



Wild Ennerdale


THE NATIONAL TRUST



Cattle Tracking Report July to October 2006

With funding from Natural England



Collar performance

Number of attempted locations 1239
 Number of failed attempts 160
 %Successful Attempts 87%

Max Temperature 31c 08/09/2006 4pm
 Min Temperature 3c 16/10/2006 8am
 Average Temperature 16.7c

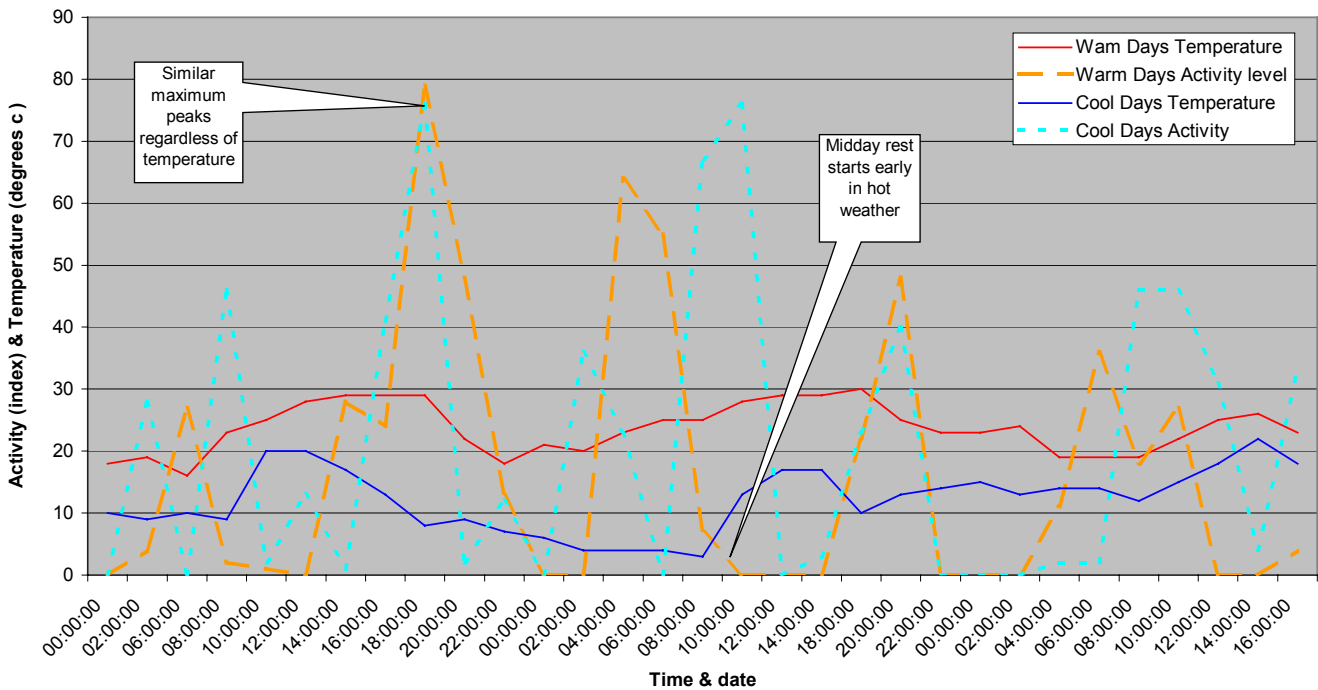
Number of locations with no activity (X and Y both 0) 311
 % of successful locations with no activity (X and Y both 0) 29%

Activity levels and Temperature

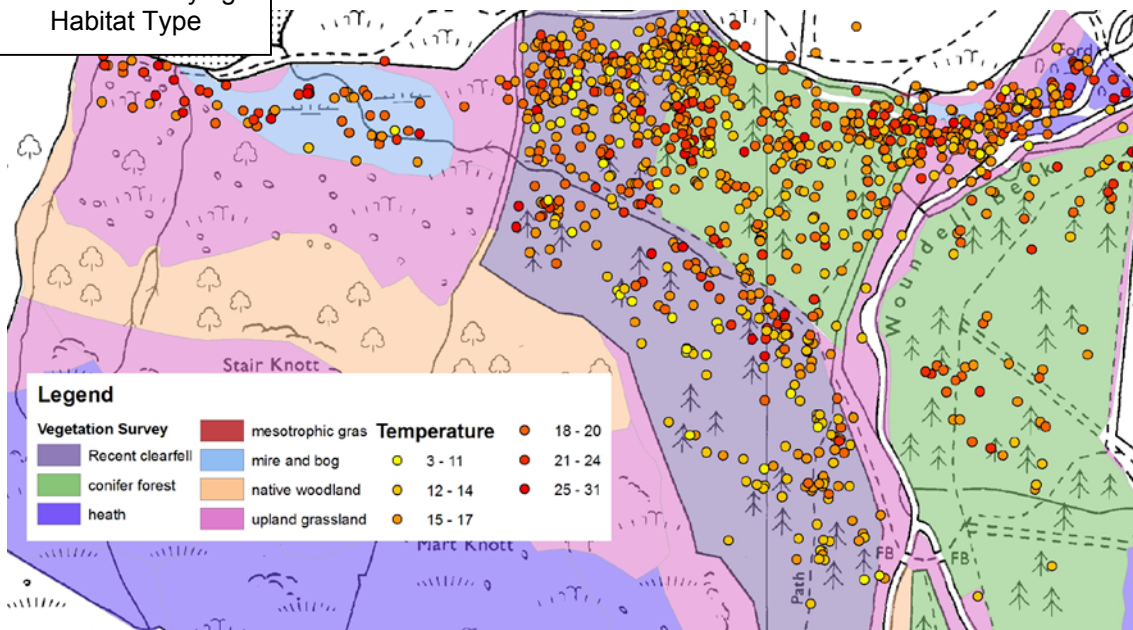
The collar includes movement sensors, which record its movement in two dimensions X and Y. These movements can be taken to relate to the level of activity of the animal. The two measurements have been simplified by multiplying them together to get a single activity index. The higher the index the greater the movement recorded. In addition to movement the collar also records temperature.

To compare the activity of the animal with the collar temperature two separate three day periods were compared. One three day during the hottest period of July and one during the coolest period of October. A graph of the results is given below. In addition a map is presented showing the distribution of locations by collar temperature.

Activity and Temperature Time Series
 Three Warm Days in July compared to 3 Cool days in October



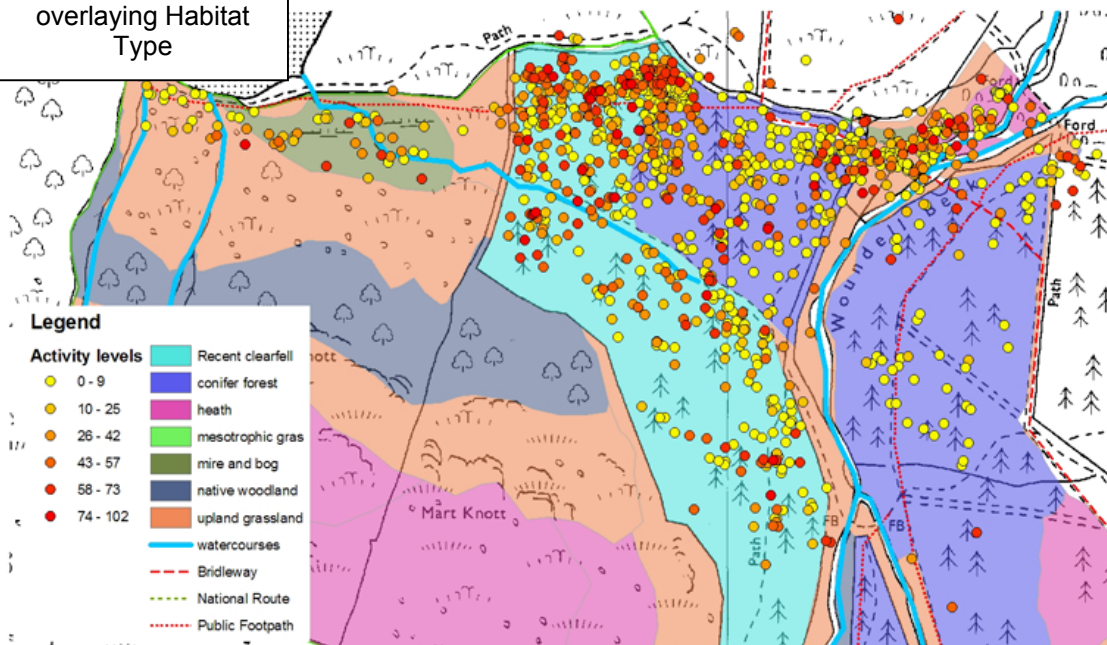
Map showing Collar Temperature by location overlaying Habitat Type



Activity levels and Habitats

The location data was mapped over the National Vegetation Classification (NVC) Map to compare the time spent and levels of activity in different habitats. Habitats were compared as summary groups and detailed NVC classes.

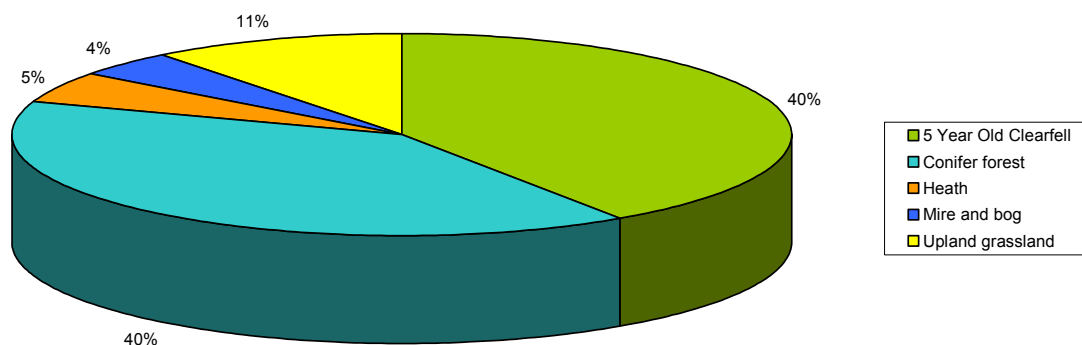
Map showing Level of Activity by location overlaying Habitat Type



Comparison with habitats grouped by broad type.

Habitat Type	Number of Locations	Average Activity	Average Dilution of Position	Average Temperature	Average time to get fix
5 Year Old Clearfell	408	25.6	2.93	16.0	59.7
Conifer forest	400	16.1	3.13	17.0	64.0
Heath	50	20.9	3.04	17.4	56.4
Mire and bog	42	23.4	3.29	19.2	58.2
Upland grassland	106	22.2	3.00	17.3	60.2

Number of Locations Recorded by Habitat



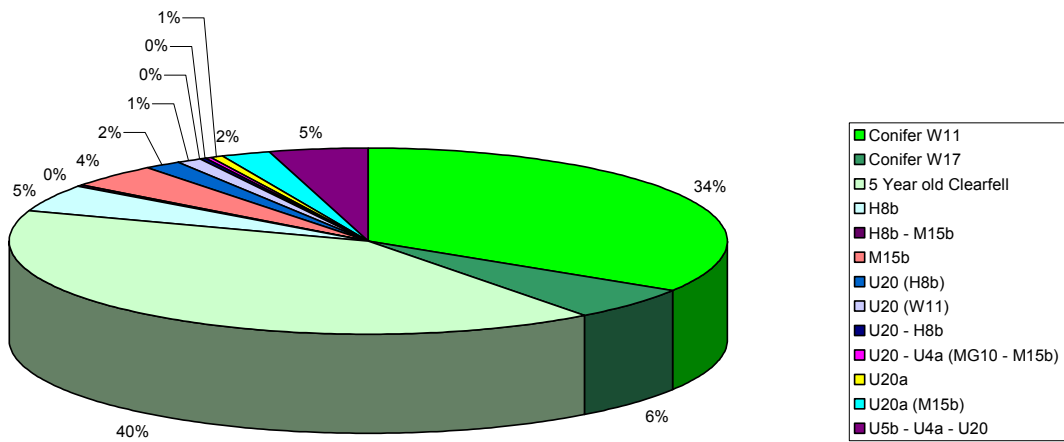
Observations

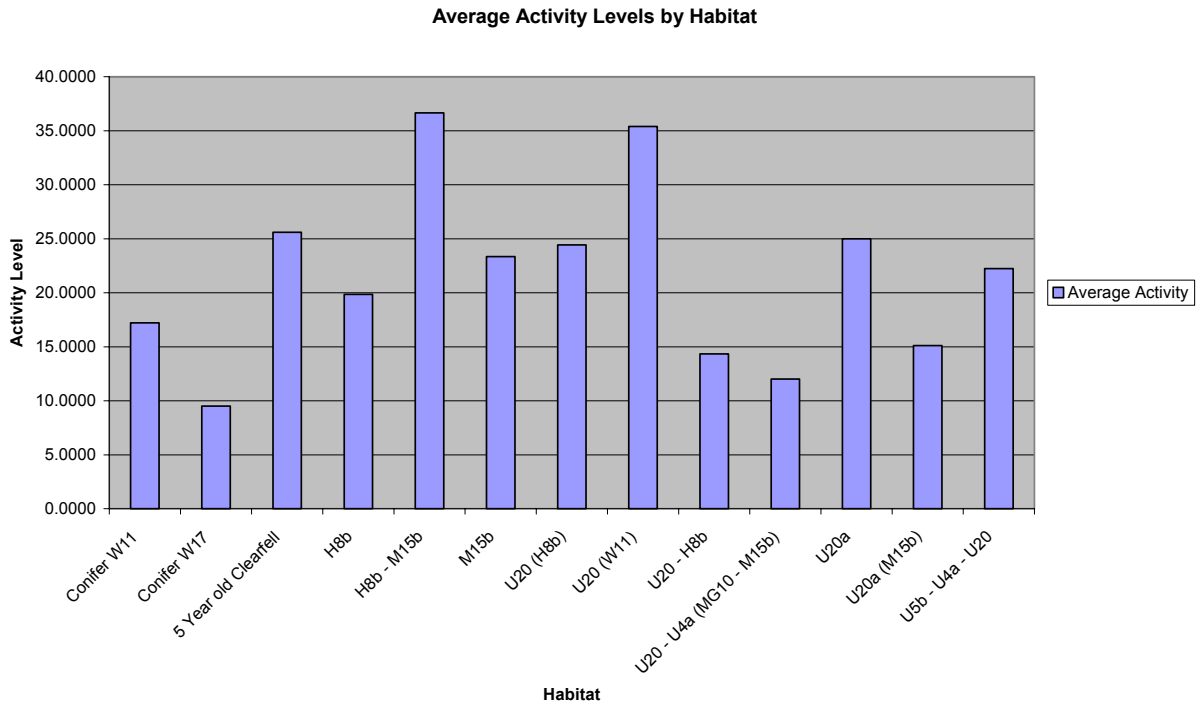
- Clearly the animals enjoy being under the forest canopy but their average activity levels in the forest are very low compared to other habitats.
- The greatest level of activity is on the 5 year old clear fell where they spend 40% of their time.
- Interestingly the average temperature recorded on the clear fell is lower than in the forest
- The forest does affect satellite reception with a higher average time to get a fix although the average Dilution of Position (a measurement of accuracy) is not significantly different across any of the habitats.
- The mire an bog habitat is nearest the lake and may record the highest average temperature due to it being the coolest place to graze during the hottest summer days or is related to particular food availability – any other thoughts welcome.

Comparison with habitats grouped by detailed NVC class

Habitat Type	Number of Locations	Average Activity
Conifer W11	342	17.2105
Conifer W17	58	9.5000
5 Year old Clearfell	408	25.6005
H8b	47	19.8511
H8b - M15b	3	36.6667
M15b	42	23.3571
U20 (H8b)	17	24.4118
U20 (W11)	10	35.4000
U20 - H8b	3	14.3333
U20 - U4a (MG10 - M15b)	3	12.0000
U20a	7	25.0000
U20a (M15b)	20	15.1000
U5b - U4a - U20	46	22.2391

Number of locations recorded by Detailed Habitat





Observations

Similar results for time spent in each habitat as summary habitat figures.

Highest average activity was found in NVC class H8b-M15b and U20 (w11)

Activity in the conifer forest was among the lowest even though 40% of the time is spent in this habitat.

Conclusion

Clearly three months data is not significant but it will be interesting to see whether the trends seen in this data continue over the winter period.

Whilst the previous set of data isn't shown here it is clear that the herd are expanding their area of exploration. In the first two months the herd explored an area of around 13ha but now the herd is exploring an area of around 32ha.

Over the coming months the collar has been programmed to record locations alternating monthly between every hour and every 30 minutes. It will be interesting to see what information this reveals

Gareth Browning
6th November 2006