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## LICKING OF PINE SAP BY GREENFINCHES *CARDUELIS CHLORIS* AND GOLDFINCHES *CARDUELIS CARDUELIS*

### ABSTRACT

In 2011 and 2012, an unusual and so far not described foraging behaviour of two finch species was observed in the Barycz valley, W-Poland. Several times Greenfinches *Carduelis chloris* broke off fresh shoots of Scots pine (*Pinus silvestris*) and then licked up the leaking sap. Afterwards, Goldfinches *Carduelis carduelis* also licked up the sap from the same spot. We hypothesize that both species take advantage of the antiseptic nature of *Pinaceae* sap.

During an ornithological study in the agricultural landscape of Western Poland near the town of Odolanów (51°34'N, 17°40'E; for details see Antczak *et al.* 2004, Ekner-Grzyb *et al.* 2013), we several times observed an unusual foraging behaviour of two species of *Carduelid* finches. On 10th April 2011 three adult Greenfinches *Carduelis chloris* were seen breaking off fresh shoots, 3-5 cm long, of Scots pine (*Pinus silvestris*) (Fig. 1) in a 20 to 30 year old Pine stand. The shoots were discarded and the birds



Fig. 1. Breaking off pine shoots by Greenfinch



Fig. 2. Leaking juice



Fig. 3. Juice licking by Greenfinch



licked up only the sap leaking from the breakage (Fig. 2 and 3). After 20 minutes two Goldfinches *Carduelis carduelis* landed on exactly the same spot and also started to lick up the leaking sap.

Greenfinches breaking off young Pine shoots and licking up the juice were recorded a total of six times in 2011 (10th, 11th, 21st and 22nd April, 1st and 3rd May) and five times in 2012 (12th (twice), 19th and 20th April, 6th May). In seven cases (four times in 2011 and three times in 2012) Goldfinches were observed licking up juice from pine shoots broken up shortly before by Greenfinches.

To the best of our knowledge, licking up sap from actively broken fresh Pine shoots by Green- and Goldfinches has not been described so far. We first assumed that birds have found a new food source to supplement their early spring diet (for details of regular food composition see Cramp & Simmons 1988, Sage 2011). However, Karting et al. (1991) could show that Pine juice has no significant nutrition value but contains several compounds with antiseptic characteristics (see table). For example, they are active against Gram+ bacteria and some species of *Candida*. Therefore, we hypothesize that licking up fresh Pine juice by Green- and Goldfinches is not a regular foraging habit but helps to improve the immunological status, perhaps especially important after winter time. However, this hypothesis still needs verification.

Tab. Chemical composition of *Pinaceae* sap (after Karting *et al.* 1991)

INGREDIENT	FUNCTION
<b><math>\alpha</math>- pinen</b>	Broad – spectrum antibiotic
<b>Limonene</b>	Insect repellent, insecticide
<b>Borneol</b>	Insect repellent, insecticide
<b>Camphene</b>	Component of drugs used in gall bladder and kidney diseases
<b>Linalool</b>	Insecticide
<b>Humulene</b>	Antiphlogistic
<b><math>\beta</math> – carbophyllene</b>	Antiphlogistic

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### REFERENCES

- Antczak M., Hromada M., Grzybek J., Tryjanowski P. 2004: Breeding biology of the great grey shrike *Lanius excubitor* in W Poland. *Acta Ornithol.* 39: 9-14.
- Cramp S., Simmons K.E.L. 1988: *The Birds of the Western Palearctic* – Vol. 4, pp. 684-694. Oxford University Press, Oxford.
- Ekner-Grzyb A., Sajkowska Z., Dudek K., Gawałek M., Skórka P., Tryjanowski P. 2013: Locomotor performance of sand lizards (*Lacerta agilis*): Effects of predatory pressure and parasite load. *Acta ethologica* 16: 173-179.
- Sage B. 2011: Food plants of the Goldfinch. *British Birds* 104: 675.
- Karting T., Still F., Reinthaler F. 1991 – Antimicrobial activity of the essential oil of young pine shoots (*Picea abies* L.) – *J. Ethnopharmacol.*, 35: 155-157.