Regulation of Moose Hunting in Scandinavia. The Implications of Age-Structured Models

by

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Abstract: In this paper, we discuss optimal regulation of moose hunting in Scandinavia based on an age-structured model, which include calves, yearlings and adults. We set-up models with and without including a predator and in both models a private landowner is assumed to maximize the sum of the meat value and the browsing damage costs on trees on his own property. Contrary, a social planner maximizes the sum of the meat value, the browsing damage cost on all landowner´s property and the costs of traffic accidents. In the model without predation, we find that a subsidy to increase the harvest and reduce the population size is optimal for calves and adults. The marginal subsidy shall be differentiated between the two population stages and must include: a. the difference in the marginal browsing damage cost between the landowner and the social planner; b. the marginal cost of traffic accidents; c. the difference in shadow prices on the population restrictions between the landowner and social planner. The marginal subsidy to the harvest of yearlings needs to be zero because it is beneficial for both the landowner and social planner to let these grow and become adults. In the model with predation, the marginal subsidy to increase the harvest of calves and adult must be adjusted by the survival rates.

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