

Embedded lead shot and infliction rates in common eiders *Somateria mollissima* and king eiders *S. spectabilis* wintering in southwest Greenland

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“As the Eider is a bird very resistant to shot, often 2-3 birds are wounded for each that is shot dead...” (Müller, South Greenland, 1906)

The large numbers of common eiders *Somateria mollissima* and king eiders *S. spectabilis* wintering in southwest Greenland are subject to intensive hunting, and in addition to direct harvest an unknown number of birds are wounded and become carriers of embedded lead shot. We conducted the first assessment of the magnitude of this undesirable side effect of hunting in Greenland by X-raying 879 common and 114 king eiders collected by local fishermen and hunters during three winters (2000-2002). On average, 22% of all common eiders carried embedded shot, but proportions were strongly age dependent; of first-winter (1W) birds 13.2%, of immatures (IM) 16.4%, and of adults (AD) 29.1% were carriers. For king eiders the proportions were similar: 11.3, 10 and 20%, respectively, were carriers. Adult common eiders collected in fjord areas were significantly less burdened (24.5%) than birds collected in the more heavily hunted coastal areas (35.0%). Among inflicted birds, 1W birds contained more pellets (mean 2.2) than AD (mean 1.7), despite the adults' longer time to accumulate pellets from multiple inflictions, which suggests that the most burdened juveniles die before entering the older age class. From the proportion of wounded 1W birds (13.2%) we modelled the infliction rates, i.e. the proportion of an age class that become pellet carriers each year, for older birds (IM+AD) to be at least 1.8-3%, assuming that annual survival of adult eiders falls within the range 0.8-0.9. Assuming that roughly 35% of the 463,000 common eiders estimated to winter in southwest Greenland are juveniles, 13% are immatures, and 52% adults (fourth winter and older), then each winter up to 30,000 eiders would become new carriers of embedded shot (21,000 juveniles, 1,200-1,800 immatures and 4,800-7,300 adults). As wounded birds may risk increased mortality in severe winters and reduced reproductive output, the infliction has implications for the demographic models used to assess sustainable eider harvest levels. There is a need for follow-up studies of regional variation in infliction, and to identify ways to possibly reduce the hunters' unintended impact on their game populations.

Key words: Arctic, eider, embedded shot, Greenland, hunting, *Somateria mollissima*, *Somateria spectabilis*

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