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Abstract

Macroscopical and microscopical findings from studies of ongoing declines in Swedish Freshwater pearl mussel (*Margaritifera margaretifera*) populations. Anders Alfjorden[1], Håkan Söderberg[2], Tomas Troschke[3]. [1]National Veterinary Institute, Sweden (SVA), S 751 89 Uppsala, [2]County administrative board, of Västernorrland, S-871 86 Härnösand, [3]County administrative board of Gävleborg, S-801 70 Gävle.

Several cases of increased mortality in freshwater pearl mussels (*Margaritifera margaritifera*) have been detected during surveys of freshwater creeks and rivers during the last years (2011-2017) in Sweden. No etiological cause of these wild stock mortalities has been concluded yet. In some cases, samples from live animals have been collected for necropsy and histological investigations, during field surveys. During recent field surveys (2016-2017), freshwater mussels have been transported alive for further investigations to the National Veterinary Institute in Uppsala. These mussels have been compared with mussels collected the same day from healthy population where no signs of mortalities have been reported. Microscopical investigation from cross sections of these animals was investigated regarding pathological findings. The mussels from the affected population showed clear differences compared to reference mussels both regarding macroscopical and microscopical appearances. The mussels from healthy population had firm and thick bodies, well developed gonadal organs and digestive glands filled with dark green digested feed content. In comparison the mussel from the affected population was in general much thinner, more relaxed bodies and had a lower body weight. Furthermore, the affected, lethargic mussels showed low or no presence of gonad cells (egg cells) and the digestive gland was pale with watery and transparent content. The microscopical investigation confirmed this pattern showing changes in the affected mussels compared to the reference population. The mussels from the population with declining numbers of animals had empty gonad follicles, enlarged swollen epithelial cells in digestive glands, where cells showed no presence of granular or vesicular content. Sometimes cellular infiltration was seen in the connective tissue surrounding these digestive glands. In the solid external body parts where connective and muscle fibers dominated, an increased cellular infiltration was observed in the emaciated mussels.