

sometimes clinging to the substrate, thereby supporting the position of the couple. Only one female used her middle legs to hold on to the support, and in one case, all legs were flexed. No couple was found in a vertical hanging position. In fact, the line between the mates' heads within the wheel ran more or less horizontally. By strongly curving his abdomen ventrally, the male pulled the female's head and thorax towards his abdominal basis until she touched the ventral side of her own S8 with her face. Thereby, the balance point of the wheel shifted closer to the male's thorax. The



Fig. 5. Male *Lindenia tetraphylla* perching with all legs on flat gravel ground. Photo: U. Buchs



Fig. 6. Male *Onychogomphus forcipatus* perching on tip of a thin vertical support that is grasped with all six legs. Photo: HW

Tab. 2. Position of legs in perched individuals of *Lindenia tetraphylla* compared to all other European gomphid species (n = number of analysed photos).

	Perched on flat substrate (ground, flat stones, leaves)		Perched on thin substrate (twig tips, small round stones)		n
	All legs grasp support	Fore legs flexed	All legs grasp support	Fore legs flexed	
<i>Lindenia tetraphylla</i>	14	4	1	74	93
<i>Gomphus flavipes</i>	43	0	40	0	83
<i>Gomphus graslinii</i>	45	0	39	0	84
<i>Gomphus pulchellus</i>	50	0	40	0	90
<i>Gomphus schneiderii</i>	13	0	29	0	42
<i>Gomphus simillimus</i>	78	0	7	0	85
<i>Gomphus vulgatissimus</i>	40	0	50	0	90
<i>Onychogomphus costae</i>	17	0	35	0	52
<i>Onychogomphus forcipatus</i>	44	0	55	0	99
<i>Onychogomphus uncatus</i>	72	0	20	0	92
<i>Ophiogomphus cecilia</i>	37	0	53	0	90
<i>Paragomphus genei</i>	29	0	50	0	90

male's long S5–8 nearly formed an open right-angled trapezium with two angles of ca 60° and 120°, respectively. S9–10 were bent dorsally so that the male could clasp the female's head with his appendages. For geometrical reasons, the female was unable to grasp or touch the male abdomen with her legs in this position.

Except for *Gomphus schneiderii*, the mating position of all other European gomphid species could be analysed. Altogether, 47 photos of copulating pairs were available. The males clung invariably with five or six legs to the support while the females, in most cases, grasped the males' abdomen with at least one leg pair, often with all of them (Tab. 4, Fig. 6). Members of the genus *Onychogomphus* were an exception, as in 11 out of 21 couples, the females held their fore legs adducted and at least their hind legs bent. Within the copulation wheel, the males' S3–6 were curved concavely in a wide bow and then, from S8–10, turned ventrally, forming a narrow semicircle. Thus, in contrast to *L. tetraphylla*, the females' head remained very distant from the males' abdominal basis. Some couples settled horizontally on flat substrates while others hung vertically on plant parts. The placement of the legs in the wheel form was identical in any position between vertical and horizontal.