprayed Field Margins (UM)	17350	190	0.33	0.009	3.19	0.058	Yes	1.16

Corrected Table 4. Deviations in the number of entries in the farm-type rotation (out of 50) for crops grown by different farm types under the Pesticide scenario (P).

Crop	Arable, clay	Arable, sand	Cattle, clay	Cattle, sand	Pigs, clay	Pigs, sand	Organic, clay	Organic cattle, sand	Organic others, sand
Spring barley	0	-1	0	0	1	3	0	0	0
Winter barley	0	0	0	0	0	0	0	0	0
Winter wheat	0	0	0	-1	-1	-4	0	0	0
Rye	0	0	0	0	0	0	0	0	0
Oats	-1	-1	0	0	0	1	0	0	0
Peas	0	0	0	0	0	0	0	0	0
Rape	0	0	0	0	0	0	0	0	0
Grass and clover seed	0	0	0	0	0	0	0	0	0
Potatoes	0	2	0	0	0	0	0	0	0
Sugar beet	0	0	0	0	0	0	0	0	0
Silage cereals and maize	0	0	0	0	0	0	0	0	0
Setaside	1	0	0	1	0	0	0	0	0

Corrected Table 5. Deviations in the number of entries in the farm-type rotation (out of 50) for crops grown by different farm types under the Herbicide scenario (H).

Crop	Arable, clay	Arable, sand	Cattle, clay	Cattle, sand	Pigs, clay	Pigs, sand	Organic, clay	Organic cattle, sand	Organic others, sand
Spring barley	1	0	1	1	2	5	0	0	0
Winter barley	0	0	0	0	0	0	0	0	0
Winter wheat	0	0	0	-1	-2	-6	0	0	0
Rye	0	0	0	0	0	1	0	0	0
Oats	-1	0	0	0	0	1	0	0	0
Peas	0	0	0	0	0	0	0	0	0
Rape	0	0	0	0	0	0	0	0	0
Grass and clover seed	0	0	0	0	0	0	0	0	0
Potatoes	0	0	0	0	0	0	0	0	0
Sugar beet	0	0	-1	0	0	0	0	0	0
Silage cereals and maize	0	0	0	0	0	0	0	0	0
Setaside	0	0	0	0	0	-1	0	0	0

Corrected Table 6: Deviations in the number of entries in the farm-type rotation (out of 50) for crops grown by different farm types under the Herbicide scenario (DH).

Crop	Arable, clay	Arable, sand	Cattle, clay	Cattle, sand	Pigs, clay	Pigs, sand	Organic, clay	Organic cattle, sand	Organic others, sand
Spring barley	0	0	0	0	1	2	0	0	0
Winter barley	0	0	0	0	0	0	0	0	0
Winter wheat	0	0	1	-1	-1	-3	0	0	0
Rye	0	0	0	1	0	0	0	0	0
Oats	-1	0	0	0	0	1	0	0	0
Peas	1	0	0	0	0	0	0	0	0
Rape	0	0	0	0	0	0	0	0	0
Grass and clover seed	0	0	0	0	0	0	0	0	0
Potatoes	0	0	0	0	0	0	0	0	0
Sugar beet	0	0	-1	0	0	0	0	0	0
Silage cereals and maize	0	0	0	0	0	0	0	0	0
Setaside	0	0	0	0	0	0	0	0	0

Corrected Table 7: Deviations in the number of entries in the farm-type rotation (out of 50) for crops grown by different farm types under the Unsprayed Field Margin scenario (UM).

Crop	Arable, clay	Arable, sand	Cattle, clay	Cattle, sand	Pigs, clay	Pigs, sand	Organic, clay	Organic cattle, sand	Organic others, sand
Spring barley	1	1	0	1	2	5	0	0	0
Winter barley	0	0	0	0	0	0	0	0	0
Winter wheat	0	0	0	-1	-2	-6	0	0	0
Rye	0	0	0	0	0	1	0	0	0
Oats	-1	-1	0	0	0	1	0	0	0
Peas	0	0	0	0	0	0	0	0	0
Rape	0	0	0	0	0	0	0	0	0
Grass and clover seed	0	0	0	0	0	0	0	0	0
Potatoes	0	0	0	0	0	0	0	0	0
Sugar beet	0	0	0	0	0	0	0	0	0
Silage cereals and maize	0	0	0	0	0	0	0	0	0
Setaside	0	0	0	0	0	-1	0	0	0