

# Appendix G: Male Maturity Data From the NMFS Survey

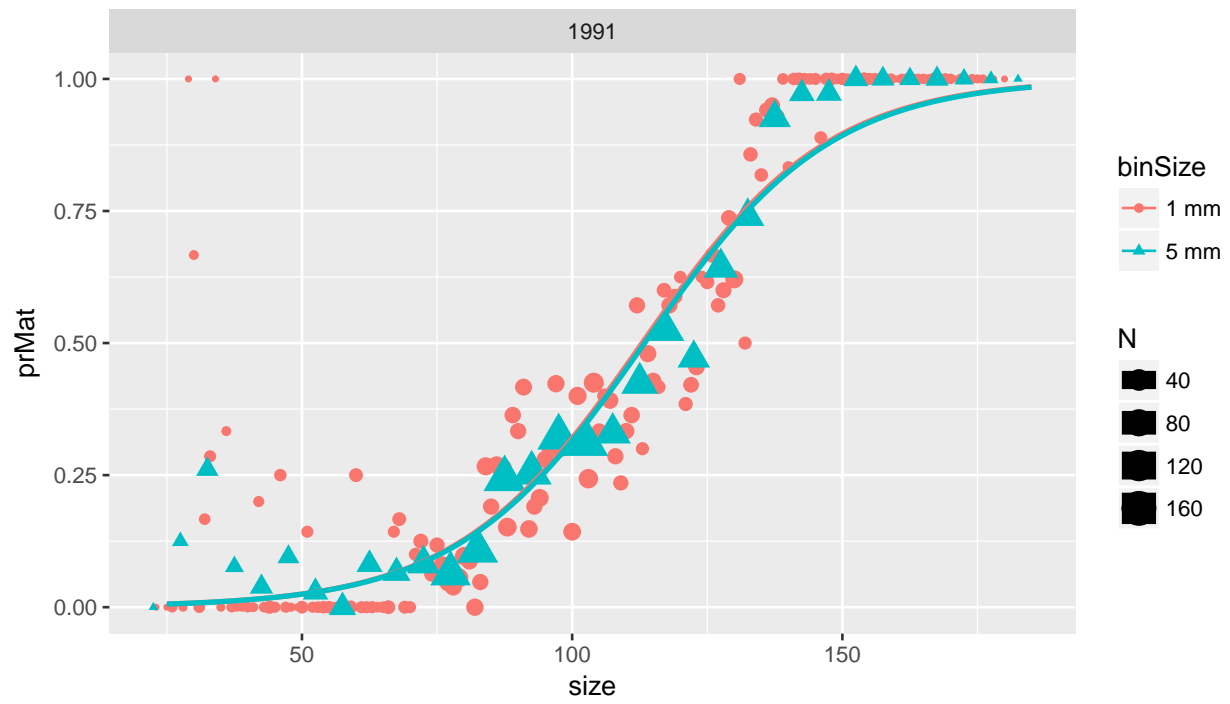
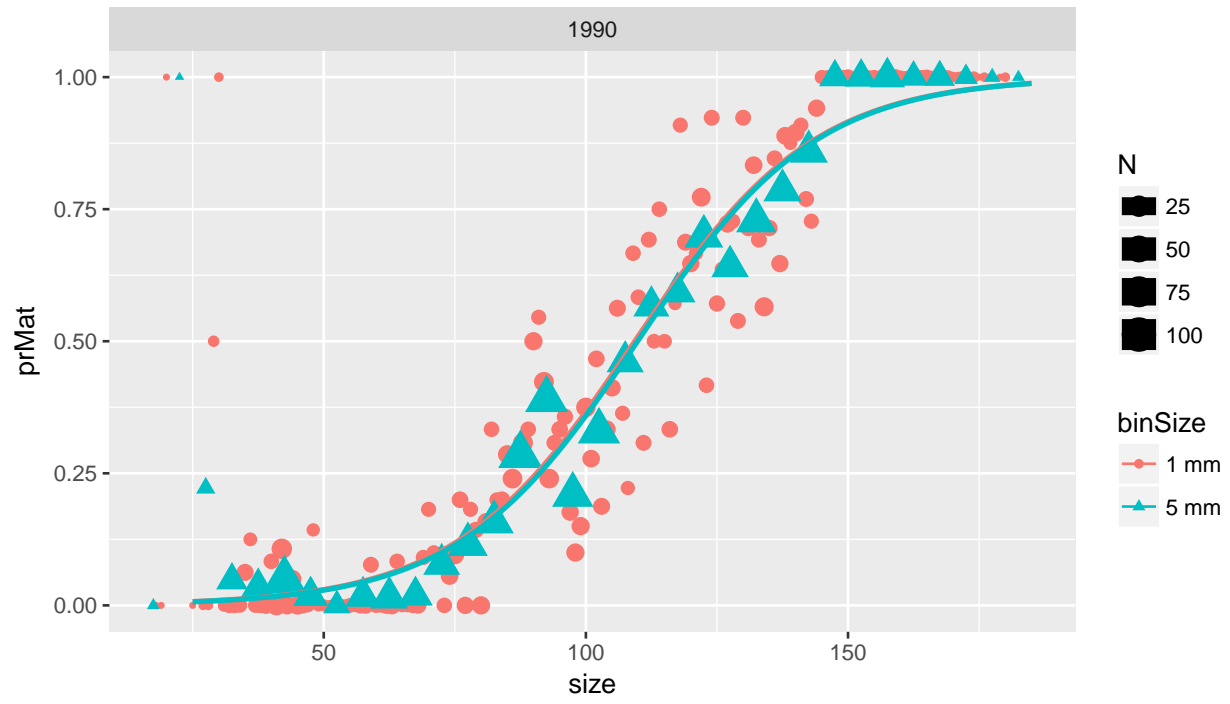
*William Stockhausen*

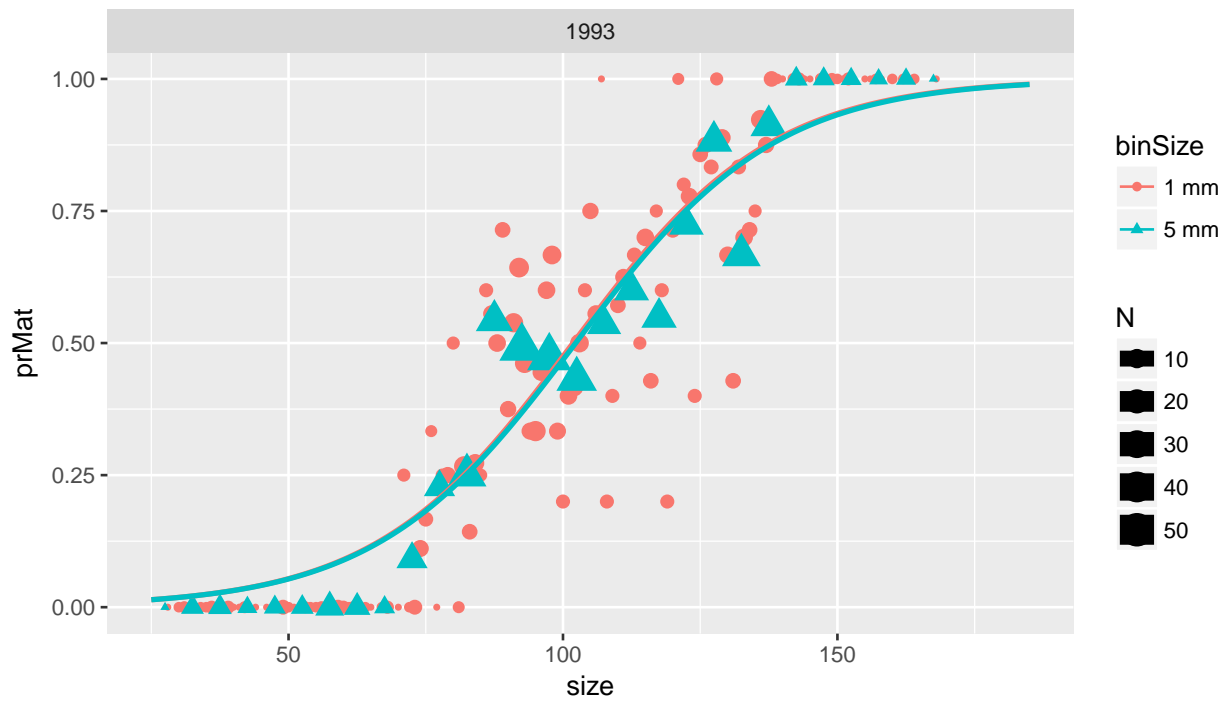
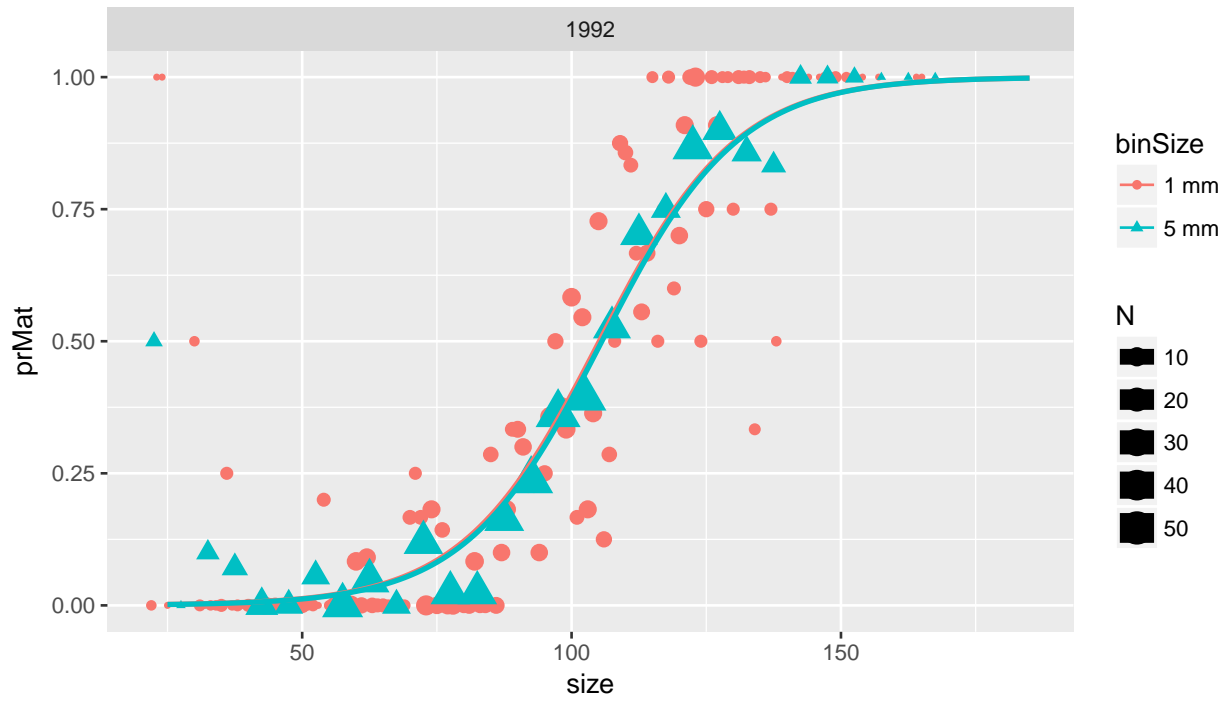
*26 February, 2018*

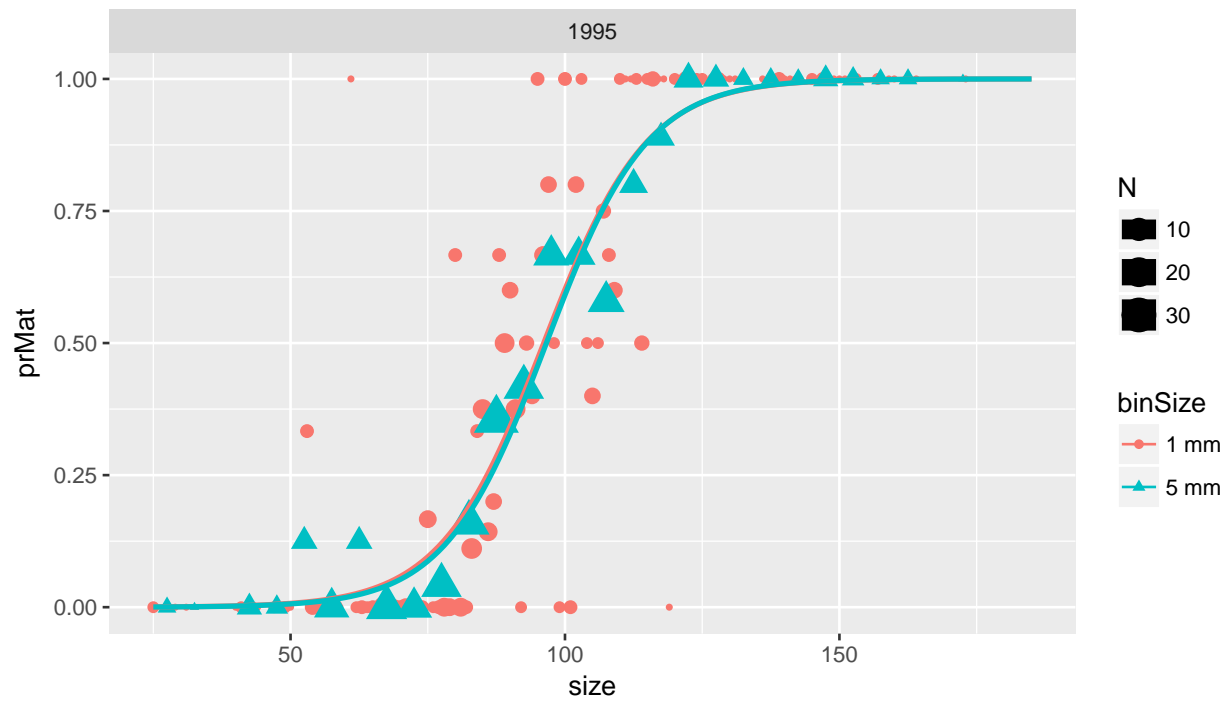
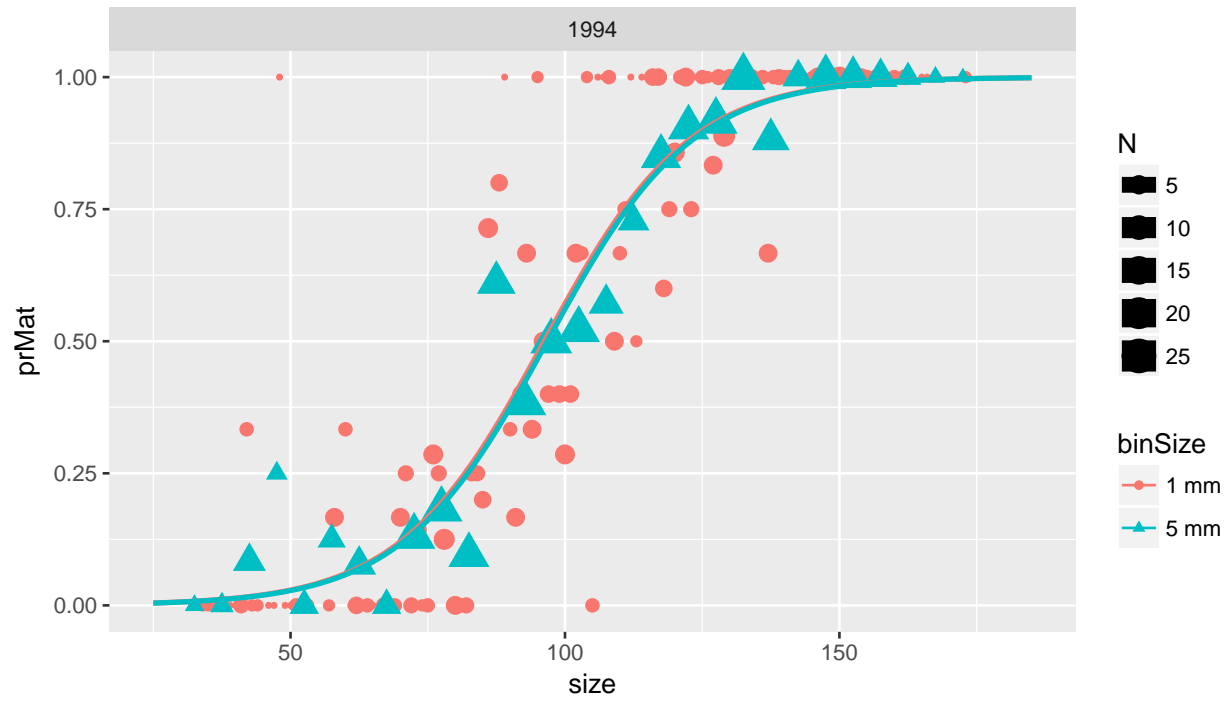
## **Chela height data and maturity state**

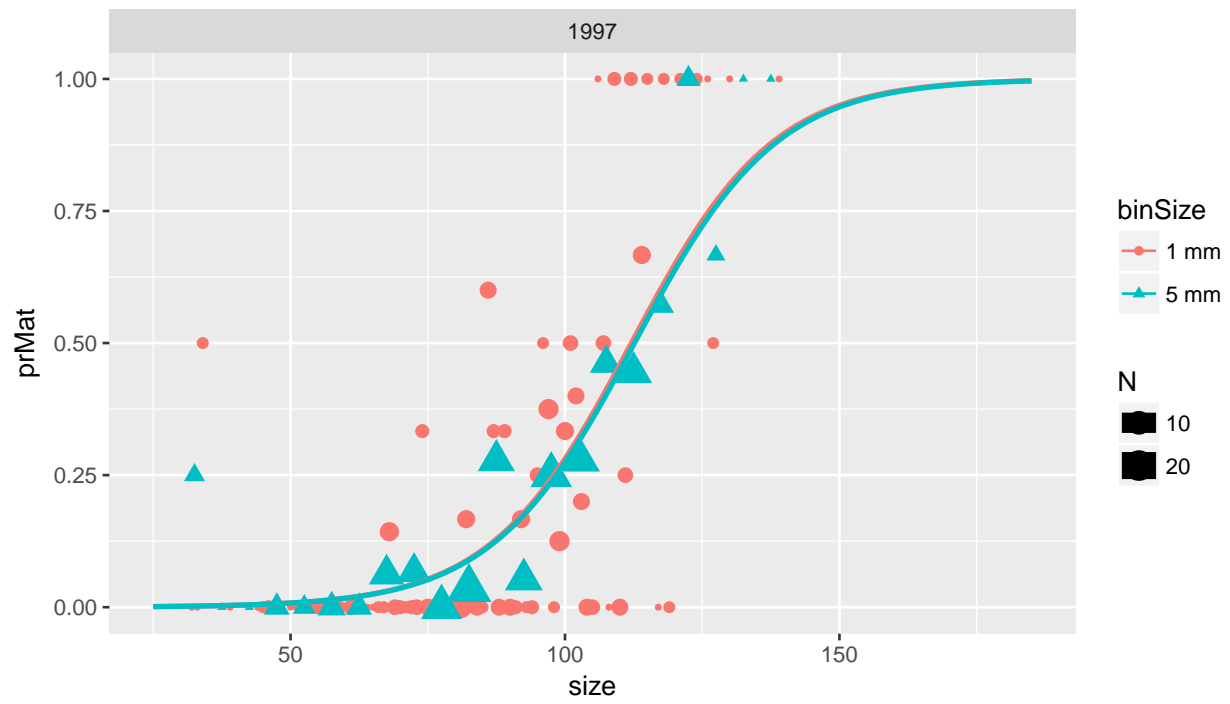
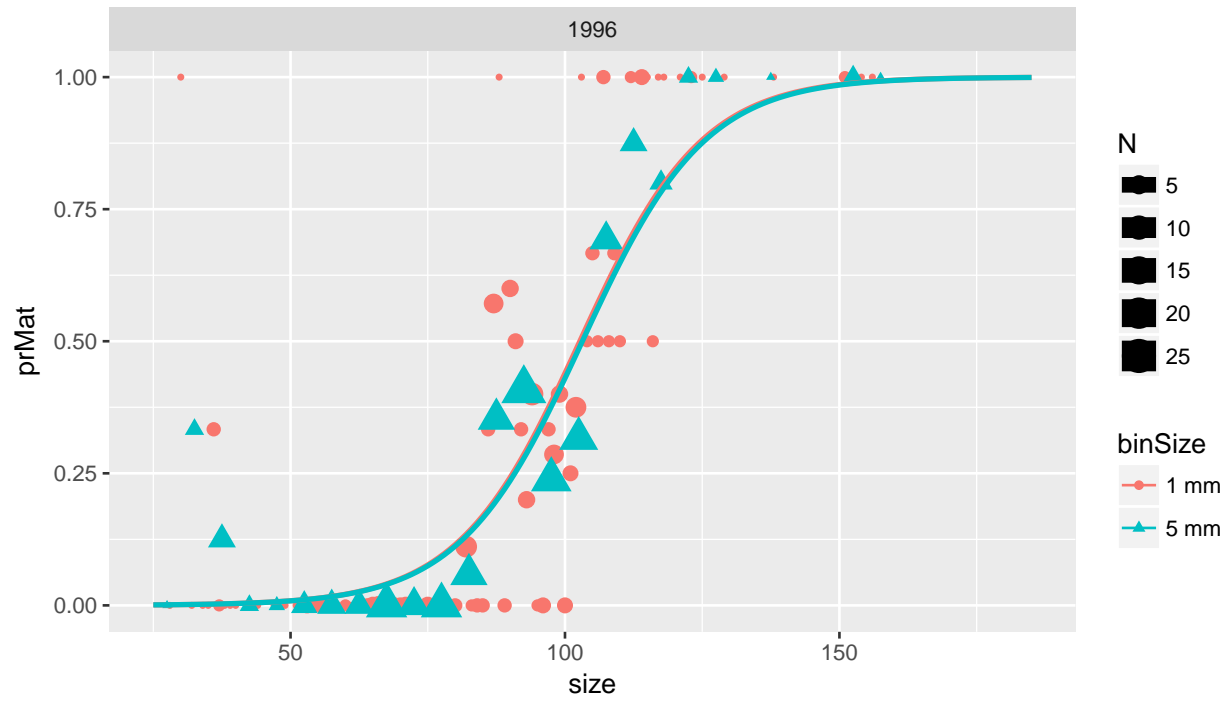
Individuals can be classified as functionally “mature” or “immature” on the basis of the ratio of chela height (CH) to carapace width (CW). For example, based on a cutpoint analysis to separate two mixed distributions of Tanner crab collected in Glacier Bay in the Gulf of Alaska, Tamone et al. (2007) classified crab exhibiting a ratio  $> 0.18$  as functionally “mature” whereas crab exhibiting a ratio  $< 0.18$  were classified as functionally “immature”.

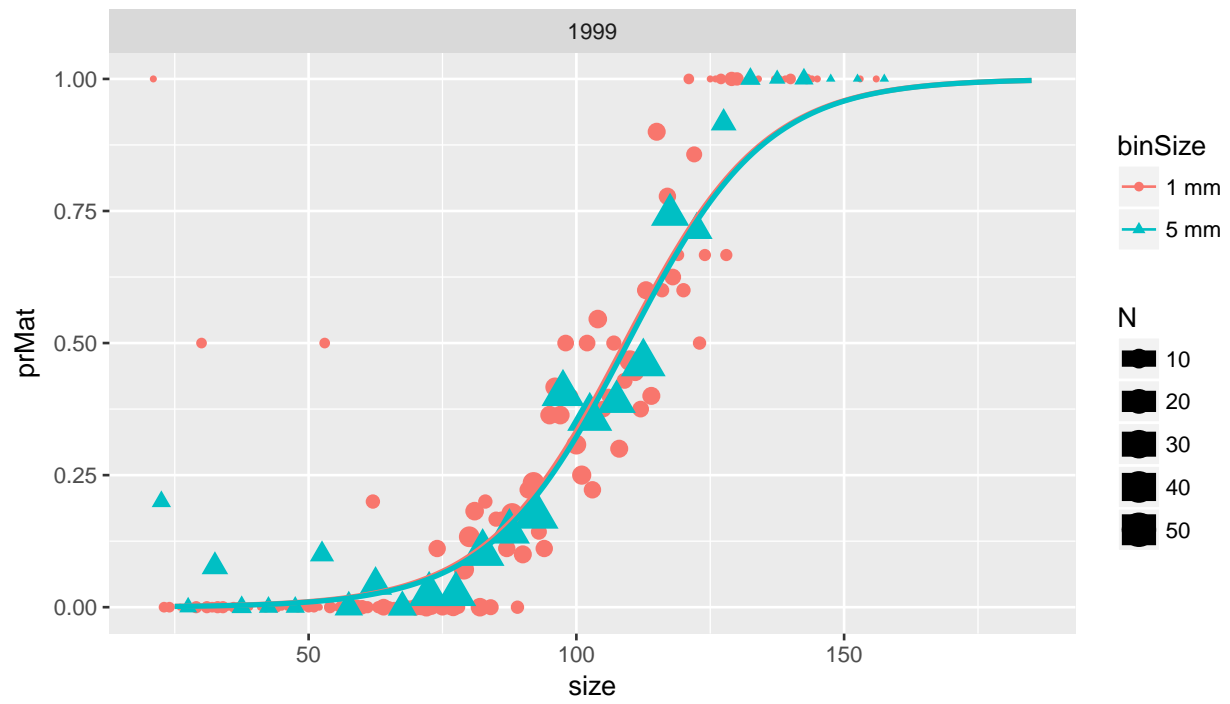
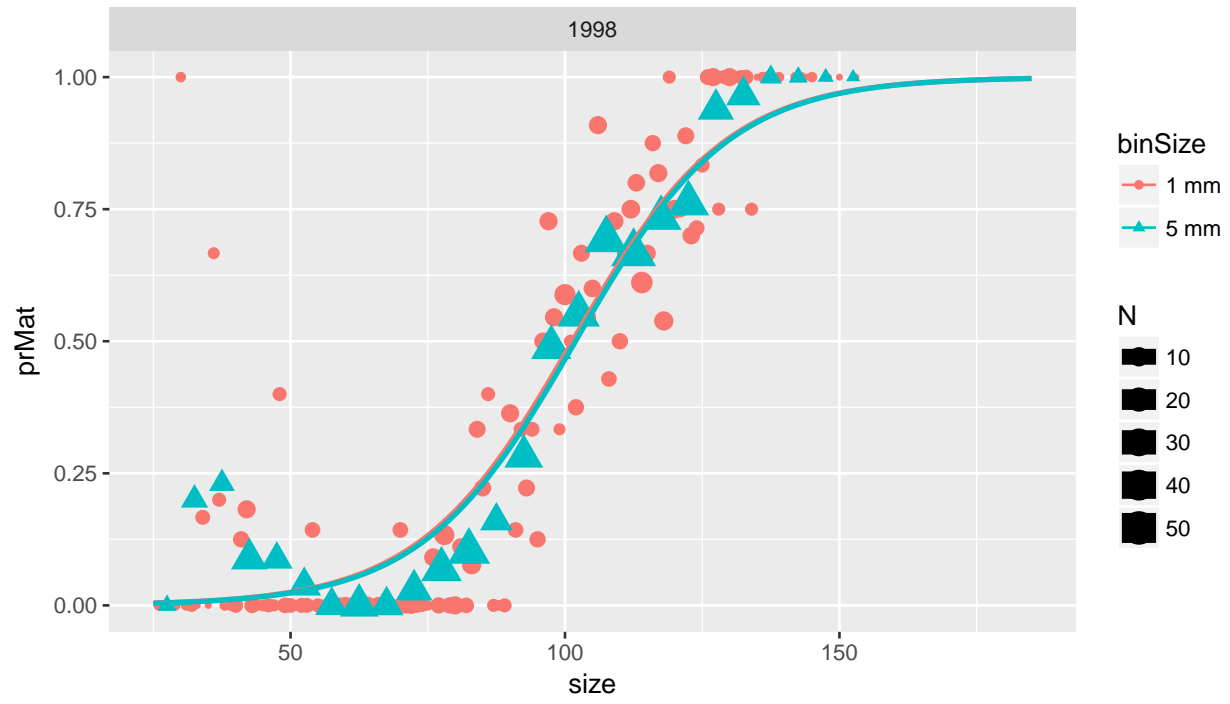
Chela height data from the NMFS EBS bottom trawl survey are available for male Tanner crab for specific years for surveys from 1975 to 2017. Robert Foy (AFSC) used a cutpoint analysis on 10-mm CW size bins to classify individual male Tanner crab as immature or mature based on their CH/CW ratio. “Raw” maturity ogives were then calculated for each year in which chela height data were collected as the ratio of the number of mature to total new shell crab by size bin. The raw ogives were calculated using both 1-mm and 5-mm size bins, and fit using with logistic curves using the glm package in R with binomial family and logit link. The resulting raw and fitted maturity ogives are shown in the following plots.

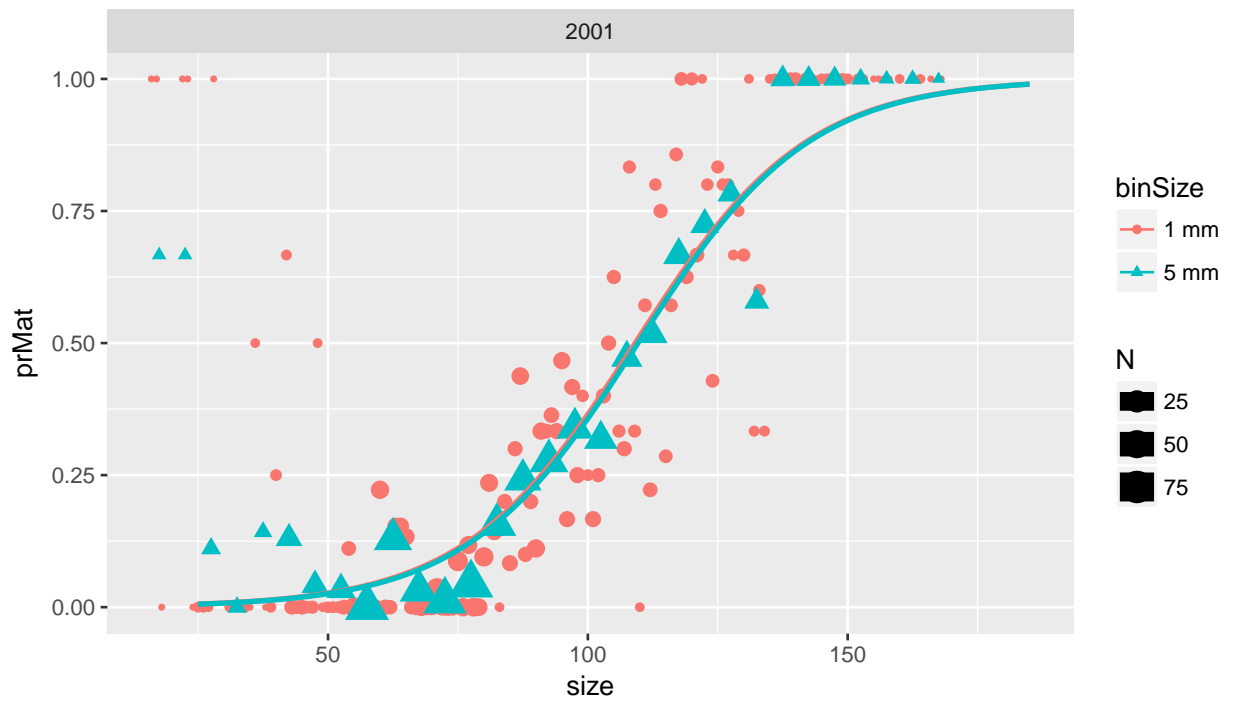
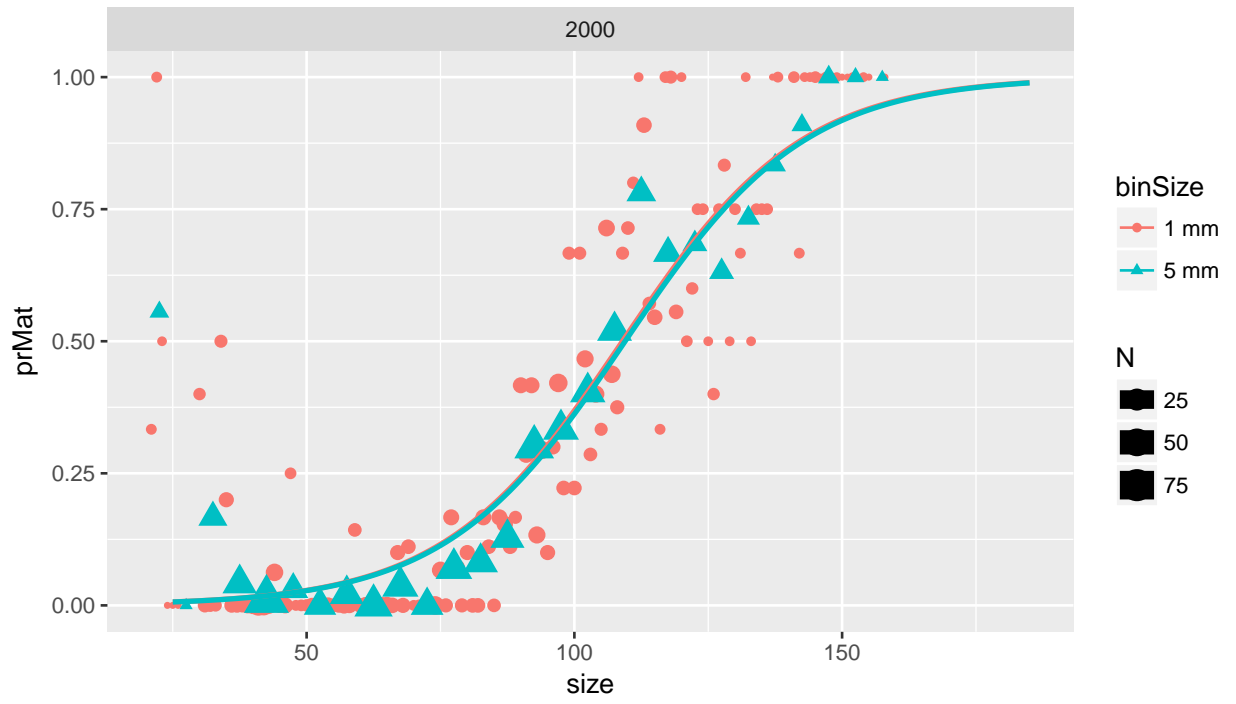


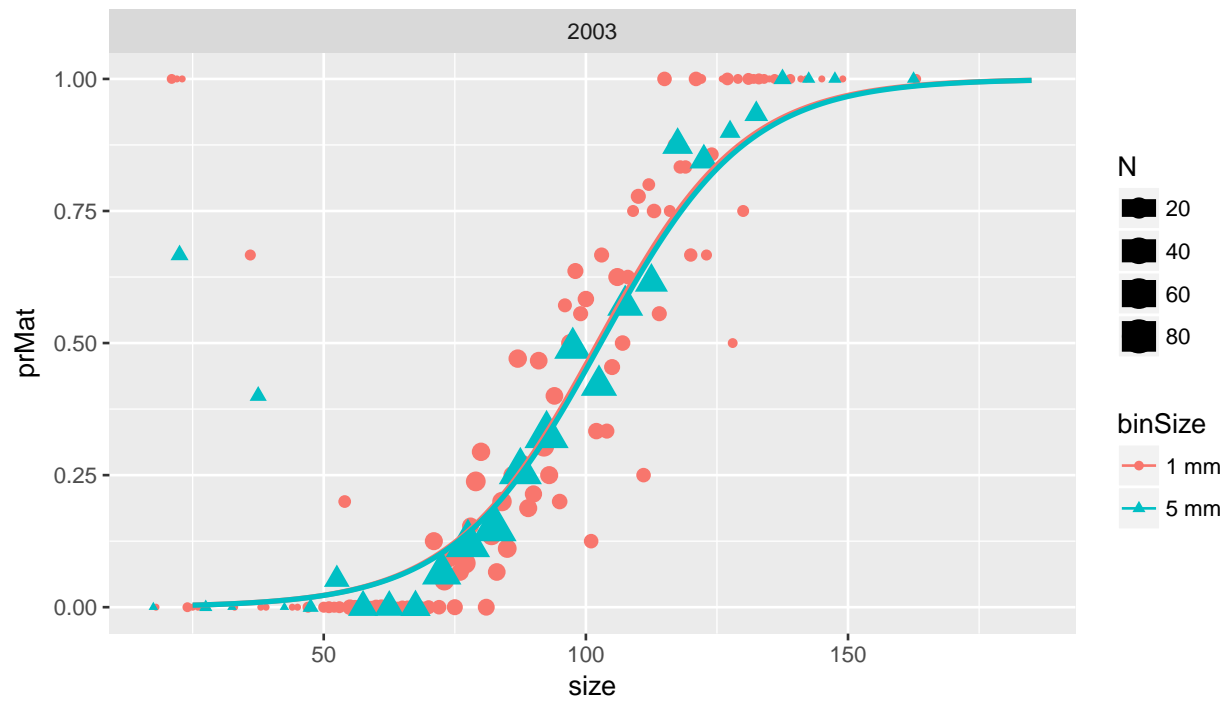
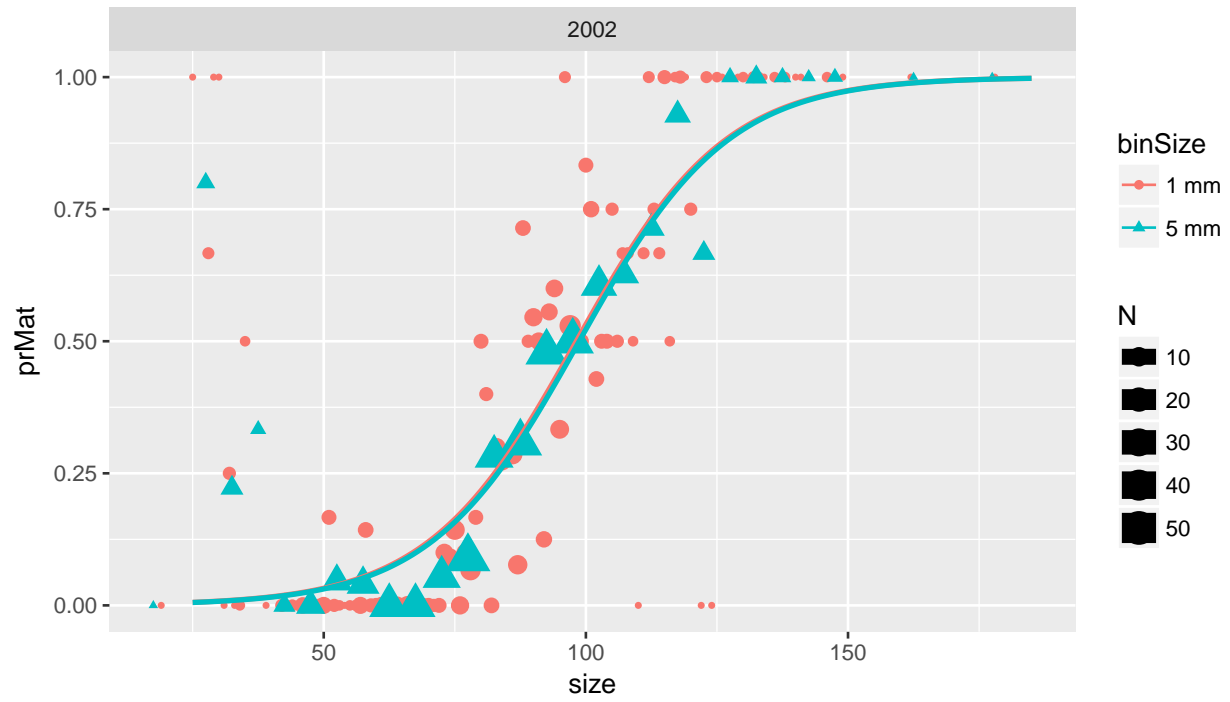




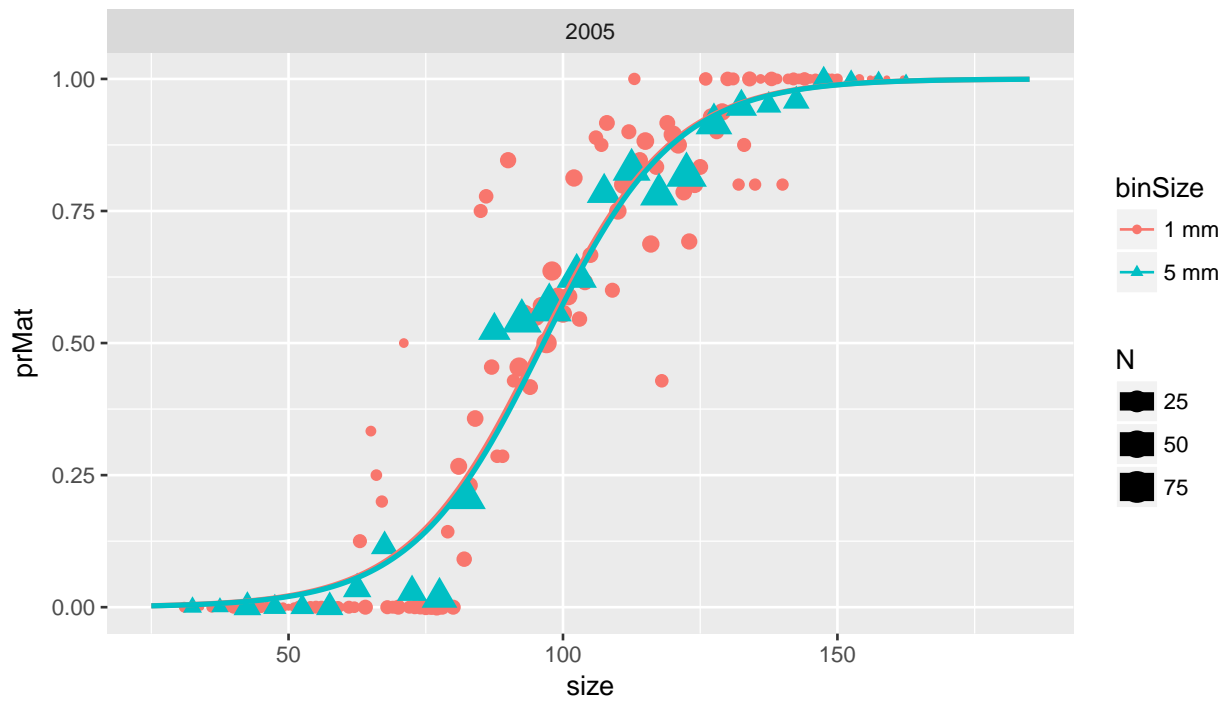
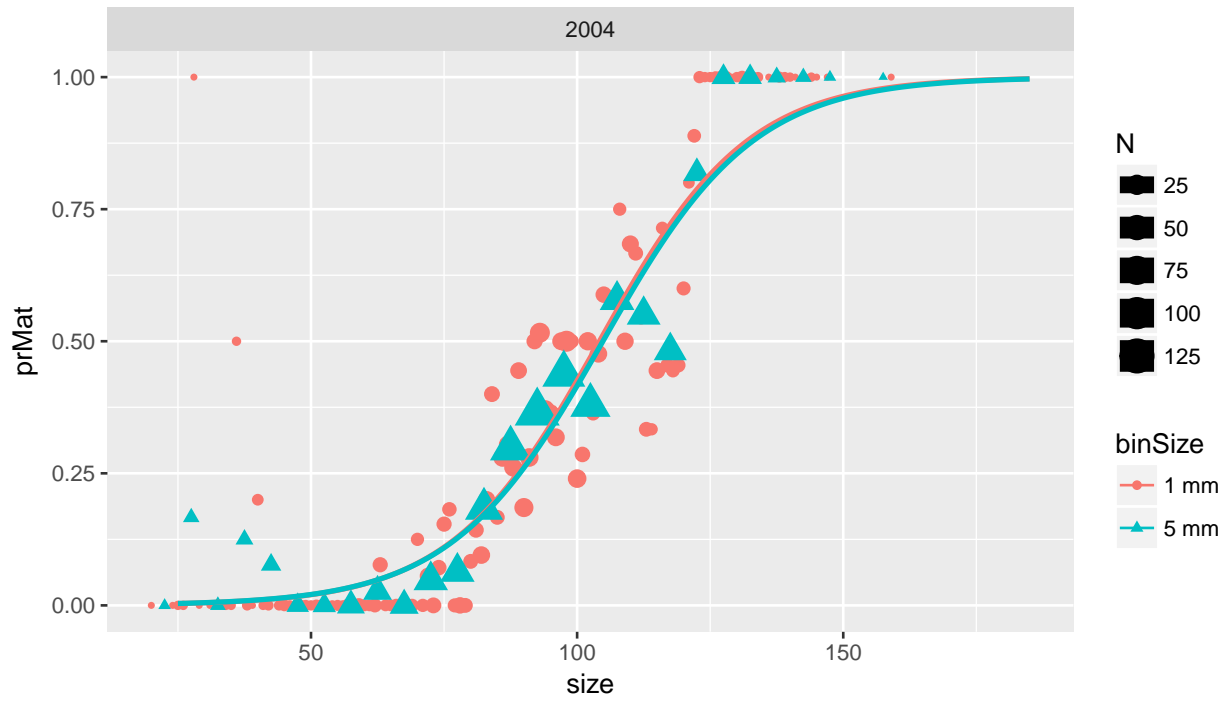


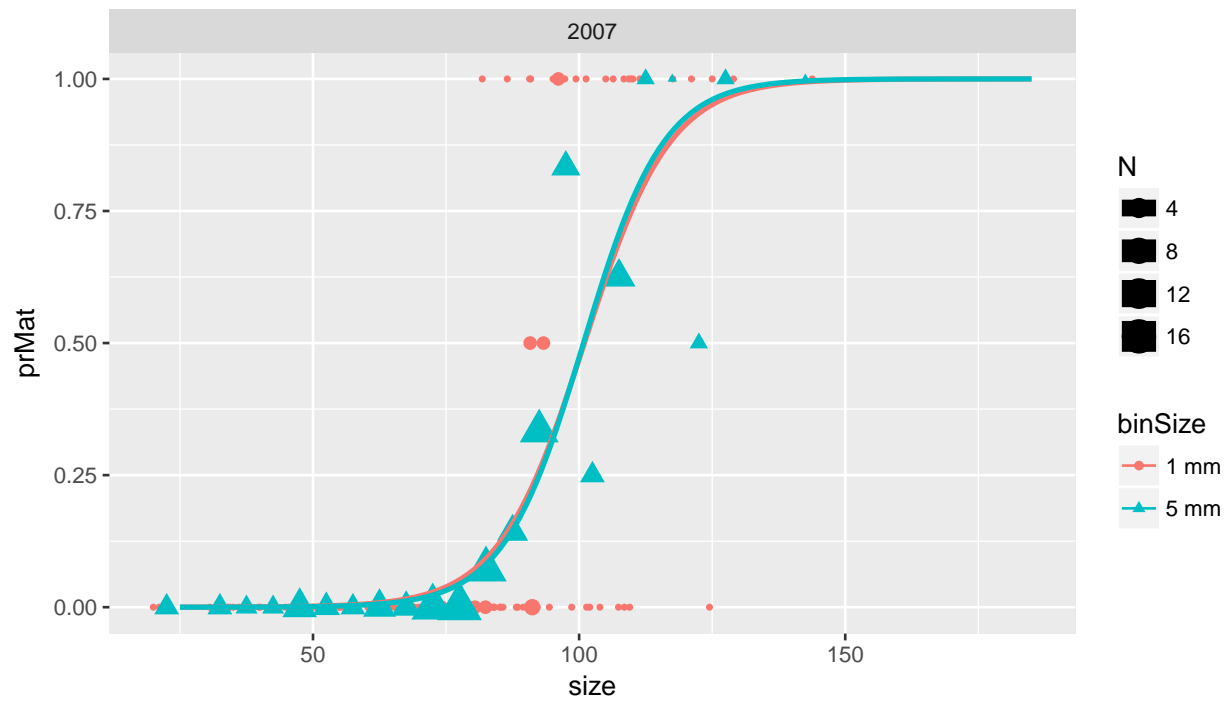
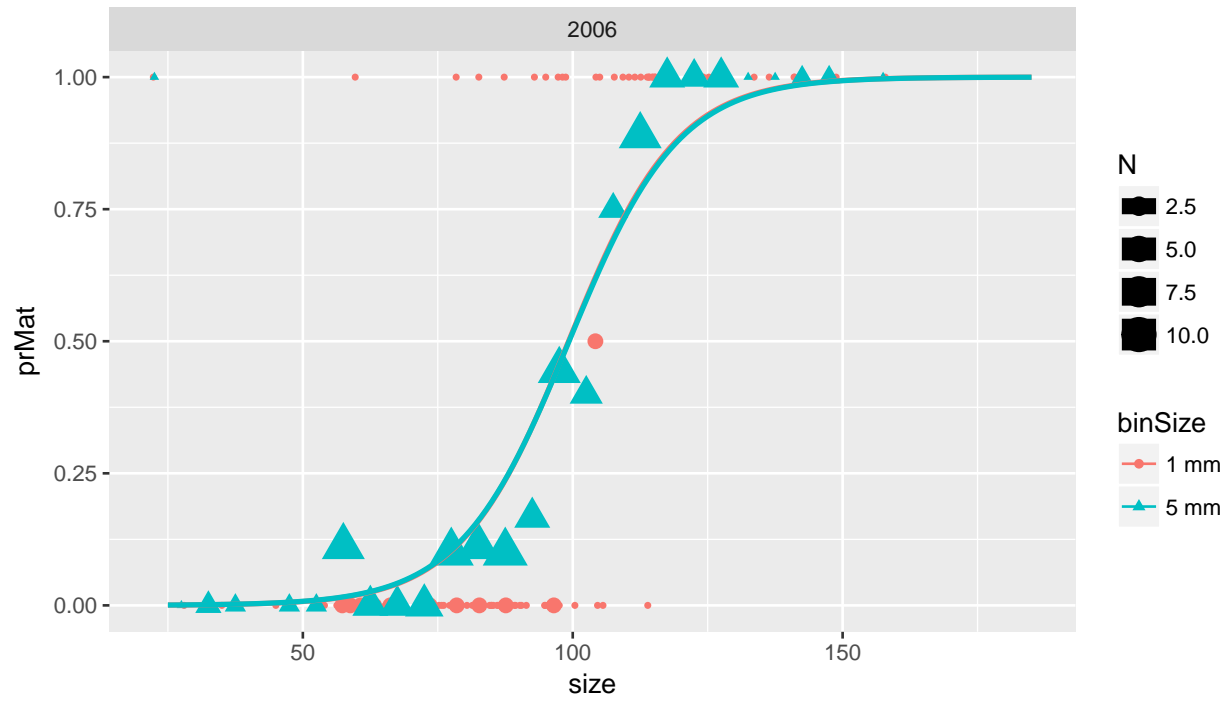


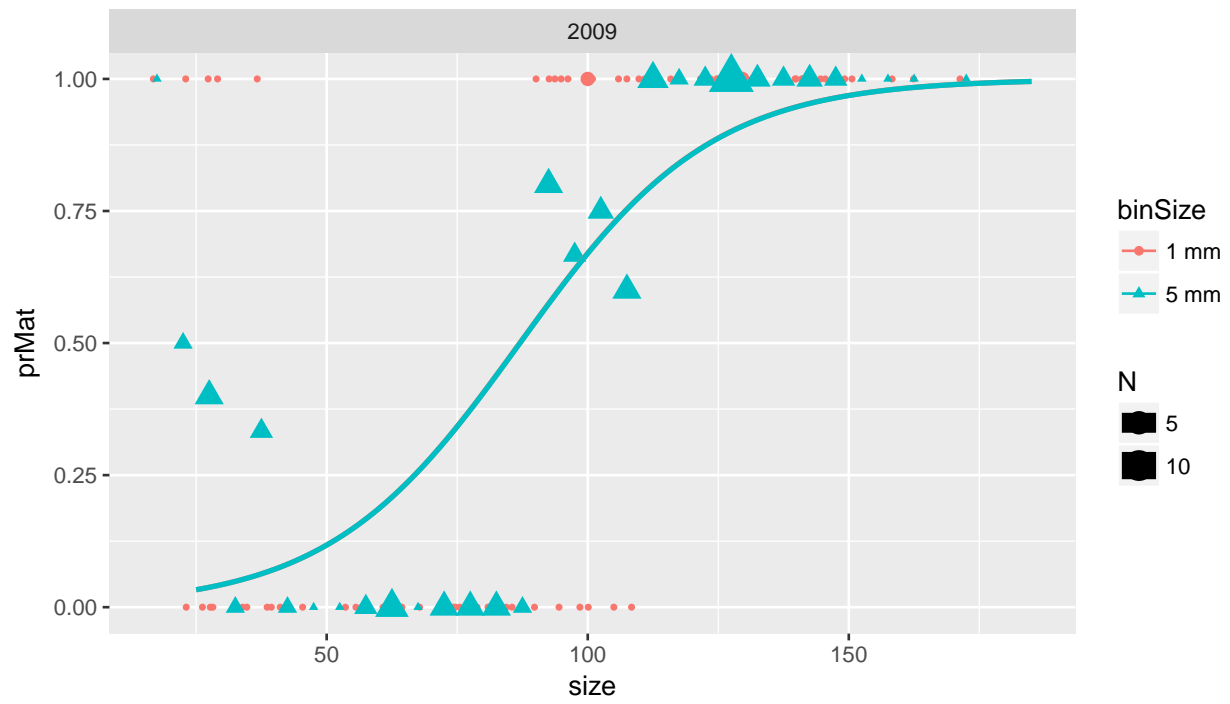
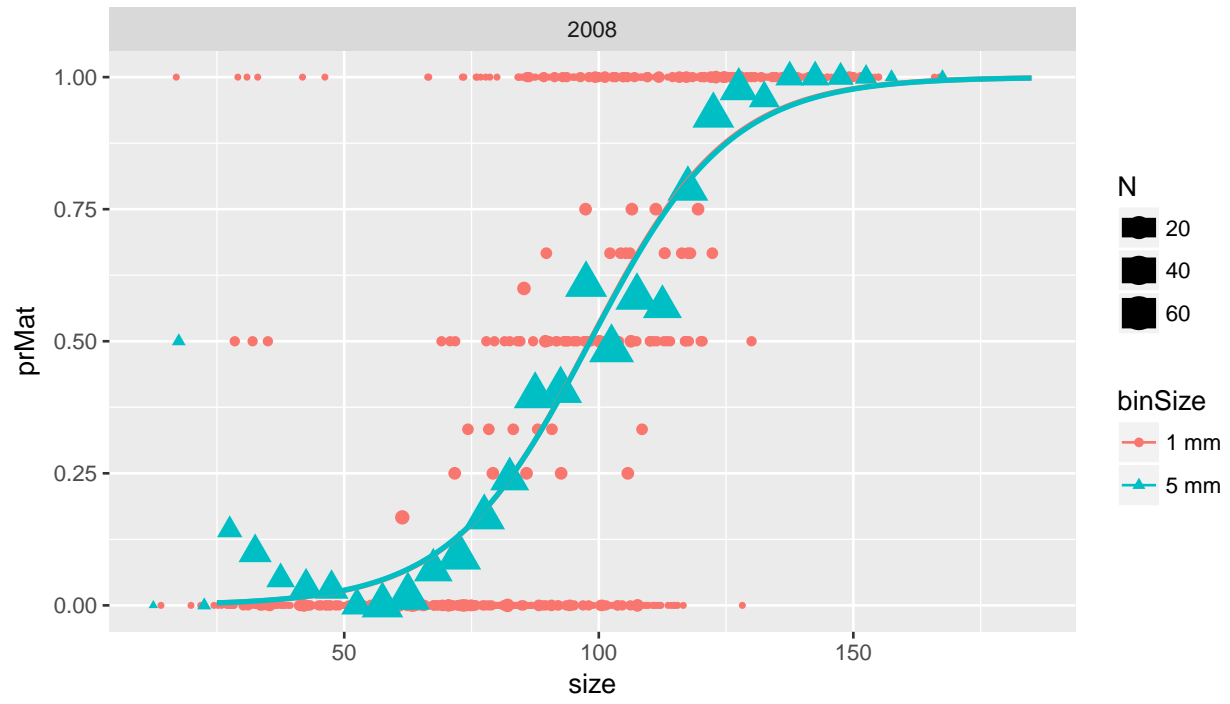


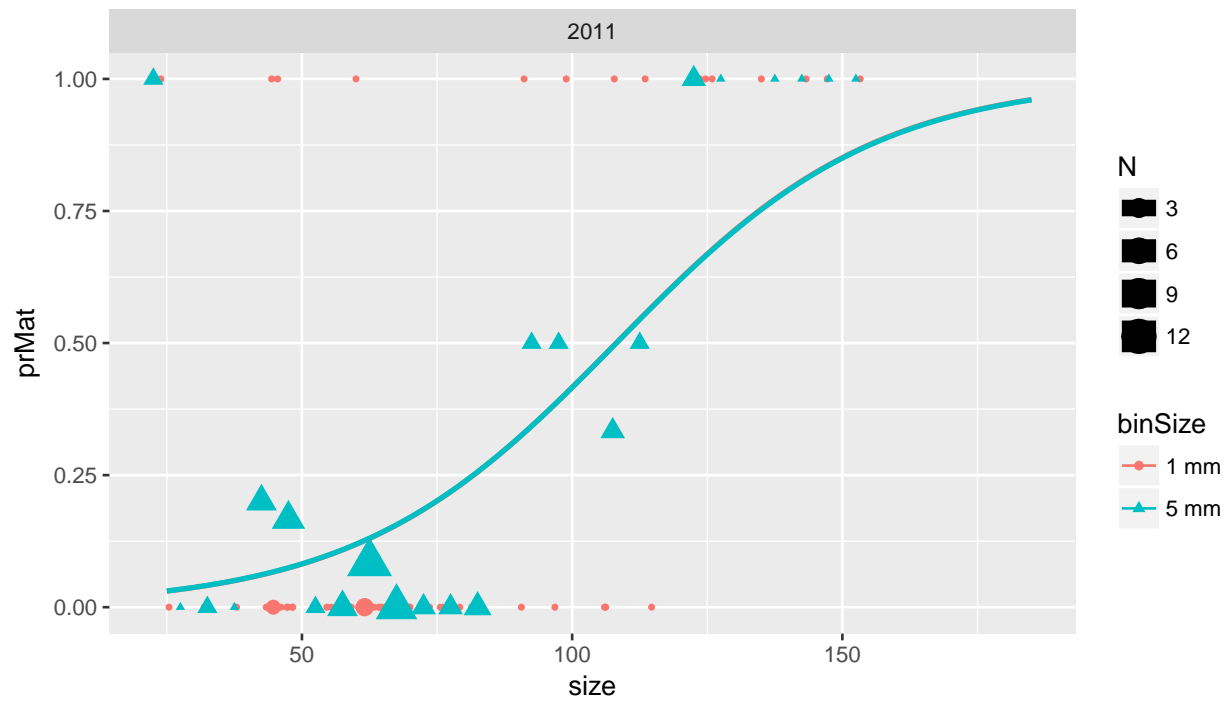
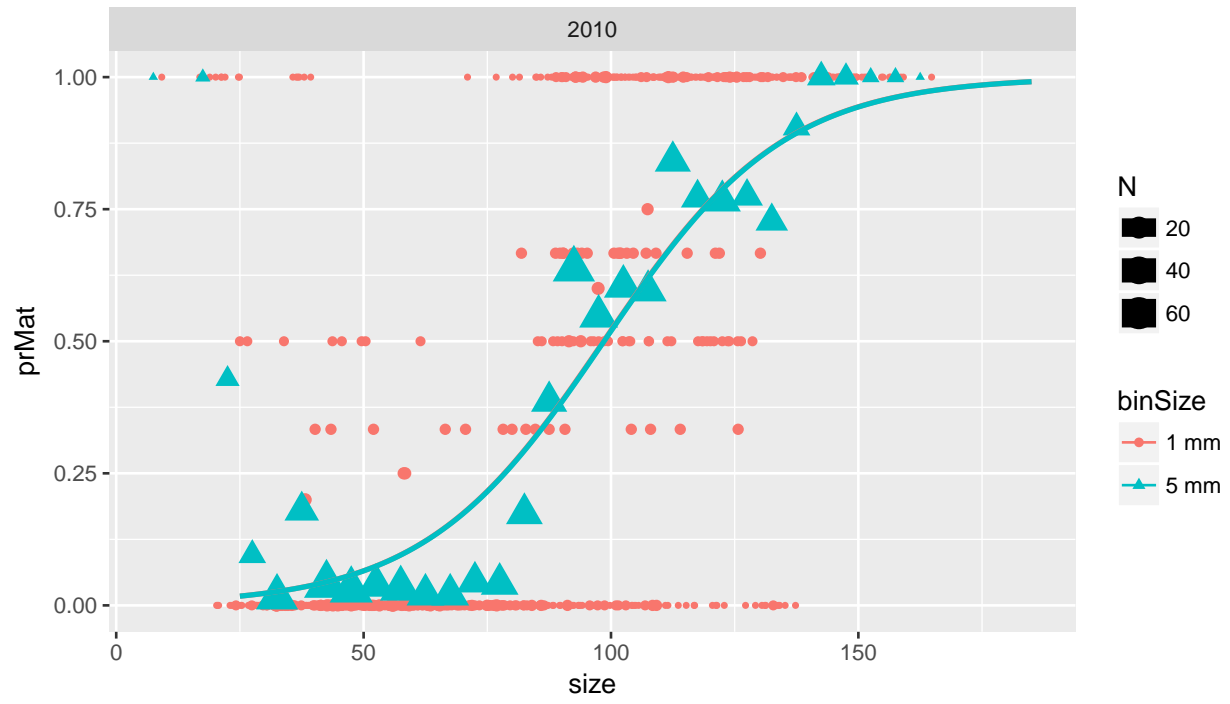


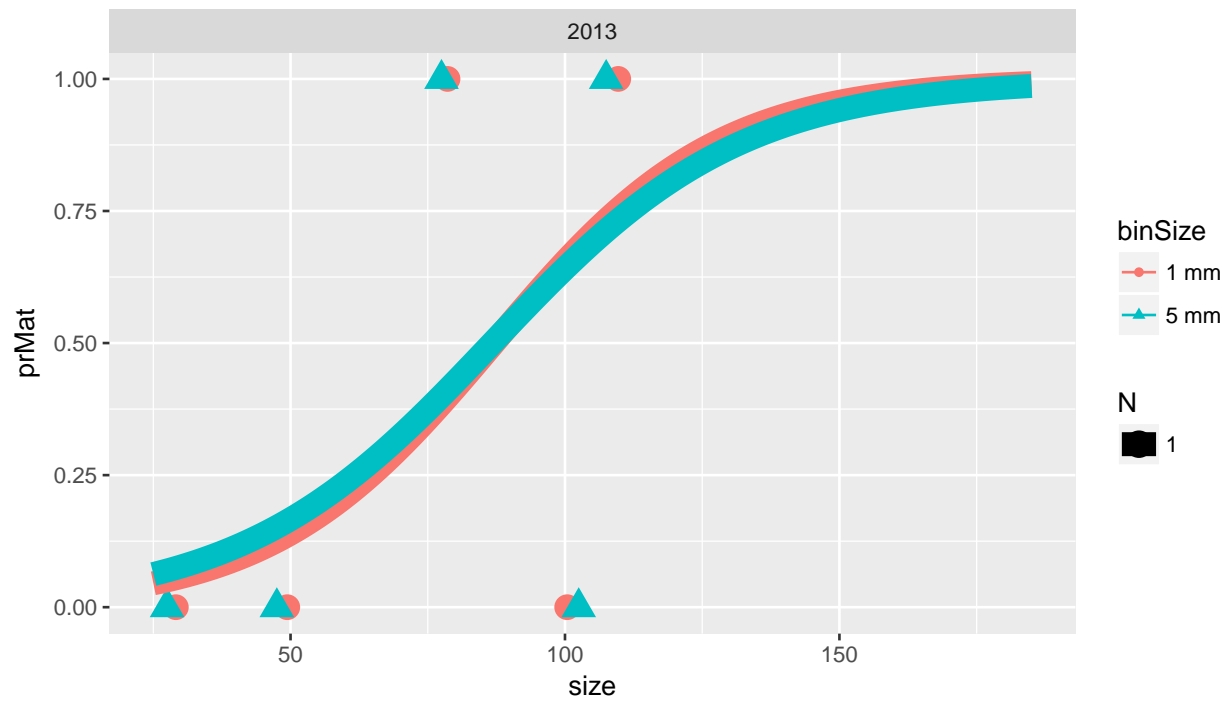
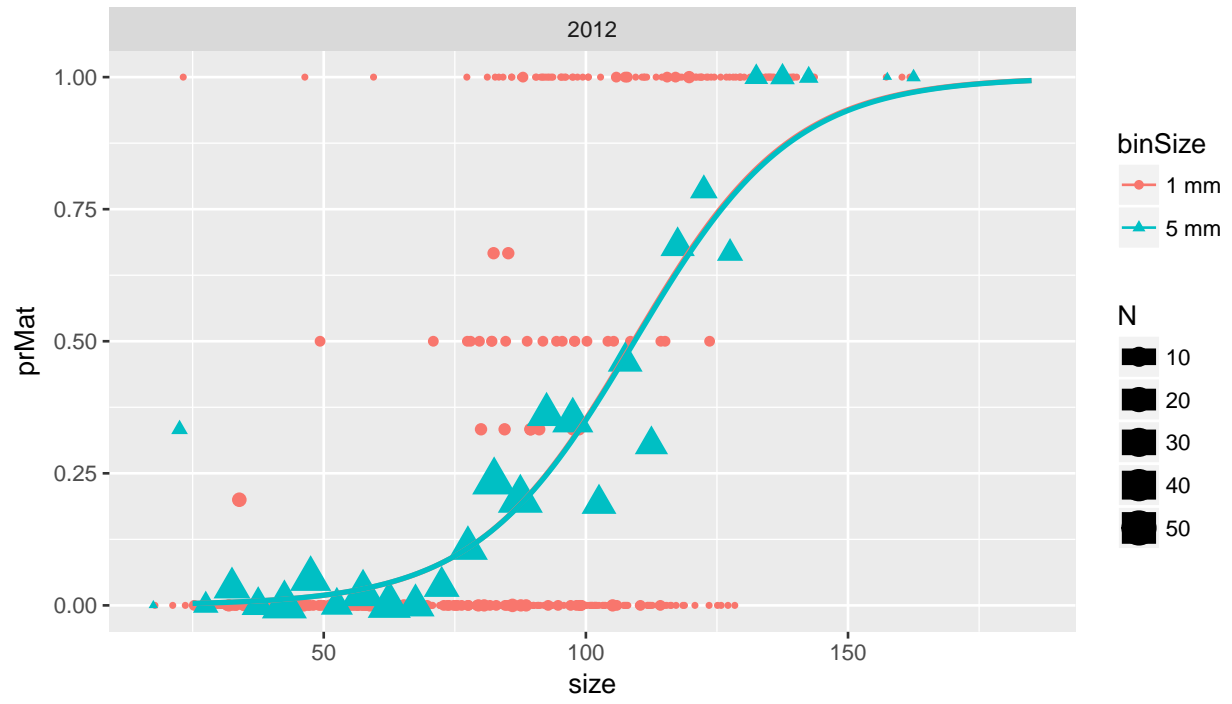


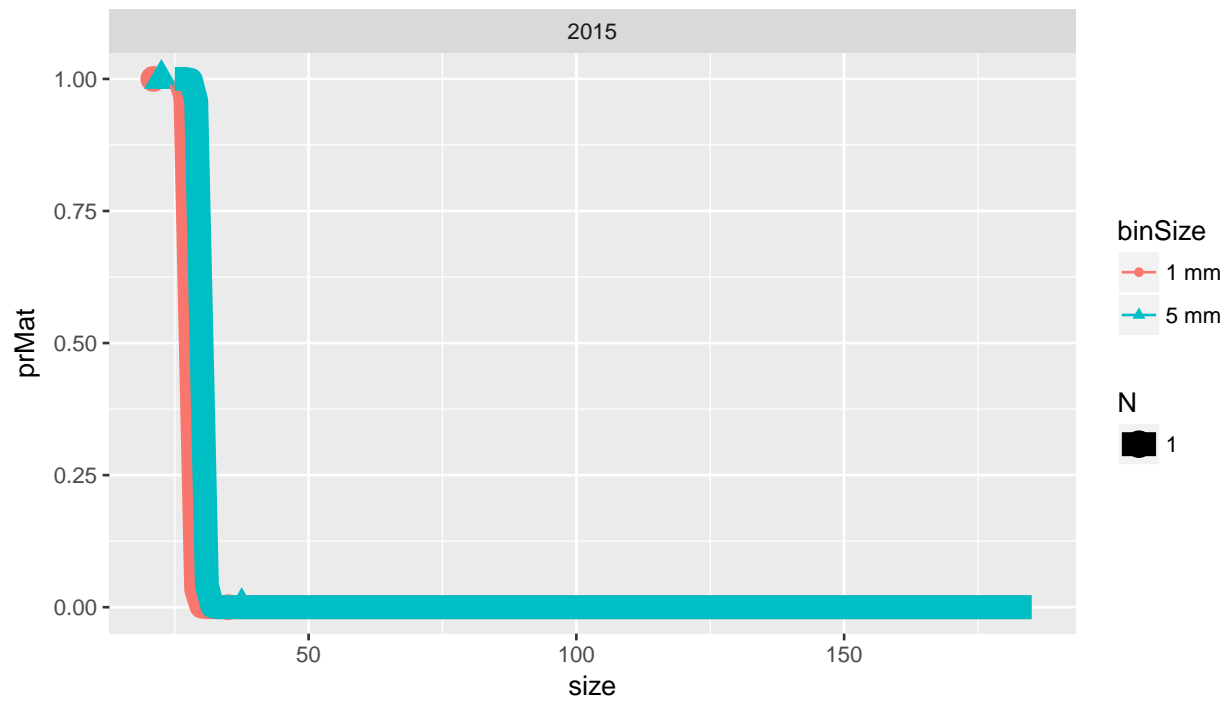
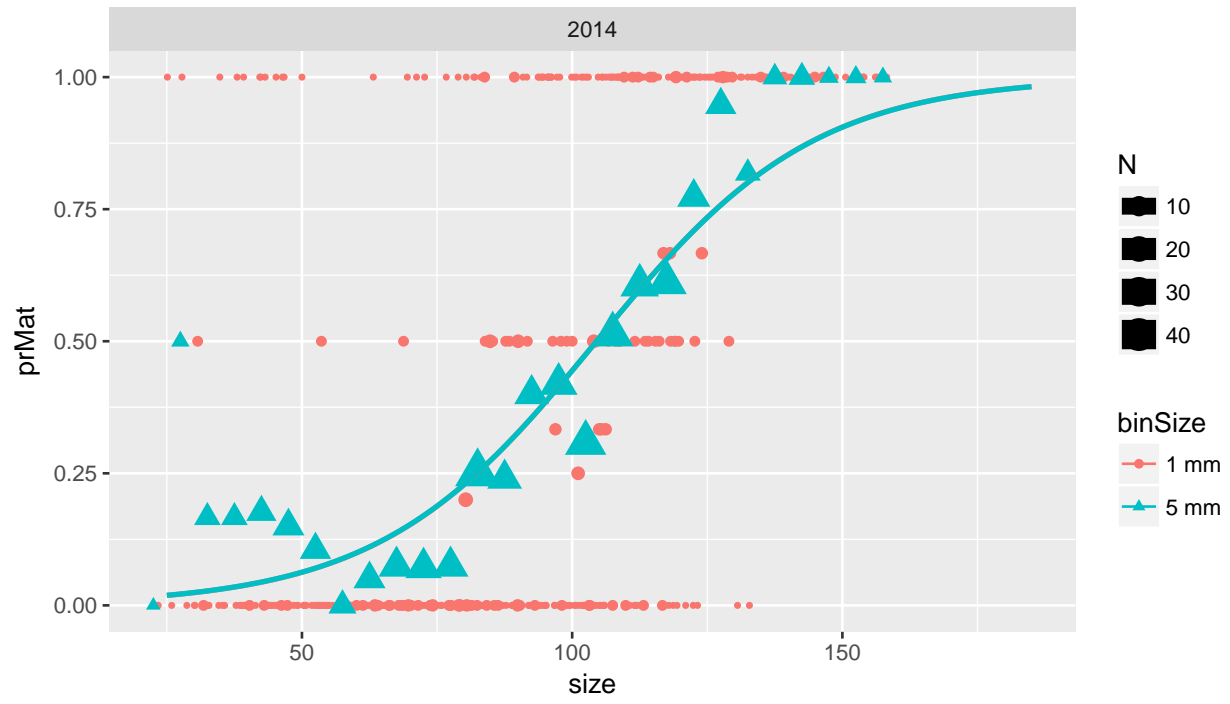


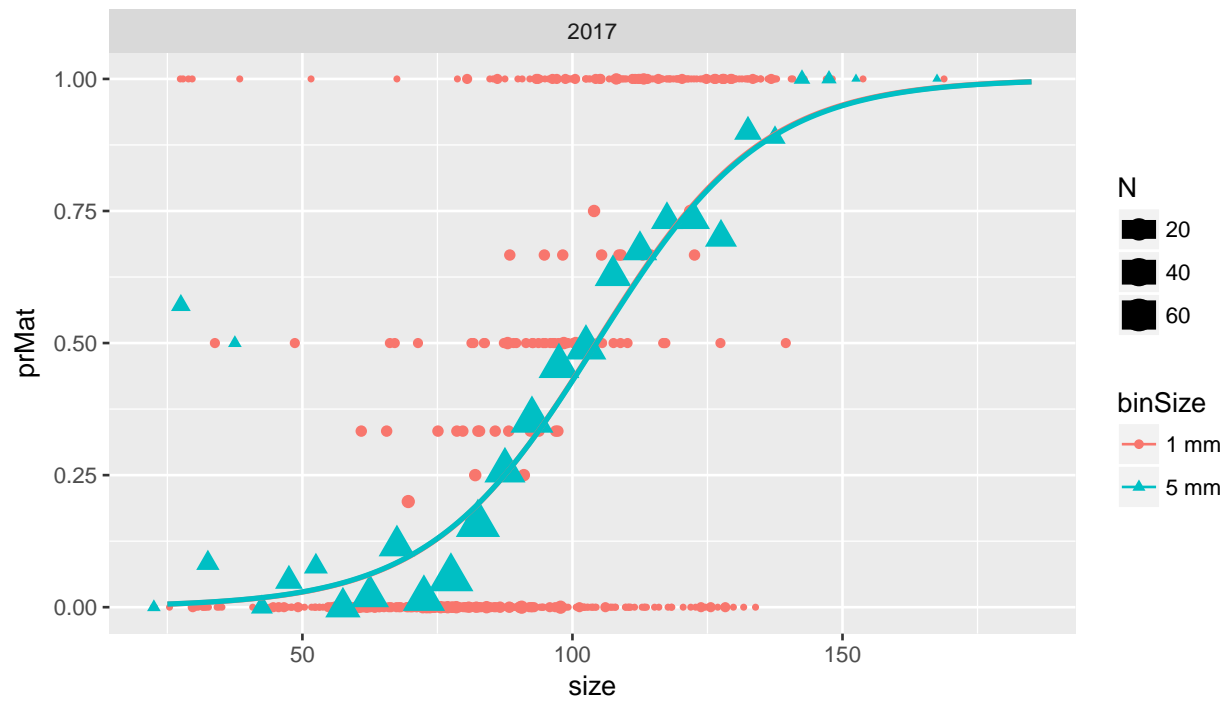
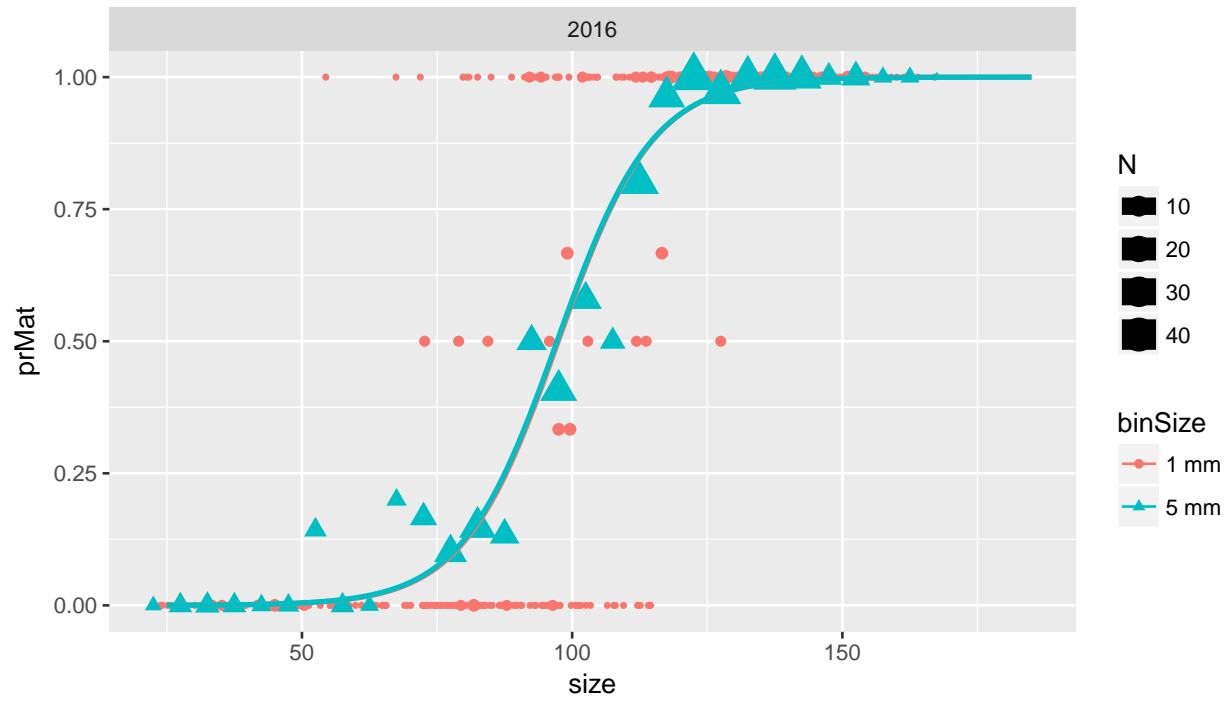












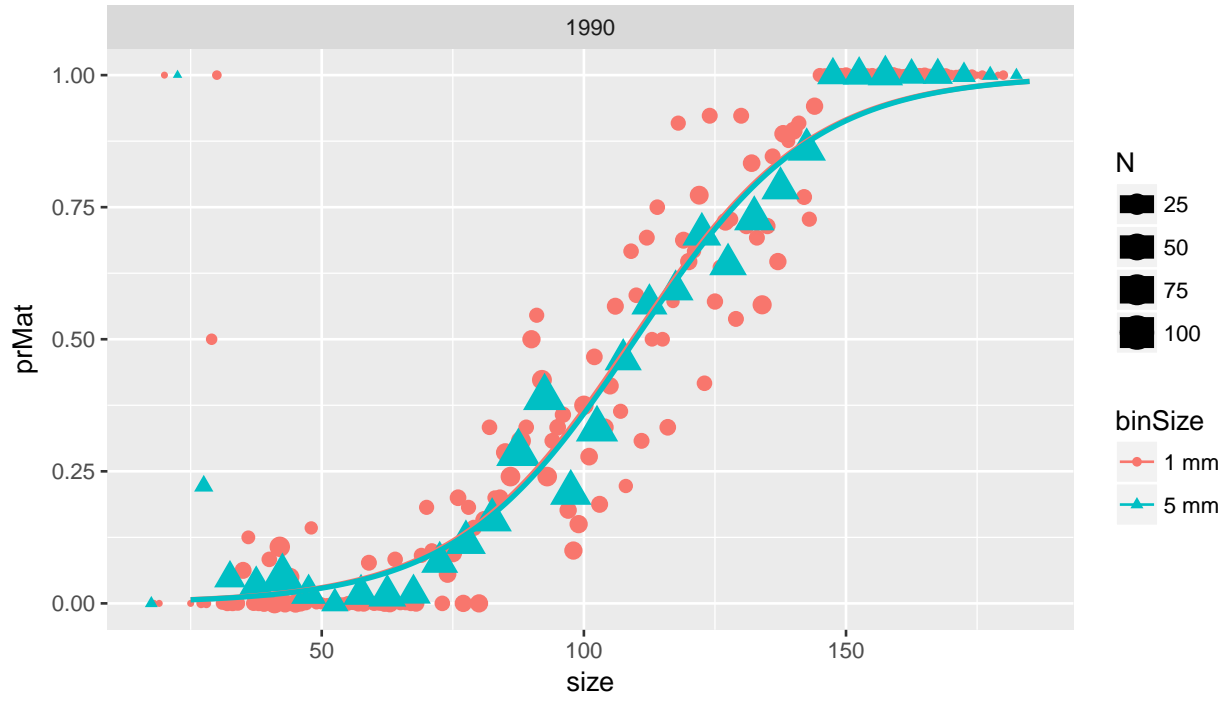


Figure 1: Figure 1. Estimated male maturity ogives for 1990.

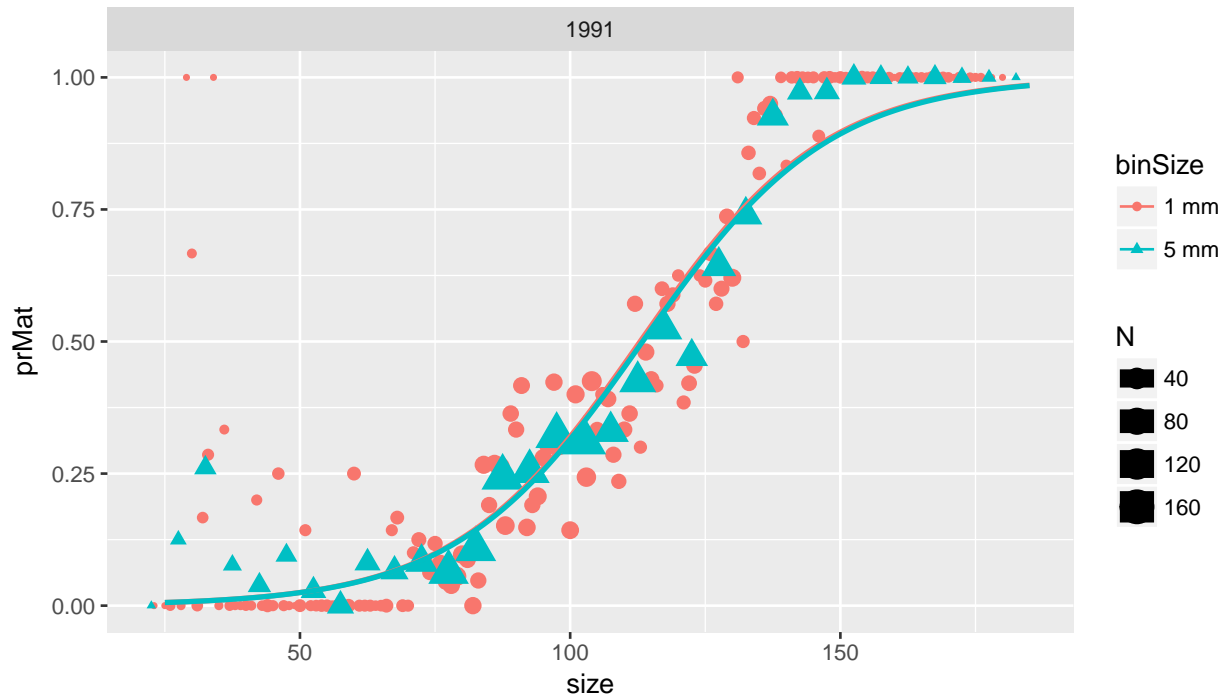


Figure 2: Figure 1. Estimated male maturity ogives for 1991.



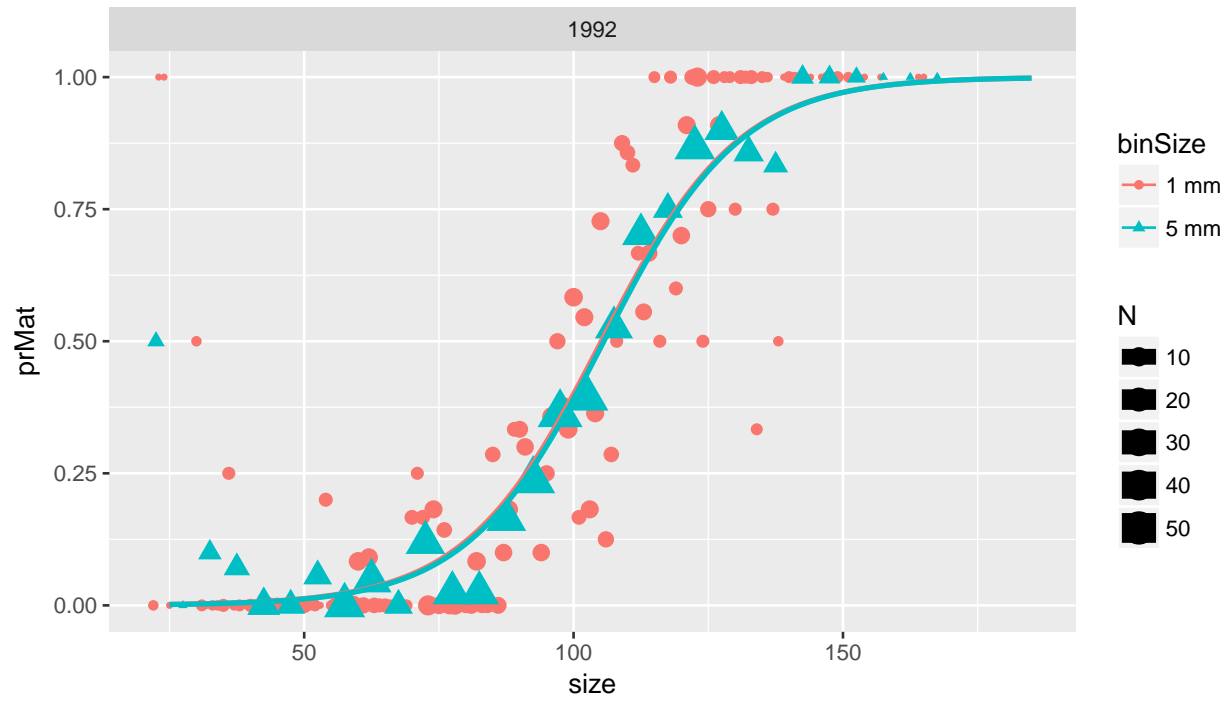


Figure 3: Figure 1. Estimated male maturity ogives for 1992.

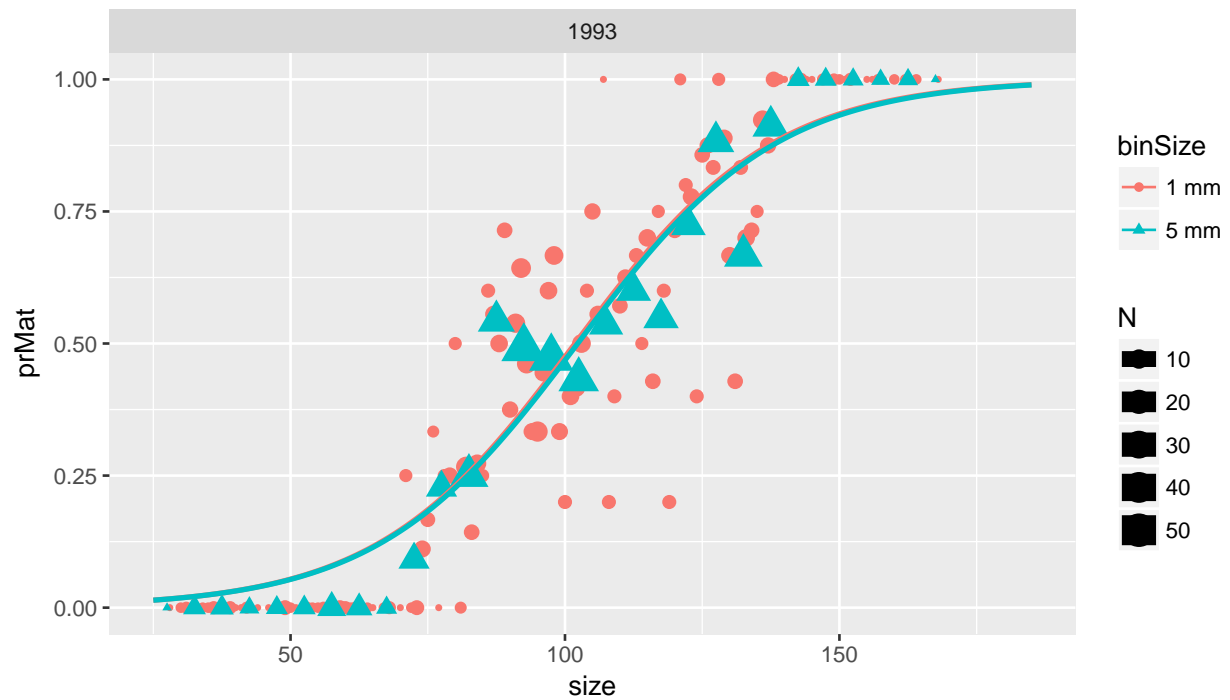


Figure 4: Figure 1. Estimated male maturity ogives for 1993.

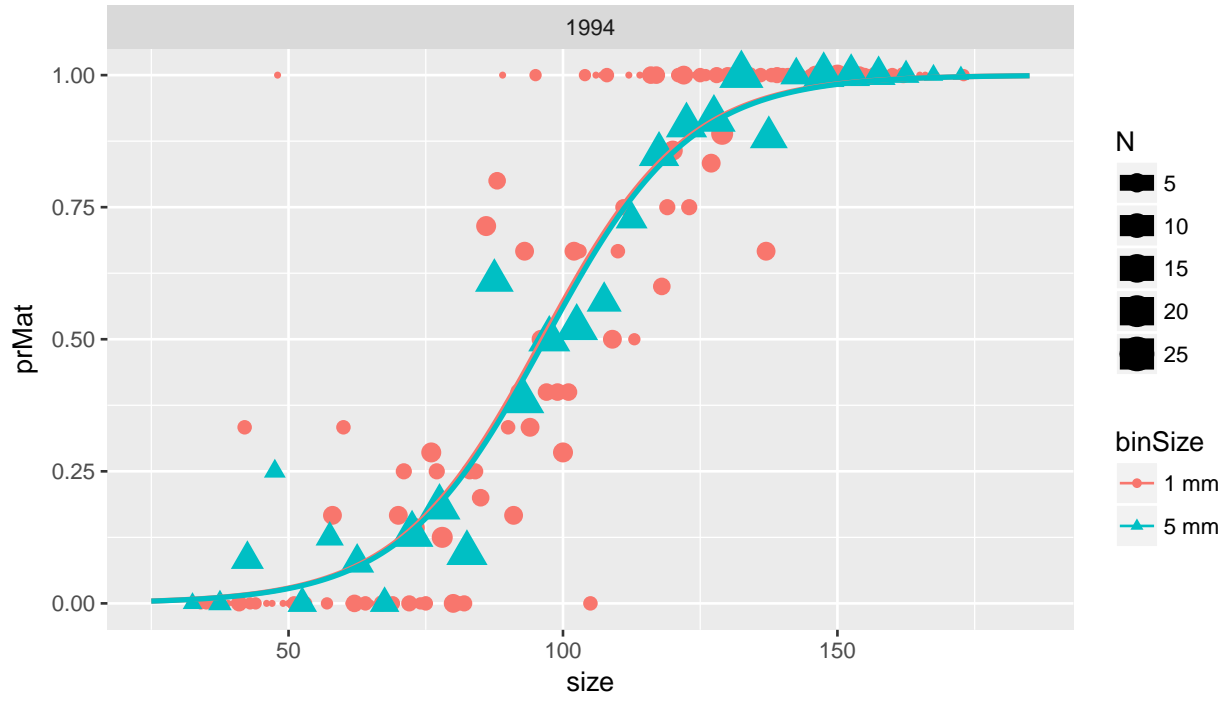


Figure 5: Figure 1. Estimated male maturity ogives for 1994.

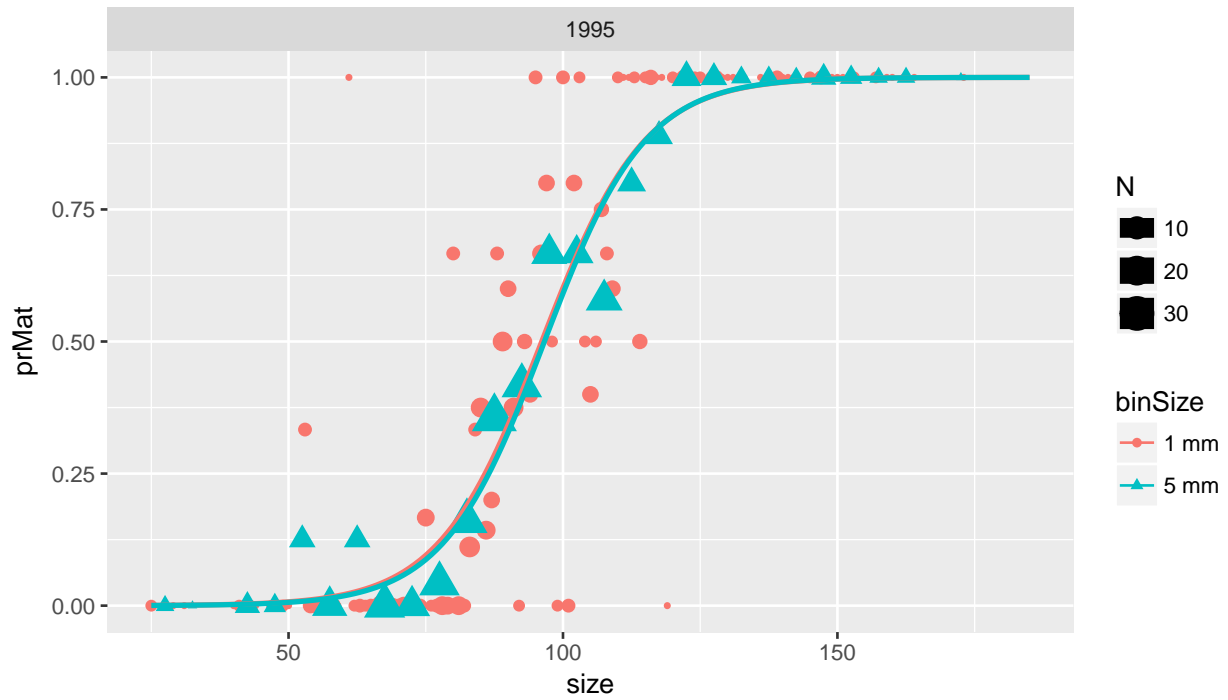


Figure 6: Figure 1. Estimated male maturity ogives for 1995.

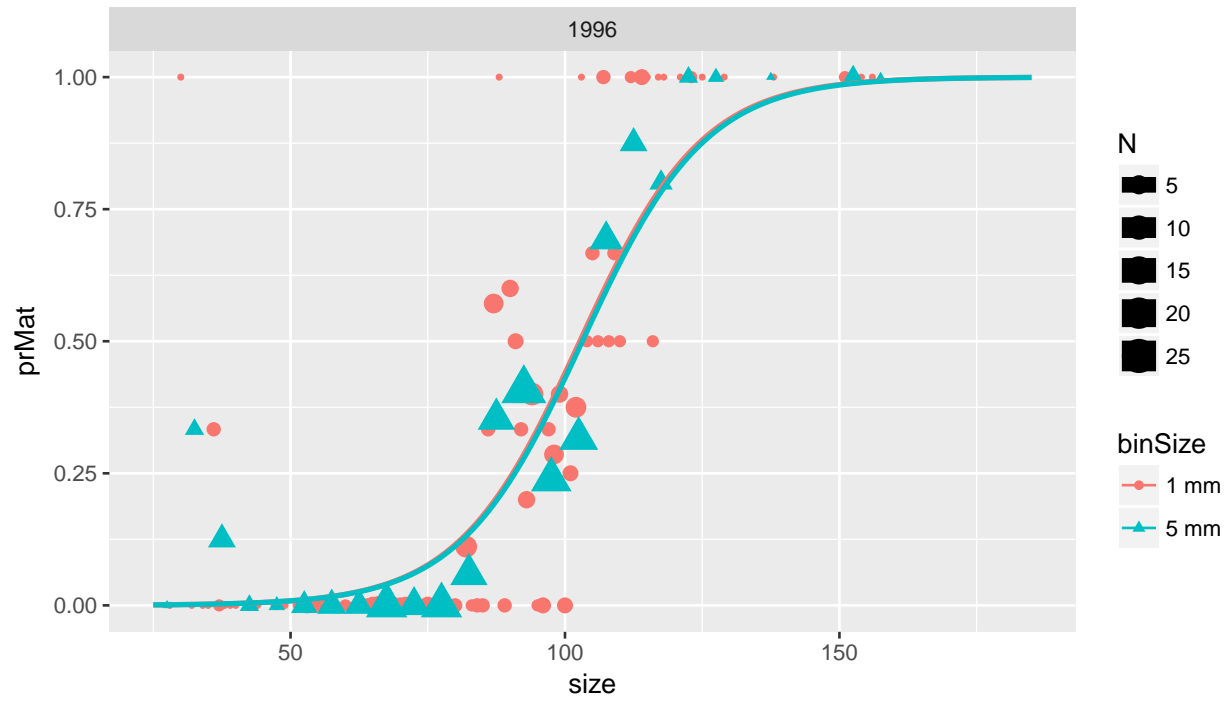


Figure 7: Figure 1. Estimated male maturity ogives for 1996.

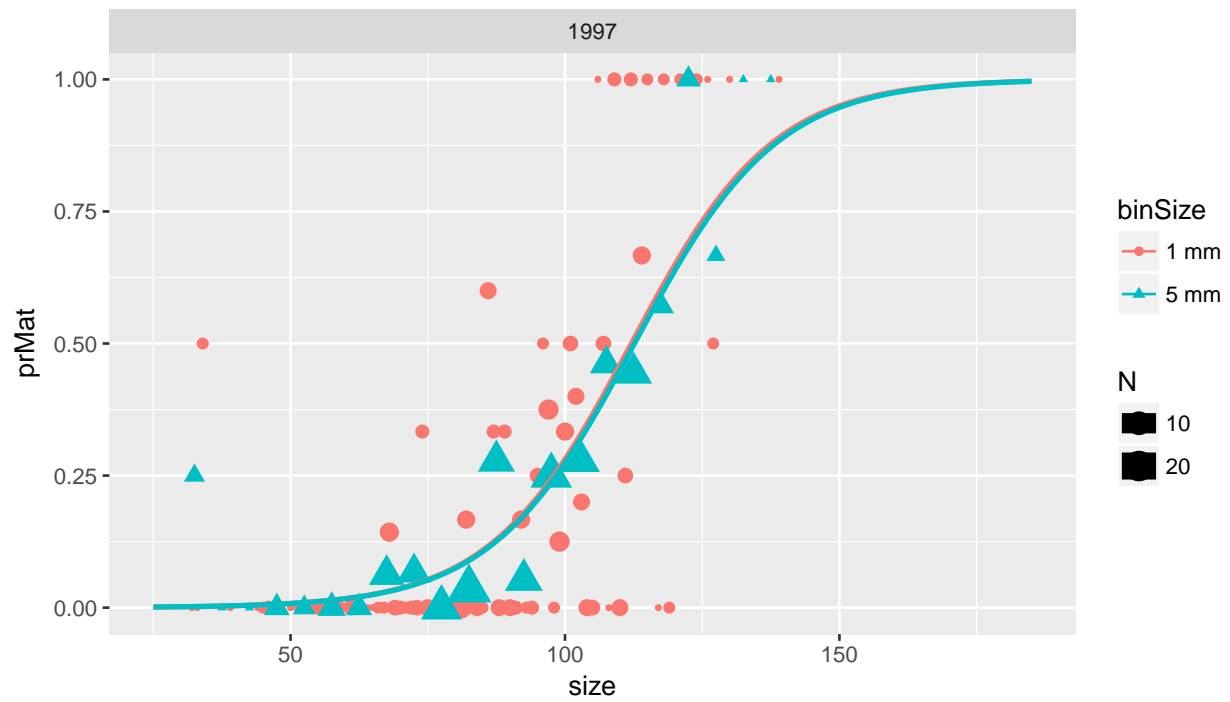


Figure 8: Figure 1. Estimated male maturity ogives for 1997.

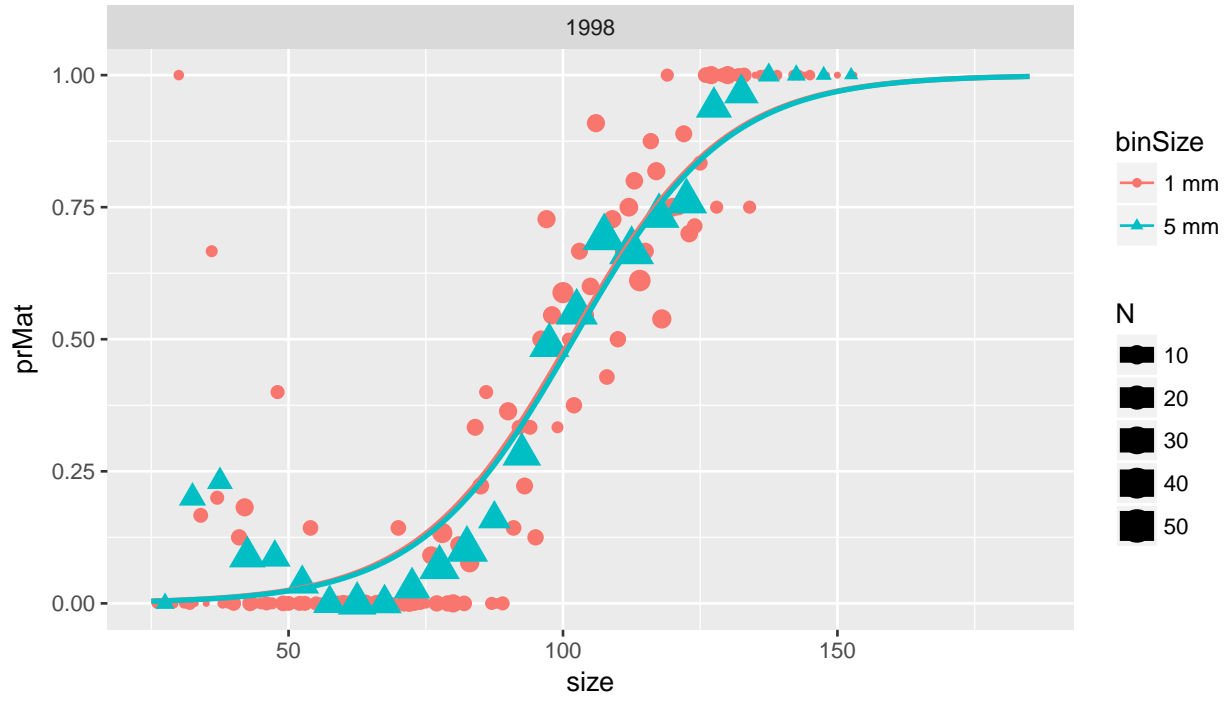


Figure 9: Figure 1. Estimated male maturity ogives for 1998.

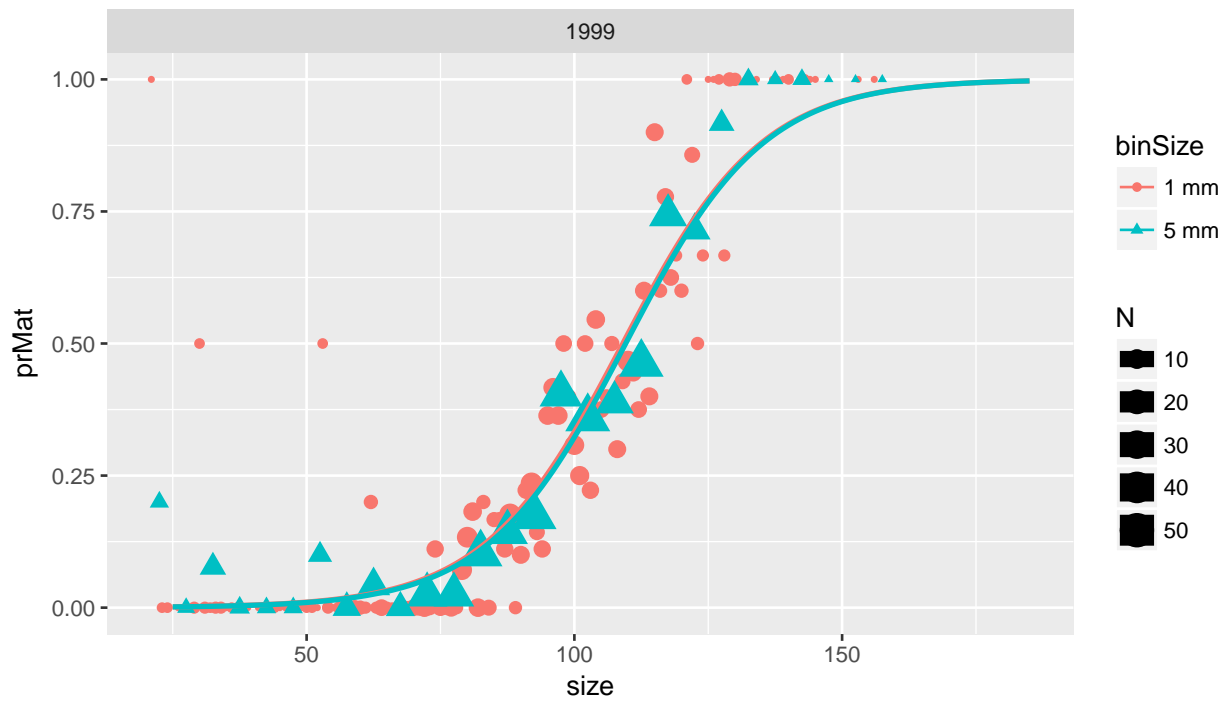


Figure 10: Figure 1. Estimated male maturity ogives for 1999.

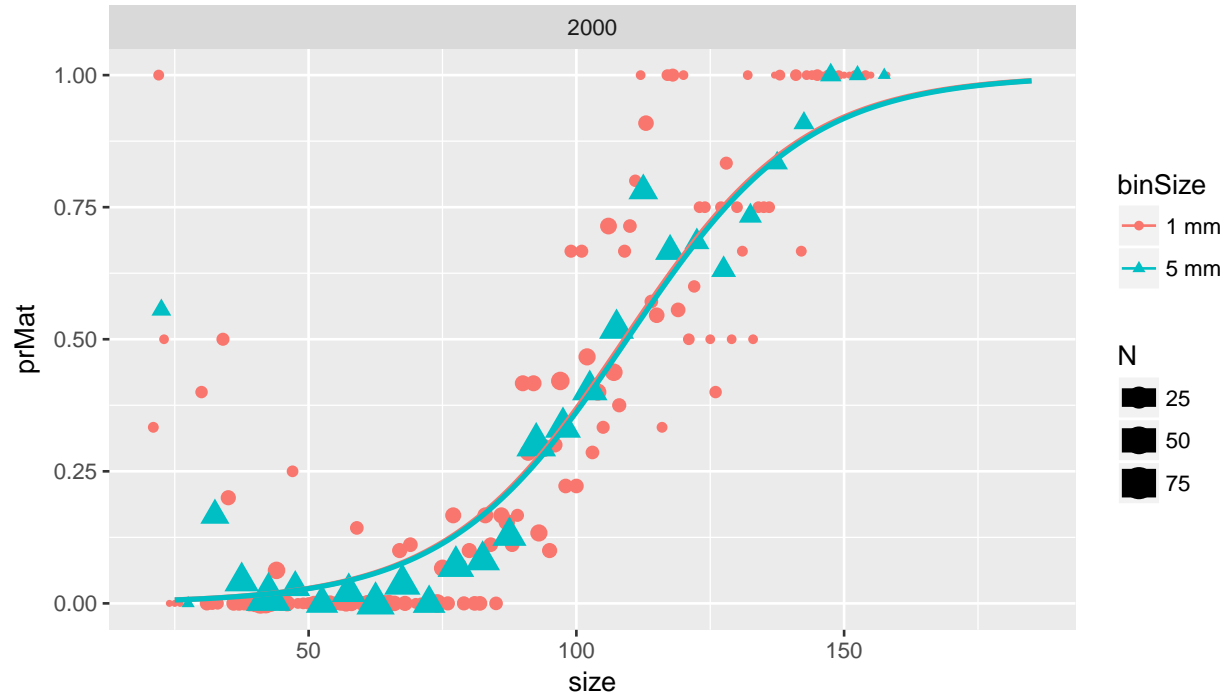


Figure 11: Figure 1. Estimated male maturity ogives for 2000.

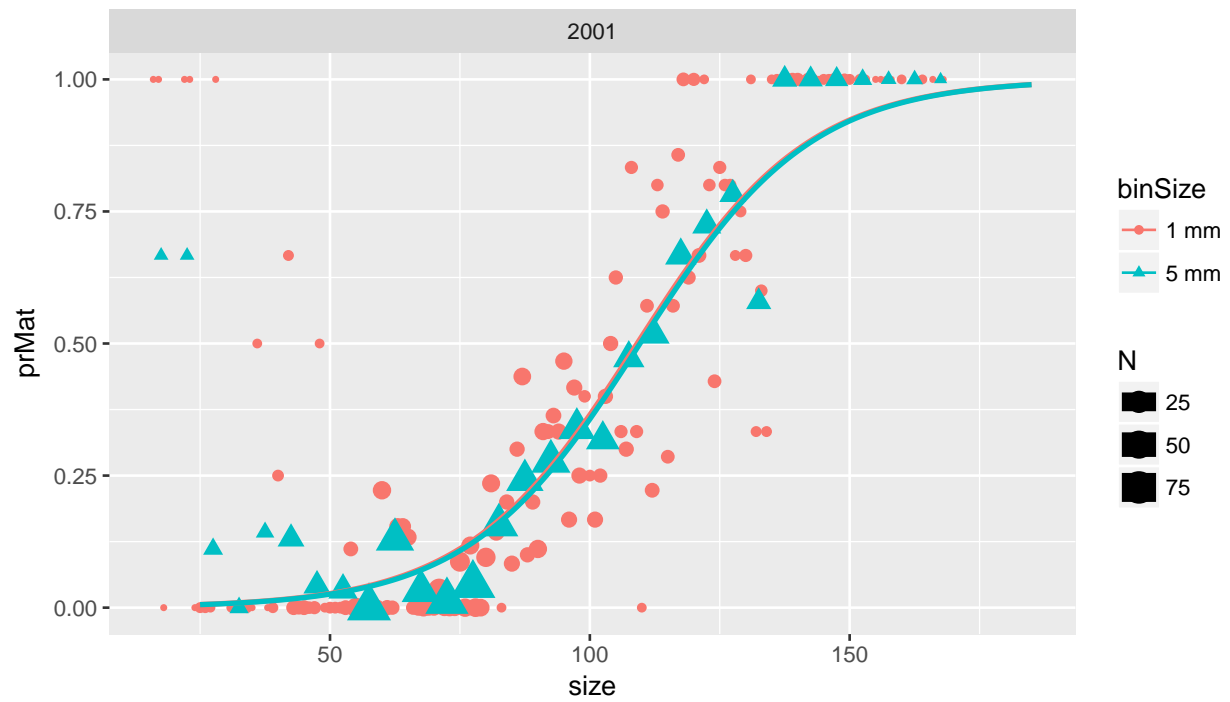


Figure 12: Figure 1. Estimated male maturity ogives for 2001.

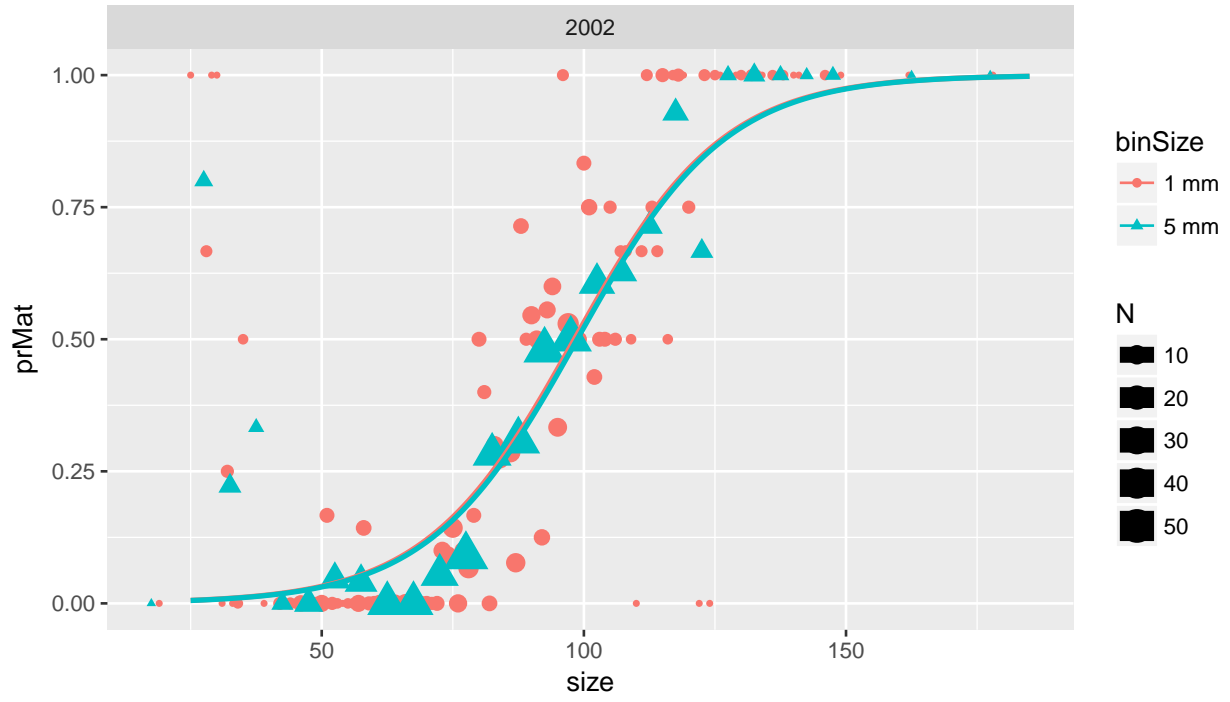


Figure 13: Figure 1. Estimated male maturity ogives for 2002.

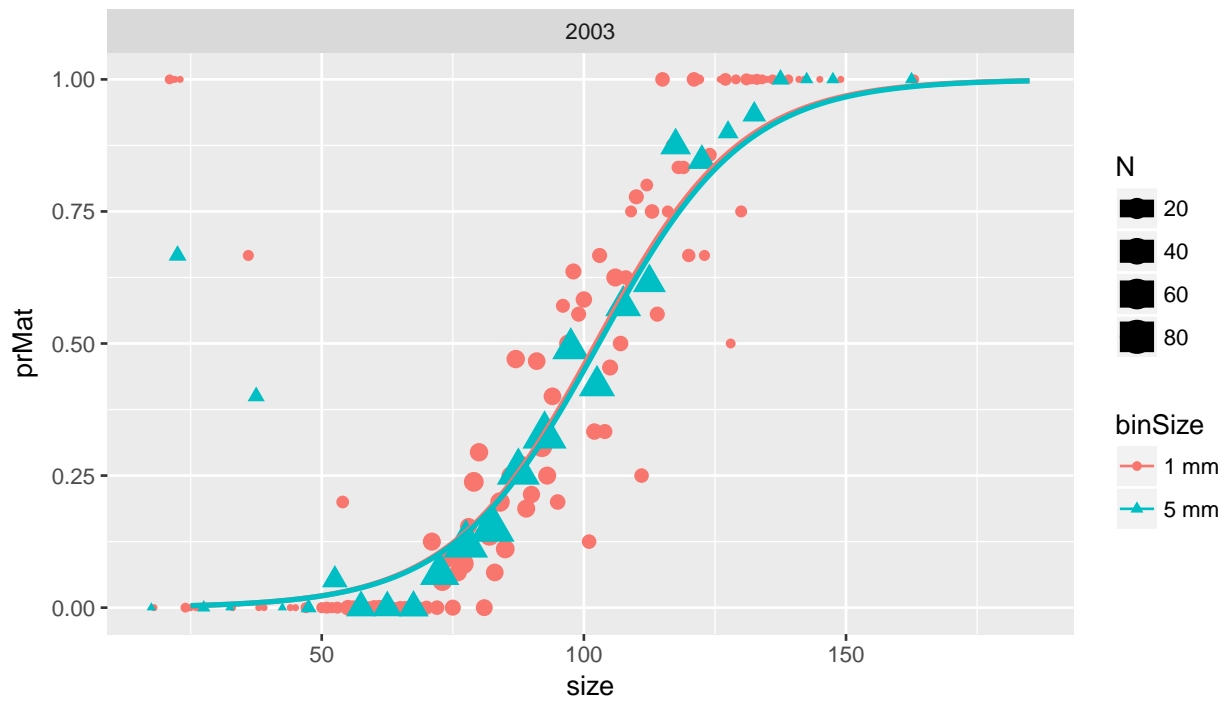


Figure 14: Figure 1. Estimated male maturity ogives for 2003.

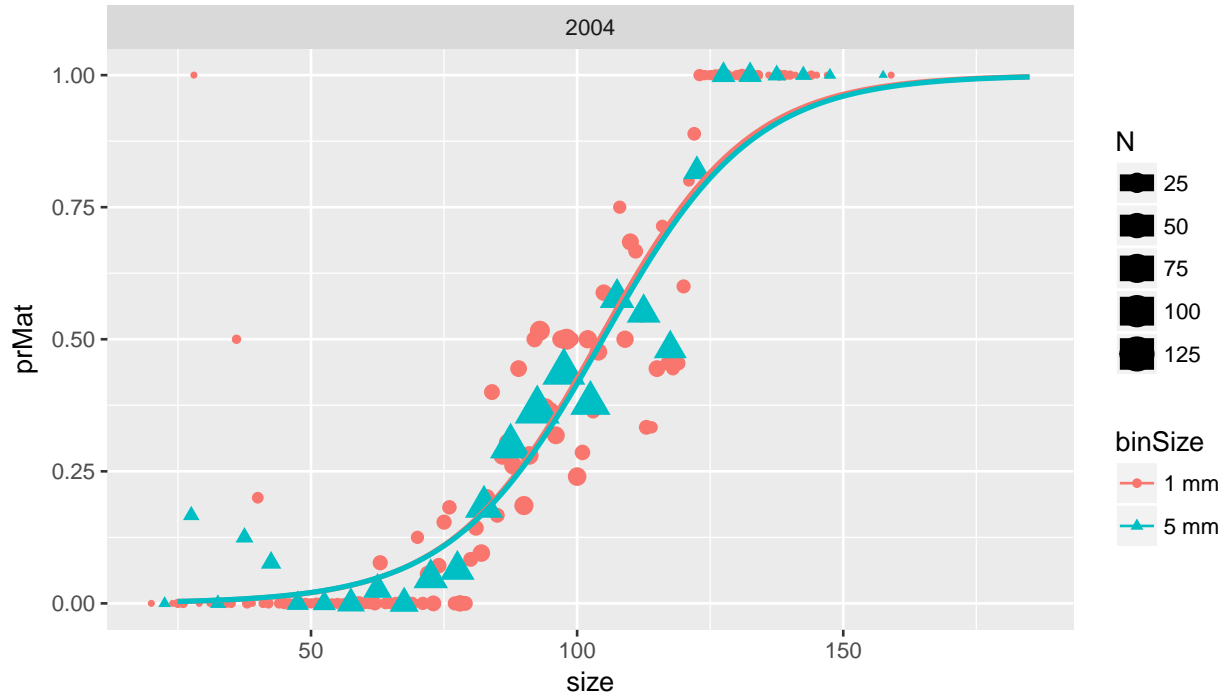


Figure 15: Figure 1. Estimated male maturity ogives for 2004.

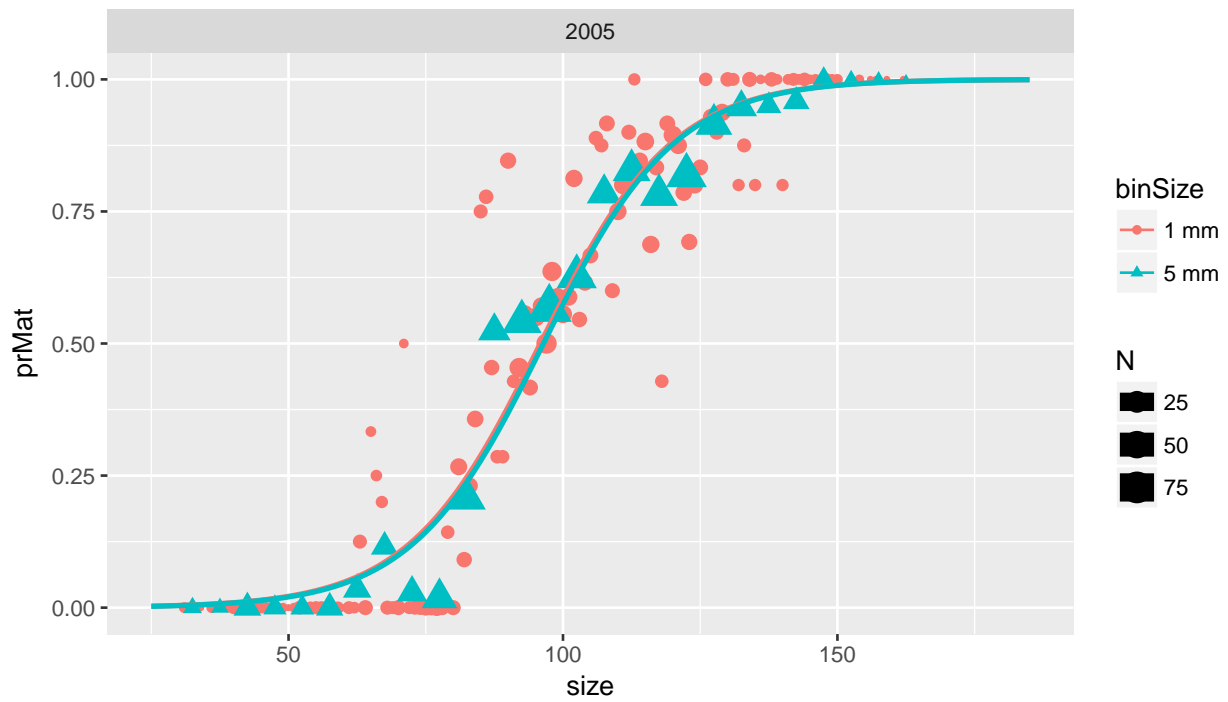


Figure 16: Figure 1. Estimated male maturity ogives for 2005.

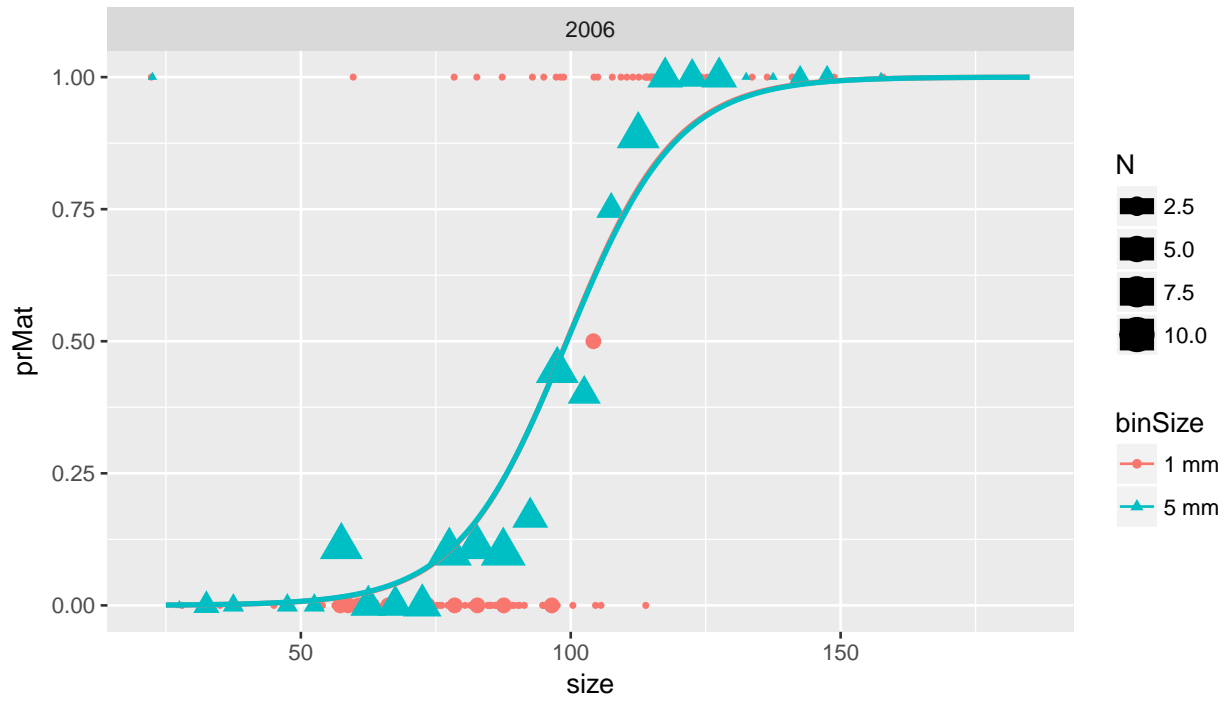


Figure 17: Figure 1. Estimated male maturity ogives for 2006.

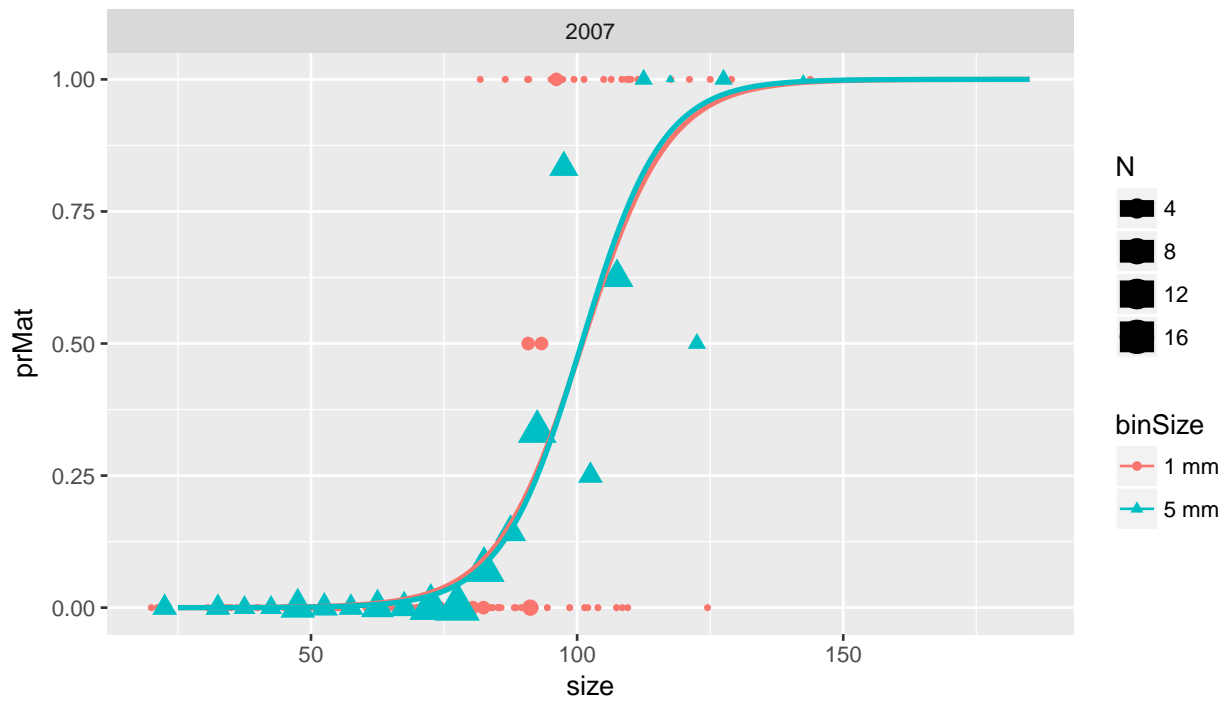


Figure 18: Figure 1. Estimated male maturity ogives for 2007.



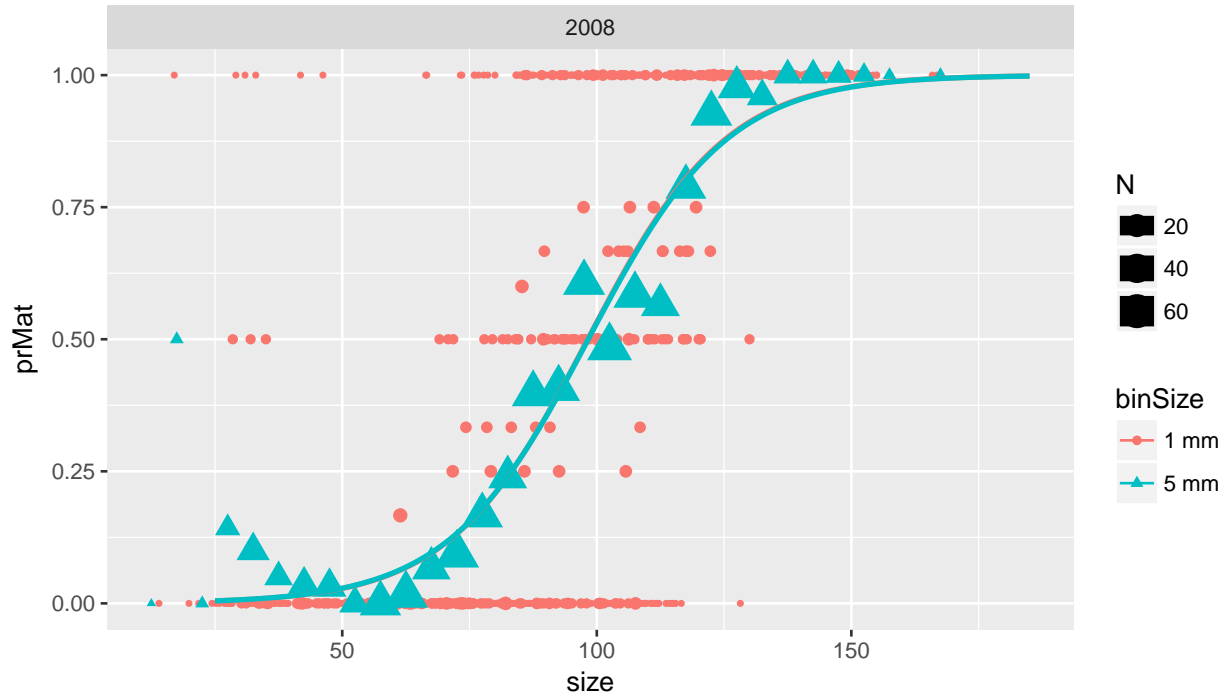


Figure 19: Figure 1. Estimated male maturity ogives for 2008.

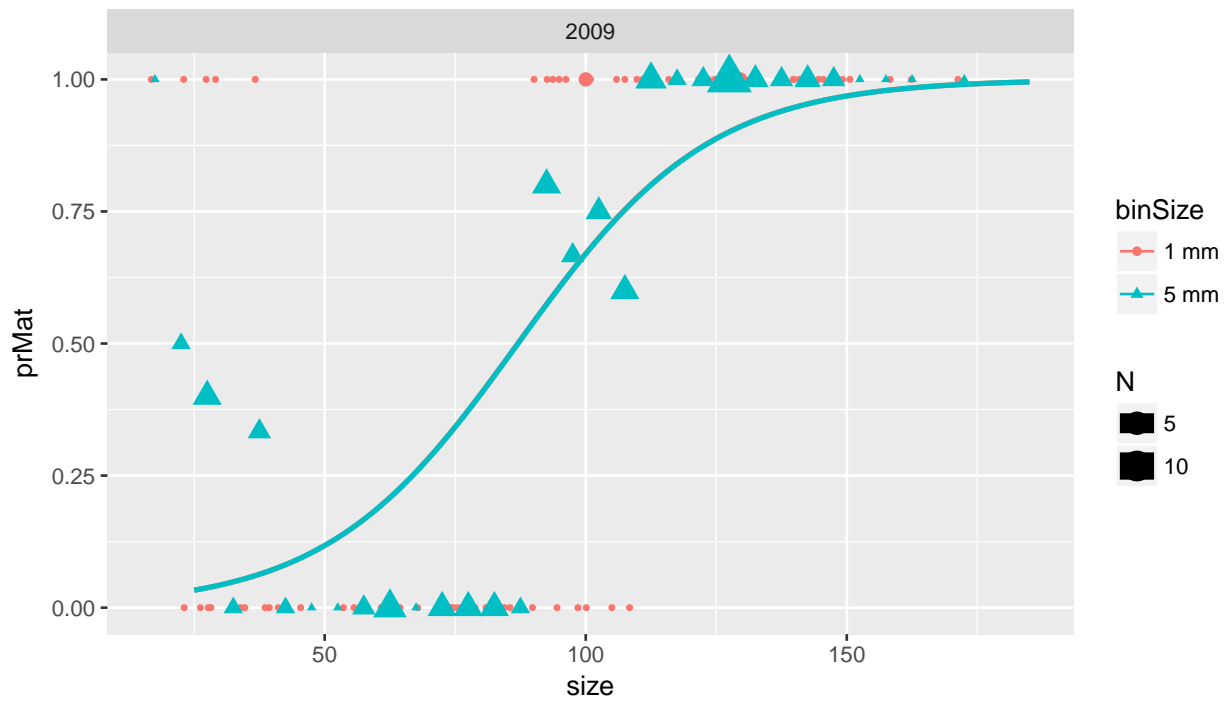


Figure 20: Figure 1. Estimated male maturity ogives for 2009.

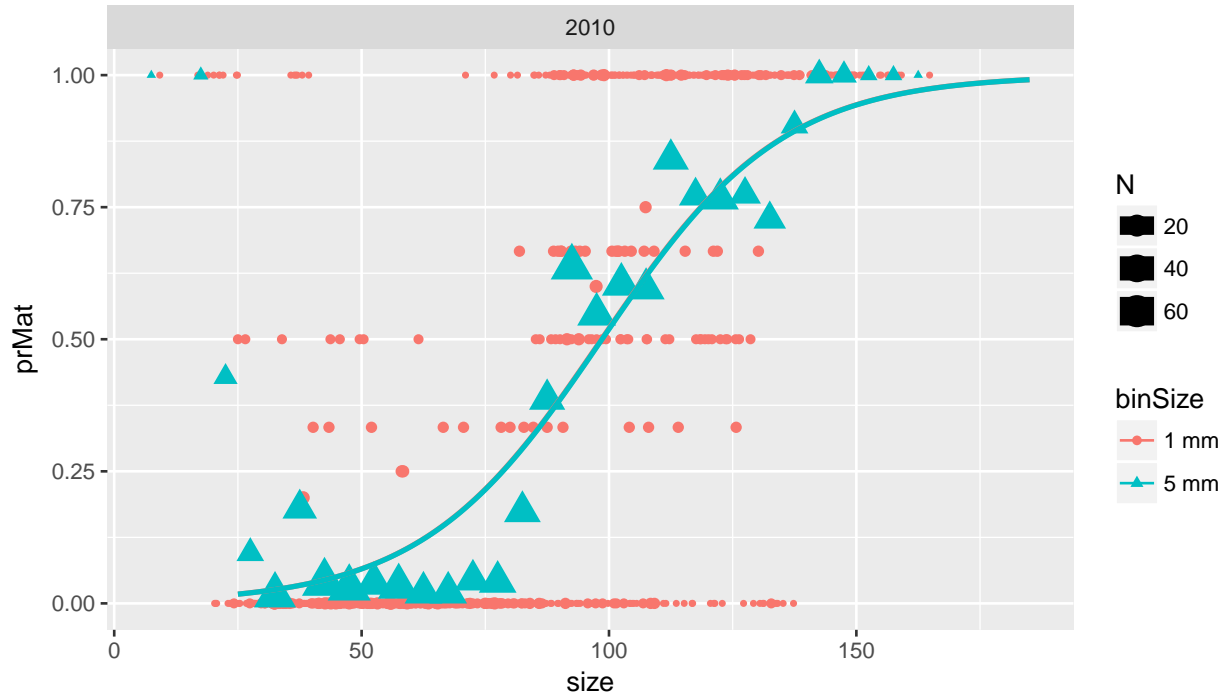


Figure 21: Figure 1. Estimated male maturity ogives for 2010.

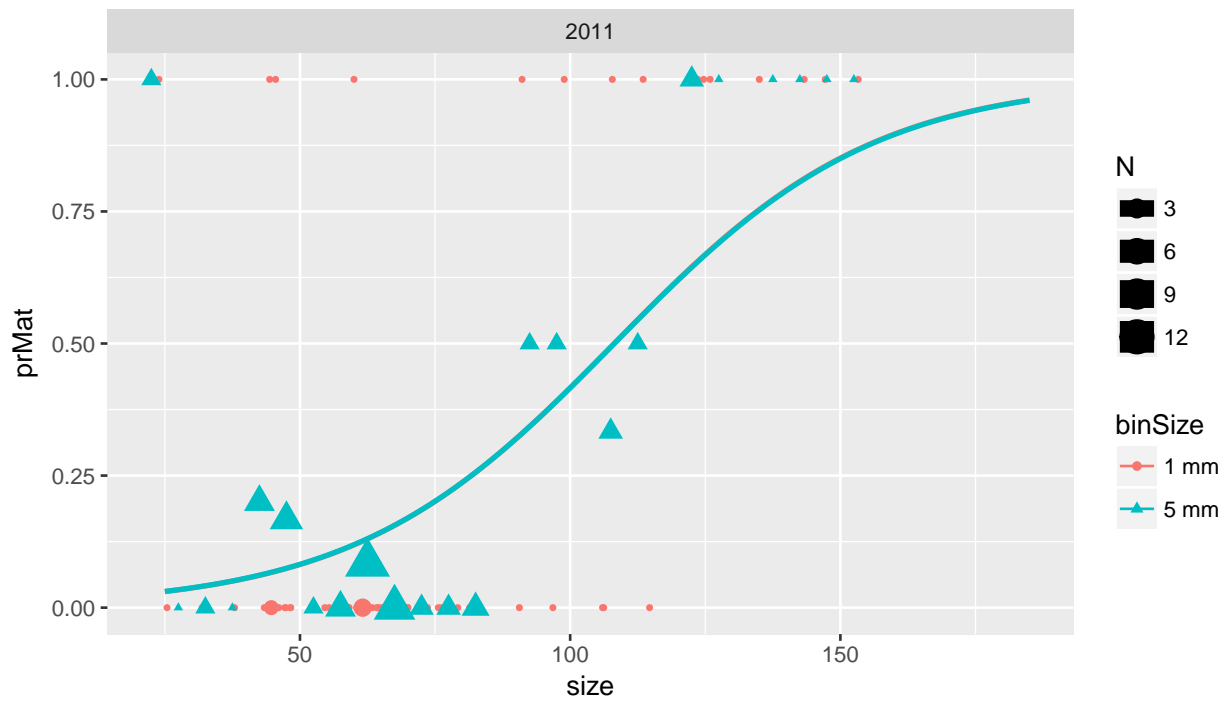


Figure 22: Figure 1. Estimated male maturity ogives for 2011.

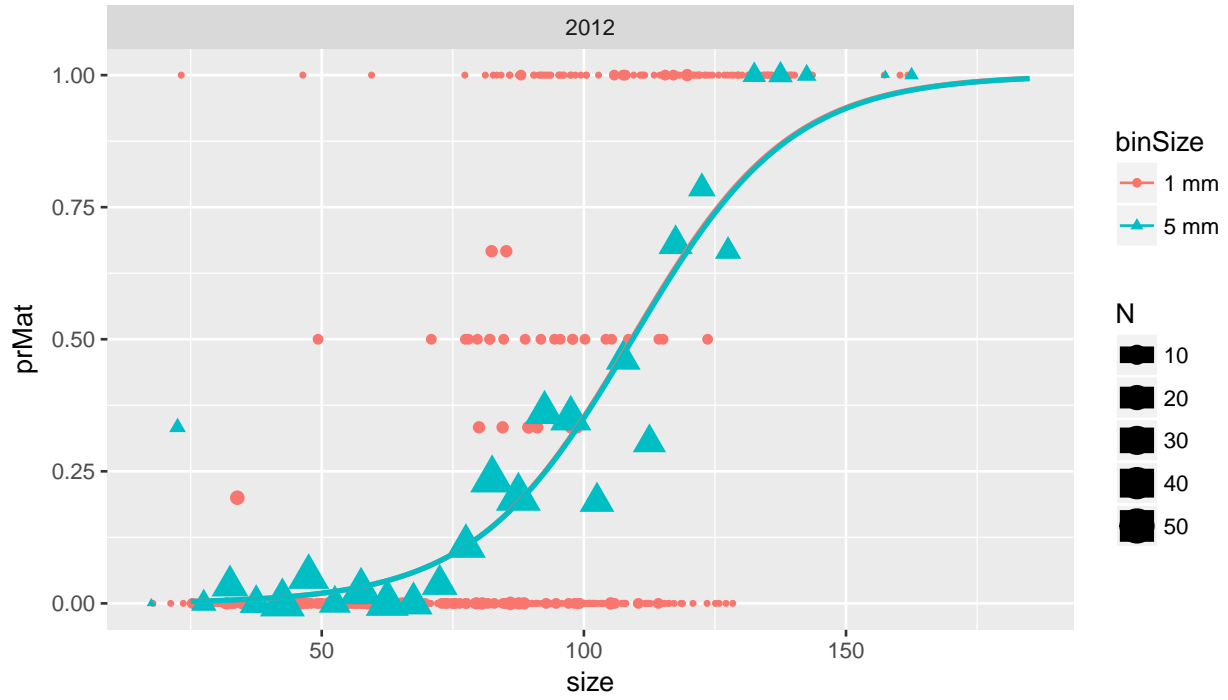


Figure 23: Figure 1. Estimated male maturity ogives for 2012.

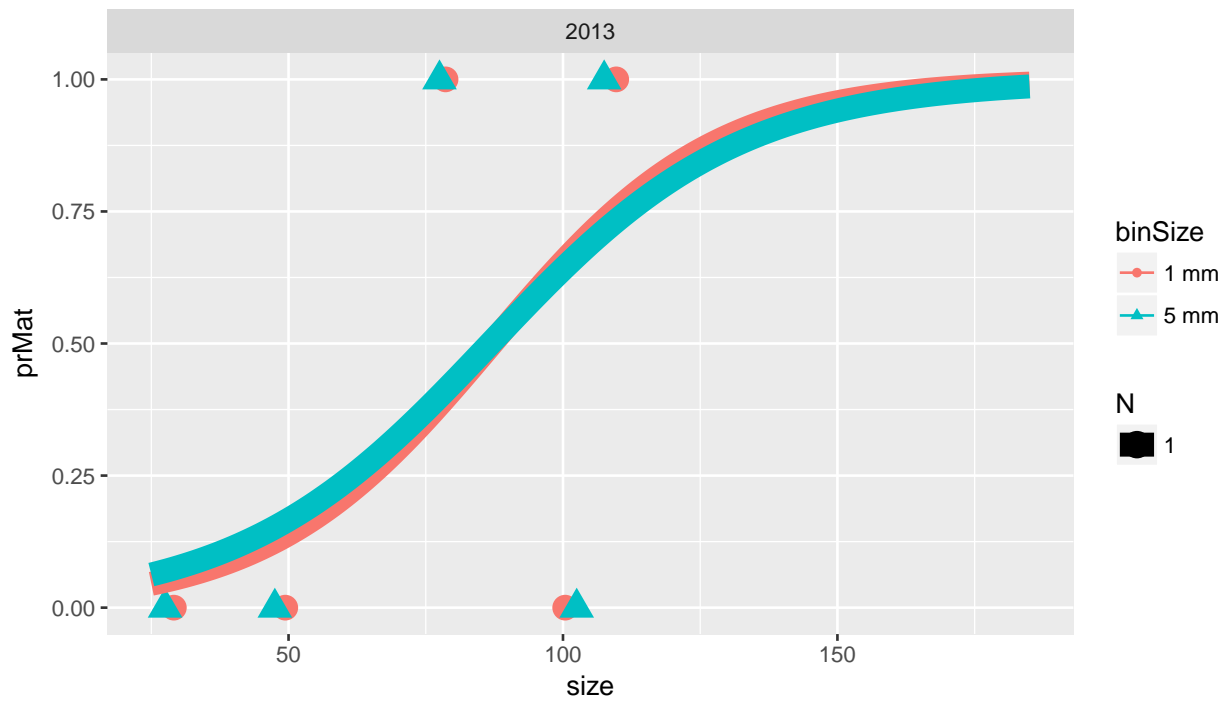


Figure 24: Figure 1. Estimated male maturity ogives for 2013.



Figure 25: Figure 1. Estimated male maturity ogives for 2014.

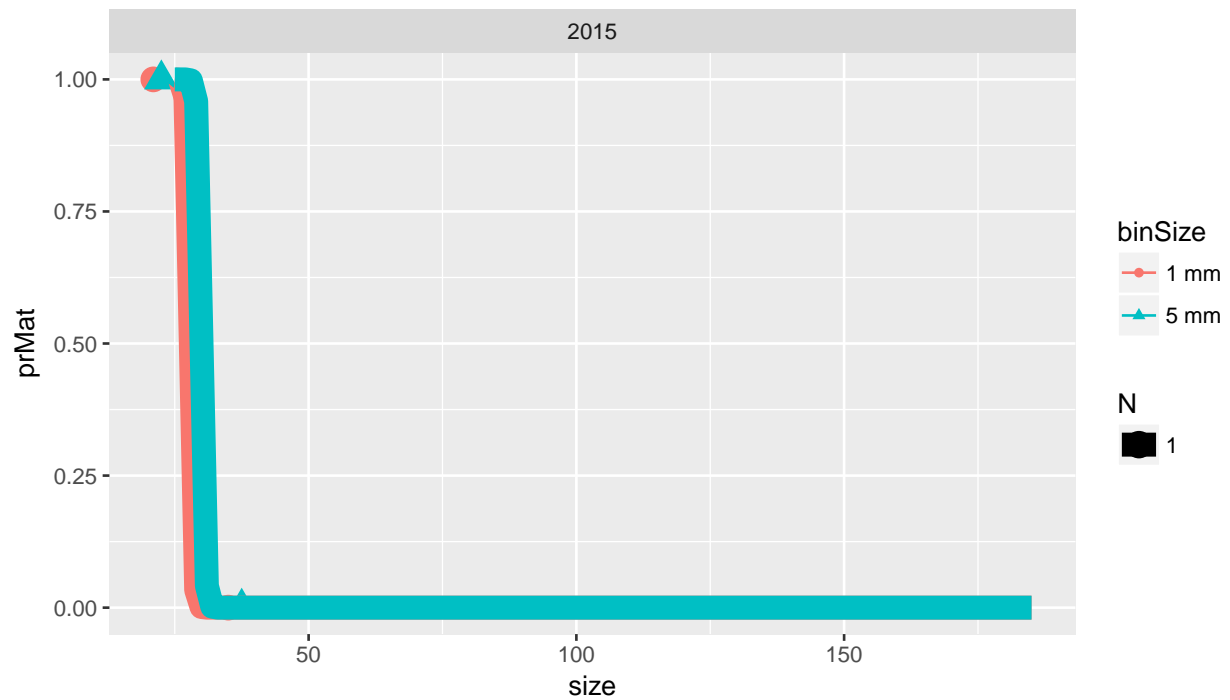


Figure 26: Figure 1. Estimated male maturity ogives for 2015.

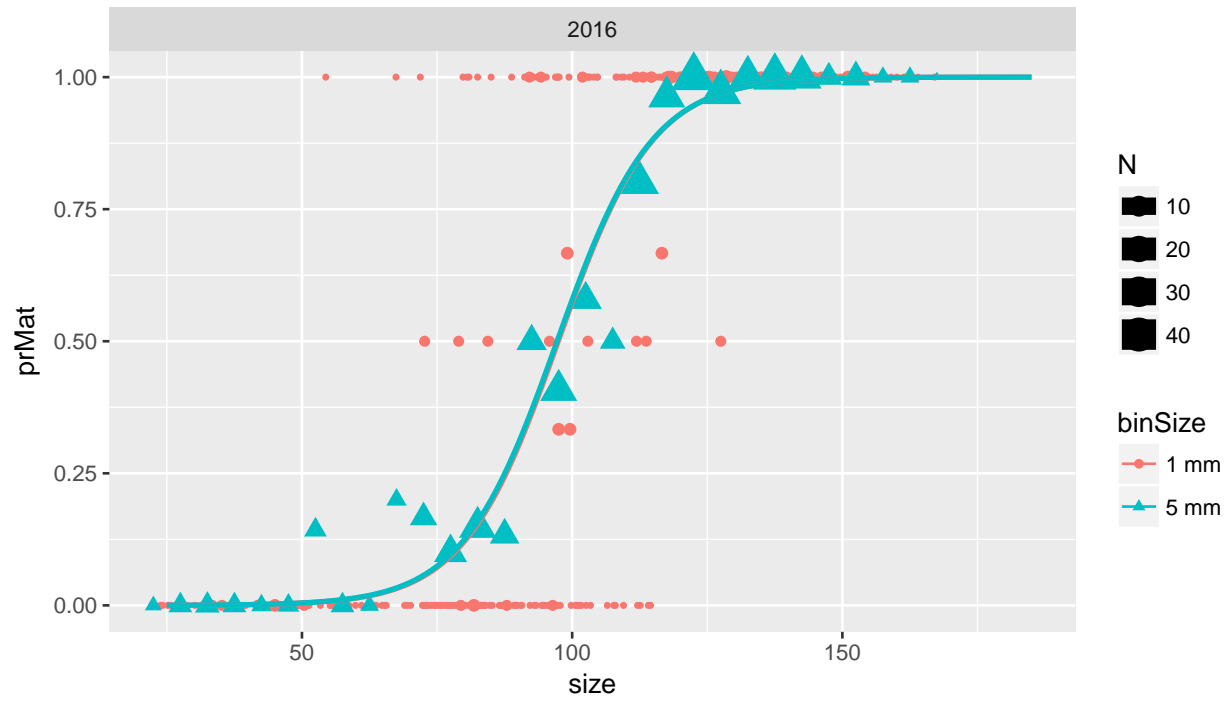


Figure 27: Figure 1. Estimated male maturity ogives for 2016.

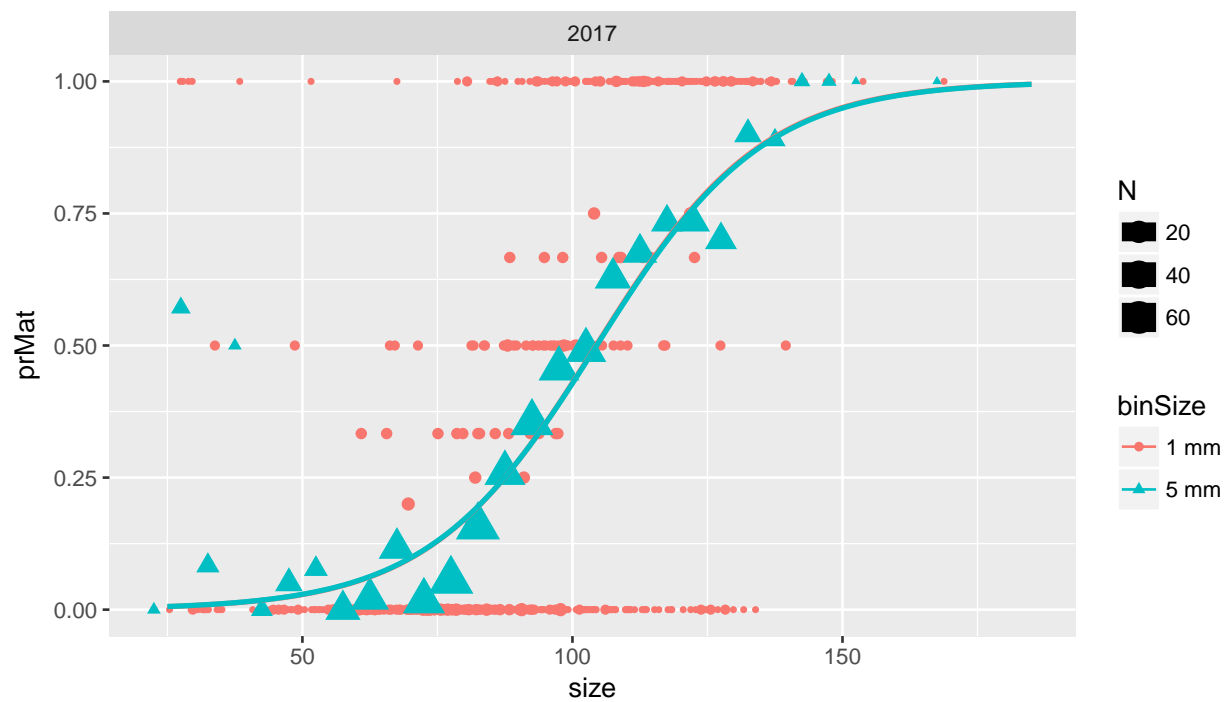


Figure 28: Figure 1. Estimated male maturity ogives for 2017.