

Reproductive biology of *Maianthemum bifolium* (L.) F.W.Schmidt (Convallariaceae) in different parts of the habitat

E.S. Nikandrova, N.A. Vislobokov

Department of Higher Plants, Biological Faculty, M.V. Lomonosov Moscow State University, 1, 12, Leninskie Gory, 119234 Moscow, Russia.

Maianthemum bifolium (L.) F.W.Schmidt is entomophilous plant which inhabits boreal region of Eurasia. The wide habitat includes locations with different climatic conditions as well as different spectrum of potential pollinators. Therefore some differences in flowering dynamics and pollination biology may be found in different part of the habitat.

Methods

Plants of *Maianthemum bifolium* were observed in two locations (Moscow region and Primorsky Krai) during flowering period. Observations were carried out by using photo and video camera as well as visually.

Results

The flowers in the inflorescence open acropetally and its lifetime is 12 days. The male stage begins immediately after the opening of the flower and lasts 1-2 days, the female stage begins on the 4-5 day and lasts 3-4 days.

Insects of orders Diptera, Hymenoptera and Coleoptera were observed as flower visitors for the both populations. Spectrum of dipteran visitors was more diverse in Moscow region than the Primorsky Krai. Flies of families Syrphidae and Empididae were observed in the both populations.

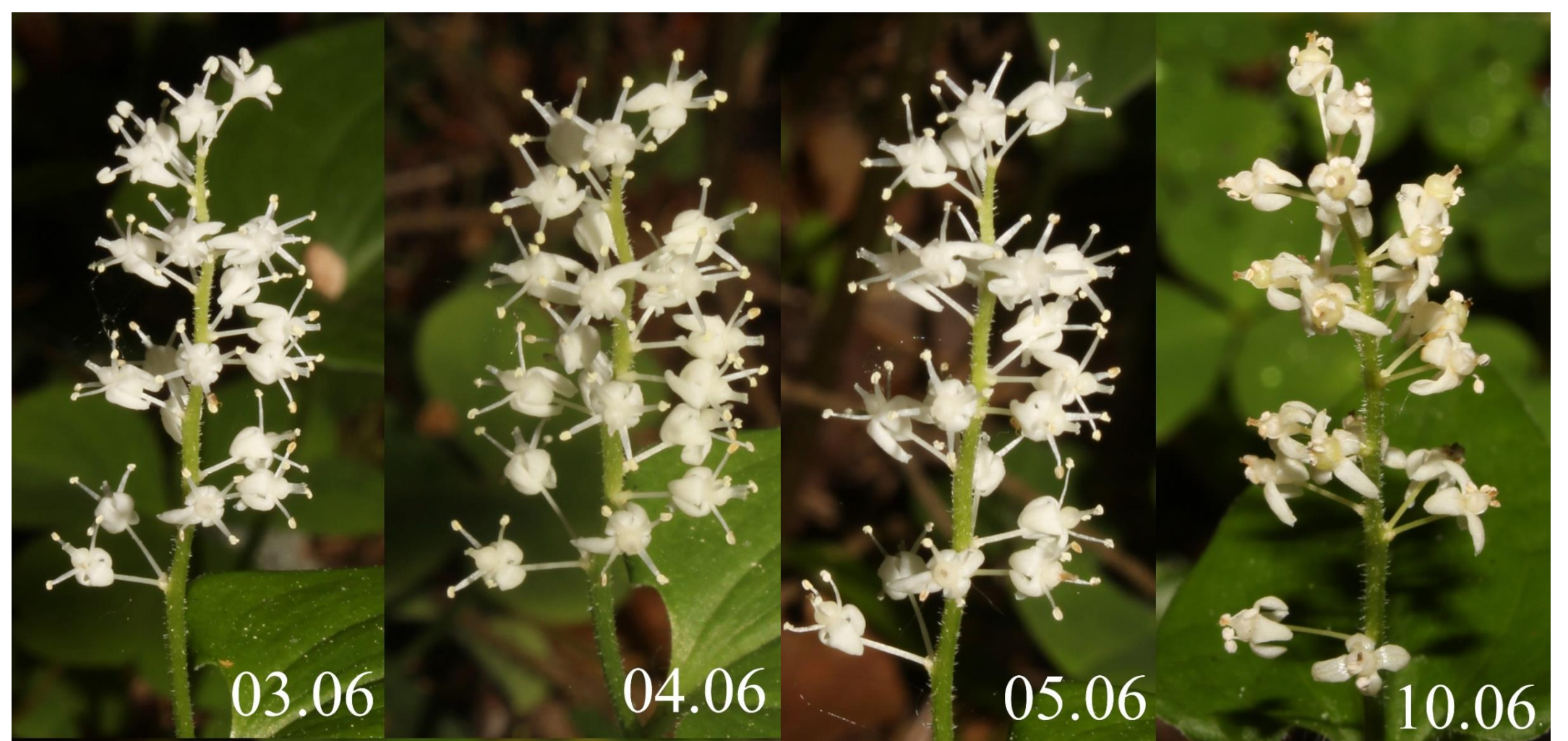


Figure 1 Inflorescence of *Maianthemum bifolium* during 4 days of flowering (3–10 June)

Ants (Formicidae) were noted as visitors in the Primorsky Krai population whereas were not observed in the Moscow region. We found pollens grains on all insects in different proportions. Insects of orders Hymenoptera, Coleoptera (Oedemeridae, Cerambycidae) and Diptera (Anthomyiidae, Pipunculidae и Syrphidae) can be recognized as pollinators of *Maianthemum bifolium*.



Figure 2 Pollen grains of *Maianthemum bifolium* obtained from body surface of flower visitors

Conclusions

Proterandry was found for both populations. Features of flowering dynamics are the same for *Maianthemum bifolium* in different parts of habitat. Syrphid flies are the most effective pollinators in the both populations.

		Период наблюдения (время суток)													
		9:00–10:00	10:00–11:00	11:00–12:00	12:00–13:00	13:00–14:00	14:00–15:00	15:00–16:00	16:00–17:00	17:00–18:00	18:00–19:00	19:00–20:00	20:00–21:00	21:00–22:00	
Московская область <i>Maianthemum bifolium</i>		Число минут наблюдения в расчете на одно соцветие													
		0	0	60	95	170	175	50	0	0	120	60	60	35	
Diptera	Oedemeridae (<i>Oedemera virescens</i>)				1	3		1							
	Muscidae					2	2								
	Syrphidae				1	2	3	2							
	Empididae				1										
	Anthomyiidae							1							
	Dolichophoridae				1										
	Pipunculidae				1										
	другие Diptera						1				1				
Hymenoptera						2	1	1							
Неопределенные					1										
Приморский край <i>Maianthemum bifolium</i>		Число минут наблюдения в расчете на одно соцветие													
		0	11	105	120	120	144	157	100	127	45	50	0	0	
Coleoptera	Cerambycidae (Lepturinae)					2							1		
	Syrphidae			1	3	2	1	1							
Diptera	Empididae			1	1	1									
	Formicidae						2		10	3	4		2		
Hymenoptera	Other														
	Hymenoptera			2	1		1								
Lepidoptera														1	

Table 1 Numbers of visitors, which were observed on inflorescences of investigated populations

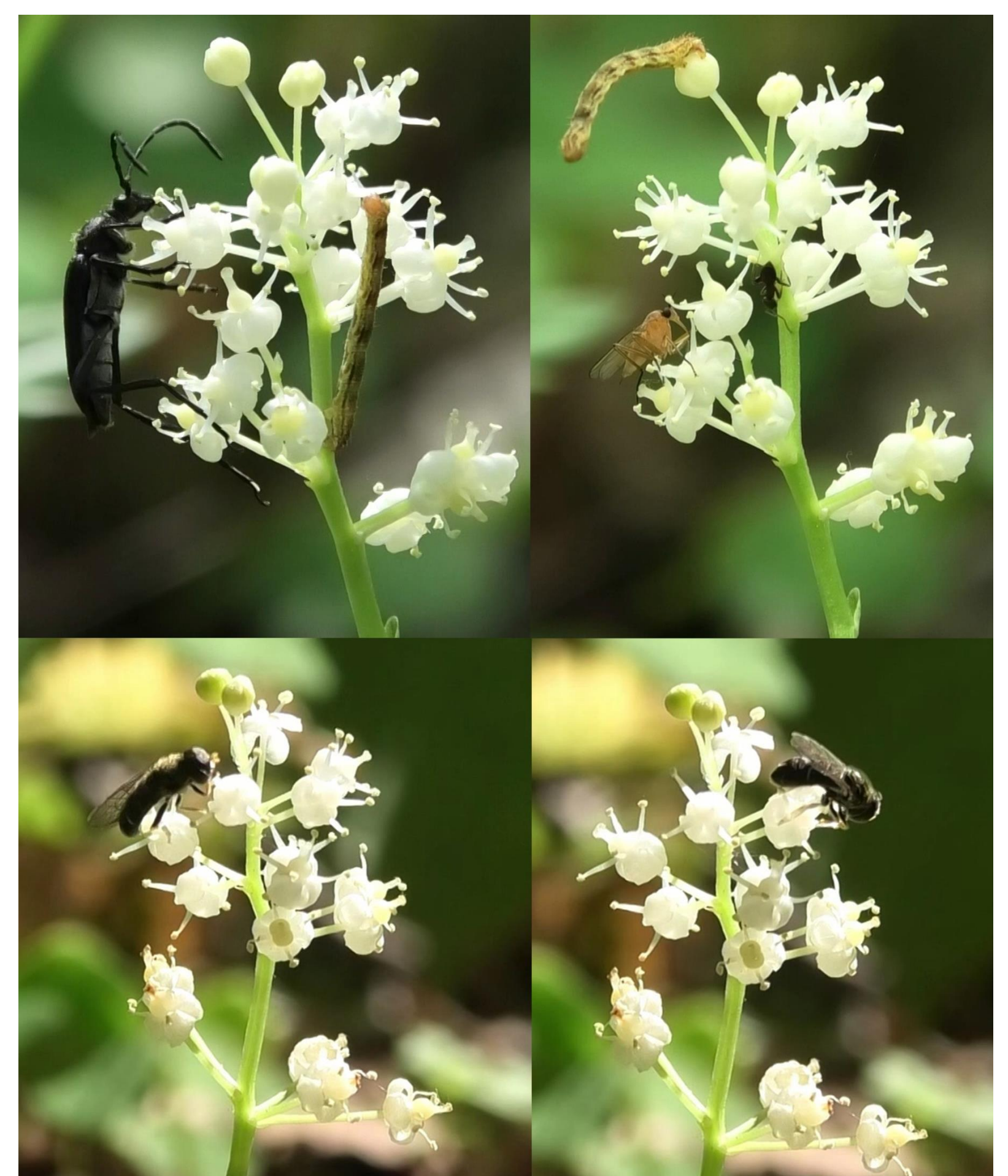


Figure 3 Flower visitors of *Maianthemum bifolium*