

## **Comparison between pure stands of Douglas fir (*Pseudotsuga menziesii*) and mixed stands of Douglas fir and beech (*Fagus sylvatica*) as habitats for hole-nesting species**

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In the framework of a three year study a pure Douglas fir and a mixed Douglas fir stand were examined with regard to their use by hole-using animal species, their reproduction and the winter populations of hole-breeding passerines. For some parameters a mixed common spruce stand was comprised for comparison. All study areas were equipped with artificial nesting boxes.

The number of hole-breeding passerine species in the pure Douglas fir stand was significantly lower than in the mixed common spruce stand. Furthermore the number of found insects' species in the pure Douglas fir stand was significantly lower than in the mixed Douglas fir stand. The number of mammal species did not differ significantly between the sample areas. Nestbox use by the common dormouse was scarce, findings of the edible dormouse were more numerous, and reproduction was verified in the mixed Douglas fir stand. The pure Douglas fir stand was intensively used by bats.

The two Douglas fir stands showed no significant differences concerning population densities respectively intensity of nestbox use. The population density of the great tit in the pure Douglas fir stand showing on average 13.3 breeding pairs (BP)/10 ha excelled accounts found in the literature for spruce stands. The mixed Douglas fir stand showed a population density of on average 25.8 BP/10 ha.

Furthermore in one study year egg deposition of great tits occurred significantly later in the pure Douglas fir stand than in the mixed common spruce stand. No specific differences between the sample areas could be detected with regard to clutch size and egg volume. The weight of great tits' nestlings was lower in the pure compared to the mixed Douglas fir stand, causing no detectable effect on breeding success.

The number of great tits and nuthatches detected in winter did not differ significantly between the two Douglas fir stands. The mean winter weights of female great tits in the mixed Douglas fir stand were significantly lower than in the mixed spruce stand whereas the weights of female and male great tits in the pure Douglas fir stand did not differ significantly from the other sample areas.

Hence the pure Douglas fir stand seems to be comparatively unattractive as a habitat for hole-breeding passerines, cavity-using small mammals and insects, but is intensively used by bats.

Due to the relatively short study period and a high number of scavenging events reducing the database the representency of the results is restricted.