

## Occurrence of *Ips duplicatus* (Coleoptera: Curculionidae, Scolytinae) on pines (*Pinus* sp.) in the Czech Republic and southern Poland – Short Communication

J. HOLUŠA<sup>1,2</sup>, W. GRODZKI<sup>3</sup>

<sup>1</sup>Forestry and Game Management Research Institute, Strnady, Frýdek-Místek, Czech Republic

<sup>2</sup>Faculty of Forestry and Wood Sciences, Czech University of Life Sciences Prague, Prague, Czech Republic

<sup>3</sup>Department of Forest Management in Mountain Regions, Forest Research Institute, Cracow, Poland

**ABSTRACT:** Spruce is regarded as the only host plant of *Ips duplicatus* in Central Europe, whereas this beetle exceptionally occurs on pine in Siberia. Its occurrence on *Pinus strobus* and *Pinus sylvestris* was discovered in the eastern part of the Czech Republic and in southern Poland, where the population density of *Ips duplicatus* has been increased for a long time on Norway spruce. However, all cases concerned only single trees which were growing in forest complexes with spruce dominance. The most likely explanation is merely a consequence of the typical host plant shortage.

**Keywords:** *Ips duplicatus*; faunistics; host tree; *Pinus*; Czech Republic; southern Poland

The double-spined spruce bark beetle *Ips duplicatus* (Sahlberg, 1836) occurred only in the Euro-Siberian taiga from Sweden to Sakhalin and in the Alps (REITTER 1916; PFEFFER 1955) until the beginning of the 20<sup>th</sup> century. Recently, its occurrence has been confirmed almost in the whole territory of the Czech Republic up to 600 m a.s.l., rarely at a higher altitude. Its focus as well as its outbreak is located in northern Moravia and Silesia (HOLUŠA, KNÍŽEK 2007). In southern Poland the occurrence of this species was detected in the whole area between the Silesian Upland in the west and Gorce in the east, up to 1,000 m a.s.l.; sporadic findings were recorded also in the Western Sudeten (GRODZKI 2003).

WACHTL (1895) reported earlier that this species attacks not only spruces *Picea abies* (L.) Karst. (in orig. *Picea excelsa* (Link.)), *Picea × fennica* (Regel.) Kom. (in orig. *Picea excelsa* var. *uralensis* Tepl.) but

also pines *Pinus sylvestris* L., *Pinus sibirica* (Du Tour.) Rupr. (in orig. *Pinus cembra* L.). KARPIŃSKI and STRAWIŃSKI (1948), beside spruce as the main host tree, described the occurrence on *Pinus sylvestris* and sporadically on *Pinus cembra*; the same information was repeated by MICHALSKI and MAZUR (1999).

According to SAALAS (1923), it mostly attacks spruce as its prime host plant though it is also detected in various abundances on pines. Feeding outsets were found on the edge of pine branches; afterwards they were also found on living pine stems in different parishes where the pine predominated. Most of the trees were growing on more or less dry forest soil. Furthermore, KARPIŃSKI (1933) noticed the infestation of both spruce and pine (*Pinus sylvestris* L.) in the Białowieża Primeval Forest. SCHNAIDER (1952) also reported Scots pine among possible host trees, with reference to north-eastern Poland.

---

Supported by the Ministry of Agriculture of the Czech Republic, Project No. 0002070201.

With reference to MRKVA (1994, 1995), the origin of his data being unsure, *I. duplicatus* occurs, in addition to spruce, less frequently on pine (*Pinus sylvestris*, *Pinus sibirica*, *Pinus koraiensis* Siebold et Zucc.), larch (*Larix decidua* Miller, *Larix sibirica* Lebed., *Larix dahurica* Turcz. ex Trautv.), exceptionally on fir (*Abies* sp.) and rarely on juniper (*Juniperus* sp.). PFEFFER (1989) summarized only spruces and pines (*Picea obovata*, *Picea abies* (in orig. *Picea excelsa*), *Picea jezoensis* (Sieb. et Zucc.) Carrier., *Pinus sylvestris*, *Pinus sibirica*). The life cycle of *I. duplicatus* is associated with *Picea abies* in Central Europe. Adults infest the upper part of stems up to tops (PFEFFER, KNÍŽEK 1995) and thicker branches (HOLUŠA et al. 2003) of 40 to 70 years old stressed trees (PFEFFER 1955) planted at sunny places. *I. duplicatus* inhabits openings and tends to attack only individual trees inside the forests (MRKVA 1995; GRODZKI 1999). Lying trees are attacked only occasionally (PFEFFER, KNÍŽEK 1995; MRKVA 1995) or remain not colonized at all (GRODZKI 1997).

The occurrence of *I. duplicatus* on pine was observed in a single locality of the eastern Czech Republic, which is characterized by spruce dominance (but many other tree species grow there):

Oprechtice, Paskovský les wood, 49°43'5.604"N, 18°16'30.519"E, 281 m a.s.l., 30 September 2004, *Pinus strobus* L., forest edge. The stem was densely colonized (more than one entrance hole per 1 dm<sup>2</sup>), up to a height of 12 m. Extended feeding marks by *I. duplicatus* were visible. The beetles of a new generation during maturation feeding were present; leg. J. Zátopek, det. et col. J. Holuša;

Oprechtice, Lipina wood, 49°44'2.486"N, 18°15'43.256"E, 269 m a.s.l., 12 November 2007, *Pinus sylvestris*, this tree (35 cm in diameter, 22 meters high) was originally growing in a spruce forest where spruces were cut afterwards. Its stem was densely colonized (more than one entrance hole per 1 dm<sup>2</sup>), up to a height of 8 m, in the lower parts of trees only maturation feedings were found. The whole life cycle passed and most beetles left the stem; leg., det. et col. J. Holuša.

Furthermore, the colonization of pine was observed earlier incidentally also in southern Poland:

Grotowice (Forest District Krasiejów, at present – Opole), 50°35'49.2"N, 17°58'31.3"E, 180 m a.s.l., summer 1993, *Pinus sylvestris*, trees infested densely along the whole stem length from top to crown, felled in pine-spruce stands damaged by wind in 1990 (W. Szczepański, personal communication).

*I. duplicatus* was observed earlier only incidentally on pine in Central Europe, in the old range

of its occurrence. Most probably, it still concerns only a chance occurrence in new localities with very high population densities. In the study area in the Czech Republic, spruces are declining because of drought and honey fungus attacks and 50–60% ( $n = 635$ ) of them are consequently infested by *I. duplicatus* during summer (July–September 2007); a similar pattern could be applied to the findings in Poland, next to the outbreak area (GRODZKI 1997). The incidental infestations on Scots pine were also observed recently in Northern Poland (Kartuzy Forest District), in the newest outbreak area of *I. duplicatus* on Norway spruce (M. Szydlarski, personal communication). These infestations vary in time and place, but they are generally spatially related with actual outbreak areas, where beetles subsequently attack even pine due to the host plant shortage.

## References

- GRODZKI W., 1997. Możliwości kontroli liczebności populacji kornika zrosłozębnego *Ips duplicatus* C. R. Sahlb. na południu Polski. Sylwan, 141: 25–36.
- GRODZKI W., 1999. Problematika výskytu lýkožrouta severského *Ips duplicatus* (Sahlberg) (Coleoptera: Scolytidae) na území Polska. Zpravodaj ochrany lesa, 5: 13–15.
- GRODZKI W., 2003. Zasięg występowania kornika zrosłozębnego *Ips duplicatus* C. R. Sahlb. (Col.: Scolytidae) w obszarach górskich południowej Polski. Sylwan, 8: 29–36.
- HOLUŠA J., KNÍŽEK M., 2007. Aktuální rozšíření lýkožrouta severského v ČR. LOS informuje. Lesnická práce, 85: 314.
- HOLUŠA J., ZAHRADNÍK P., KNÍŽEK M., DRÁPELA K., 2003. Seasonal flight activity of the double-spined spruce bark beetle *Ips duplicatus* (Coleoptera, Curculionidae, Scolytinae) in Silesia (Czech Republic). Biológia (Bratislava), 58: 935–941.
- KARPIŃSKI J.J., 1933. Fauna korników Puszczy Białowieskiej na tle występujących w puszczy typów drzewostanów. Instytut Badawczy Leśnictwa, Rozprawy i Sprawozdania, Seria A, 1: 1–68.
- KARPIŃSKI J.J., STRAWIŃSKI K., 1948. Korniki ziem Polski. Annales Universitatis Mariae Curie-Skłodowska, Sectio C, Supplementum IV, Lublin: 1–239.
- MICHAŁSKI J., MAZUR A., 1999. Korniki. Praktyczny przewodnik dla leśników. Warszawa, Oficyna Wydawnicza Wydawnictwo Świat: 1–188.
- MRKVA R., 1994. Lýkožrout severský (*Ips duplicatus* Sahlberg), nový významný škůdce na smrku. Lesnická práce, 73: 35–37.
- MRKVA R., 1995. Nové poznatky o bionomii, ekologii a hubení lýkožrouta severského. Lesnická práce, 74: 5–7.

PFEFFER A., 1955. Fauna ČSR. Svazek 6. Kůrovci Scolytidae. (Řád: Brouci – Coleoptera). Praha, Nakladatelství Československé akademie věd: 324.

PFEFFER A., 1989. Kůrovcovití (Scolytidae) a jádrohlodovití (Platypodidae). Praha, Academia: 137.

PFEFFER A., KNÍŽEK M., 1995. Expanze lýkožrouta *Ips duplicatus* (Sahlb.) ze severské tajgy. Zpravodaj ochrany lesa, 2: 8–11.

REITTER E., 1916. Bestimmungstabelle der Borkenkäfer (Scolytidae) aus Europa und den angrenzenden Landern. Wien Entomologische Zeitung, 32 (Beiheft): 1–113.

SAALAS U., 1923. Die Fichtenkäfer Finnlands. Annales Academiae Scientiarum Fennicae, Serie A, 22: 746.

SCHNAIDER Z., 1952. Kornik zroszłozębny. Las Polski, 12: 33–36.

WACHTL F., 1895. Zur Systematik und Nomenklatur. Mitteilungen aus dem Forstlichen Versuchswesen Österreichs (Wien), 19: 1–31.

Received for publication March 5, 2008

Accepted after corrections April 9, 2008

## Výskyt lýkožrouta severského *Ips duplicatus* (Coleoptera: Curculionidae, Scolytinae) na borovici (*Pinus* sp.) v České republice a v jižním Polsku – Krátké sdělení

**ABSTRAKT:** Jako hostitelská rostlina je pro *Ips duplicatus* ve střední Evropě znám jen smrk, zatímco na Sibiři se výjimečně vyskytuje i na borovici. Výskyt na *Pinus strobus* a *Pinus sylvestris* byl zjištěn ve východní části České republiky a v jižním Polsku, kde jsou dlouhodobě zvýšené populační hustoty *Ips duplicatus*. Jednalo se však v obou případech pouze o jednotlivé stromy, rostoucí ve smrkových lesních komplexech. Pravděpodobně se jedná jen o důsledek nedostatku typické hostitelské rostliny.

**Klíčová slova:** *Ips duplicatus*; faunistika; hostitelská rostlina; *Pinus*; Česká republika; jižní Polsko

---

Corresponding author:

Doc. ing. JAROSLAV HOLUŠA, Ph.D., Výzkumný ústav lesního hospodářství a myslivosti, v.v.i., Strnady, pracoviště Frýdek-Místek, Nádražní 2811, 738 01 Frýdek-Místek, Česká republika  
tel./fax: + 420 558 628 647, e-mail: holusaj@seznam.cz

---