Supporting information – supplementary tables and figures

Table S1 Details on GPS-transmitters

<table>
<thead>
<tr>
<th>Species</th>
<th>Transmitter type</th>
<th>Tracking period</th>
<th>Nr. indiv.</th>
<th>Nr. gps-points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barnacle geese</td>
<td>Ornitela (BP) 25 g (raised solar panel)</td>
<td>Nov 2019 – May 2020</td>
<td>57</td>
<td>34558</td>
</tr>
<tr>
<td>White-fronted geese</td>
<td>University Konstanz (NB) 35 g;</td>
<td>Jan 2016 – March 2020</td>
<td>73</td>
<td>18550</td>
</tr>
<tr>
<td></td>
<td>MadebyTheo (NB) 35 g</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greylag geese</td>
<td>MadebyTheo (NB) 40g</td>
<td>Nov 2016 – May 2020</td>
<td>34</td>
<td>39861</td>
</tr>
</tbody>
</table>
**Figure S1** a) Boxplots showing goose densities per count areas in Fryslân, for each month and species, excluding zero counts, averaged across 2016/17 and 2017/18. The numbers at the top give the total count per month, averaged over the two seasons and rounded to integers. b) Estimated goose grazing pressure per damage report for each month and species.
Figure S2 Goose density in number ha$^{-1}$ per count area and month, averaged across three species (barnacle, white-fronted and greylag geese) and two seasons (2016/17 and 2017/18). The total (in green) averages across all months (November-May). In May, counts were focussed on locations with high densities of barnacle geese and brent geese. Because of this, some areas with greylag geese may have been missed, and their count in this month is underestimated. However, as the greylag geese are still breeding around this time, many of them would be in nature reserves and thus not relevant for damage estimates. In addition, in the figure for April, we see very low densities of geese in general (including greylag geese) in most of the count areas missing in May.
Figure S3 Frequency distribution of the assessed damages from damage reports from spring 2017 and 2018, with damage on a logarithmic scale. In the analysis, the zero damages were excluded to obtain normality.
Figure S4 Five examples of reports with multiple fields (different colours), showing all fields belonging to that report and the corresponding convex hull, with numbers indicating the weighing factor. When the area between fields in a report was larger, the report weighed less heavily in the analysis.
Preferred model

\[ \ln(D) = 6.45 + 0.44 \ln(B) - 0.47 \ln(W) - 0.07 \ln(B) \ln(G) + 0.09 \ln(W) \ln(G) \]

\[ D = e^{6.45+0.44 \ln(B) - 0.47 \ln(W) - 0.07 \ln(B) \ln(G) + 0.09 \ln(W) \ln(G)} \]

Rewriting for barnacle and white-fronted geese

\[ D = e^{6.45} \cdot B^{0.44} \cdot B^{-0.07 \ln(G)} \cdot W^{-0.47} \cdot W^{0.09 \ln(G)} \]

\[ D = 632.7 \cdot B^{0.44-0.07 \ln(G)} \cdot W^{-0.47+0.09 \ln(G)} \]

Rewriting for greylag geese

\[ D = e^{6.45} \cdot B^{0.44} \cdot W^{-0.47} \cdot G^{-0.07 \ln(B)} \cdot G^{0.09 \ln(W)} \]

\[ D = e^{6.45} \cdot B^{0.44} \cdot W^{-0.47} \cdot G^{-0.07 \ln(B)+0.09 \ln(W)} \]

Figure S5 Steps from the preferred model to the relationship between damage and grazing pressure of each of the species. The relationship of each species is influenced by the grazing pressure of the other two.
**Figure S6** Damage in kg dry matter ha\(^{-1}\) and estimated grazing pressure in g ha\(^{-1}\) day\(^{-1}\) of the three species (barnacle geese, greylag geese, and white-fronted geese). Data points represent the 1297 damage reports and are clustered for better visualization; point size indicates the weight of that point. The coloured areas represent all possible associated damages with the estimated grazing pressure of the focal species, when for the other two species the grazing pressure is varied using all combinations occurring in the damage reports. The colours indicate the 2.5\(^{th}\) to 97.5\(^{th}\)-percentile of the predictions; the median (50\(^{th}\) percentile) is represented by the solid red line. The transparency illustrates how often an x-value has been estimated to occur in the reports. The highest 2.5% grazing pressures are not presented, as these fall far outside the displayed range and impair visualization. Note that the near-straight line for the greylag geese is the consequence of the interaction with the other two species (fig. S2).
Figure S7 Map showing all hourly GPS points in Fryslân and Groningen, plotted per goose species. For time period see table S1.
Figure S8 All hourly GPS-points in Fryslân and Groningen, plotted per month and per species. The number in the top-left of each figure shows the number of individuals. Greylag geese generally use a small area, while for barnacle geese we see a decrease in overall space use from March to May, corresponding to the patterns found within individuals (fig. 4). White-fronted geese generally leave for migration in March. For the years included see table S1.