

More simulation analyses

By Julie Yee

September 26, 2011

Objective: Continue the simulation analyses from P-207 and P-220 to characterize the estimation precision among varying sizes of fresh carcass detection experiments, ranging from 25 to 200 carcass trials per experiment. Since the first year of QAQC included approx. 25 fresh carcass trials, then the current simulations focus on the precision that could be expected from up to another 25 fresh carcasses from a 2nd year of QAQC, or a cumulative total of 25-50 carcass trials. Simulations based on 100 and 200 carcasses are included for comparison.

Method: All methods are the same as described in P-207 and P-220 except for the following changes:

1. Each simulated experiment is comprised of one QAQC experiment (ranging in sizes 25, 30, 40, 50, 100, and 200 carcass trials) and one year of monitoring naturally deposited fatalities.
2. All experiments were replicated 100 times and the distributions of adjusted estimates are presented.
3. Detections were simulated under the Smallwood model (abbreviated "SS") and my hypothetical P-207 model (abbreviated "JY")
4. For each sample size (25-200) and detection model (SS, JY), there are eight variations of QAQC which vary by:
 - length of trial: 90-day experiments (where trial carcasses are left out) and 1-rotation experiments (where carcass trials are removed by supervisor after 1st rotation),
 - use of secondary searches: primary + secondary searches, and primary-only searches
 - quality of carcass age information: known, estimated with error up to 7 days
5. Adjustment factors were derived from simulated QAQC data by regression against age
6. Adjusted fatality counts were derived by multiplying the number of fatalities detected from one year of simulated fatalities monitoring (does not include trial carcasses or secondarily detected carcasses) with the simulated adjustment factor.

Figure A. Distribution of adjusted counts, based on three sample sizes of QAQC (40, 50, or 100 carcasses) and two different trial lengths (1 rotation or 90-day), assuming JY detection model, and use of carcasses of estimated age, and primary and secondary searches. Vertical reference line represents the number of fatalities simulated, and thus the target value which the Adjusted Count is intended to estimate. The SD is estimated as the root mean square error.

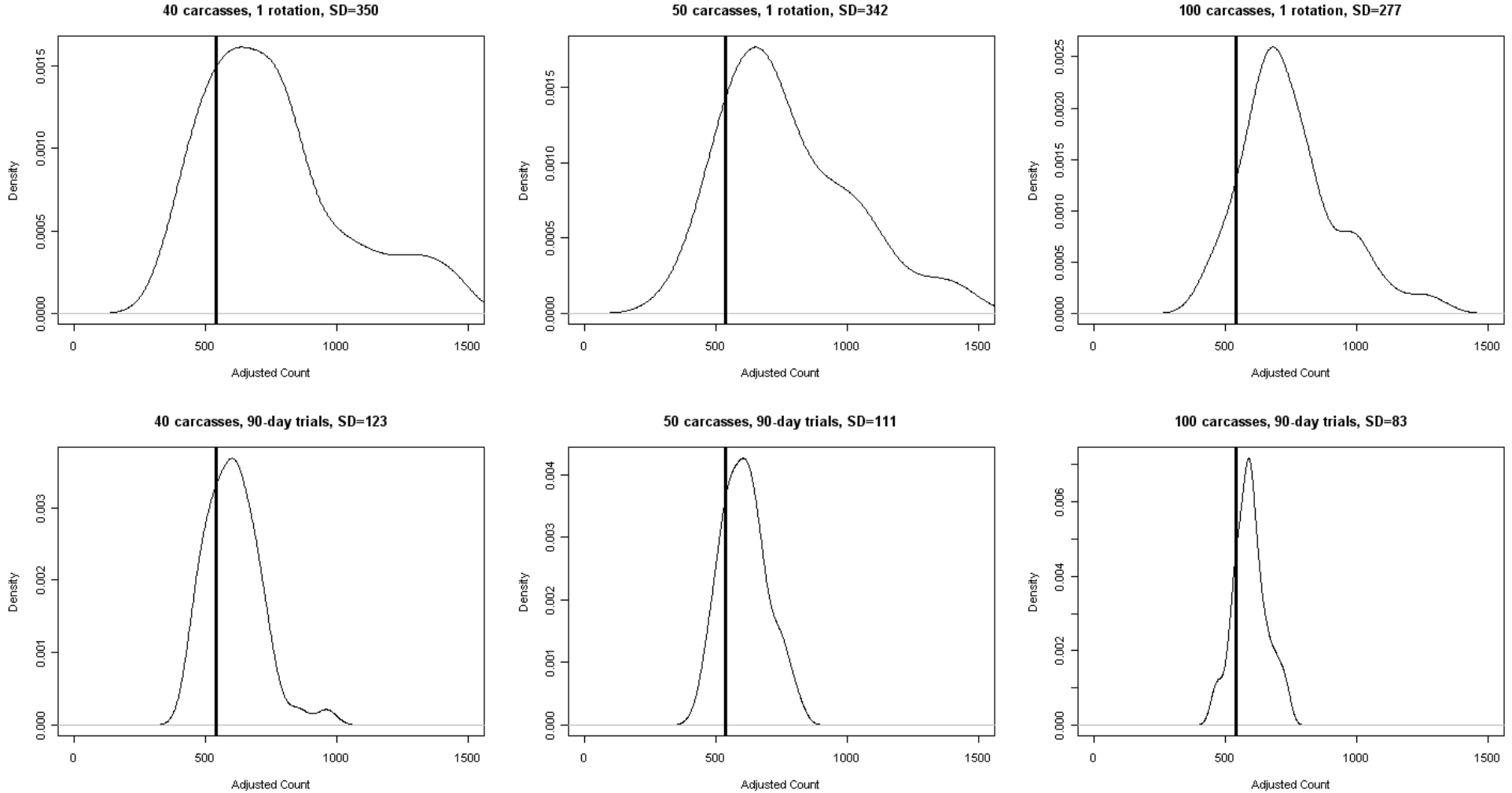


Table of Additional Figures:

Fig 1. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 25 carcass trials left out 90 days, using the SS detection model.....	5
Fig 2. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 25 carcass trials left out 1 rotation, using the SS detection model	6
Fig 3. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 30 carcass trials left out 90 days, using the SS detection model.....	7
Fig 4. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 30 carcass trials left out 1 rotation, using the SS detection model	8
Fig 5. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 40 carcass trials left out 90 days, using the SS detection model.....	9
Fig 6. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 40 carcass trials left out 1 rotation, using the SS detection model	10
Fig 7. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 50 carcass trials left out 90 days, using the SS detection model.....	11
Fig 8. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 50 carcass trials left out 1 rotation, using the SS detection model	12
Fig 9. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 100 carcass trials left out 90 days, using the SS detection model.....	13
Fig 10. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 100 carcass trials left out 1 rotation, using the SS detection model	14
Fig 11. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 200 carcass trials left out 90 days, using the SS detection model.....	15
Fig 12. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 200 carcass trials left out 1 rotation, using the SS detection model	16
Fig 13. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 25 carcass trials left out 90 days, using the JY detection model.....	17
Fig 14. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 25 carcass trials left out 1 rotation, using the JY detection model	18
Fig 15. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 30 carcass trials left out 90 days, using the JY detection model.....	19

Fig 16. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 30 carcass trials left out 1 rotation, using the JY detection model	20
Fig 17. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 40 carcass trials left out 90 days, using the JY detection model.....	21
Fig 18. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 40 carcass trials left out 1 rotation, using the JY detection model	22
Fig 19. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 50 carcass trials left out 90 days, using the JY detection model.....	23
Fig 20. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 50 carcass trials left out 1 rotation, using the JY detection model	24
Fig 21. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 100 carcass trials left out 90 days, using the JY detection model.....	25
Fig 22. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 100 carcass trials left out 1 rotation, using the JY detection model	26
Fig 23. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 200 carcass trials left out 90 days, using the JY detection model.....	27
Fig 24. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 200 carcass trials left out 1 rotation, using the JY detection model	28

Fig 1. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 25 carcass trials left out 90 days, using the SS detection model.

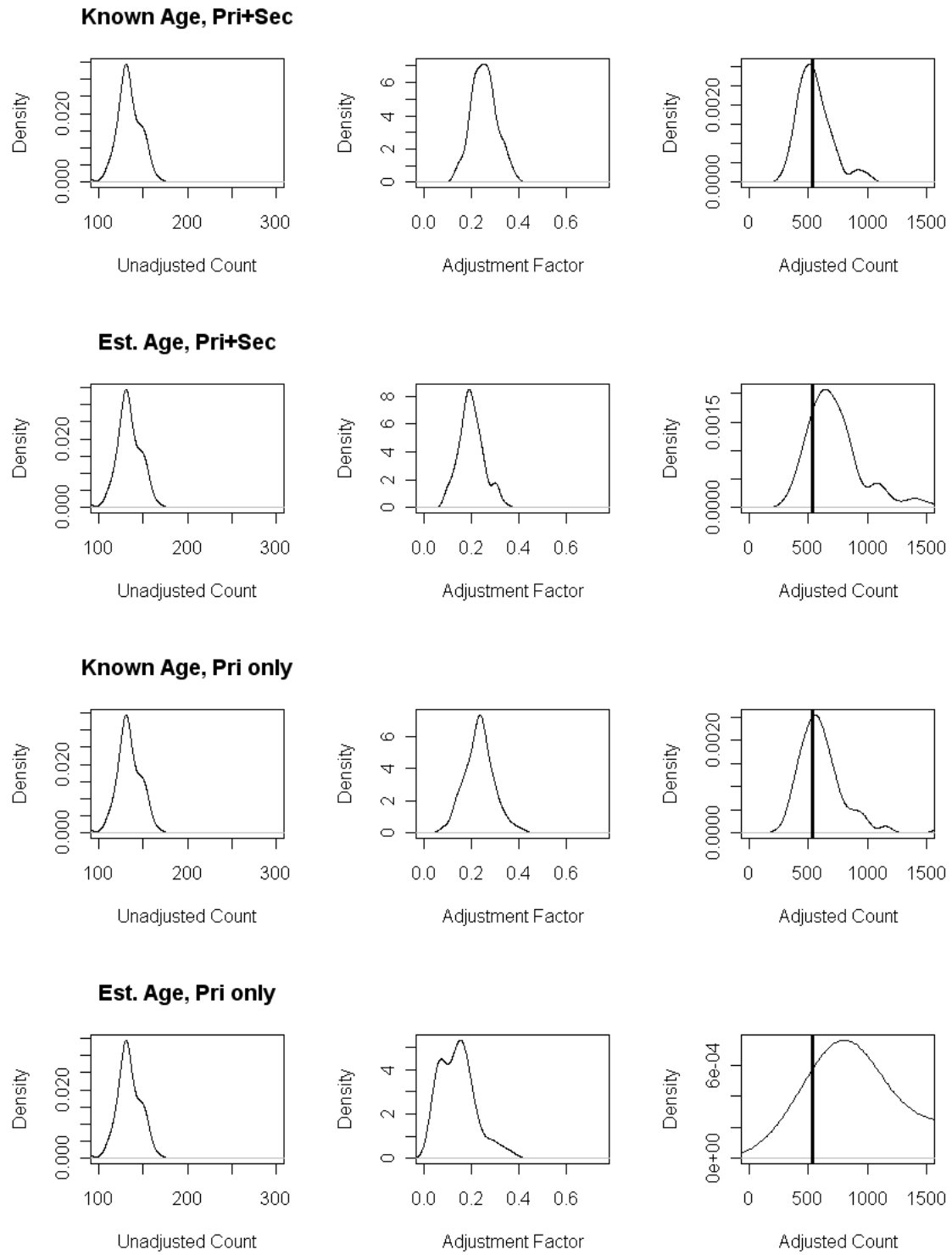


Fig 2. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 25 carcass trials left out 1 rotation, using the SS detection model

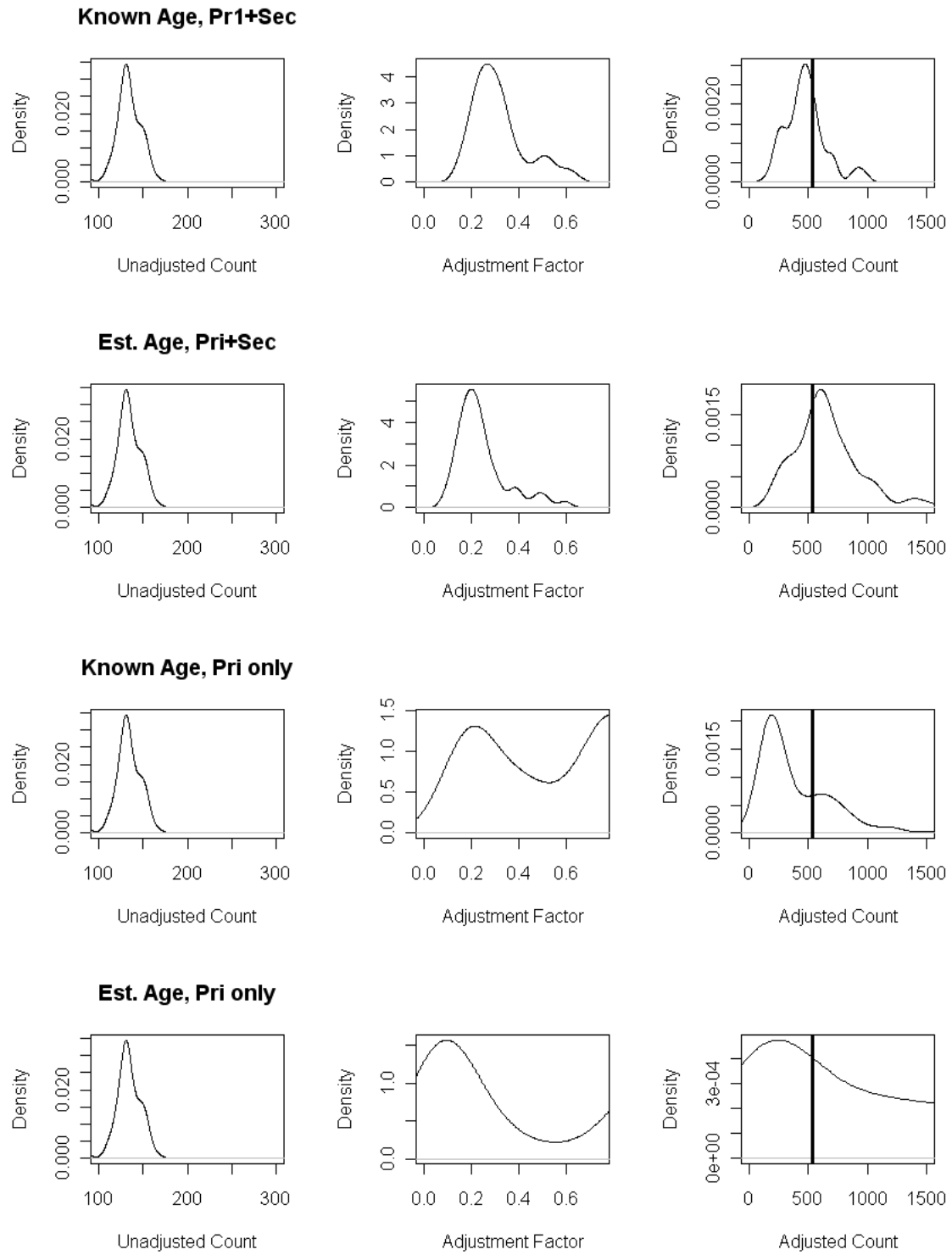


Fig 3. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 30 carcass trials left out 90 days, using the SS detection model

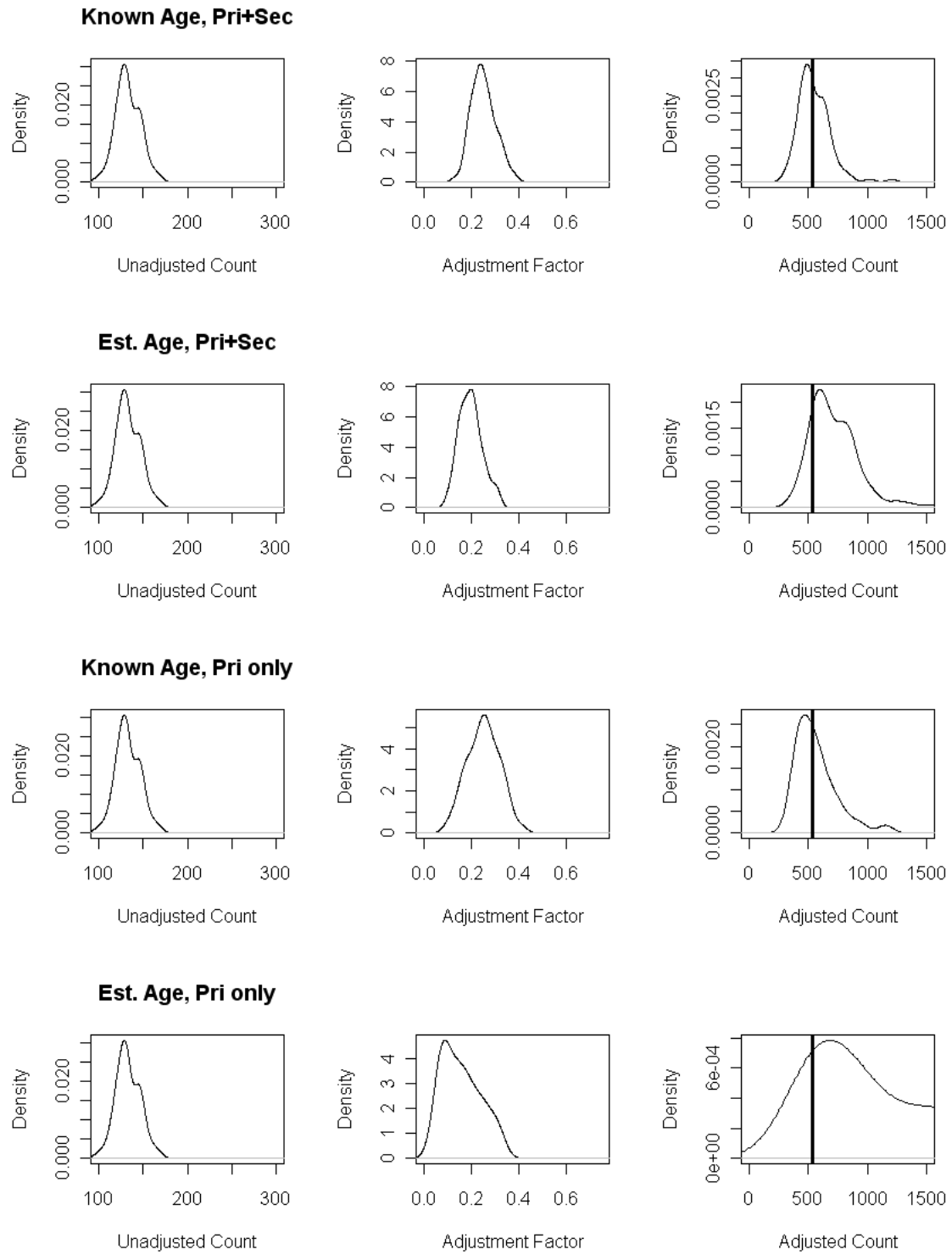


Fig 4. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 30 carcass trials left out 1 rotation, using the SS detection model

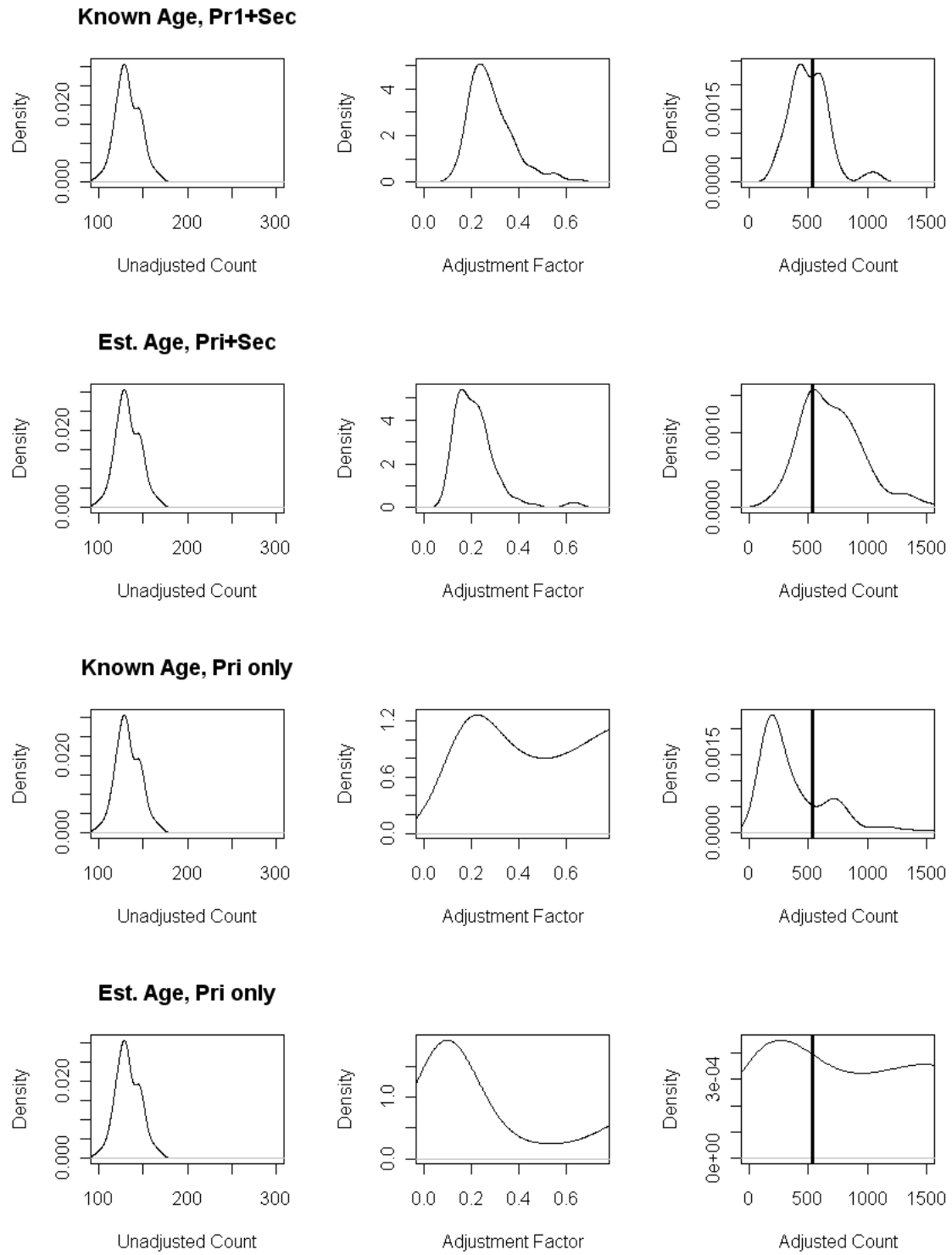


Fig 5. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 40 carcass trials left out 90 days, using the SS detection model

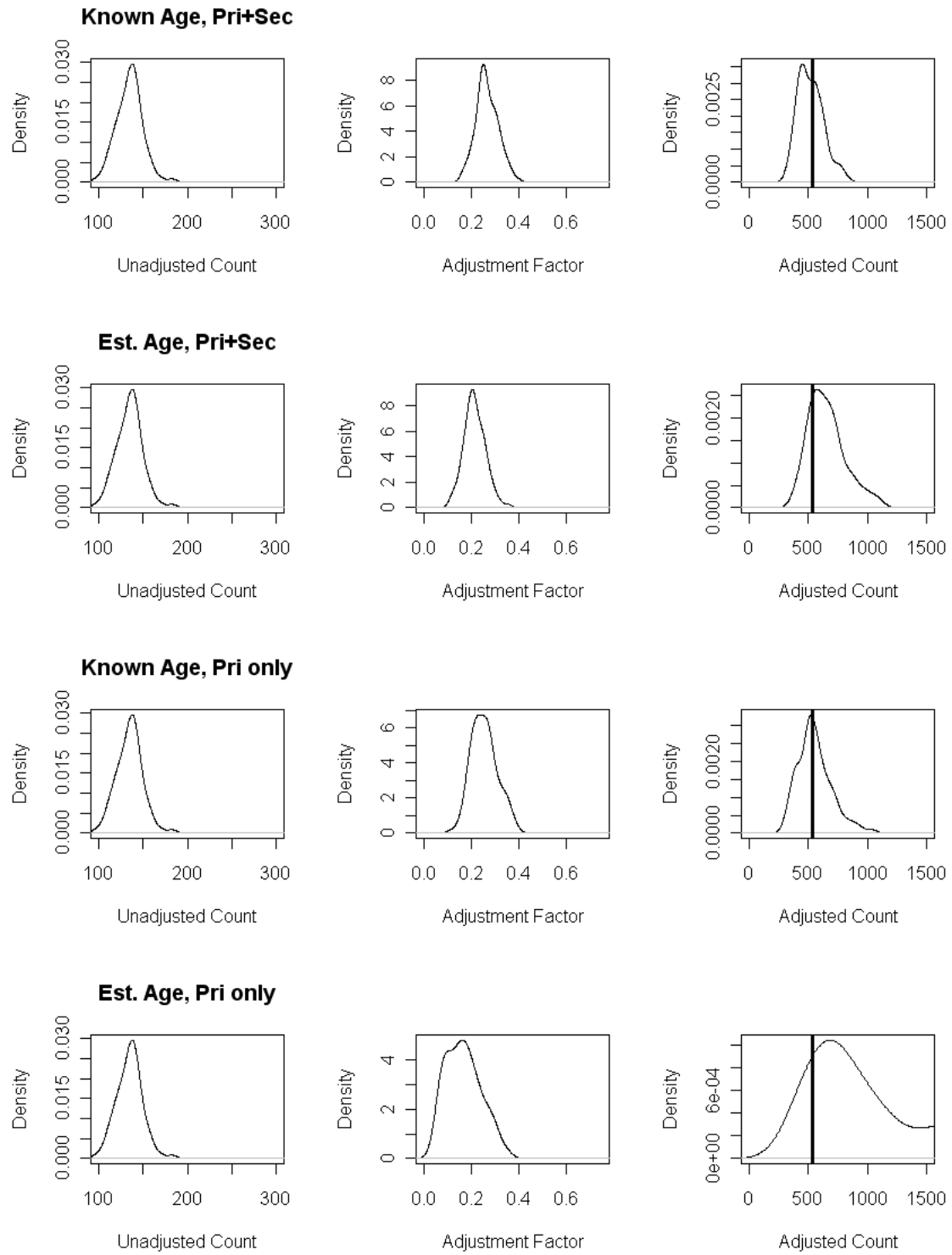


Fig 6. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 40 carcass trials left out 1 rotation, using the **SS** detection model

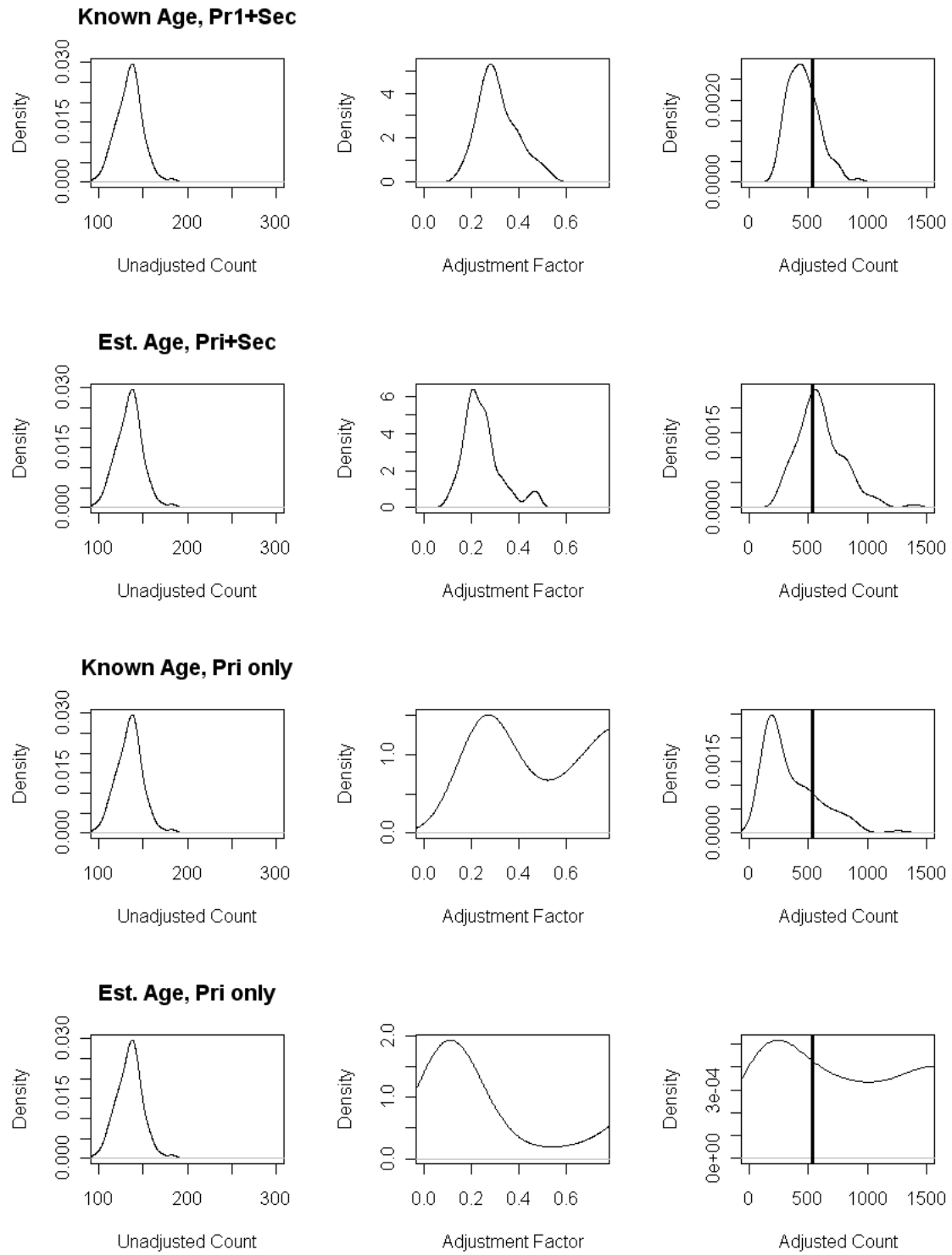


Fig 7. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on **50** carcass trials left out **90 days**, using the **SS** detection model

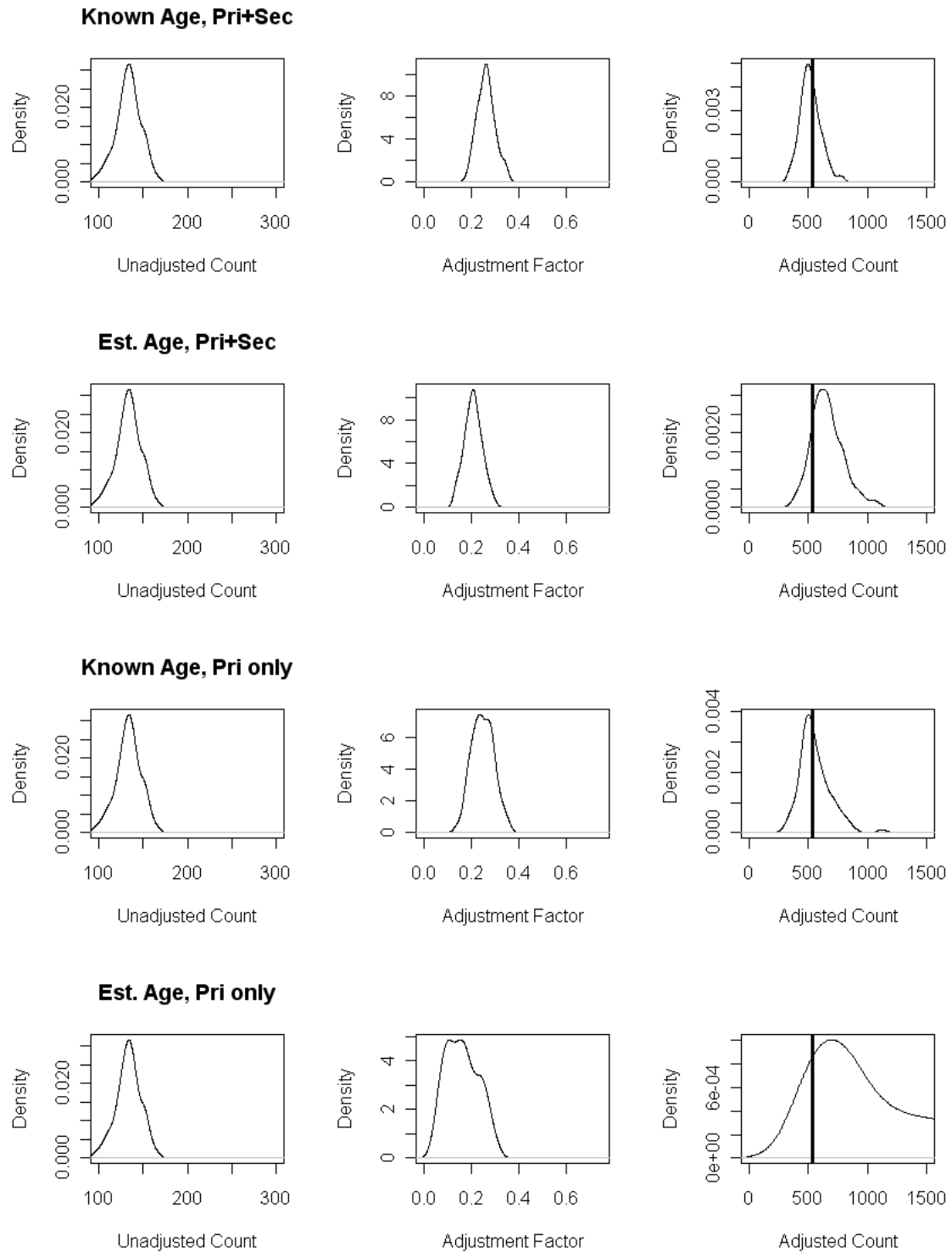


Fig 8. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on **50** carcass trials left out **1 rotation**, using the **SS** detection model

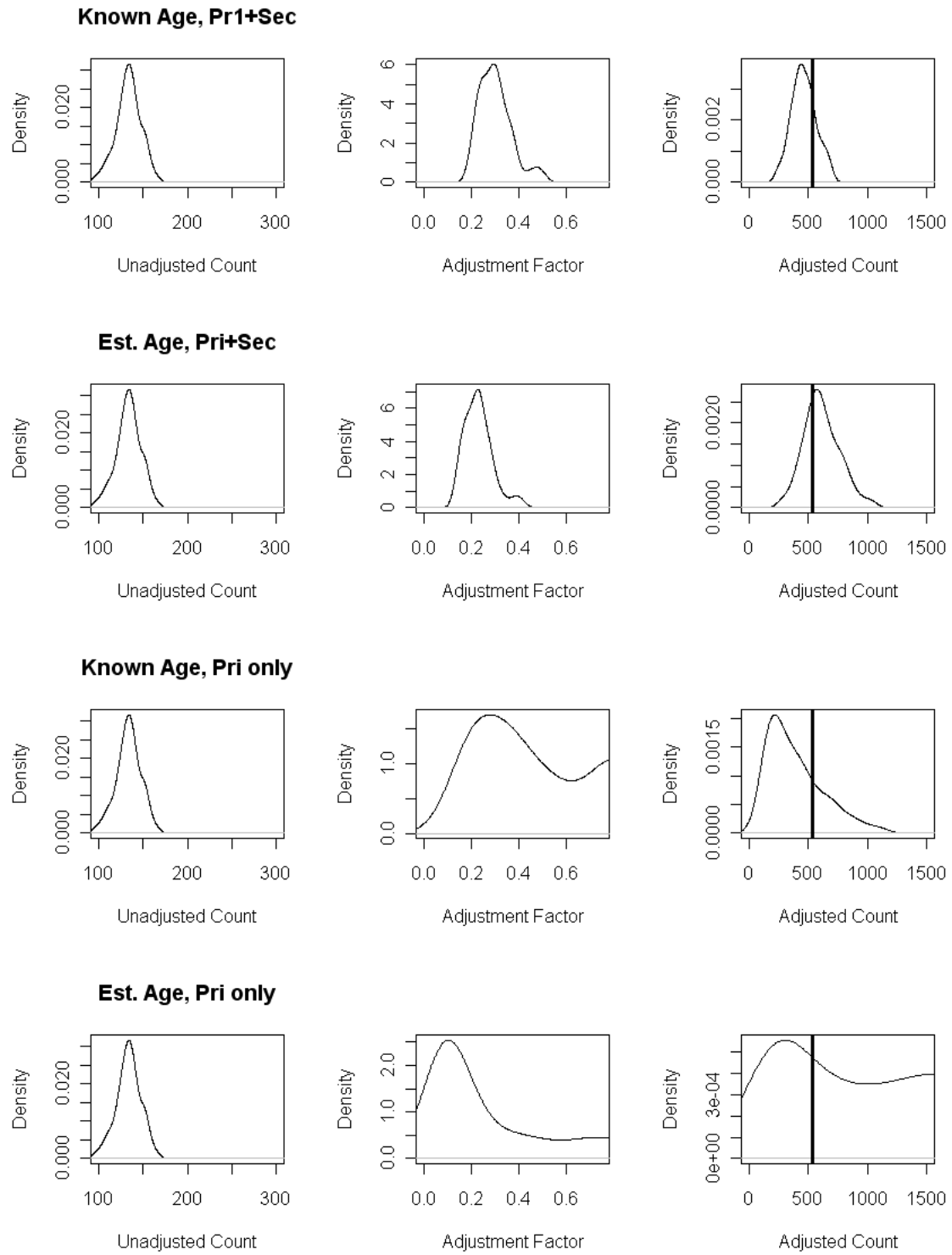


Fig 9. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 100 carcass trials left out 90 days, using the SS detection model

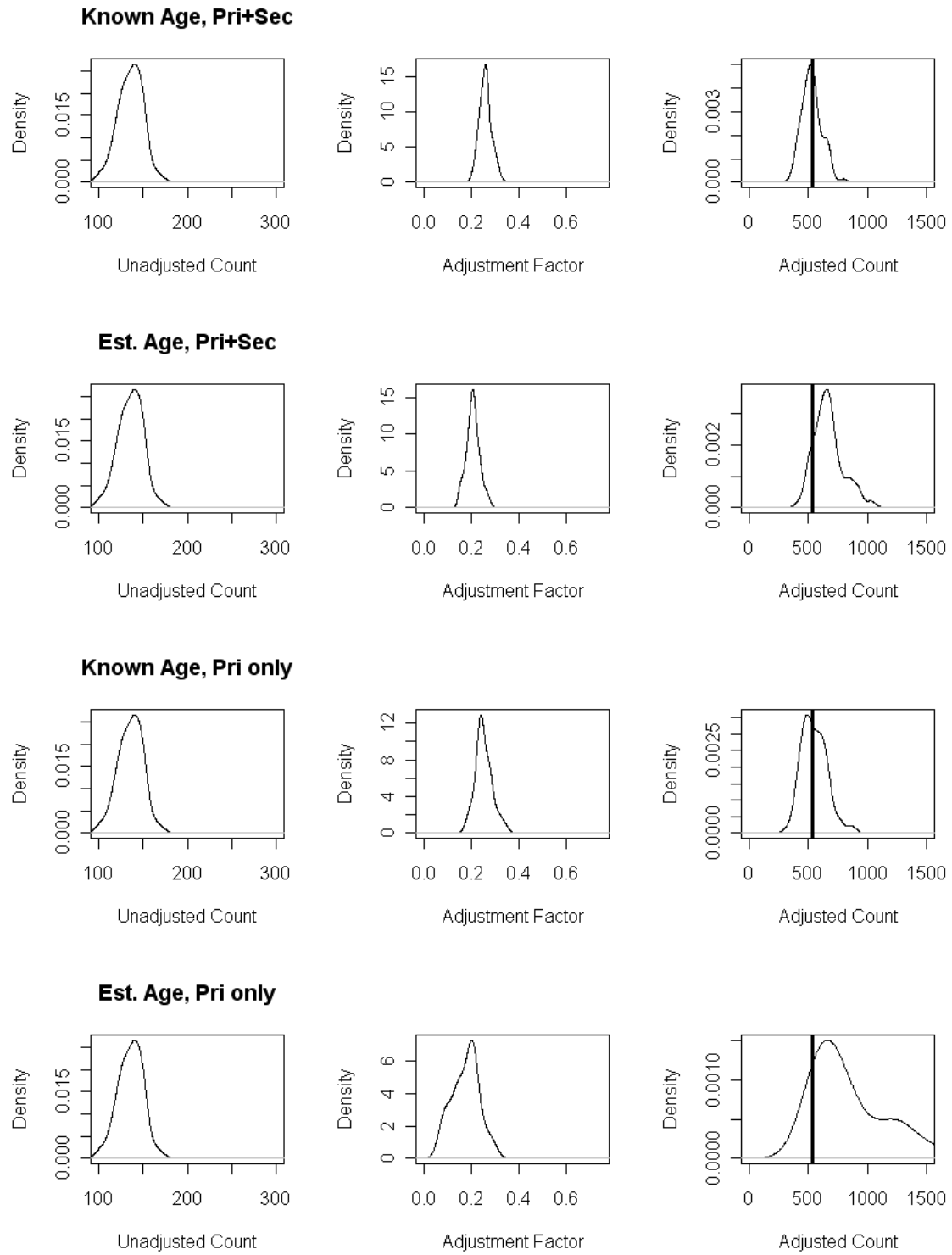


Fig 10. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 100 carcass trials left out 1 rotation, using the **SS** detection model

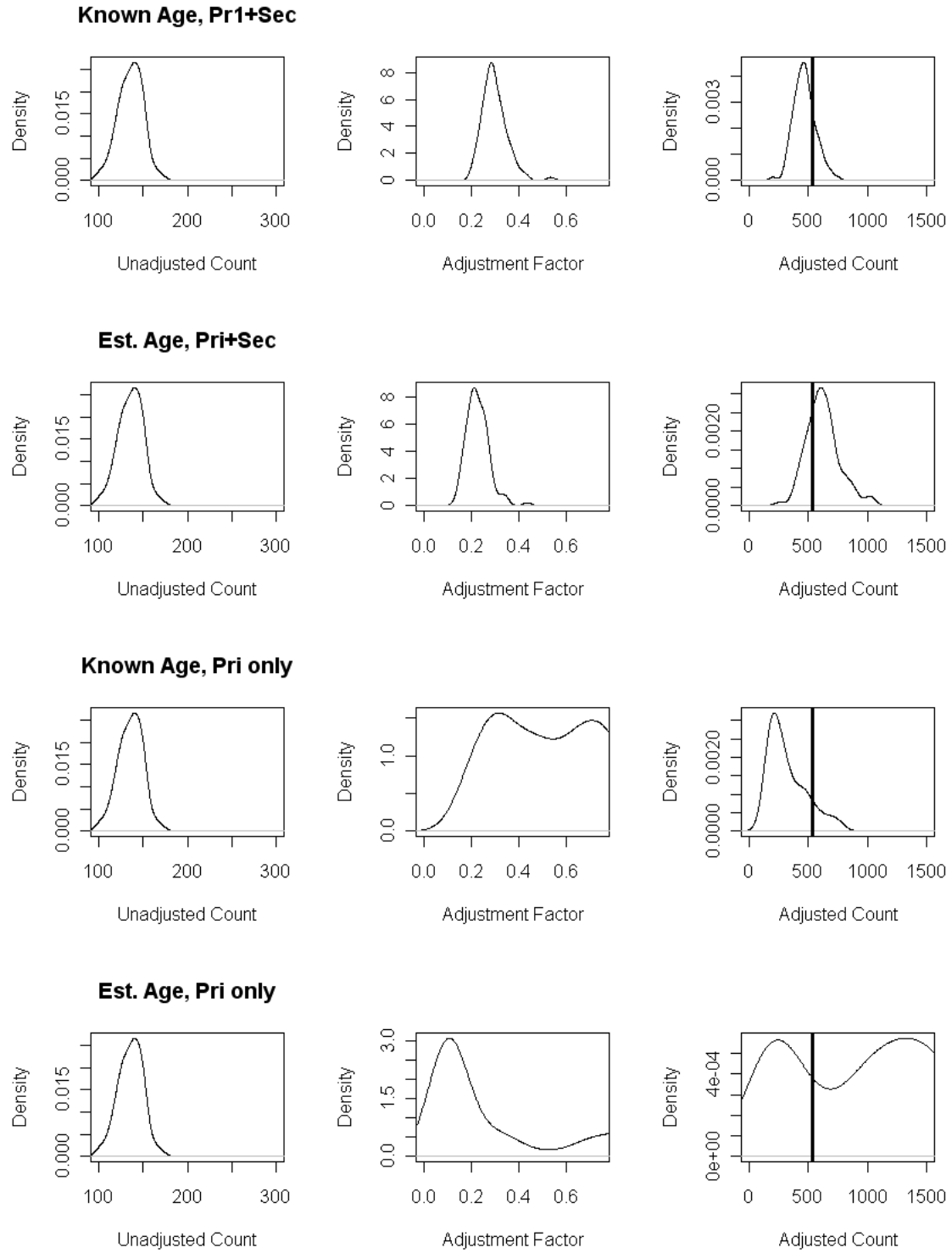


Fig 11. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on **200** carcass trials left out **90 days**, using the **SS** detection model

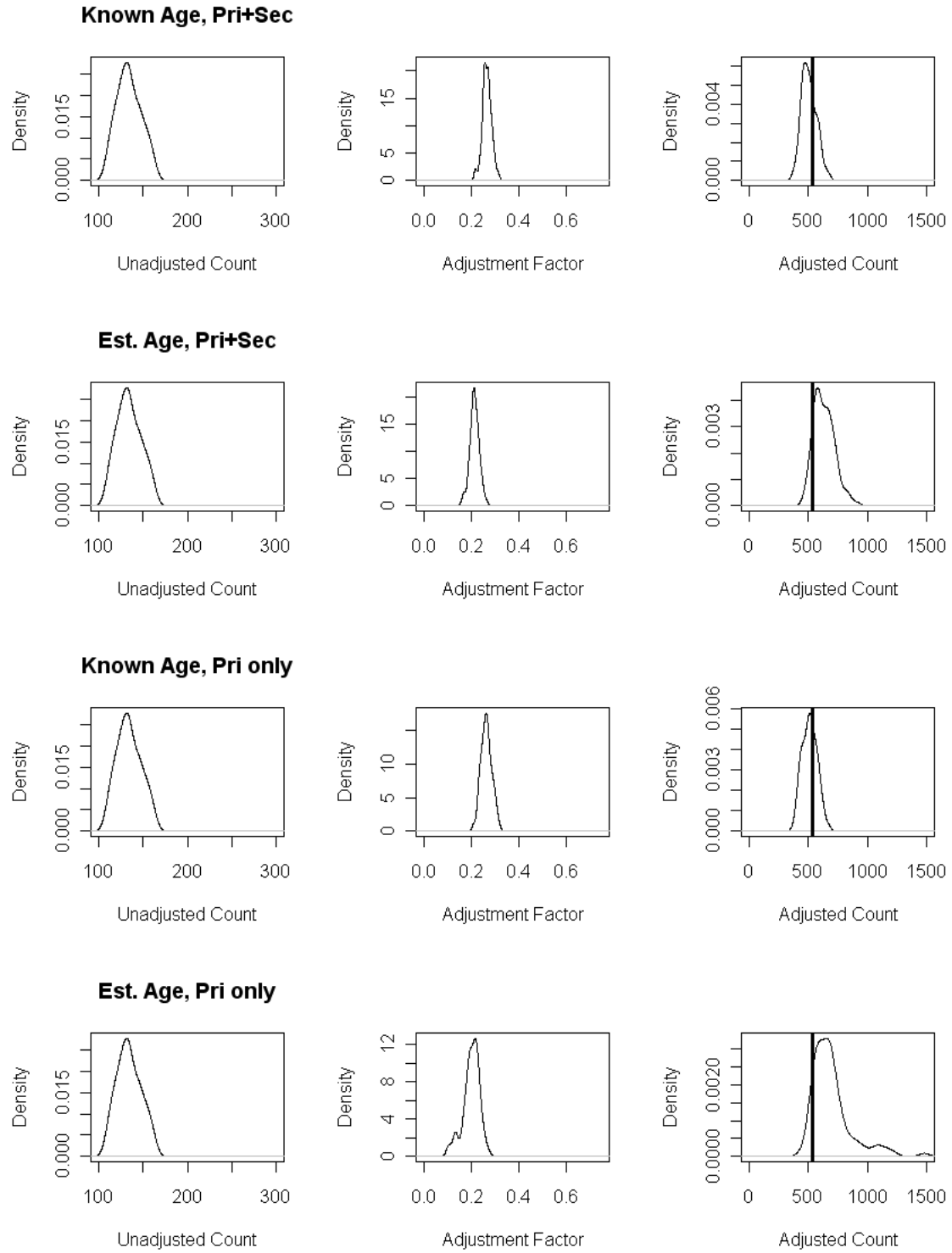


Fig 12. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on **200** carcass trials left out **1 rotation**, using the **SS** detection model

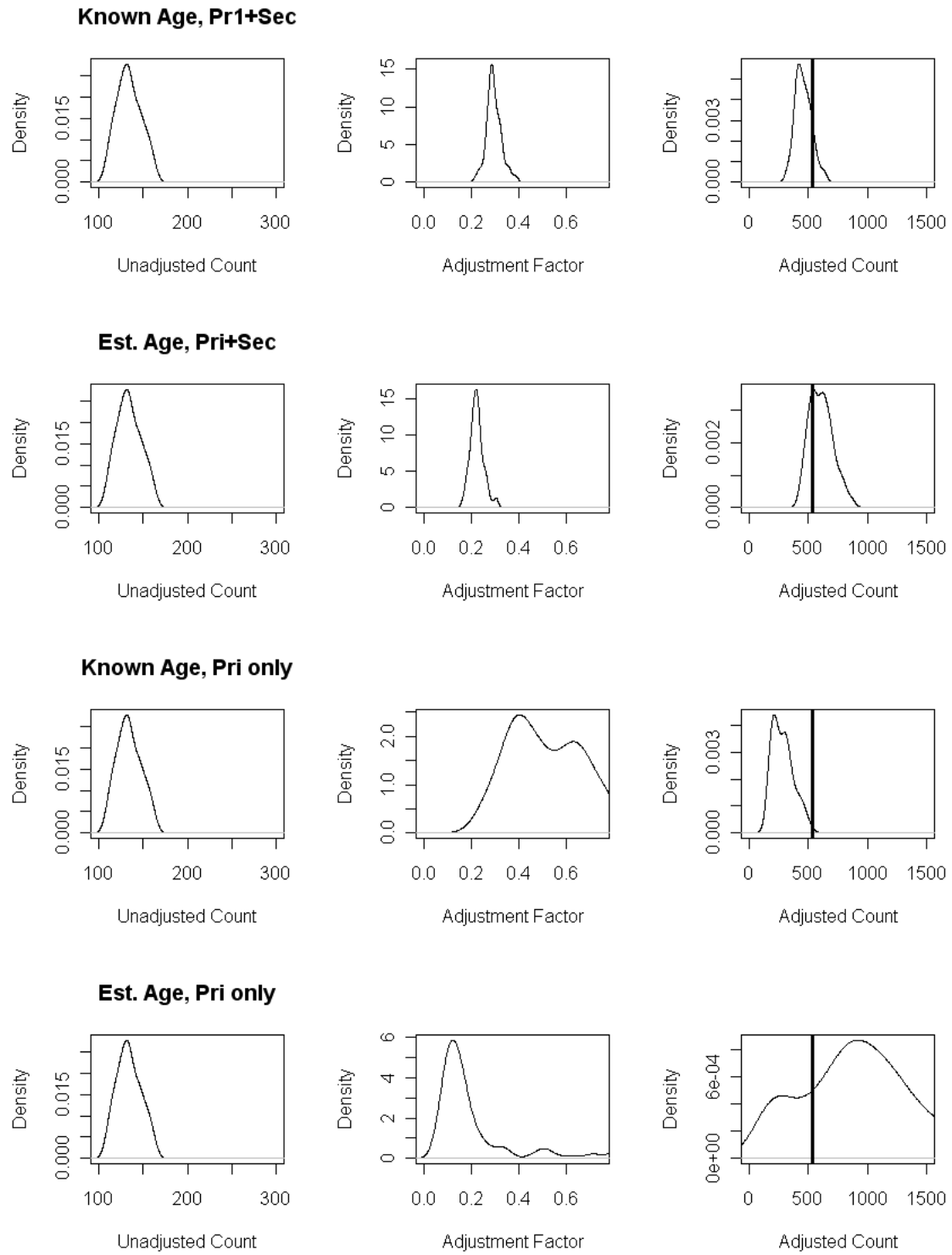


Fig 13. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 25 carcass trials left out 90 days, using the JY detection model.

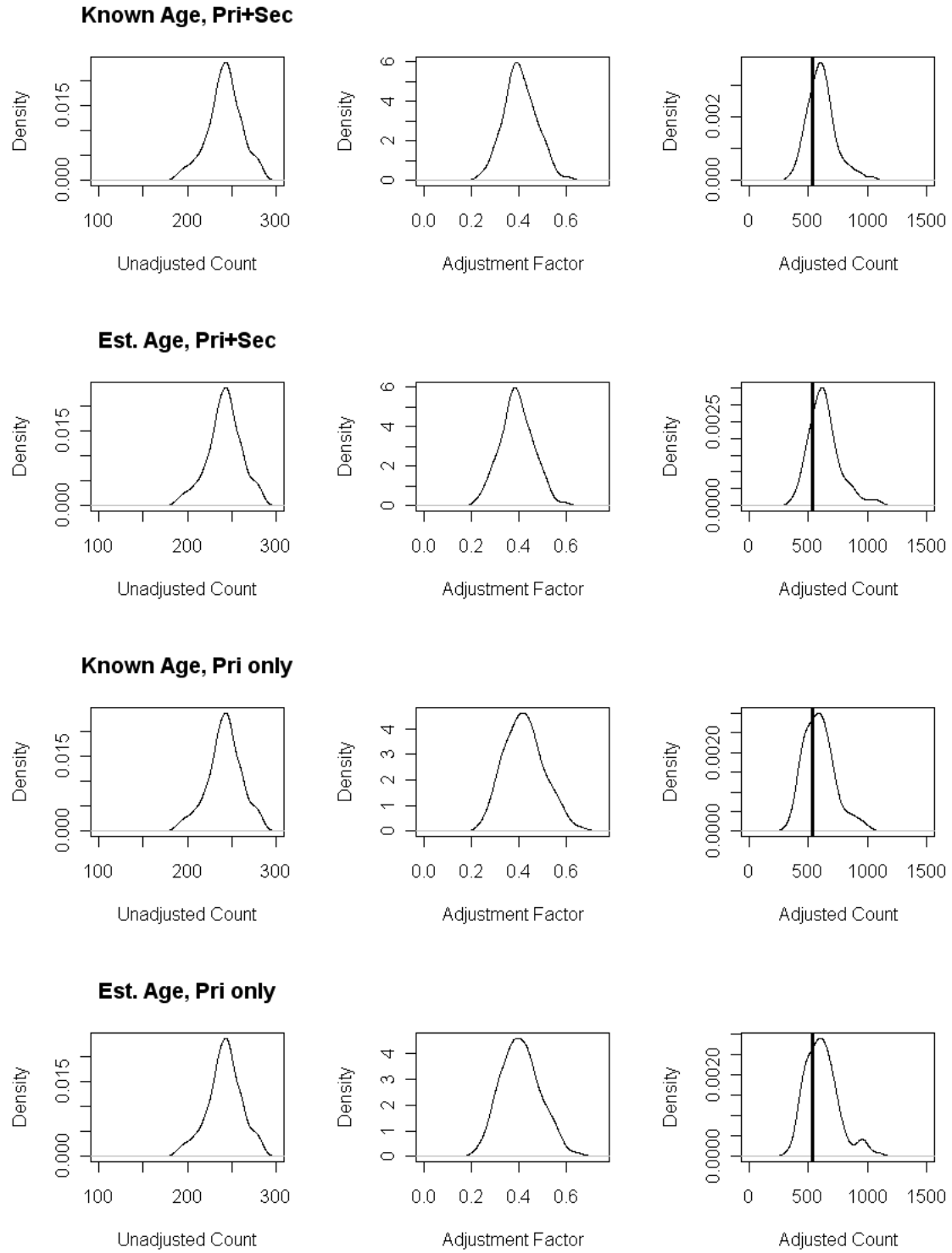


Fig 14. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 25 carcass trials left out 1 rotation, using the JY detection model

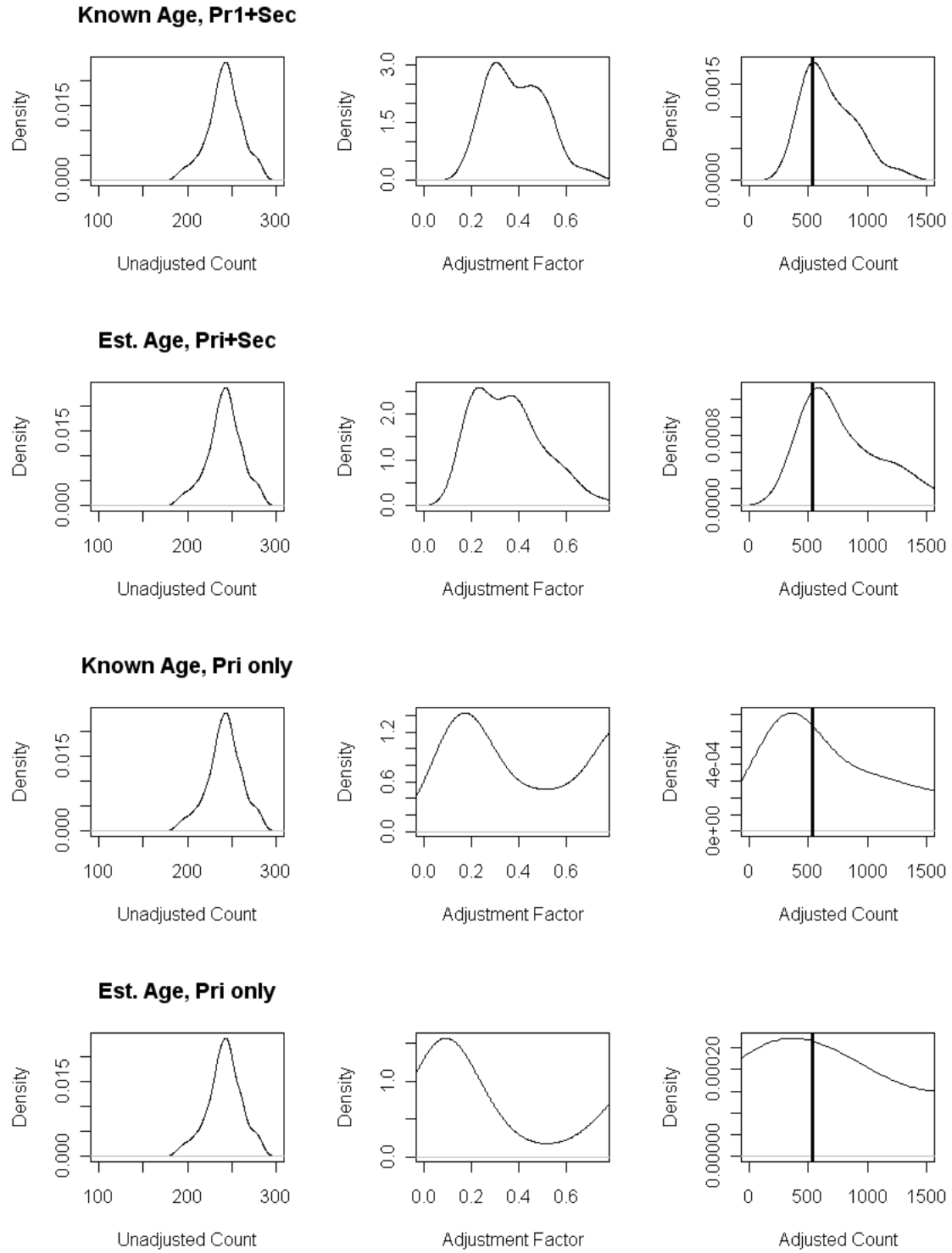


Fig 15. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 30 carcass trials left out 90 days, using the JY detection model

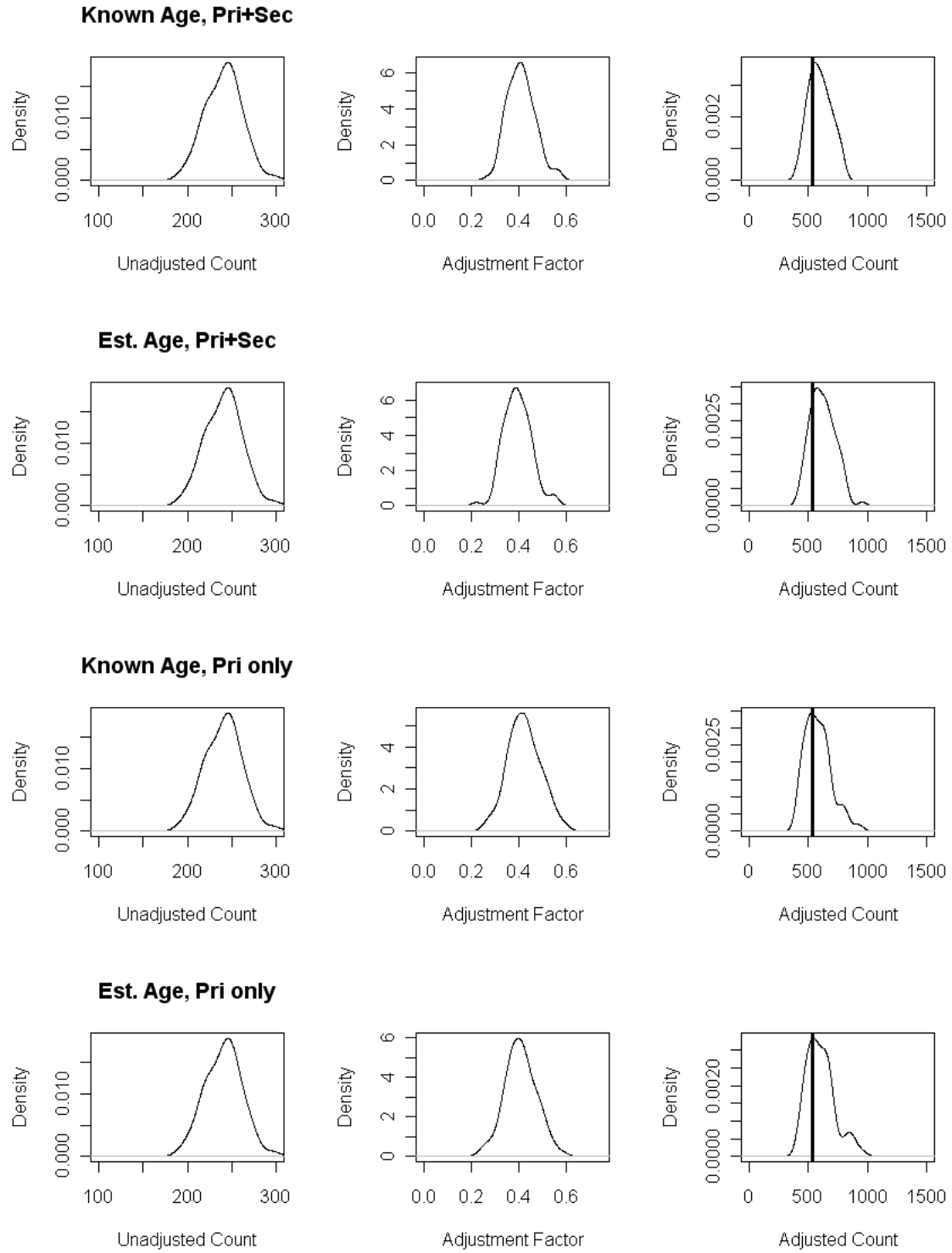


Fig 16. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 30 carcass trials left out 1 rotation, using the JY detection model

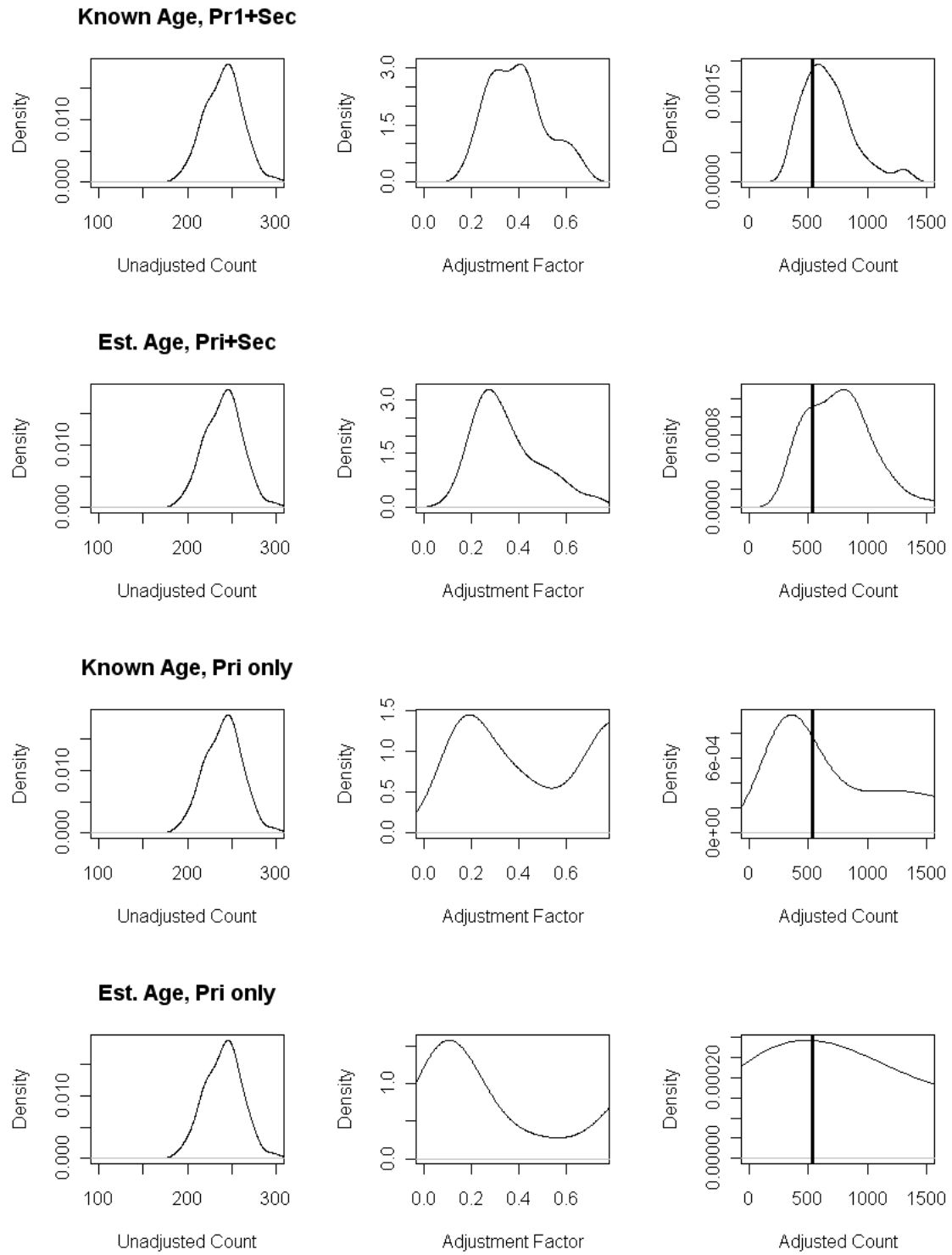


Fig 17. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 40 carcass trials left out 90 days, using the JY detection model

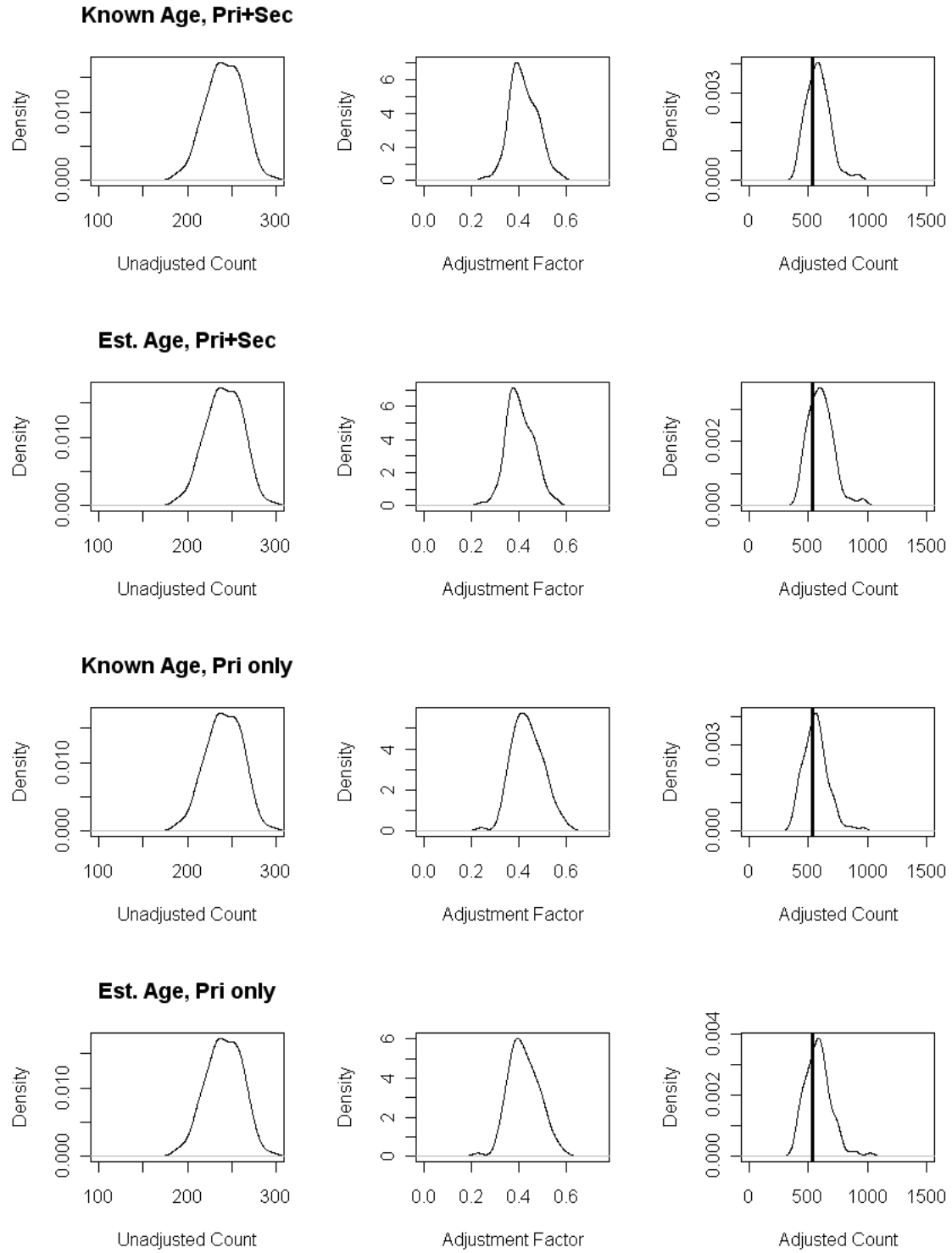


Fig 18. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 40 carcass trials left out 1 rotation, using the JY detection model

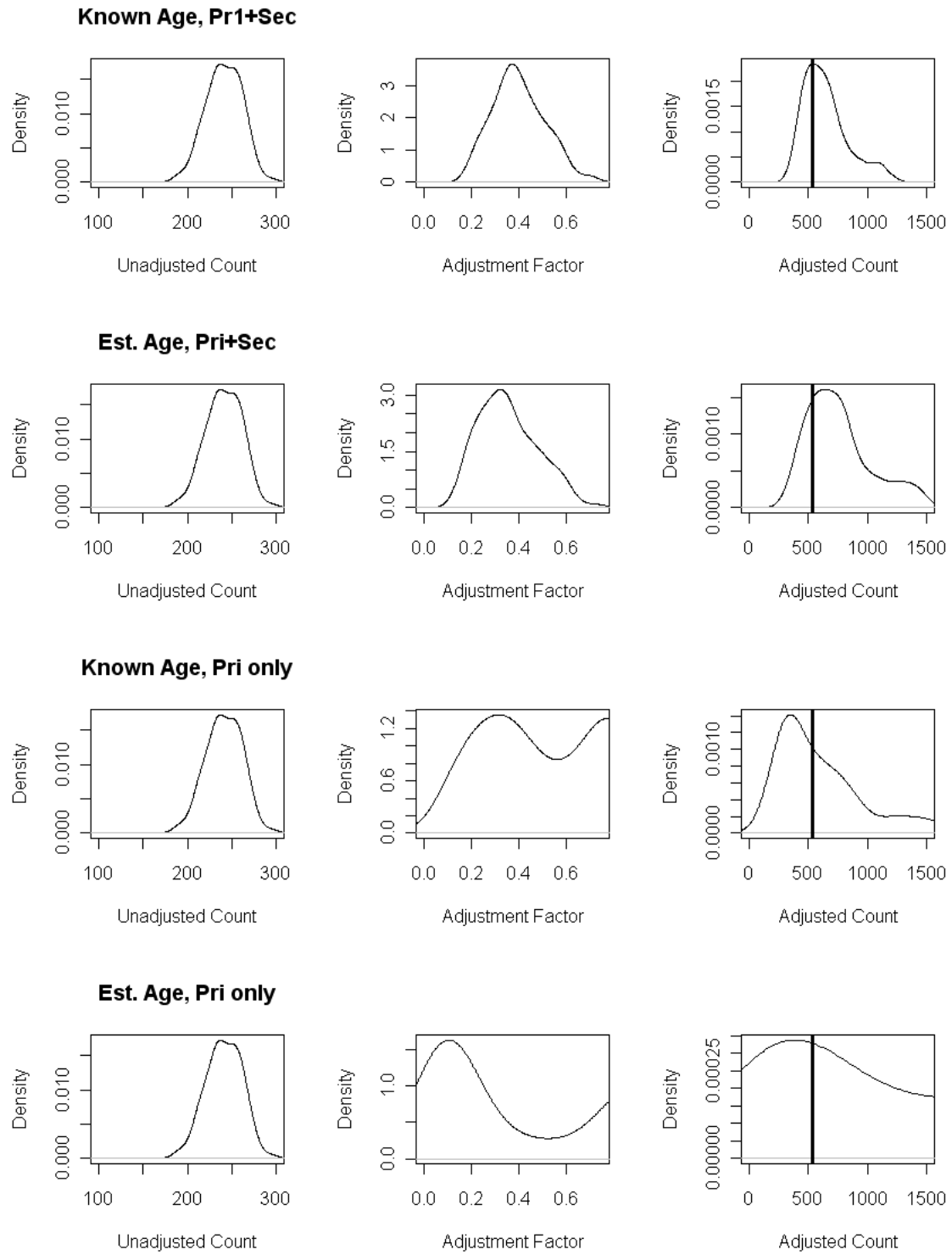


Fig 19. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 50 carcass trials left out 90 days, using the JY detection model

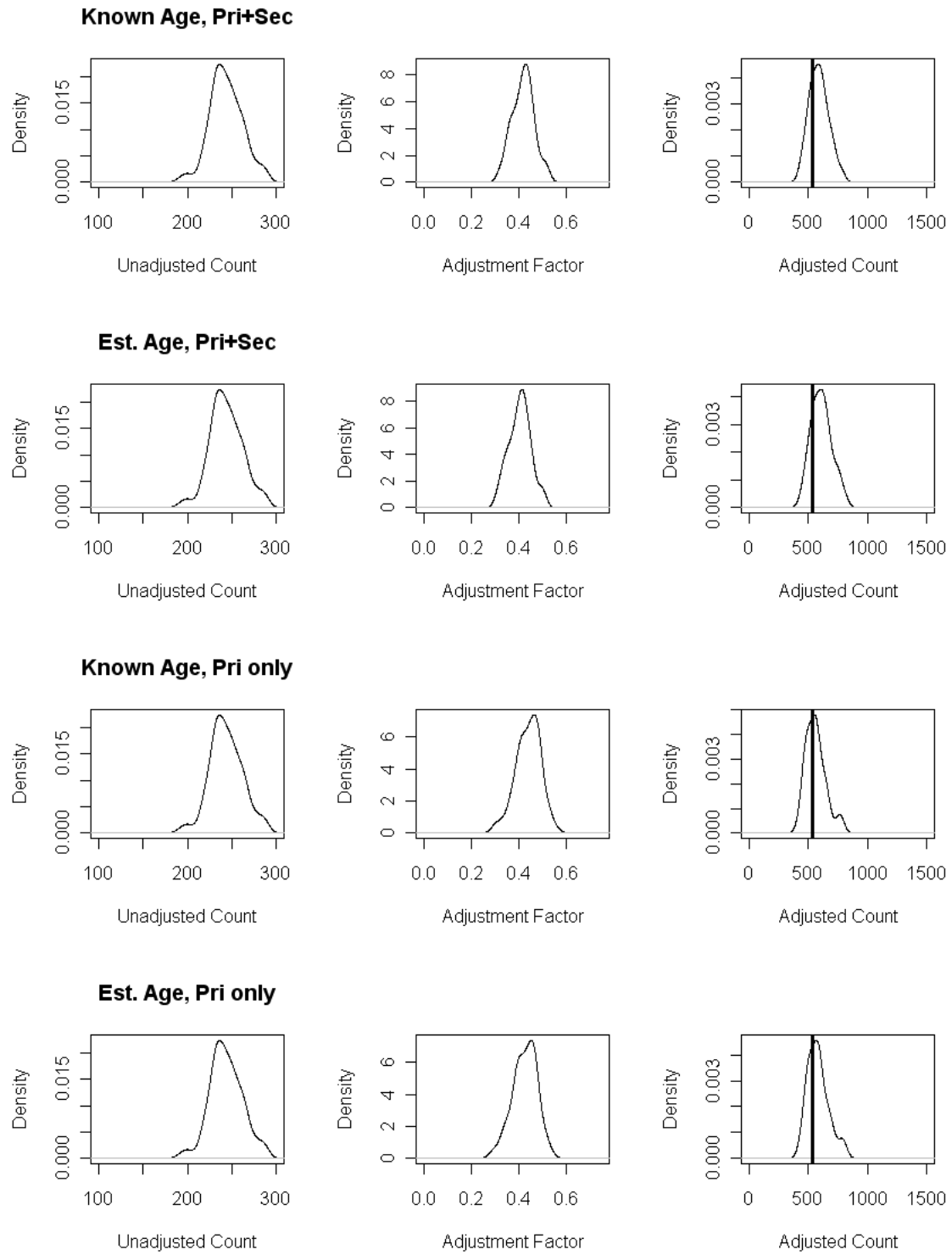


Fig 20. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 50 carcass trials left out 1 rotation, using the JY detection model

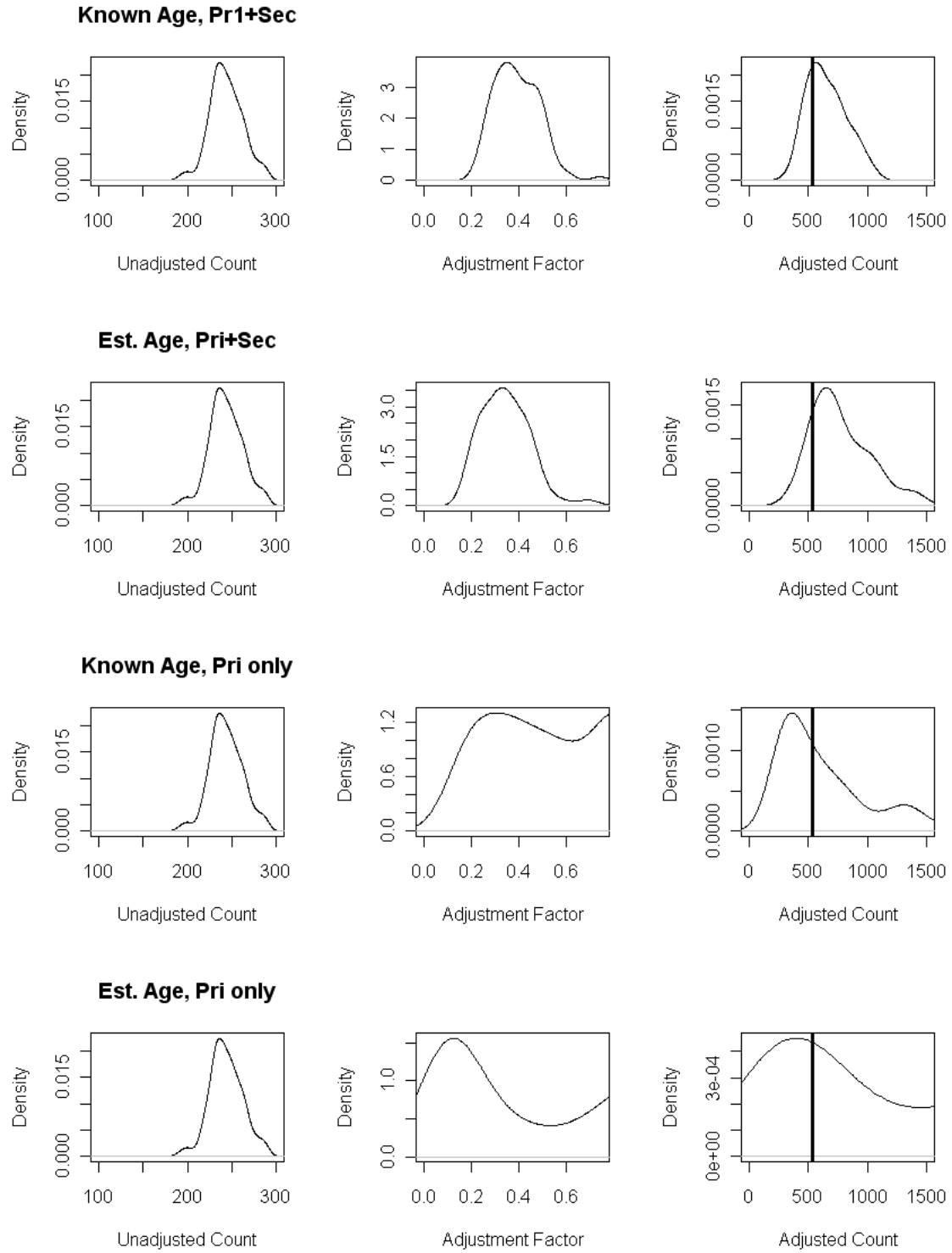


Fig 21. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 100 carcass trials left out 90 days, using the JY detection model

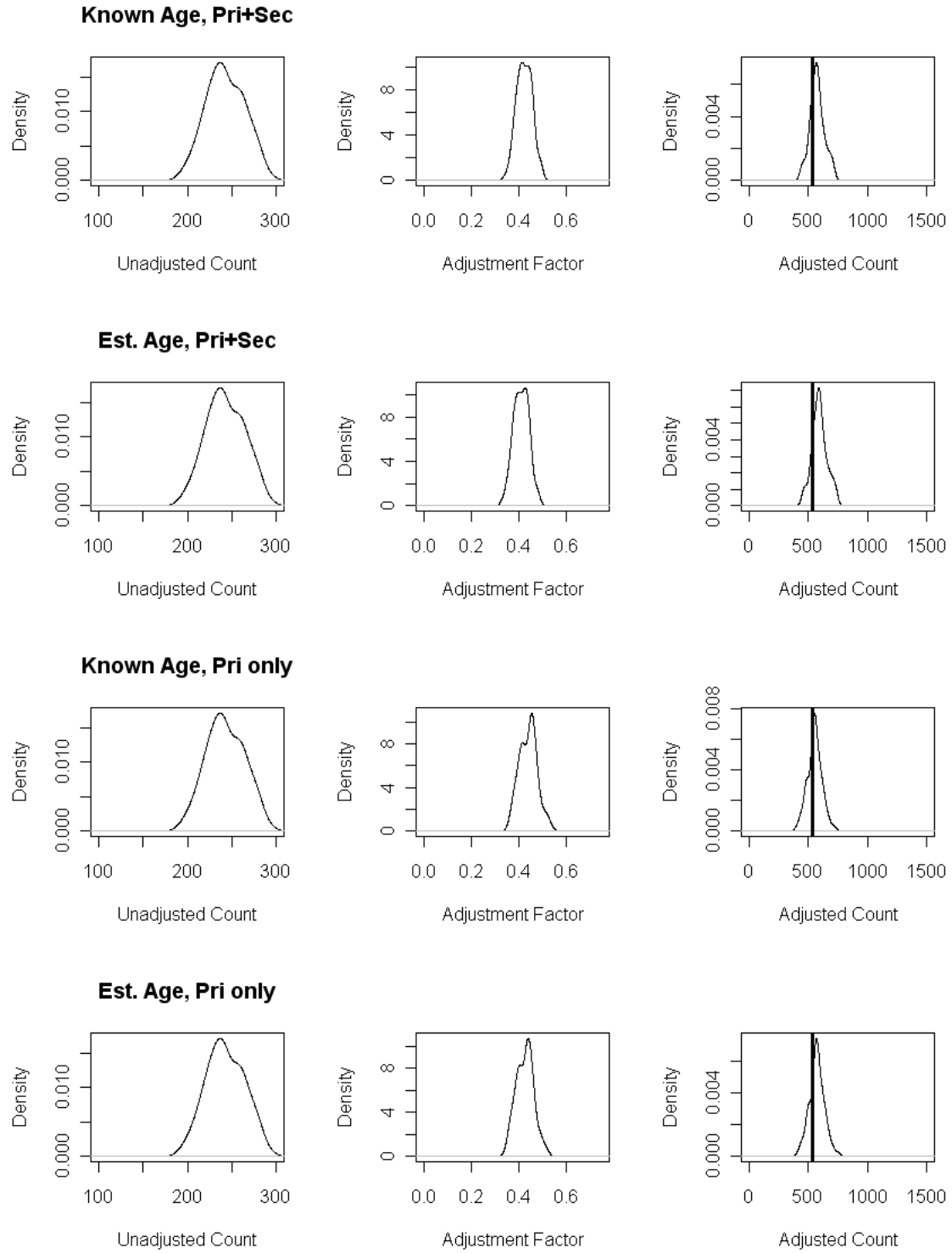


Fig 22. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on 100 carcass trials left out 1 rotation, using the JY detection model

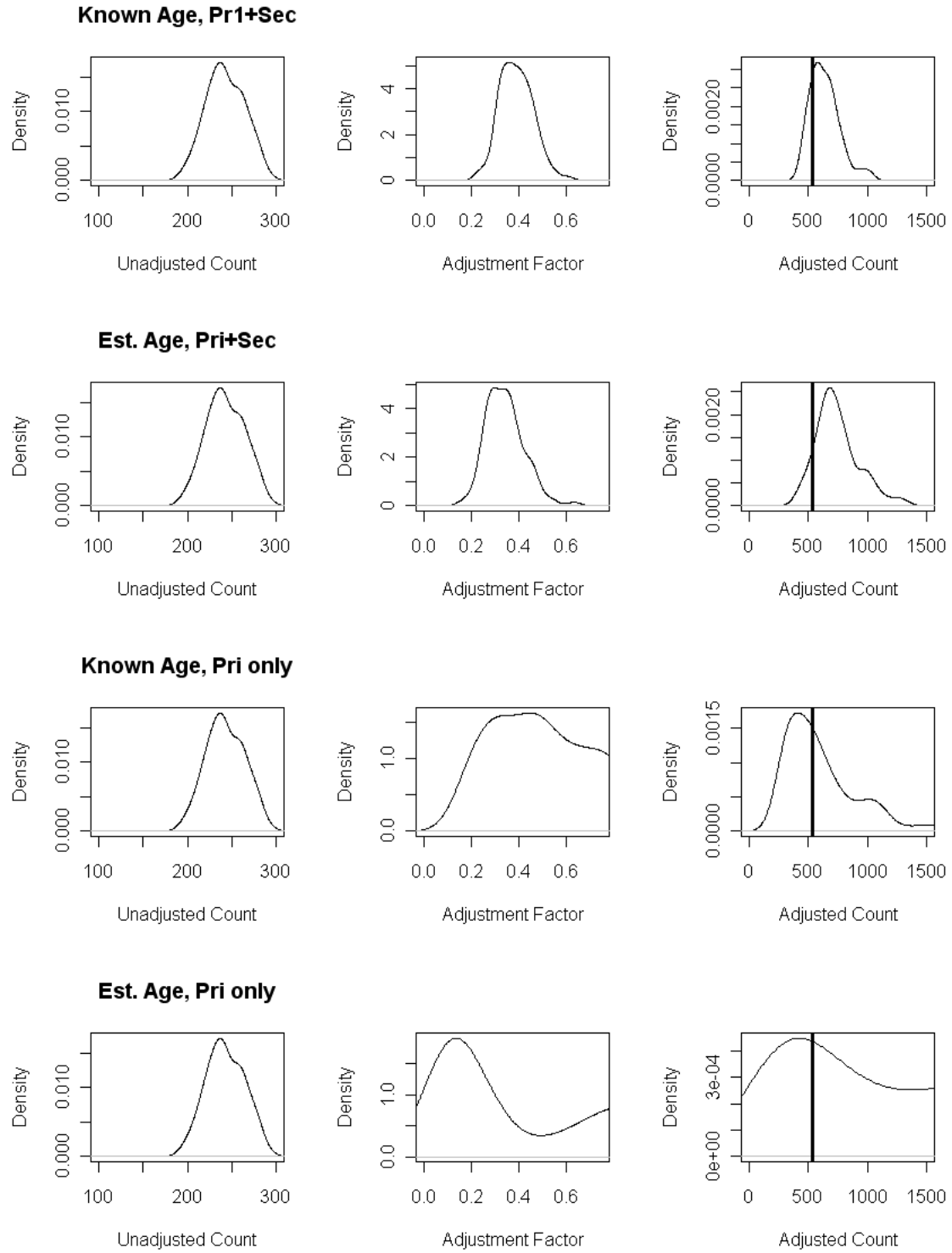


Fig 23. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on **200** carcass trials left out **90 days**, using the **JY** detection model

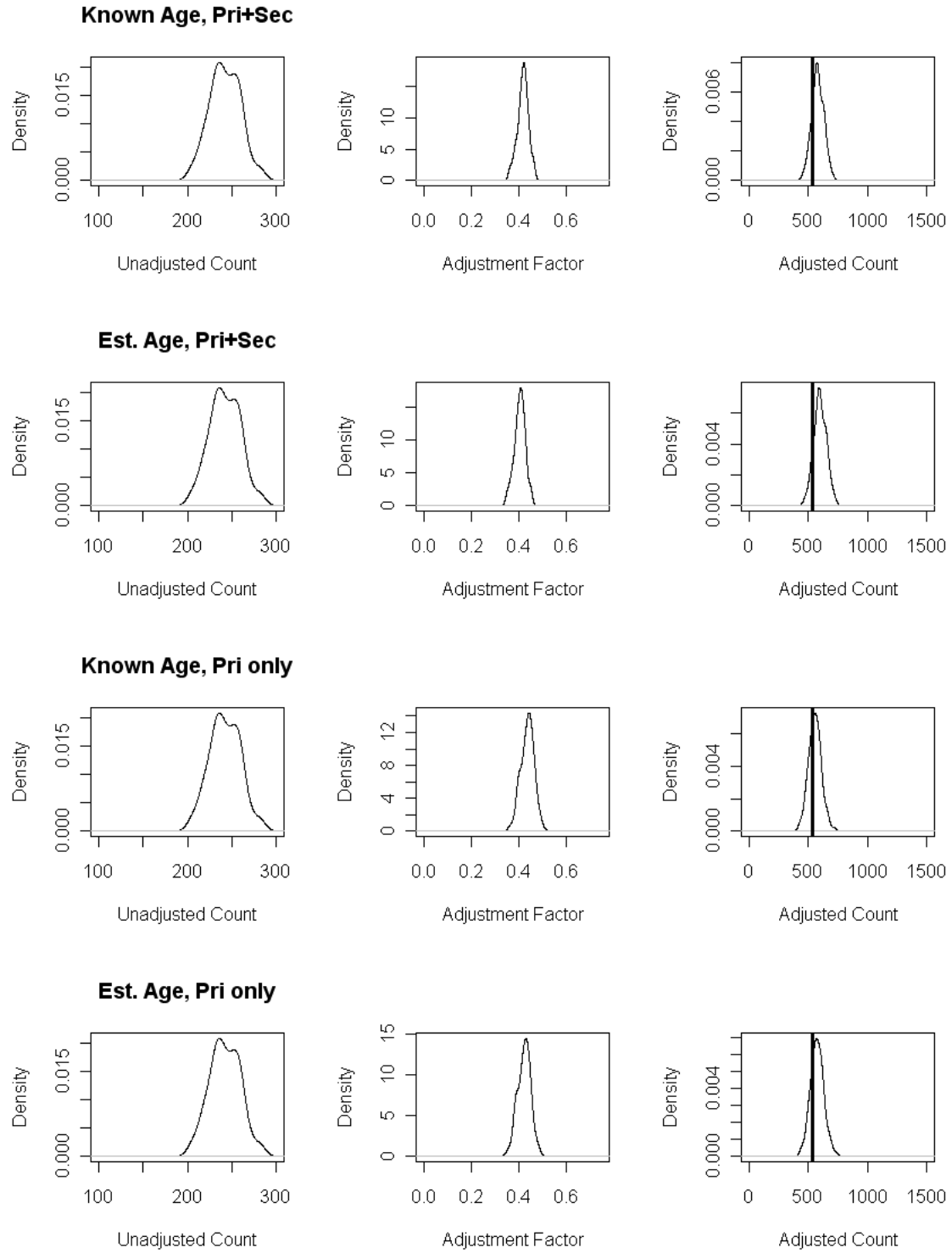


Fig 24. Distribution of unadjusted counts, adjustment factors, and adjusted counts, based on **200** carcass trials left out **1 rotation**, using the **JY** detection model

