

## Supplementary material:

Supplementary file 1. *Ips amitinus* description

*Ips amitinus* adults were collected for identification in the laboratory when possible. *Ips amitinus* differ from other *Ips* species present in Sweden by a shiny declivity at the back of the elytra (Knižek 2001; Nierhaus-Wunderwald and Forster 2004; Åke Lindelöw, pers. communication).

The gallery system is highly characteristic for the species. It has a very large nuptial chamber in the late stages, as the male usually attracts between two and seven females. The mother galleries often start away from the direction of the wood fibre, then turn after about one centimetre and continue along the wood fibre in a rather windy way. The gallery system could be confused to other bark beetles in the early stages (like *Orthotomicus* spp.), but it is rather specific in the later stages (for a visual comparison, see Knižek 2001).

## References

- Knižek M (2001) Progradation of small spruce bark beetle species. *Journal of Forest Science* 47: 113-114.
- Nierhaus-Wunderwald D, Forster B (2004) Zur Biologie der Buchdruckerarten. *Merkblatt für die Praxis* 18: 1-8.

**Table S1.** Percentages of localities and wood objects colonised by bark- and wood-boring beetle taxa north and south of the *Ips amitinus* 2019 southern distribution limit. The number of colonised localities and objects is given within parenthesis. Species were ordered, based on the percentage (and number) of colonised localities north of *Ips amitinus* distribution limit. Taxonomic group: B = bark beetle; L = longhorn beetle; W = weevil (except bark beetles). Host tree: S = Norway spruce; P = Scots pine. The percentage of colonised objects is calculated, based on the number of objects from their host tree species

Species	Beetle group	Colonised localities		Colonised objects		Host tree
		North	South	North	South	
		% (number)	% (number)	% (number)	% (number)	
<i>Pityogenes chalcographus</i>	B	82.1 (261)	73.4 (47)	87.4 (4348)	91.4 (1008)	S
<i>Pityogenes</i> spp.	B	75.4 (240)	61 (39)	57.5 (2114)	55.9 (405)	P
<i>Ips amitinus</i>	B	57.9 (184)	0	8.6 (741)	0	S/P
<i>Orthotomicus</i> spp.	B	54.7 (174)	28.1 (18)	7.5 (647)	5.1 (94)	S/P
<i>Tomicus piniperda</i>	B	45.6 (145)	42.2 (27)	18.1 (665)	19.6 (142)	P
<i>Pissodes</i> spp.	W	29.6 (94)	15.6 (10)	1.8 (153)	1.0 (18)	S/P
<i>Dryocoetes</i> spp.	B	28.9 (92)	35.9 (23)	3.9 (194)	7.2 (80)	S
<i>Monochamus</i> spp.	L	23.6 (75)	12.5 (8)	3.9 (341)	1.3 (24)	S/P
<i>Ips typographus</i>	B	19.5 (62)	25.0 (16)	1.4 (118)	2.3 (42)	S
<i>Hylurgops glabratus</i>	B	9.7 (31)	4.7 (3)	0.8 (42)	0.4 (4)	S
<i>Hylurgops palliatus</i>	B	9.4 (30)	7.8 (5)	0.6 (53)	0.4 (7)	S/P
<i>Polygraphus</i> spp.	B	2.5 (8)	1.6 (1)	0.2 (11)	0.1 (1)	S
<i>Trypodendron lineatum</i>	B	2.2 (7)	1.6 (1)	0.2 (13)	0.1 (1)	S/P
<i>Rhagium inquisitor</i>	L	1.9 (6)	6.3 (4)	0.1 (9)	1.4 (25)	S/P
<i>Hylastes</i> spp.	B	1.6 (5)	3.1 (2)	0.1 (7)	0.2 (4)	S/P
<i>Acanthocinus aedilis</i>	L	0.9 (3)	0.0	0.1 (3)	0	P