Rediscovery of *Osmoderma eremita* (Scopoli, 1763) (Coleoptera, Scarabaeidae) in Norway

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Adults and larvae of the hermit beetle, *Osmoderma eremita* (Scopoli, 1763), are reported from Norway for the first time since late 1800. A population was discovered in hollow ash trees in Tønsberg in July 2008. The species was associated with its predator, the click beetle *Elater ferrugineus* Linnaeus, 1758.

Key words: *Osmoderma eremita*, *Elater ferrugineus*, Norway.

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INTRODUCTION

The main distribution area of *Osmoderma eremita* covers central Europe reaching north to southern parts of Sweden and Finland, Denmark, Poland and Latvia (Ranius et al. 2005). In Norway the species has not been recorded for more than a century. Siebke (1875) gives a record by Esmark from **BØ** Drammen while Strand (1960) refers to an old record from **AK** Asker made by Grüner before year 1900. The only preserved material in Norway is a specimen in Zoological Museum, Oslo, labelled "Ex. coll. Norway. Einar Fischer" (Ranius et al. 2005). Remnants of adults - probably very old - have been found several times from 1958 onwards in hollow oaks at the island Rauer near Fredrikstad (Hanssen 1999). In the latest edition of the Norwegian Red List (Kålås et al. 2006) *O. eremita* is considered extinct and listed as one of four Norwegian beetle species which are included in the 2006 Global IUCN Red List as vulnerable (VU).

REDISCOVERY

On 5 July 2008 the senior author discovered an adult female sitting on a stone in the old city graveyard in Tønsberg, **VE** Tønsberg (Tønsberg Gamle Kirkegård, UTM 32v 580530 E, 6571057 N, Figure 1). A hollow ash tree with abundance of the characteristic larval faecal pellets were located within 50 m from the collecting site. The tree has a diameter of 73 cm at chest height. On 9 July the junior author discovered two more adults creeping on the outside of the same tree trunk. On both occasions the observations were made in early afternoon in warm, sunny weather (about 20° C). Further observations of adults were not made, not even on the very warmest days with temperatures around 30° C at the end of July. On 19 July the junior author examined an accumulated pile of mould and larval faecal pellets at foot of the ash tree and a full grown 6 cm long larva was discovered at about 15 cm depth, outside the tree trunk (Figures 2, 3). One small larva, about 3 cm long, was also seen. The adult female from 5 July is deposited at Zoological Museum, Oslo, while other specimens were left at the collecting site.

ASSOCIATED SPECIES

On 9 July 2008 two larvae (28 and 25 mm long) of *Elater ferrugineus* Linnaeus, 1758 (Elateridae) were found in the mould piled up at foot of the

Figure 1. Adult female of *Osmoderma eremita*, 31 mm long, collected in Tønsberg on 5 July 2008.

ash tree (Figure 4). The species is a facultative predator on larvae of *O. eremita* and other wood living Scarabidae and was discovered for the first time in Norway in an hollow oak in **VE** Larvik in 2006 (Sverdrup-Thygeson et al. 2007).

PERSPECTIVES FOR *OSMODERMA EREMITA* IN NORWAY

The old 19th Century records of *O. eremita* indicate that it may have been widely distributed in the climatically favourable districts around the Oslofjord at a time when suitable living trees were more abundant than at present. The nearest Swedish recent locality is on the west coast at Tanum, about 50 km from the Norwegian border (Antonsson et al. 2003). In Sweden more than 90% of known populations are located in hollow oak trees, while ash trees are only sporadically used (Antonsson et al. 2003). The presence of a recent population in Tønsberg is certainly of relic character. Local conditions may have supported this population during long periods. The graveyard has about 50 old ash trees within dispersal distance for adult *O. eremita* (less than 300 m, cf. Ranius & Hedin 2001). Many of the trees have developed hollows of sufficient volume for *O. eremita*. Apart from the tree where adults and larva are observed, fresh larval faecal pellets are seen at one more tree about 40 m away. However, only a few trees are readily available for inspections with open hollows near ground. Most tree hollows must be inspected from above, which has not yet been done.

Large hollow oaks have probably attracted most attention in recent surveys of saproxylic beetles in Norway. Hollow ash trees of moderate size are less charismatic and local populations of *O. eremita* may have escaped attention until present. Crucial factors for maintenance of populations of *O. eremita* are number of potential breeding trees within dispersal distance and microclimatic conditions. If number of trees become too low and breeding trees become shaded by surrounding vegetation, populations will decline but may still persist for decades before going extinct. Ranius (2000) found the Swedish populations of *O. eremita* to fit metapopulation theory, requiring a certain amount of available trees to keep viable populations. The number of potential breeding trees (50) at the Tønsberg locality is probably above the minimum number.

The warmest districts in SE Norway may still have undetected populations of *O. eremita*. Freely exposed trees in city parks, alleys, road sides and church yards may provide breeding ground for *O. eremita*. However, not many sites may have the required minimum number of suitable trees to keep populations over time.

Present environmental politics in Norway include a ban on extinction of species from our country within year 2010. Because *O. eremita* was considered to be extinct in Norway it had no formal protection when it was rediscovered. The Norwegian Directorate for nature management issued an immediate species protection for *O. eremita* on 22th August 2008.

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Figure 2. Full grown 6 cm long larva of *Osmoderma eremita* collected 19 July 2008 in mould at base of the ash tree in which adults were observed.

Figure 3. Base of ash tree in which adults and larvae of *Osmoderma* were observed. Note the accumulation of mould and larval faecal pellets flowing out from the open fissure in the stem. The full grown larva was found in the mould outside the stem together with its predator, *Elater ferrugineus*. Units of the yardstick are centimeters.

REFERENCES

Antonsson. K., Hedin, J., Jansson, N., Nilsson, S. G. & Ranius, T. 2003. Läderbaggans utbredning i Sverige. Entomologisk Tidskrift 124, 225–240.

Hanssen, O. 1999. Insekter i hule trær. Insekt-Nytt 24 (2/3), 35–44.

Kålås, J.A., Viken, Å. & Bakken, T. (eds.) 2006. Norsk Rødliste 2006 – Norwegian Red List. Artsdatabanken, Norway. 416 pp.

Ranius, T. 2000. Minimum viable metapopulation size of a beetle, *Osmoderma eremita*, living in tree hollows. Conservation Biology 3, 37–43.

Ranius, T. & Hedin, J. 2001. The dispersal rate of a beetle, *Osmoderma eremita*, living in tree hollows. Oecologia 126,171–180.

Ranius, T., Aguado, L. O, Antonsson, K., Audisio, P., Ballerio, A., Carpaneto, G. M., Chobot, K., Gjurašin, B., Hanssen, O., Huijbregts, H., Lakatos, F., Martin, O., Neculiseanu, Z., Nikitsky, N. B.; Paill, W.; Pirnat, A.; Rizun, V.; Ruicănescu, A.; Stegner, J.; Süda, I.; Szwalko, P., Tamutis, V., Telnov, D., Tsinkevich, V., Versteirt, V., Vignon, V., Vögeli, M. & Zach, P. 2005. *Osmoderma eremita* (Coleoptera, Scarabaeidae, Cetoniinae) in Europe. Animal Biodiversity and Conservation 28, 1–44.

Siebke, H.1875. Enumeratio insectorum norvegicorum, fasciculus II. Catalogum coleopterorum continens. Universitetsprogram for første semester 1875, Christiania.

Figure 4. Larva of *Elater ferrugineus*, 28 mm long, collected together with *Osmoderma* larvae on 19 July 2008.

Strand, A. 1960. Koleopterologisk bidrag X. Norsk Entomologisk Tidsskrift 11, 167–172.

Sverdrup-Thygeson, A., Blom, H.H., Brandrud, T.E., Bratli. H., Skarpaas, O. & Ødegaard, F. 2007. Kartlegging og overvåking av rødlistearter. Delprosjekt II: Areal for rødlistearter. – Kartlegging og overvåking (AR-KO). Faglig framdriftsrapport for 2006. NINA Rapport 238. 55 pp. Trondheim.

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