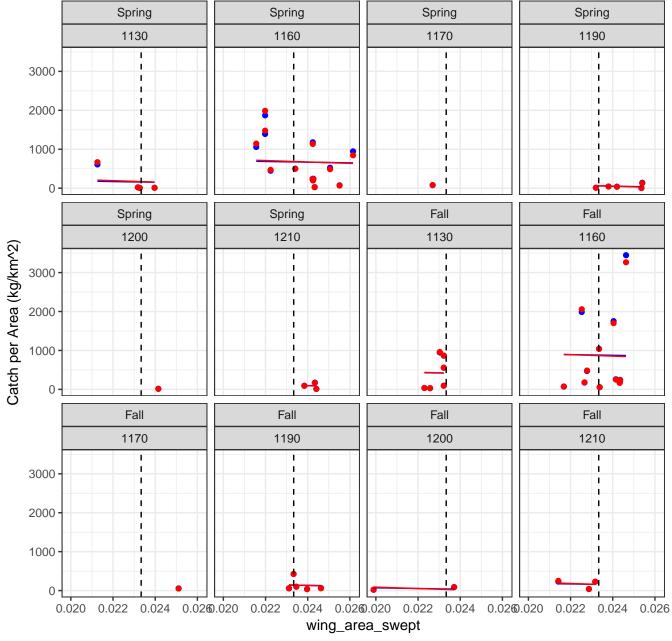
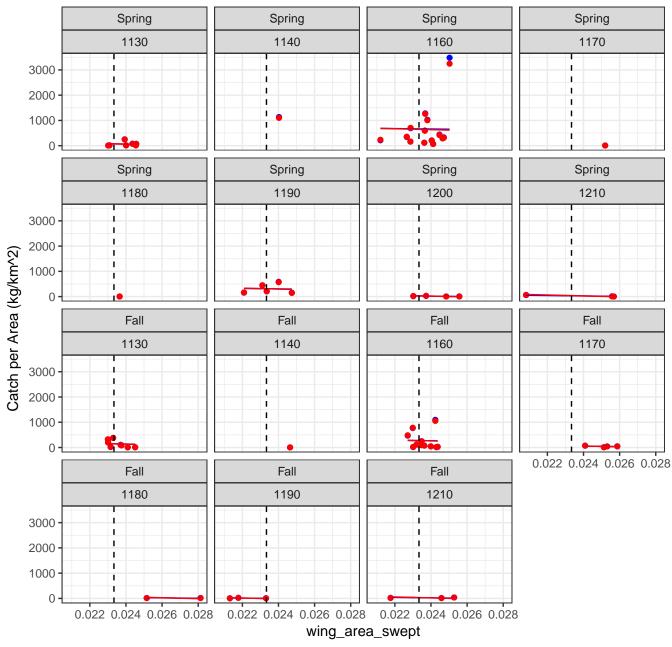
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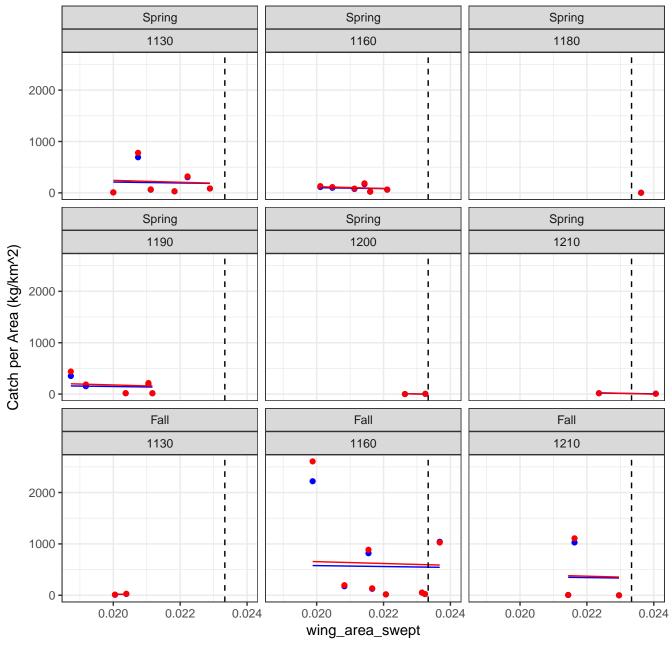


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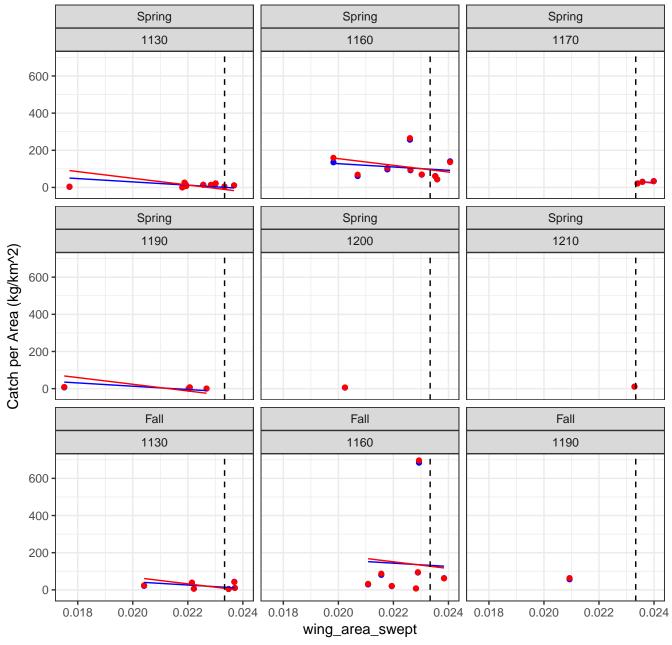


GBYT 2011 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring 500 -Spring Spring Spring Fall Catch per Area (kg/km^2) Fall Fall Fall Fall  $0.0180.0200.0220.0240.026 \ 0.0180.0200.0220.0240.026 \ 0.0180.0200.0220.0240.026 \ 0.0180.0200.0220.0240.026$ wing\_area\_swept

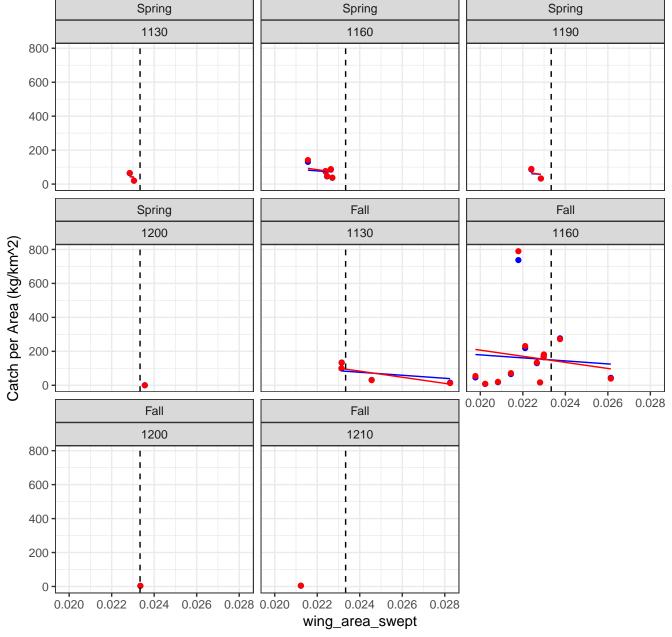
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GBYT 2013 Case 4 (Without Zeros or Fills) Winner = Standard

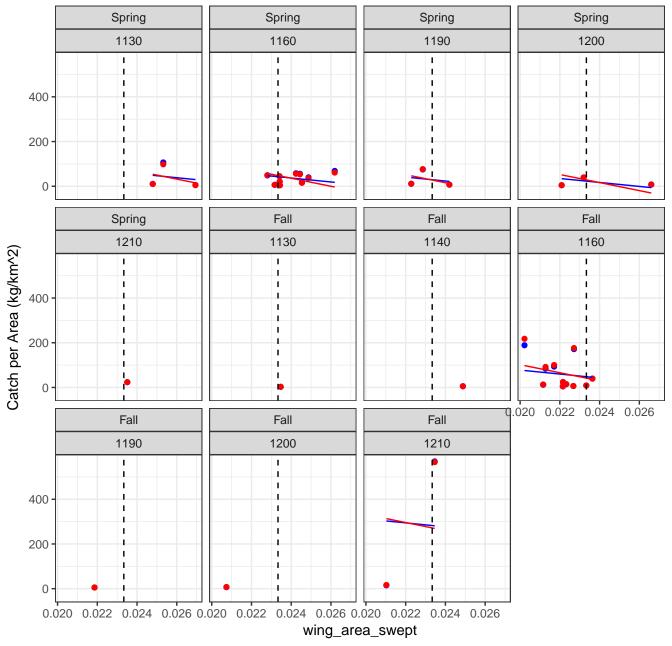


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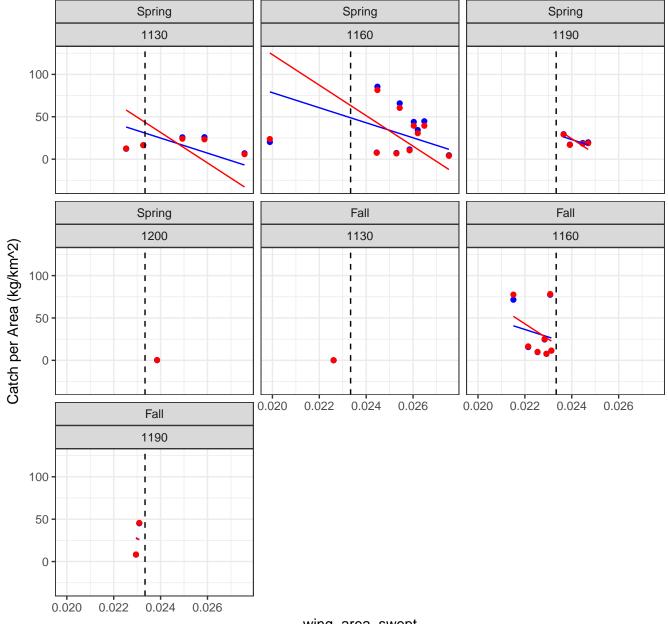


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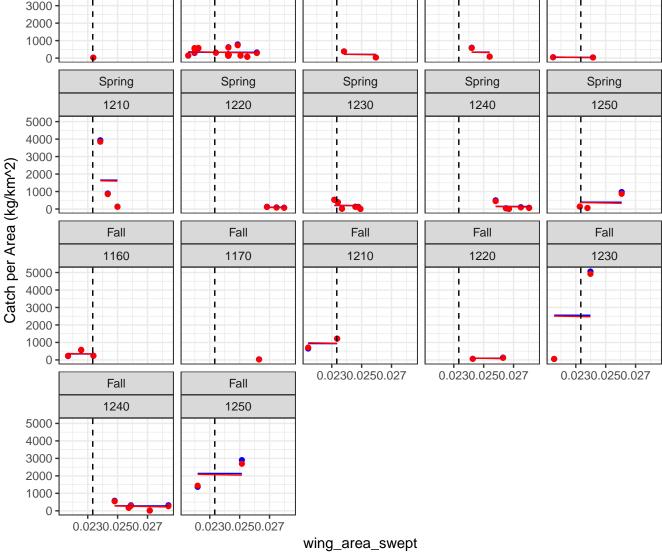


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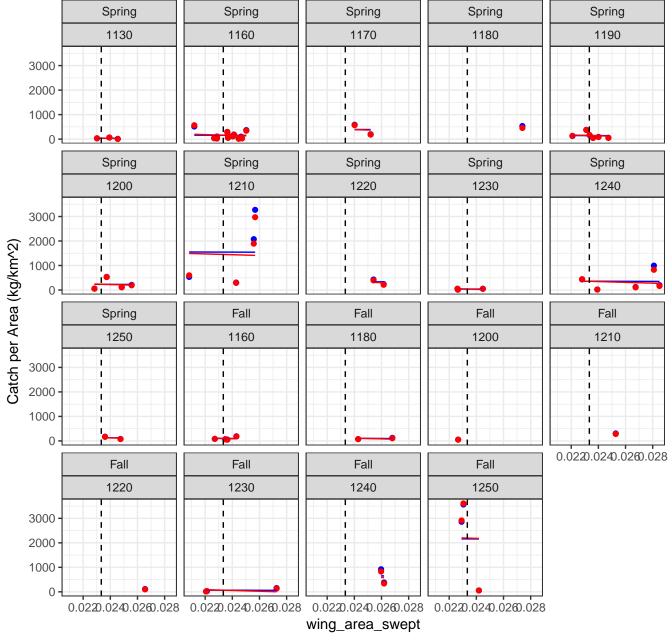


wing\_area\_swept

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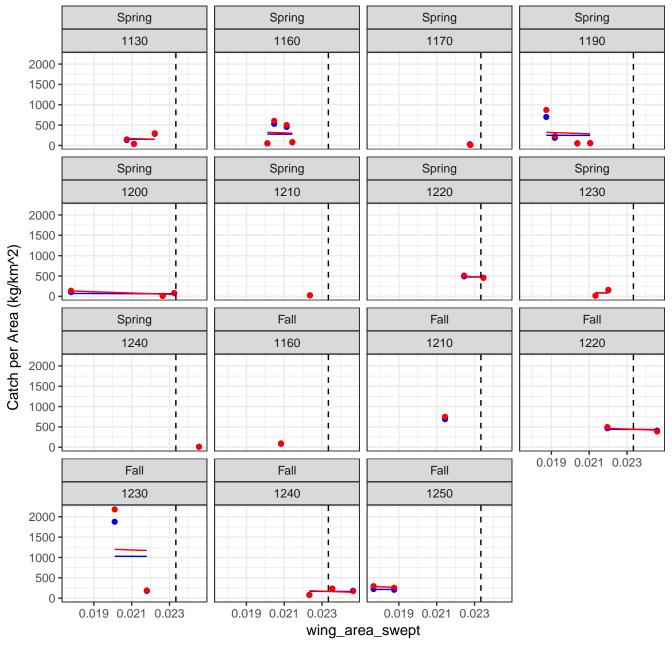


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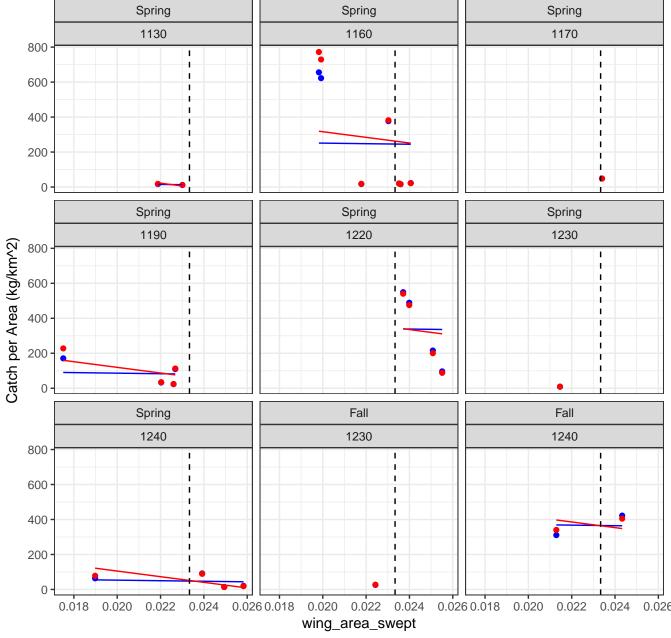


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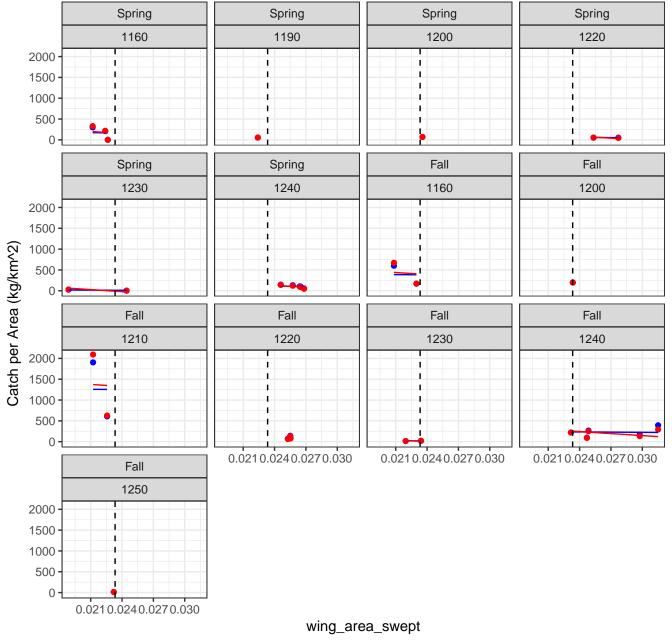
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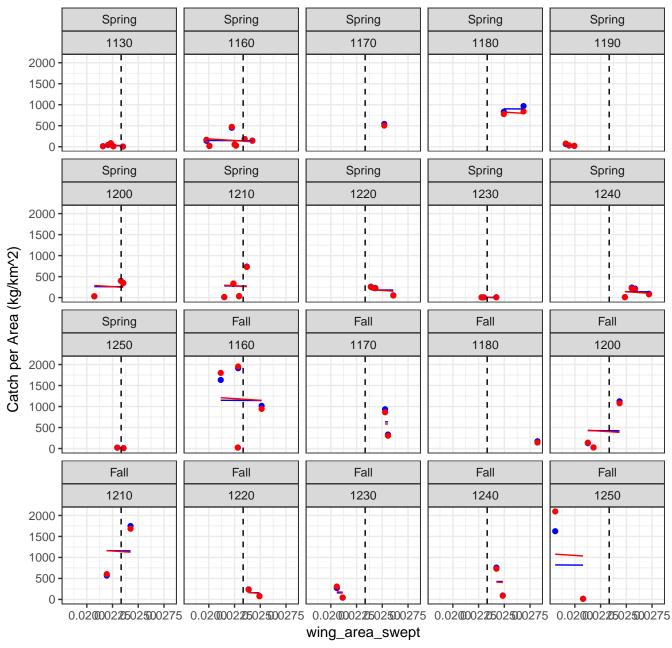
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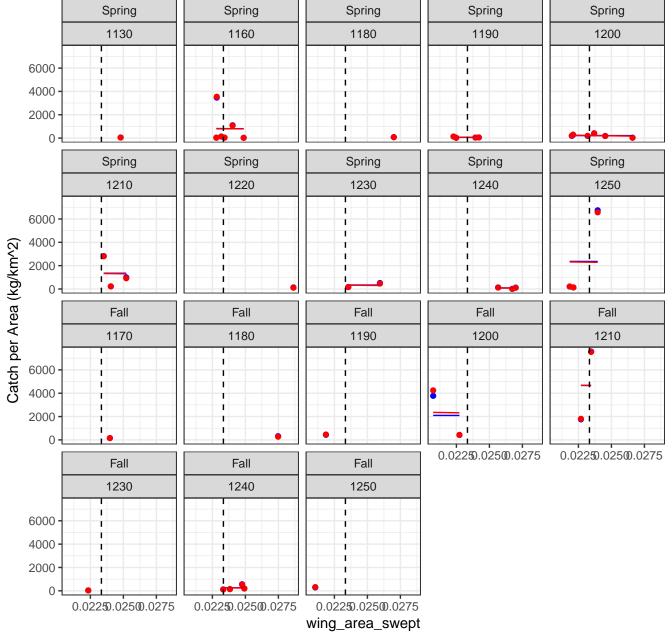
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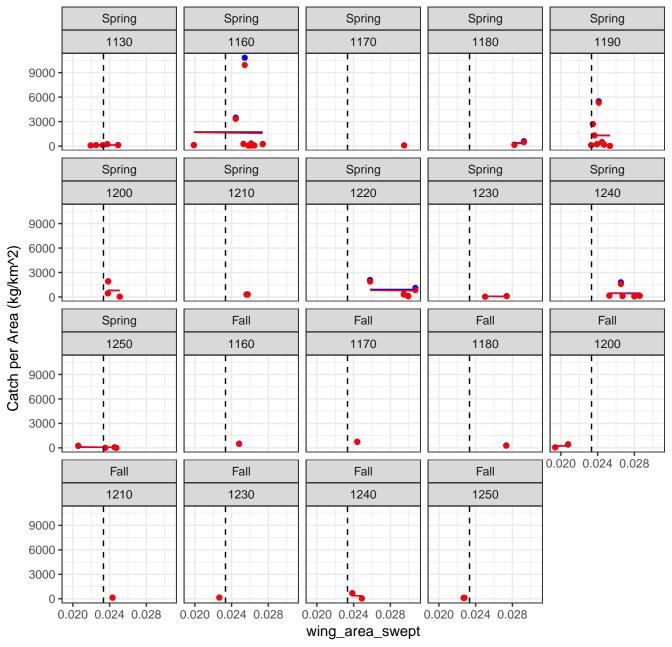
GBcod 2015 Case 4 (Without Zeros or Fills) Winner = Standard



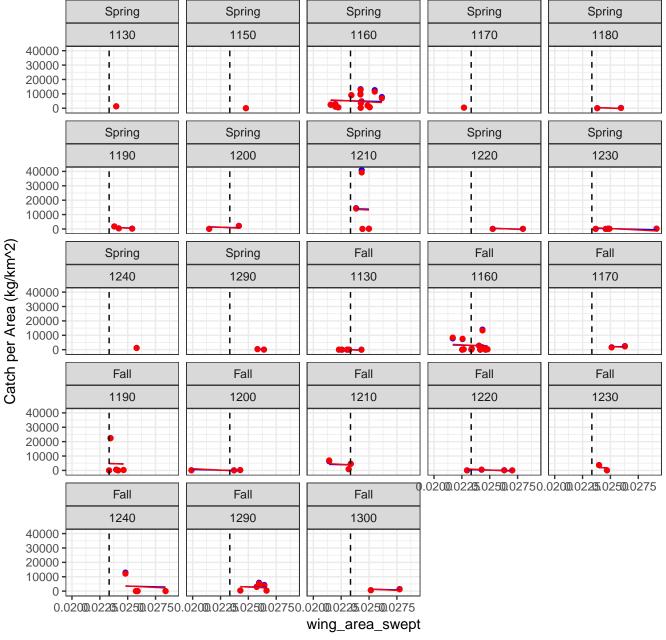
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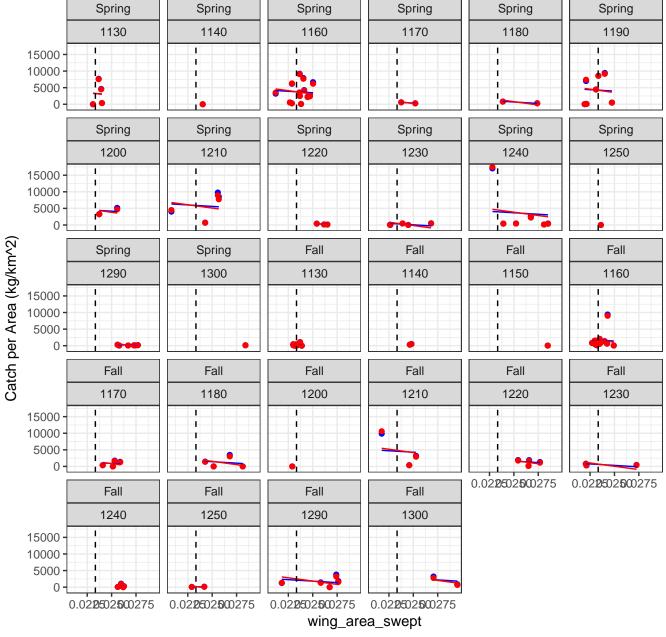
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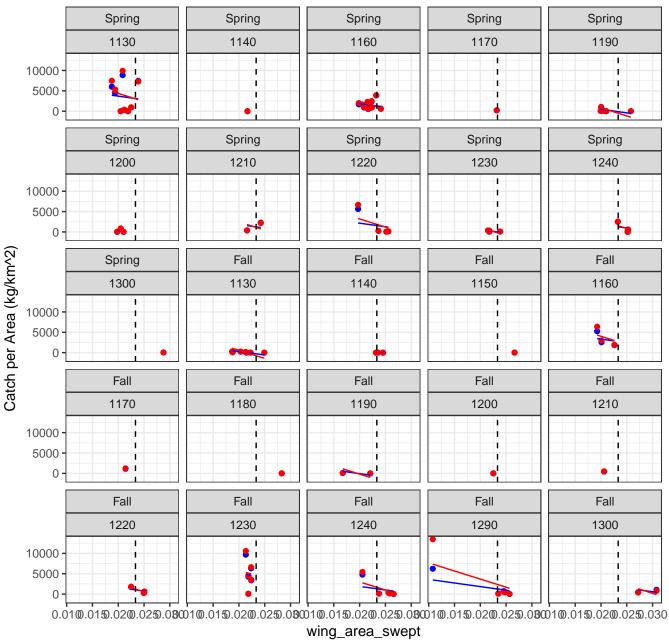
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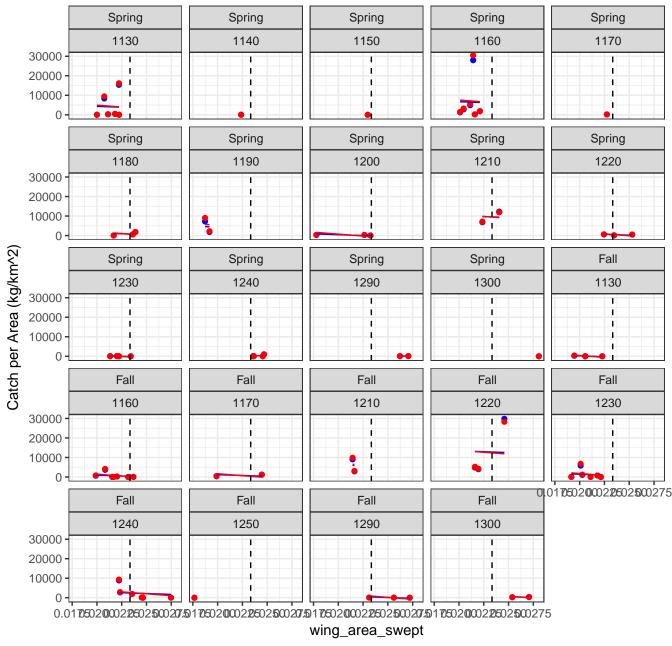
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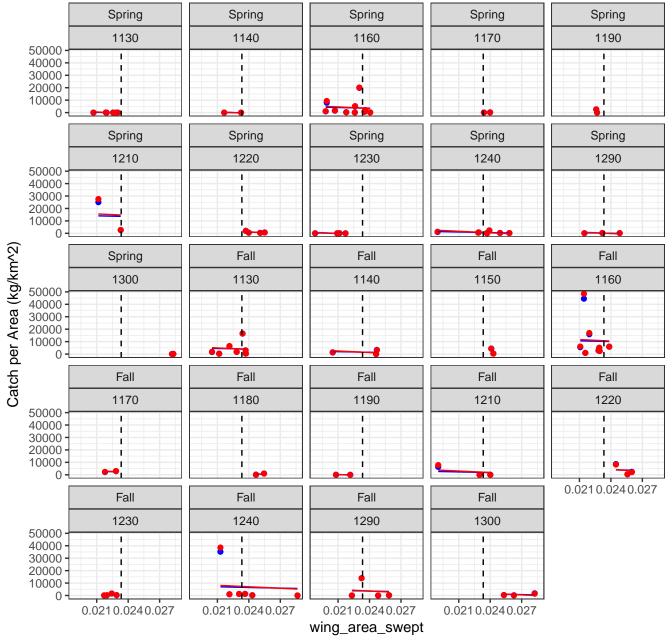
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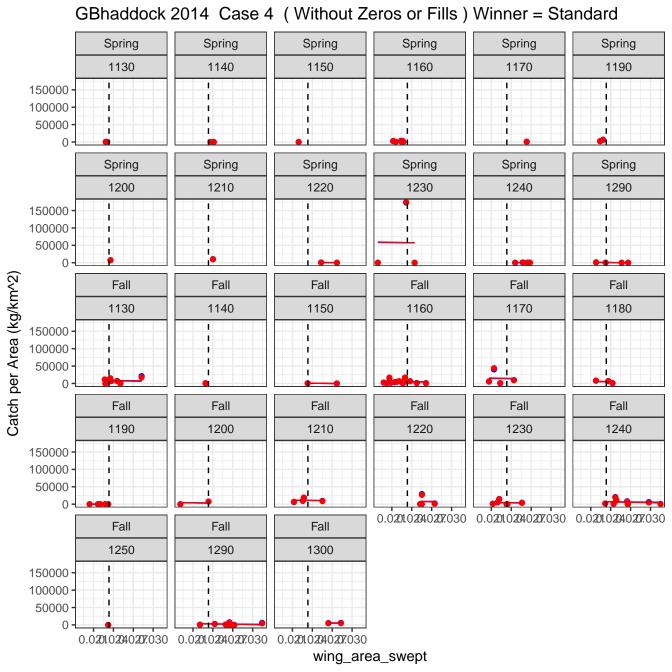


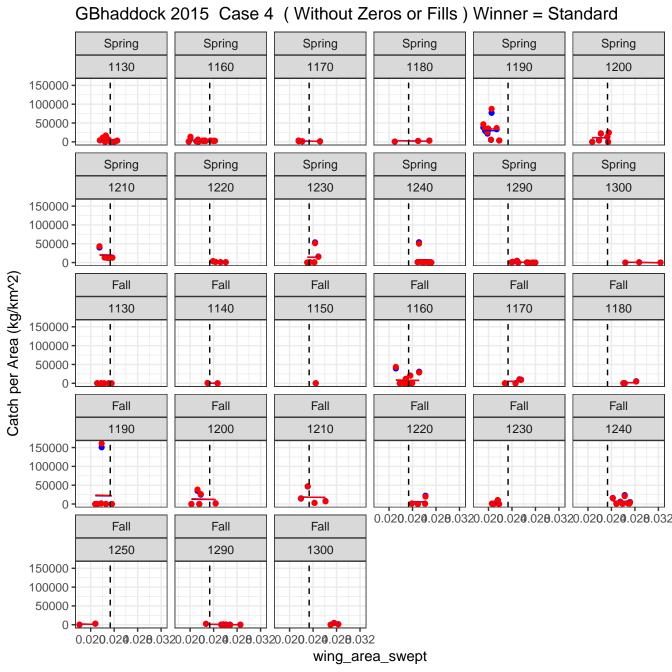
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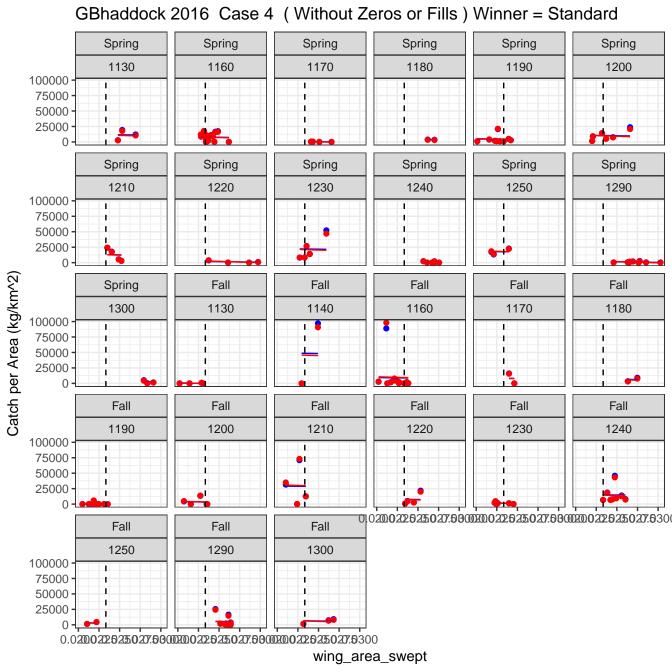


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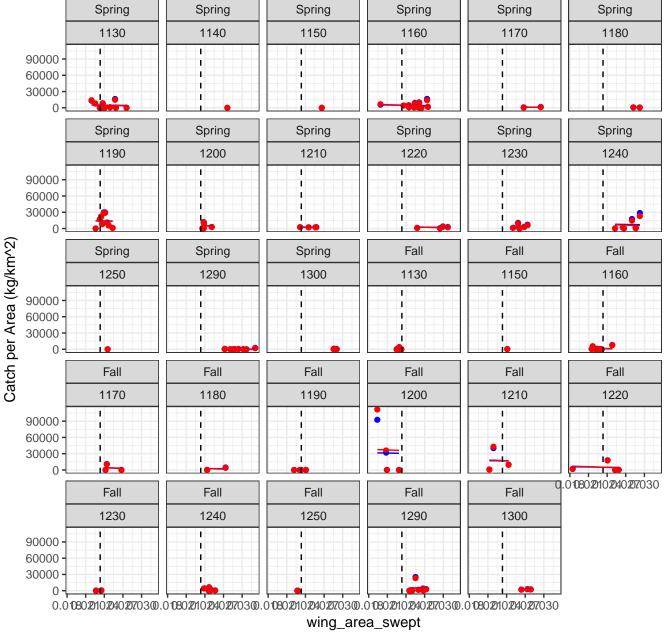








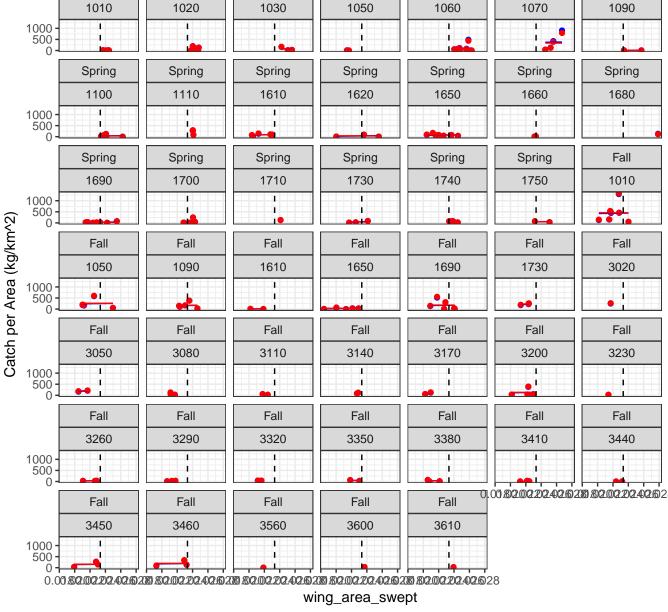
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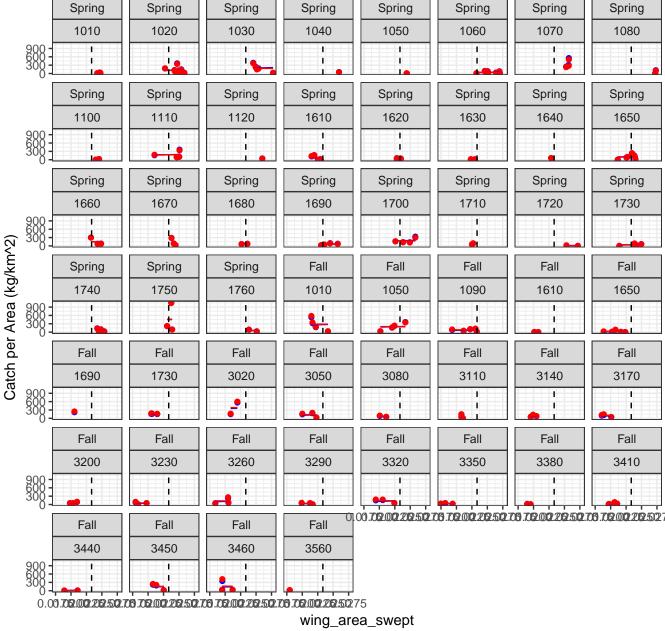
Fluke 2009 Case 4 (Without Zeros or Fills ) Winner = WingSpread

Spring Spring

Spring

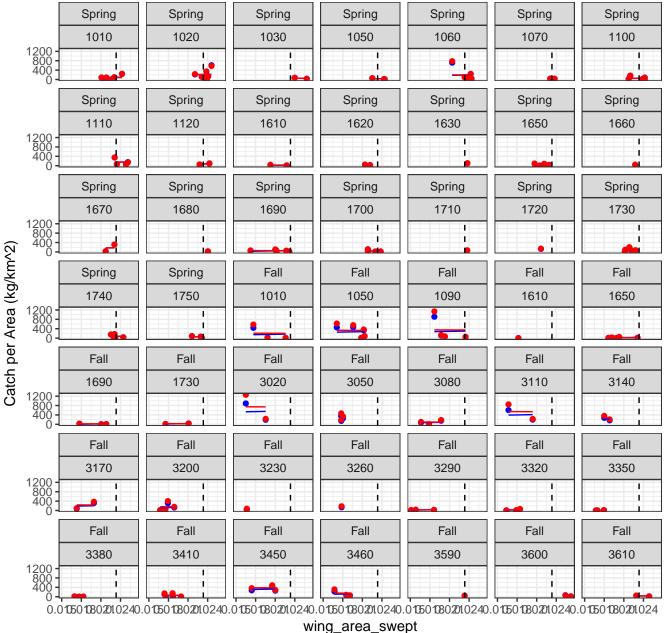


Fluke 2010 Case 4 (Without Zeros or Fills) Winner = WingSpread



Fluke 2011 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring 1010 1020 1030 1050 1060 1070 1100 Spring Spring Spring Spring Spring Spring Spring 1110 1610 1620 1630 1650 1660 1670 Spring Spring Spring Spring Spring Spring Spring 1680 1690 1700 1710 1720 1730 1740 Catch per Area (kg/km^2) Spring Fall Fall Fall Fall Fall Fall 1750 1010 1050 1090 1610 1650 1690 Fall Fall Fall Fall Fall Fall Fall 1730 3020 3050 3080 3140 3170 3200 Fall Fall Fall Fall Fall Fall Fall 3230 3260 3290 3320 3350 3380 3410 0.0200.0250.030 0.0200.0250.03 Fall Fall Fall Fall Fall 3440 3450 3460 3590 3600  $0.02 \\ 0.02 \\ 0.03 \\ 0.02 \\ 0.02 \\ 0.02 \\ 0.03 \\ 0.02 \\ 0.02 \\ 0.03 \\ 0.02 \\ 0.02 \\ 0.02 \\ 0.02 \\ 0.02 \\ 0.03 \\ 0.02 \\ 0.02 \\ 0.03 \\ 0.02 \\ 0.02 \\ 0.03 \\ 0.02 \\ 0.03 \\ 0.02 \\ 0.03 \\ 0.02 \\ 0.03 \\ 0.02 \\ 0.03 \\$ wing\_area\_swept

Fluke 2012 Case 4 (Without Zeros or Fills) Winner = WingSpread

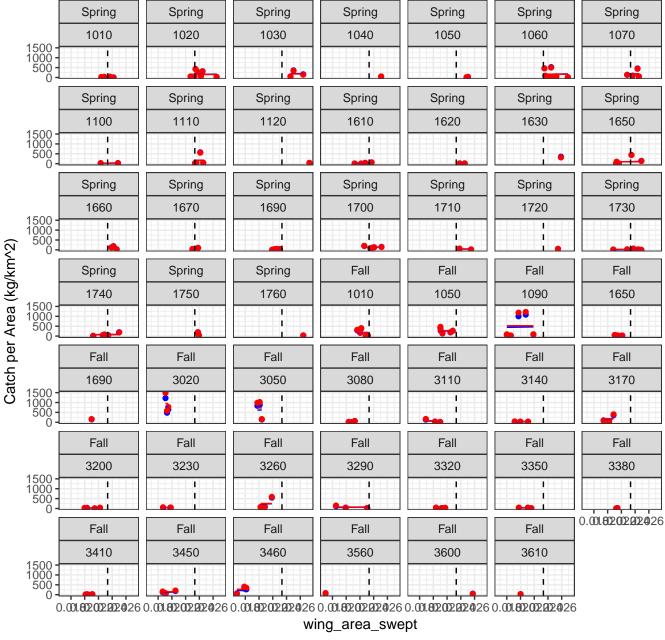


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wing\_area\_swept

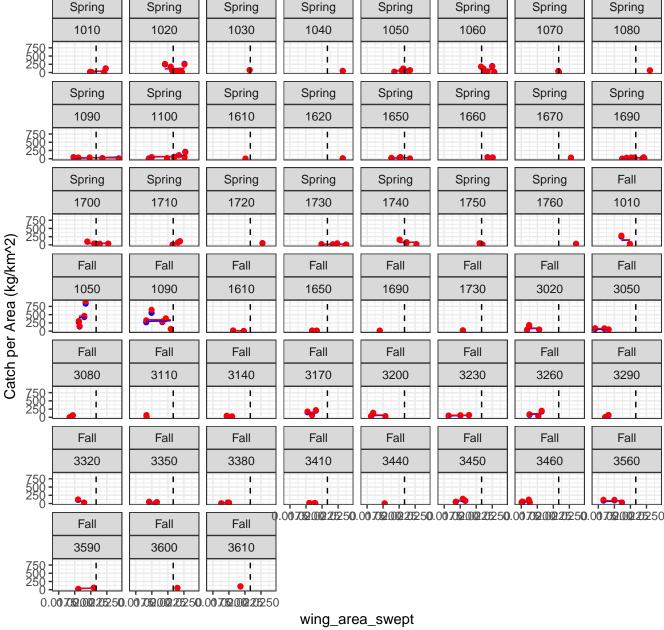
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Fluke 2015 Case 4 (Without Zeros or Fills) Winner = WingSpread

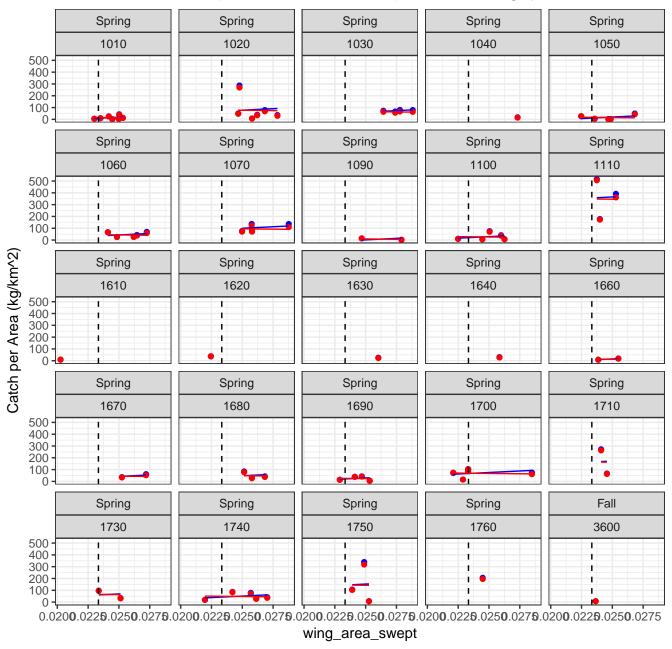


Fluke 2016 Case 4 (Without Zeros or Fills ) Winner = WingSpread

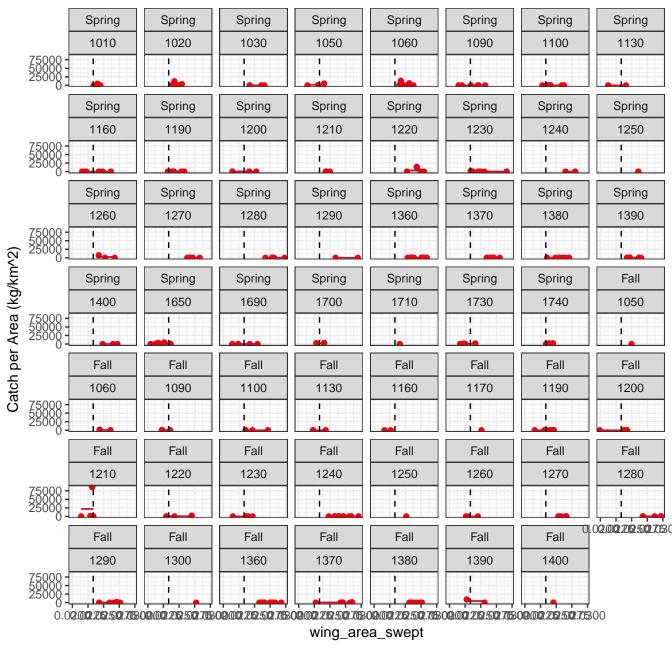
Spring Spring Spring Spring Spring Spring Spring



Fluke 2017 Case 4 (Without Zeros or Fills) Winner = WingSpread



### Herring 2009 Case 4 (Without Zeros or Fills) Winner = Standard

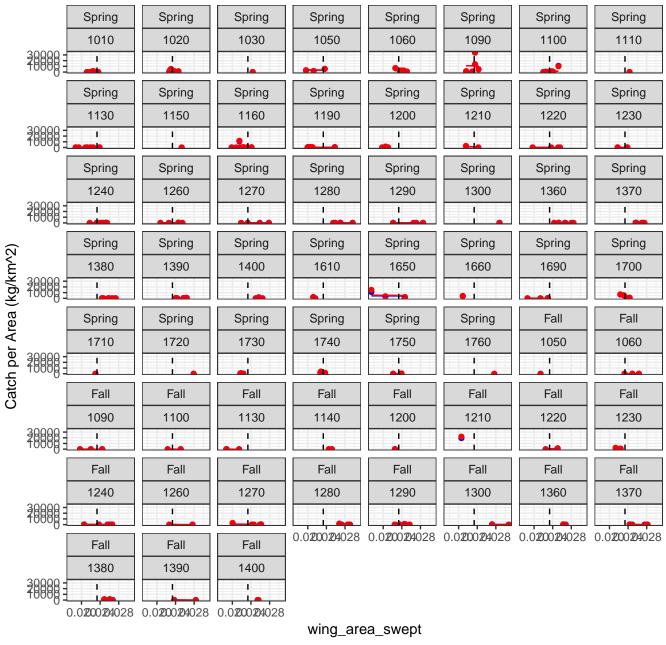


## Herring 2010 Case 4 (Without Zeros or Fills) Winner = Standard

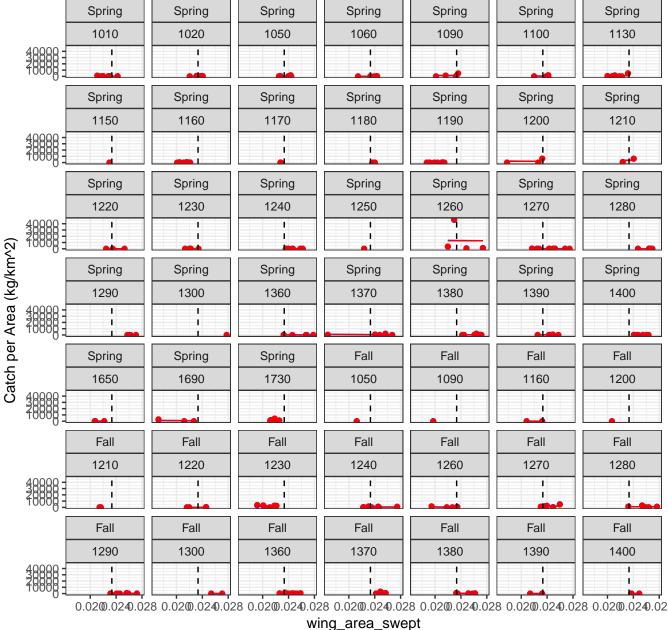
		Spring	Spring	Spring	Spring	Spring	Spring	Spring	Spring
	19888	1010	1020	1030	1050	1060	1070	1090	1100
			I	1	· ·	13	1		1
		Spring	Spring	Spring	Spring	Spring	Spring	Spring	Spring
		1110	1120	1130	1140	1160	1190	1200	1210
	19888		I I	I de		1	1	1	
	[	Spring	Spring	Spring	Spring	Spring	Spring	Spring	Spring
		1220	1230	1240	1250	1260	1270	1280	1290
	19888 =		1	I do do					
5		Spring	Spring	Spring	Spring	Spring	Spring	Spring	Spring
m.		1300	1360	1370	1380	1390	1400	1610	1650
kg/k	19888			1		1	1		1
rea (		Spring	Spring	Spring	Spring	Spring	Spring	Spring	Fall
ř. A		1660	1690	1700	1720	1730	1740	1750	1050
Catch per Area (kg/km^2)	19888	1		I L		1	1	1	
		Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall
		1060	1090	1100	1110	1160	1170	1180	1190
	19888		1	I I			1		1
		Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall
		1200	1210	1220	1230	1240	1250	1260	1270
	19888		14	1	1	1			
		Fall	Fall	Fall	Fall	Fall	Fall	Fall	Fall
		1280	1290	1300	1360	1370	1380	1390	1400
	18888					1	1		
	0.00802:0240270330802:024027030802:0240270280200000000000000000000000000000								
	wing area swept								

wing\_area\_swept

## Herring 2011 Case 4 (Without Zeros or Fills) Winner = Standard

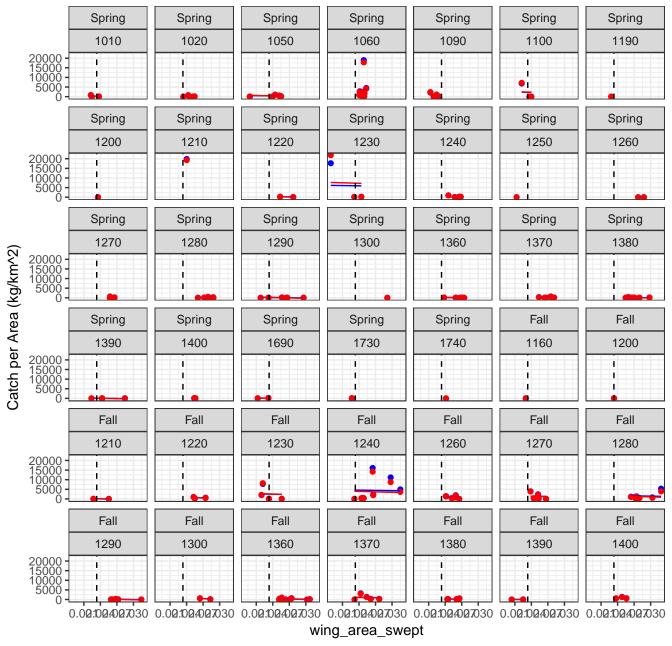


## Herring 2012 Case 4 (Without Zeros or Fills) Winner = Standard

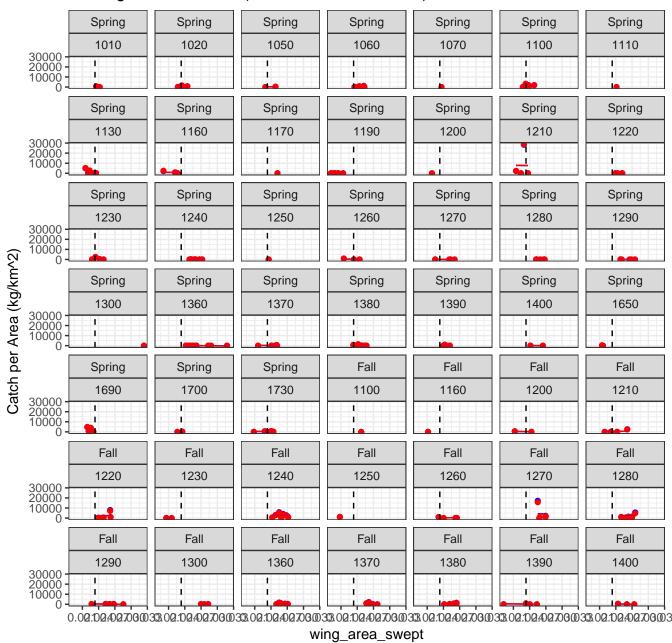


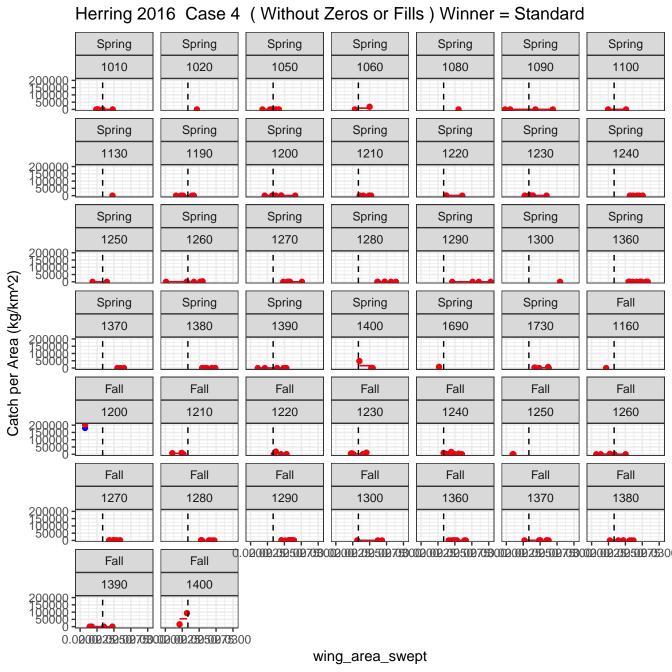
Herring 2013 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring 1060 1010 1020 1030 1050 1090 1100 15000 10000 5000 Spring Spring Spring Spring Spring Spring Spring 1130 1160 1190 1200 1210 1220 1230 15000 10000 5000 Spring Spring Spring Spring Spring Spring Spring 1240 1250 1260 1270 1280 1290 1300 15000 10000 5000 1 Catch per Area (kg/km^2) 0 Spring Spring Spring Spring Spring Spring Spring 1360 1370 1400 1610 1380 1390 1650 15000 <del>-</del> 10000 -5000 Spring Spring Fall Fall Fall Fall Fall 1690 1220 1230 1730 1060 1090 1210 15000 10000 5000 Fall Fall Fall Fall Fall Fall Fall 1240 1280 1290 1300 1260 1270 1360 15000 10000 ı 5000 TO.00.7012.0001.2012.502.7500.7012.0001.2012.502.7500.7012.0001.2012.502.75 Fall Fall Fall Fall 1370 1380 1390 1400 15000 10000 5000 0.0**1.702.002.202.502.7501.702.002.202.502.7501.702.002.202.502.7501.702.002.202.502.75** wing area swept

## Herring 2014 Case 4 (Without Zeros or Fills) Winner = Standard



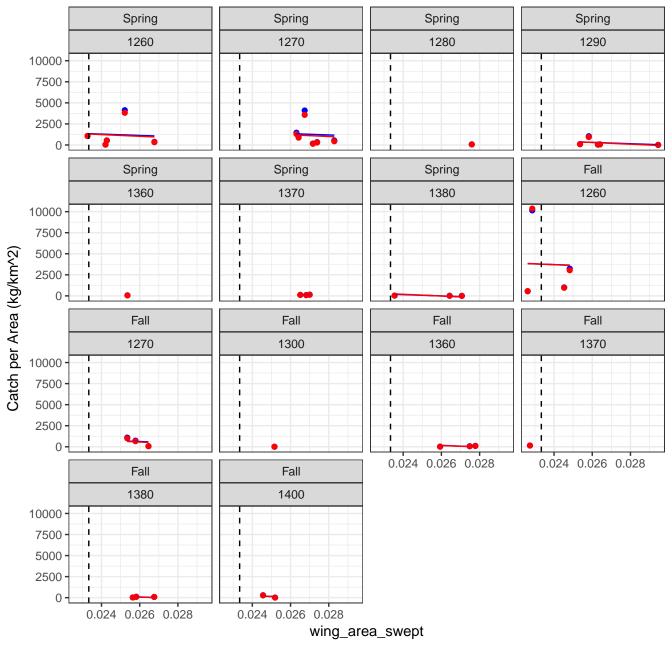
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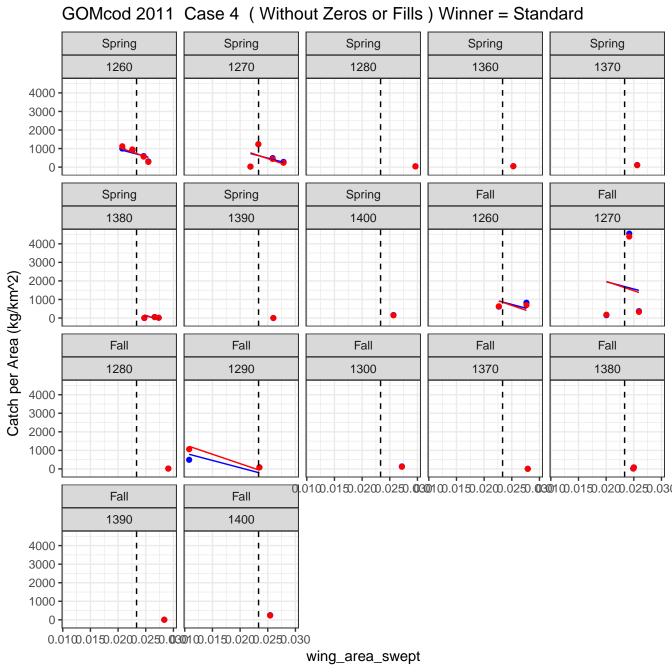


#### Herring 2017 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring 1060 1010 1020 1050 1090 1100 1130 Spring Spring Spring Spring Spring Spring Spring 1160 1170 1200 1210 1220 1230 1240 Spring Spring Spring Spring Spring Spring Spring 1250 1260 1270 1280 1290 1300 1360 Catch per Area (kg/km^2) Spring Spring Spring Spring Spring Spring Spring 1370 1380 1390 1400 1690 1730 1740 Fall Fall Fall Fall Fall Fall Fall 1160 1190 1200 1210 1220 1240 1250 Fall Fall Fall Fall Fall Fall Fall 1260 1270 1280 1290 1300 1360 1370 <del>(</del>10,008)2102402703.0008)2102402703.0008)2102402703.0008)2102402703.0008)21024027030 Fall Fall Fall 1380 1390 1400 0.0**0802102402703.00 0802102402703.00 08021024027**030 wing\_area\_swept

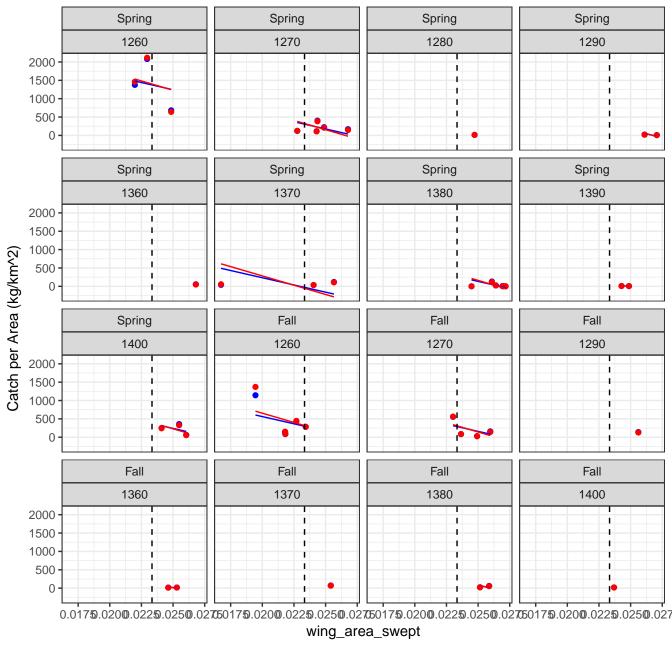
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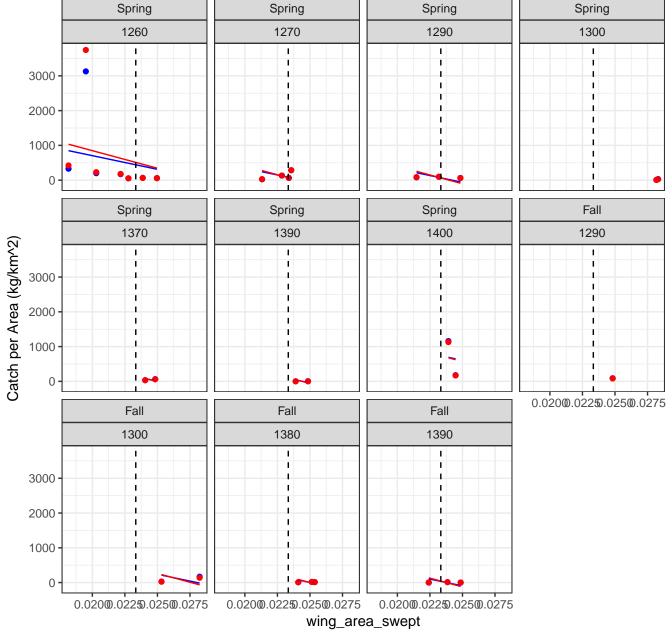
GOMcod 2010 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring Spring Spring Fall Catch per Area (kg/km^2) Fall Fall Fall Fall Fall Fall Fall 0.0220.0240.0260.028 0.0220.0240.0260.028 wing\_area\_swept



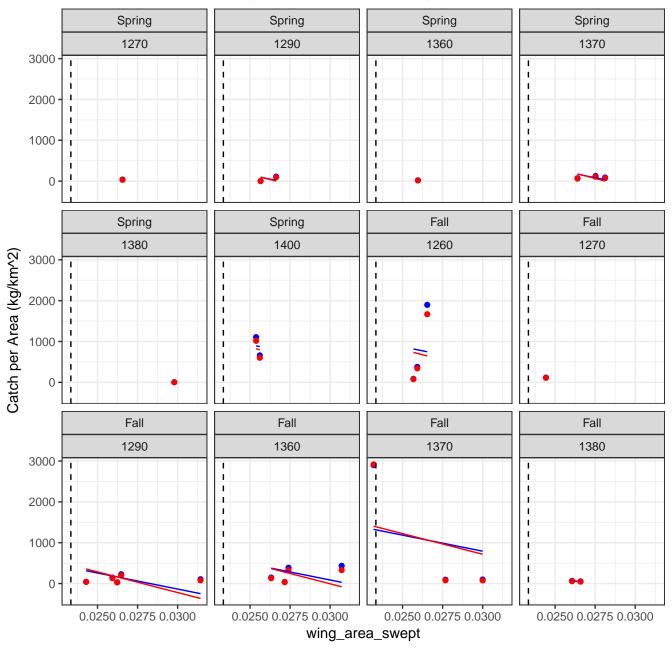
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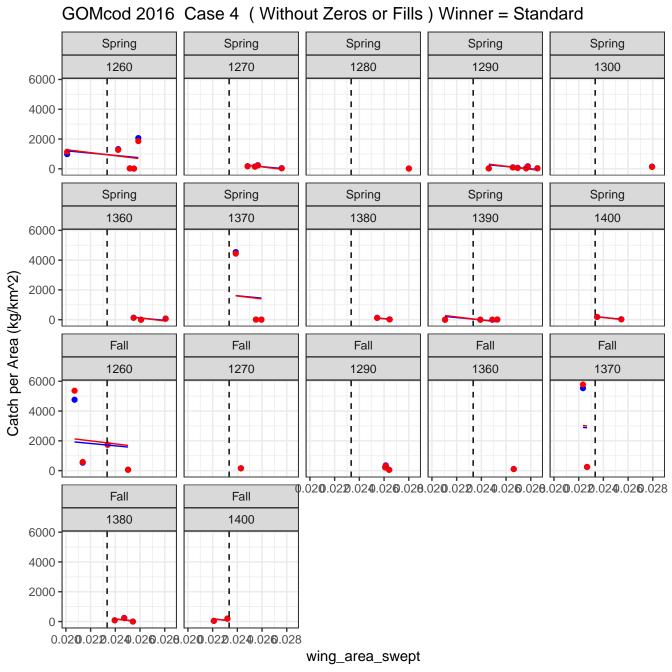
GOMcod 2013 Case 4 (Without Zeros or Fills) Winner = Standard



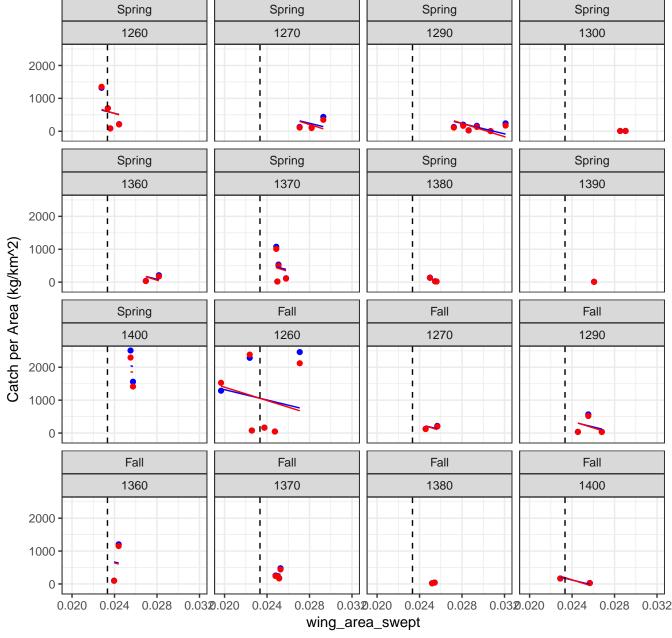
GOMcod 2014 Case 4 (Without Zeros or Fills) Winner = Standard



GOMcod 2015 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring 1270 1280 1290 1260 1300 ı ı ı 7500 5000 2500 Fall Spring Spring Spring Spring 1360 1370 1380 1400 1260 ı 7500 5000 Catch per Area (kg/km^2) 2500 Fall Fall Fall Fall Fall 1270 1290 1300 1360 1370 ı 7500 ī ı 5000 2500 0 T01,0210.0240.0270.030 0.0210.0240.0270.030 0.0210.0240.0270.030 Fall Fall 1380 1400 7500 5000 2500 0.0210.0240.0270.030 0.0210.0240.0270.030 wing\_area\_swept



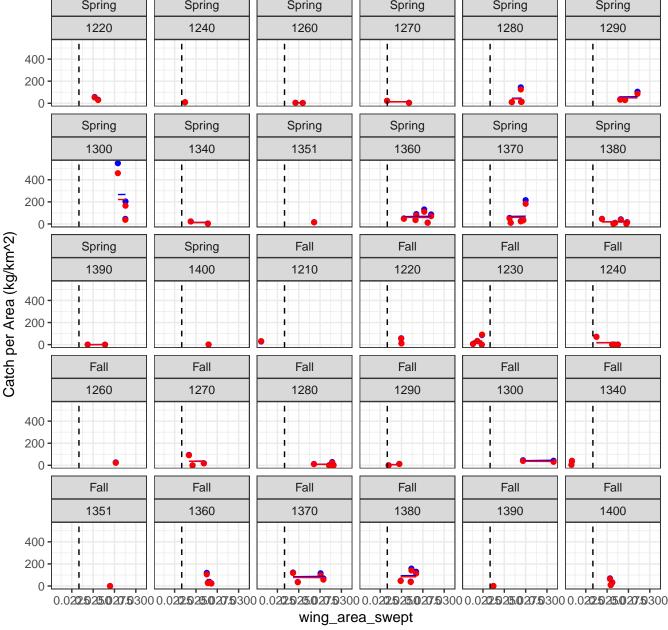
GOMcod 2017 Case 4 (Without Zeros or Fills) Winner = Standard



Nmonkfish 2009 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1210 1220 1230 1260 1270 1240 200 100 Spring Spring Spring Spring Spring Spring 1280 1290 1300 1340 1351 1360 200 -100 Spring Spring Spring Spring Fall Fall 1370 1380 1390 1400 1200 1220 Catch per Area (kg/km^2) 200 100 0 Fall Fall Fall Fall Fall Fall 1230 1240 1260 1270 1280 1250 200 -100 0 Fall Fall Fall Fall Fall Fall 1290 1300 1351 1360 1370 1380 200 100 0 0.0294.0205.0238.030 0.0294.0205.0238.030 0.0294.0205.0238.030 0.0294.0205.0238.030 Fall Fall 1390 1400 200 -100 0 0.0294.0205.0288.030 0.0294.0205.0288.030 wing\_area\_swept

Nmonkfish 2010 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1230 1240 1260 1270 1280 1220 300 200 100 Spring Spring Spring Spring Spring Spring 1290 1300 1340 1360 1370 1380 300 200 100 Spring Spring Fall Fall Fall Fall 1390 1400 1200 1210 1220 1230 Catch per Area (kg/km^2) 300 200 100 0 Fall Fall Fall Fall Fall Fall 1240 1250 1270 1280 1290 1260 300 200 100 0 Fall Fall Fall Fall Fall Fall 1300 1340 1351 1360 1370 1380 300 200 100 0 10.0222.0234.0236.0238.03300232.0234.0236.0238.03300232.0234.0236.0238.03300232.0224.0236.0238.030 Fall Fall 1390 1400 300 200 100 0.022202402660280300022024026028030 wing\_area\_swept

# Nmonkfish 2011 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring



Nmonkfish 2012 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1210 1220 1240 1260 1270 1280 400 -300 -200 -100 -Spring Spring Spring Spring Spring Spring 1290 1300 1340 1351 1360 1370 400 -300 -200 -100 -Spring Spring Spring Fall Fall Fall 1380 1390 1400 1210 1220 1230 Catch per Area (kg/km^2) 400 -300 -200 -100 -0 -Fall Fall Fall Fall Fall Fall 1240 1260 1270 1280 1290 1300 400 -300 -200 -100 -1 0 Fall Fall Fall Fall Fall Fall 1340 1351 1360 1370 1380 1390 400 -300 -200 -100 - $0.02002202402602 \\ \$.02002202402602 \\ \$.02002202202 \\ \$.0200220202 \\ \$.0200202 \\ \$.0200202 \\ \$.0200202 \\ \$.0200202 \\ \$.0200202 \\ \$.0200202 \\ \$.0200202 \\ \$.02002 \\ \$.0200202 \\ \$.0200$ Fall 1400 400 -300 -200 -100 -0.0200020202040206028 wing area swept

Nmonkfish 2013 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1220 1230 1240 1260 1270 1280 200 150 100 50 Spring Spring Spring Spring Spring Spring 1290 1300 1340 1360 1370 1380 200 150 100 50 Catch per Area (kg/km^2) Spring Spring Fall Fall Fall Fall 1390 1400 1220 1230 1240 1260 200 150 100 50 Fall Fall Fall Fall Fall Fall 1270 1280 1290 1300 1340 1351 200 150 100 50 0 D.020.023.025.020.02 Fall Fall Fall Fall Fall 1360 1370 1380 1390 1400 200 150 100 50  $0.02\\ 0.02$ wing\_area\_swept

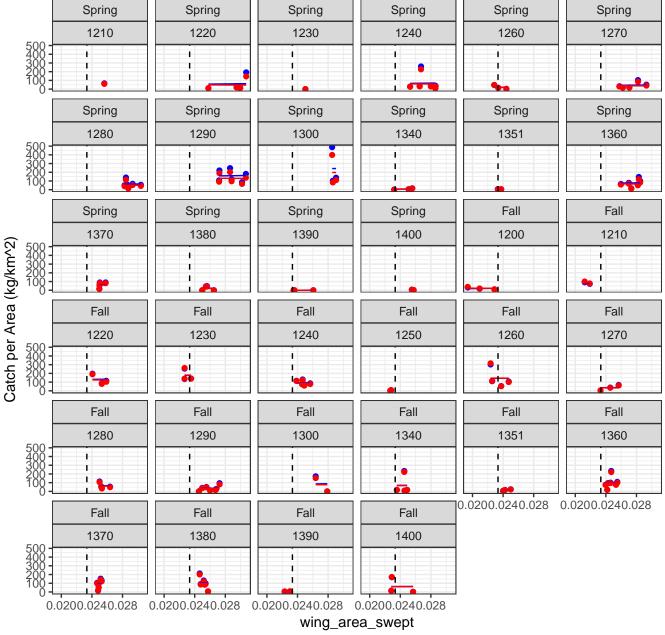
Nmonkfish 2014 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1220 1240 1260 1270 1280 1290 1 1 100 50 Spring Spring Spring Spring Spring Spring 1300 1340 1351 1360 1370 1380 100 50 0 Catch per Area (kg/km^2) Spring Spring Fall Fall Fall Fall 1390 1400 1220 1230 1240 1260 100 50 Fall Fall Fall Fall Fall Fall 1270 1280 1290 1300 1351 1360 100 50 0 TD.02**2**:525:0027:53000.02**2:**525:0027:53000.02**2:**525:0027:5300 Fall Fall Fall 1370 1380 1390 100 -50 0.0225025.0027503000.0225025.0027503000.0225025.002750300 wing\_area\_swept

Nmonkfish 2015 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1220 1230 1240 1260 1280 1270 300 200 100 -Spring Spring Spring Spring Spring Spring 1290 1300 1340 1351 1360 1370 300 200 100 Spring Spring Spring Fall Fall Fall 1380 1390 1400 1200 1210 1220 Catch per Area (kg/km^2) 300 200 100 0 Fall Fall Fall Fall Fall Fall 1230 1240 1260 1270 1280 1250 300 200 100 0 Fall Fall Fall Fall Fall Fall 1290 1300 1340 1351 1360 1370 300 200 100 -0 0.0226250276300 0.0226250276300 0.0226250276300 Fall Fall Fall 1380 1390 1400 300 200 100 0 0.0226250276300 0.0**22625027.6**300 0.0**22625027.6**300 wing\_area\_swept

Nmonkfish 2016 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1210 1220 1250 1200 1230 1240 1 1 400 1 200 Т, Spring Spring Spring Spring Spring Spring 1260 1270 1280 1290 1300 1340 400 200 0 Spring Spring Spring Spring Spring Spring 1351 1360 1370 1380 1390 1400 Catch per Area (kg/km^2) 400 200 0 Fall Fall Fall Fall Fall Fall 1200 1210 1230 1250 1220 1240 400 200 0 Fall Fall Fall Fall Fall Fall 1260 1270 1280 1290 1300 1340 400 200 0 Fall Fall Fall Fall Fall Fall 1351 1360 1370 1380 1390 1400 400 200 0 0.02250250250200.0225025000.0225025000.0225025000.0225025000.0225025000.0225025000.0225025000.0225025000.0225025000.0225025000.0225025000.0225025000.0225025000.0225025000.0225025000.0225025000.022502500.022500.022502500.022500.0

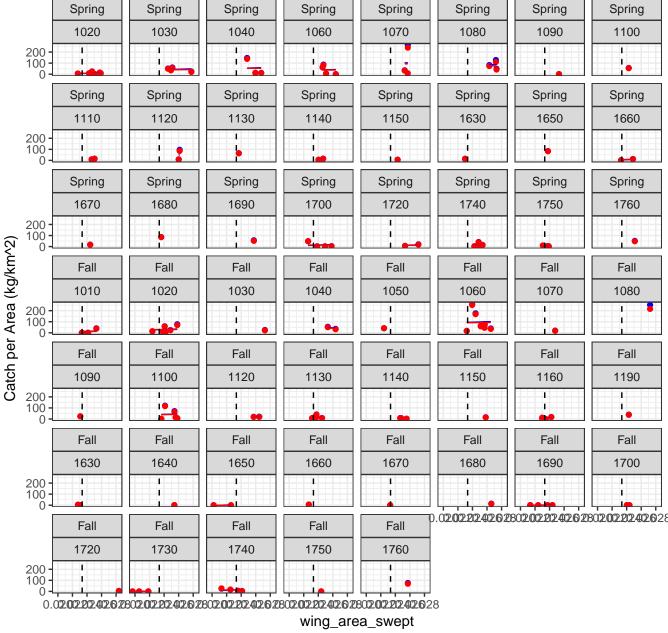
wing\_area\_swept

Nmonkfish 2017 Case 4 (Without Zeros or Fills ) Winner = WingSpread



#### Smonkfish 2009 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring Spring 1010 1020 1030 1060 1070 1080 1090 1040 Spring Spring Spring Spring Spring Spring Spring Spring 1100 1110 1120 1150 1160 1180 1610 1640 Spring Spring Spring Spring Spring Spring Spring Spring 1670 1680 1690 1700 1710 1740 1750 1760 1 Catch per Area (kg/km^2) Fall Fall Fall Fall Fall Fall Fall Fall 1010 1020 1030 1040 1050 1060 1070 1080 Fall Fall Fall Fall Fall Fall Fall Fall 1090 1100 1110 1120 1130 1160 1620 1630 Fall Fall Fall Fall Fall Fall Fall Fall 1640 1650 1660 1690 1700 1710 1720 1730 0.0225250275 0.02252500275 0.02252500275 0.0225250275 0.02252500275 Fall Fall Fall 1740 1750 1760 0.0**225250**275 0.0**225250**275 0.0**225250**275 wing\_area\_swept

## Smonkfish 2010 Case 4 (Without Zeros or Fills) Winner = WingSpread



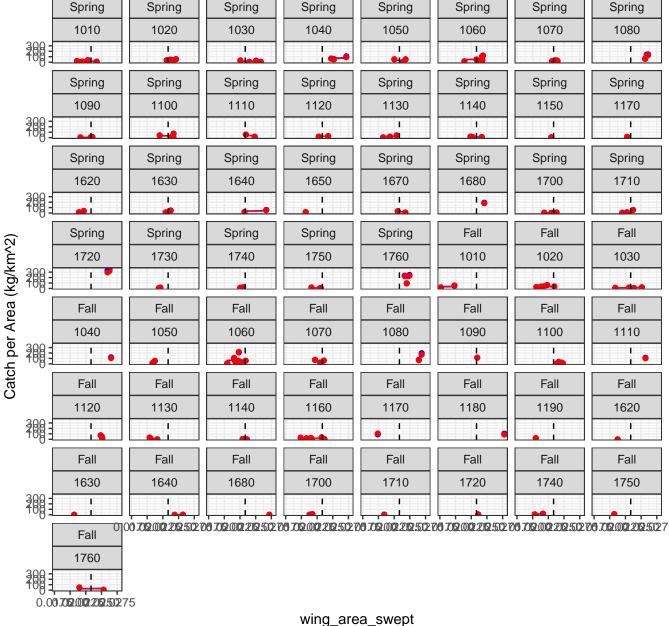
#### Smonkfish 2011 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring Spring 1020 1030 1040 1060 1070 1080 1100 1110 Spring Spring Spring Spring **Spring** Spring Spring Spring 1120 1130 1140 1150 1630 1640 1180 1620 Spring Spring Spring Spring Spring Spring Spring Spring 1670 1680 1690 1700 1710 1720 1730 1740 Catch per Area (kg/km^2) Spring Spring Fall Fall Fall Fall Fall Fall 1750 1760 1020 1030 1040 1060 1070 1080 400 = 100 = Fall Fall Fall Fall Fall Fall Fall Fall 1090 1100 1110 1130 1140 1160 1180 1630 Fall Fall Fall Fall Fall Fall Fall Fall 1640 1670 1680 1700 1710 1720 1730 1740 0.02/102/4027 0.021024027 0.02/102/4027 0.02/102/4027 0.02010204027 0.02/102/4027 Fall Fall 1750 1760

wing\_area\_swept

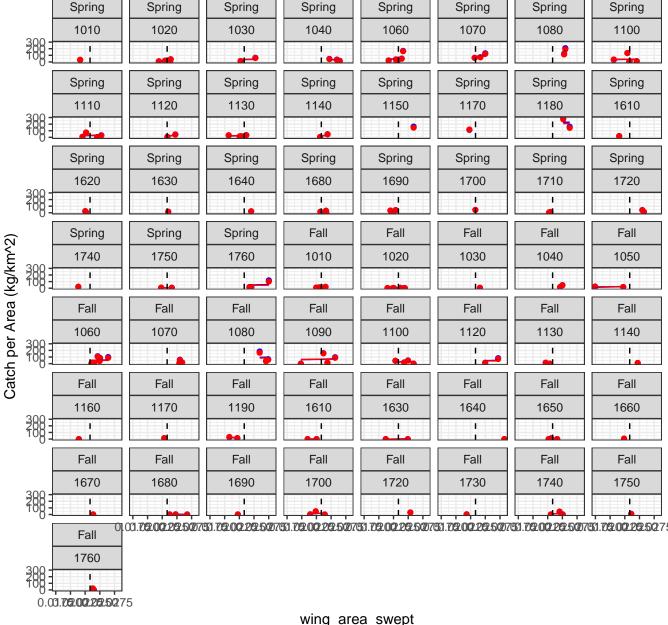
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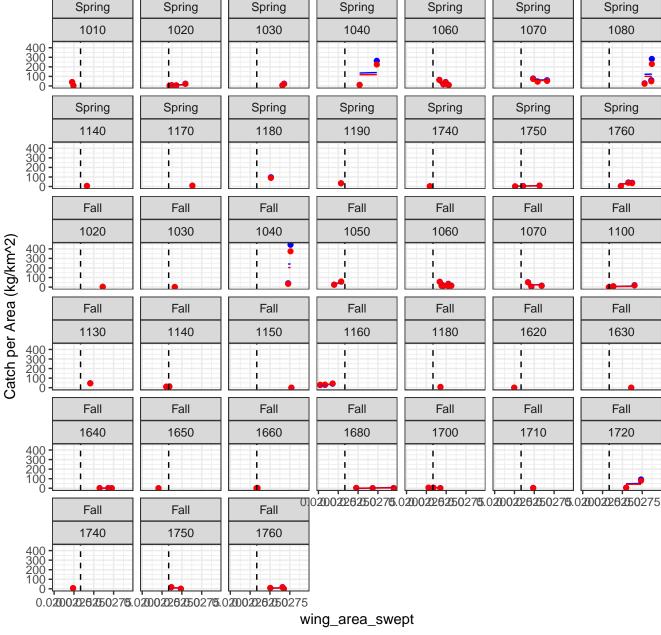
## Smonkfish 2012 Case 4 (Without Zeros or Fills) Winner = WingSpread



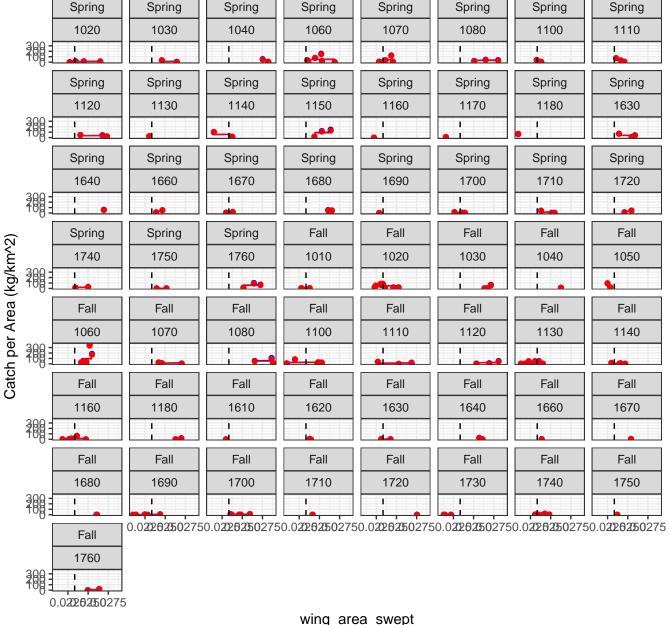
## Smonkfish 2013 Case 4 (Without Zeros or Fills) Winner = WingSpread



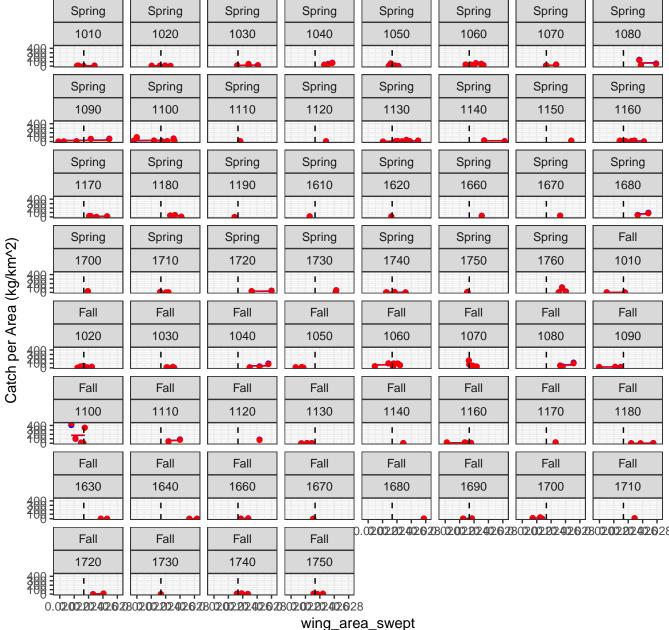
# Smonkfish 2014 Case 4 (Without Zeros or Fills ) Winner = WingSpread Spring Spr



## Smonkfish 2015 Case 4 (Without Zeros or Fills) Winner = WingSpread



## Smonkfish 2016 Case 4 (Without Zeros or Fills) Winner = WingSpread

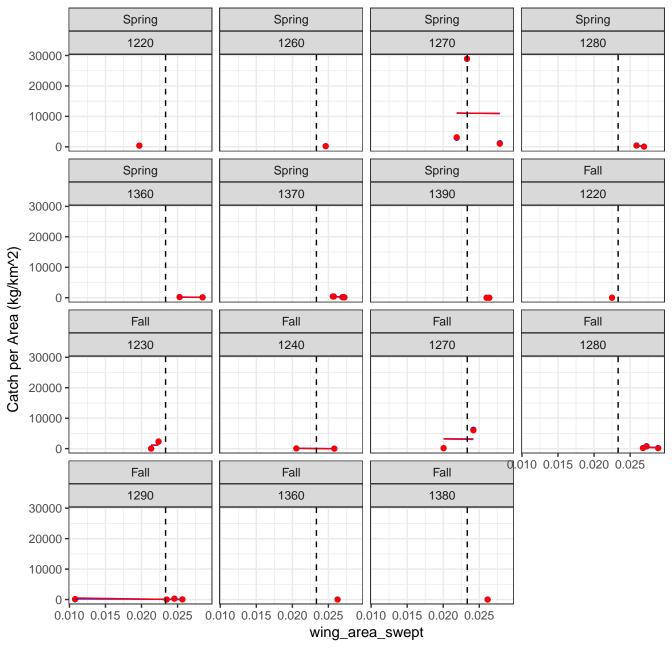


### Smonkfish 2017 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring 1010 1020 1030 1040 1050 1060 1070 750 500 250 Spring Spring Spring Spring Spring Spring Spring 1080 1090 1100 1110 1120 1130 1140 750 500 250 Spring Spring Spring Spring Spring Spring Spring 1150 1160 1170 1180 1620 1630 1660 Catch per Area (kg/km^2) 750 500 250 0 Spring Spring Spring Spring Spring Spring Spring 1670 1680 1690 1700 1710 1720 1740 750 500 250 Fall Fall Fall Fall Spring Spring Fall 1750 1760 1130 1140 1150 1160 1170 750 500 250 TI.020**0226250**27**5.**020**0226250**27**5.**020**0226250**27**5.0200226250275.0200226250275** Fall Fall 1180 1190 750 500 250 0.0**200226250**27**5**.0**200226250**275 wing area swept

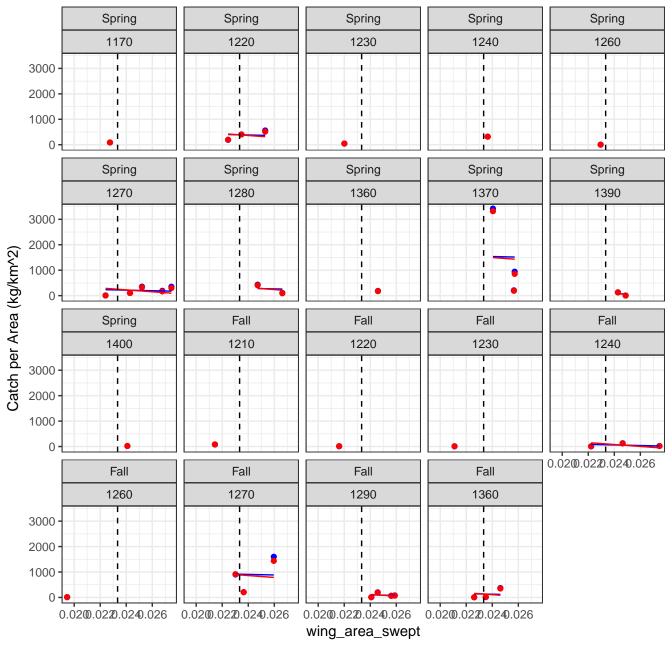
Pollock 2009 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring **Spring** Spring Spring 1180 1210 1250 1260 1270 6000 4000 2000 Spring Spring Spring Spring Spring 1280 1290 1360 1370 1380 6000 4000 2000 0 Catch per Area (kg/km^2) Fall Fall Fall Fall Fall 1170 1210 1230 1240 1250 6000 4000 2000 Fall Fall Fall Fall Fall 1260 1270 1290 1360 1370 6000 4000 2000 0  $0.0240.0260.0280.030\ 0.0240.0260.0280.030\ 0.0240.0260.0280.03$ Fall Fall 1380 1400 6000 4000 2000 0.0240.0260.0280.030 0.0240.0260.0280.030 wing\_area\_swept

Pollock 2010 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring 1180 1210 1220 1240 1260 4000 2000 Spring Spring Spring Spring Spring 1360 1270 1280 1290 1370 4000 2000 Catch per Area (kg/km^2) Spring Spring Spring Fall Fall 1380 1390 1400 1210 1230 4000 2000 -Fall Fall Fall Fall Fall 1270 1240 1280 1290 1360 4000 2000 0 0.0220.0240.0260.028 0.0220.0240.0260.028 0.0220.0240.0260.028 Fall Fall 1380 1370 4000 2000 0.0220.0240.0260.028 0.0220.0240.0260.028 wing\_area\_swept

Pollock 2011 Case 4 (Without Zeros or Fills) Winner = Standard

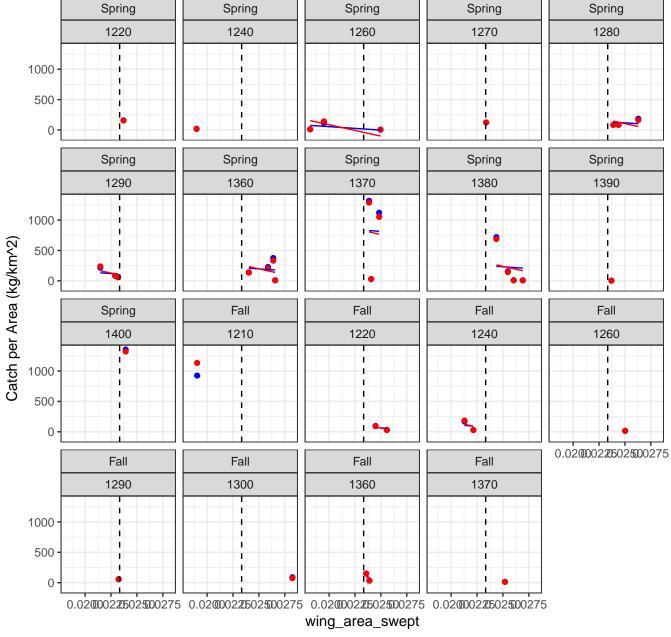


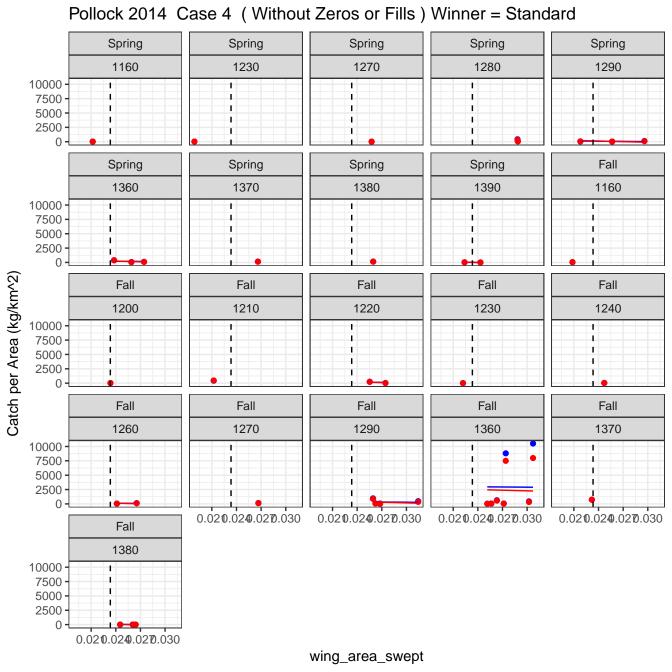
Pollock 2012 Case 4 (Without Zeros or Fills) Winner = Standard



Pollock 2013 Case 4 (Without Zeros or Fills ) Winner = Standard

Spring Spring Spring Spring



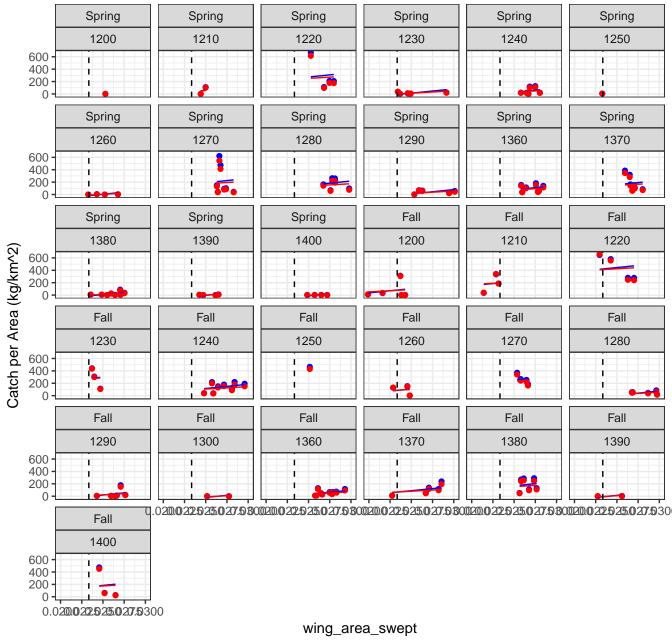


#### Pollock 2015 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring 1180 1170 1210 1220 1240 1250 30000 -20000 -10000 Spring Spring Spring Spring Spring Spring 1260 1280 1290 1360 1370 1380 30000 20000 -10000 -0 Catch per Area (kg/km^2) Spring Fall Fall Fall Fall Fall 1390 1160 1170 1210 1220 1240 30000 20000 -10000 -Fall Fall Fall Fall Fall Fall 1260 1270 1280 1290 1300 1360 30000 20000 -10000 -0 0.0230.0250.027 0.0230.0250.027 0.0230.0250.027 Fall Fall Fall 1370 1380 1390 30000 20000 -10000 0 0.0230.0250.027 0.0230.0250.027 0.0230.0250.027 wing\_area\_swept

Pollock 2016 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring 1160 1180 1200 1210 1220 1230 15000 -10000 -5000 -Spring Spring Spring Spring Spring Spring 1240 1250 1260 1270 1280 1290 15000 -10000 5000 -0 Catch per Area (kg/km^2) Spring Spring Spring Spring Spring Fall 1300 1360 1370 1380 1400 1180 15000 10000 -5000 -Fall Fall Fall Fall Fall Fall 1200 1210 1240 1260 1270 1280 15000 -10000 -5000 -0.020022525027530 Fall Fall Fall Fall Fall 1290 1300 1360 1370 1400 15000 10000 -5000 wing\_area\_swept

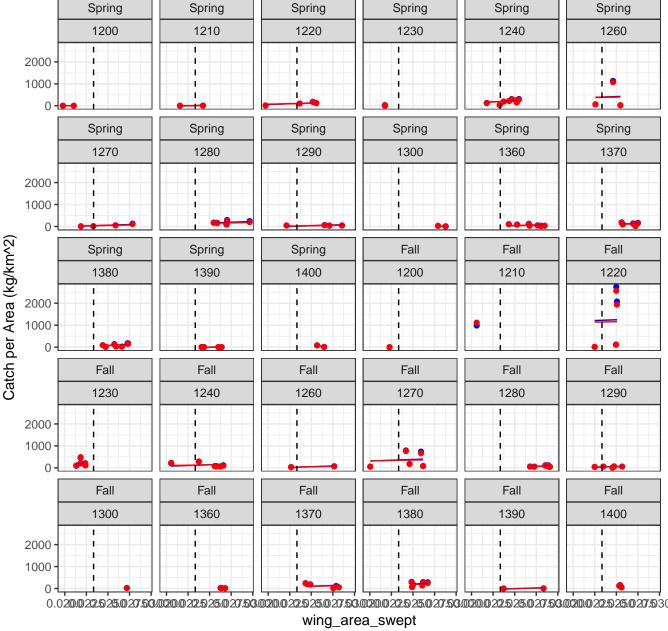
Pollock 2017 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring 1220 1180 1190 1210 1260 20000 -10000 0 Spring Spring Spring Spring Spring 1270 1280 1290 1360 1370 20000 Catch per Area (kg/km^2) 10000 0 Fall Fall Fall Fall Fall 1170 1180 1240 1260 1300 20000 -10000 0 <u> 1</u>0.020 0.024 0.028 0.0**32**020 0.024 0.028 0.032 Fall Fall Fall 1370 1360 1400 20000 -10000  $0.020\ 0.024\ 0.028\ 0.032\ 020\ 0.024\ 0.028\ 0.032\ 020\ 0.024\ 0.028\ 0.032$ wing\_area\_swept

### Nredhake 2009 Case 4 (Without Zeros or Fills) Winner = WingSpread

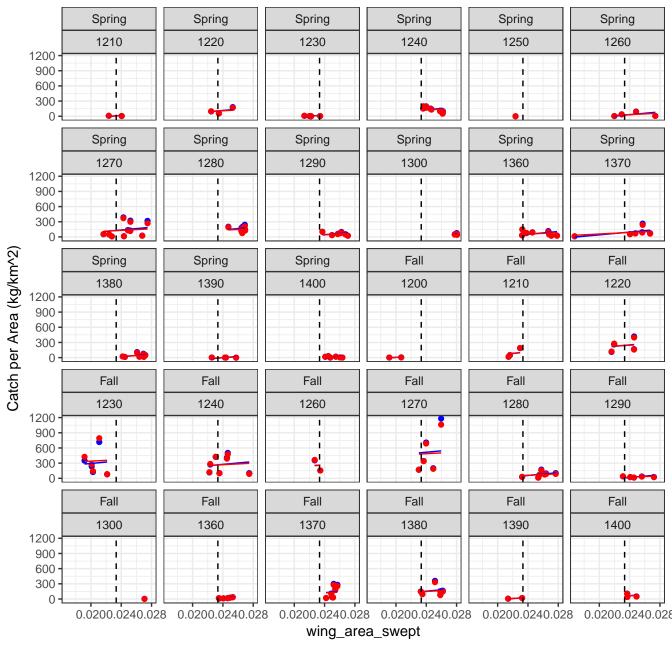


Nredhake 2010 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1200 1220 1230 1250 1210 1240 1200 800 400 Spring Spring Spring Spring Spring Spring 1260 1270 1280 1290 1300 1360 1200 800 400 Spring Spring Spring Spring Fall Fall 1370 1380 1390 1400 1200 1210 Catch per Area (kg/km^2) 1200 800 400 Fall Fall Fall Fall Fall Fall 1220 1230 1260 1270 1240 1250 1200 800 ı 400 0 Fall Fall Fall Fall Fall Fall 1280 1290 1300 1360 1370 1380 1200 800 400 10.0212.0234.0236.0238.08:002122.0224.0236.0238.08:00212.0224.0236.0238.08:00212.0224.0236.0238.03 Fall Fall 1390 1400 1200 800 400 0.022024026028030022024026028030 wing\_area\_swept

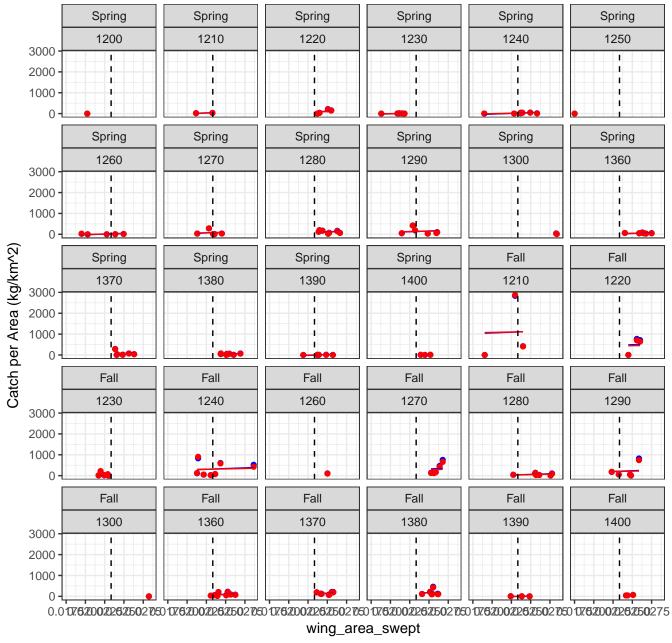
# Nredhake 2011 Case 4 (Without Zeros or Fills) Winner = WingSpread



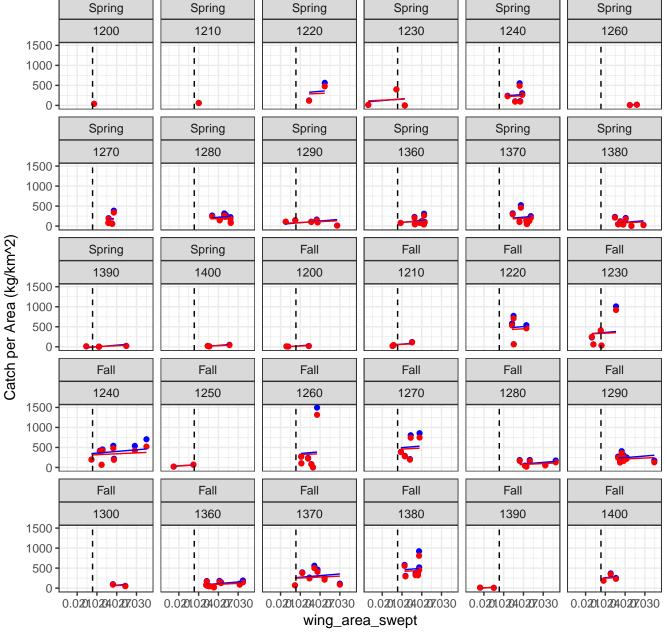
### Nredhake 2012 Case 4 (Without Zeros or Fills) Winner = WingSpread



### Nredhake 2013 Case 4 (Without Zeros or Fills) Winner = WingSpread



Nredhake 2014 Case 4 (Without Zeros or Fills) Winner = WingSpread



Nredhake 2015 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1230 1200 1210 1220 1240 1250 4000 -3000 -2000 -1000 -Spring Spring Spring Spring Spring Spring 1260 1270 1280 1290 1300 1360 4000 3000 2000 1000 Spring Spring Spring Spring Fall Fall 1370 1380 1390 1400 1200 1210 Catch per Area (kg/km^2) 4000 3000 2000 1000 0 Fall Fall Fall Fall Fall Fall 1220 1230 1240 1250 1260 1270 4000 3000 2000 -1000 0 Fall Fall Fall Fall Fall Fall 1280 1290 1300 1360 1370 1380 4000 3000 2000 **-**1000 **-**0.02110224027.030030.02010224027.030030.02010224027.030030.02010224027.03003Fall Fall 1390 1400 4000 3000 2000 1000 0.020102240207.0300030.020102240207.0300033 wing\_area\_swept

Nredhake 2016 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1200 1220 1230 1250 1210 1240 1500 **-**1000 **-**500 **-**Spring Spring Spring Spring Spring Spring 1260 1270 1280 1290 1300 1360 1500 -1000 Spring Spring Spring Spring Fall Fall 1370 1380 1390 1400 1200 1210 Catch per Area (kg/km^2) 1500 -1000 -500 -0 Fall Fall Fall Fall Fall Fall 1220 1250 1230 1240 1260 1270 1500 -1000 500 -0 Fall Fall Fall Fall Fall Fall 1280 1290 1300 1360 1370 1380 1500 1000 500 -TI 02D022525027.530D2D022525027.530D2D022525027.530D2D022525027.530 Fall Fall 1390 1400 1500 1000 500 0.02**0.022525.027.530020.022525.027.5**300 wing\_area\_swept

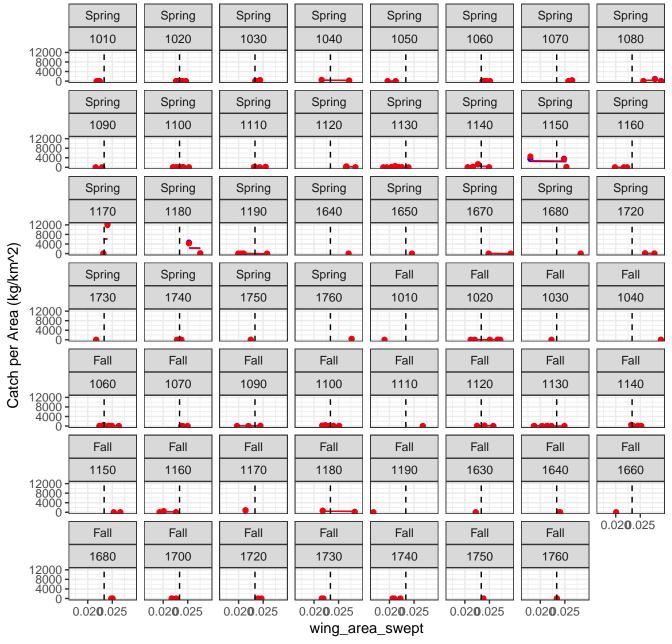
Nredhake 2017 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1200 1210 1220 1230 1250 1240 2000 1000 • • • Spring Spring Spring Spring Spring Spring 1260 1270 1280 1290 1300 1360 2000 1000 Spring Spring Spring Spring Fall Fall 1370 1380 1390 1400 1200 1210 Catch per Area (kg/km^2) 2000 1000 0 Fall Fall Fall Fall Fall Fall 1220 1230 1250 1260 1270 1240 2000 -1000 1 0 Fall Fall Fall Fall Fall Fall 1280 1290 1300 1360 1370 1380 2000 1000 0 TI.01802102402703@.01802102402703@.01802102402703@.018021024027 Fall Fall 1390 1400 2000 1000 0.01080201020402070300.0108020102040207030 wing\_area\_swept

### Sredhake 2009 Case 4 (Without Zeros or Fills) Winner = Standard

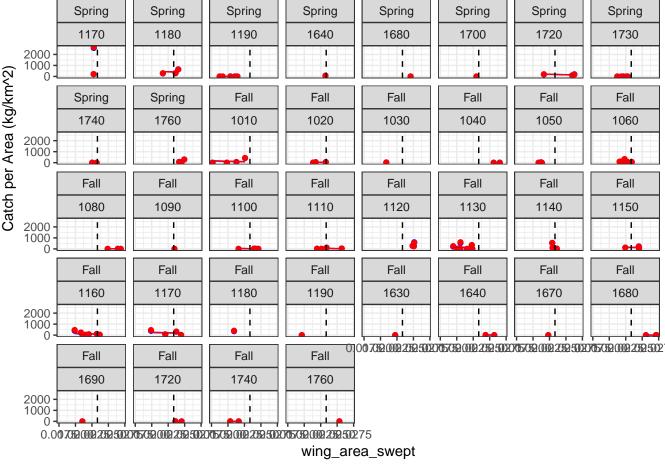


#### Sredhake 2010 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring Spring 1040 1010 1020 1030 1050 1060 1070 1080 ı 1 Spring Spring Spring Spring Spring Spring Spring Spring 1090 1100 1110 1120 1130 1150 1160 1140 7999 Spring Spring Spring Spring Spring Spring Spring Spring 1170 1180 1190 1650 1660 1670 1680 1690 Spring Spring Spring Spring Spring Spring Fall Fall Catch per Area (kg/km^2) 1700 1720 1730 1740 1750 1760 1010 1020 Fall Fall Fall Fall Fall Fall Fall Fall 1050 1060 1090 1100 1030 1040 1070 1080 le , Fall Fall Fall Fall Fall Fall Fall Fall 1120 1130 1140 1180 1110 1150 1160 1170 1 Fall Fall Fall Fall Fall Fall Fall Fall 1190 1640 1660 1670 1680 1720 1730 1740 Fall Fall 1750 1760 0.022550275500.0225250270500 wing area swept

### Sredhake 2011 Case 4 (Without Zeros or Fills) Winner = Standard



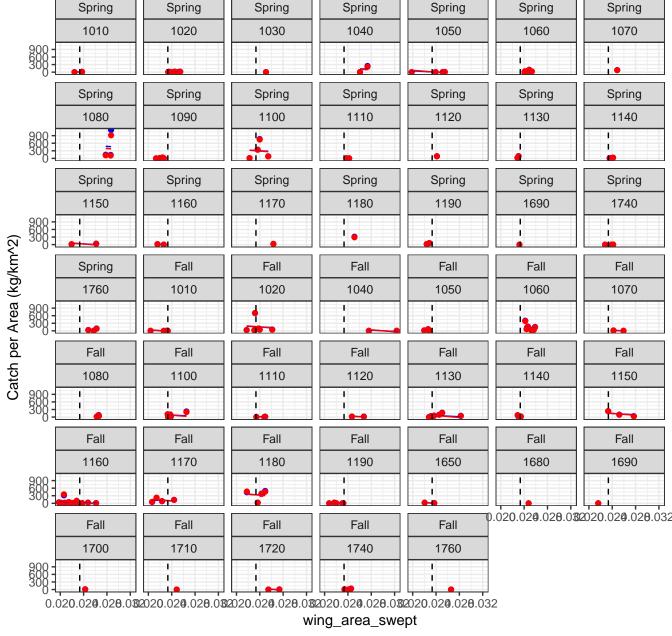
#### Sredhake 2012 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring Spring 1010 1020 1030 1040 1050 1060 1070 1080 2000 1000 Spring Spring Spring Spring Spring Spring Spring Spring 1100 1110 1120 1130 1140 1150 1160 1090 2000 1000 Spring Spring Spring Spring Spring Spring Spring Spring 1170 1180 1190 1640 1680 1700 1720 1730 2000 1000 Catch per Area (kg/km^2) Spring Spring Fall Fall Fall Fall Fall Fall 1020 1050 1740 1760 1010 1030 1040 1060 2000 1000 Fall Fall Fall Fall Fall Fall Fall Fall 1080 1090 1100 1110 1120 1130 1150 1140



Sredhake 2013 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring 1050 1010 1020 1030 1040 1060 1080 Spring Spring Spring Spring Spring Spring Spring 1090 1100 1110 1120 1130 1150 1140 Spring Spring Spring Spring Spring Spring Spring 1160 1170 1180 1190 1670 1690 1700 Catch per Area (kg/km^2) Spring Spring Spring Spring Fall Fall Fall 1730 1760 1010 1020 1720 1740 1050 Fall Fall Fall Fall Fall Fall Fall 1060 1080 1090 1100 1110 1120 1130 Fall Fall Fall Fall Fall Fall Fall 1640 1140 1150 1160 1170 1190 1630 **0.00752002252502**7 Fall Fall Fall Fall Fall Fall 1670 1680 1700 1730 1740 1760 0.0 075P00P25P50275D75P00P25P50275D0P25P50275D0P25P50275D0P25P50275D0P25P50275D0P25P50275D0P25P50275D0P25P50275

wing\_area\_swept

# Sredhake 2014 Case 4 (Without Zeros or Fills) Winner = Standard



# Sredhake 2015 Case 4 (Without Zeros or Fills) Winner = Standard



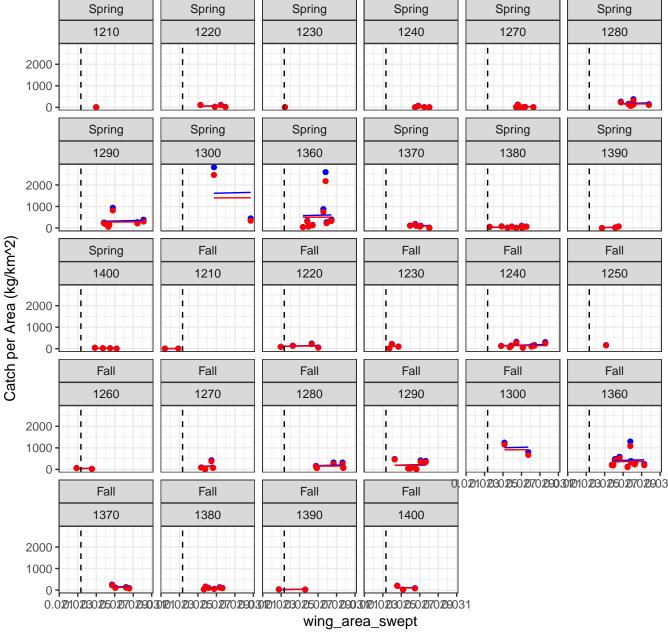
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Spring

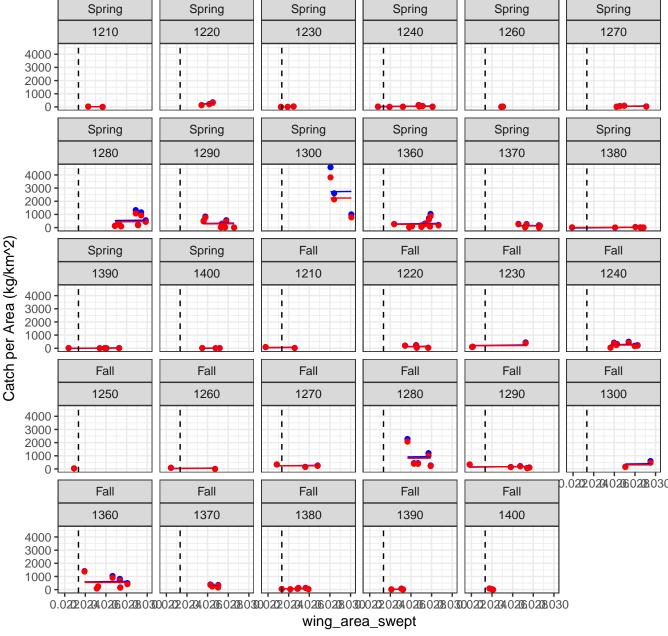


#### Sredhake 2017 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring 1010 1020 1030 1040 1050 1060 300 200 · 100 · 0 Spring Spring Spring Spring Spring Spring 1070 1080 1090 1100 1110 1120 300 200 100 0 Spring Spring Spring Spring Spring Spring 1140 1150 1160 1170 1130 1180 300 200 Catch per Area (kg/km^2) 100 Spring Spring Spring Spring Spring Spring 1660 1680 1690 1720 1730 1760 300 200 100 Fall Fall Fall Fall Fall Fall 1130 1140 1150 1160 1170 1180 300 200 100 $0.022024026028030\\0.02202402602802\\0.02202402602802\\0.02202402602802\\0.02202402602802\\0.02202402602802\\0.02202402602802\\0.02202402602802\\0.02202402602802\\0.02202402602\\0.02202402602\\0.02202402602\\0.02202402602\\0.02202402602\\0.02202402602\\0.02202402602\\0.02202402602\\0.02202402602\\0.02202402602\\0.02202402602\\0.02202402602\\0.02202402602\\0.022024\\0.022024\\0.0$ Fall 1190 300 200 100 0 0.0222022402060238030 wing\_area\_swept

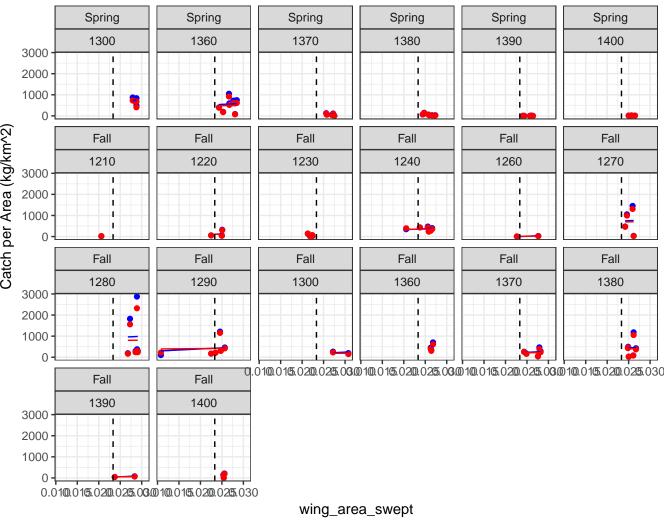
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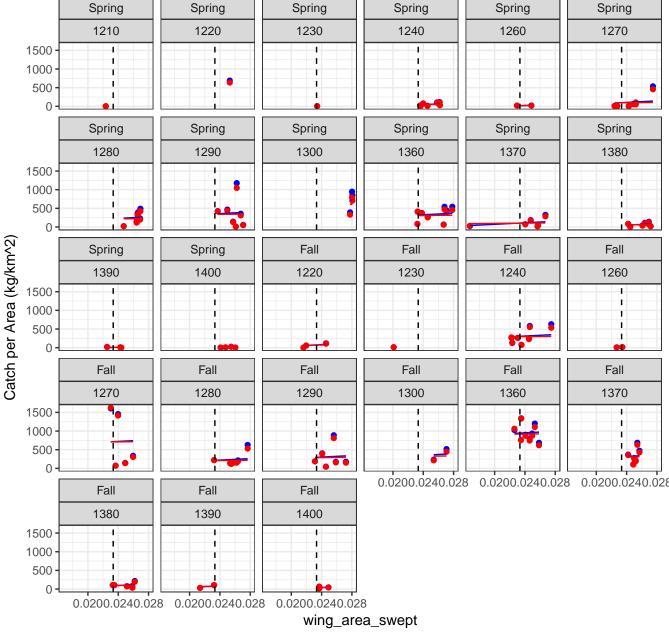
# Whitehake 2010 Case 4 (Without Zeros or Fills ) Winner = WingSpread



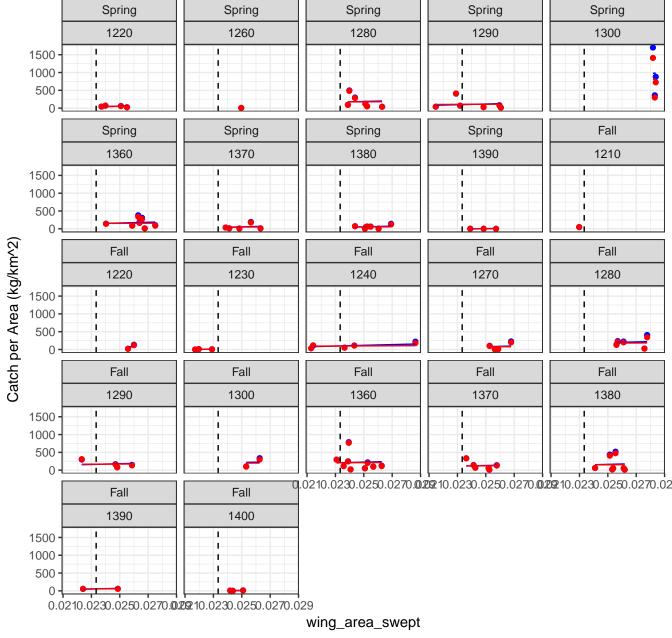
Whitehake 2011 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1220 1240 1260 1270 1280 1290 3000 2000 1000 Spring Spring Spring Spring Spring Spring 1300 1360 1370 1380 1390 1400 3000 2000 1000 Catch per Area (kg/km^2) Fall Fall Fall Fall Fall Fall 1210 1220 1230 1240 1260 1270 3000 2000 -1000 Fall Fall Fall Fall Fall Fall 1280 1290 1300 1360 1370 1380 3000 2000



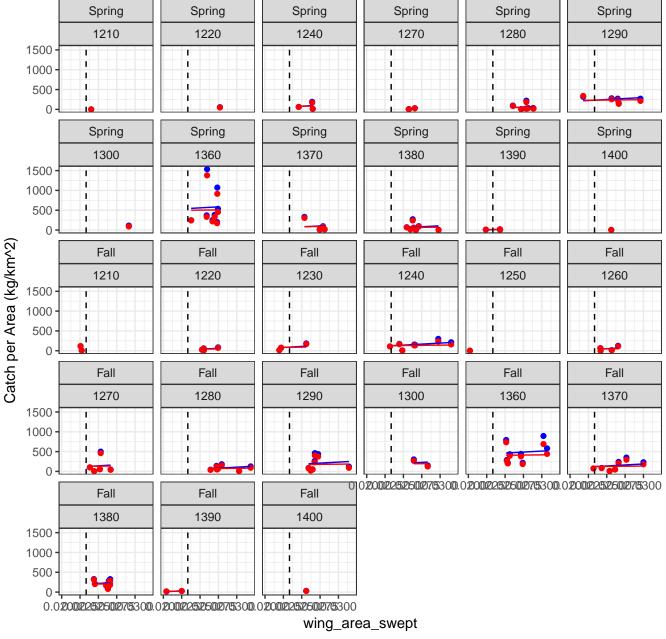
# Whitehake 2012 Case 4 (Without Zeros or Fills) Winner = WingSpread



## Whitehake 2013 Case 4 (Without Zeros or Fills) Winner = WingSpread

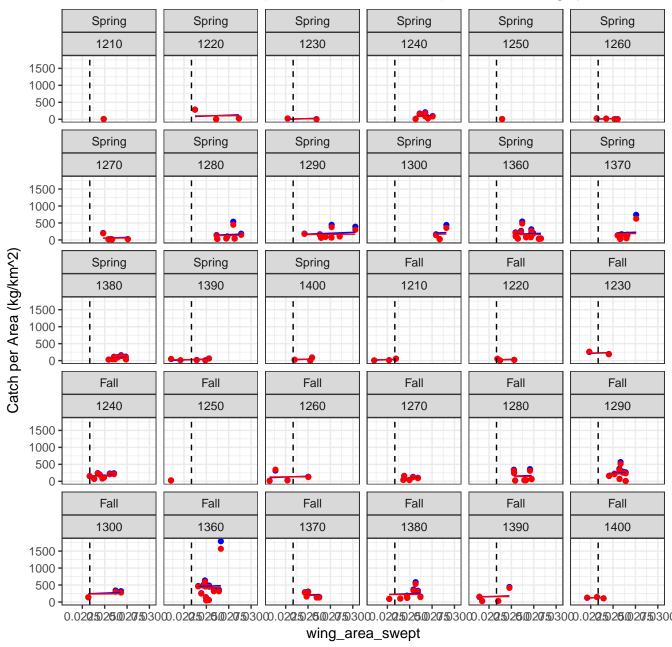


### Whitehake 2014 Case 4 (Without Zeros or Fills) Winner = WingSpread

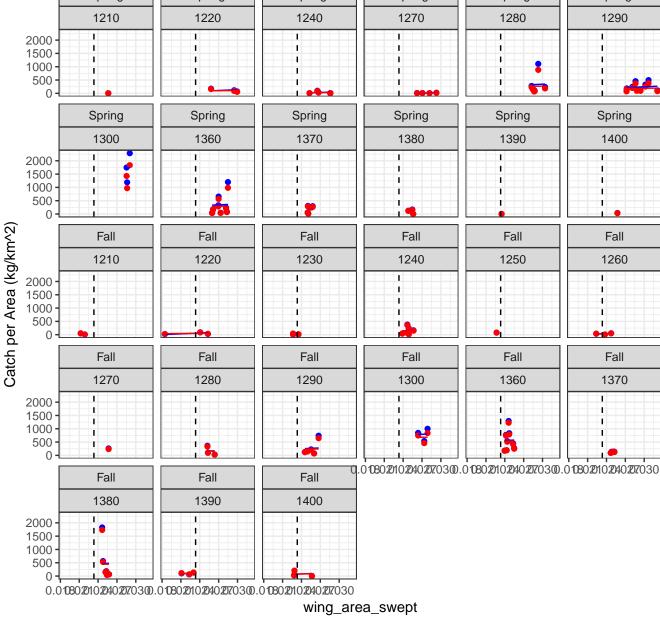


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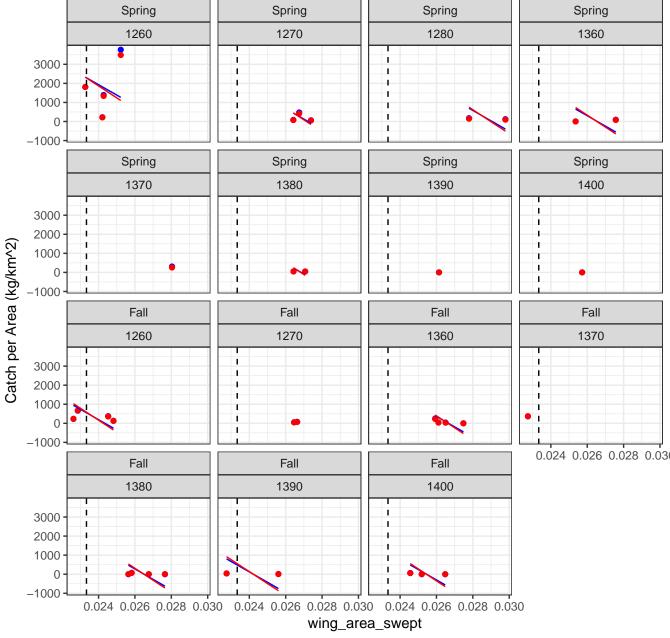
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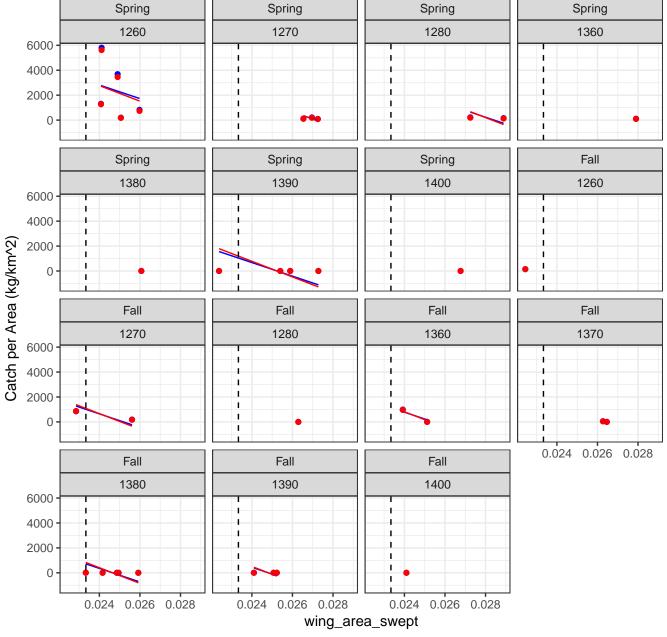
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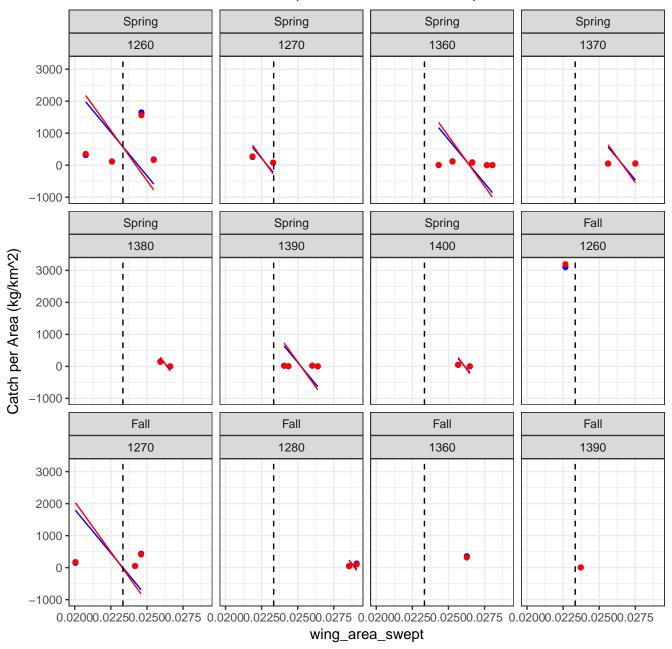
GOMhaddock 2009 Case 4 (Without Zeros or Fills) Winner = Standard



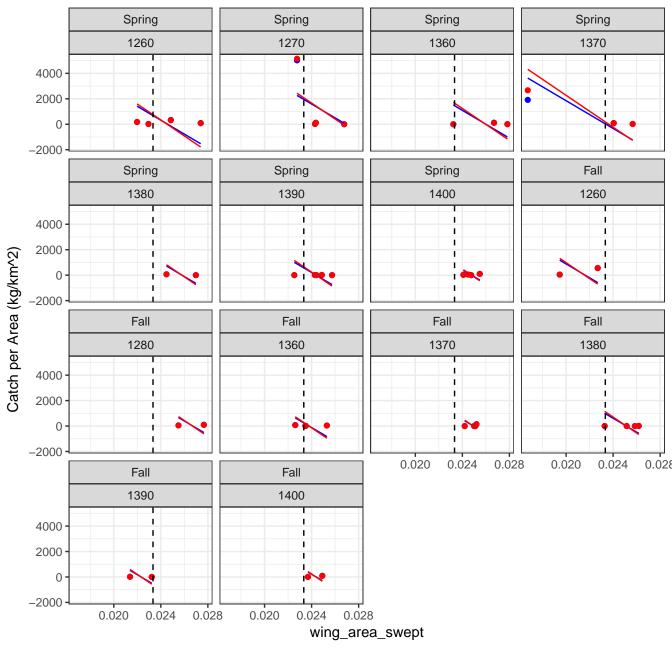
GOMhaddock 2010 Case 4 (Without Zeros or Fills ) Winner = Standard



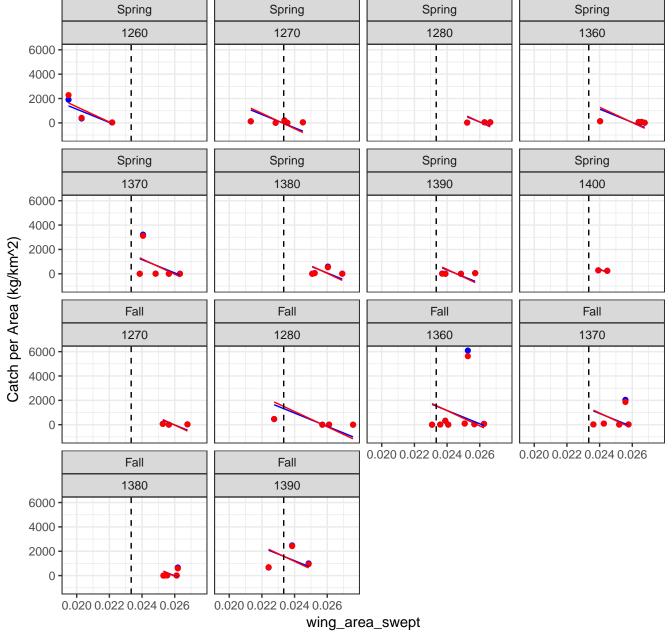
GOMhaddock 2011 Case 4 (Without Zeros or Fills) Winner = Standard



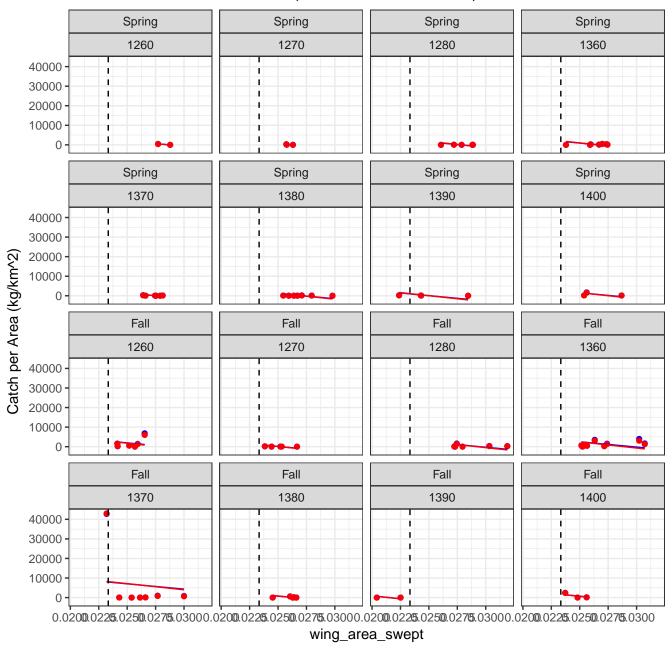
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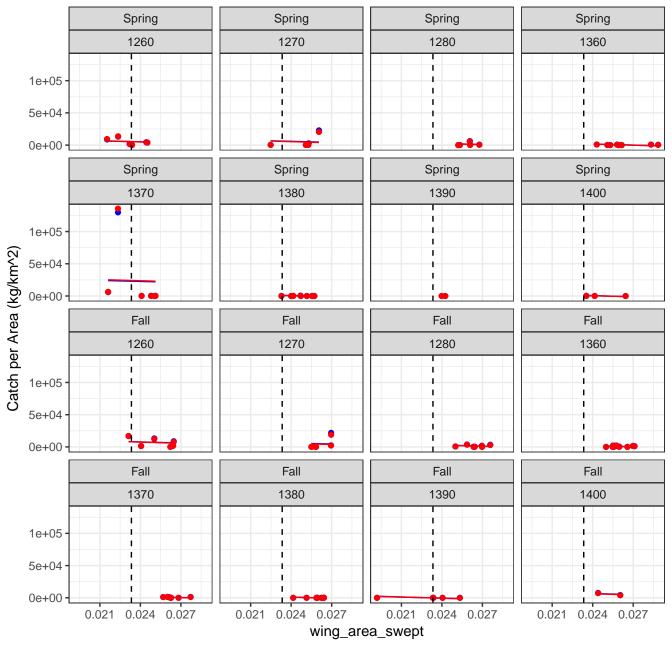
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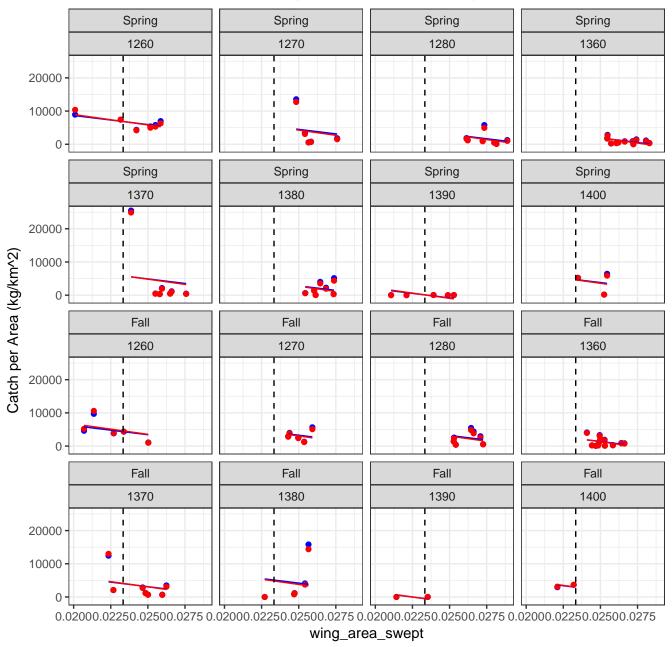
# GOMhaddock 2014 Case 4 (Without Zeros or Fills) Winner = Standard



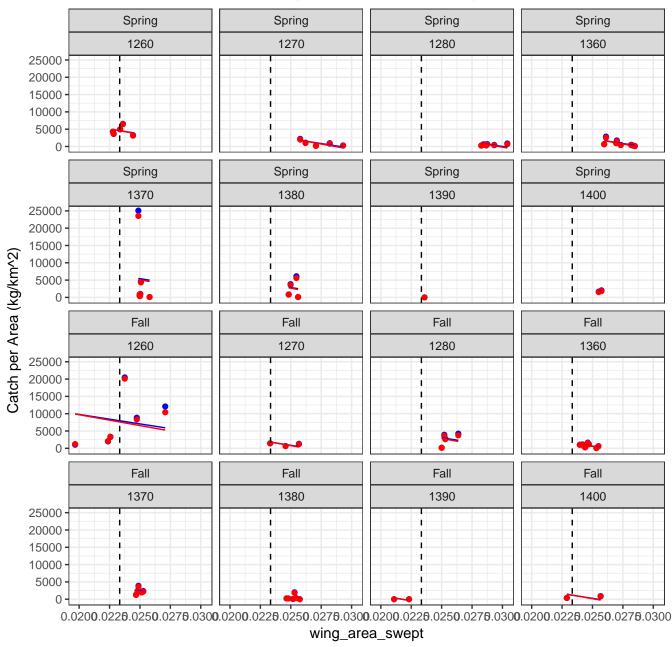
GOMhaddock 2015 Case 4 (Without Zeros or Fills) Winner = Standard



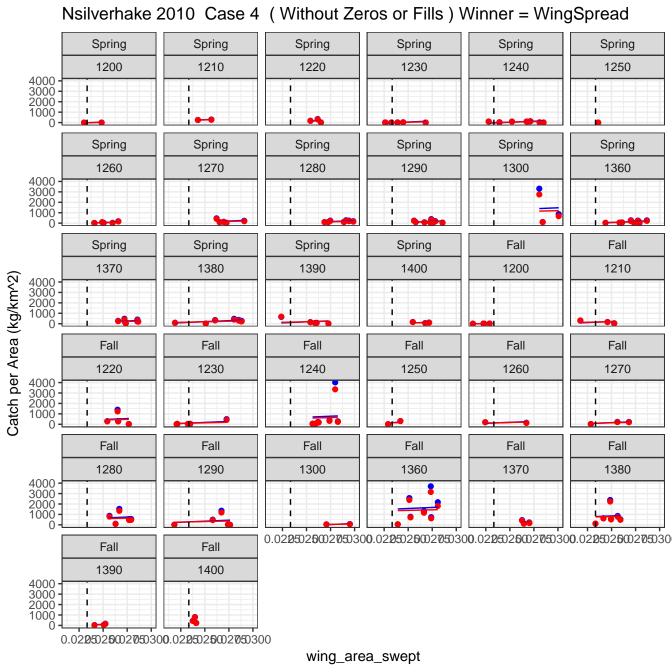
GOMhaddock 2016 Case 4 (Without Zeros or Fills) Winner = Standard



GOMhaddock 2017 Case 4 (Without Zeros or Fills) Winner = Standard



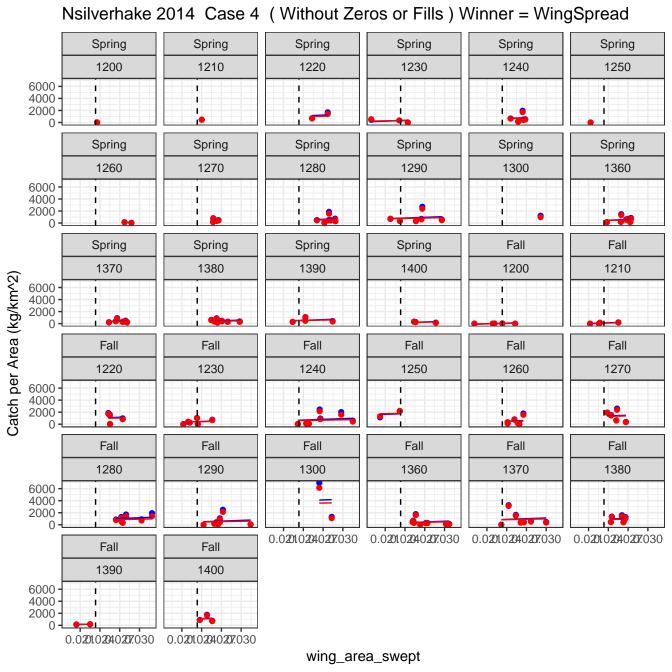




Nsilverhake 2011 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1200 1220 1230 1250 1210 1240 3000 2000 1000 0 Spring Spring Spring Spring Spring Spring 1260 1270 1280 1290 1300 1360 3000 2000 1000 -Spring Spring Spring Spring Fall Fall 1370 1380 1390 1400 1200 1210 Catch per Area (kg/km^2) 3000 2000 ı 1000 0 Fall Fall Fall Fall Fall Fall 1220 1230 1240 1260 1270 1280 3000 1 2000 -1000 -T 0 Fall Fall Fall Fall Fall Fall 1290 1300 1360 1370 1380 1390 3000 2000 1000 0 -77|, 010|, 010|, 020|, 025, 03:0010|, 015, 020|, 025, 03:0010|, 015, 020|, 025, 03:0010|, 015, 020|, 025, 03:0010|, 015, 020|, 025, 03:0010| Fall 1400 3000 2000 1000 0.010.015.020.025.030 wing\_area\_swept

### Nsilverhake 2012 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1230 1200 1210 1220 1240 1250 6000 4000 2000 Spring Spring Spring Spring Spring Spring 1260 1270 1280 1290 1300 1360 6000 4000 2000 -Spring Spring Spring Spring Fall Fall 1370 1380 1390 1400 1200 1210 Catch per Area (kg/km^2) 6000 4000 2000 0 -Fall Fall Fall Fall Fall Fall 1220 1230 1260 1270 1240 1280 6000 4000 -2000 -0 Fall Fall Fall Fall Fall Fall 1290 1300 1360 1370 1380 1390 6000 4000 2000 0.0200.0240.028 0.0200.0240.028 0.0200.0240.028 0.0200.0240.028 0.0200.0240.028 Fall 1400 6000 4000 2000 -0 0.0200.0240.028 wing\_area\_swept

Nsilverhake 2013 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1200 1220 1230 1210 1240 1250 4000 3000 **-**2000 **-**1000 **-**Spring Spring Spring Spring Spring Spring 1260 1270 1280 1290 1300 1360 4000 3000 **-**2000 **-**1000 **-**Spring Spring Spring Spring Fall Fall 1370 1380 1390 1400 1200 1210 4000 3000 2000 Catch per Area (kg/km^2) 1000 Fall Fall Fall Fall Fall Fall 1220 1260 1270 1230 1240 1280 4000 3000 2000 1000 Fall Fall Fall Fall Fall Fall 1290 1300 1360 1370 1380 1390 4000 3000 -2000 -1000 -TJ, 0 17/62D02P625027650 17/62D02P62502 7650 17/62D02P625027650 17/62D02P62502755 17/62D02P6250275 Fall 1400 4000 -3000 -2000 -1000 -0.0107.6200022.625.0275 wing\_area\_swept



### Nsilverhake 2015 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1200 1220 1230 1260 1210 1240 6000 4000 2000 Spring Spring Spring Spring Spring Spring 1270 1280 1290 1300 1360 1370 6000 4000 2000 0 Spring Spring Spring Fall Fall Fall 1380 1390 1400 1200 1210 1220 Catch per Area (kg/km^2) 6000 4000 -2000 0 Fall Fall Fall Fall Fall Fall 1230 1240 1250 1260 1270 1280 6000 -4000 2000 0 Fall Fall Fall Fall Fall Fall 1290 1300 1360 1370 1380 1390 6000 4000 2000 Fall 1400 6000 4000 2000 0.020102040207.0300033 wing\_area\_swept

## Nsilverhake 2016 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1200 1210 1220 1230 1240 1250 4000 -3000 -2000 -1000 -Spring Spring Spring Spring Spring Spring 1260 1270 1280 1290 1300 1360 4000 3000 2000 1000 Spring Spring Spring Spring Fall Fall 1370 1380 1390 1400 1200 1210 Catch per Area (kg/km^2) 4000 3000 2000 1000 Fall Fall Fall Fall Fall Fall 1220 1230 1240 1250 1260 1270 4000 **-**3000 **-**2000 **-**1000 Fall Fall Fall Fall Fall Fall 1280 1290 1300 1360 1370 1380 4000 3000 2000 1000 TI 02D022525027,580D2D022525027,580D2D022525027,580D2D022525027,530 Fall Fall 1390 1400 4000 3000 2000 1000 0.02**0.022525.027.530020.022525.027.5**300 wing area swept

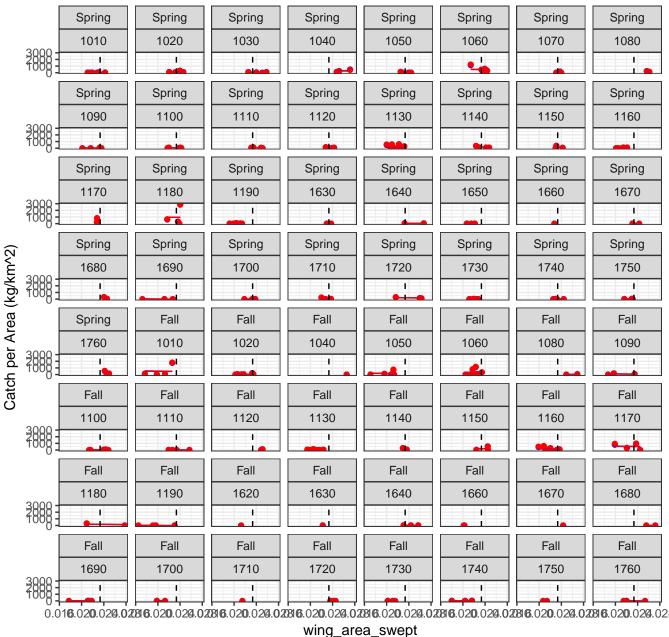
### Nsilverhake 2017 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1200 1210 1220 1230 1250 1240 3000 2000 1000 -Spring Spring Spring Spring Spring Spring 1260 1270 1280 1290 1300 1360 3000 2000 -**#** 1000 -Spring Spring Spring Spring Fall Fall 1370 1380 1390 1400 1200 1210 Catch per Area (kg/km^2) 3000 **-**2000 **-**1000 **-**0 Fall Fall Fall Fall Fall Fall 1220 1230 1240 1250 1270 1260 3000 -2000 -1000 0 Fall Fall Fall Fall Fall Fall 1280 1290 1300 1360 1370 1380 3000 -2000 ; **😜** 1000 -TI.01802102402703@.01802102402703@.01802102402703@.018021024027 Fall Fall 1390 1400 3000 2000 1000 0.01080201020402070300.0108020102040207030 wing\_area\_swept

### Ssilverhake 2009 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring Spring Spring 1010 1020 1030 1040 1050 1060 1070 1080 1090 ı 1 Spring Spring Spring Spring Spring Spring Spring Spring Spring 1100 1140 1110 1120 1130 1150 1160 1170 1180 **4000** Spring Spring Spring Spring Spring Spring Spring Spring Spring 1190 1610 1620 1640 1650 1660 1670 1680 1690 Spring Spring Spring Spring Spring Spring Fall Fall Fall Catch per Area (kg/km^2) 1700 1710 1730 1740 1750 1760 1010 1020 1030 **1999** Fall Fall Fall Fall Fall Fall Fall Fall Fall 1050 1060 1100 1070 1080 1090 1110 1120 1130 **400** Fall Fall Fall Fall Fall Fall Fall Fall Fall 1140 1190 1630 1150 1160 1170 1180 1640 1650 **4000 1** 1 1 Fall Fall Fall Fall Fall Fall Fall Fall Fall 1660 1670 1680 1690 1700 1710 1720 1730 1740 **4000** Fall Fall 1750 1760 **4000** 0.02.002.25.5020.502.002.25.50275 wing\_area\_swept

#### Ssilverhake 2010 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring Spring Spring 1010 1020 1030 1040 1050 1060 1070 1080 1090 7500 1 I. 1 1 1 Spring Spring Spring Spring Spring Spring Spring Spring Spring 1100 1120 1110 1130 1140 1150 1160 1170 1180 2500 ± Spring Spring Spring Spring Spring Spring Spring Spring Spring 1190 1610 1620 1630 1640 1650 1660 1670 1680 2500 1900 Spring Spring Spring Spring Spring Spring Spring Spring Fall Catch per Area (kg/km^2) 1690 1700 1710 1720 1730 1740 1750 1760 1010 Fall Fall Fall Fall Fall Fall Fall Fall Fall 1020 1030 1070 1040 1050 1060 1080 1090 1100 ٧. Fall Fall Fall Fall Fall Fall Fall Fall Fall 1110 1160 1120 1130 1140 1150 1170 1180 1190 1 ı ı 1 1 Fall Fall Fall Fall Fall Fall Fall Fall Fall 1620 1630 1640 1650 1660 1670 1680 1690 1700 **75** 0.020242730.020242730.020242730.02024273 Fall Fall Fall Fall Fall 1730 1710 1720 1740 1760 0.020242730.020242730.020242730.020242730.020242730 wing\_area\_swept

#### Ssilverhake 2011 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring **Spring** Spring Spring Spring Spring Spring Spring 1060 1010 1020 1030 1040 1050 1070 1080 1090 ı 1 ı Spring Spring Spring Spring Spring Spring Spring Spring Spring 1100 1110 1120 1130 1140 1150 1160 1170 1180 9888 2888 : -Spring Spring Spring Spring Spring Spring Spring Spring Spring 1190 1610 1620 1630 1640 1650 1660 1670 1680 9888 2888 Spring Spring Spring Spring Spring Spring Spring Spring Fall Catch per Area (kg/km^2) 1690 1700 1710 1720 1730 1740 1750 1760 1010 6000 2008 Fall Fall Fall Fall Fall Fall Fall Fall Fall 1020 1030 1080 1050 1060 1070 1090 1100 1110 \$888 2888 Fall Fall Fall Fall Fall Fall Fall Fall Fall 1120 1170 1130 1140 1150 1160 1180 1190 1620 ī. ı Fall Fall Fall Fall Fall Fall Fall Fall Fall 1630 1640 1650 1660 1670 1680 1690 1700 1710 6000 2000 0.020.025 0.020.025 0.020.025 0.020.025 Fall Fall Fall Fall Fall 1720 1730 1740 1750 1760 0.020.025 0.020.025 0.020.025 0.020.025 0.020.025 wing\_area\_swept

# Ssilverhake 2012 Case 4 (Without Zeros or Fills) Winner = Standard



### Ssilverhake 2013 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring Spring Spring 1060 1010 1020 1030 1040 1050 1070 1080 1090 2000 -1 1 Spring Spring Spring Spring Spring Spring Spring Spring Spring 1100 1140 1110 1120 1130 1150 1160 1170 1180 6000 2000 Spring Spring Spring Spring Spring Spring Spring Spring Spring 1190 1610 1620 1630 1640 1650 1660 1670 1680 9000 2000 Spring Spring Spring Spring Spring Spring Spring Spring Fall Catch per Area (kg/km^2) 1710 1690 1700 1720 1730 1740 1750 1760 1010 Fall Fall Fall Fall Fall Fall Fall Fall Fall 1020 1030 1080 1050 1060 1070 1090 1100 1110 2000 Fall Fall Fall Fall Fall Fall Fall Fall Fall 1130 1190 1140 1150 1160 1170 1610 1620 1630 2000 2000 1 Fall Fall Fall Fall Fall Fall Fall Fall Fall 1640 1650 1660 1670 1680 1690 1700 1710 1720 2008 2008 0.02D0240280.02D0240280.02D0240280.02D0240280.02D0240280.02D0224028 Fall Fall Fall 1730 1740 1760 9888 2888 0.020002240280.020002240280.02000224028 wing\_area\_swept

### Ssilverhake 2014 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring Spring 1010 1020 1030 1040 1050 1060 1070 1080 7888 ± Spring Spring Spring Spring Spring Spring Spring Spring 1090 1110 1120 1100 1130 1140 1150 1160 <del>2</del>888 <u>-</u> Spring Spring Spring Spring Spring Spring Spring Spring 1170 1180 1190 1690 1730 1750 1760 1740 <del>2</del>888 = Fall Fall Fall Fall Fall Fall Fall Fall Catch per Area (kg/km^2) 1010 1020 1030 1040 1050 1060 1070 1080 <del>2</del>888 Fall Fall Fall Fall Fall Fall Fall Fall 1110 1120 1090 1100 1130 1140 1150 1160 £888£ Fall Fall Fall Fall Fall Fall Fall Fall 1180 1620 1650 1660 1170 1190 1630 1640 Fall Fall Fall Fall Fall Fall Fall Fall 1670 1680 1690 1700 1710 1720 1730 1740 <del>2</del>888 TO.02D02402B0G2D2D02402B0G2D2D02402B0G2D2D02402B0G2D2D02402B0G2D2D02A02B0G2D2D02A02B0G2 Fall Fall 1750 1760 <del>2</del>888 0.020002240228062020002240228032

wing\_area\_swept

### Ssilverhake 2015 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring Spring 1030 1040 1080 1010 1020 1050 1060 1070 翻 1 ı L 1 Spring Spring Spring Spring Spring Spring Spring Spring 1090 1100 1110 1120 1130 1150 1160 1140 1999 Spring Spring Spring Spring Spring Spring Spring Spring 1170 1180 1190 1610 1630 1640 1650 1660 1999 Spring Spring Spring Spring Spring Spring Spring Spring Catch per Area (kg/km^2) 1670 1680 1690 1700 1710 1720 1730 1740 Spring Spring Fall Fall Fall Fall Fall Fall 1010 1020 1060 1070 1750 1760 1030 1050 1999 Fall Fall Fall Fall Fall Fall Fall Fall 1080 1090 1100 1110 1120 1130 1140 1150 7 1 1 1 1

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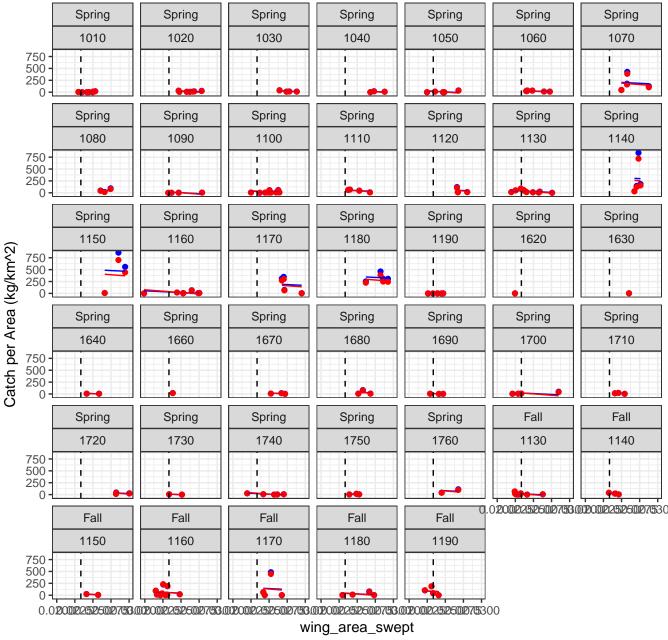
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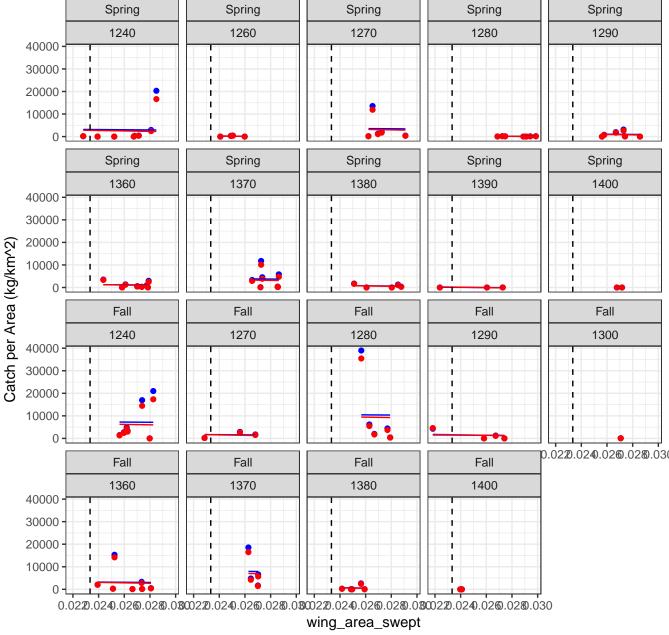
#### Ssilverhake 2016 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring Spring Spring 1060 1010 1020 1030 1040 1050 1070 1080 1090 1000 1 -1 ı 1 1 ı Spring Spring Spring Spring Spring Spring Spring Spring Spring 1100 1130 1160 1170 1110 1140 1150 1180 1190 1988 Spring Spring Spring Spring Spring Spring Spring Spring Spring 1630 1640 1650 1660 1670 1680 1690 1700 1710 1988 Spring Spring Spring Spring Spring Fall Fall Fall Fall Catch per Area (kg/km^2) 1720 1730 1740 1750 1760 1010 1020 1030 1040 1988 Fall Fall Fall Fall Fall Fall Fall Fall Fall 1050 1060 1100 1070 1080 1090 1110 1130 1140 18887 4 I Fall Fall Fall Fall Fall Fall Fall Fall Fall 1150 1170 1620 1630 1160 1180 1190 1640 1650 1988 ı 3 T т 1 Fall Fall Fall Fall Fall Fall Fall Fall Fall 1660 1670 1680 1690 1700 1710 1720 1730 1740 1988 1 Fall Fall 1750 1760 1988 wing\_area\_swept

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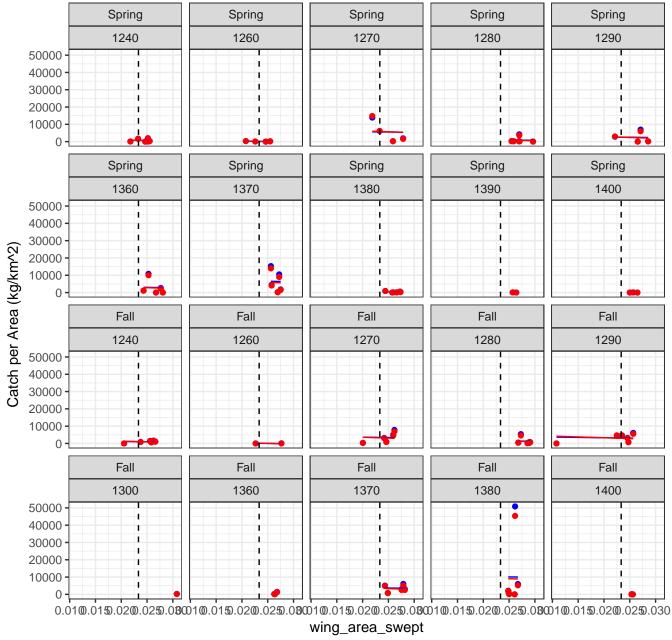


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Redfish 2010 Case 4 (Without Zeros or Fills) Winner = Standard



# Redfish 2011 Case 4 (Without Zeros or Fills) Winner = Standard



Redfish 2012 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring 1270 1280 1240 1260 1290 20000 15000 -10000 -5000 -0 Spring Spring Spring Spring Spring 1300 1360 1370 1380 1390 20000 15000 -10000 -5000 -0 Catch per Area (kg/km^2) Spring Fall Fall Fall Fall 1400 1240 1260 1270 1280 20000 15000 -10000 -5000 -Fall Fall Fall Fall Fall 1290 1300 1360 1370 1380 20000 15000 -10000 -5000 -0 0.020 0.024 0.028 0.020 0.024 0.028 0.020 0.024 0.028 0.020 0.024 0.028 Fall 1390 20000 15000 10000 -5000 -0 -0.020 0.024 0.028 wing\_area\_swept

Redfish 2013 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring 1280 1240 1260 1270 1290 30000 -20000 10000 -0 -Spring Spring Spring Spring Spring 1300 1360 1370 1380 1390 30000 -20000 -10000 -0 Catch per Area (kg/km^2) Spring Fall Fall Fall Fall 1400 1240 1260 1270 1280 30000 -20000 ı 10000 -Fall Fall Fall Fall Fall 1290 1300 1360 1370 1380 30000 -20000 -10000 -0 0.021 0.024 0.027 0.021 0.024 0.027 0.021 0.024 0.027 Fall Fall 1390 1400 30000 -20000 -10000 -0.021 0.024 0.027 0.021 0.024 0.027 wing\_area\_swept

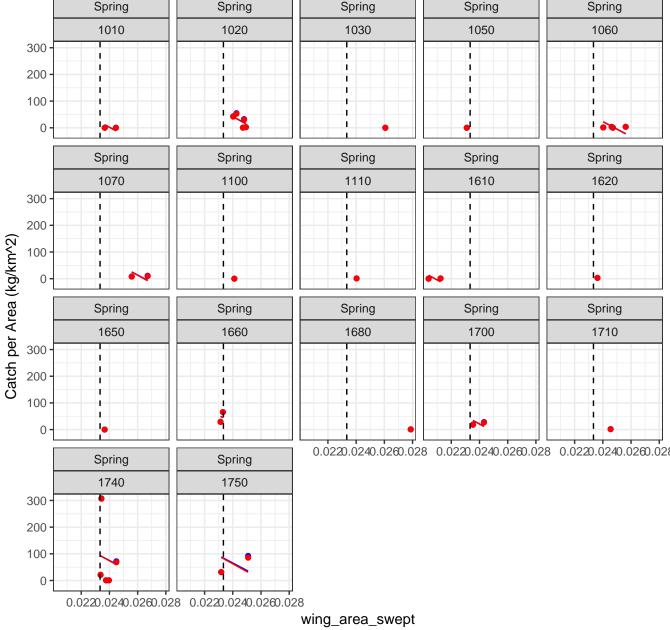
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Redfish 2015 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring 1280 1240 1260 1270 1290 40000 30000 ī ī 20000 -10000 0 Spring Spring Spring Spring Spring 1300 1360 1370 1380 1400 40000 30000 20000 -10000 0 Catch per Area (kg/km^2) Fall Fall Fall Fall Fall 1240 1260 1270 1280 1290 40000 30000 -20000 -10000 -Fall Fall Fall Fall Fall 1300 1360 1370 1380 1390 40000 30000 -20000 -10000 0  $0.02 \\ 0.02 \\ 0.02 \\ 0.02 \\ 0.03 \\ 0.03 \\ 0.02 \\ 0.02 \\ 0.02 \\ 0.03 \\ 0.03 \\ 0.03 \\ 0.02 \\ 0.02 \\ 0.02 \\ 0.02 \\ 0.03 \\ 0.03 \\ 0.03 \\ 0.03 \\ 0.02 \\ 0.02 \\ 0.03 \\ 0.03 \\ 0.03 \\ 0.03 \\ 0.02 \\ 0.02 \\ 0.03 \\$ Fall 1400 40000 30000 -20000 -10000 -0.020.020.020.030.033 wing\_area\_swept

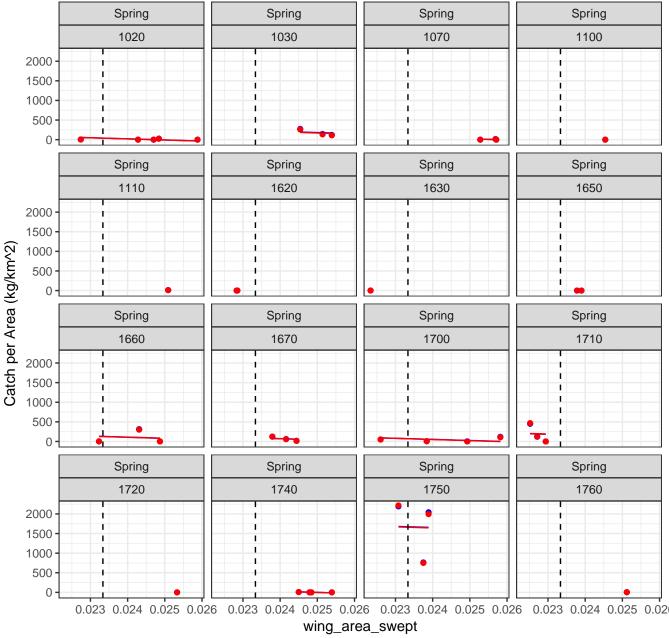
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Redfish 2017 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring 1280 1240 1260 1270 1290 15000 10000 -5000 -Spring Spring Spring Spring Spring 1300 1360 1370 1380 1390 15000 10000 -5000 -0 Catch per Area (kg/km^2) Spring Fall Fall Fall Fall 1400 1240 1260 1270 1280 15000 10000 -5000 -0 Fall Fall Fall Fall Fall 1290 1300 1360 1370 1380 15000 10000 -5000 -0 ]0.020 0.024 0.028 0.032020 0.024 0.028 0.032020 0.024 0.028 0.032020 0.024 0.028 0.032 Fall 1400 15000 10000 -5000 -0.020 0.024 0.028 0.032 wing\_area\_swept

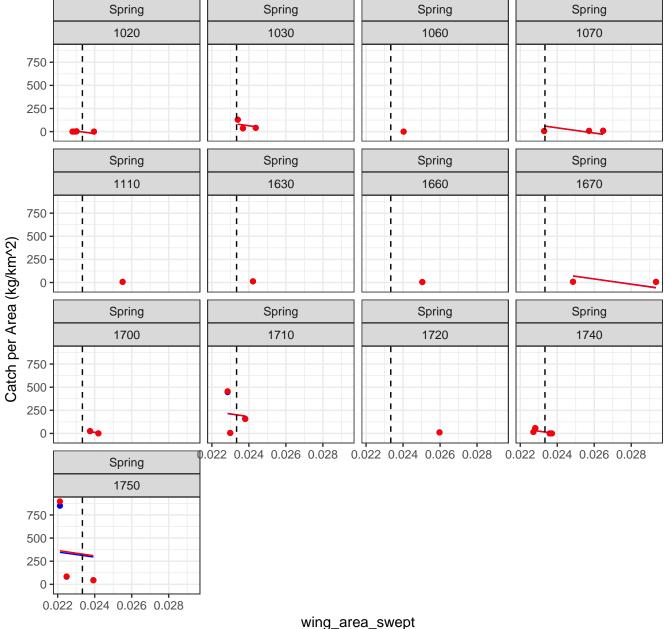
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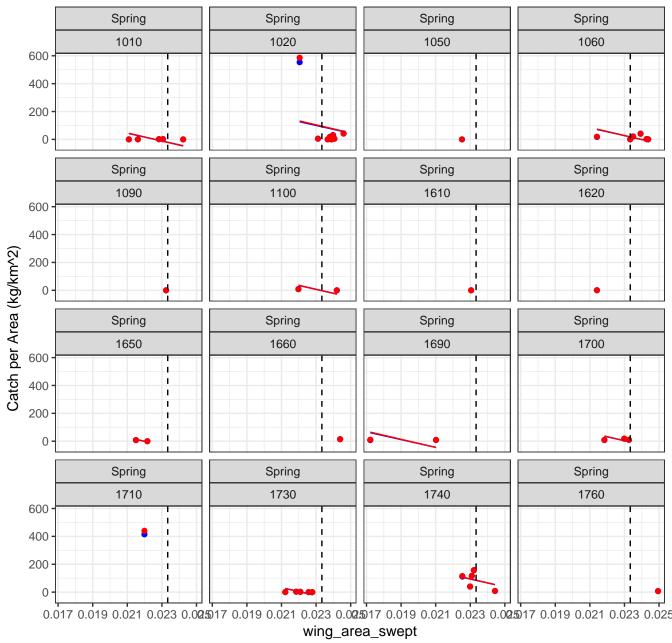
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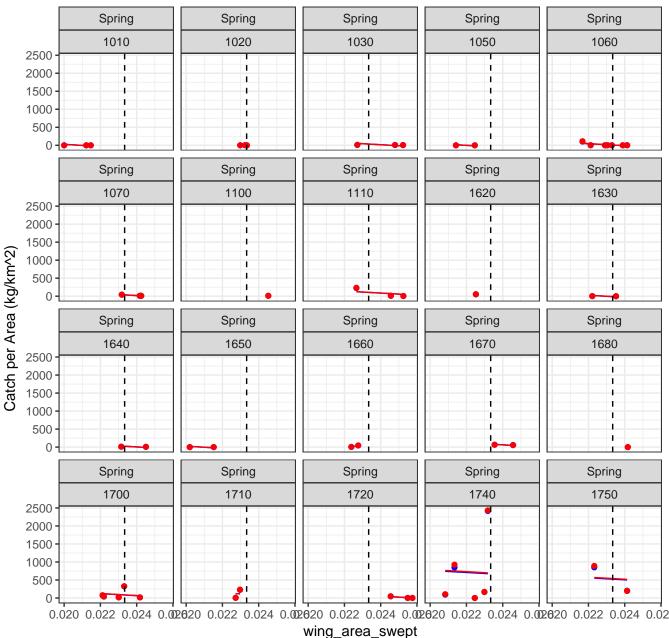
## BlackSeaBass 2011 Case 4 (Without Zeros or Fills) Winner = Standard



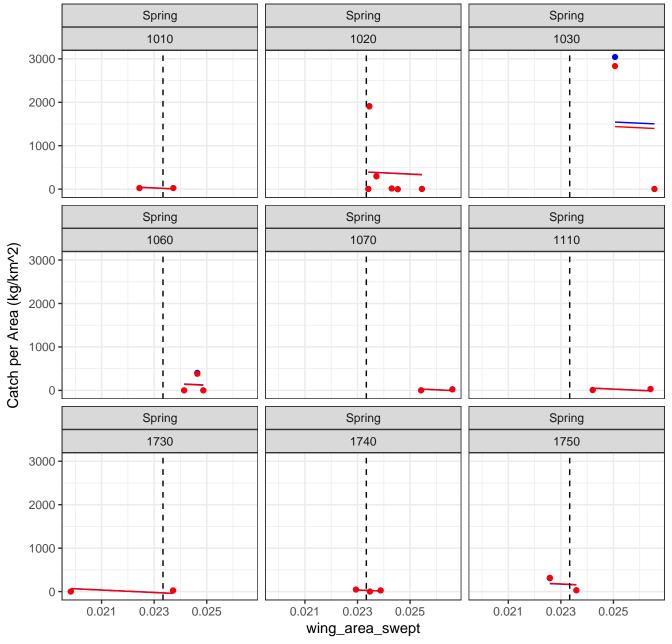
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BlackSeaBass 2013 Case 4 (Without Zeros or Fills) Winner = Standard

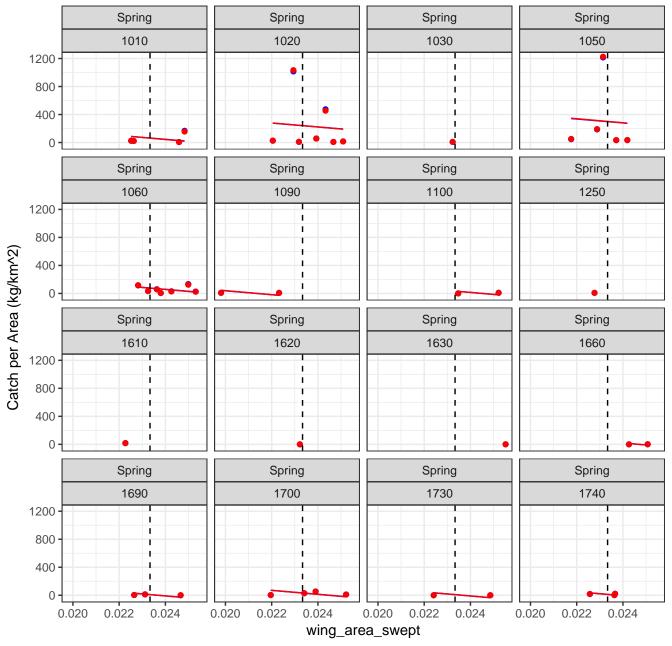


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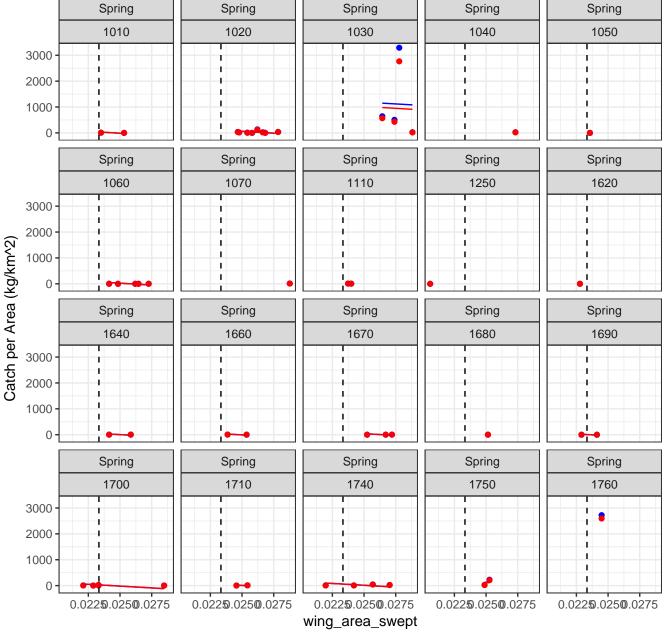


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BlackSeaBass 2016 Case 4 (Without Zeros or Fills) Winner = Standard



BlackSeaBass 2017 Case 4 (Without Zeros or Fills) Winner = Standard



#### Scup 2009 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring 1020 1610 1620 1030 1040 1110 1660 20000 15000 -10000 -Spring Spring Spring Spring Fall Fall Fall 1670 1710 1740 1750 1010 1050 1090 20000 15000 10000 -Fall Fall Fall Fall Fall Fall Fall 1610 1620 1730 3020 1630 1650 1690 Catch per Area (kg/km^2) 20000 15000 10000 5000 Fall Fall Fall Fall Fall Fall Fall 3050 3080 3110 3140 3170 3200 3230 20000 15000 **-**10000 **-**5000 Fall Fall Fall Fall Fall Fall Fall 3260 3290 3320 3350 3380 3410 3440 20000 15000 **-**10000 **-**5000 0.019.020.023.025 Fall Fall Fall Fall Fall Fall 3450 3460 3560 3590 3600 3610 20000 15000 10000 5000 0.01 @.021.023.025.01 @.021.025.01 @.025.01 @.025.01 @.025.01 @.025.01 @.025.01wing\_area\_swept

#### Scup 2010 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring 1020 1030 1040 1060 1610 1620 1630 40000 30000 20000 10000 т Spring Spring Spring Spring Spring Spring Spring 1640 1650 1660 1670 1680 1700 1710 40000 30000 20000 10000 Spring Spring Spring Fall Fall Fall Fall 1740 1060 1090 1750 1760 1010 1050 Catch per Area (kg/km^2) 40000 **-**30000 **-**20000 ī 10000 Fall Fall Fall Fall Fall Fall Fall 1100 1610 1650 1690 3020 3080 3110 40000 **-**30000 **-**20000 **-**10000 -Fall Fall Fall Fall Fall Fall Fall 3140 3170 3200 3230 3260 3290 3320 40000 30000 **-**20000 **-**10000 Fall Fall Fall Fall Fall Fall Fall 3350 3380 3410 3440 3450 3460 3560 40000 30000 20000 10000 wing\_area\_swept



#### Scup 2012 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring 1010 1020 1050 1060 1610 1620 1650 10000 7500 5000 2500 Spring Spring Spring Spring Spring Spring Fall 1660 1690 1700 1710 1730 1740 1010 10000 -7500 -5000 -2500 Fall Fall Fall Fall Fall Fall Fall 1050 1060 1090 1650 3020 1100 1610 Catch per Area (kg/km^2) 10000 7500 5000 2500 Fall Fall Fall Fall Fall Fall Fall 3050 3080 3110 3140 3170 3200 3230 10000 **-**7500 **-**5000 **-**2500 -Fall Fall Fall Fall Fall Fall Fall 3260 3290 3320 3350 3380 3410 3440 10000 -7500 -5000 -2500 -**10**.0105010802010240.010501080201024 Fall Fall Fall Fall Fall 3450 3600 3610 3460 3590 10000 7500 5000 2500 wing\_area\_swept

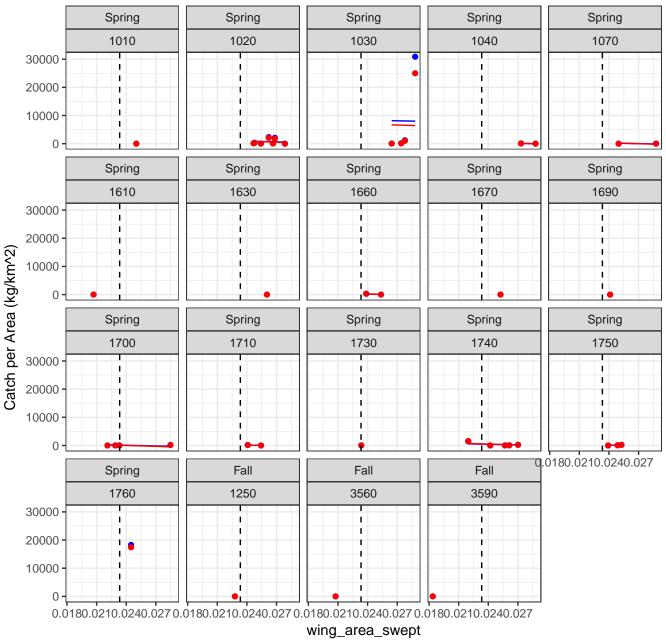
Scup 2013 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring 1060 1070 1020 1030 1040 1080 1610 6000 4000 2000 Spring Spring Spring Spring Spring Spring Spring 1620 1630 1650 1660 1670 1690 1700 6000 4000 2000 -Spring Spring Spring Spring Fall Fall Fall 1710 1740 1750 1760 1050 1060 1090 Catch per Area (kg/km^2) 6000 4000 I 🔵 2000 Fall Fall Fall Fall Fall Fall Fall 1230 1650 3110 3020 3050 3080 3140 6000 4000 -2000 0 Fall Fall Fall Fall Fall Fall Fall 3170 3200 3320 3350 3380 3410 3440 6000 4000 2000 0.016.020.024.02 Fall Fall Fall Fall Fall Fall 3450 3460 3560 3590 3600 3610 6000 -4000 2000 0.016.020.024.028016.020.020.024.020016.020.020016.0200016.020016.0200016.0200016wing\_area\_swept

Scup 2014 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring 1030 1020 1060 1730 1740 1750 120000 1 80000 40000 Spring Fall Fall Fall Fall Fall 1760 1010 1050 1090 1100 1610 120000 80000 Т 40000 Fall Fall Fall Fall Fall Fall 3020 1650 1730 3050 3080 3110 Catch per Area (kg/km^2) 120000 1 80000 40000 0 Fall Fall Fall Fall Fall Fall 3140 3200 3260 3170 3230 3290 120000 80000 T 40000 Fall Fall Fall Fall Fall Fall 3320 3350 3380 3410 3440 3450 120000 80000 40000 010170502**0**0022050250 Fall Fall Fall Fall Fall 3460 3560 3590 3600 3610 120000 80000 40000 wing\_area\_swept

#### Scup 2015 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring 1010 1070 1620 1020 1030 1060 1660 30000 20000 10000 T T Г 0 Spring Spring Spring Spring Spring Fall Fall 1670 1700 1740 1750 1760 1010 1050 30000 20000 10000 -Fall Fall Fall Fall Fall Fall Fall 1610 1090 1650 1690 3020 3050 3080 Catch per Area (kg/km^2) 30000 • т ı 20000 -10000 Fall Fall Fall Fall Fall Fall Fall 3110 3170 3140 3200 3230 3260 3290 30000 20000 -10000 0 Fall Fall Fall Fall Fall Fall Fall 3320 3350 3380 3410 3440 3450 3460 30000 20000 -10000 -0 0.01.**82.02.22.4**260.01.**82.02.22.4**260.01.**82.02.22.4**260.01.**82.02.22.4**26 Fall Fall Fall 3560 3590 3600 30000 20000 -10000 0.01.82.02224260.01.82.022224260.01.82.02222426 wing area swept

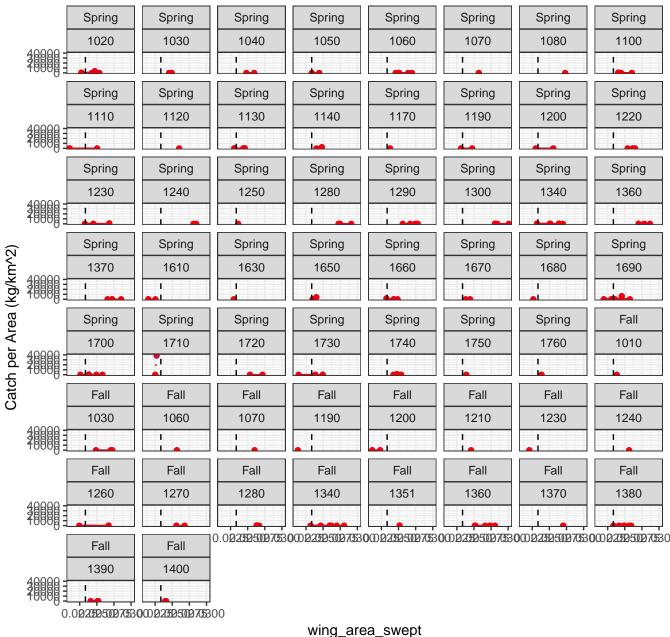
#### Scup 2016 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring 1010 1060 1090 1100 1020 1050 1610 Spring Spring Spring Spring Spring Spring Spring 1630 1650 1660 1670 1680 1700 1710 Fall Spring Spring Fall Fall Fall Fall 1740 1750 1010 1050 1060 1090 1100 Catch per Area (kg/km^2) Fall Fall Fall Fall Fall Fall Fall 1250 1610 1650 1690 3020 3050 3080 Fall Fall Fall Fall Fall Fall Fall 3110 3140 3170 3230 3260 3290 3320 Fall Fall Fall Fall Fall Fall Fall 3350 3380 3460 3410 3440 3450 3560 ı 0.00802002224 0.00802002224 0.008020022240.008020022024 0.008020022024 Fall Fall 3590 3600 0.008020022024 0.008020022024 wing\_area\_swept

Scup 2017 Case 4 (Without Zeros or Fills) Winner = Standard



#### Mackerel 2009 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring Spring 1020 1030 1060 1100 1110 1010 1070 1090 20000 10000 Spring Spring Spring Spring Spring Spring Spring Spring 1130 1140 1150 1160 1170 1190 1200 1210 20000 10000 Spring Spring Spring Spring Spring Spring Spring Spring 1220 1230 1240 1280 1340 1351 1360 1380 20000 10000 Catch per Area (kg/km^2) 0 Spring Spring Spring Spring Spring Spring Fall Spring 1650 1690 1700 1710 1730 1740 1750 1060 20000 10000 Fall Fall Fall Fall Fall Fall Fall Fall 1100 1110 1160 1200 1130 1140 1190 1210 20000 -10000 Fall Fall Fall Fall Fall Fall Fall Fall 1220 1230 1260 1290 1340 1360 1380 1351 20000 10000 | O. O 22525027930.0 22525027930.0 22525027930.0 22525027930.0 22525027930.0 2252502793 Fall Fall Fall 1390 1400 1710 20000 10000 0.0**22525027530.022525027530.0225250275**300 wing area swept

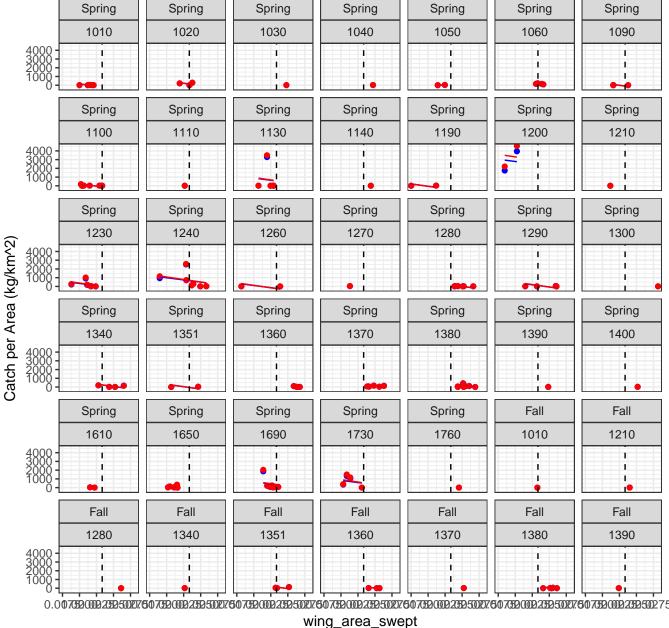
## Mackerel 2010 Case 4 (Without Zeros or Fills) Winner = Standard



#### Mackerel 2011 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring Spring 1020 1040 1130 1010 1060 1070 1100 1110 10000 **-** 5000 **-**Spring Spring Spring Spring Spring Spring Spring Spring 1140 1150 1170 1200 1210 1240 1250 1280 10000 <del>-</del> 5000 -Spring Spring Spring Spring Spring Spring Spring Spring 1290 1300 1340 1351 1360 1370 1380 1650 10000 5000 Catch per Area (kg/km^2) Ō Spring Spring Spring Spring Spring Spring Spring Spring 1660 1670 1680 1690 1700 1710 1730 1740 10000 5000 Spring Spring Fall Fall Fall Fall Fall Fall 1230 1750 1760 1050 1200 1210 1240 1260 10000 5000 0 Fall Fall Fall Fall Fall Fall Fall Fall 1280 1290 1300 1351 1360 1370 1380 1340 1 1 10000 -5000 Fall Fall 1390 1400 10000 5000 0.01*0*2020202020500002020202020300 wing area swept

#### Mackerel 2012 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring 1010 1020 1050 1060 1090 1100 1120 8000 **-**6000 **-**4000 **-**2000 **-**Spring Spring Spring Spring Spring Spring Spring 1130 1160 1170 1190 1200 1210 1230 8000 6000 4000 2000 Spring Spring Spring Spring Spring Spring Spring 1240 1270 1280 1290 1340 1250 1260 Catch per Area (kg/km^2) 8000 6000 4000 2000 Spring Spring Spring Spring Spring Spring Spring 1360 1370 1380 1650 1690 1730 1740 8000 6000 4000 2000 Fall Fall Fall Fall Fall Fall Fall 1130 1210 1260 1290 1340 1351 1360 8000 6000 4000 **-**2000 **-**0.0200.0240.028 0.0200.0240.028 0.0200.0240.028 0.0200.0240.02 Fall Fall Fall 1380 1390 1400 8000 6000 4000 2000 0.0200.0240.028 0.0200.0240.028 0.0200.0240.028 wing area swept

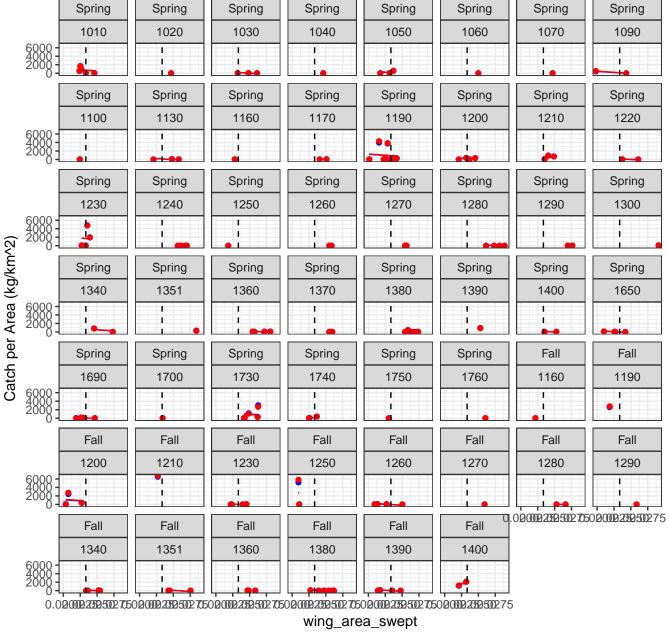
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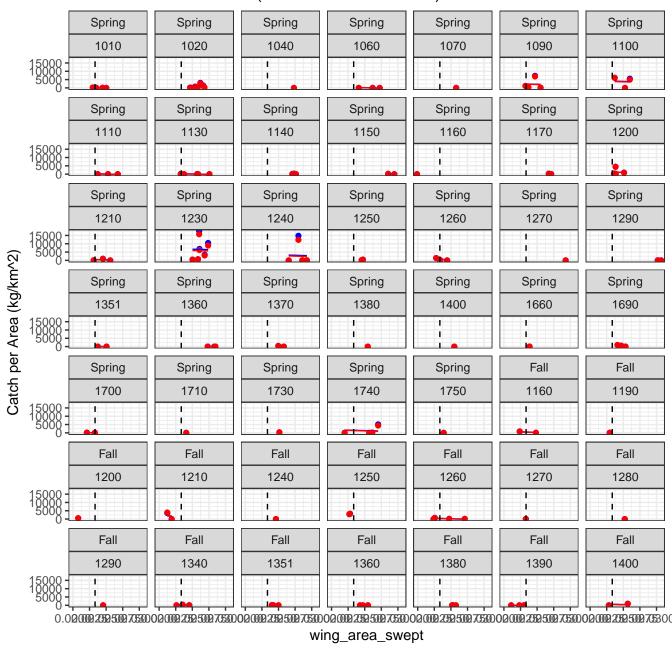
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#### Mackerel 2015 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring Spring Spring 1020 1060 1070 1080 1090 1100 1110 1120 Spring Spring Spring Spring Spring Spring Spring Spring 1130 1160 1170 1190 1200 1210 1220 1230 Spring Spring Spring Spring Spring Spring Spring Spring 1280 1290 1240 1250 1260 1270 1300 1340 Catch per Area (kg/km^2) Spring Spring Spring Spring Spring Spring Spring Spring 1360 1370 1380 1610 1620 1660 1690 1700 Fall Fall Spring Spring Fall Fall Fall Fall 1710 1010 1060 1160 1190 1200 1210 1740 Fall Fall Fall Fall Fall Fall Fall Fall 1230 1240 1260 1270 1340 1351 1360 1370 0.02010204027 0.02010204027 0.02010204027 0.02010204027 0.02010204027 Fall Fall Fall 1380 1390 1400 0.02010204027 0.02010204027 wing\_area\_swept

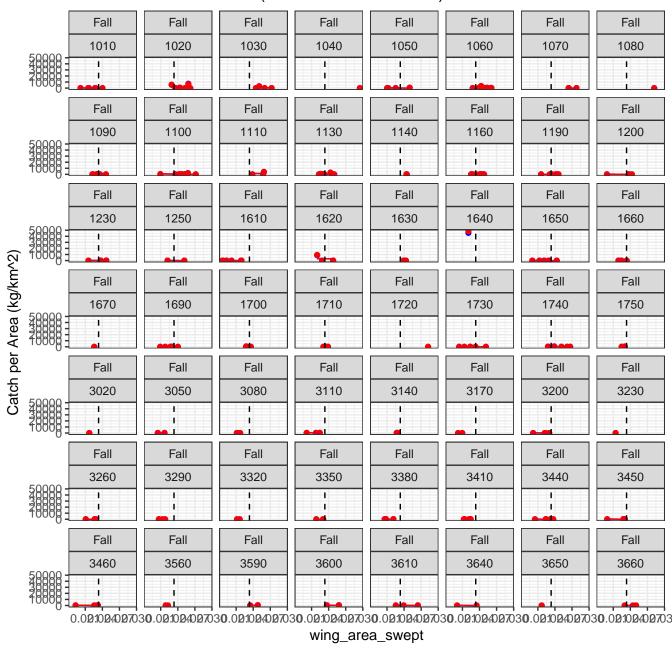
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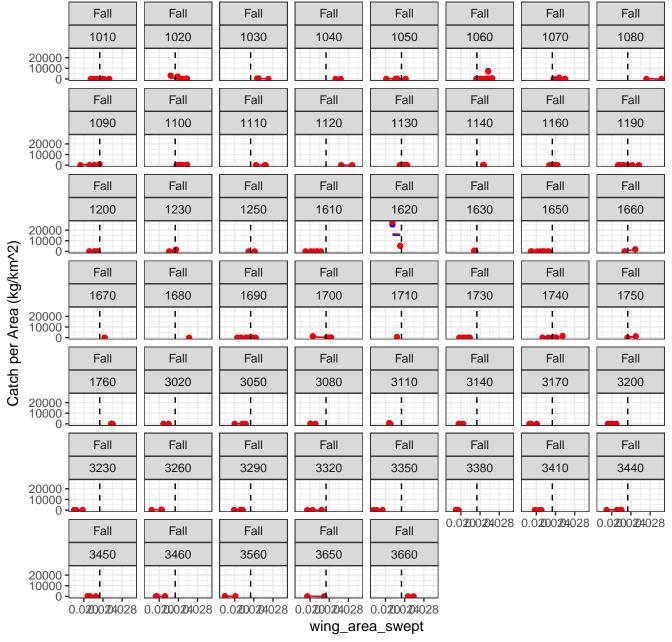
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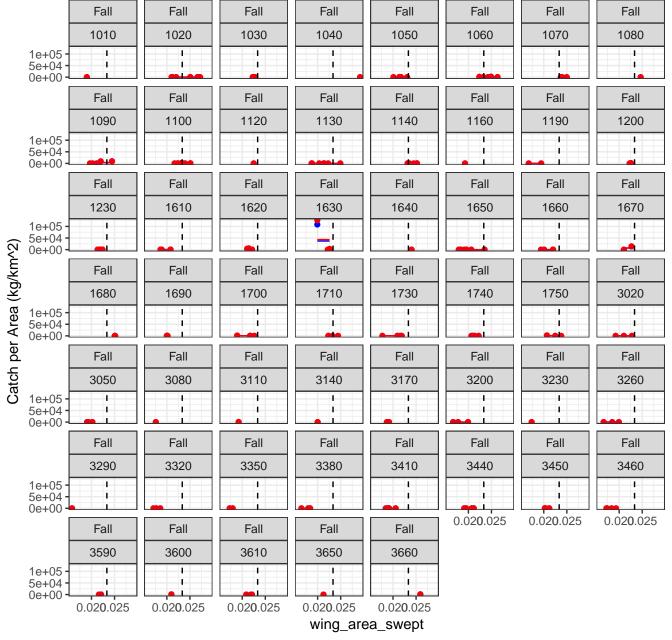
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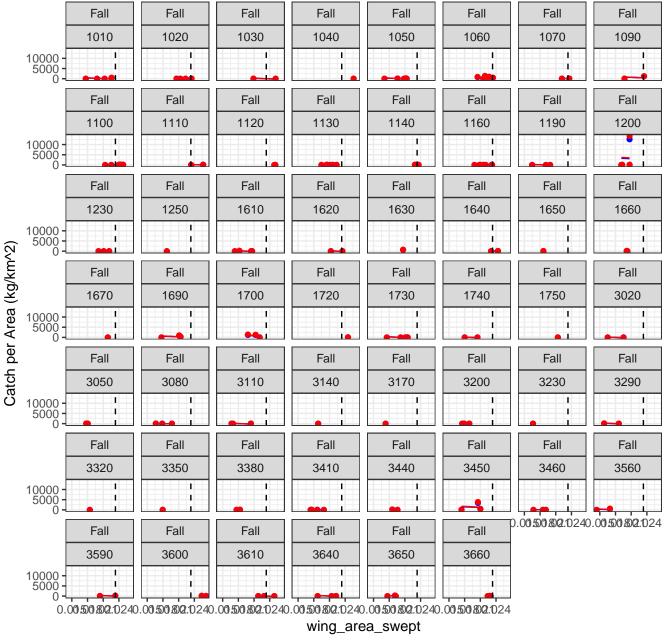
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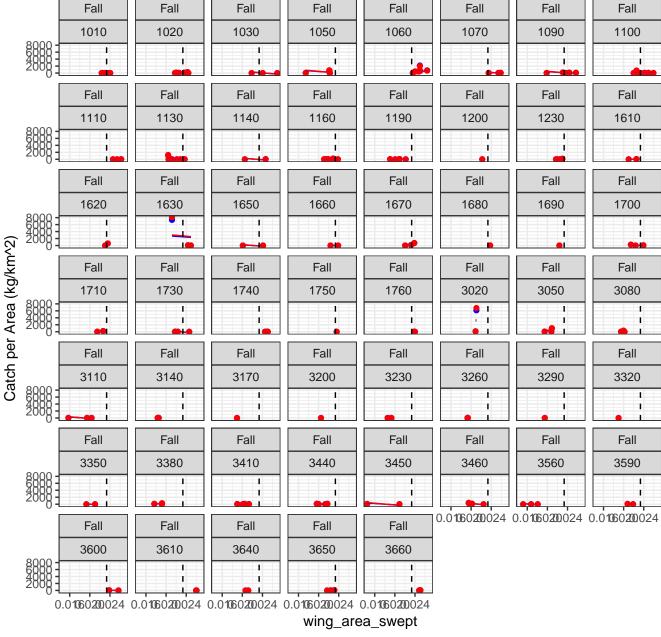
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## Butterfish 2012 Case 4 (Without Zeros or Fills) Winner = Standard

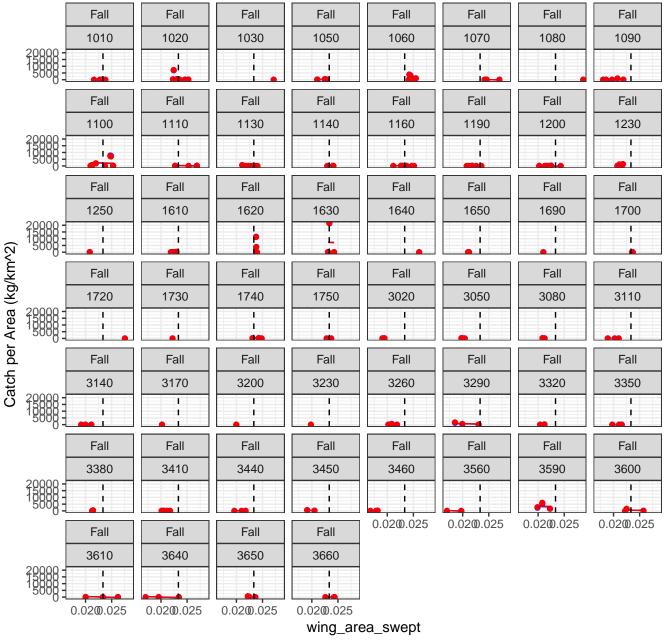


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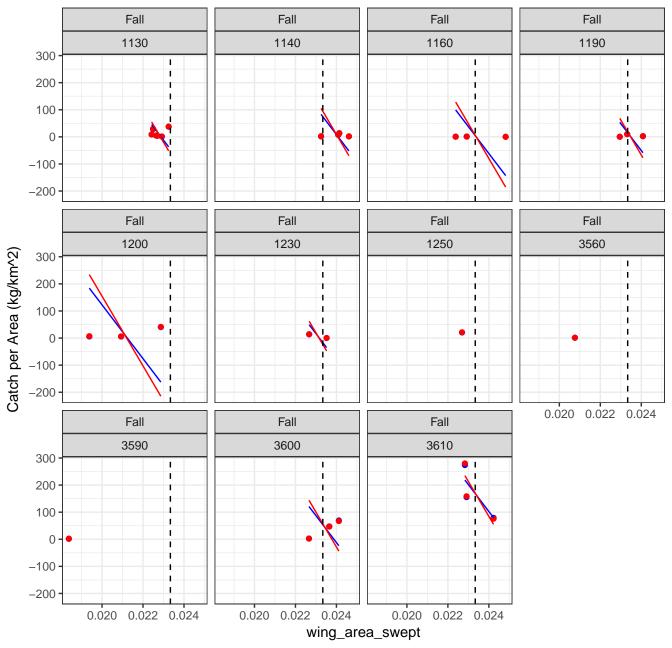
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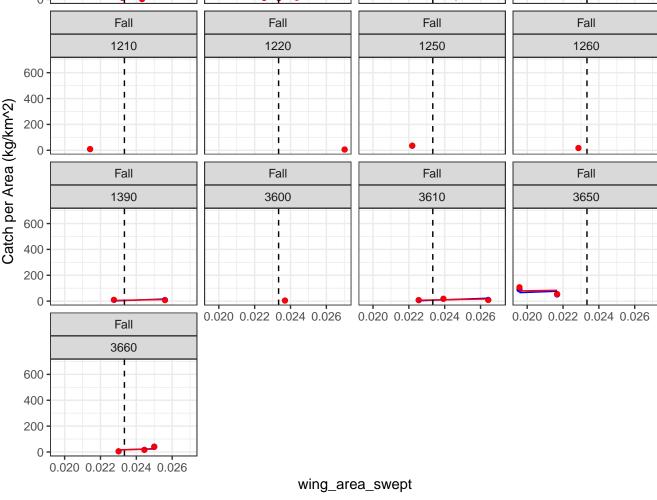


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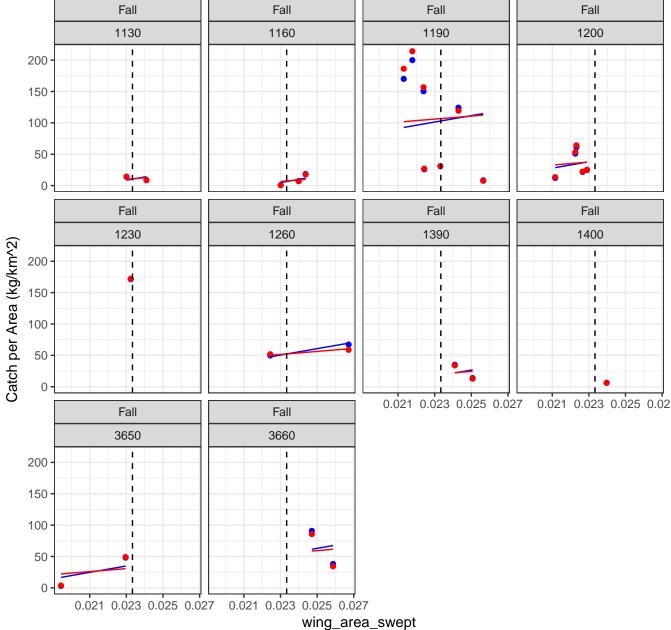
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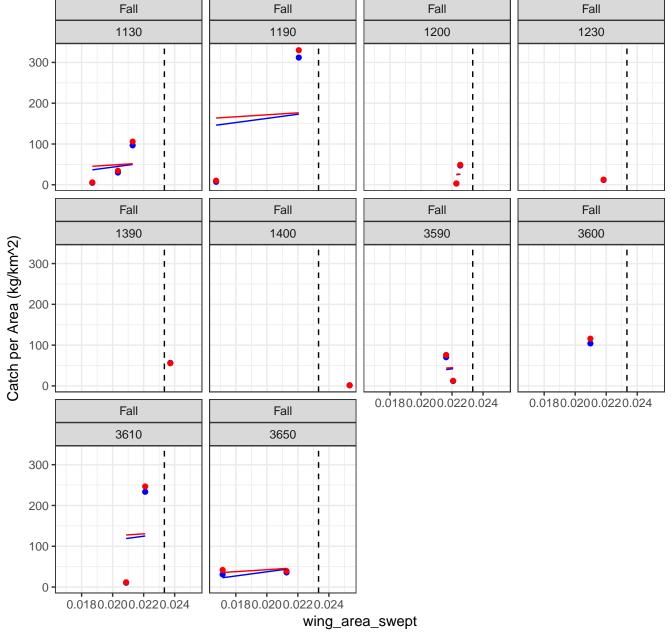
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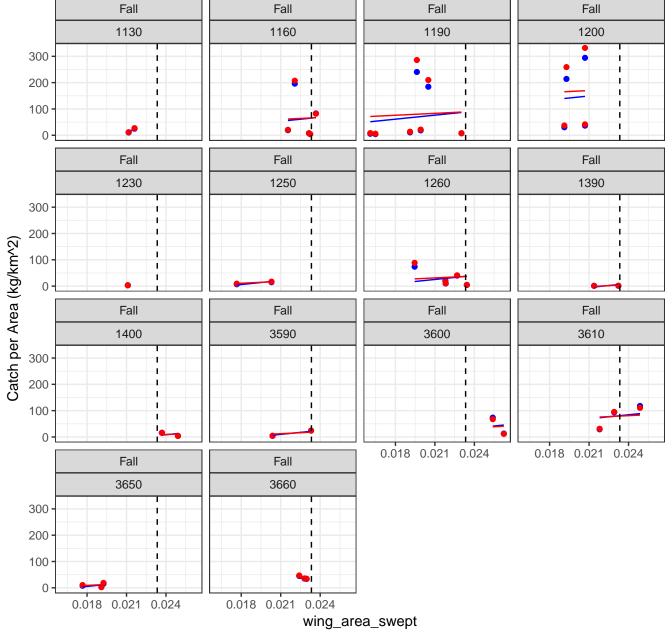
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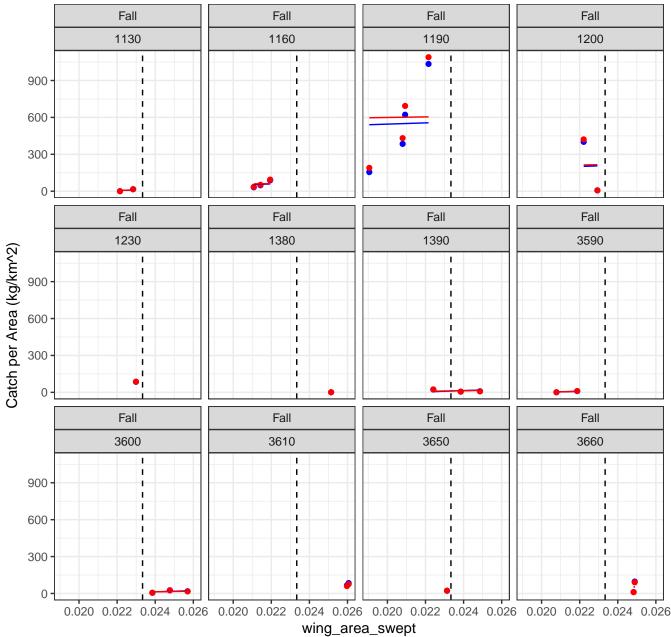
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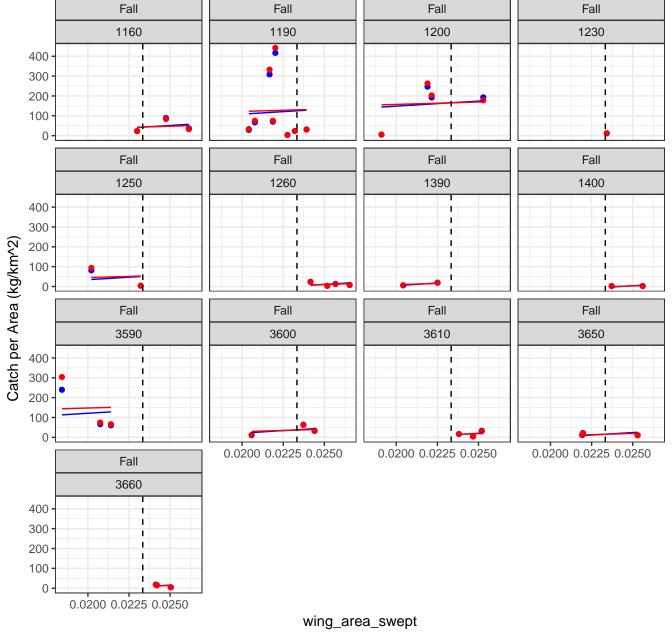
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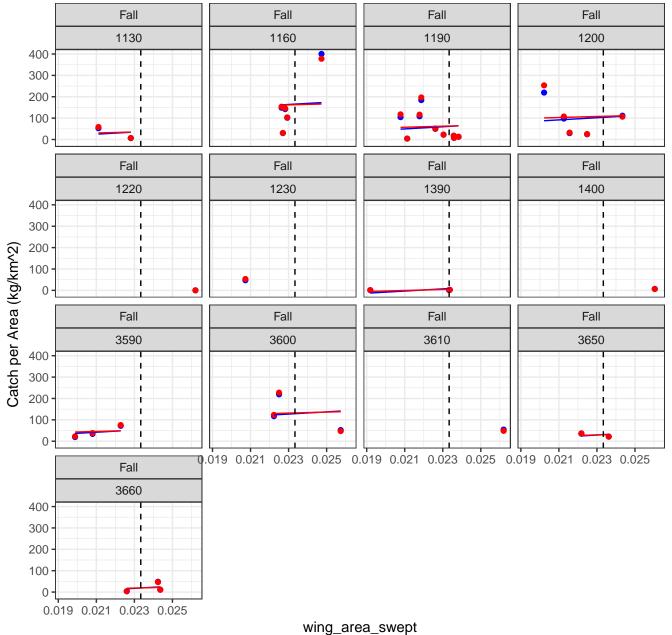
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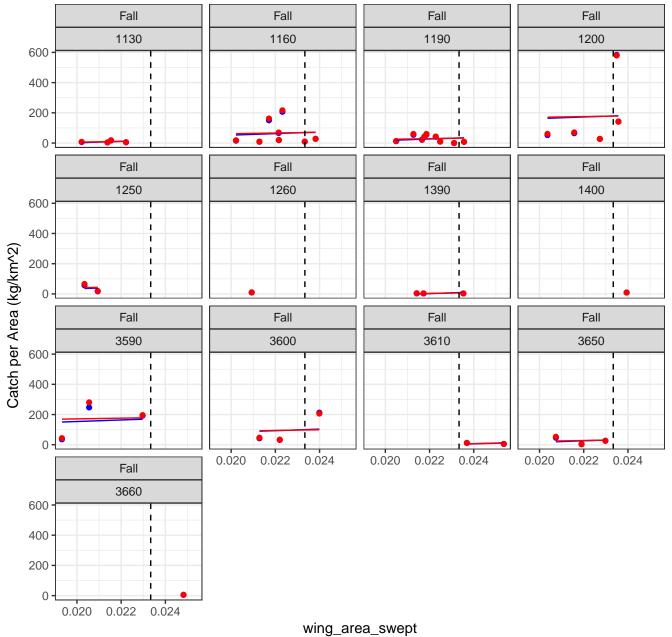
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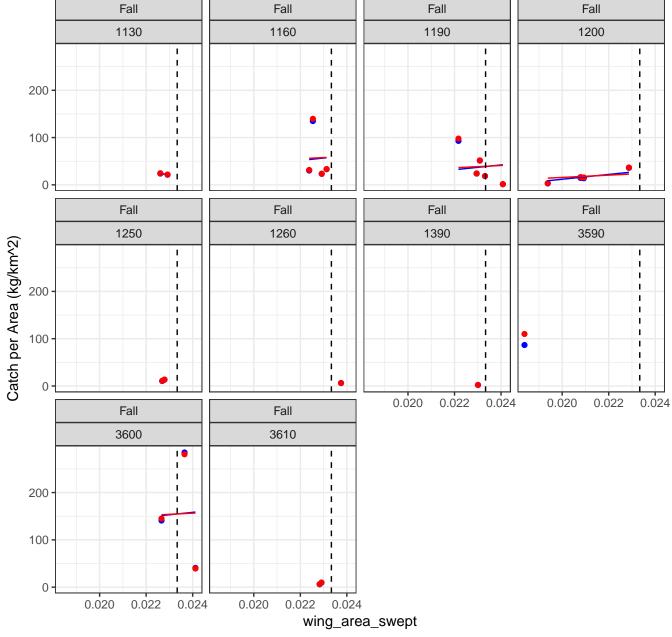
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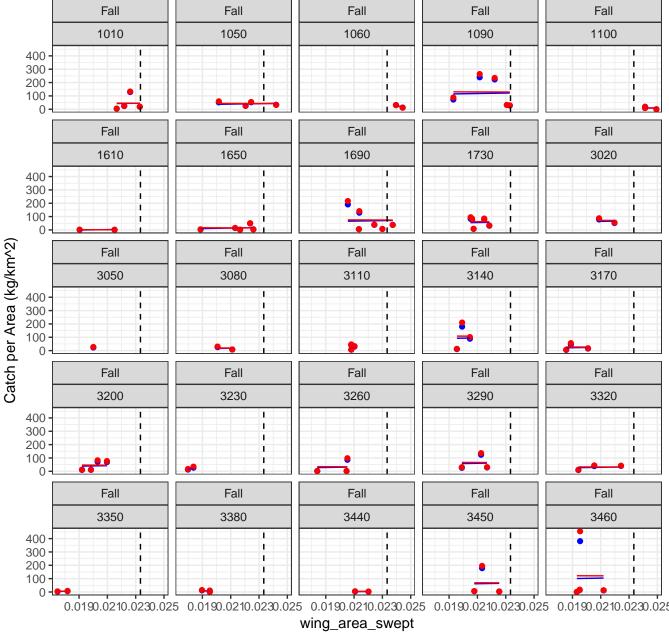


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Swindow 2009 Case 4 (Without Zeros or Fills) Winner = WingSpread Fall Fall Fall Fall Fall 1100 1010 1050 1090 1650 200 100 0 Fall Fall Fall Fall Fall 1690 1730 3020 3050 3080 200 100 0 Catch per Area (kg/km^2) Fall Fall Fall Fall Fall 3110 3140 3170 3200 3260 200 100 Fall Fall Fall Fall Fall 3290 3320 3350 3380 3410 200 100 0 Fall Fall 3450 3460 200 100 wing\_area\_swept

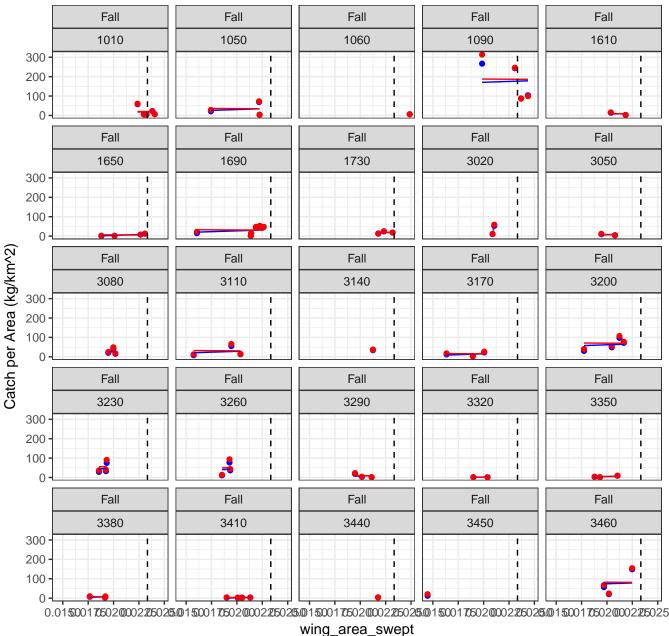
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Swindow 2011 Case 4 (Without Zeros or Fills) Winner = WingSpread Fall Fall Fall Fall Fall 1090 1650 1690 1730 1010 600 т 400 200 0 Fall Fall Fall Fall Fall 3020 3050 3080 3140 3170 600 400 Catch per Area (kg/km^2) 200 ı Fall Fall Fall Fall Fall 3200 3230 3260 3290 3320 600 400 200 0 0.0160.0180.0200.022 0.0160.0180.0200.022 Fall Fall Fall 3410 3450 3460 600 400 200 0.0160.0180.0200.022 0.0160.0180.0200.022 0.0160.0180.0200.022 wing\_area\_swept

Swindow 2012 Case 4 (Without Zeros or Fills) Winner = WingSpread Fall Fall Fall Fall Fall 1010 1050 1090 1610 1650 600 400 200 Fall Fall Fall Fall Fall 1730 3050 1690 1700 3020 600 ٠ 400 200 0 Catch per Area (kg/km^2) Fall Fall Fall Fall Fall 3080 3110 3140 3170 3200 600 400 200 Fall Fall Fall Fall Fall 3230 3290 3320 3350 3380 600 400 200 0 0.0160.0180.0200.022 0.0160.0180.0200.022 0.0160.0180.0200.022 Fall Fall 3410 3450 600 400 200 0.016.018.020.022 0.0160.0180.0200.022 wing\_area\_swept

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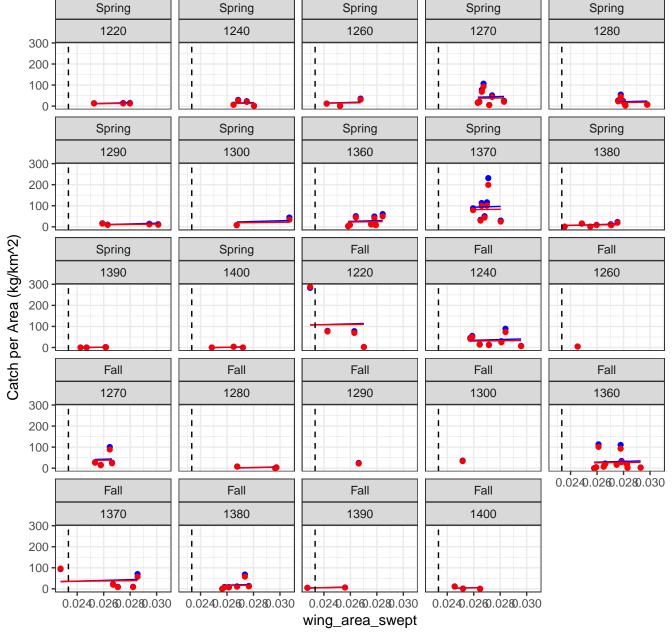


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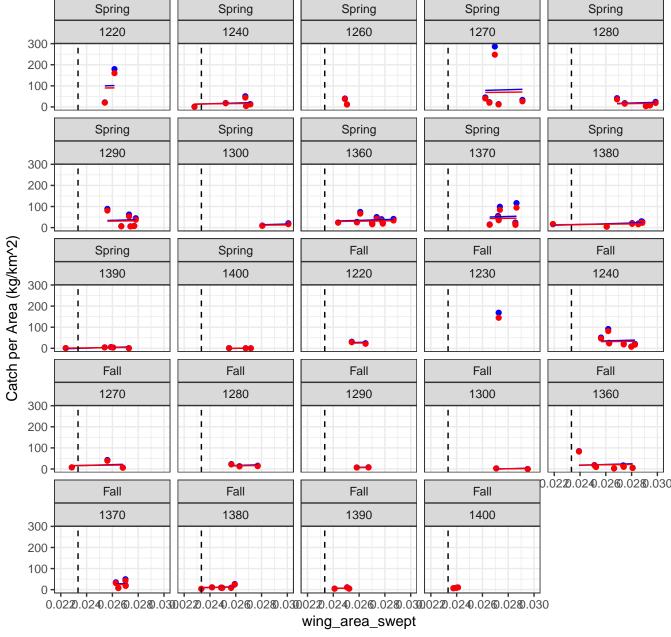
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Swindow 2016 Case 4 (Without Zeros or Fills) Winner = WingSpread Fall Fall Fall Fall Fall 1010 1050 1090 1100 1610 200 -150 100 -1 50 Fall Fall Fall Fall Fall 1730 1740 3050 1690 3020 200 150 100 50 Т Catch per Area (kg/km^2) Fall Fall Fall Fall Fall 3080 3110 3140 3170 3200 200 150 -100 50 -Fall Fall Fall Fall Fall 3230 3260 3290 3320 3350 200 150 100 50 0 Fall Fall 3450 3460 200 150 -100 50 0.0180.0200.0220.0240.0180.0200.0220.024wing\_area\_swept

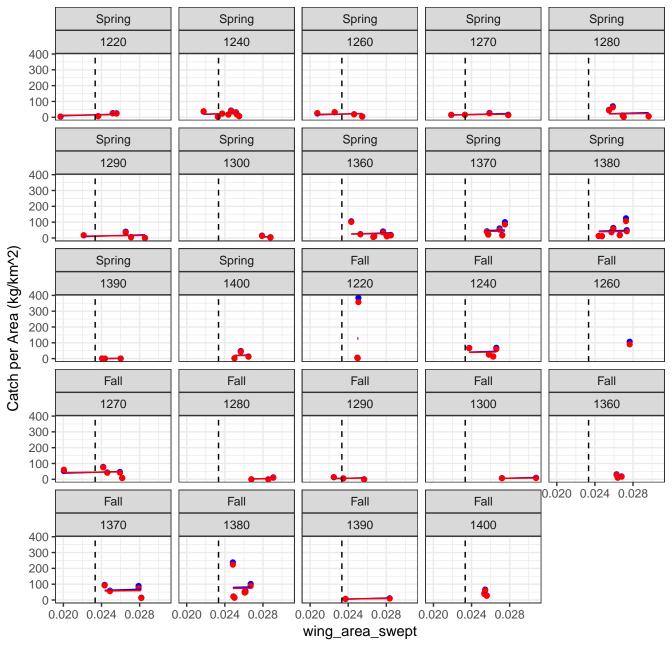
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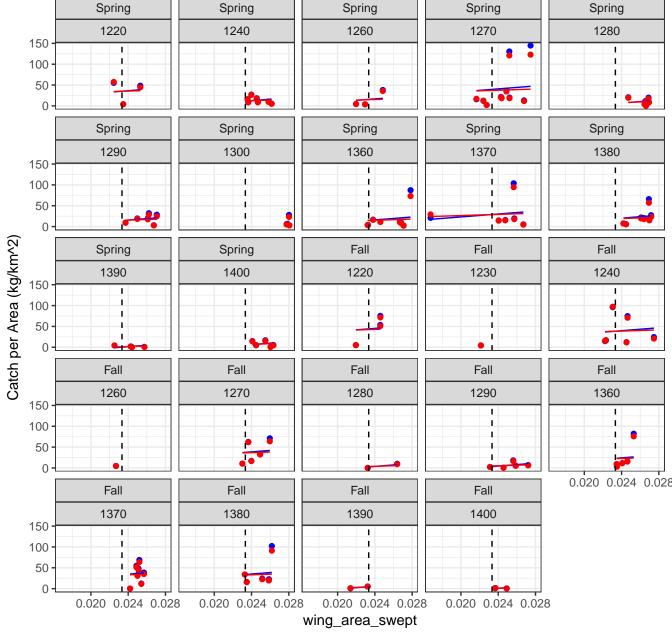
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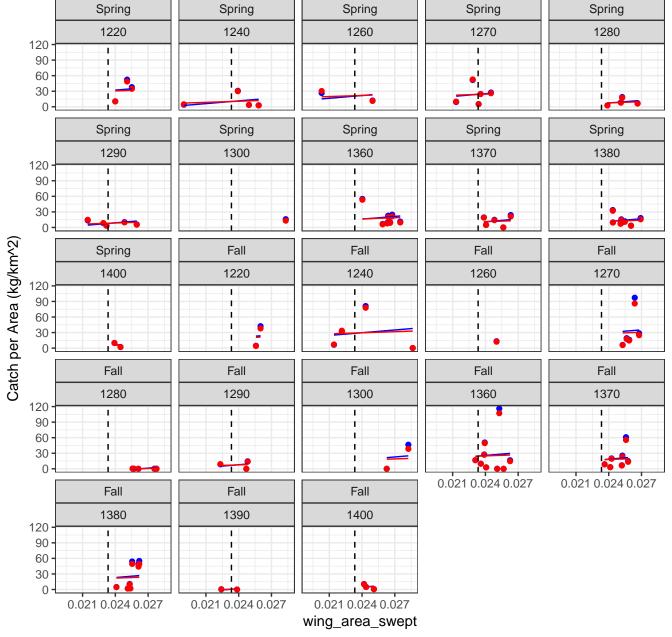
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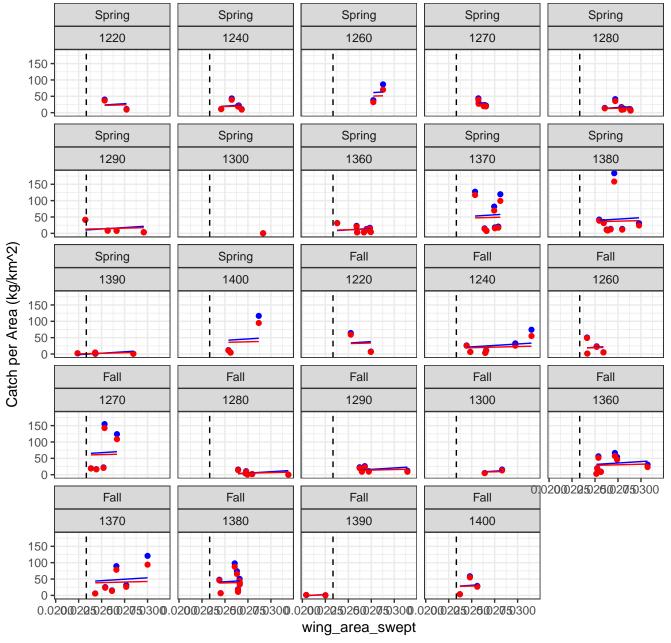
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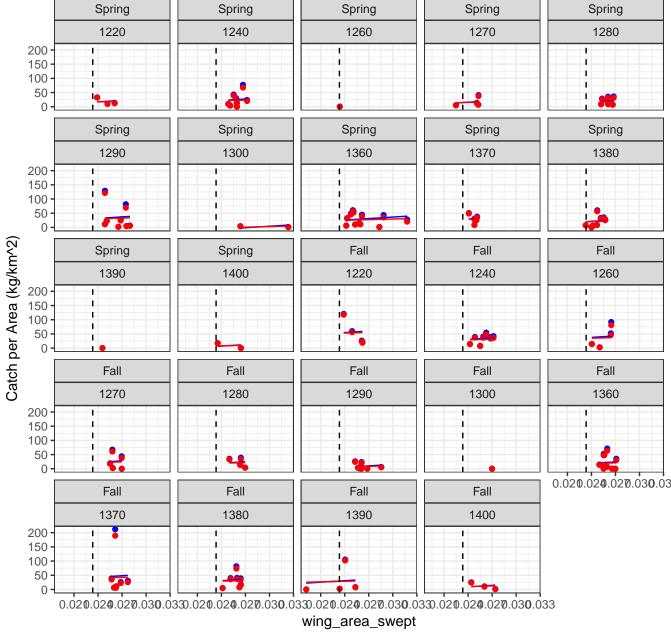
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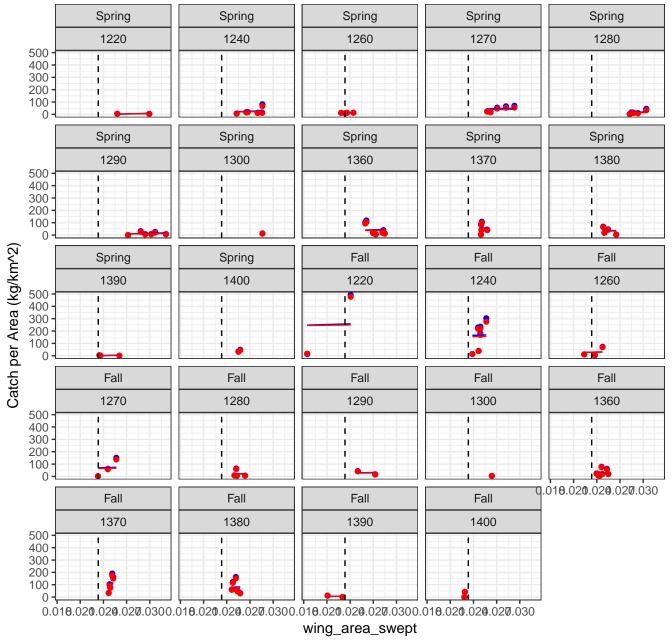


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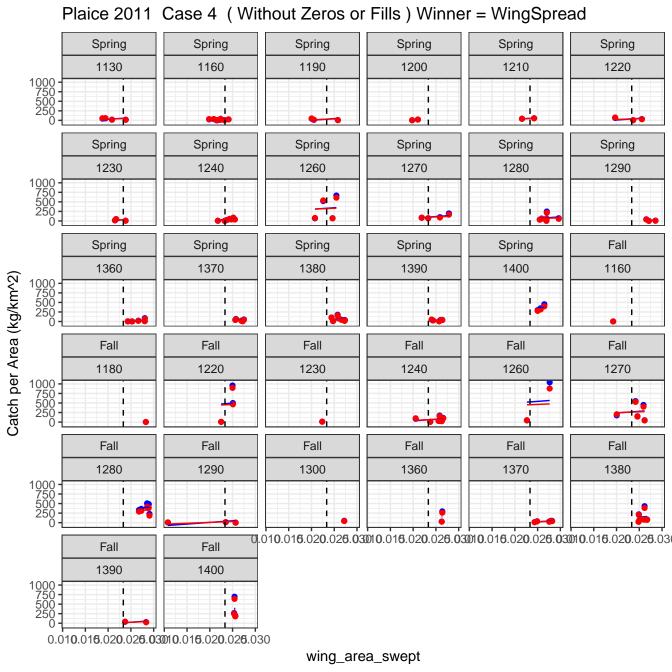
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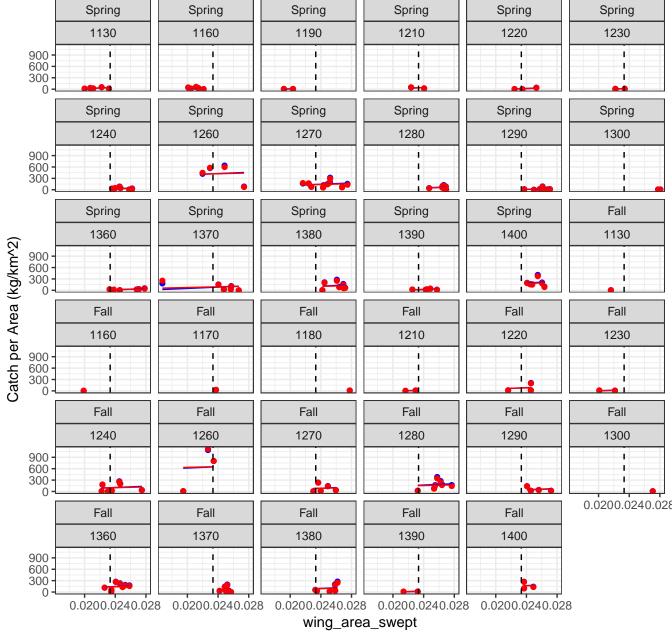
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#### Plaice 2010 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring 1130 1160 1170 1180 1190 1200 1210 900 600 300 Spring Spring Spring Spring Spring Spring Spring 1220 1230 1240 1260 1270 1280 1290 900 600 300 Spring Spring Spring Spring Spring Spring Fall 1300 1360 1370 1380 1390 1400 1130 Catch per Area (kg/km^2) 900 600 300 0 Fall Fall Fall Fall Fall Fall Fall 1210 1230 1240 1260 1160 1180 1220 900 600 300 Fall Fall Fall Fall Fall Fall Fall 1270 1280 1290 1300 1360 1370 1380 900 600 300 Fall Fall 1390 1400 900 300 0.022625027.6300.022625027.6300

wing\_area\_swept



Plaice 2012 Case 4 (Without Zeros or Fills) Winner = WingSpread



Plaice 2013 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1200 1130 1160 1190 1210 1220 1200 800 400 Spring Spring Spring Spring Spring Spring 1230 1240 1260 1270 1280 1290 1200 800 400 -Spring Spring Spring Spring Spring Spring 1300 1360 1370 1380 1390 1400 Catch per Area (kg/km^2) 1200 ١ 800 400 0 Fall Fall Fall Fall Fall Fall 1150 1180 1210 1220 1260 1240 1200 ı 800 400 -Т 0 Fall Fall Fall Fall Fall Fall 1270 1280 1290 1300 1360 1370 1200 800 400 ♣. **10**.01**8**.02**0**.02**4**.02**7**0.01**8**.02**0**.02**4**.02**7**0.01**8**.02**0**.02**4**.027 Fall Fall Fall 1380 1390 1400 1200 800 400 0.018.020.024.0270.018.020.024.0270.018.020.024.027wing\_area\_swept

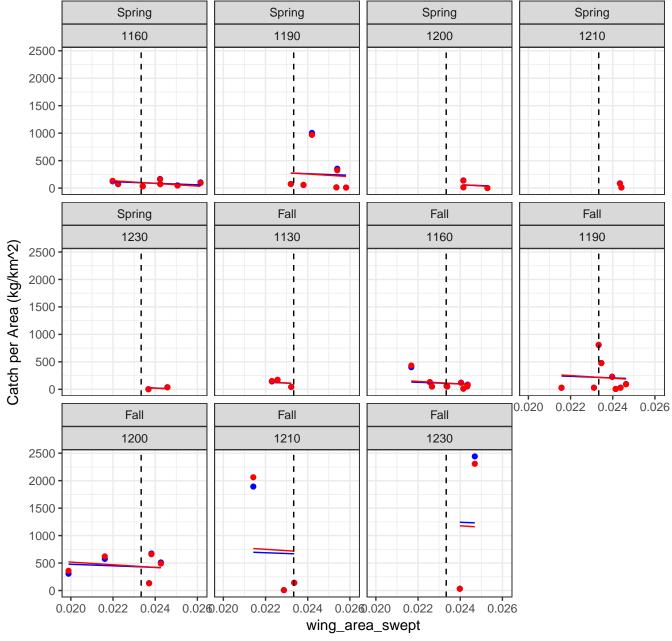
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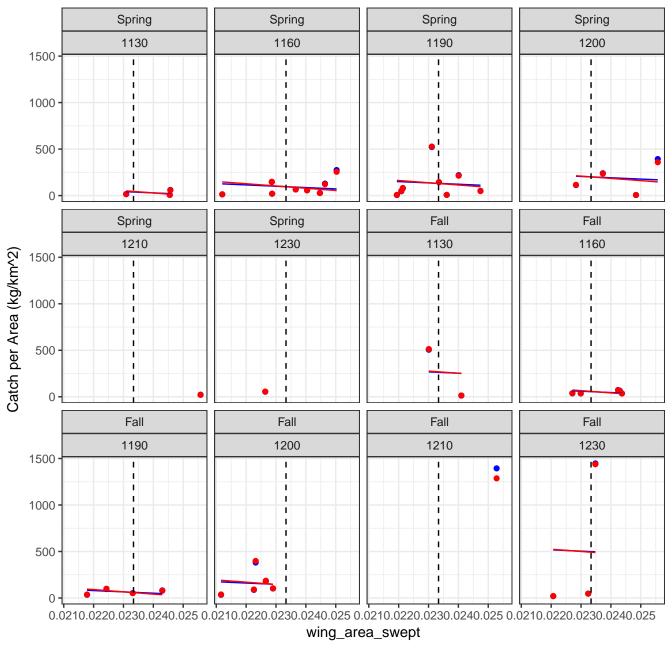
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Plaice 2017 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1130 1170 1190 1160 1200 1210 1500 1000 500 Spring Spring Spring Spring Spring Spring 1220 1230 1240 1260 1270 1280 1500 1000 500 3 Spring Spring Spring Spring Spring Spring 1290 1300 1360 1370 1380 1390 Catch per Area (kg/km^2) 1500 L T 1000 500 0 Spring Fall Fall Fall Fall Fall 1400 1180 1220 1240 1270 1260 1500 -1000 500 0 Fall Fall Fall Fall Fall Fall 1280 1290 1360 1370 1380 1390 1500 1000 500 6 0 Fall 1400 1500 1000 500 0.0108.0201.0204.0207.030 wing\_area\_swept

GBwinter 2009 Case 4 (Without Zeros or Fills) Winner = Standard

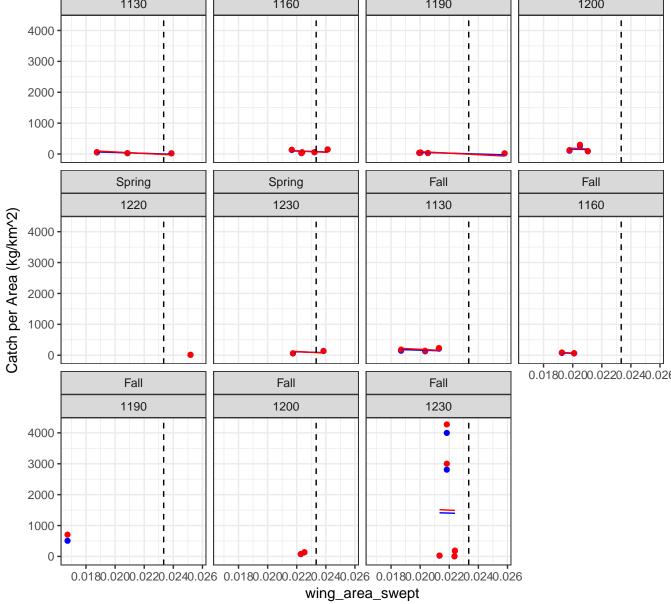


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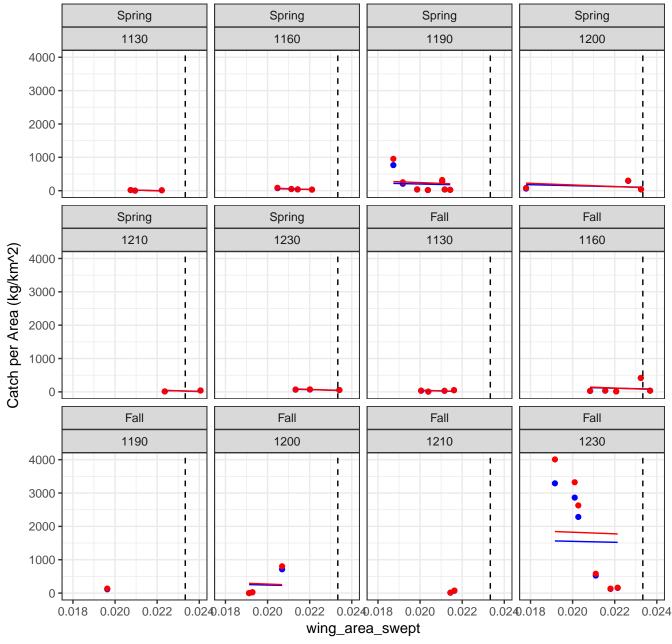


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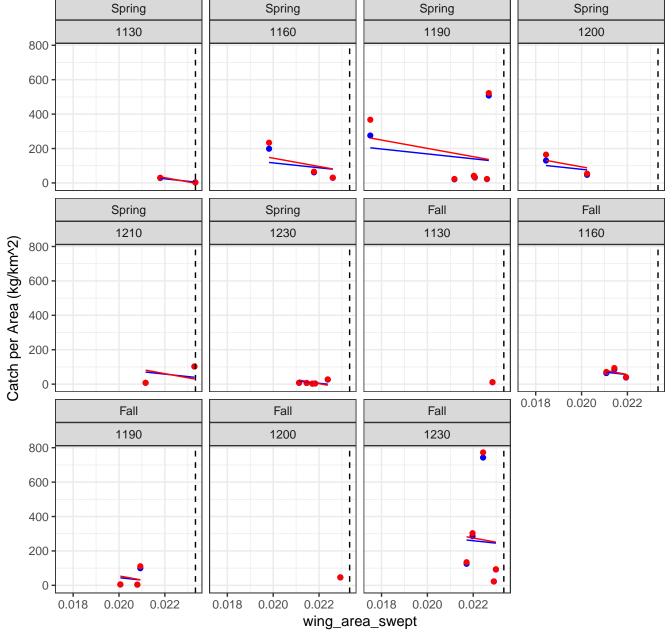
Spring Spring Spring Spring Spring 1130 1160 1190 1200



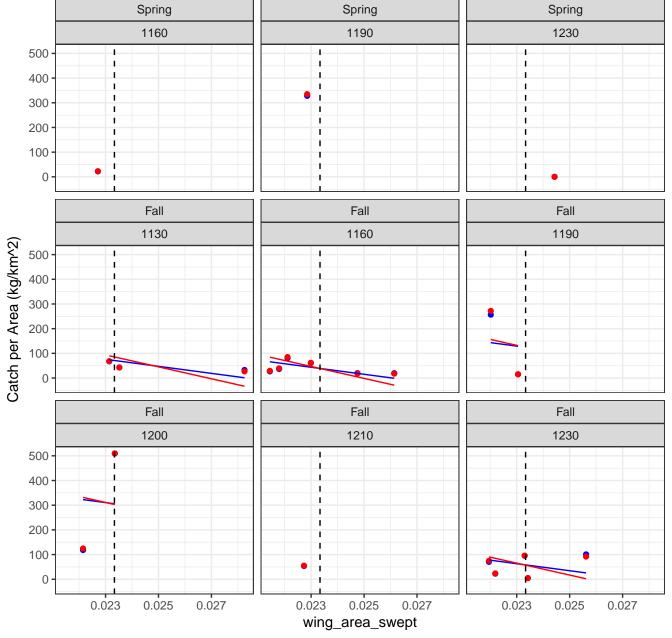
GBwinter 2012 Case 4 (Without Zeros or Fills) Winner = Standard



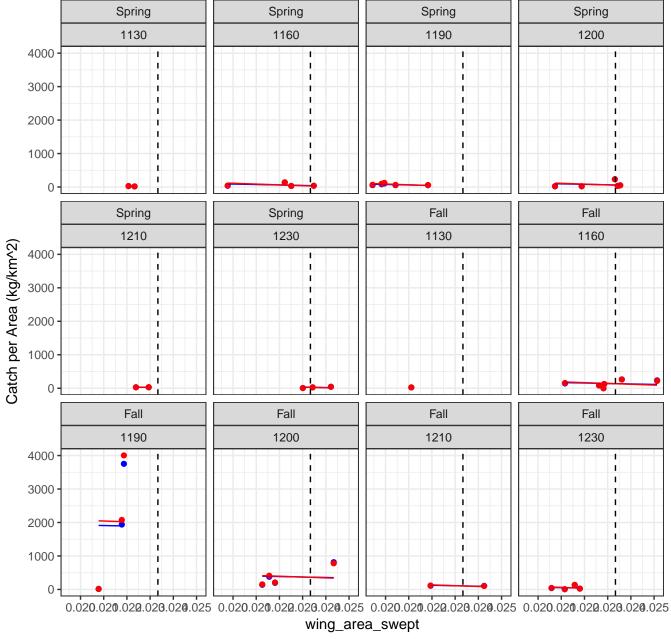
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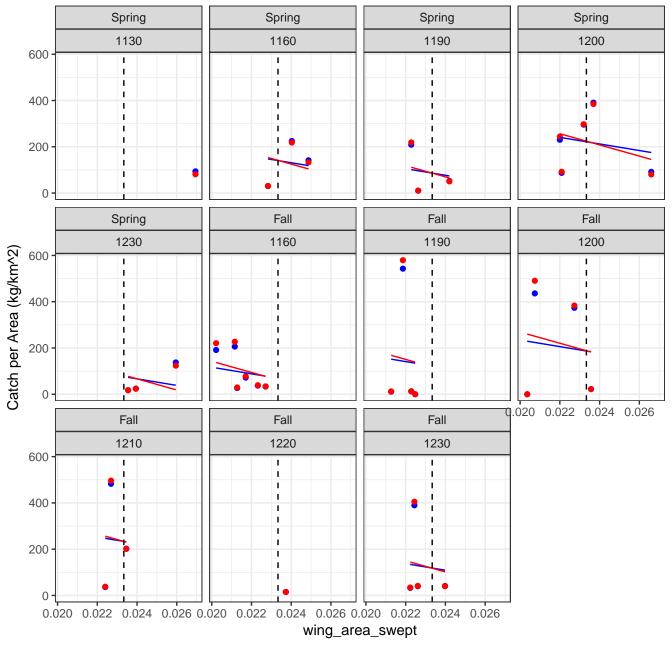
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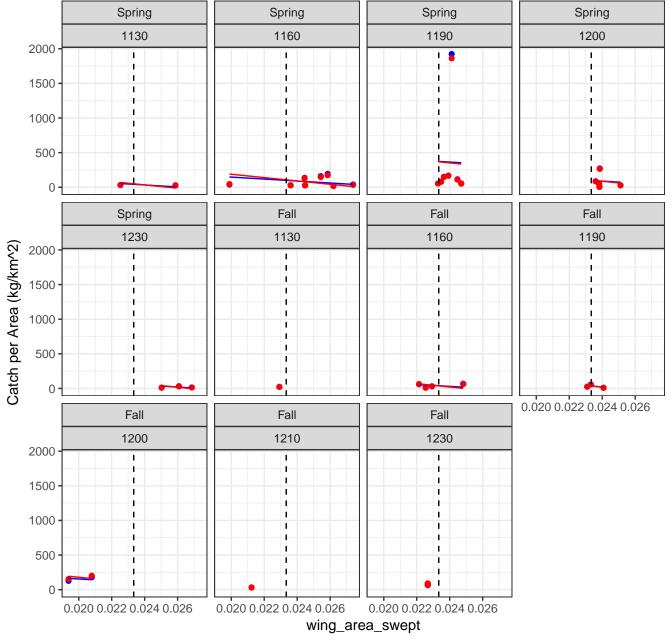
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GBwinter 2016 Case 4 (Without Zeros or Fills) Winner = Standard



GBwinter 2017 Case 4 (Without Zeros or Fills) Winner = Standard



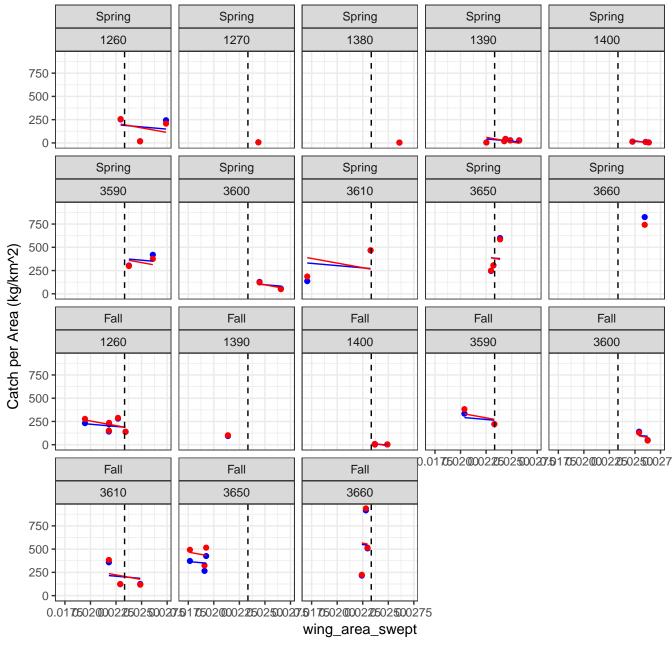
GOMwinter 2009 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring 1260 1270 1380 1390 1400 3000 2000 1000 -0 Spring Spring Spring Spring Spring 3590 3600 3610 3650 3660 3000 2000 Catch per Area (kg/km^2) 1000 Fall Fall Fall Fall Fall 1260 1390 1400 3590 3600 3000 2000 1000 0.020.022.024.026.0280.020.022.024.026.028 Fall Fall Fall 3610 3650 3660 3000 -2000 1000  $0.02 \\ \mathbf{0}.02 \\ \mathbf{0}.02$ wing\_area\_swept

GOMwinter 2010 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring 1270 1260 1380 1390 1400 3000 ı 2000 1000 0 Spring Spring Spring Spring Spring 3590 3600 3610 3650 3660 3000 2000 Catch per Area (kg/km^2) 1000 -Fall Fall Fall Fall Fall 1260 1270 1380 1390 1400 3000 1 2000 ī T 1000 0 10.0200002205025000275 0.0200002205025000275 0.0200002205025000275 Fall Fall 3650 3660 3000 2000 1000 0.0200002205025000275 0.0200002205025000275 wing\_area\_swept

GOMwinter 2011 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring 1390 1400 1260 3590 1000 750 500 -250 0 Spring Spring Spring Spring 3600 3610 3650 3660 1000 750 500 Catch per Area (kg/km^2) 250 Fall Fall Fall Fall 1260 1400 3590 3600 1000 750 -500 250 0 70.01**75**.020**0**.022**5**.025**0**.0275 Fall Fall Fall 3610 3650 3660 1000 750 500 250  $0.0175 \\ 0.020 \\ 0.0225 \\ 0.025 \\ 0.0275 \\ 0.0275 \\ 0.175 \\ 0.020 \\ 0.0225 \\ 0.025 \\ 0.0275 \\ 0.0275 \\ 0.020 \\ 0.0225 \\ 0.0275 \\ 0.0275 \\ 0.020 \\ 0.0225 \\ 0.0275 \\$ 

wing\_area\_swept

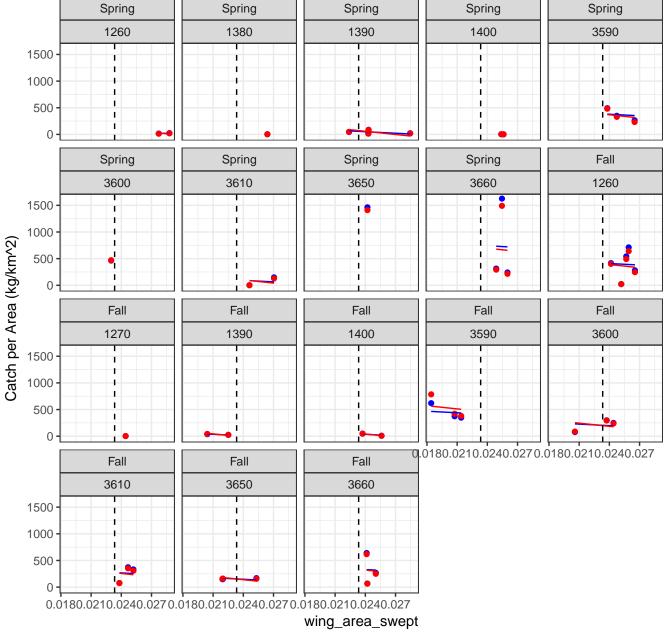
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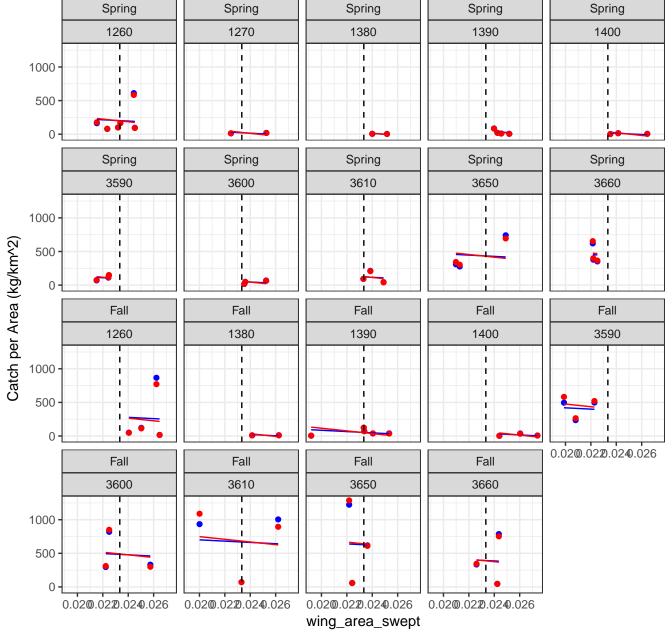
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wing\_area\_swept

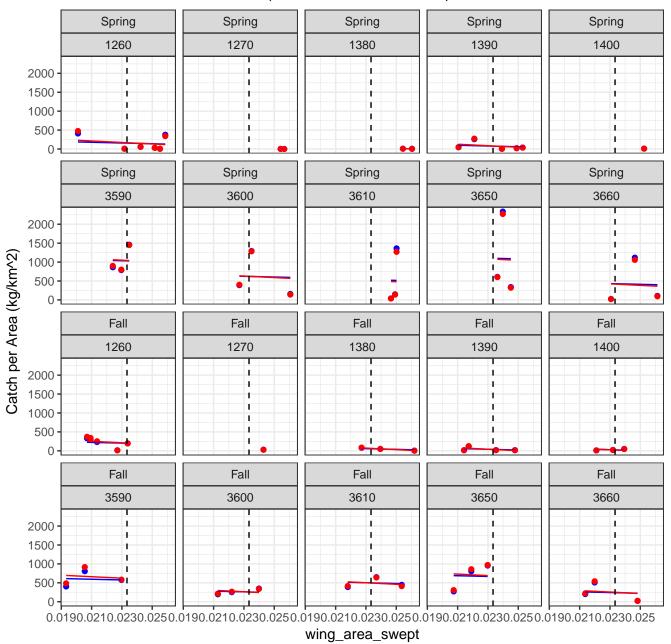
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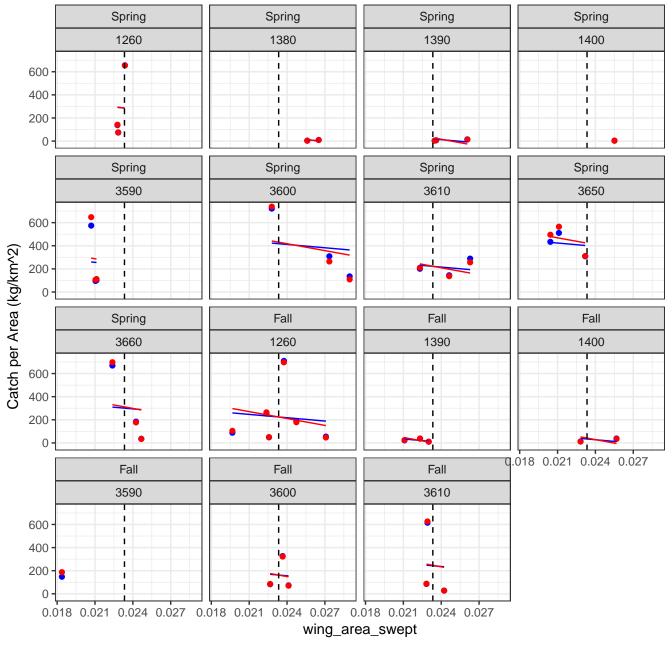
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GOMwinter 2016 Case 4 (Without Zeros or Fills) Winner = Standard



GOMwinter 2017 Case 4 (Without Zeros or Fills) Winner = Standard



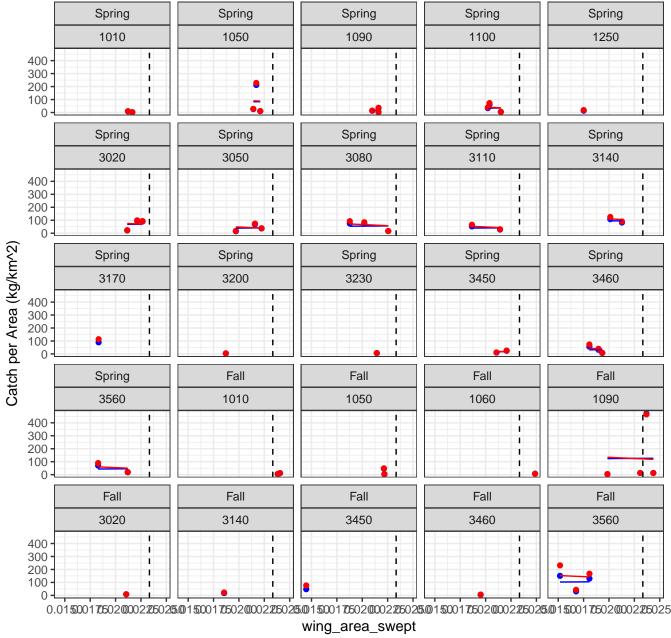
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### SNEwinter 2010 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring 1010 1050 1060 1090 1100 1250 Spring Spring Spring Spring Spring Spring 1730 3020 3050 3080 3110 3140 Spring Spring Spring Spring Spring Spring 3170 3200 3260 3450 3460 3560 Catch per Area (kg/km^2) Fall Fall Fall Fall Fall Fall 1010 1020 1050 1060 1090 1100 Fall Fall Fall Fall Fall Fall 1250 1690 1730 3020 3050 3080 0.010802000202020402 Fall Fall Fall Fall Fall 3110 3140 3450 3460 3560 $0.018020022202402\\ 6.018020022202402\\ 6.018020022202222\\ 6.018020022202222\\ 6.01802002220222\\ 6.01802002220222\\ 6.01802002220222\\ 6.0180200222022\\ 6.0180200222022\\ 6.01802002220222\\ 6.0180200222022\\ 6.0180200222022\\ 6.0180200222022\\ 6.018020022022\\ 6.0180200220222\\ 6.018020022022\\ 6.018020022\\ 6.018020022022\\ 6.01802002\\ 6.01802002\\ 6.01802002\\ 6.01802002\\ 6.01802002\\ 6.01802002\\ 6.01802002\\ 6.01802002\\ 6.01802002\\ 6.01802002\\ 6.01802002\\ 6.01802002\\ 6.01802002\\ 6.01802002\\ 6.01802002\\ 6.01802002\\ 6.01802002\\ 6.01$ wing\_area\_swept

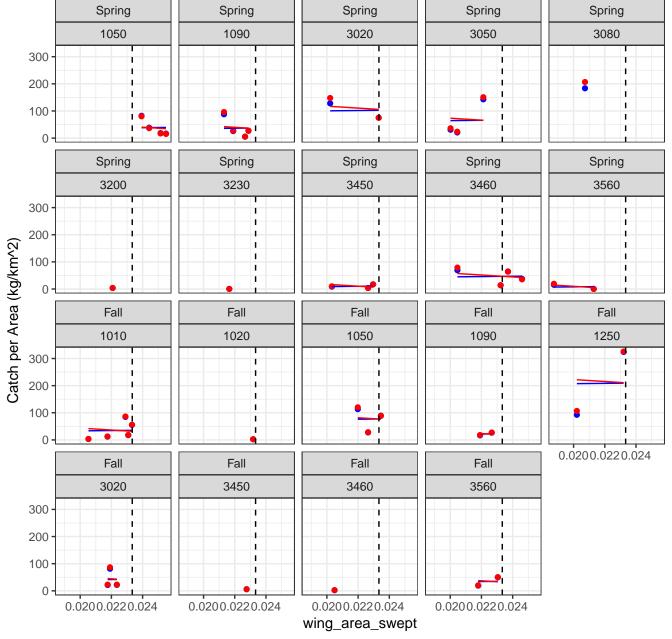
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SNEwinter 2012 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring Spring ī T Spring Spring Spring Spring Spring Spring Catch per Area (kg/km^2) Spring Spring Spring Spring Fall Fall Fall Fall Fall Fall Fall Fall ī D.01**5017.520.022525015017.520.022525015017.520.0225**25 Fall Fall Fall 0.015.017.520.022.525015.017.520.022.525015.017.520.022.5250 wing\_area\_swept

## SNEwinter 2013 Case 4 (Without Zeros or Fills) Winner = Standard

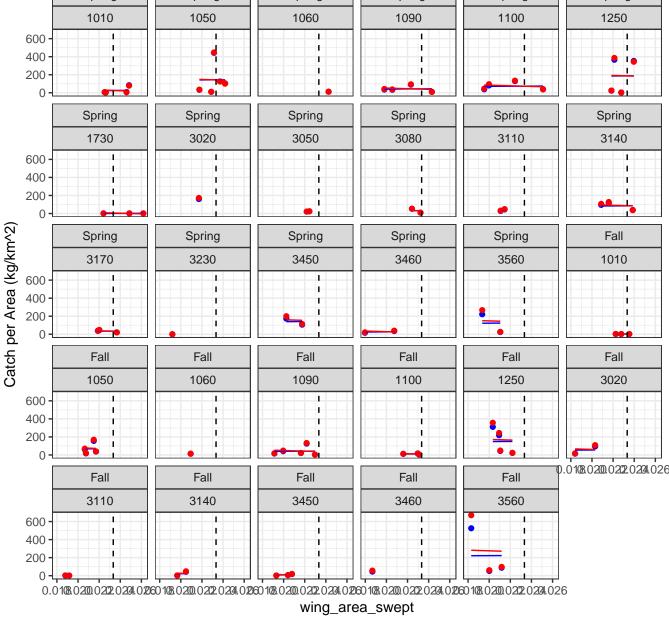


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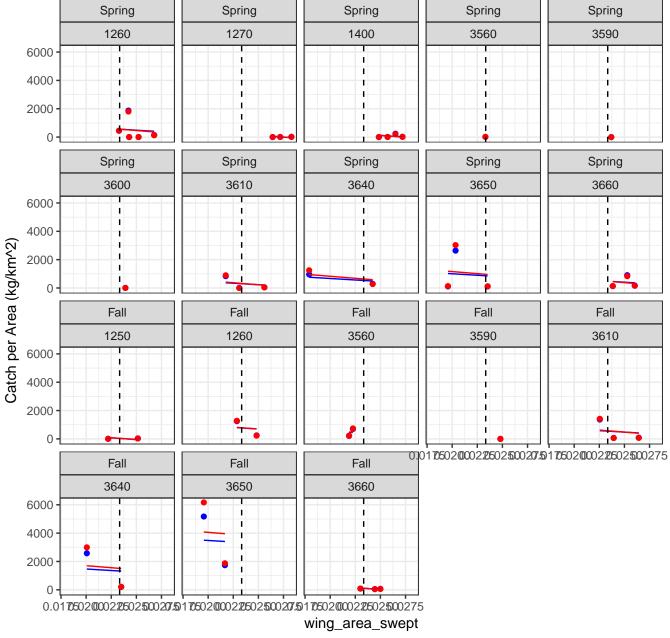
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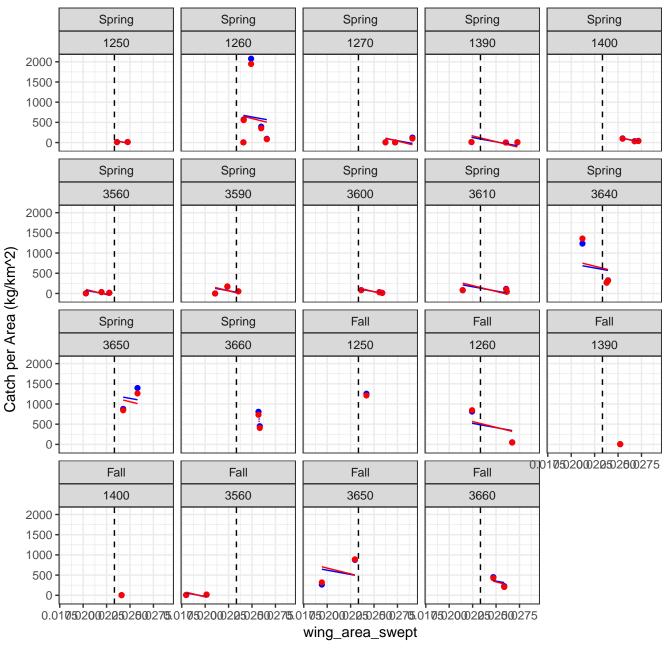


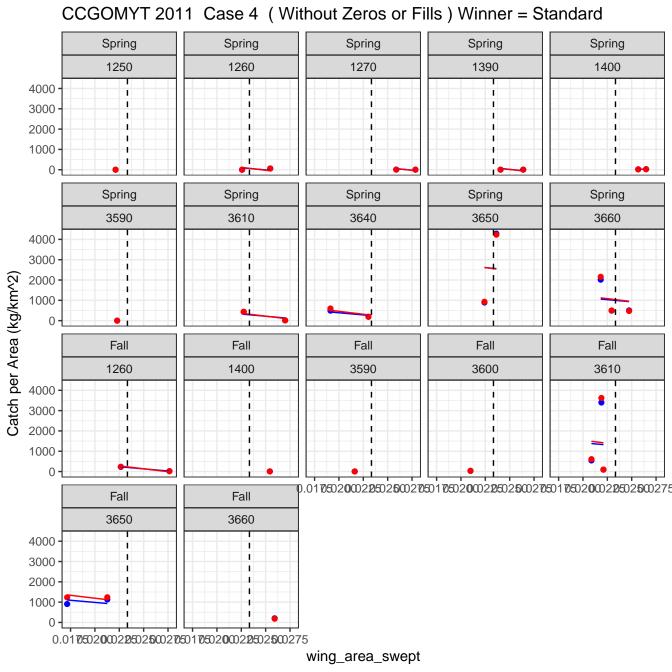
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CCGOMYT 2009 Case 4 (Without Zeros or Fills ) Winner = Standard

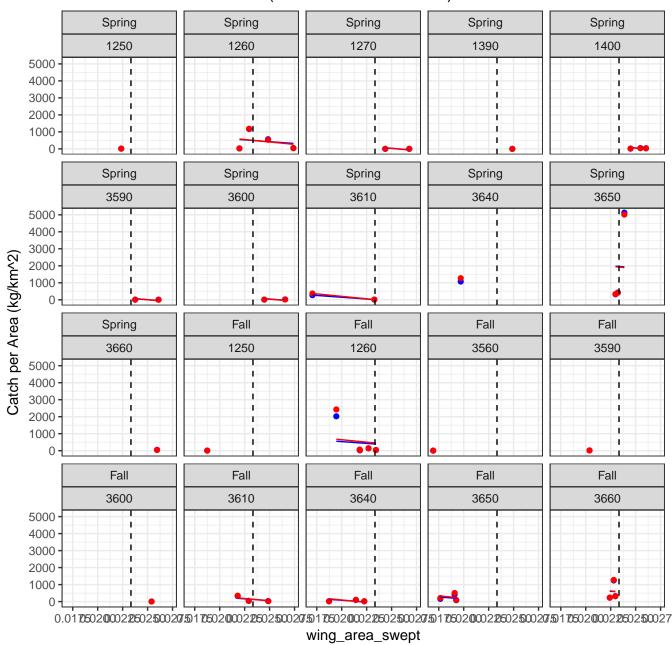


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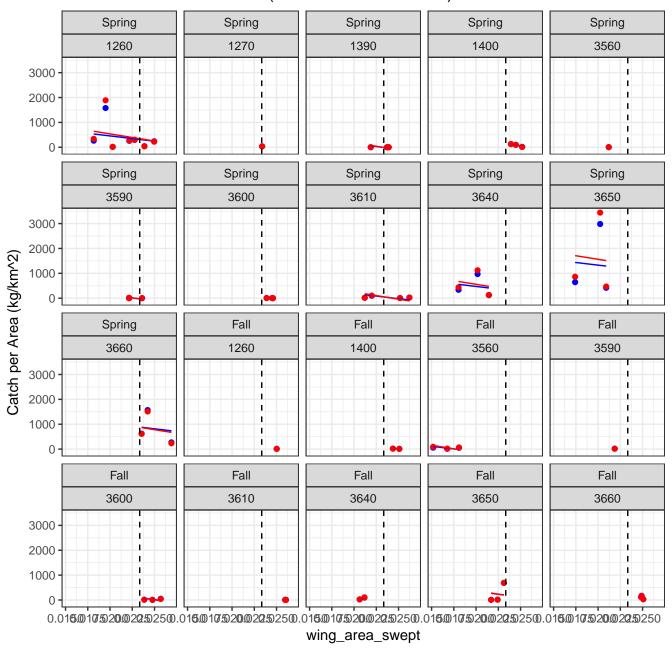




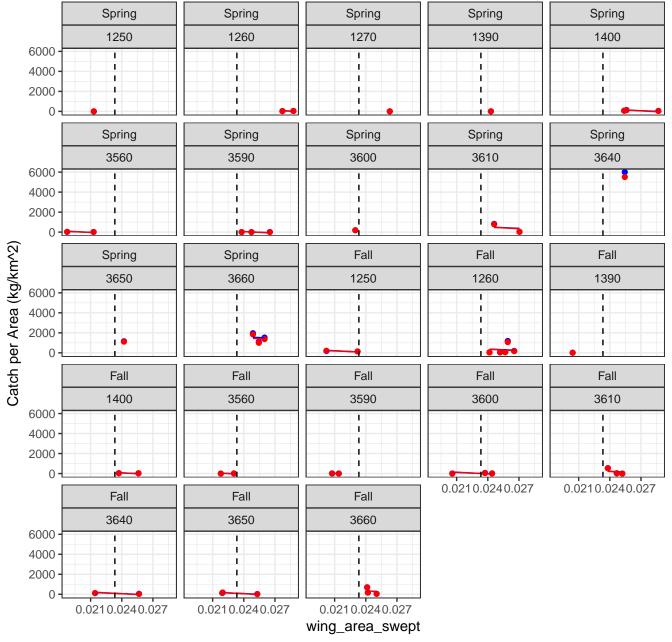
### CCGOMYT 2012 Case 4 (Without Zeros or Fills) Winner = Standard



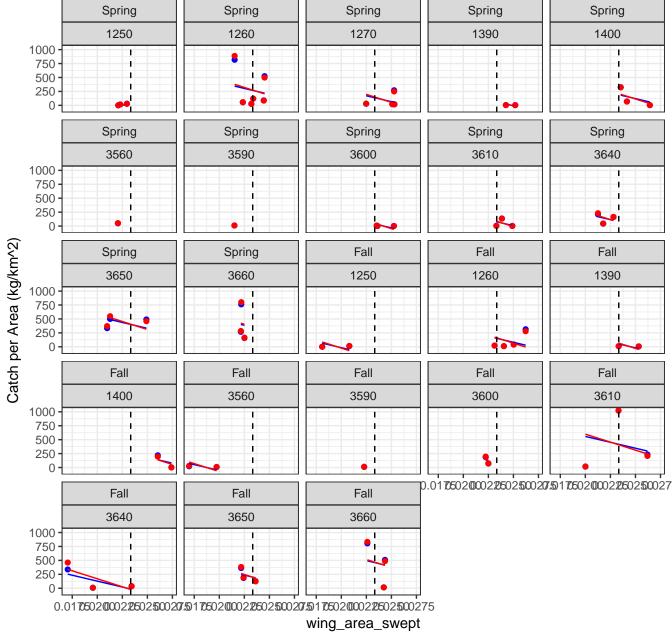
## CCGOMYT 2013 Case 4 (Without Zeros or Fills) Winner = Standard



CCGOMYT 2014 Case 4 (Without Zeros or Fills) Winner = Standard

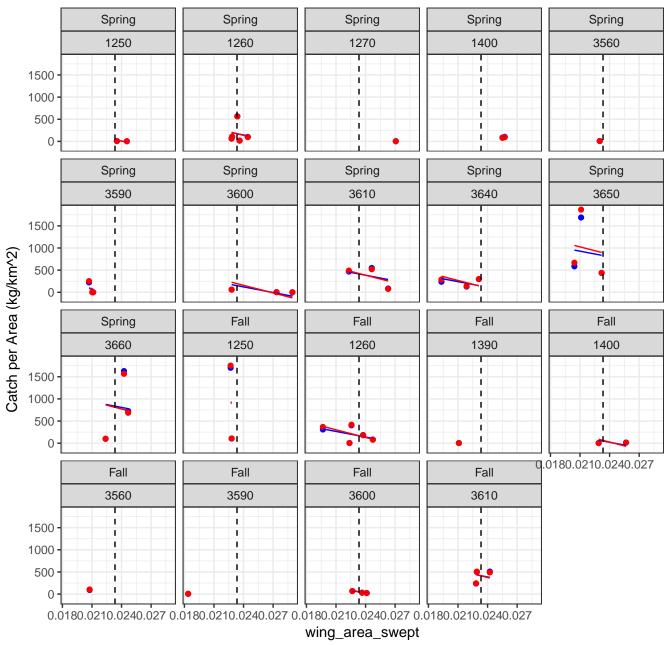


CCGOMYT 2015 Case 4 (Without Zeros or Fills) Winner = Standard



CCGOMYT 2016 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring Spring 1270 1390 1250 1260 1400 4000 3000 2000 1000 Spring Spring Spring Spring Spring 3640 3560 3590 3600 3610 4000 3000 2000 1000 ī 0 Catch per Area (kg/km^2) Spring Spring Fall Fall Fall 3650 3660 1250 1260 1390 4000 3000 2000 -1000 -Fall Fall Fall Fall Fall 3560 1400 3590 3600 3610 4000 3000 t 2000 1000 0 TO,015.017.520.022.525.027055.017.520.022.525.027 Fall Fall Fall 3640 3650 3660 4000 3000 2000 1000 0.015.017.520.022525.02755.017.520.022525.02755.017.520.022525.0275wing\_area\_swept

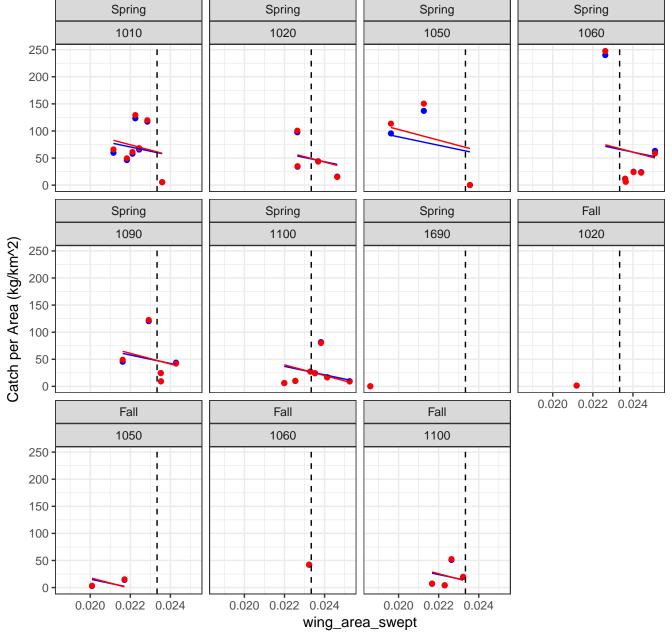
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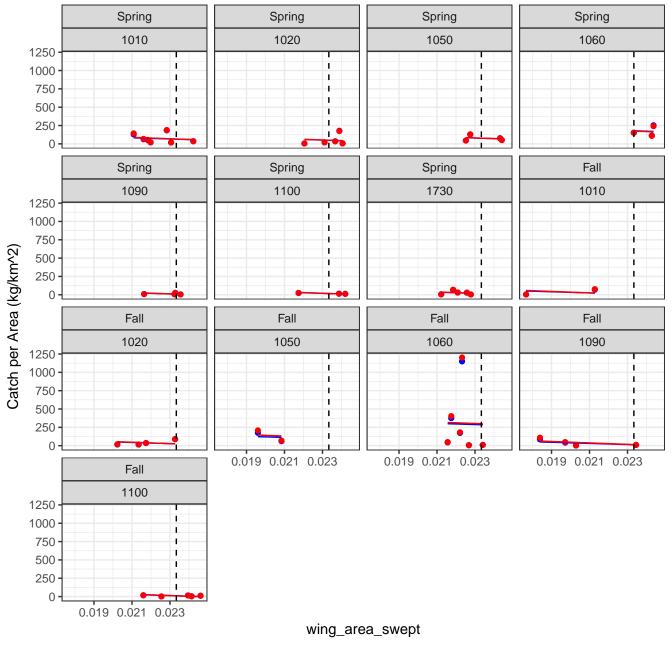
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SNEMAYT 2010 Case 4 (Without Zeros or Fills) Winner = Standard Spring Spring Spring Spring 1020 1060 1010 1050 2000 1500 1000 500 0 . Spring Spring Spring Fall 1090 1100 1730 1010 2000 1500 Catch per Area (kg/km^2) 1000 500 Fall Fall Fall Fall 1020 1050 1060 1090 2000 1500 -1000 -500 0  $0.02 \\ 2.02 \\ 0.02 \\$ Fall 1100 2000 1500 1000 500 0.020.020.020.020.020.020.027 wing\_area\_swept

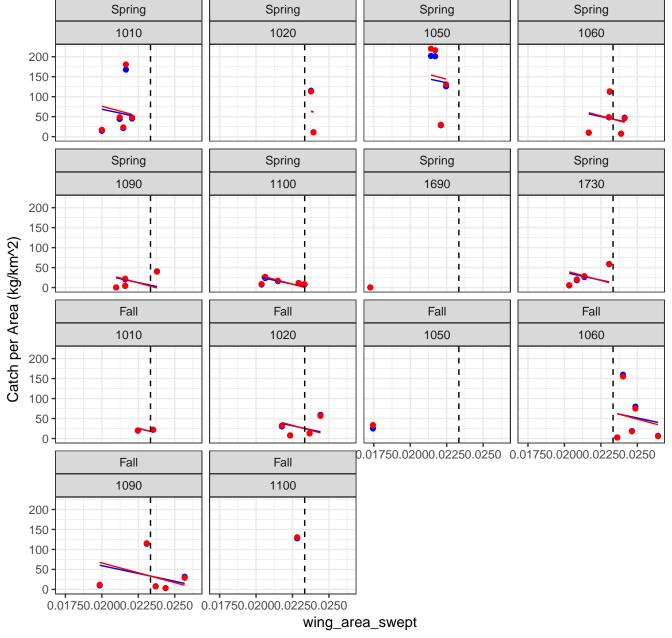
SNEMAYT 2011 Case 4 (Without Zeros or Fills) Winner = Standard



# SNEMAYT 2012 Case 4 (Without Zeros or Fills) Winner = Standard



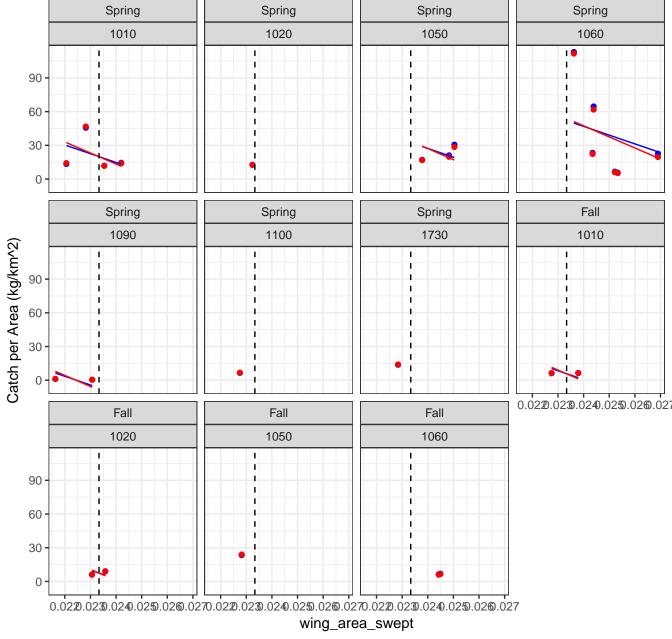
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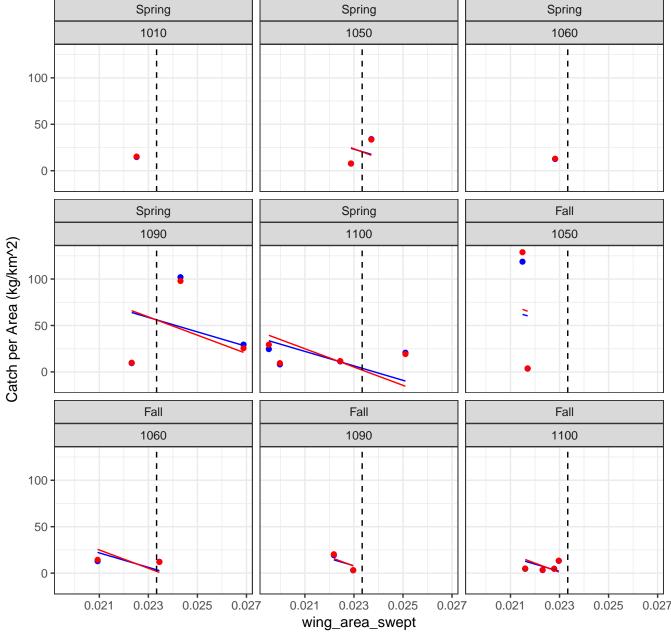
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wing\_area\_swept

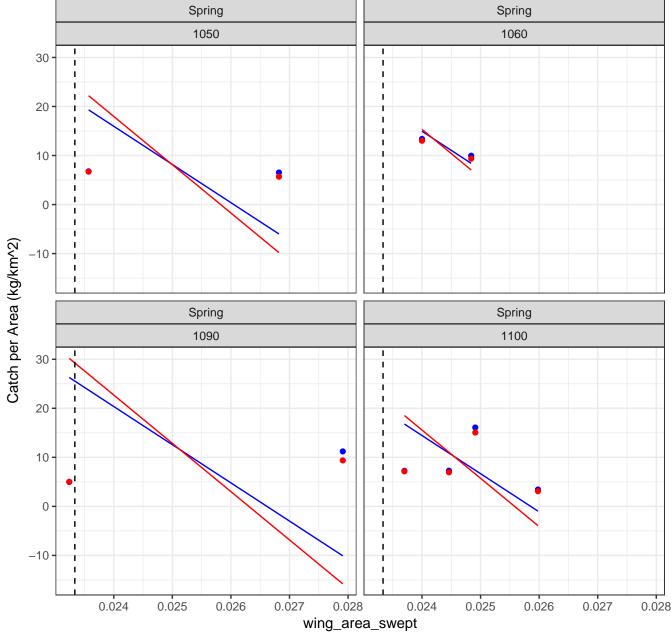
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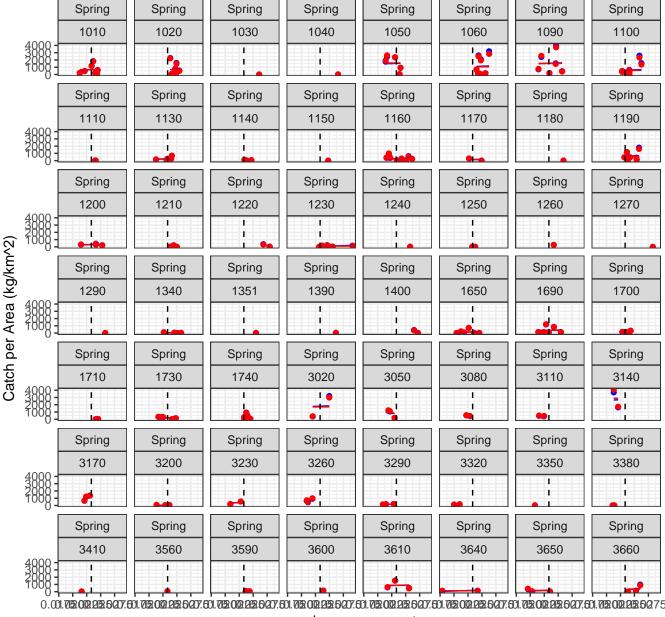
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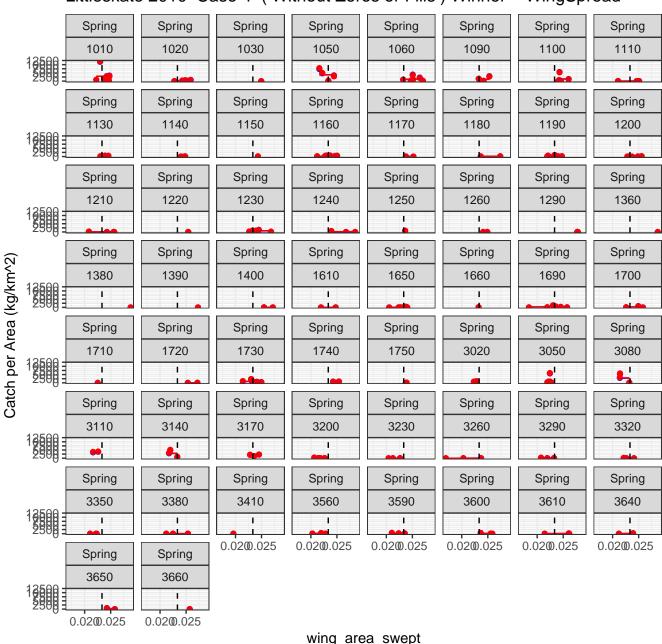


#### Littleskate 2009 Case 4 (Without Zeros or Fills) Winner = WingSpread

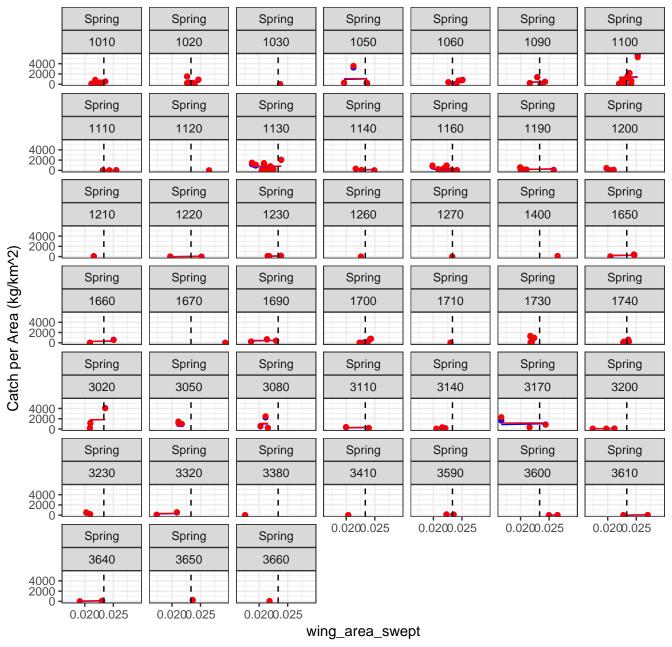


wing\_area\_swept

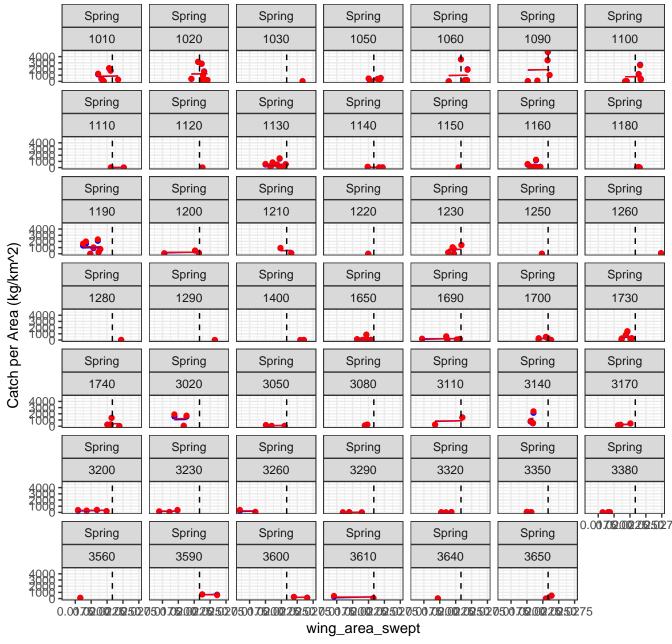
## Littleskate 2010 Case 4 (Without Zeros or Fills) Winner = WingSpread



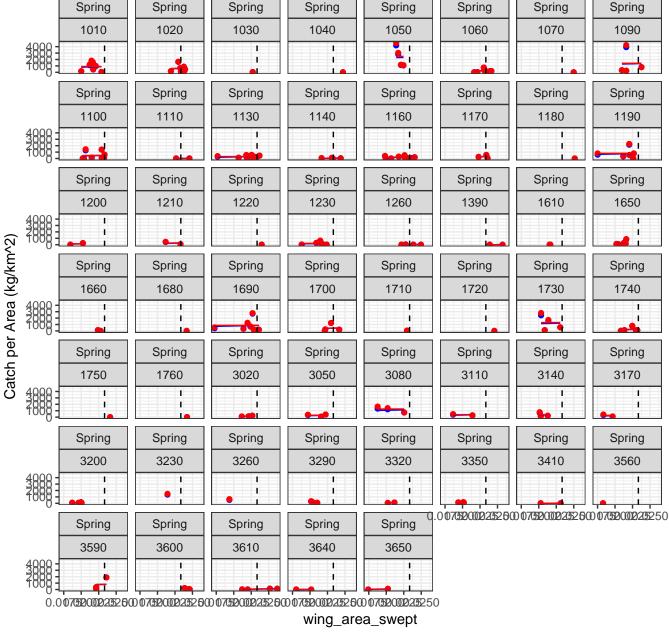
### Littleskate 2011 Case 4 (Without Zeros or Fills) Winner = WingSpread



Littleskate 2012 Case 4 (Without Zeros or Fills) Winner = WingSpread

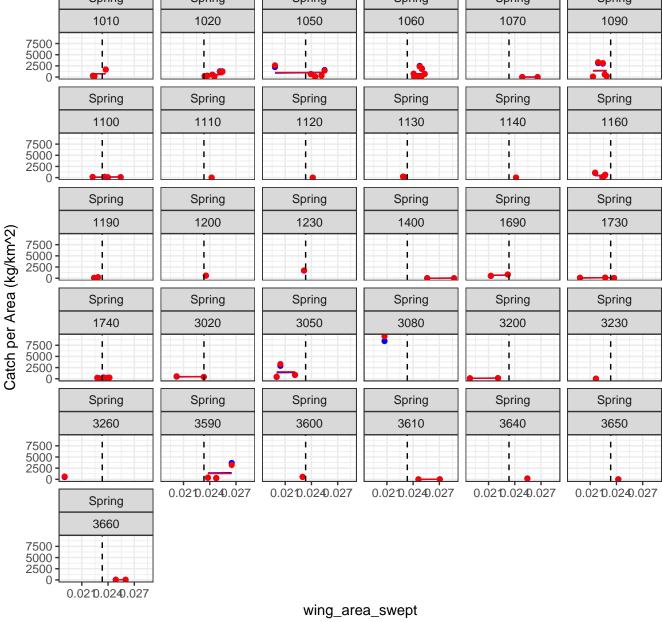


Littleskate 2013 Case 4 (Without Zeros or Fills) Winner = WingSpread

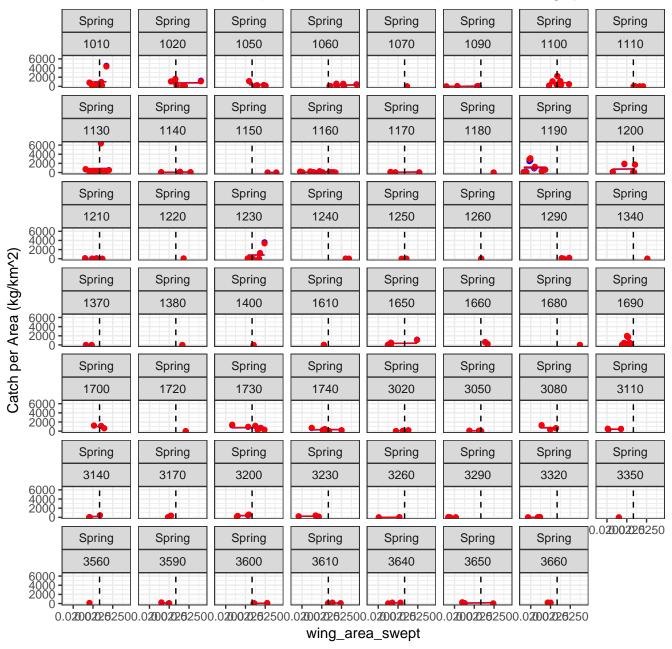


Littleskate 2014 Case 4 (Without Zeros or Fills ) Winner = WingSpread

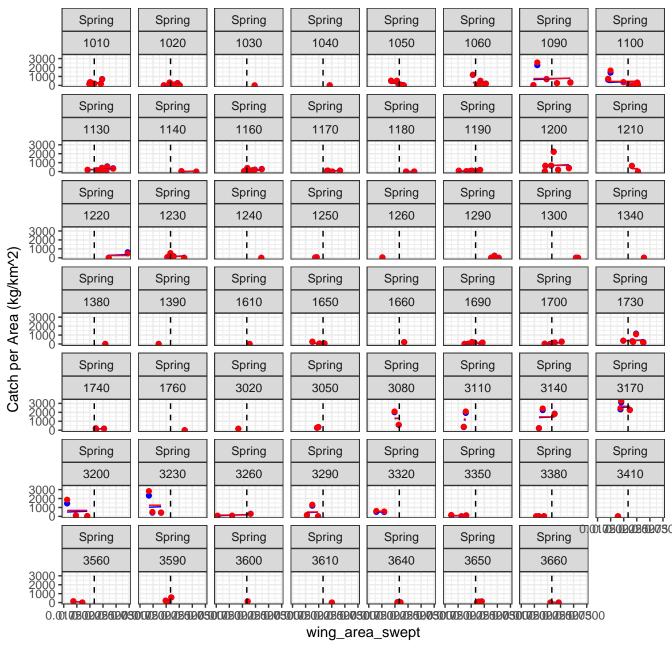
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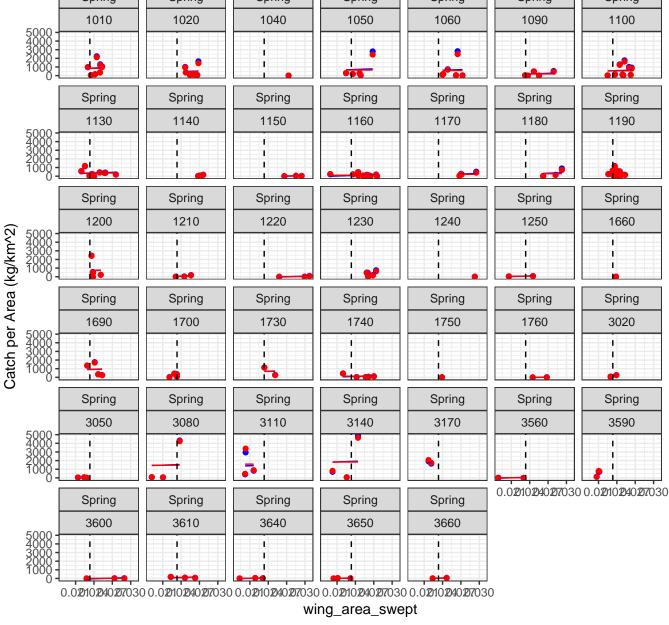
#### Littleskate 2015 Case 4 (Without Zeros or Fills) Winner = WingSpread



### Littleskate 2016 Case 4 (Without Zeros or Fills) Winner = WingSpread



# Littleskate 2017 Case 4 (Without Zeros or Fills ) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring

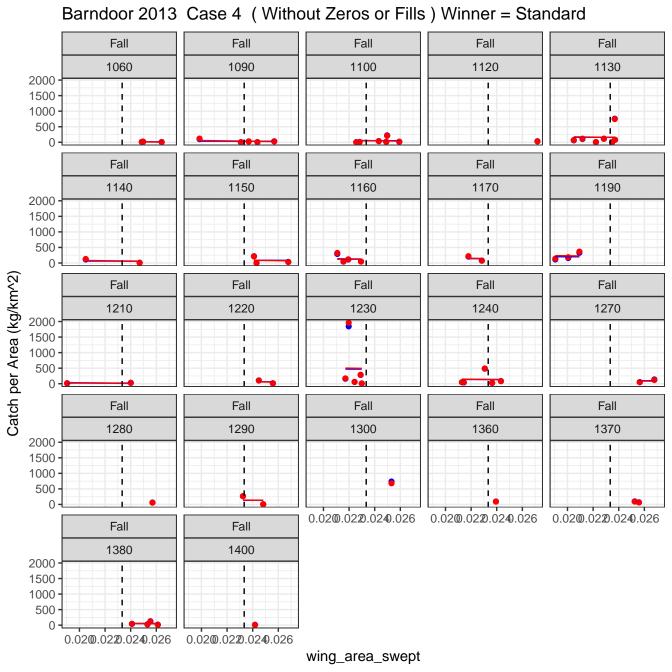


Barndoor 2009 Case 4 (Without Zeros or Fills) Winner = Standard Fall Fall Fall Fall Fall 1060 1090 1100 1110 1130 600 400 200 0 Fall Fall Fall Fall Fall 1140 1160 1170 1190 1200 600 400 Catch per Area (kg/km^2) 200 Fall Fall Fall Fall Fall 1210 1220 1230 1240 1270 600 400 200 0 Fall Fall Fall Fall Fall 1300 1280 1290 1360 1400 600 400 200 wing\_area\_swept

Barndoor 2010 Case 4 (Without Zeros or Fills) Winner = Standard Fall Catch per Area (kg/km^2) Fall wing\_area\_swept

Barndoor 2011 Case 4 (Without Zeros or Fills) Winner = Standard Fall Fall Fall Fall Fall Fall 1020 1040 1060 1080 1090 1100 600 400 200 Fall Fall Fall Fall Fall Fall 1130 1140 1150 1160 1170 1180 600 400 200 0 Catch per Area (kg/km^2) Fall Fall Fall Fall Fall Fall 1190 1200 1210 1220 1230 1240 600 400 -200 • [ 0 Fall Fall Fall Fall Fall Fall 1260 1270 1280 1290 1300 1360 600 400 200 0 0.020.024.027.030 0.020.024.027.030 0.020.024.027.030 0.0201.0204.0207.030 Fall Fall 1370 1380 600 400 200 0.020.029.0207.030 0.0201.029.0207.030wing\_area\_swept

Barndoor 2012 Case 4 (Without Zeros or Fills) Winner = Standard Fall Catch per Area (kg/km^2) Fall Fall Fall Fall Fall Fall 2500 · 2000 · Fall Fall Fall Fall Fall Fall 0.0160.0200.0240.02 Fall Fall Fall Fall Fall 0.0160.0200.0240. @26160.0200.0240. @26160.0200.0240. @26160.0200.0240. @26160.0200.0240. @26160.0200.0240. &26160.0240. &26160.0240.wing\_area\_swept

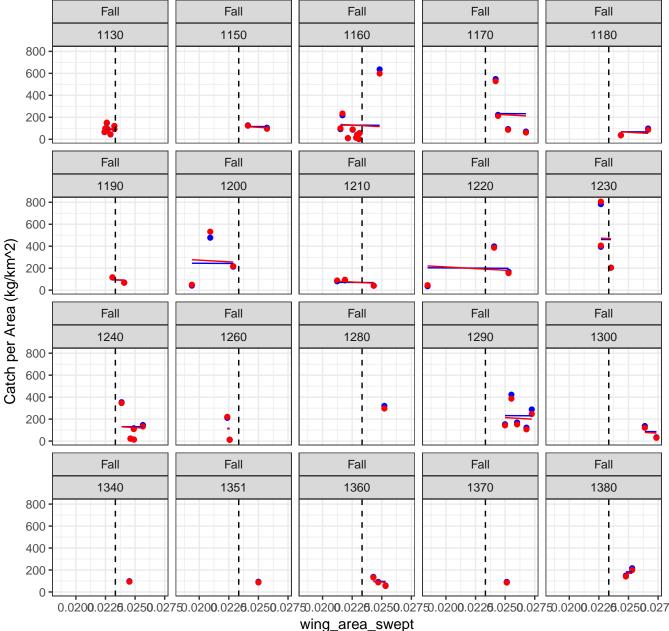


Barndoor 2014 Case 4 (Without Zeros or Fills) Winner = Standard Fall Fall Fall Fall Fall Fall 1040 1050 1070 1060 1090 1100 4000 2000 Fall Fall Fall Fall Fall Fall 1130 1140 1150 1160 1170 1180 4000 2000 0 Catch per Area (kg/km^2) Fall Fall Fall Fall Fall Fall 1190 1200 1210 1220 1230 1240 4000 2000 -Fall Fall Fall Fall Fall Fall 1260 1270 1280 1290 1300 1340 4000 2000 0 0.0201.0204.0207.030 0.0201.0204.0207.030 0.0201.0204.0207.030 Fall Fall Fall 1360 1370 1380 4000 2000 -0.0201.02040207.030 0.0201.02040207.030 0.0201.0204.0207.030 wing\_area\_swept

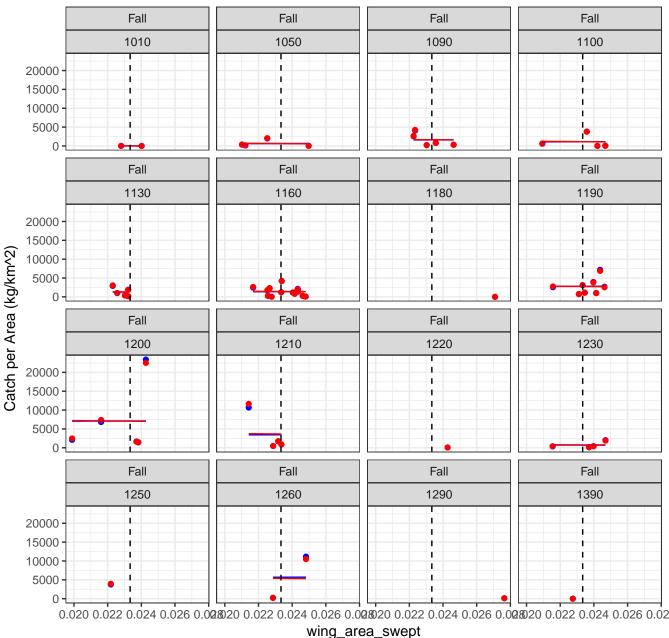
#### Barndoor 2015 Case 4 (Without Zeros or Fills) Winner = Standard Fall Fall Fall Fall Fall Fall 1050 1060 1100 1130 1090 1150 6000 4000 2000 -1 . Fall Fall Fall Fall Fall Fall 1160 1170 1180 1190 1200 1210 6000 4000 2000 ı 0 Catch per Area (kg/km^2) Fall Fall Fall Fall Fall Fall 1220 1230 1240 1250 1260 1270 6000 4000 -2000 -Fall Fall Fall Fall Fall Fall 1280 1290 1300 1340 1351 1360 6000 4000 2000 0 <del>U,</del>D10.520022525027510.520022525027510.520022525027510.52002252 Fall Fall 1370 1380 6000 4000 2000 0.010.5200022.525.027510.5200022.525.0275 wing\_area\_swept

Barndoor 2016 Case 4 (Without Zeros or Fills) Winner = Standard Fall Fall Fall Fall Fall Fall 1050 1060 1070 1090 1100 1110 600 ī ı 400 200 Fall Fall Fall Fall Fall Fall 1130 1140 1160 1170 1180 1190 600 400 200 0 -Catch per Area (kg/km^2) Fall Fall Fall Fall Fall Fall 1200 1210 1220 1230 1240 1250 600 400 200 0 Fall Fall Fall Fall Fall Fall 1260 1270 1280 1290 1300 1340 600 400 200 0 TD.020.020.020.026 0.020.020.020.026 0.020.020.020.026 Fall Fall Fall 1360 1370 1380 600 400 200  $0.02 \\ 0.02 \\$ wing\_area\_swept

Barndoor 2017 Case 4 (Without Zeros or Fills ) Winner = Standard



Winterskate 2009 Case 4 (Without Zeros or Fills) Winner = Standard



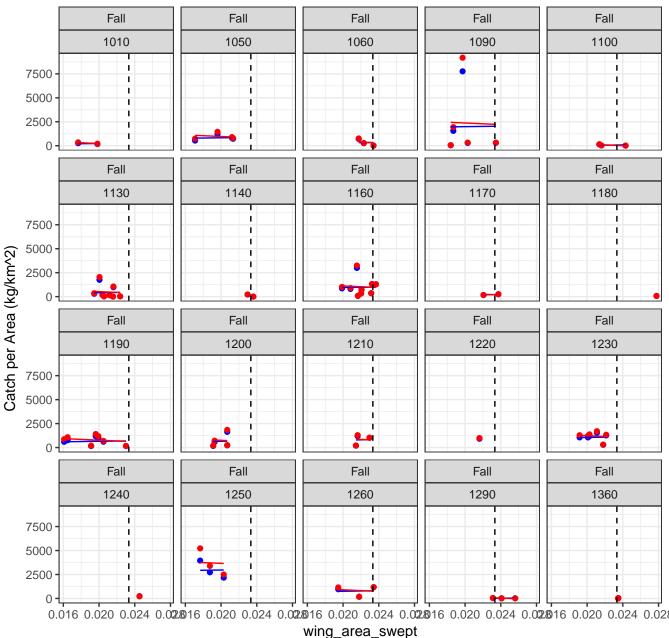
Winterskate 2010 Case 4 (Without Zeros or Fills) Winner = Standard Fall Fall Fall Fall Fall 1010 1020 1050 1060 1090 6000 4000 L 2000 Fall Fall Fall Fall Fall 1100 1130 1140 1160 1170 6000 4000 -2000 -0 Catch per Area (kg/km^2) Fall Fall Fall Fall Fall 1180 1190 1200 1210 1220 6000 -4000 -2000 -Fall Fall Fall Fall Fall 1230 1240 1250 1260 1290 6000 4000 -2000 -0  $0.02 \\ 0.02 \\ 20.02 \\ 4.02 \\ 6.02 \\ 8.02 \\ 0.02 \\ 0.02 \\ 0.02 \\ 4.02 \\ 6.02 \\ 8.02 \\ 0.02 \\$ Fall Fall 1380 1400 6000 -4000 2000 0.020.022.024.026.028.020.022.024.026.028 wing\_area\_swept

Winterskate 2011 Case 4 (Without Zeros or Fills) Winner = Standard Fall Fall Fall Fall Fall 1010 1050 1060 1090 1130 15000 -10000 5000 · 0 Fall Fall Fall Fall Fall 1160 1170 1190 1200 1210 15000 -10000 Catch per Area (kg/km^2) 5000 -0 Fall Fall Fall Fall Fall 1220 1230 1240 1260 1290 15000 Т 10000 -5000 -0 0,0100.0150.0200.025 Fall Fall Fall Fall 1340 1351 1360 1400 15000 10000 5000

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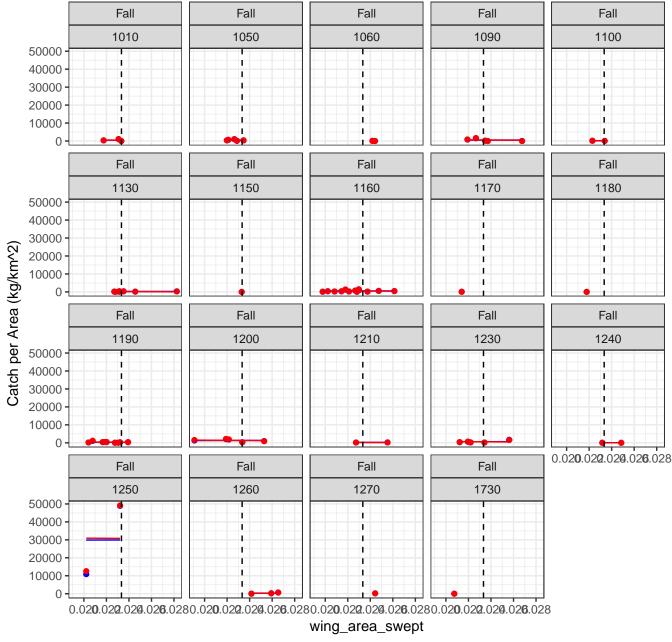
wing\_area\_swept

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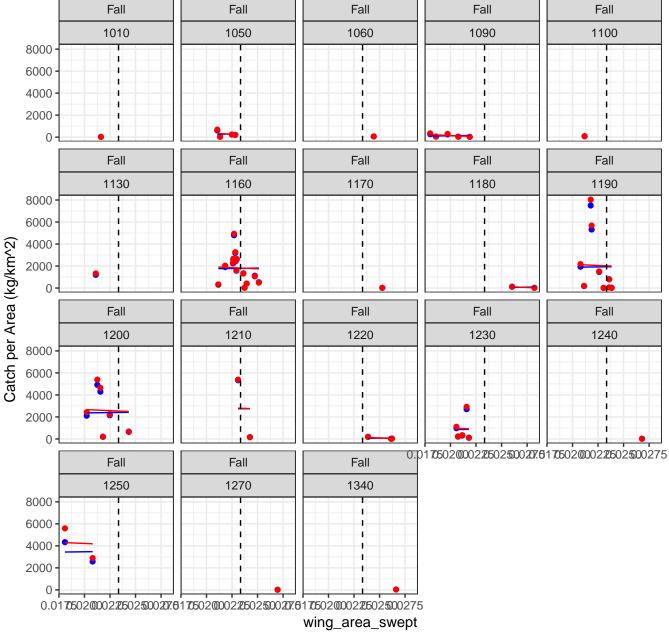


Winterskate 2013 Case 4 (Without Zeros or Fills) Winner = Standard Fall Fall Fall Fall 1010 1050 1060 1090 3000 2000 1000 -0 Fall Fall Fall Fall 1100 1130 1160 1190 3000 2000 Catch per Area (kg/km^2) 1000 -Fall Fall Fall Fall 1210 1200 1220 1230 3000 -2000 1000 0 0.0180.0200.0220.0240.026 Fall Fall Fall 1240 1260 1290 3000 2000 -1000  $0.0180.0200.0220.0240.02\\0.0180.0200.0220.0240.02\\0.0180.0200.0220.0240.02\\0$ wing\_area\_swept

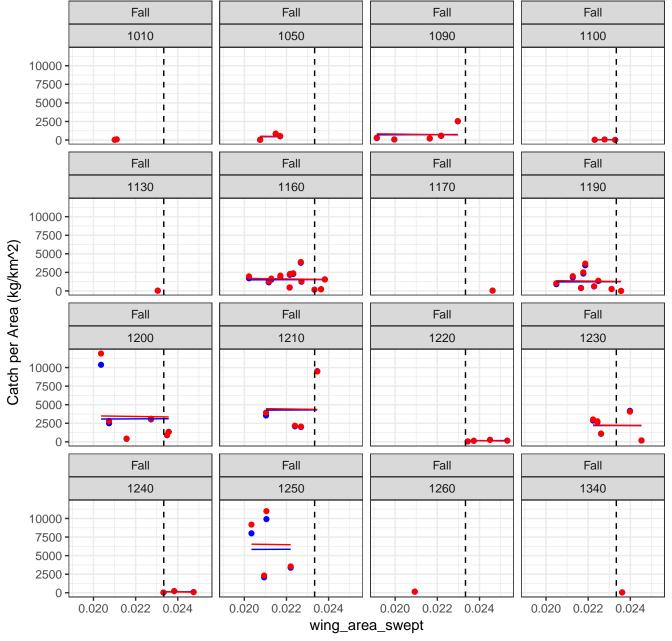
Winterskate 2014 Case 4 (Without Zeros or Fills) Winner = Standard



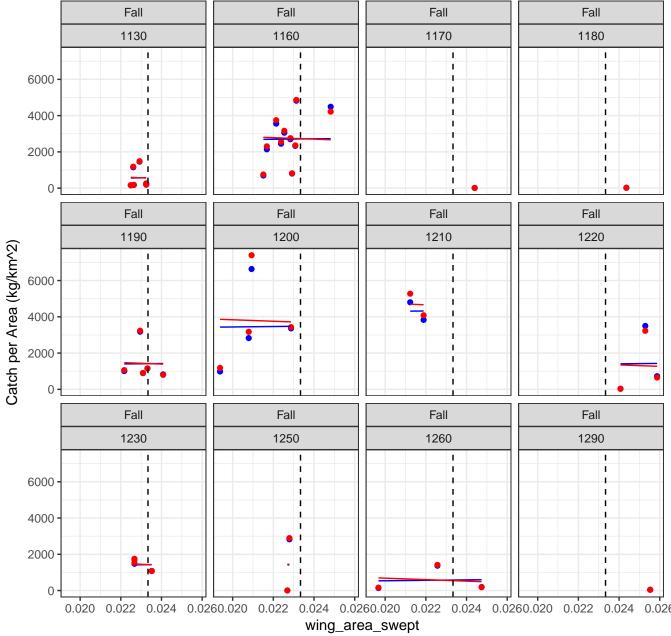
Winterskate 2015 Case 4 (Without Zeros or Fills) Winner = Standard



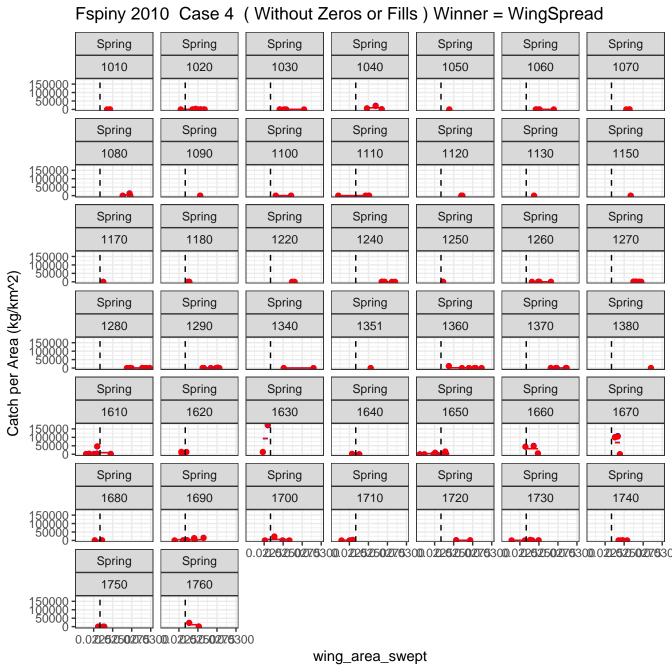
Winterskate 2016 Case 4 (Without Zeros or Fills) Winner = Standard



Winterskate 2017 Case 4 (Without Zeros or Fills) Winner = Standard

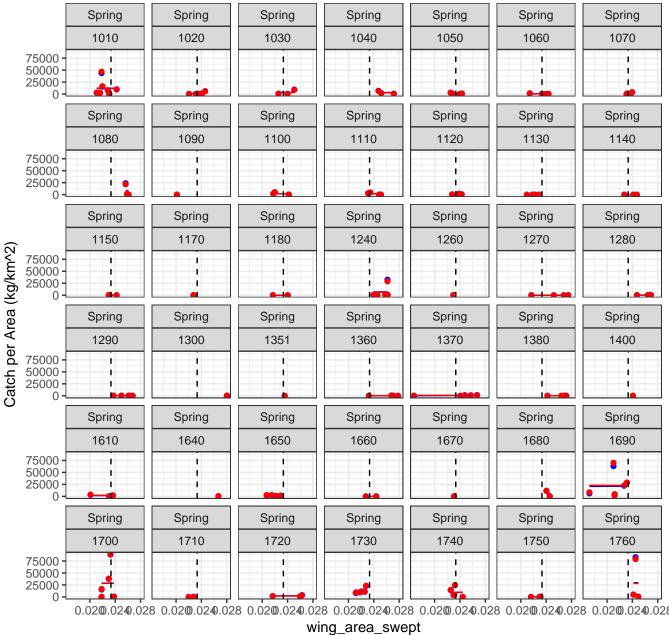


Fspiny 2009 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring 1010 1020 1030 1050 1060 1070 1040 60000 40000 20000 Spring Spring Spring Spring Spring Spring Spring 1080 1100 1120 1160 1200 1110 1130 60000 -40000 20000 Spring Spring Spring Spring Spring Spring Spring 1220 1230 1270 1280 1290 1240 1260 Catch per Area (kg/km^2) 60000 40000 20000 -Spring Spring Spring Spring Spring Spring Spring 1300 1340 1360 1370 1610 1620 1640 60000 40000 -20000 -0 Spring Spring Spring Spring Spring Spring Spring 1650 1660 1670 1680 1690 1700 1710 60000 40000 20000 <del>0</del>1.0200023525027560**0**200023525027560**0**2000235250275600 Spring Spring Spring Spring 1730 1760 1740 1750 60000 40000 20000 0.02011225251127550020112252511275500020112252511275500020112252511275300 wing\_area\_swept



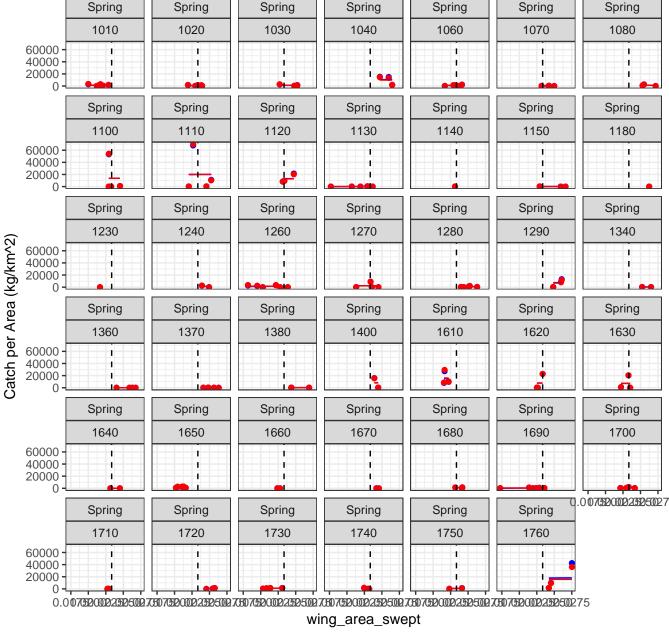
Fspiny 2011 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring 1020 1060 1010 1030 1040 1050 1070 200000 150000 100000 50000 Spring Spring Spring Spring Spring Spring Spring 1080 1090 1100 1110 1120 1130 1140 200000 150000 100000 50000 Spring Spring Spring Spring Spring Spring Spring 1150 1170 1240 1260 1270 1280 1290 Catch per Area (kg/km^2) 200000 150000 100000 50000 Spring Spring Spring Spring Spring Spring Spring 1351 1360 1370 1380 1610 1620 1630 200000 150000 100000 ı. 50000 Spring Spring Spring Spring Spring Spring Spring 1640 1650 1660 1670 1680 1690 1700 200000 150000 100000 50000 101.001.10**22.0022.2023.502**70.50 Spring Spring Spring Spring Spring Spring 1720 1710 1730 1740 1750 1760 200000 150000 100000 50000 wing area swept

Fspiny 2012 Case 4 (Without Zeros or Fills) Winner = WingSpread



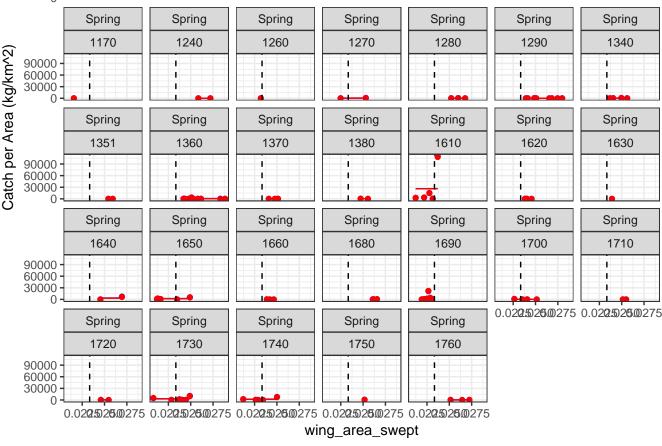
Fspiny 2013 Case 4 (Without Zeros or Fills ) Winner = WingSpread

Spring Spring

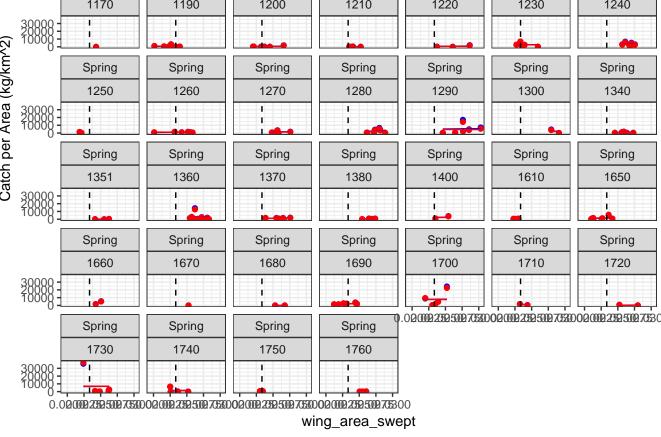


Fspiny 2014 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1020 1040 1010 1030 1060 1070 15000 10000 5000 0 Spring Spring Spring Spring Spring Spring 1080 1100 1110 1120 1130 1140 15000 ۰ 10000 5000 -Spring Spring Spring Spring Spring Spring 1150 1160 1170 1190 1200 1240 Catch per Area (kg/km^2) 15000 10000 5000 Spring Spring Spring Spring Spring Spring 1270 1280 1340 1360 1290 1351 15000 10000 5000 0 Spring Spring Spring Spring Spring Spring 1370 1380 1690 1730 1740 1750 15000 10000 5000 0 T).020M2Q5D26M276.020M2Q5D26M276.020M2Q5D26M276.020M2Q5D26M276.020M2Q5D26M275 Spring 1760 15000 10000 5000 0.0200020502600275 wing\_area\_swept

Fspiny 2015 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring 1010 1020 1030 1040 1050 1060 1070 90000 60000 -30000 Spring Spring Spring Spring Spring Spring Spring 1080 1100 1120 1140 1150 1110 1130 90000 60000 30000 Spring Spring Spring Spring Spring Spring Spring 1240 1280 1290 1340 1170 1260 1270 Catch per Area (kg/km^2) 90000 60000 30000 Spring Spring Spring Spring Spring Spring Spring 1351 1360 1370 1380 1610 1620 1630 90000 60000 -30000 -Spring Spring Spring Spring Spring Spring Spring 1640 1650 1660 1680 1690 1700 1710 90000



Fspiny 2016 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring 1010 1020 1030 1050 1060 1070 1040 Spring Spring Spring Spring Spring Spring Spring 1080 1090 1100 1130 1140 1150 1160 Spring Spring Spring Spring Spring Spring Spring 1170 1190 1200 1210 1220 1230 1240 Catch per Area (kg/km^2) Spring Spring Spring Spring Spring Spring Spring 1250 1260 1270 1280 1290 1300 1340 Spring Spring Spring Spring Spring Spring Spring 1351 1360 1370 1380 1400 1610 1650

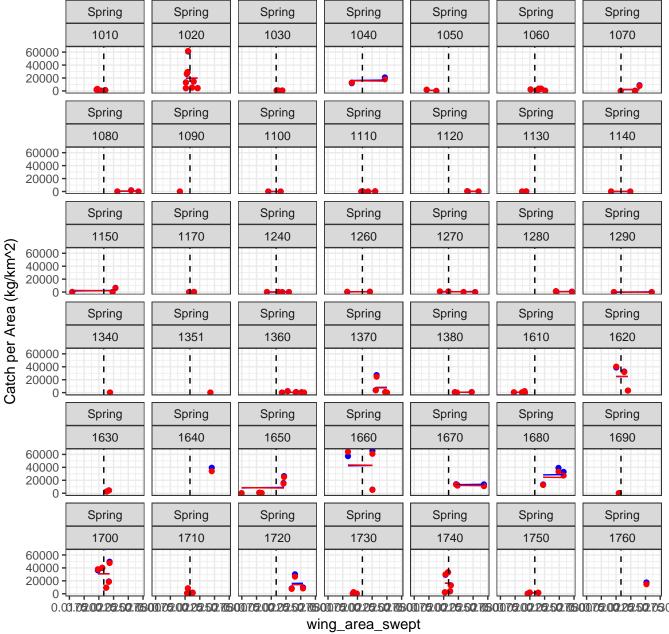


Fspiny 2017 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring 1030 1050 1010 1020 1040 1060 1070 80000 60000 40000 20000 -Spring Spring Spring Spring Spring Spring Spring 1080 1090 1100 1110 1120 1130 1140 80000 60000 40000 20000 Spring Spring Spring Spring Spring Spring Spring 1150 1160 1230 1240 1260 1270 1280 Catch per Area (kg/km^2) 80000 60000 40000 -20000 -Spring Spring Spring Spring Spring Spring Spring 1290 1340 1360 1370 1380 1620 1630 80000 **-**60000 **-**40000 -20000 -Spring Spring Spring Spring Spring Spring Spring 1640 1660 1670 1680 1690 1700 1710 80000 60000 40000 **-**20000 **-**T0.0220240260280300022024026028030 Spring Spring Spring Spring Spring 1720 1730 1740 1750 1760 80000 60000 40000 20000 wing area swept

#### Mspiny 2009 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring 1020 1010 1030 1040 1060 1070 1080 150000 100000 50000 Spring Spring Spring Spring Spring Spring Spring 1100 1110 1120 1130 1150 1160 1190 150000 100000 50000 **Spring** Spring Spring Spring Spring Spring Spring 1220 1240 1250 1280 1290 1300 1340 Catch per Area (kg/km^2) 150000 100000 50000 0 Spring Spring Spring Spring Spring Spring Spring 1351 1360 1370 1610 1620 1640 1650 150000 100000 50000 Spring Spring Spring Spring Spring Spring Spring 1660 1670 1680 1690 1700 1710 1730 150000 100000 = 50000 <del>0</del>1,02002252502763**02**002252502763**02**002252502763**02**002252502763 Spring Spring Spring 1740 1750 1760 150000 100000 50000 0.0**2**00**2**25**2**50**2**7**6**8**0<b>2**00**2**25**2**50**2**7**6**8**0<b>2**00**2**25**2**50**2**7**5**300 wing\_area\_swept

Mspiny 2010 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring 1010 1020 1030 1040 1060 1070 1080 150000 100000 50000 Spring Spring Spring Spring Spring Spring Spring 1090 1100 1110 1120 1150 1180 1200 150000 100000 50000 Spring Spring Spring Spring Spring Spring Spring 1220 1240 1260 1280 1290 1300 1270 Catch per Area (kg/km^2) 150000 100000 50000 0 Spring Spring Spring Spring Spring Spring Spring 1630 1340 1360 1370 1380 1610 1620 150000 100000 50000 Spring Spring Spring Spring Spring Spring Spring 1640 1650 1660 1670 1680 1690 1700 150000 100000 50000 1-0.022625027.630 Spring Spring Spring Spring Spring Spring 1710 1720 1730 1740 1750 1760 150000 100000 50000 wing\_area\_swept

## Mspiny 2011 Case 4 (Without Zeros or Fills) Winner = WingSpread



#### Mspiny 2012 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring 1010 1020 1030 1040 1050 1060 1070 3e+05 2e+05 1e+05 0e+00 Spring Spring Spring Spring Spring Spring Spring 1080 1100 1110 1120 1130 1140 1150 3e+05 2e+05 1e+05 0e+00 Spring Spring Spring Spring Spring Spring Spring 1160 1170 1190 1230 1240 1260 1180 Catch per Area (kg/km^2) 3e+05 2e+05 1e+05 0e+00 Spring Spring Spring Spring Spring Spring Spring 1270 1280 1290 1340 1351 1360 1370 3e+05 2e+05 1e+05 -0e+00 Spring Spring Spring Spring Spring Spring Spring 1380 1630 1640 1650 1670 1680 1690 3e+05 2e+05 1e+05 0e+00 Spring Spring Spring Spring Spring Spring Spring 1700 1710 1720 1730 1750 1760 1740 3e+05 2e+05 1e+05 0e+00

wing\_area\_swept

 $0.02 \\ 0.02 \\ 0.024 \\ 0.028 \\ 0.020 \\ 0.024 \\ 0.028 \\ 0.028 \\ 0.020 \\ 0.024 \\ 0.028$ 

Mspiny 2013 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring 1010 1020 1030 1040 1060 1070 1080 60000 40000 20000 -Spring Spring Spring Spring Spring Spring Spring 1100 1110 1120 1130 1140 1150 1180 60000 40000 20000 Spring Spring Spring Spring Spring Spring Spring 1230 1240 1260 1270 1280 1290 1340 Catch per Area (kg/km^2) 60000 40000 20000 Spring Spring Spring Spring Spring Spring Spring 1360 1370 1630 1400 1610 1620 1640 60000 40000 20000 Spring Spring Spring Spring Spring Spring Spring 1650 1660 1670 1680 1690 1700 1710 60000 40000 20000 0 TQ.0075200022525027507520002252502 Spring Spring Spring Spring Spring 1720 1730 1750 1760 1740 60000 40000 20000 0.0075P00P25P50PXHD75P00P25P50PXHD75P00P25P50PXHD75P00P25P50PXHD75P00P25P50PXHD75P00P25P50PX wing\_area\_swept

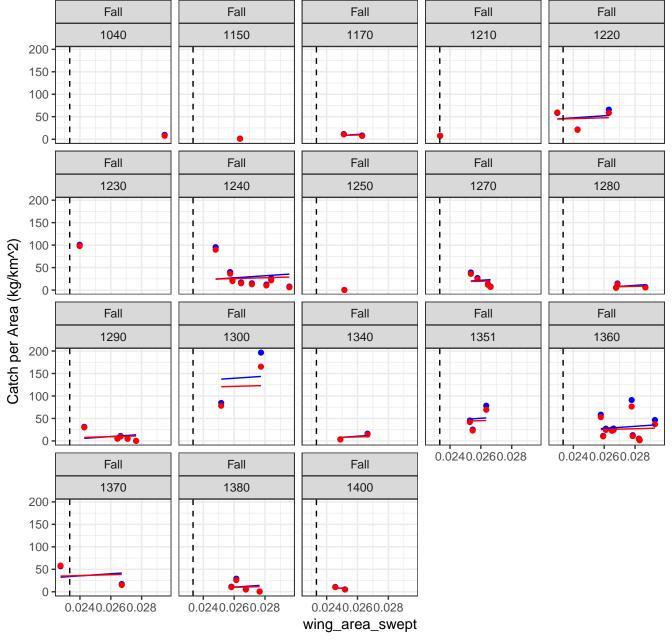
#### Mspiny 2014 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring 1010 1020 1030 1040 1060 1050 80000 60000 40000 20000 -Spring Spring Spring Spring Spring Spring 1070 1080 1090 1120 1130 1110 80000 60000 40000 20000 Spring Spring Spring Spring Spring Spring 1150 1190 1200 1140 1160 1170 Catch per Area (kg/km^2) 80000 60000 40000 -20000 -Spring Spring Spring Spring Spring Spring 1230 1240 1270 1280 1290 1300 80000 **-**40000 -20000 -Spring Spring Spring Spring Spring Spring 1340 1351 1360 1370 1380 1690 80000 **-**40000 **-**20000 **-**0.02**0.022.525.027.53020.022.525.027.**53( Spring Spring Spring Spring 1730 1750 1760 1740 80000 60000 40000 20000 wing\_area\_swept

#### Mspiny 2015 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring 1010 1020 1030 1040 1050 1060 1070 60000 -40000 20000 Spring Spring Spring Spring Spring Spring Spring 1080 1100 1120 1140 1150 1170 1110 60000 -40000 20000 Spring Spring Spring Spring Spring Spring Spring 1220 1240 1290 1340 1351 1270 1280 Catch per Area (kg/km^2) 60000 40000 -20000 -Spring Spring Spring Spring Spring Spring Spring 1360 1370 1380 1610 1620 1630 1640 60000 40000 -20000 -Spring Spring Spring Spring Spring Spring Spring 1650 1660 1670 1680 1690 1700 1710 60000 40000 -20000 0.02**0**502**5**00275 0.02**0**502**5**00275 Spring Spring Spring Spring Spring 1720 1730 1750 1760 1740 60000 -40000 20000 0.02**0**\$\;0.02**0**\$\\$0.02**0**\\$0.02**0**\\$0.02**0**\$\\$0.02**0**\$\\$0.02**0**\$\\$0.02**0**\$\\$0.02**0**\$ wing\_area\_swept

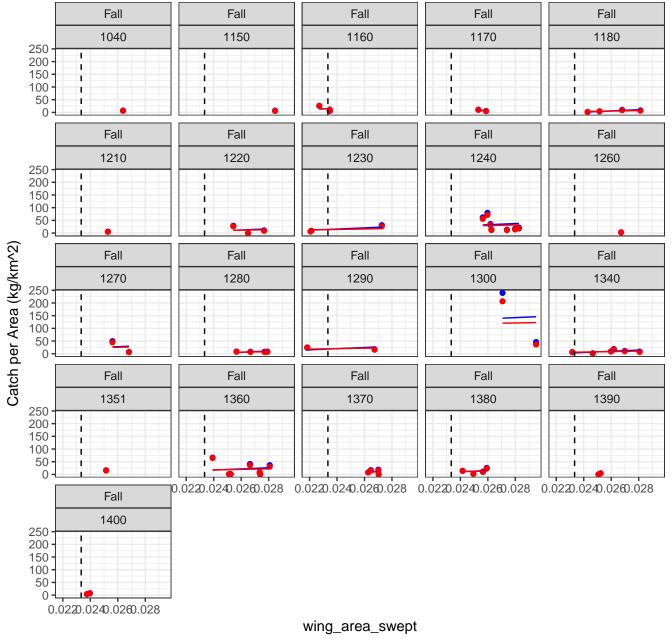
#### Mspiny 2016 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring 1020 1060 1010 1030 1040 1050 1070 120000 90000 60000 30000 Spring Spring Spring Spring Spring Spring Spring 1090 1080 1100 1110 1120 1130 1140 120000 90000 60000 30000 Spring Spring Spring Spring Spring Spring Spring 1150 1160 1190 1200 1210 1220 1230 Catch per Area (kg/km^2) 120000 90000 60000 30000 Spring Spring Spring Spring Spring Spring Spring 1240 1270 1280 1290 1300 1340 1351 120000 90000 60000 30000 Spring Spring Spring Spring Spring Spring Spring 1360 1370 1380 1400 1680 1690 1700 120000 90000 60000 30000 TO.02000225950027530 Spring Spring Spring Spring Spring Spring 1710 1720 1730 1740 1750 1760 120000 90000 60000 30000 0.02(MP2H25TD755D02(MP2H25D02(MP2H25 wing area swept

#### Mspiny 2017 Case 4 (Without Zeros or Fills) Winner = WingSpread Spring Spring Spring Spring Spring Spring Spring 1010 1020 1030 1040 1050 1060 1070 ı 40000 20000 Spring Spring Spring Spring Spring Spring Spring 1080 1090 1100 1110 1120 1130 1140 40000 20000 Spring Spring Spring Spring Spring Spring Spring 1150 1160 1240 1260 1280 1290 1300 Catch per Area (kg/km^2) 40000 20000 0 Spring Spring Spring Spring Spring Spring Spring 1340 1360 1620 1630 1640 1370 1380 40000 20000 0 Spring Spring Spring Spring Spring Spring Spring 1660 1670 1680 1690 1700 1710 1720 40000 20000 0 TO.022024026028030022024026028030022024026028030 Spring Spring Spring Spring 1730 1740 1750 1760 40000 20000 0.02202402602830022024026028300220240260283002202402602830wing\_area\_swept

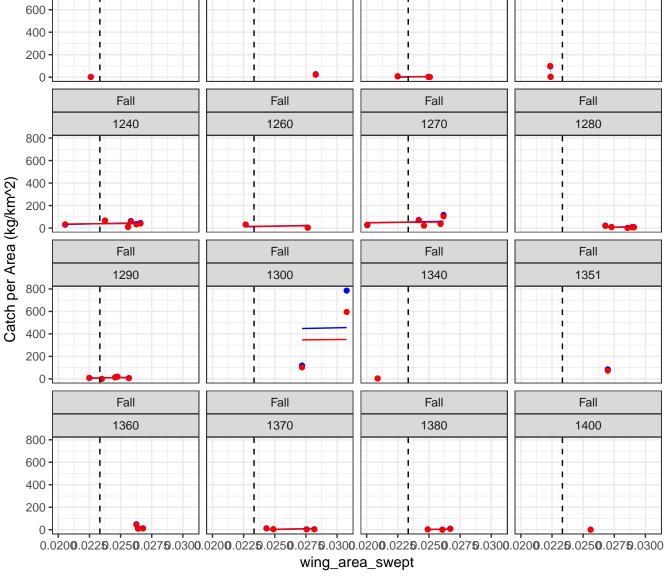
Smoothskate 2009 Case 4 (Without Zeros or Fills) Winner = WingSpread



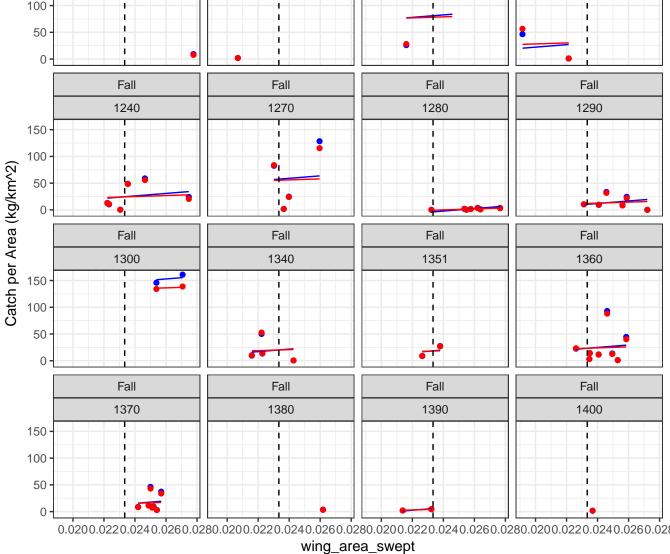
### Smoothskate 2010 Case 4 (Without Zeros or Fills) Winner = WingSpread



Smoothskate 2011 Case 4 (Without Zeros or Fills) Winner = WingSpread Fall Fall Fall Fall Fall Fall Fall Fall Catch per Area (kg/km^2) Fall Fall Fall Fall 

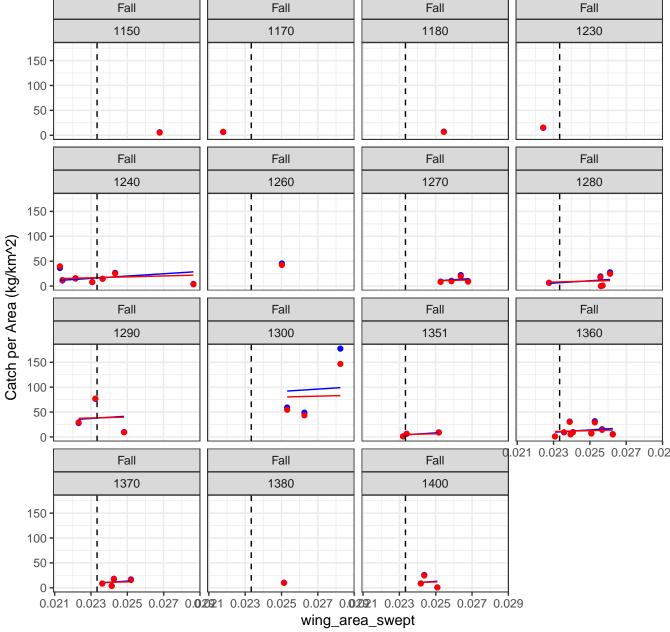


Smoothskate 2012 Case 4 (Without Zeros or Fills) Winner = WingSpread Fall Fall Fall Fall Fall Fall Fall Fall 

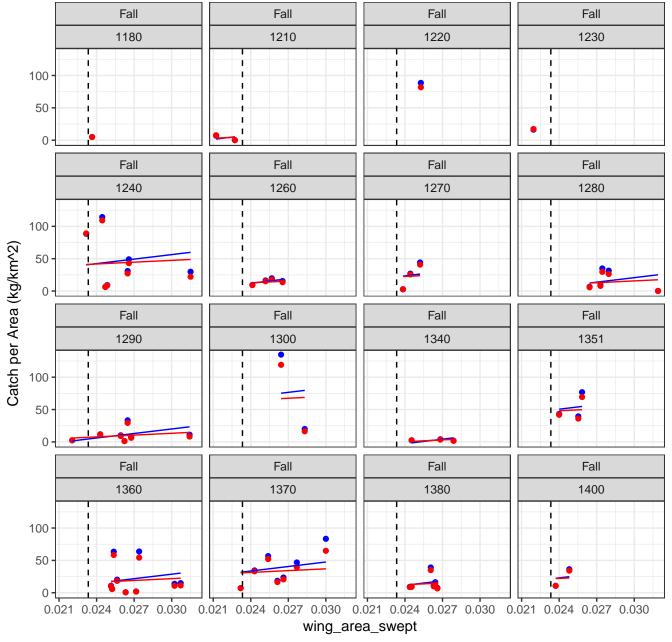


Smoothskate 2013 Case 4 (Without Zeros or Fills ) Winner = WingSpread

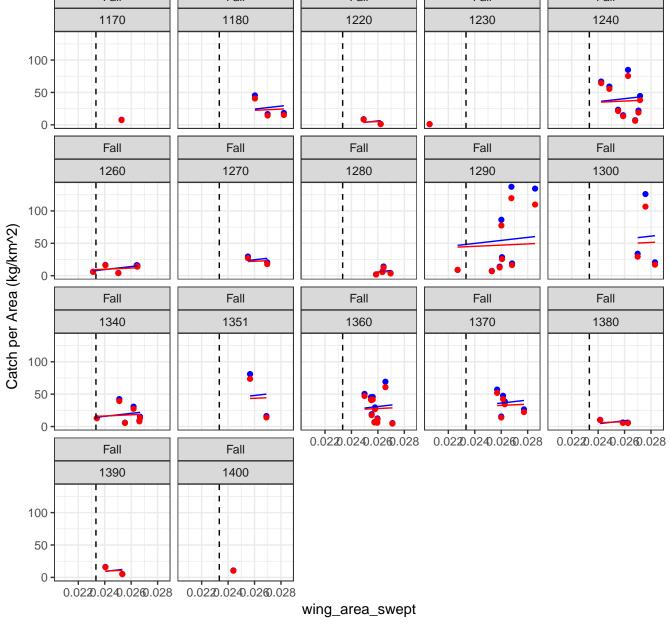
Fall Fall Fall Fall



Smoothskate 2014 Case 4 (Without Zeros or Fills) Winner = WingSpread

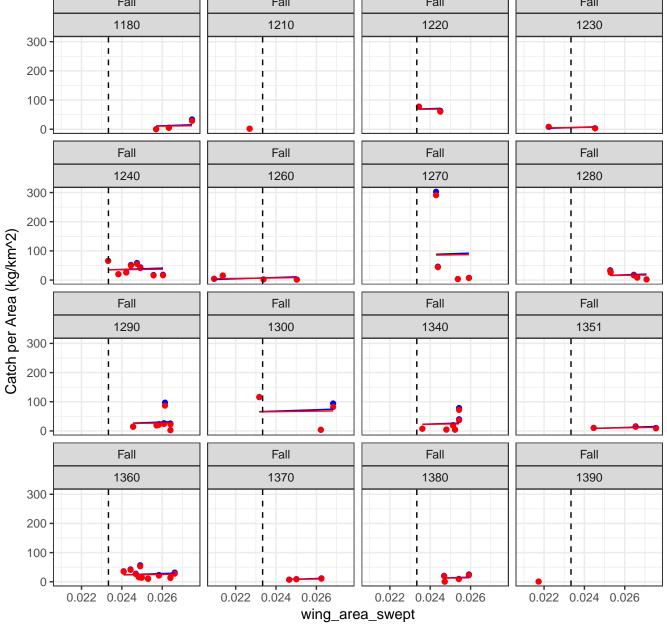


# Smoothskate 2015 Case 4 (Without Zeros or Fills ) Winner = WingSpread Fall Fall Fall Fall Fall



Smoothskate 2016 Case 4 (Without Zeros or Fills ) Winner = WingSpread

Fall Fall Fall Fall



Smoothskate 2017 Case 4 (Without Zeros or Fills) Winner = WingSpread Fall Fall Fall Fall Fall Fall Fall Fall Catch per Area (kg/km^2) Fall Fall Fall Fall TOI,0180.0200.0220.0240.0260.028 Fall Fall Fall  $0.0180.0200.0220.0240.0260. \\ @26180.0200.0220.0240.0260. \\ @26180.0200.0220.0240.0260. \\ @26180.0200.0220.0240.0260. \\ \\ @26180.0200.0220.0240. \\ \\ @26180.0200.0220.0240. \\ \\ @26180.0200.0220.0240. \\ \\ @26180.0200.0220.0240. \\ \\ @26180.0200.0220.0240. \\ \\ @26180.0200.0220.0240. \\ \\ @26180.0200.0220.0240. \\ \\ @26180.0200.0220.0240. \\ \\ @26180.0200.0220.0240. \\ \\ @26180.0220.0220.0240. \\ \\ @26180.0220.0220.0240. \\ \\ @26180.0220.0220.0240. \\ \\ @26180.0220.0220.0240. \\ \\ @26180.0220.0220.0240. \\ \\ @26180.0220.0240. \\ \\ @26180.0220.0240. \\ \\ @26180.0220.0240. \\ \\ @26180.0220.0240. \\ \\ @26180.0220.0240. \\ \\ @26180.0220.0240. \\ \\ @26180.0240.0240. \\ \\ @2$ wing\_area\_swept