Short papers

Songbirds breeding in stands of knotweed in Germany

Abstract The Asian knotweeds *Fallopia* are invasive plants that cause environmental concerns in many European countries. This short paper summarises a study of the breeding bird communities in stands of knotweed in southwest Saxony, Germany, in 2017 and 2018.

Since the massive spread of the Asian knotweeds (Japanese *Fallopia japonica* and Giant Knotweed *F. sachalinensis* and the hybrid Conolly's ('Bohemian') Knotweed *F.* × *bohemica*, these plants have been classified as highly problematic, invasive neophytes in Germany and other European countries. Various publications, including published papers, conference proceedings and even a Japanese Knotweed handbook (Child & Wade 2000) warn against the dangers of these invasive species for biodiversity. As a rule, we tend to be most concerned about their displacement of native plant species, leading to rigorous demands for elimination and, increasingly, preventative measures. According to the German Association for the Environment and Nature Conservation (BUND), €34–41 million is spent every year in Germany to combat knotweed, chiefly by mowing or grazing in summer. Most previous studies illustrate the negative effects on native plant communities and invertebrates, but songbird nests in knotweed stands were described by Dowsett-Lemaire (1981) and Larsen (2013). This short paper, which is a summary of a more detailed paper published in German (Hering 2019a,b), illustrates the potential importance of knotweed stands in providing nesting sites for songbirds, especially in urban areas and regions with intensive agriculture. Targeted breeding bird surveys were carried out in 2017 and 2018, mainly in knotweed stands in southwest Saxony, Germany.

Jens Hering

422. The hybrid Conolly's ('Bohemian') Knotweed *F.* x *bohemica* lines the banks of the Zwickauer Mulde on both sides for many kilometres; June 2018. This section was surveyed in 2018 and is where all the breeding birds mentioned here were located.

Jens Hering

423. A Marsh Warbler *Acrocephalus palustris* nest with a clutch of four eggs plus one Common Cuckoo *Cuculus canorus* egg, woven into four knotweed stems; Remse, June 2018.

Reed warblers as the starting point

Singing Great Reed Warblers *Acrocephalus arundinaceus* during the breeding season first prompted a more careful look into the bamboo-like, rather impenetrable thickets of knotweed. Although I found no indication that Great Reed Warblers were actually breeding, the presence of eight occupied nests of other songbird species surprised me. The initial survey, on 5th July 2017 along the Zwickauer Mulde, north of Glauchau in southwest Saxony, resulted in three Marsh Warbler *A. palustris* nests, two each of Red-backed Shrike *Lanius collurio* and Blackbird *Turdus merula*, as well as a Yellowhammer *Emberiza citrinella* nest, all within a 160-m stretch. In the 2018 breeding season, the linear knotweed stands in this river valley were then systematically searched over a total length of 8.78 km, predominantly by crawling on hands and knees or crouching down low. A total of 116 active nests (Blackbird n=37, Marsh Warbler n=31, including one nest parasitised by Common Cuckoo *Cuculus*

Jens Hering

424. An incubating female Red-backed Shrike *Lanius collurio* in a stable nest built in the knotweed stems of the current and previous years; Reinholdshain, June 2018.

canorus, Red-backed Shrike n=22, Yellowhammer n=13, Blackcap *Sylvia atricapilla* and Garden Warbler *S. borin* n=13) were documented. Owing to the inaccessibility of heavily overgrown stands and the likelihood that some nests, both in the leaf canopy and on the ground, were missed, it is assumed that only 60–70% of all nests were found. Nest-bearing plants were mostly of the hybrid form, Conolly's Knotweed, first described in the Czech Republic in 1982 and now widespread in Germany. Knotweed plants were first recorded in the region in 1872, but it wasn't until the 1950s that they were found more widely, while their spread accelerated in the 1970s.

Remarkable adaptations to the carrier plant

Many breeding birds have adapted quickly to knotweed. In the case of the Marsh Warbler, known for its broad habitat requirements, the species shows great adaptability in how it deals with the dominant vertical structures, which is perhaps surprising in view of its foot morphology and the fact that it generally avoids extensive, homogeneous plant populations. It is also noteworthy that of the 31 nests found, half were built at a height of more than 1 m and five at more than 2 m; and that thick, vertical stems were chosen to support the suspended nest. It has until now been assumed that the species' weakly grasping foot is an adaptation to soft herbaceous vegetation and thinner branches. The locations of Yellowhammer nests were also surprising, hidden sometimes 2 m up in the leaf canopy; away from trees, no comparable median nest height is known for this bunting. The interior of the knotweed stands seems to be rather food-poor compared with the arthropod- and gastropod-rich tall perennial vegetation, although more data are required.

Protected under a canopy of leaves

With the exception of parasitisation of the Marsh Warbler nest by the Cuckoo, there was little evidence of nest predation. Only a few nests were seen to be damaged and traces of a predated clutch were found only once. The position of the nests of some species in the middle of the stands could mean that they were at low risk of predation. Although the nests are more or less visible inside the canopy, they are completely protected from view from outside the canopy and from above. The stability of the knotweed stems and the dense leaf canopy also seems likely to afford good protection in adverse weather conditions. Nest losses due to them sliding down the smooth carrier stems, because of insufficient anchoring due to the plant's rapid growth (or weight gain by a growing Cuckoo), are also conceivable. The daily increase during the main growth phase is remarkable, up to 5.5 cm or even 15 cm per day according to some sources. Resting Goosanders *Mergus merganser*, including family groups, were also noted at various locations on the banks of the Zwickauer Mulde below the knotweed stands. At the neighbouring Freiberger Mulde, Dipper *Cinclus cinclus* moulting areas were observed under protective foliage in the ground-level structures such as roots or leaning stems.

Related species in knotweed in its region of origin

The occurrence and importance for birds of knotweed in its native region of East Asia is interesting. In Japan, for example, knotweed harbours nests of *Acrocephalus* warblers (Oriental Reed Warbler *A. orientalis* and Black-browed Reed Warbler *A. bistrigiceps*), but also Gray's Grasshopper Warbler *Helopsaltes fasciolatus*, Siberian Rubythroat *Calliope calliope*, and Black-faced Bunting *Emberiza spodocephala* (Jahn 1942; Udagawa 1953; Kiyosu 1978; N. Nakamura *in litt.*). Knotweed grows much less luxuriantly in its original homelands, typically reaching a height of 0.5–1.5 m or even less. That songbirds also nest in knotweed in North America was shown by studies in an invasion area in Nova Scotia, Canada, where six nests of Dark-eyed Junco *Junco hyemalis* and 21 of Cedar Waxwing *Bombycilla cedrorum* were found (Larsen 2013). The extent to which knotweed seeds are eaten by songbird species there and in central Europe is unknown, but Bullfinch *Pyrrhula pyrrhula*, Tree Sparrow *Passer montanus*, Grey-capped Greenfinch *Chloris sinica*, Black-faced and Meadow Buntings *Emberiza cioides* use this food source in Asia (Kiyosu 1978; T. Hiraoka, N. Nakamura *in litt.*).

Jens Hering

425. Elmar Fuchs and a vigorous, 2.5-m-high stand of Conolly's ('Bohemian') Knotweed *F.* x *bohemica* on the bank of the Zwickauer Mulde; Remse, July 2018.

No mowing and grazing during the breeding season

In the floodplain of the Zwickauer Mulde, mowing or grazing by sheep has occurred in many places for years during the breeding season, which can lead to a complete loss of knotweed stands and consequently of all nests. The Red-backed Shrike, which is listed in Annex I of the European Birds Directive and is an important breeding species in the Special Protection Area 'Valley of the Zwickauer Mulde', is one species affected. It is likely that countless broods have been destroyed by the established practice of knotweed control in recent decades. To protect the birds breeding in these stands, immediate action under nature conservation laws is required, similar to the legal regulation that applies in Germany to woodland and reedbeds. Mowing, grazing, flailing, uprooting, etc. should take place only outside the breeding season of the bird species present. Nature conservation authorities in particular must concern themselves with new management methods. But this work is about remarkable breeding densities of birds in a 'new' habitat and not about protecting knotweed for its own sake: almost 120 nests (the real figure must be higher) of a variety of species in less than nine linear kilometres is unprecedented in stands of knotweed.

The work described here was a preliminary study; work continued in 2020, focusing on Marsh Warblers, and over 60 nests were found. Comparative studies on knotweed-free sections of river bank are necessary to assess the significance of neophytes as breeding habitats in river and stream floodplains.

Acknowledgments

I wish to thank Elmar Fuchs, Peter Meese, Hartmut Sänger and Wolfgang Thoß for their support in matters of phytosociology, and Peter H. Barthel, Wolfgang Dornberger, Stephan Ernst, Wolfgang Fiedler, Eberhard Flöter, Herbert Grimm, A. Günther, Tina Heger, Wieland Heim, Brian Hillcoat, Ommo Hüppop, Detlef Metzing, Kiyoaki Ozaki, Dieter Saemann, Jevgeni Shergalin and Karl Schulze-Hagen for their assistance in many other areas.

References

Child, L. E., & Wade, P. M. 2000. *The Japanese Knotweed Manual: the management and control of an invasive alien weed.* Packard Publishing, Chichester.

Dowsett-Lemaire, F. 1981. Eco-ethological aspects of breeding in the Marsh Warbler *Acrocephalus palustris*. *Terre et Vie* 35: 437–491.

Hering, J. 2019a. A plea for a hated neophyte: Japanese Knotweed stands *Fallopia* spp. as an important nesting habitat for songbirds. *Vogelwarte* 57: 99–114.

— 2019b. Ein gehasster Neophyt in neuem Licht: Singvögel brüten erfolgreich in asiatischen Staudenknöterichen. *Falke* 66: 22–26.

Jahn, H. 1942. Zur Oekologie und Biologie der Vögel Japans. *J. Ornithol.* 90: 7–302.

Kiyosu, Y. 1978. *The Birds of Japan*. Vols. I–III. Kodansya, Tokyo.

Larsen, T. 2013. Biology, ecological impacts, and management of Japanese Knotweed in Nova Scotia. Unpublished MSc dissertation, Dalhousie University, Halifax, NS.

Udagawa, T. 1953. The avifauna of Teuri and Yagishiri Islands, Hokkaido. *Jap. J. Ornithol.* 13: 68–85.

Jens Hering, Wolkenburger Straße 11, D-09212 Limbach-Oberfrohna, Germany;
e-mail: jenshering.vso-bibliothek@t-online.de