

IS THE „AGRI-ENVIRONMENTAL PROGRAMME” A CHANCE FOR NATURE CONSERVATION OF POLISH COUNTRYSIDE?

Emilia Grzędzicka

Institute of Nature Conservation, Polish Academy of Sciences
Mickiewicza Av. 33, 31-120 Kraków, grzedzicka@iop.krakow.pl

Summary. Implementation of the „Agri-environmental programme” is to contribute to sustainable development of rural areas and to maintain biodiversity in these areas. The main aim of the programme is to promote rural production based on methods meeting requirements of protection of the environment and nature. Farmers get financial compensation to care for land friendly for nature. Research from the year 2009 in some areas with different plant communities in the macroregion Niecka Nidziańska showed that the programme requirements do not reflect all plants' needs: for example the mowing dates are too early. The nature values of analysed meadows qualifying for the Programme variants are different.

Key words: „Agri-environmental programme”, nature conservation, wet meadow, mesic meadow, tall sedge swamp, xerothermic grass

INTRODUCTION

Implementation of the „Agri-environmental programme” is mainly to contribute to sustainable development of rural areas and to maintain biodiversity in these areas. The most important aim of the programme is to promote rural production based on methods meeting the requirements of protection of the environment and nature. Improvement of the natural environment and rural areas must restore the values of valuable natural habitats used for agricultural purposes and retain the biodiversity in rural areas. Essential is the promotion of sustainable management system, proper use of soils and water protection, and protection of endangered local species of farm animals and local crop varieties. The „Agri-environmental programme” is one of the instruments of Common Agricultural Policy (CAP), including 9 agri-environmental packages. Within the frame-

work of each package there are some variants. For nature conservation the most important are: Package 4. Protection of endangered bird species and natural habitats outside of Natura 2000 areas, and Package 5. Protection of endangered bird species and natural habitats in Natura 2000 areas [Rural Development Programme... 2007].

As an expert and advisor I have made several reports in this region. I noted that meadows were very different in many places, also their values (mainly number of protected plants) were varied. After choosing a representative number of areas from the most popular variants, I decided to check if the agri-environmental requirements are appropriate for plant communities, because the mowing dates seemed to me to be too early. Moreover, as far as payments are concerned, I expected that the most valuable must be the xerothermic grass, while wet and mesic meadows would be less valuable and comparable to each other (payment for these two variants is the same).

MATERIALS AND METHODS

The research was conducted in June 2009 in some areas of the macroregion Niecka Nidziańska, particularly two mesoregions: Nida Valley and Pińczów Hump [Kondracki 2006]. Usually farmers were calling me, so places were chosen at random. The variants used in the research included: 4.7/5.7 Semi-natural mesic meadows, 4.6/5.6 Semi-natural wet meadows, 4.5/5.5 Tall sedge swamps, 4.3/5.3 Xerothermic grass, 4.1/5.1 Protection of birds breeding habitats. Representative meadows were located in villages Kocina, Ostrów, Ksany, Młodzawy Duże, Kije, Chotel Czerwony. Plants communities were named according to the guide by Matuszkiewicz [2005]. In my research I made about 300 phytosociological records, but this report is based on 31 ones. All were taken according to the Braun-Blanquet method with covering degrees [Dzwonko 2007]. In botany the method of describing the communities includes plant lists from squares of 25 square meters, situated regularly on all area of meadow and measured by GPS. Similar area of squares was also used in methodical botany research [Plackowski 2009], so it well describes the biodiversity. Two ornithological reports were also used. Ornithological reports need at last three controls including counting all birds, with two weeks intervals.

To describe the value of the meadows I used ecological indicator values of vascular plants of Poland [Zarzycki *et al.* 2002]. For every plant from the phytosociological records, I found two numbers: A – number of stations in Poland, with the scale: 1 – very small number of stations (up to several dozen); 2 – small number of stations (up to 100); 3 – large number of stations, but mainly in one region; 4 – large number of stations in many regions; 5 – common throughout Poland. The second was E – dynamic tendencies in the last decade, with scale: – 2 – marked decrease in the number of localities; – 1 – decrease in the number of stations or marked reduction of the numbers of individuals at localities; +1 –

increase in the number of localities, a marked increase in the number of individuals at stations; +2 – considerable increase and occupation of new localities; –/+ – disappearance and appearance of localities is balanced (species disappears from some localities and appears at new ones). What is more, the average months of flowering were identified for all the plants, according to the guide by Rutkowski [2004]. To analyse the variance of species' number from every degree of stations in Poland (A), One-way ANOVA and Bartlett test were used.

RESULTS

Semi-natural wet meadows and semi-natural mesic meadows were quite similar. Example of phytosociological record with Braun-Blanquet scale of first variant: *Calamagrostis neglecta* 3, *Cirsium rivulare* 2, *Ranunculus acris* 2, *Lychnis-flos cuculi* 1, *Alopecurus pratensis* 1, *Poa pratensis* 1, *Deschampsia caespitosa* 1, *Caltha palustris* 1, *Trifolium pratense* 1, *Plantago lanceolata* 1, *Festuca pratensis* 1, *Polygonum bistorta* 1, *Galium palustre* +, *Achillea millefolium* +, *Rumex acetosa* +, *Plantago major* +, *Potentilla erecta* +, *Potentilla anserina* +, *Cerastium holostoides* +, *Aquilegia arvense* +, *Vicia cracca* +, *Dactylorhiza incarnata* +, *Climacium dendroides* +. The example of phytosociological record of mesic meadow: *Geranium pratense* 4, *Deschampsia caespitosa* 3, *Alopecurus pratensis* 2, *Trisetum flavescens* 1, *Alchemilla pastoralis* 1, *Festuca rubra* +, *Galium verum* +, *Ranunculus acris* +, *Poa pratensis* +, *Rumex acetosa* +, *Chrysanthemum leucanthemum* +, *Stellaria graminea* +, *Achillea millefolium* +, *Trifolium repens* +, *Artemisia vulgaris* +, *Arrhenatherum elatius* +, *Lathyrus pratensis* +, *Galium mollugo* +, *Potentilla erecta* +, *Potentilla anserina* +, *Plantago lanceolata* +. Both communities belong to class *Molinio-Arrhenatheretea*. For wet meadows there were noted 40 plant species in 10 phytosociological records; 28 species (73.7%) are common in Poland and have indicator 5 in the scale describing the number of stations, while 8 (21.1%) have number 4 and 2 (5.2%) number 3 (*Calamagrostis neglecta*, *Pedicularis palustris* – second protected in the country). Twenty species of flowers from May, 15 from June, 5 from July. Semi-natural mesic meadows showed 33 species of plants at 10 phytosociological records, 28 of them (84.4%) have indicator 5 (common in Poland) while 5 (15.2%) have 4. Fifteen species start to flower in May, 15 from June, 3 from July.

The variant of tall sedge swamps was classified as *Phragmitetea-Phragmitetalia-Magnocarcion*. An example of phytosociological record: *Calamagrostis neglecta* 3, *Carex vulpina* 2, *Carex vesicaria* 2, *Cirsium rivulare* +, *Lychnis-flos cuculi* +, *Deschampsia caespitosa* +, *Caltha palustris* +, *Trifolium pratense* +, *Plantago lanceolata* +, *Galium palustre* +, *Rumex acetosa* +, *Aquilegia arvense* +. There were noted 15 species in 5 chosen phytosociological records, 10 (66.7%) of them have number 5 (common in Poland), 3 (20%) have 4, 2 (13.3%) have number 3 (*Calamagrostis neglecta*, *Symphytum tuberosum*). All plants flower in May or June.

The variant of xerothermic grass was classified as: *Festuco Brometea* – *Festuco-Stipion*. An example of phytosociological record: *Bromus erectus* 3, *Holcus lanatus* 2, *Deschampsia caespitosa* 1, *Dianthus cartusianorum* 1, *Ononis spinosa* 1, *Galium verum* 1, *Stipa capillata* +, *Rubus caesius* +, *Fragaria vesca* +, *Scabiosa ochroleuca* +, *Scabiosa columbaria* +, *Thymus pulegioides* +, *Convolvulus arvensis* +, *Euphorbia cyparissias* +, *Veronica spicata* +, *Sedum acre* +, *Corynephorus canescens* +, *Artemisia campestris* +, *Cirsium arvense* +, *Campanula sibirica* +, *Agrimonia eupatoria* +, *Papaver rhoeas* +, *Anthyllis vulneraria* +, *Consolida regalis* +, *Myosotis stricta* +, *Coronilla varia* +. In 6 chosen records there were 36 plants; 17 (47.2%) of them are common in Poland (5), 14 (38.9%) have 4, 4 (11.1%) have number 3 (*Bromus erectus*, *Ononis spinosa*, *Scabiosa columbaria*, *Campanula sibirica*), while 1 species (2.8%) have number 2 – small number of stations in Poland (*Stipa capillata*). Thirty species flower from May or June, 6 in July and August.

To compare plants variety between the variants by degrees of stations' number in the country, One-way ANOVA was used. Comparison data were lists of indexes A (see: methods) from two variants. The results are in the Table 1.

Table 1. Results of One-way ANOVA (F) and Bartlett test comparing the variants – 4.3/5.3: tall sedge swamps; 4.5/5.5: xerothermic grass; 4.6/5.6: wet meadows; 4.7/5.7: mesic meadows

	4.6/5.6	4.3/5.3	4.5/5.5
4.7/5.7	Bart. = 6,66; P <= 0,01 F = 1,99; P > 0,05	Bart. = 10,77; P <= 0,01 F = 1,83; P > 0,05	Bart. = 17,499; P <= 0,001 F = 13,138; P < 0,001
4.6/5.6		Bart. = 1,44; P > 0,05 F = 0,98; P > 0,05	Bart. = 3,46; P > 0,05 F = 5,638; P <= 0,05
4.3/5.3			Bart. = 0,061; P > 0,05 F = 0,916; P > 0,05

Finally, to describe the number of species potentially needing protection for every variant, indexes of dynamic tendencies from the last decade were used. In the records from mesic meadows only two species have number -1 (decrease in the number of stations); in wet meadows: five have index -1 while two -2 (marked decrease in the number of localities) – *Galium palustre* and *Pedicularis palustris*. In the area with tall sedge swamps five species have number -1 while on xerothermic grass only two species were described by -1 and one by +/- (disappearance and appearance are balanced) – *Consolida regalis*. It is worth noting that for xerothermic grass, twelve plants have no data of dynamic tendencies in literature.

DISCUSSION AND CONCLUSION

Comparing the values of the variants, it is worth to note that semi-natural mesic meadows and wet meadows are significantly less valuable than xerothermic grass (Tab. 1). In variants 4.7/5.7 and 4.6/5.6 there were fewer plants with index 4, 3 and none with 2. There is no difference between wet and mesic meadows and both of them are comparable with tall sedge swamps. The Bartlett test, describing the homogeneity of variance, was statistically significant comparing variant 4.7/5.7 with three others. So, xerothermic grass is the most valuable phytosociological community while wet and mesic meadows are similar – the subsidies to these variants appear to be appropriate. Differences between tall sedge swamps are not significant, but higher payments than for meadows reflects later dates of mowing. It is worth to note that the actual requirements are not always fitted to months of flowering in the macroregion Niecka Nidziańska. For wet and mesic meadows the dates of mowing (15th June) seem to be too early (most plants start to blossom in May and June) while the dates of grazing (from 21st July) are appropriate. For xerothermic grass the date of grazing is much too early (1st May), the date of mowing is all right (15th July). For tall sedge swamps the requirements are correct (grazing from 15th June, mowing from 21st July). Because these plant communities were also on the areas with ornithological reports, it must be written that the requirements of variant 4.1/5.1, with date of mowing on 1st August, are appropriate not only for birds but also for all phytosociological classes.

Plant communities in Niecka Nidziańska macroregion are different in comparison with phytotaxons from other places. For example, in the Wierzyca valley in the macroregion East Pomorze Lake District and mesoregion Starogard Lake District in the north of Poland [Kondracki 2006], *Phragmitetea* class is based on *Typha latifolia*, *Butomus umbellatus*, *Oenanthe aquatica*, while *Carex vulpina* is rare. Xerothermic grass *Festuco-Brometea* includes mainly *Allium oleraceum*, *Artemisia campestris*, *Centaurea scabiosa*, *Ranunculus bulbosus* and some plants similar to the Świętokrzyskie region: *Campanula sibirica*, *Scabiosa columbaria*, *Scabiosa ochroleuca*, *Euphorbia cyparissias*. Finally, meadows in the Wierzyca valley are also classified to *Molinio-Arrhenatheretea* with about 30 species located commonly: *Geranium pratense*, *Pastinaca sativa*, *Tragopogon pratensis* [Buliński 1993]. These data show that lists of indicators of variants of „Agri-environmental programme” should be adapted to smaller geographical units individually.

To sum up, in Niecka Nidziańska plant communities classified to different variants have individual values that are mostly reflected in the payment rates. Species are different compared to other macroregions, so indexes of variants should be fitted to every geographical unit individually. Moreover, some requirements of the „Agri-environmental programme” do not reflect the plants' needs, they are too early to let them flower completely.

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CZY „PROGRAM ROLNOŚRODOWISKOWY” STANOWI SZANSE DLA OCHRONY PRZYRODY POLSKIEJ WSI?

Streszczenie. „Program rolnośrodowiskowy” służy wprowadzaniu zasady zrównoważonego rozwoju na terenach wiejskich oraz zachowaniu ich bioróżnorodności. Jego głównym celem jest promocja produkcji rolnej opartej na metodach przyjaznych dla środowiska i przyrody. Rolnicy otrzymują finansową rekompensatę za pielęgnację działek przyjazną naturze. Badania przeprowadzone w sezonie 2009 w województwie świętokrzyskim na obszarach z różnymi zbiorowiskami roślinnymi pokazały, że wymogi programu nie odzwierciedlają wszystkich potrzeb roślin, np. terminy koszenia często są zbyt wczesne. Wartość przyrodnicza łąk kwalifikujących się do wariantów była różna.

Słowa kluczowe: „Program rolnośrodowiskowy”, ochrona przyrody, wilgotna łąka, świeża łąka, szuwały wielkoturzycowe, murawa kserotermiczna