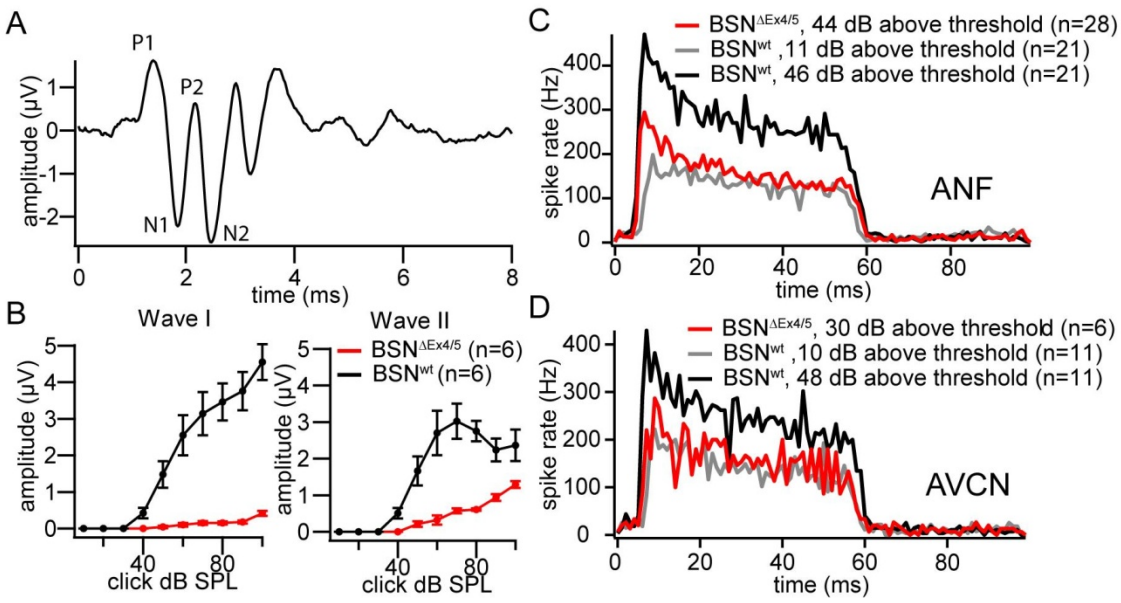
Figure S8: Preserved auditory transmission at Bsn$^{\Delta Ex4/5}$ endbulbs when matching input



A) Representative ABR wave evoked by 80 dB click at a repetition rate of 20 Hz. P1,N1 and P2, N2 indicate the positive and negative peak of ABR wave I and wave II, respectively. **B)** Quantification of input-output function of ABR wave I and wave II amplitude to clicks. Analysis in A and B was performed on data from experiments originally described in (Jing et al., 2013). **C,D)** PSTHs of ANF **(C)** and AVCN BC **(D)** units in response to CF tones presented at different sound pressure levels (SPL) during rate-level function runs. Average SPLs used for stimulation are shown in respective figure legend. Most ANF and bushy cells have a dynamic range of 10-25dB SPL before their firing rate saturates. The average adapted firing rates of putative Bsn^{wt} ANFs matched the maximal ones of Bsn$^{\Delta Ex4/5}$ ANFs when SPLs were reduced to around 11 dB above threshold. A reduced input (on average 10 dB above threshold) also evoked similar average adapted firing rate for both Bsn^{wt} and Bsn$^{\Delta Ex4/5}$ AVCN BC units (n.s., Wilcoxon-rank-test), suggesting no further impairment in synaptic transmission at endbulb synapses due to bassoon disruption at the rates amenable to sound stimulation.

Explanation of experimental rationale and results of figure S8:

Previous studies have shown reduced ANF sound-driven activity in Bsn$^{\Delta Ex4/5}$ mice (Buran et al., 2010, Jing et al., 2013), so that BCs of Bsn$^{\Delta Ex4/5}$ receive less input from ANFs *in vivo*. We compared that with the responses of BCs in Bsn^{wt} mice to reduced sound intensities as a way to match the input strength from ANFs. If there is any dysfunction between the transmission of auditory information between ANFs and BCs in Bsn$^{\Delta Ex4/5}$, it should be translated into a difference in AVCN responses when input from ANFs were matched between Bsn$^{\Delta Ex4/5}$ and Bsn^{wt} mice. We then found that AVCN rates in response to matched ANF

input in $Bsn^{\Delta Ex4/5}$ and Bsn^{wt} were very similar, indicating no further degradation of transmission at endbulb synapses upon bassoon disruption.

References:

Jing, Z., Rutherford, M.A., Takago, H., Frank, T., Fejtova, A., Khimich, D., Moser, T., and Strenzke, N. (2013). Disruption of the presynaptic cytomatrix protein bassoon degrades ribbon anchorage, multiquantal release, and sound encoding at the hair cell afferent synapse. J. Neurosci. *33*, 4456–4467.