# Deciding which plots to include / exclude

**Plots that had rapid surveys conducted multiple times in the same year**

-plots with 2 observations: timing doesn’t appear to matter all that much if I look at the number of birds observed within each region.

-For the Alert plots, I wondered if the ones that were surveyed by 2 people might be better (1 might be missing birds, 3+ might be getting into weird methods that differ from later years). However, some only ever have 1, some have 2 more than once

-Are the Alert plots merged as described somewhere or separate segments of plots by habitat type, in which case, appropriate action would be to add them together? Looked at the one plot that was surveyed 7 times and the proportions don’t add up to 100%

-I read one comment about some intensive plots being converted to rapid plots because they didn’t have time to finish the intensive protocol

-Intensive plots that had no birds in them were excluded – definitely a bias for presence/absence

* Intensive plots surveyed using rapid methods
  + 53 plots. Why are they only in regions 3,4,8,10,12?
* Industry plots
  + 2008, Kiggarvik Mine Project, 1 plot x 2 surveys
* NOT SURE WHY – could they be intensive plots? There didn’t appear to have any rows with final decisions associated with these plots. The fact that most of them were surveyed twice suggests that they could have been
* 1995, Rasmussen Lowlands: 6 plots x 2 surveys each
* 1997, Prince Charles Island: 2 plot x 2 surveys each
* 2001, Alert: 1 x 7, 1 x 6, 3 x 4, 3 x 3, 7 x 2
* 2001, Somerset Island, 3 x 2
* 2003, Dewey Soper: 4 x 2
* 2003, Southampton, 1 x 2
* 2008, Mackenzie, 4 x 2

**Plots that had rapid surveys conducted in multiple years**

-re-surveyed plots: would it be better for me to have them as early ones to align with the population estimates, or would it better to use the new ones where survey methods might be more reliable?

-Are there any years that we know were more questionable based on weather or methods? (esp Rasmussen Lowlands

* Intensive plots
  + 25 plots, 2-6 years (Mackenzie Gas 2007-2014, North Hudson Barrens (Igloolik? 2016 and 2017)
* Industry plots
  + 178 plots, 2–10 years (Meadowbank, Hope Bay, Kiggavik, Mackenzie Gas)
* Re-surveyed in 2019
  + 66 plots, Prince Charles Island and Rasmussen Lowlands
* Prince Charles Island 1996/1997 (but not 2019): 1996 was flooded, use 1997
  + 11 plots
* Rasmussen Lowlands 1994/1995
  + 10 plots

**Comparing plots that were selected in different ways**

-summed all birds that were observed in each survey, took the mean if they were surveyed multiple times

|  |  |  |  |
| --- | --- | --- | --- |
| **comparison** | **mean\_shorebirds** | **sd\_shorebirds** | **n\_plots** |
| gis selected | 5.6 | 5.6 | 1480 |
| field modified gis selected | 8.3 | 6.7 | 161 |
| field selected - industry | 2.6 | 2.4 | 553 |
| field selected - intensive | 7.5 | 5.0 | 68 |
| field selected - other | 11.8 | 12.7 | 278 |

Comparing total number of birds of randomly selected to non-randomly

Call:

lm(formula = mean\_sum\_birds ~ comparison + quality, data = test\_sb)

Residuals:

Min 1Q Median 3Q Max

-11.516 -3.242 -1.198 1.081 76.484

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 7.4039 0.3777 19.604 < 2e-16 \*\*\*

comparisonfield modified gis selected 3.2020 0.5596 5.722 1.21e-08 \*\*\*

comparisonfield selected - industry -1.7210 0.4092 -4.206 2.71e-05 \*\*\*

comparisonfield selected - intensive 2.1049 0.5871 3.585 0.000344 \*\*\*

comparisonfield selected - other 6.2734 0.4422 14.186 < 2e-16 \*\*\*

quality -1.1616 0.1912 -6.075 1.48e-09 \*\*\*

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 6.467 on 2017 degrees of freedom

(73 observations deleted due to missingness)

Multiple R-squared: 0.1981, Adjusted R-squared: 0.1961

F-statistic: 99.64 on 5 and 2017 DF, p-value: < 2.2e-16

**Plots that were field selected**

* Intensive plots
  + 68 plots, Regions 4,5,6,8,9,10,12
* Industry plots: 533 plots. What were the methods used for field selection?
  + Amaruq & Meadowbank Mine Project: 85 plots
  + Gahcho Kué Mine Project: 25 plots
  + Hope Bay Mine Project: 111 plots
  + Izok Mine Project: 82 plots
  + Kiggavik Mine Project: 44 plots
  + Mackenzie Gas Project Affected Areas: 84 plots
  + Mary River Project: 97 plots
  + Meliadine Mine Project: 16 plots
  + Tahera Mine Project: 9 plots
* NOT SURE WHY – might be worth checking the comments on these ones
  + Eastern Foxe Basin: 89 plots (1996, 1997, 2003, 2019) 1996 due to weather – exclude?
  + Mackenzie: 83 plots (2005, 2006, 2007, 2008, 2009)
  + North Archipelago: 66 plots (2001, 2007, 2011)
  + Northwest Hudson Barrens: 2 plots (2016)
  + Queen Maud Gulf: 8 plots (2010)
  + South Archipelago: 9 plots (2001, 2011)
  + Southampton: 6 plots (2004)
  + Southwest Hudson Barrens: 15 plots (2008, 2015)

*Examples:*

* SOI-0082C, 2001, North Archipelago
  + Plot\_Comment\_1: “Replacement for 715 which we couldn't reach due to fog.”
  + Comment\_1: “ Four of us walked in different directions for 20min. looking for shorebirds in the best places we could find.”
* ALE-2529,
  + Comment\_1: surveyed by skidoo
* 14 plots containing or adjacent to human developments

|  |
| --- |
| KWI-0012 |
| MDW-0099A |
| ALE-1670 |
| ALE-1670 |
| ALE-1670 |
| ALE-1670 |
| ALE-1670 |
| ALE-1670 |
| ALE-7140 |
| CLGT-92020 |
| CLGT-92021 |
| CLGT-92022 |
| RAS-0072 |
| RAS-0030 |

**Plots that were GIS selected, field modified**

* Intensive plots
  + 1 plot, 2006, Southampton region, Coats Island, COI-IntB
* NOT SURE WHY – might be worth checking the comments on these ones
  + Eastern Foxe Basin: 4 plots (2003, 2004)
  + Mackenzie: 7 plots (2005, 2006)
  + North Archipelago: 3 plots (2001, 2007)
  + Northwest Hudson Barrens: 55 plots (1994, 1995, 2015, 2019)
  + Queen Maud Gulf: 20 plots (2006, 2010)
  + South Archipelago: 67 plots (1994, 1995, 2001, 2012, 2019)
  + Southampton: 1 plot (2003)
  + Baffin: 1 plot (2018)
  + Quebec: 2 plots (2002)

*Examples:*

Seems OK?

* Couldn’t cross a river, adjusted accordingly
* Changed orientation

Not sure

* Moved due to high shrub, large lakes, mudflat, snow cover – how were they modified? Did people just choose an spot that looked like there would be more birds?

**Plots with a weird areas, shapes, proportion surveyed**