

RESERVE MEADOW: RESULTS OF 30 YEARS OF MONITORING

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Abstract. The article presents the results of 30 years (1987–2017) of geobotanical monitoring of a wet meadow in a forest glade in the Bryanskiy Les nature reserve (Bryansk region, Russia). Long-term studies showed that there are four stages in the successional transformation of this plant community. A polydominant multi-species meadow formed in the first stage (from 1987 to 2002). The species richness of the community differed in maximum values over time, with a maximum of 70 vascular plant species per 25 m². During the first stage, the plant community was dominated by the following species: *Alchemilla vulgaris*, *Galium mollugo*, *Geum rivale*, *Gladiolus imbricatus*, *Iris sibirica*, *Polygonum bistorta*, *Potentilla erecta*, *Stachys officinalis*, and *Succisa pratensis*. Twenty rare plants grew in the meadow: *Angelica archangelica*, *Blysmus compressus*, *Carex flava*, *C. hartmanii*, *Coronilla varia*, *Dactylorhiza baltica*, *D. fuchsii*, *Epipactis palustris*, *Gladiolus imbricatus*, *Gymnadenia conopsea*, *Helictotrichon pubescens*, *Hypochoeris radicata*, *Iris sibirica*, *Listera ovata*, *Ophioglossum vulgatum*, *Parnassia palustris*, *Primula veris*, *Thalictrum aquilegifolium*, *Trifolium montanum*, and *Trollius europaeus*. The high species diversity was due to the fact that before the establishment of the reserve (1987), hay was manually harvested from the meadow, and no ploughing was carried out. Fifteen years following the establishment, the second stage of the succession (from 2003 to 2010) began with the termination of haymaking after a strict protection regime was implemented. The second stage was represented by a monodominant meadow dominated by the light-loving tall herb – meadowsweet (*Filipendula ulmaria*). The meadowsweet formed dense thickets and remained dominant while the clearing was well illuminated. Due to the unfavourable conditions created by the meadowsweet, a large number of light-loving herbs died out, and the species richness of the community decreased by half. The third stage (from 2010 to the present) was a monodominant meadow dominated by the shade-tolerant tall herb – the common nettle (*Urtica dioica*). The change in the dominant species was associated with a decrease in illumination in the community due to growth of the surrounding trees. In dense thickets of nettles, the species richness was three times lower than in the polydominant meadow. Of the 20 rare species present in the first stage, only two remained in 2017: *Thalictrum aquilegifolium* and *Trollius europaeus*. Judging by the coenotic environment, it can be assumed that the fourth stage will be represented by nettle black alder forest with undergrowth comprised of broad-leaved trees (*Acer platanoides*, *Fraxinus excelsior*, etc.). Such spontaneous development of a phytocenosis, which is accompanied by a decrease in species diversity, is typical of autogenous successions of a regressive type. When managing specially protected natural areas with meadows of this type, measures should be taken in the form of regular manual haymaking, as well as periodic clearing of shrubs and tree undergrowth.

Keywords: in-forest meadow, strict protection regime, haymaking, species diversity, autogenous succession, rare species, *Filipendula ulmaria*, *Urtica dioica*

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