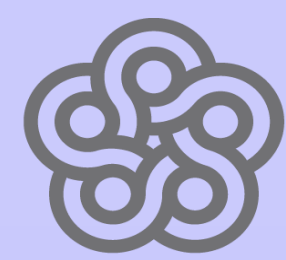




# Effects of supplementary feeding on moose body weight & reproduction



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## Aim:

To determine how supplementary feeding in winter affects habitat selection & subsequently body condition, reproductive rates & autumn slaughter weights in moose

## Rational:

- 1) Slaughter weights & reproductive rates are declining (Fig. 1) – could supplementary feeding help?
- 2) Supplementary feeding is increasingly used as a management tool but the ecological consequences are unknown.

Table 1. Winter use of feeding stations (FS) in each study area

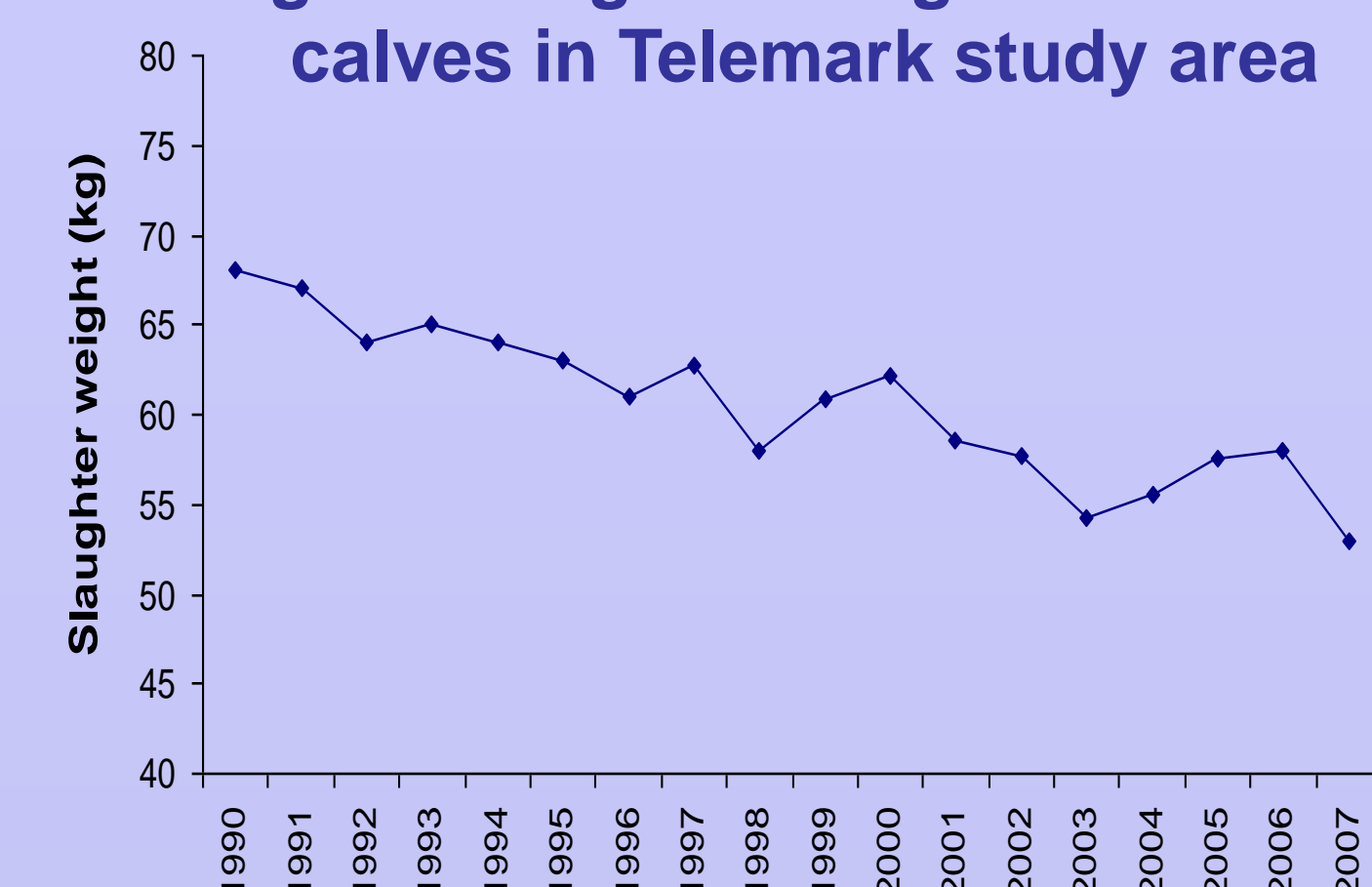
		Non-user	User
<b>Telemark</b>	n (2007 + 2008)	18	15
	Mean % winter within 250m of FS	1.6%	15.1%
	Range	0-14.4%	0.6-41.6%
<b>Hedmark</b>	n (2009)	5	13
	Mean % winter within 250m of FS	0 %	35.3 %
	Range	0-0%	8.8-72.0%

## Preliminary Results & Discussion:

- 1) Moose in Hedmark used feeding sites more than moose in Telemark (Table 1), probably because of a longer feeding history & colder winters.
- 2) Moose feeding site users lost less weight over winter than non-users, especially in Hedmark (Fig. 2a). Winter weight loss decreased as use of feeding stations increased (Fig. 2b). Autumn slaughter weights in Telemark did not differ with feeding status.
- 3) Pregnancy rates in January did not differ between feeding station users and non-users (89%) or between study areas. June calving rates were lower in Telemark than Hedmark & tended to be higher among FS users (74% v. 58%), especially in Hedmark. Cows with twins (n=3) were all FS users from Hedmark. Abortion & neonatal mortality were a problem among Telemark females.
- 4) Supplementary feeding does not appear to be effective in improving reproductive rates or slaughter weights in Telemark.
- 5) A full analysis of ecological fitness in relation to habitat use & use of supplementary forage, & an economic cost / benefit analysis of feeding will be carried out in 2011 ..... **Look out for our results!**



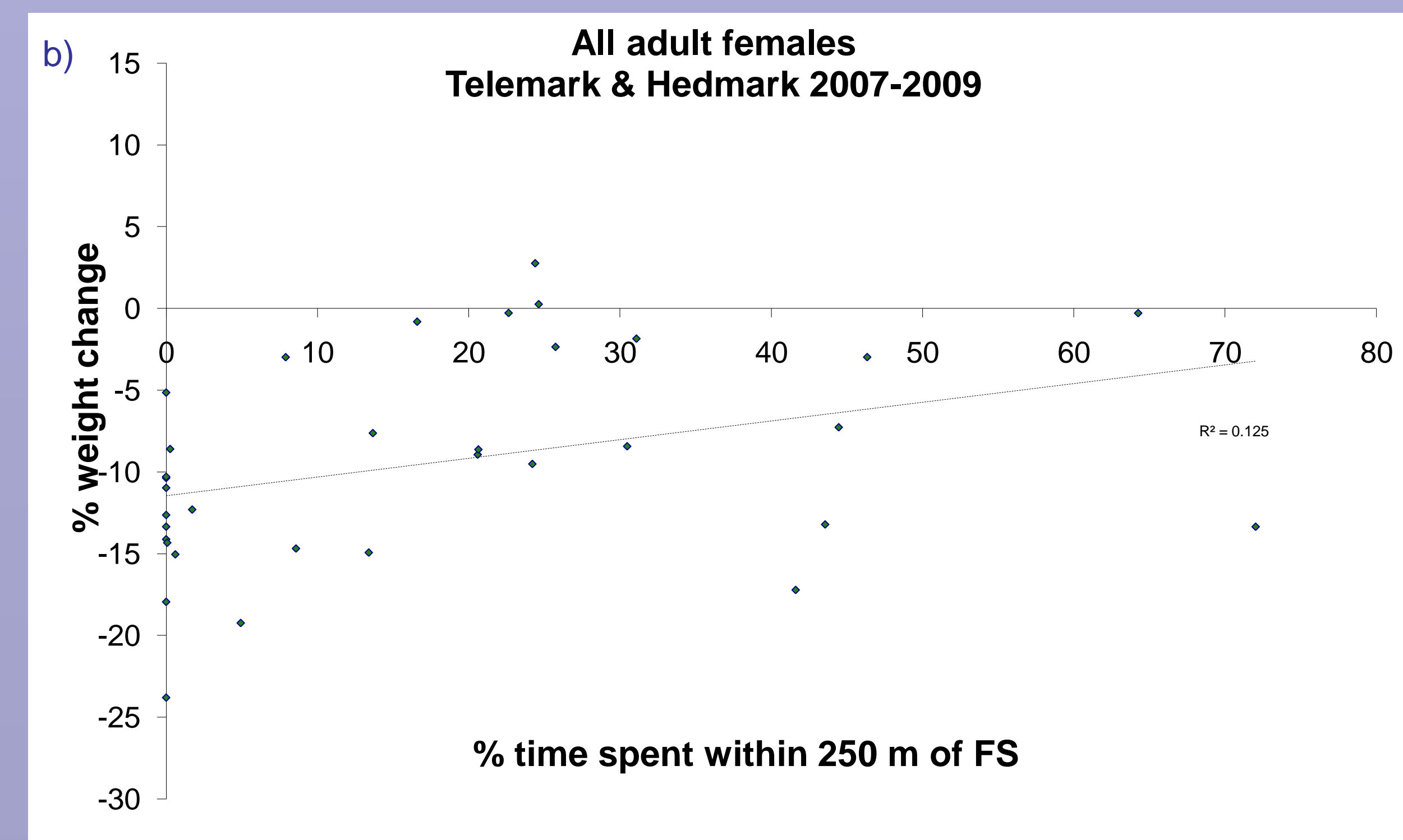
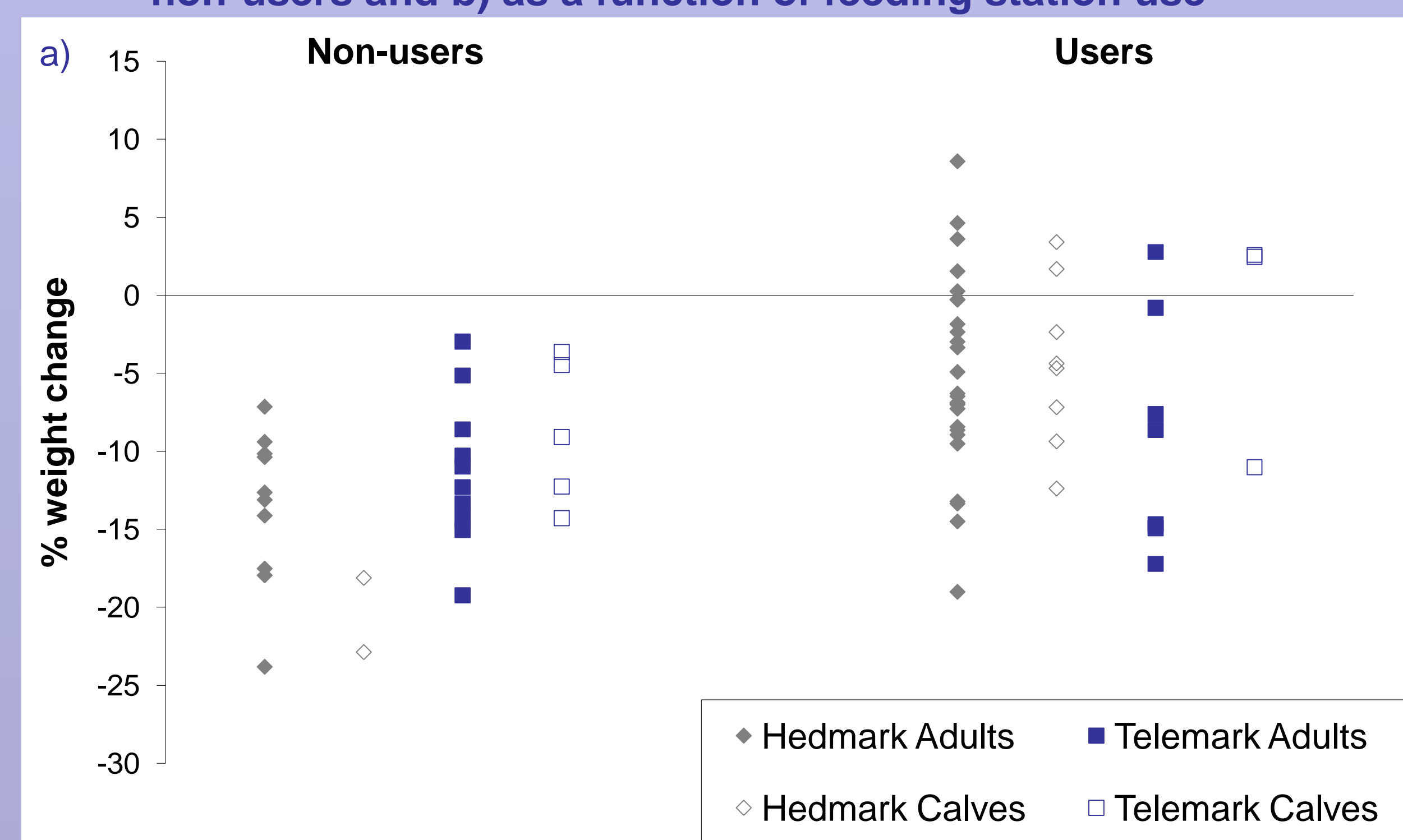
Fig. 1. Slaughter weights of moose calves in Telemark study area



## Methods:

- 1) Capture & weigh 15-20 adult female moose + calves in early winter each year. Fit cows with GPS collars. Telemark: 2007, 2008; Hedmark: 2009, 2010.
- 2) Re-capture & re-weigh individuals at end of winter.
- 3) Check calving status of collared cows in June.
- 4) Cull marked individuals in autumn & weigh, age & collect jaw bones & ovaries. Recover GPS collars.
- 5) Plot & analyse GPS data to determine habitat selection & use of supplementary feeding stations.

Fig. 2. Winter weight change of a) feeding site users and non-users and b) as a function of feeding station use



Further details: <http://english.hihm.no/forestwildlife/Research/mooseforage.htm>

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## Project publications:

- van Beest, F. M., A. Myrsetrud, Loe, L.E. & Milner, J.M. (2010) Forage quantity, quality and depletion as scale-dependent mechanisms driving habitat selection of a large browsing herbivore. *Journal of Animal Ecology*.
- van Beest, F.M., Gundersen, H., Mathisen, K.M., Milner, J.M., & Skarpe, C. (2010) Long-term browsing impact around diversionary feeding stations for moose in Southern Norway. *Forest Ecology and Management* **259**, 1900-1911.
- van Beest, F.M., Loe, L.E., Myrsetrud, A., Milner, J.M. (2010) Comparative space use and habitat selection of moose around feeding stations. *Journal of Wildlife Management*, **74**, 219-227.

## Funders

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## Project Partners

