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Detection function fitting *Lommer*

Lars Dalby

Mon Jan 30 13:42:27 2023

Settings

Settings used while compiling this document: Species = Lommer, surveyid = 1, 34, 35, 36, 37, 38, 39, 40, 42, 43, 44, 45, 46, 67.

Campaign overview

Campaign info

Number of birds	Average flock size	Max flock size	Total transect length	Survey area
664	2	70	7899.721	37075.76

Observer statistics

Observer	Number of observations	Number of birds	Percent of all birds observed
OBS1	87	289	43.52
OBS2	85	197	29.67
OBS3	58	100	15.06
OBS4	24	29	4.37
OBS5	23	34	5.12
OBS6	8	12	1.81
OBS7	3	3	0.45

Modelling input overview

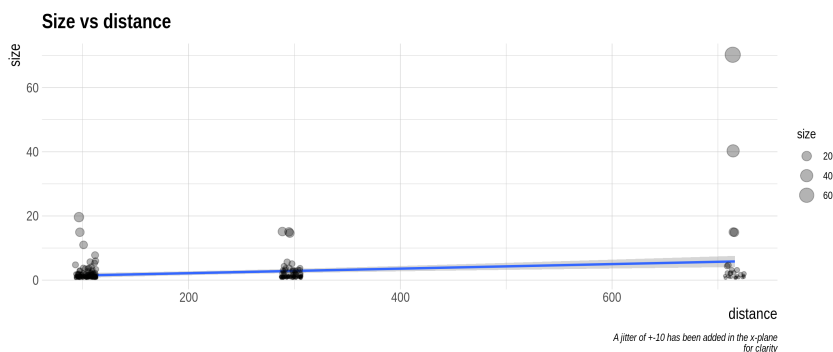
Campaign info

Number of birds	Average flock size	Max flock size	Total transect length	Survey area
649	2	70	7899.721	37075.76

Observer statistics

Observer	Number of observations	Number of birds	Percent of all birds observed
OBS1	87	289	44.53
OBS2	85	197	30.35
OBS3	58	100	15.41
OBS4	24	29	4.47
OBS5	23	34	5.24

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Model selection table

Model	Key function	Formula	χ^2 p-value	\hat{P}_a	$se(\hat{P}_a)$	ΔAIC
26	Half-normal	~behaviour + log(size + 0.01) + observerid	NA	0.210	0.014	0.000
22	Half-normal	~log(size + 0.01) + observerid	NA	0.216	0.013	0.880
27	Half-normal	~behaviour + log(size + 0.01) + observerid + seastate	NA	0.207	0.013	2.547

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Model	Key function	Formula	χ^2 p-value	\hat{P}_a	se(\hat{P}_a)	Δ AIC
25	Half-normal	~log(size + 0.01) + observerid + seastate	NA	0.213	0.013	3.315
9	Hazard-rate	~log(size + 0.01) + observerid	NA	0.190	0.024	3.406
13	Hazard-rate	~behaviour + log(size + 0.01) + observerid	NA	0.182	0.027	3.425
14	Hazard-rate	~behaviour + log(size + 0.01) + observerid + seastate	NA	0.175	0.028	6.551
12	Hazard-rate	~log(size + 0.01) + observerid + seastate	NA	0.184	0.025	6.737
20	Half-normal	~behaviour + observerid	NA	0.213	0.014	7.351
23	Half-normal	~behaviour + observerid + seastate	NA	0.210	0.014	7.609
6	Hazard-rate	~behaviour + observerid	NA	0.177	0.030	9.915
17	Half-normal	~observerid	NA	0.222	0.014	10.003
2	Hazard-rate	~observerid	NA	0.185	0.023	10.363
19	Half-normal	~observerid + seastate	NA	0.218	0.013	10.507
10	Hazard-rate	~behaviour + observerid + seastate	NA	0.170	0.029	12.127
5	Hazard-rate	~observerid + seastate	NA	0.183	0.026	13.061
8	Hazard-rate	~behaviour + log(size + 0.01)	NA	0.181	0.028	16.849
3	Hazard-rate	~log(size + 0.01)	NA	0.198	0.019	19.038
11	Hazard-rate	~behaviour + log(size + 0.01) + seastate	NA	0.177	44.992	21.147
1	Hazard-rate	~behaviour	NA	0.176	0.031	22.380
7	Hazard-rate	~log(size + 0.01) + seastate	NA	0.193	53.749	23.065
4	Hazard-rate	~behaviour + seastate	NA	0.173	42.077	27.281
21	Half-normal	~behaviour + log(size + 0.01)	NA	0.241	0.013	36.756
24	Half-normal	~behaviour + log(size + 0.01) + seastate	NA	0.237	65.219	38.613
16	Half-normal	~behaviour	NA	0.247	0.013	46.195
18	Half-normal	~log(size + 0.01)	NA	0.260	0.010	47.666
15	Half-normal	~seastate	NA	0.261	155.703	57.853

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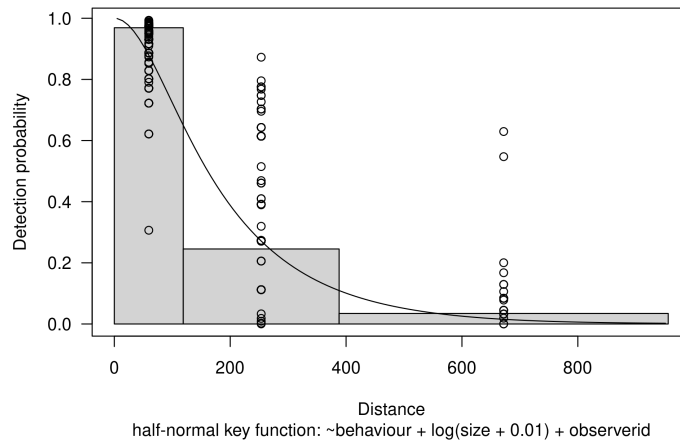
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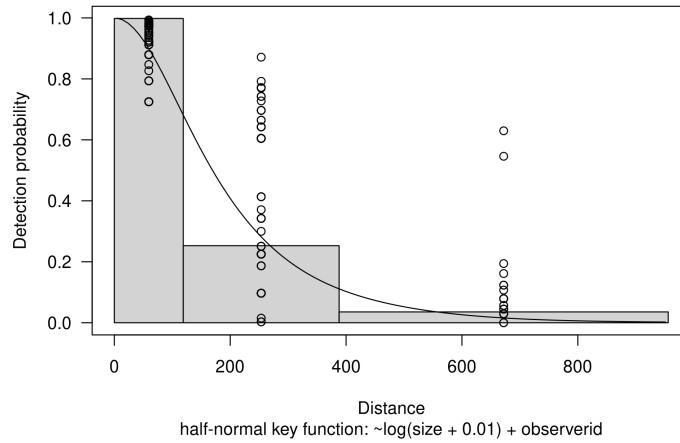
AIC table

Plots

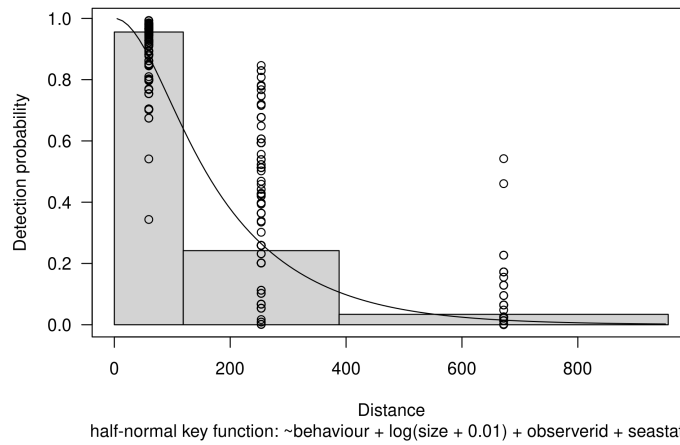
Lommer. Estimated abundance 5393 (LCL:3096, UCL:9395)



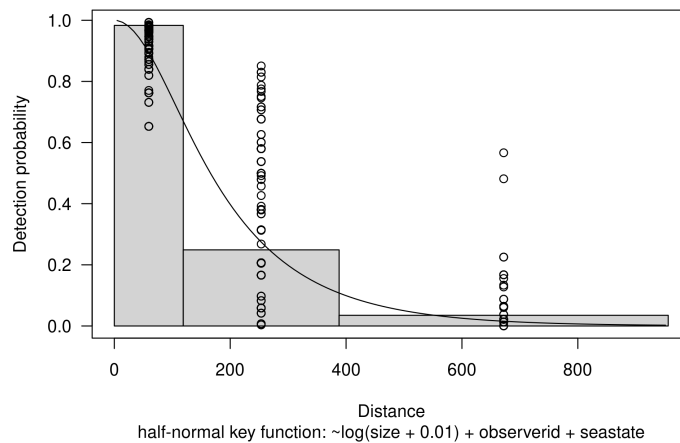
Lommer. Estimated abundance 5295 (LCL:3078, UCL:9110)



Lommer. Estimated abundance 5493 (LCL:3112, UCL:9697)



Lommer. Estimated abundance 5386 (LCL:3085, UCL:9405)



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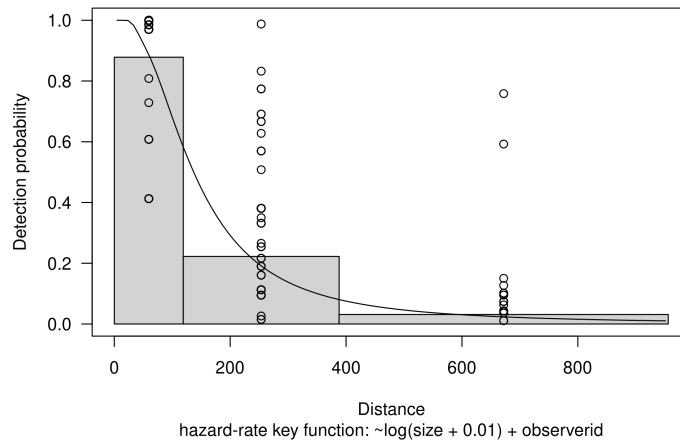
Exploration

Fit detection function

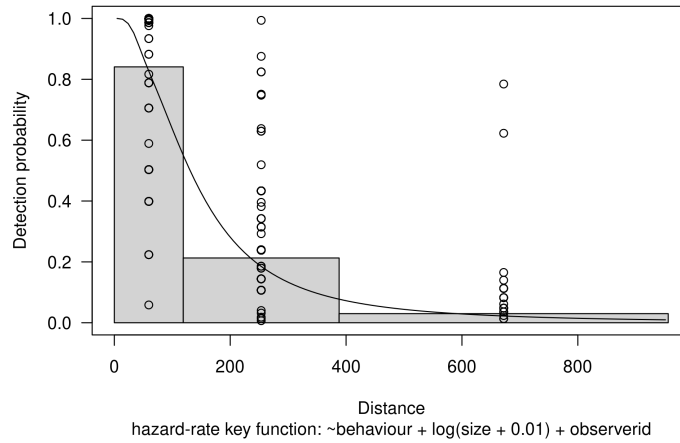
AIC table

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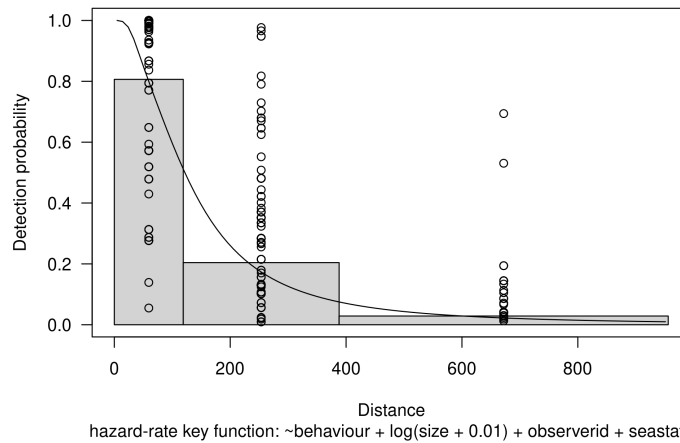
Lommer. Estimated abundance 5703 (LCL:3340, UCL:9737)



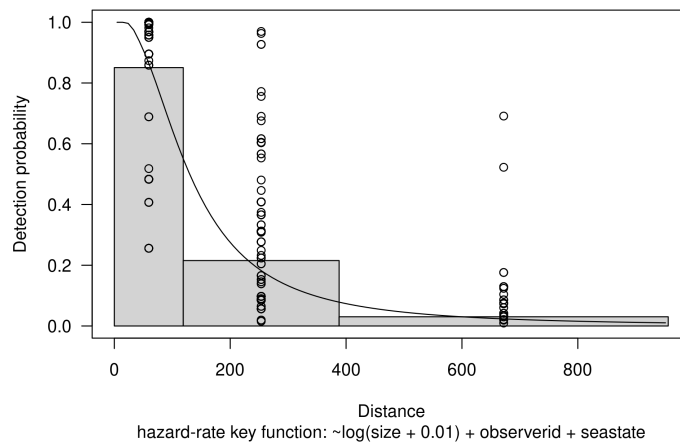
Lommer. Estimated abundance 5926 (LCL:3338, UCL:10521)



Lommer. Estimated abundance 6146 (LCL:3413, UCL:11067)



Lommer. Estimated abundance 5869 (LCL:3379, UCL:10194)



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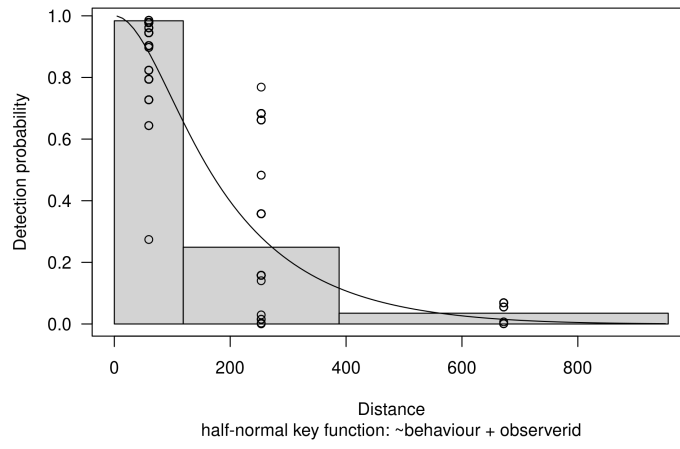
Exploration

Fit detection function

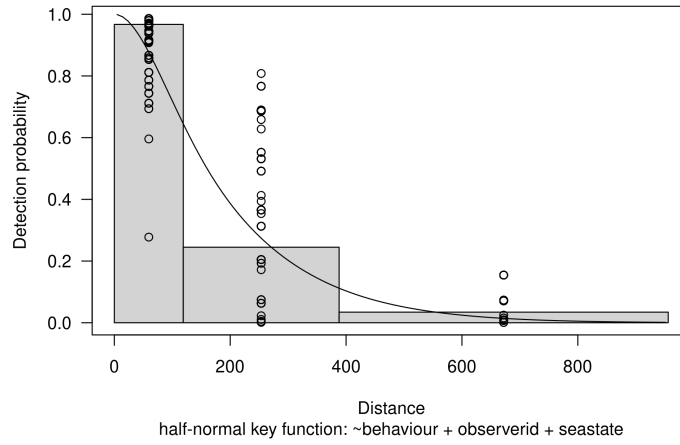
AIC table

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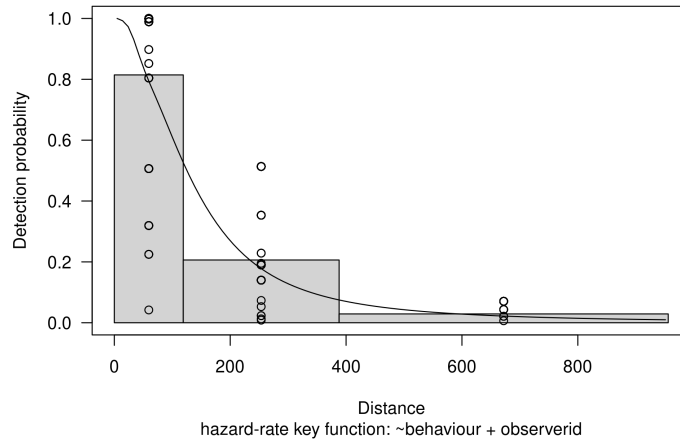
Lommer. Estimated abundance 6248 (LCL:3203, UCL:12189)



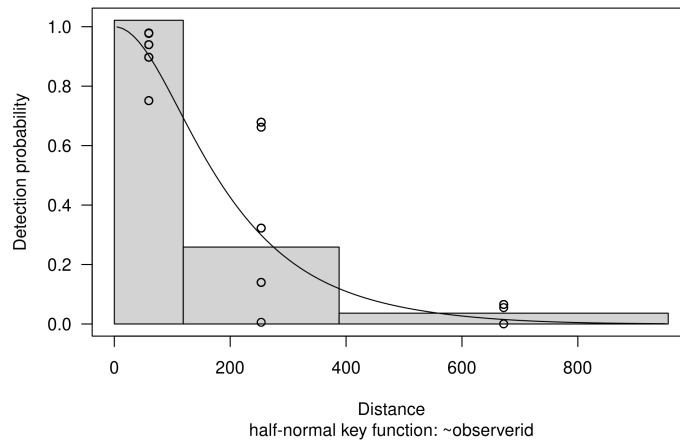
Lommer. Estimated abundance 6201 (LCL:3198, UCL:12023)



Lommer. Estimated abundance 7549 (LCL:3611, UCL:15782)



Lommer. Estimated abundance 6208 (LCL:3157, UCL:12207)



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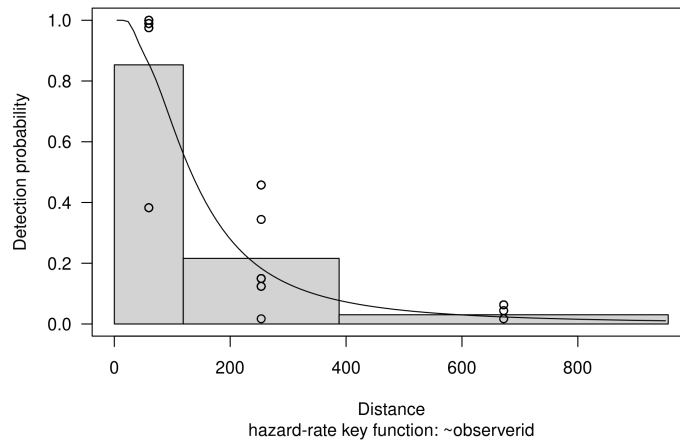
Exploration

Fit detection function

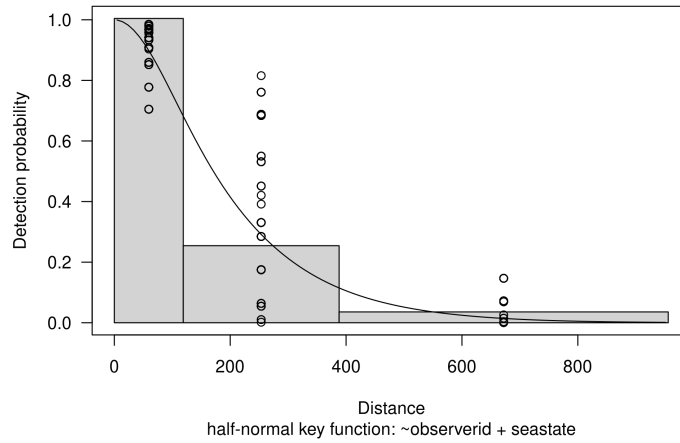
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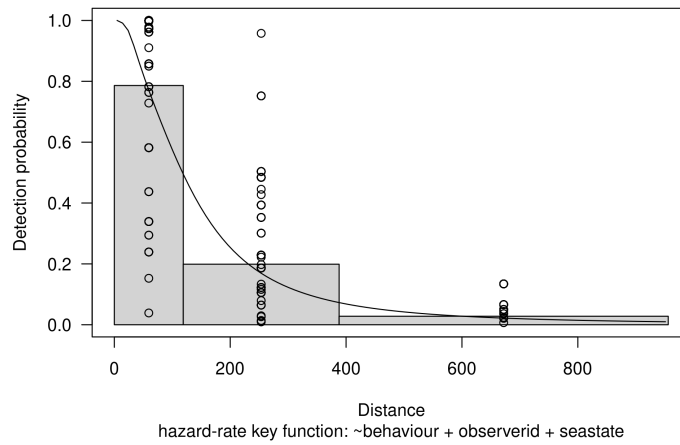
Lommer. Estimated abundance 7391 (LCL:3665, UCL:14903)



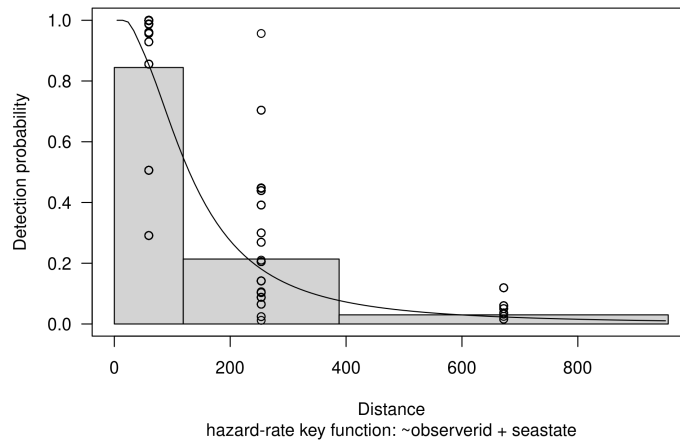
Lommer. Estimated abundance 6162 (LCL:3146, UCL:12068)



Lommer. Estimated abundance 7673 (LCL:3661, UCL:16081)



Lommer. Estimated abundance 7380 (LCL:3583, UCL:15199)



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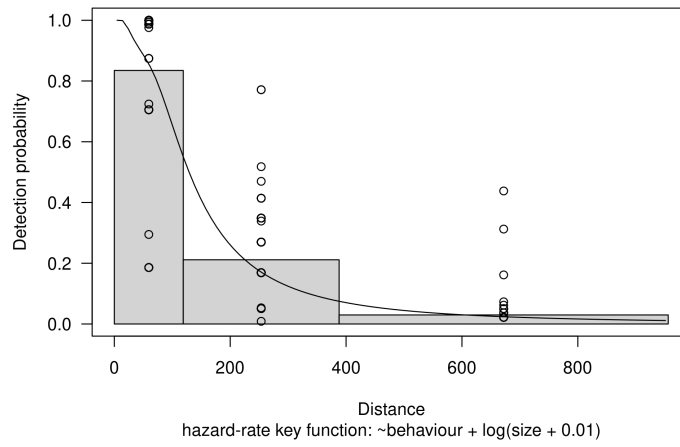
Exploration

Fit detection function

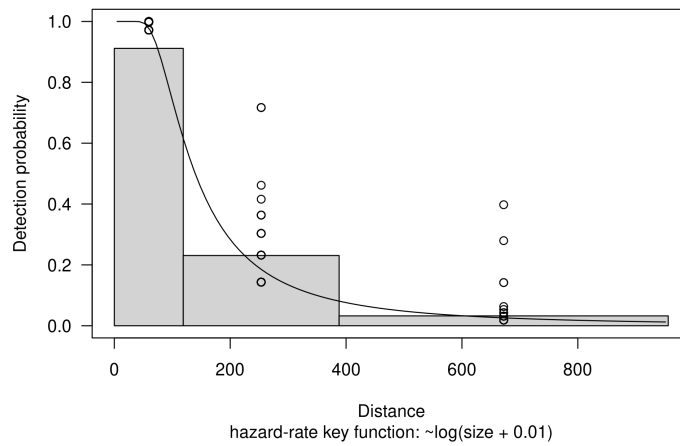
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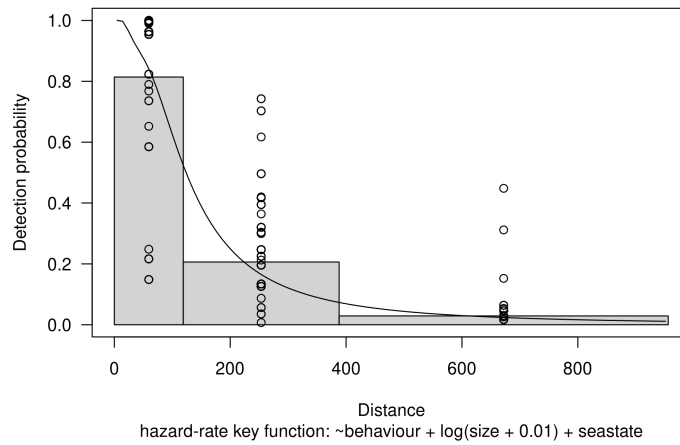
Lommer. Estimated abundance 5992 (LCL:3225, UCL:11132)



Lommer. Estimated abundance 5630 (LCL:3152, UCL:10056)



Lommer. Estimated abundance 6100 (LCL:12, UCL:3141600)



Lommer. Estimated abundance 8056 (LCL:3493, UCL:18577)



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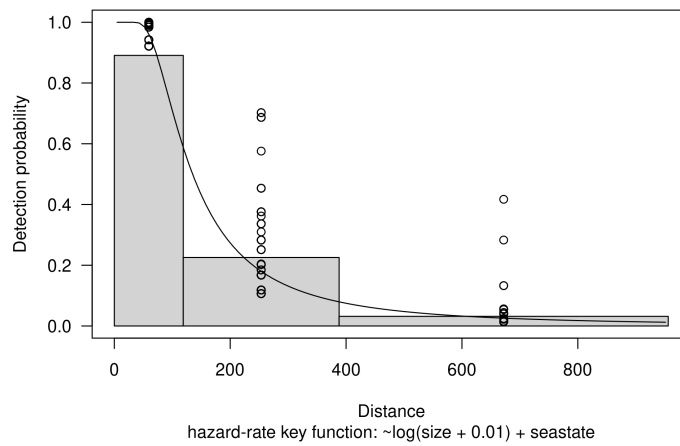
Exploration

Fit detection function

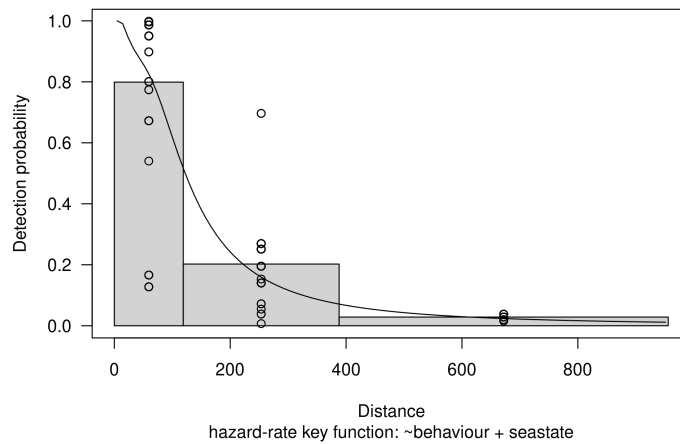
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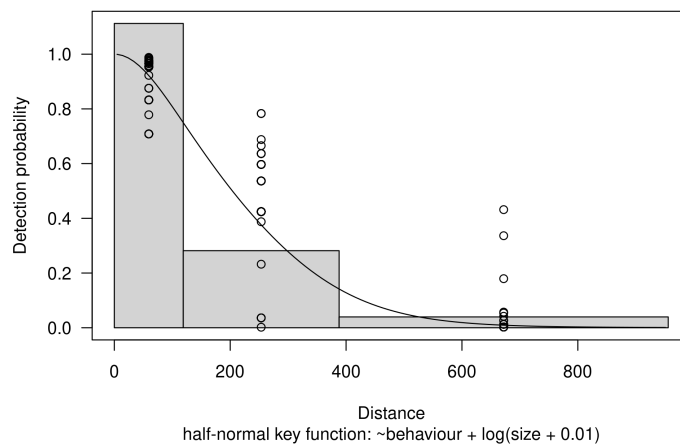
Lommer. Estimated abundance 5712 (LCL:11, UCL:3058159)



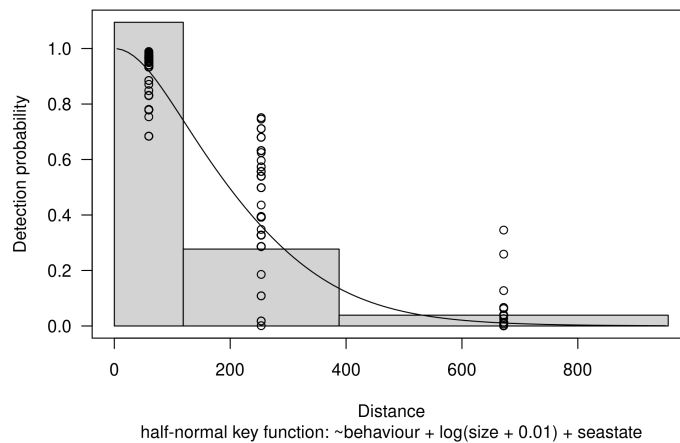
Lommer. Estimated abundance 8199 (LCL:20, UCL:3437836)



Lommer. Estimated abundance 4847 (LCL:2559, UCL:9179)



Lommer. Estimated abundance 4954 (LCL:10, UCL:2530394)



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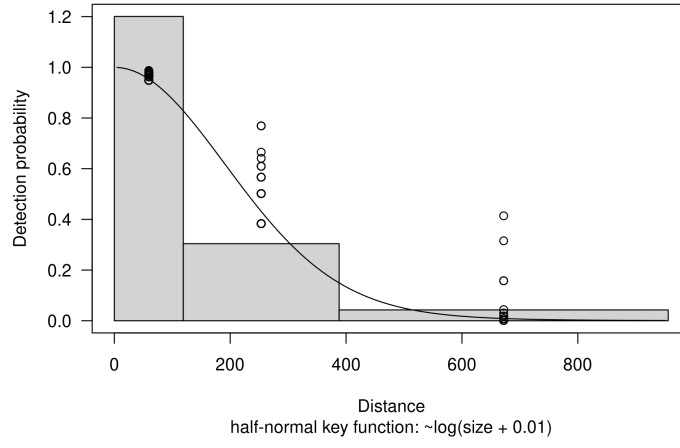
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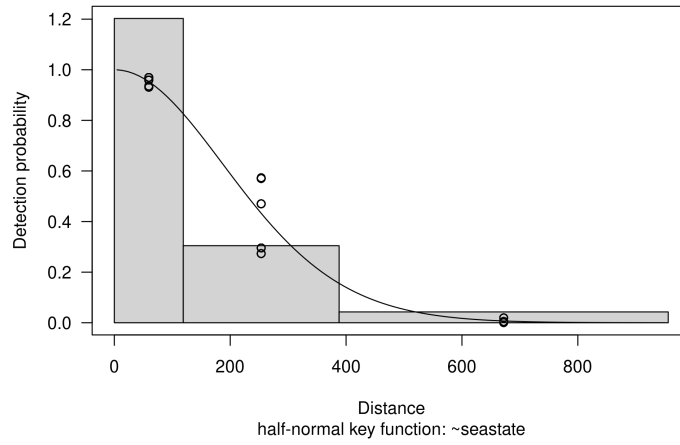
Lommer. Estimated abundance 5833 (LCL:2612, UCL:13024)



Lommer. Estimated abundance 4582 (LCL:2456, UCL:8548)



Lommer. Estimated abundance 5635 (LCL:8, UCL:4021250)



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Detection function fitting *Ederfugl*

Lars Dalby

Sun Jan 29 20:44:03 2023

Settings

Settings used while compiling this document: Species = Ederfugl, surveyid = 1, 34, 35, 36, 37, 38, 39, 40, 42, 43, 44, 45, 46, 67.

Campaign overview

Campaign info

Number of birds	Average flock size	Max flock size	Total transect length	Survey area
115141	22	3000	7899.721	37075.76

Observer statistics

Observer	Number of observations	Number of birds	Percent of all birds observed
OBS1	1901	21958	19.07
OBS2	1455	65394	56.79
OBS3	1007	16741	14.54
OBS4	280	2791	2.42
OBS5	272	5679	4.93
OBS6	158	1056	0.92
OBS7	134	1522	1.32

Modelling input overview

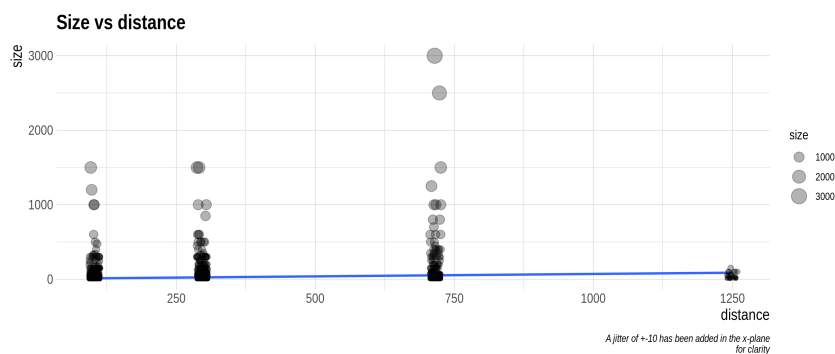
Campaign info

Number of birds	Average flock size	Max flock size	Total transect length	Survey area
115141	22	3000	7899.721	37075.76

Observer statistics

Observer	Number of observations	Number of birds	Percent of all birds observed
OBS1	1901	21958	19.07
OBS2	1455	65394	56.79
OBS3	1007	16741	14.54
OBS4	280	2791	2.42
OBS5	272	5679	4.93
OBS6	158	1056	0.92
OBS7	134	1522	1.32

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Model selection table

Model	Key function	Formula	χ^2 p-value	\hat{P}_a	$se(\hat{P}_a)$	Δ AIC
22	Half-normal	$\sim \log(\text{size} + 0.01) + \text{observerid} + \text{seastate}$	NA	0.177	0.002	0.000
23	Half-normal	$\sim \text{behaviour} + \log(\text{size} + 0.01) + \text{observerid} + \text{seastate}$	NA	0.176	0.002	0.355

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Model	Key function	Formula	χ^2 p-value	\hat{P}_a	se(\hat{P}_a)	Δ AIC
20	Half-normal	~log(size + 0.01) + observerid	NA	0.177	0.002	11.139
8	Hazard-rate	~log(size + 0.01) + observerid	NA	0.172	0.003	11.643
10	Hazard-rate	~log(size + 0.01) + observerid + seastate	NA	0.173	0.003	11.789
4	Hazard-rate	~log(size + 0.01)	NA	0.175	0.003	345.039
6	Hazard-rate	~log(size + 0.01) + seastate	NA	0.175	0.003	346.674
7	Hazard-rate	~behaviour + log(size + 0.01)	NA	0.175	0.003	348.499
9	Hazard-rate	~behaviour + log(size + 0.01) + seastate	NA	0.175	0.003	349.849
3	Hazard-rate	~observerid	NA	0.169	0.003	385.948
16	Half-normal	~observerid + seastate	NA	0.190	0.002	495.628
18	Half-normal	~log(size + 0.01) + seastate	NA	0.195	0.002	525.989
21	Half-normal	~behaviour + log(size + 0.01) + seastate	NA	0.194	0.002	527.834
14	Half-normal	~log(size + 0.01)	0	0.195	0.002	528.744
19	Half-normal	~behaviour + log(size + 0.01)	NA	0.195	0.002	530.333
17	Half-normal	~behaviour + observerid	NA	0.192	0.002	542.812
13	Half-normal	~observerid	NA	0.192	0.002	543.547
2	Hazard-rate	~behaviour	NA	0.172	0.003	624.941
1	Hazard-rate	~seastate	NA	0.172	0.003	627.522
5	Hazard-rate	~behaviour + seastate	NA	0.172	0.003	630.343
15	Half-normal	~behaviour + seastate	NA	0.209	0.002	1012.832
12	Half-normal	~behaviour	NA	0.210	0.002	1013.952
11	Half-normal	~seastate	NA	0.210	0.002	1014.341

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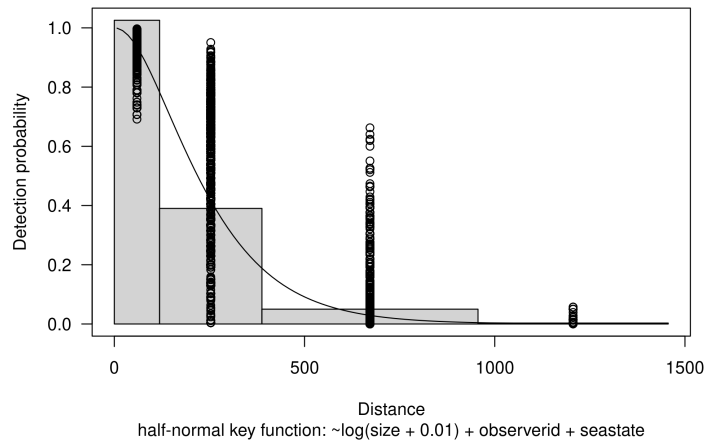
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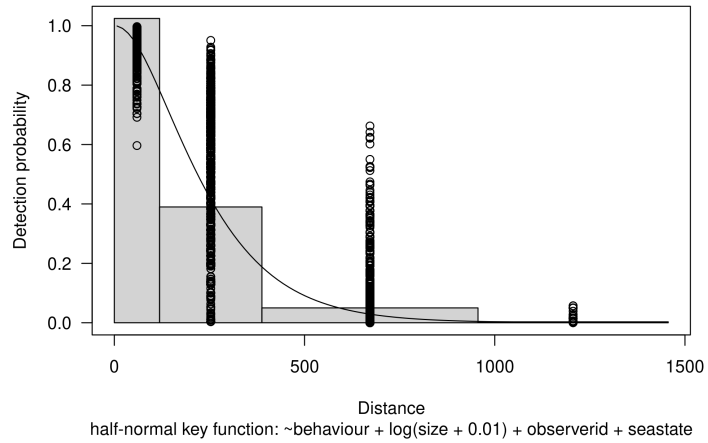
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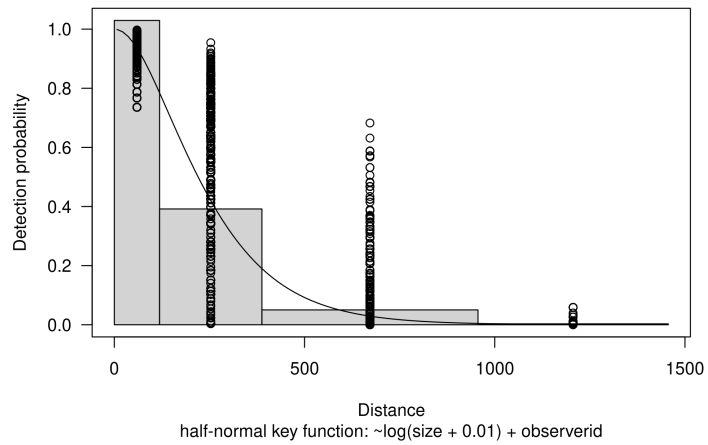
Ederfugl. Estimated abundance 387035 (LCL:290037, UCL:516473)



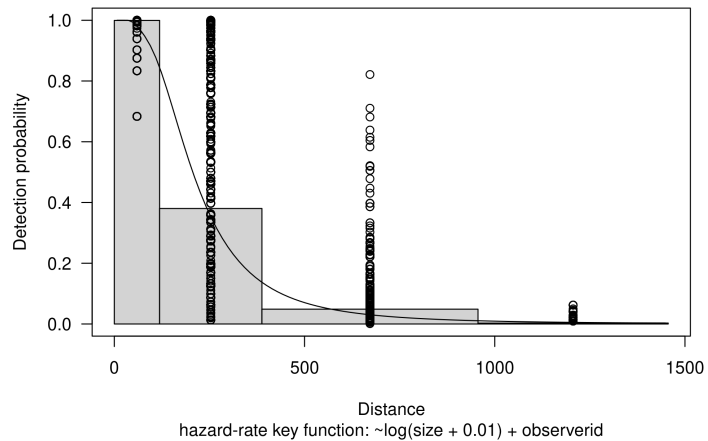
Ederfugl. Estimated abundance 387294 (LCL:290338, UCL:516627)



Ederfugl. Estimated abundance 385435 (LCL:287152, UCL:517357)



Ederfugl. Estimated abundance 373892 (LCL:280430, UCL:498503)



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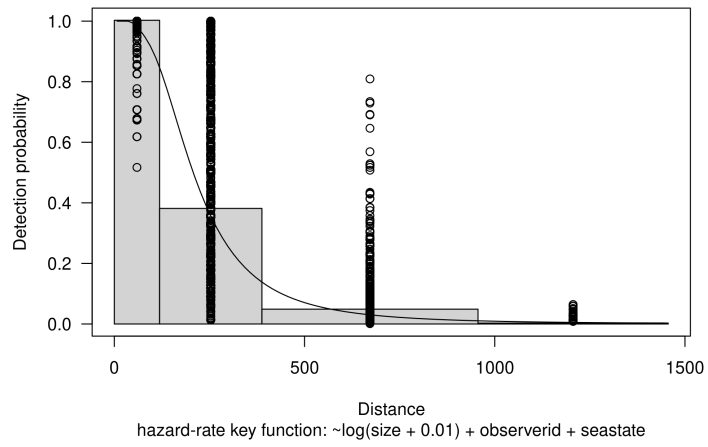
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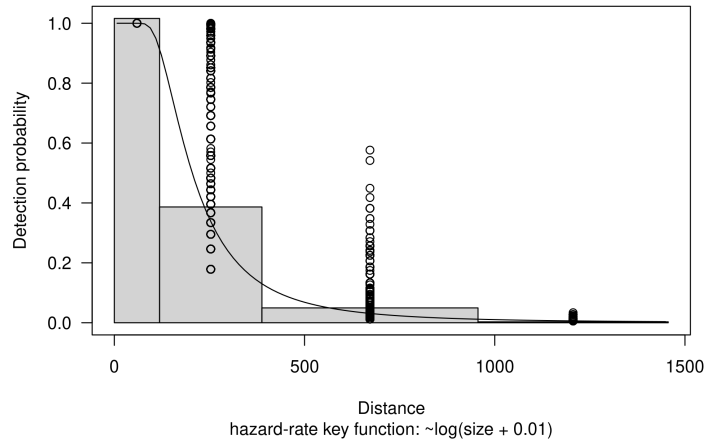
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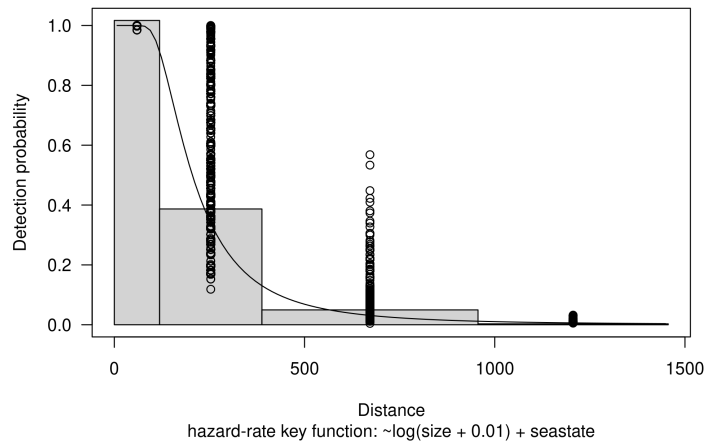
Ederfugl. Estimated abundance 372553 (LCL:280447, UCL:494908)



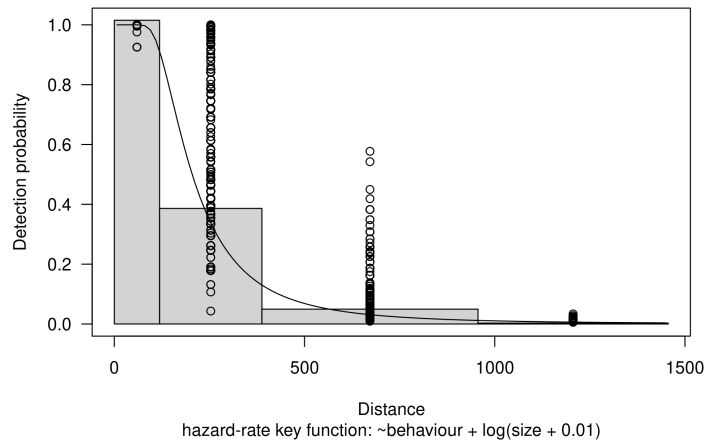
Ederfugl. Estimated abundance 372729 (LCL:276803, UCL:501898)



Ederfugl. Estimated abundance 372283 (LCL:276268, UCL:501667)



Ederfugl. Estimated abundance 373187 (LCL:277234, UCL:502350)



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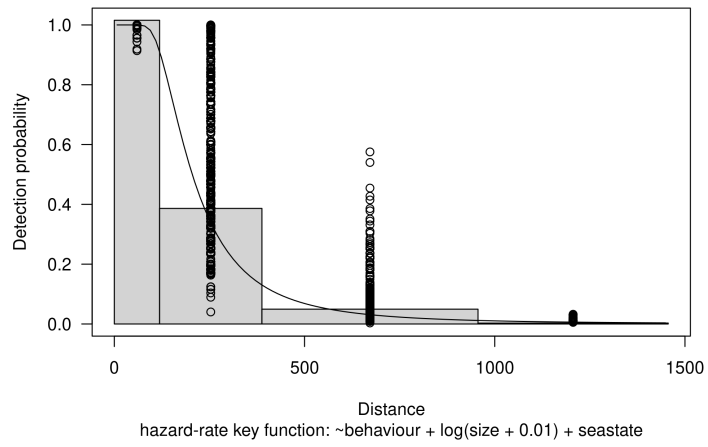
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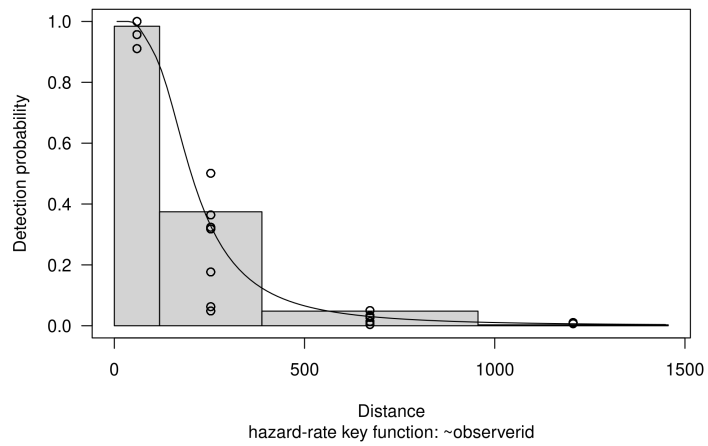
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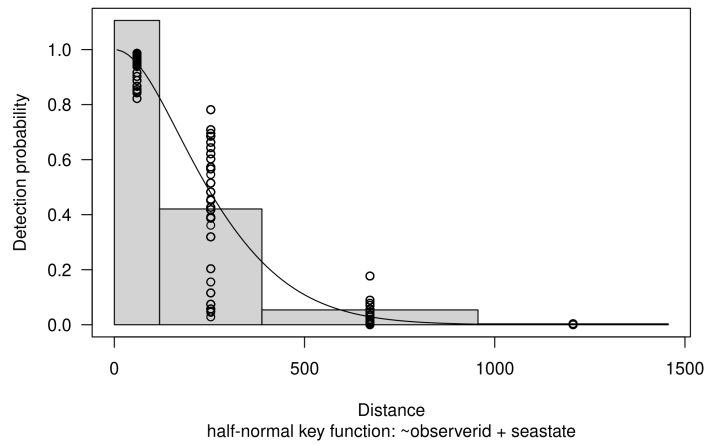
Ederfugl. Estimated abundance 372108 (LCL:276354, UCL:501039)



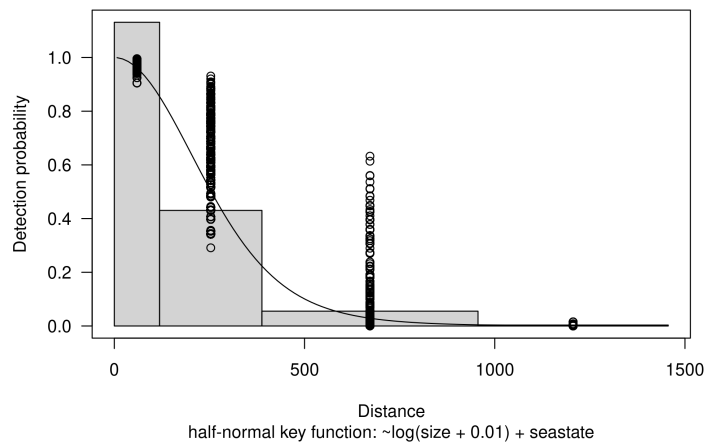
Ederfugl. Estimated abundance 693488 (LCL:484028, UCL:993589)



Ederfugl. Estimated abundance 602384 (LCL:426223, UCL:851354)



Ederfugl. Estimated abundance 343180 (LCL:254779, UCL:462254)



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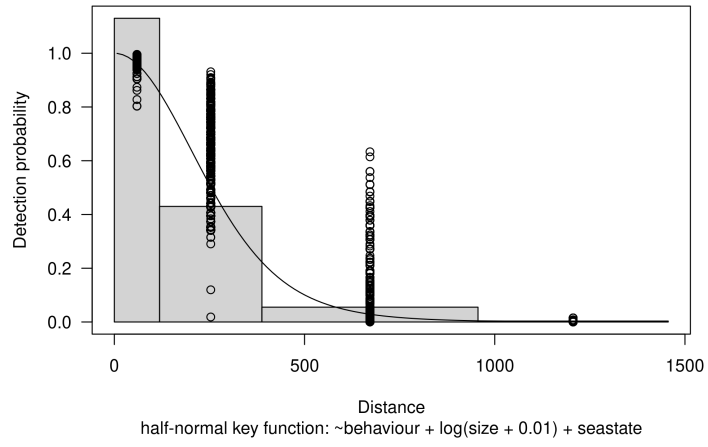
Exploration

Fit detection function

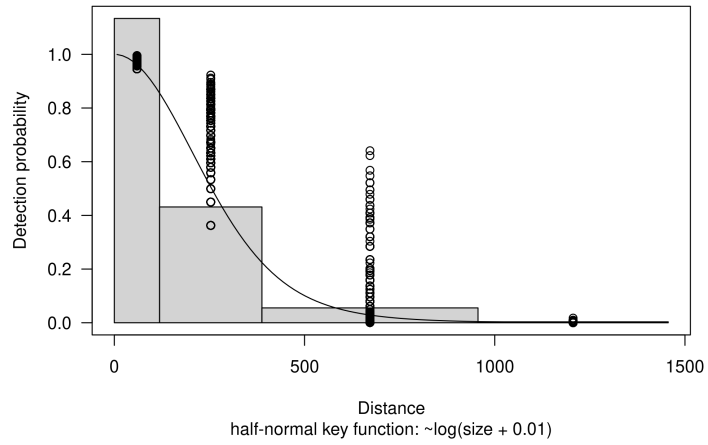
AIC table

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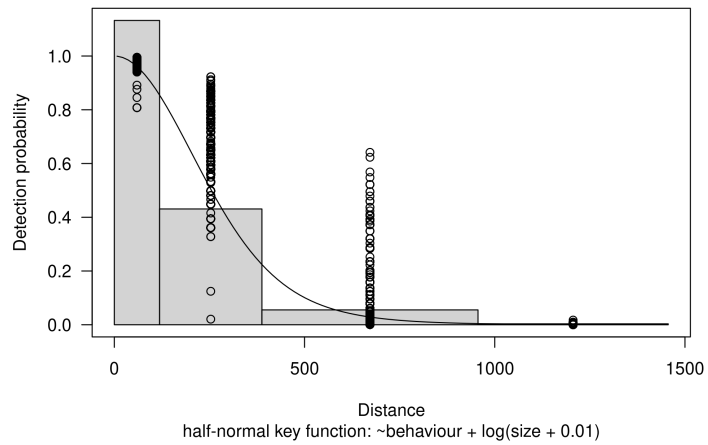
Ederfugl. Estimated abundance 343347 (LCL:254983, UCL:462333)



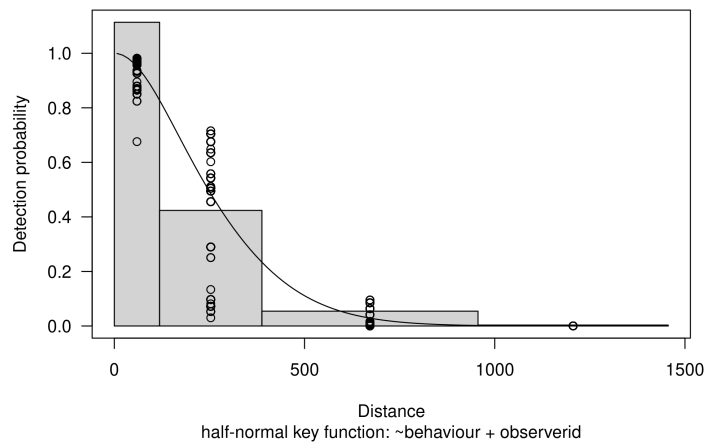
Ederfugl. Estimated abundance 342417 (LCL:254486, UCL:460729)



Ederfugl. Estimated abundance 342616 (LCL:254710, UCL:460861)



Ederfugl. Estimated abundance 610555 (LCL:424607, UCL:877934)



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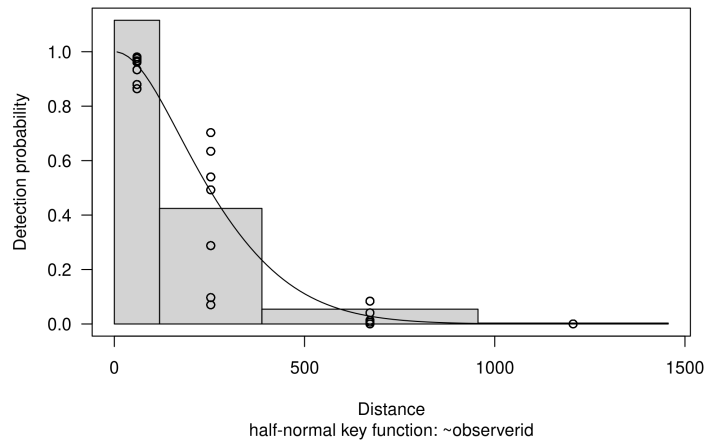
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Fit detection function

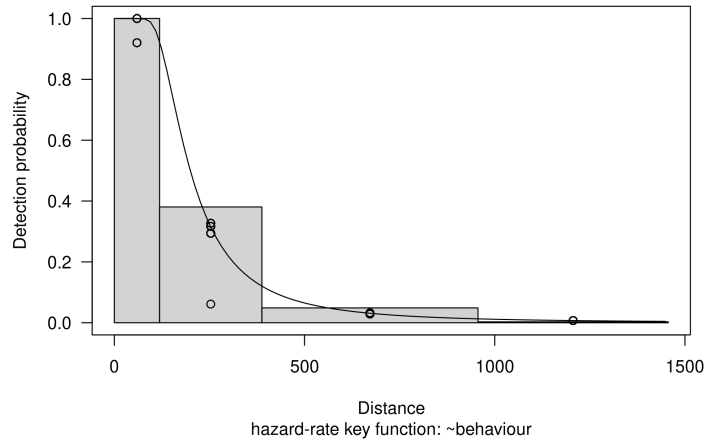
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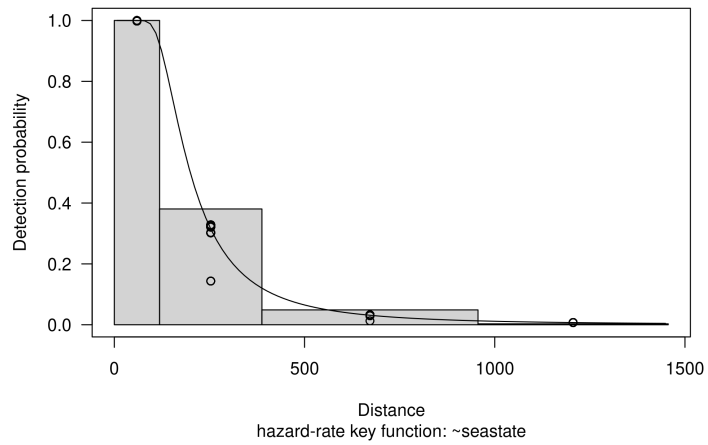
Ederfugl. Estimated abundance 612257 (LCL:425778, UCL:880408)



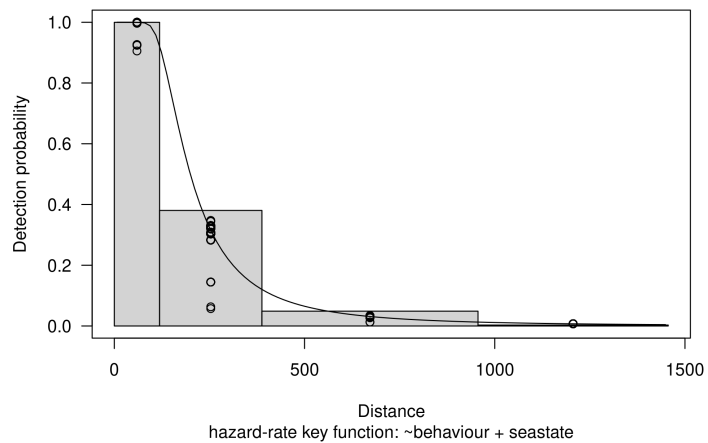
Ederfugl. Estimated abundance 671509 (LCL:465076, UCL:969571)



Ederfugl. Estimated abundance 670855 (LCL:466109, UCL:965539)



Ederfugl. Estimated abundance 669160 (LCL:464923, UCL:963116)



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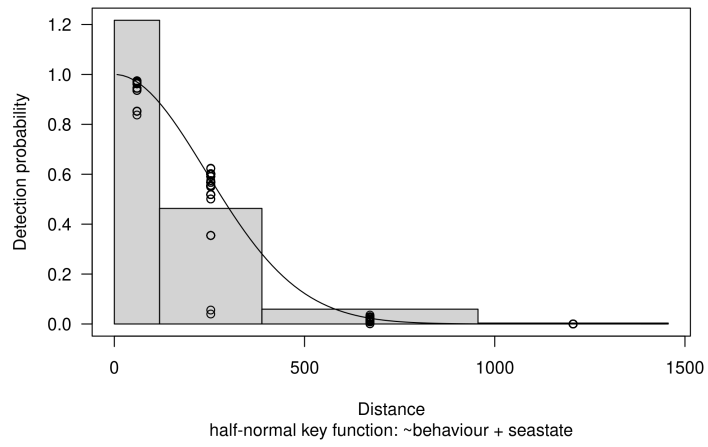
Exploration

Fit detection function

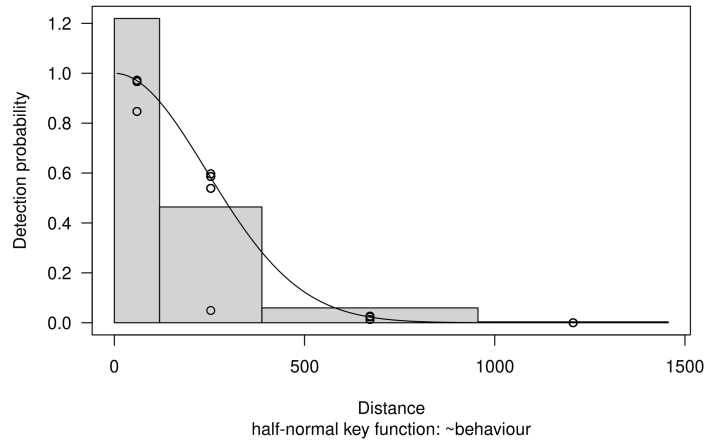
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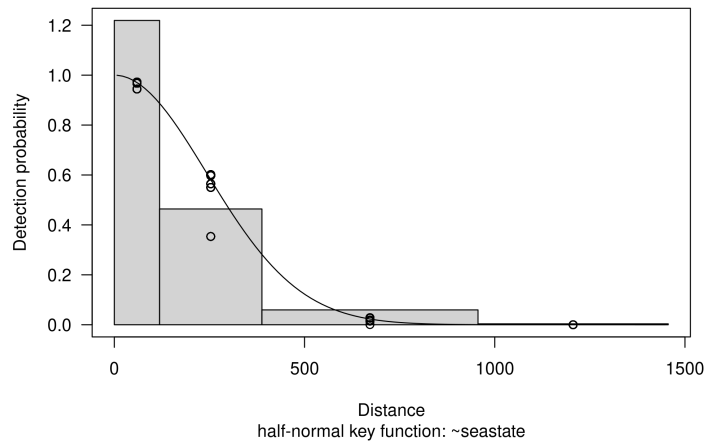
Ederfugl. Estimated abundance 547713 (LCL:381460, UCL:786423)



Ederfugl. Estimated abundance 549601 (LCL:381035, UCL:792739)



Ederfugl. Estimated abundance 549460 (LCL:382708, UCL:788867)



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Detection function fitting *Havlit*

Lars Dalby
 Mon Jan 30 13:53:36 2023

Settings

Settings used while compiling this document: Species = Havlit, surveyid = 1, 34, 35, 36, 37, 38, 39, 40, 42, 43, 44, 45, 46, 67.

Campaign overview

Campaign info

Number of birds	Average flock size	Max flock size	Total transect length	Survey area
4365	10	1200	7899.721	37075.76

Observer statistics

Observer	Number of observations	Number of birds	Percent of all birds observed
OBS1	172	737	16.88
OBS2	117	3207	73.47
OBS3	93	242	5.54
OBS4	33	174	3.99
OBS5	2	4	0.09
OBS6	1	1	0.02

Modelling input overview

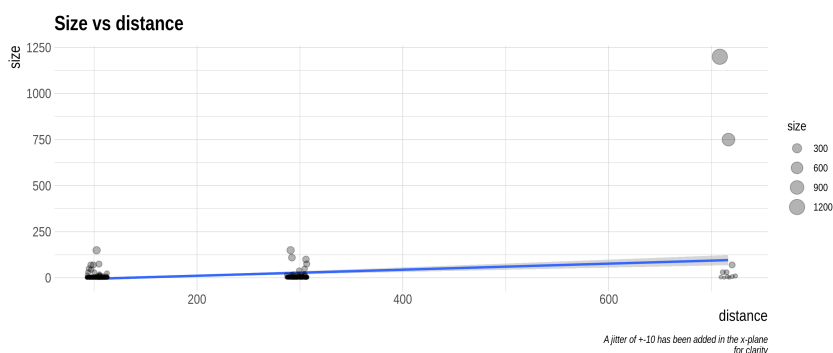
Campaign info

Number of birds	Average flock size	Max flock size	Total transect length	Survey area
4360	11	1200	7899.721	37075.76

Observer statistics

Observer	Number of observations	Number of birds	Percent of all birds observed
OBS1	172	737	16.90
OBS2	117	3207	73.56
OBS3	93	242	5.55
OBS4	33	174	3.99

Exploration



Fit detection function

AIC table

Model selection table

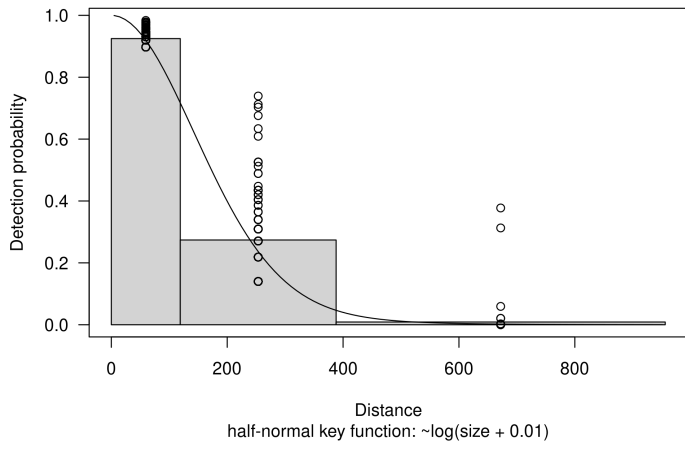
Model	Key function	Formula	χ^2 p-value	\hat{P}_a	$se(\hat{P}_a)$	ΔAIC
9	Half-normal	$\sim \log(\text{size} + 0.01)$	NA	0.197	0.008	0.000
12	Half-normal	$\sim \log(\text{size} + 0.01) + \text{observerid}$	NA	0.195	0.009	0.826
11	Half-normal	$\sim \text{behaviour} + \log(\text{size} + 0.01)$	NA	0.196	0.008	1.912
14	Half-normal	$\sim \text{behaviour} + \log(\text{size} + 0.01) + \text{observerid}$	NA	0.194	0.009	2.354
3	Hazard-rate	$\sim \log(\text{size} + 0.01)$	NA	0.216	0.009	3.688
6	Hazard-rate	$\sim \text{behaviour} + \log(\text{size} + 0.01) + \text{observerid}$	NA	0.215	0.009	5.822
5	Hazard-rate	$\sim \text{behaviour} + \log(\text{size} + 0.01)$	NA	0.216	0.009	6.731
13	Half-normal	$\sim \log(\text{size} + 0.01) + \text{observerid} + \text{seastate}$	NA	0.191	7.677	7.378

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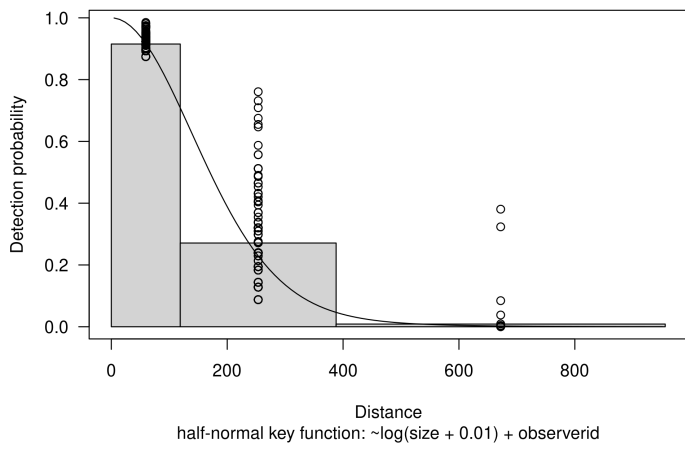
Model	Key function	Formula	χ^2 p-value	\hat{P}_a	se(\hat{P}_a)	Δ AIC
8	Half-normal	~observerid	NA	0.202	0.009	18.774
2	Hazard-rate	~observerid	NA	0.212	0.010	19.056
10	Half-normal	~behaviour + observerid	NA	0.201	0.009	20.029
1	Hazard-rate	~behaviour	NA	0.213	0.009	26.299
4	Hazard-rate	~observerid + seastate	NA	0.212	0.010	27.788
7	Half-normal	~behaviour	NA	0.208	0.008	28.514

Plots

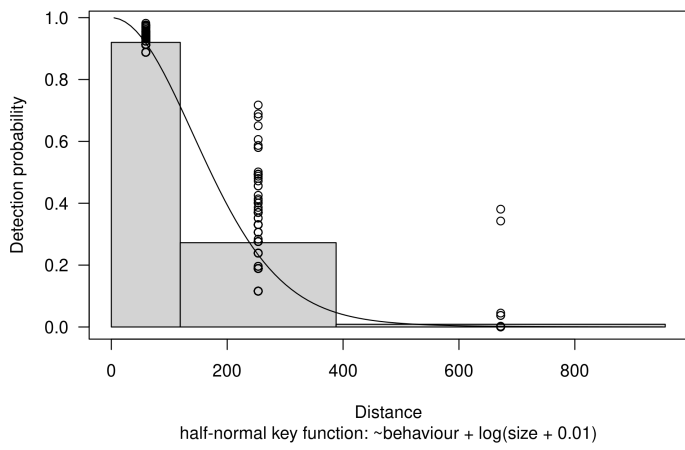
Havlit. Estimated abundance 33213 (LCL:19531, UCL:56479)



Havlit. Estimated abundance 33246 (LCL:19548, UCL:56543)



Havlit. Estimated abundance 33547 (LCL:19639, UCL:57306)



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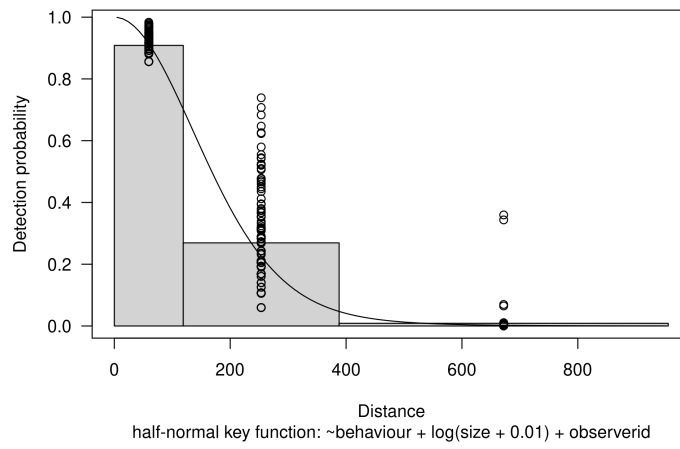
Exploration

Fit detection function

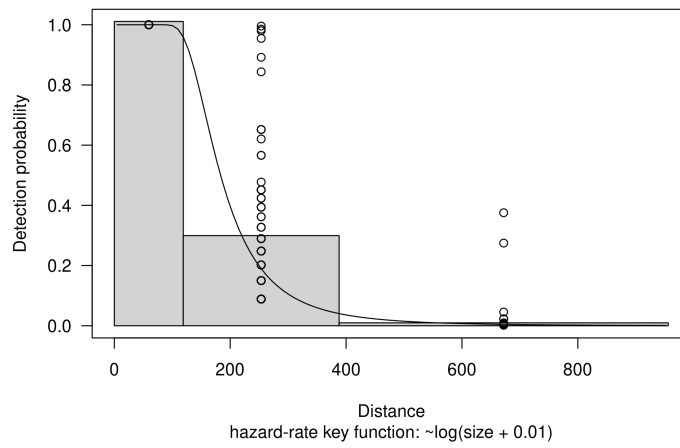
AIC table

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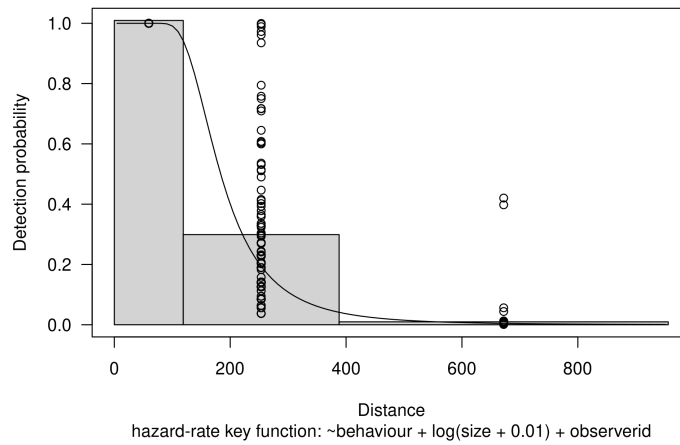
Havlit. Estimated abundance 33724 (LCL:19687, UCL:57770)



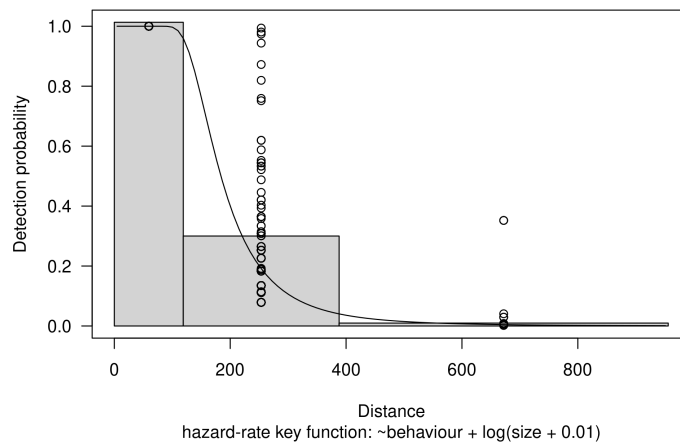
Havlit. Estimated abundance 30043 (LCL:17697, UCL:51001)



Havlit. Estimated abundance 29306 (LCL:17411, UCL:49329)



Havlit. Estimated abundance 29988 (LCL:17620, UCL:51035)



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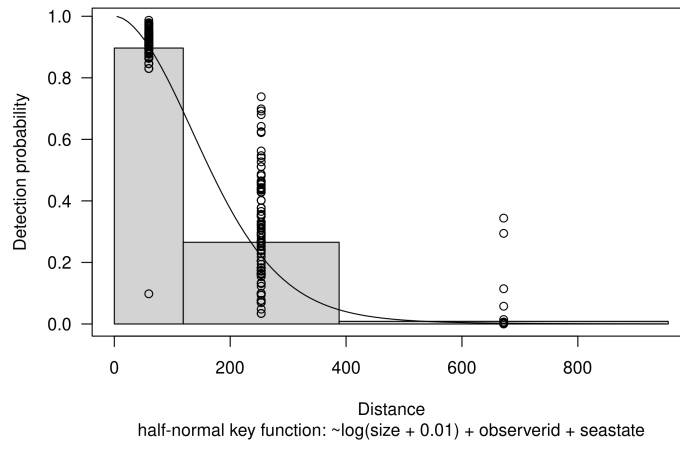
Exploration

Fit detection function

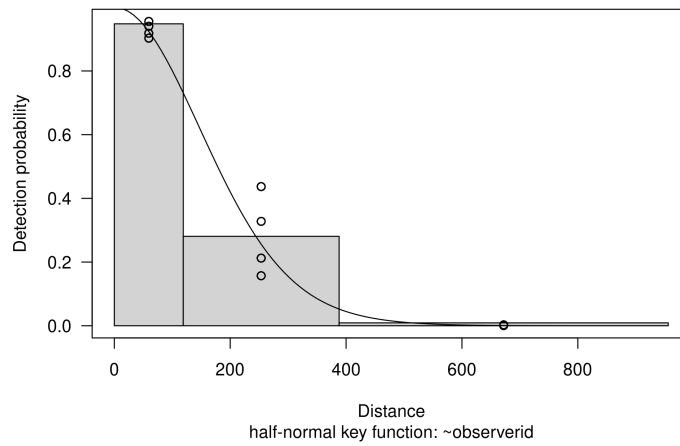
AIC table

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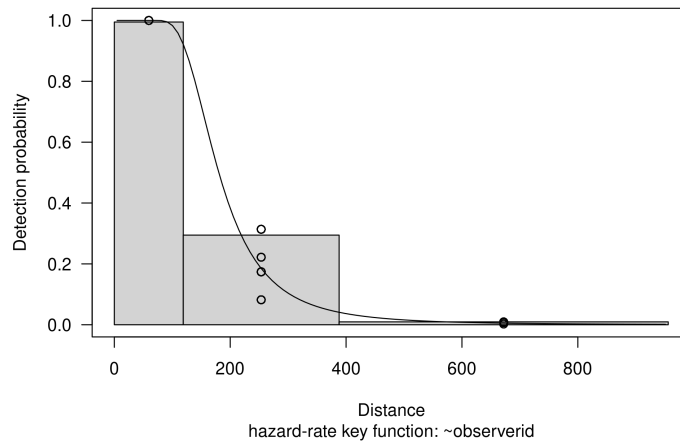
Havlit. Estimated abundance 33889 (LCL:689, UCL:1667710)



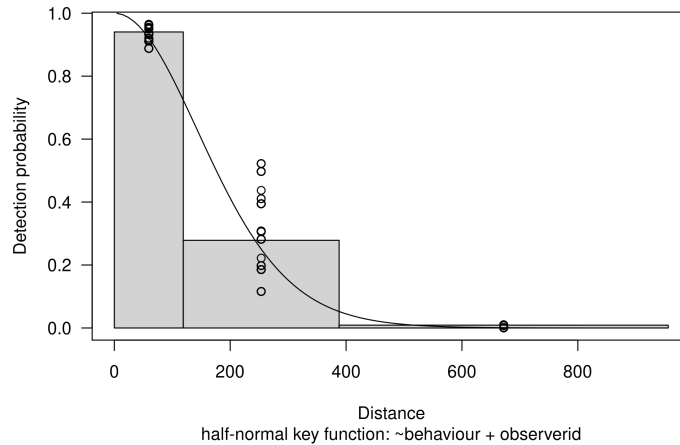
Havlit. Estimated abundance 50858 (LCL:25981, UCL:99555)



Havlit. Estimated abundance 50171 (LCL:25285, UCL:99550)



Havlit. Estimated abundance 51388 (LCL:26044, UCL:101396)



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Campaign overview

Modelling input overview

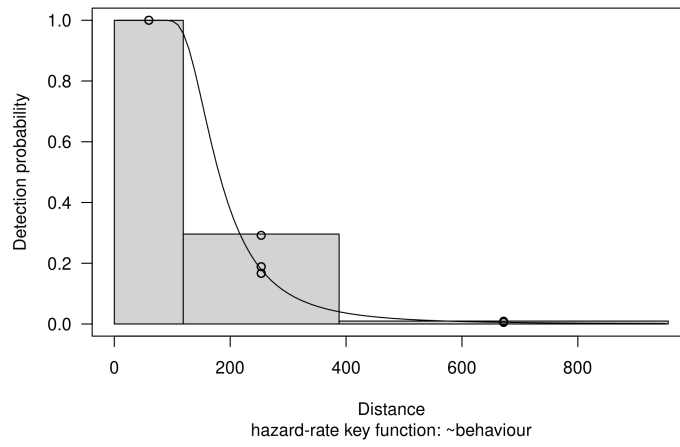
Exploration

Fit detection function

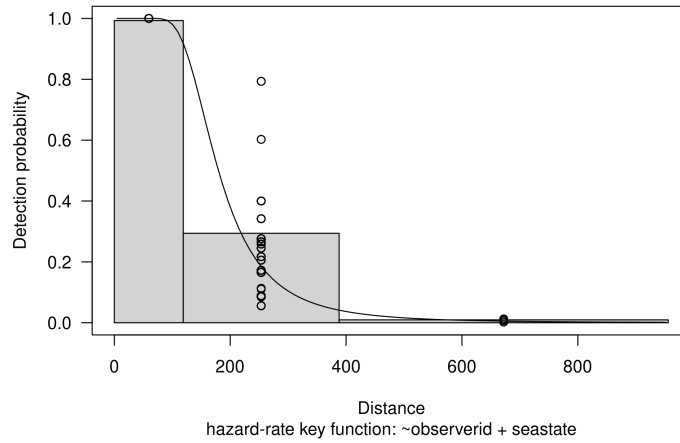
AIC table

Plots

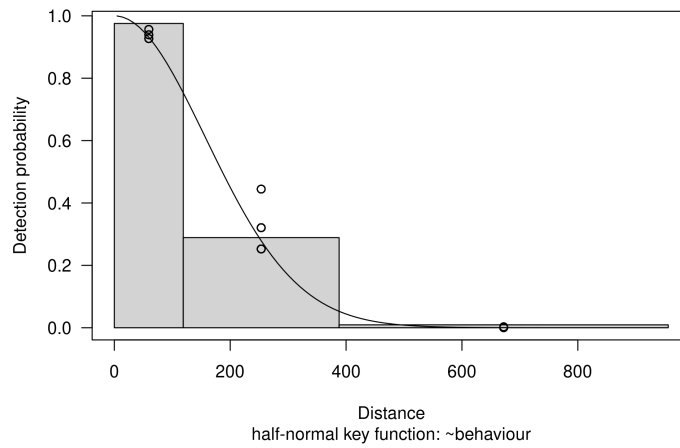
Havlit. Estimated abundance 55299 (LCL:27137, UCL:112686)



Havlit. Estimated abundance 50374 (LCL:25483, UCL:99580)



Havlit. Estimated abundance 56614 (LCL:27728, UCL:115594)



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Detection function fitting *Sortand*

Lars Dalby

Sun Jan 29 20:44:03 2023

Settings

Settings used while compiling this document: Species = Sortand, surveyid = 1, 34, 35, 36, 37, 38, 39, 40, 42, 43, 44, 45, 46, 67.

Campaign overview

Campaign info

Number of birds	Average flock size	Max flock size	Total transect length	Survey area
65047	21	2000	7899.721	37075.76

Observer statistics

Observer	Number of observations	Number of birds	Percent of all birds observed
OBS1	1453	21237	32.65
OBS2	668	8991	13.82
OBS3	413	23190	35.65
OBS4	228	8218	12.63
OBS5	213	1127	1.73
OBS6	47	782	1.20
OBS7	46	1502	2.31

Modelling input overview

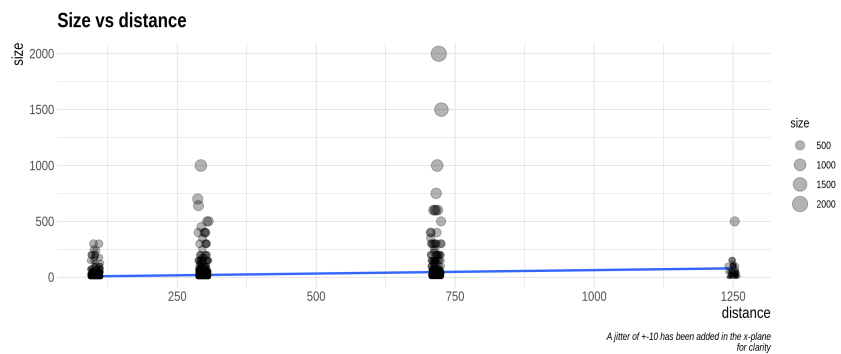
Campaign info

Number of birds	Average flock size	Max flock size	Total transect length	Survey area
65047	21	2000	7899.721	37075.76

Observer statistics

Observer	Number of observations	Number of birds	Percent of all birds observed
OBS1	1453	21237	32.65
OBS2	668	8991	13.82
OBS3	413	23190	35.65
OBS4	228	8218	12.63
OBS5	213	1127	1.73
OBS6	47	782	1.20
OBS7	46	1502	2.31

Exploration



Fit detection function

AIC table

Model selection table

Model	Key function	Formula	χ^2 p-value	\hat{P}_a	$se(\hat{P}_a)$	ΔAIC
20	Half-normal	\sim behaviour + log(size + 0.01) + observerid + seastate	NA	0.216	0.004	0.000
19	Half-normal	\sim log(size + 0.01) + observerid + seastate	NA	0.220	0.004	45.846

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Model	Key function	Formula	χ^2 p-value	\hat{P}_a	se(\hat{P}_a)	Δ AIC
16	Half-normal	~log(size + 0.01) + observerid	NA	0.223	0.004	76.080
18	Half-normal	~behaviour + log(size + 0.01) + seastate	NA	0.228	0.004	210.290
15	Half-normal	~behaviour + log(size + 0.01)	NA	0.230	0.003	223.926
4	Hazard-rate	~log(size + 0.01)	NA	0.251	0.005	234.159
14	Half-normal	~log(size + 0.01) + seastate	NA	0.233	0.003	263.400
10	Half-normal	~log(size + 0.01)	0.03	0.235	0.003	272.003
17	Half-normal	~behaviour + observerid + seastate	NA	0.237	0.004	406.109
12	Half-normal	~observerid + seastate	NA	0.241	0.004	446.647
6	Hazard-rate	~behaviour + observerid	NA	0.255	0.005	461.288
13	Half-normal	~behaviour + observerid	NA	0.243	0.004	485.649
3	Hazard-rate	~observerid	NA	0.258	0.005	496.794
9	Half-normal	~observerid	NA	0.247	0.004	518.877
5	Hazard-rate	~behaviour + seastate	NA	0.250	0.006	564.603
1	Hazard-rate	~seastate	NA	0.254	0.006	603.582
2	Hazard-rate	~behaviour	NA	0.246	0.006	619.456
11	Half-normal	~behaviour + seastate	NA	0.255	0.003	667.607
7	Half-normal	~seastate	NA	0.261	0.003	710.464
8	Half-normal	~behaviour	NA	0.260	0.003	731.435

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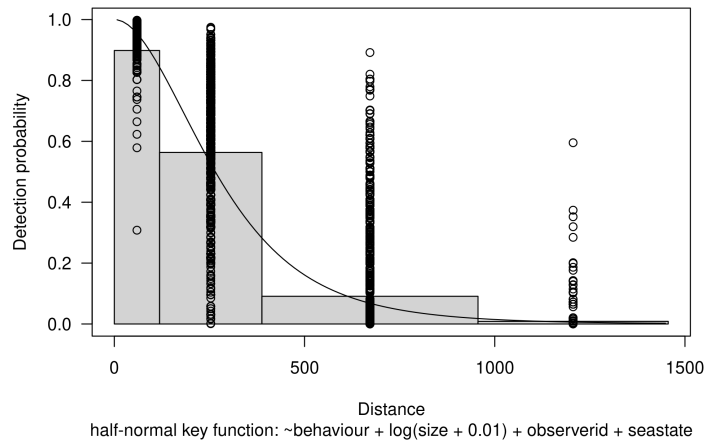
Exploration

Fit detection function

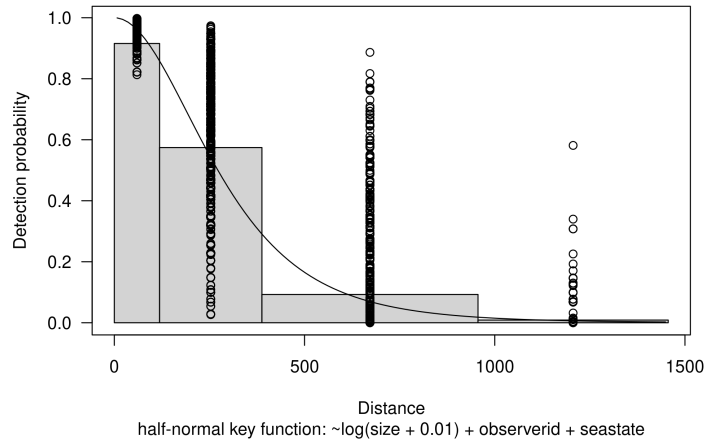
AIC table

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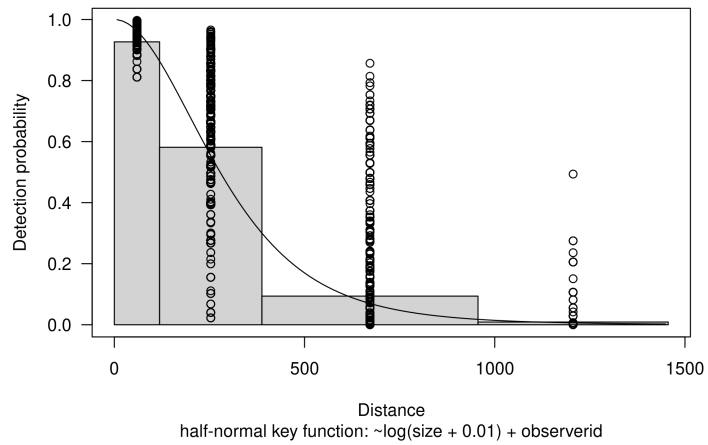
Sortand. Estimated abundance 191558 (LCL:144514, UCL:253918)



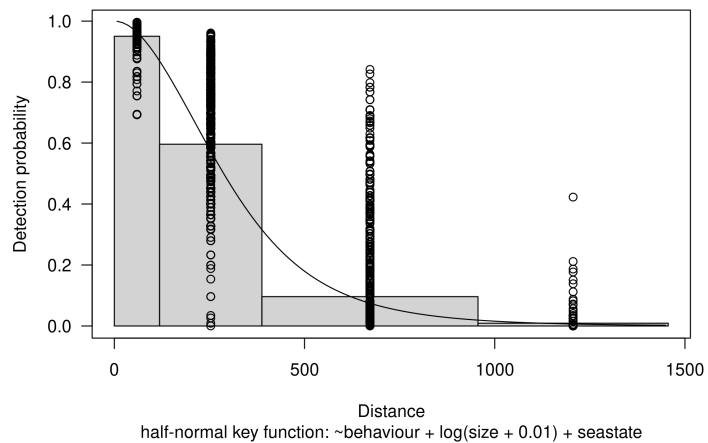
Sortand. Estimated abundance 186621 (LCL:141075, UCL:246872)



Sortand. Estimated abundance 182736 (LCL:137955, UCL:242054)



Sortand. Estimated abundance 167889 (LCL:128114, UCL:220012)



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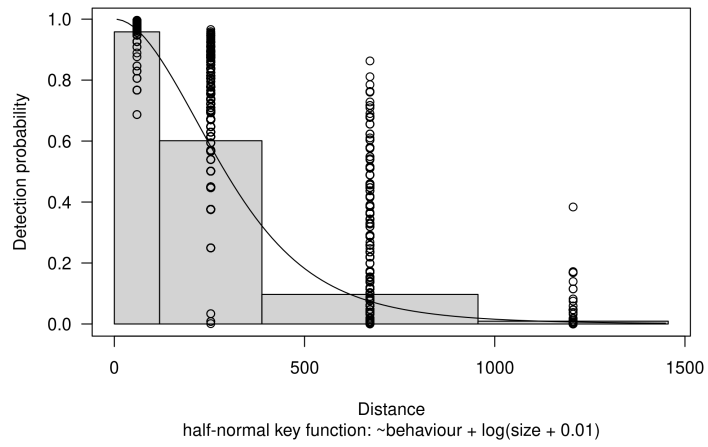
Exploration

Fit detection function

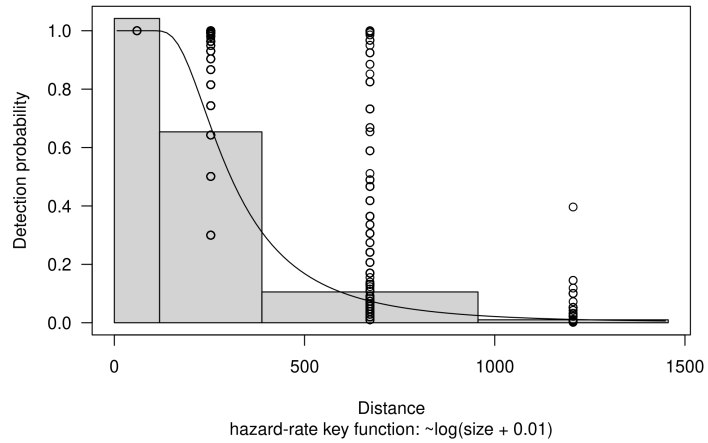
AIC table

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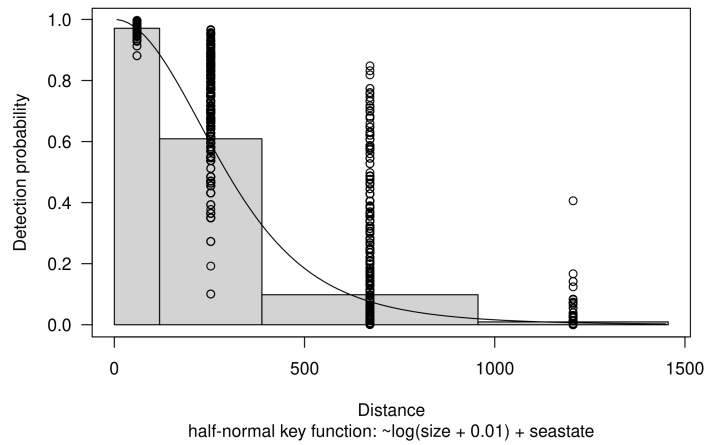
Sortand. Estimated abundance 166183 (LCL:126741, UCL:217900)



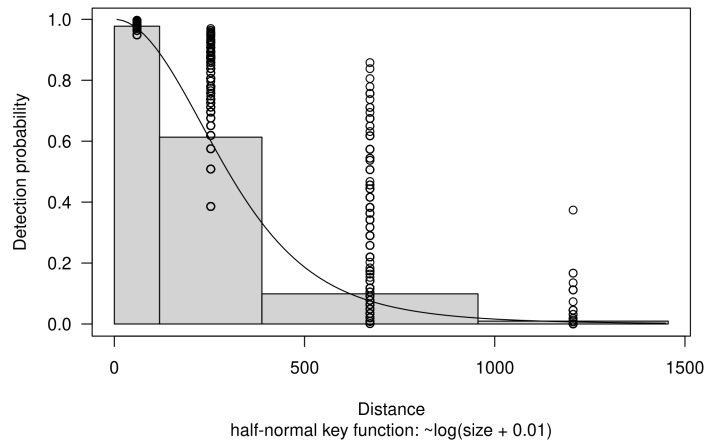
Sortand. Estimated abundance 146793 (LCL:111957, UCL:192467)



Sortand. Estimated abundance 163105 (LCL:124454, UCL:213759)



Sortand. Estimated abundance 161800 (LCL:123353, UCL:212230)



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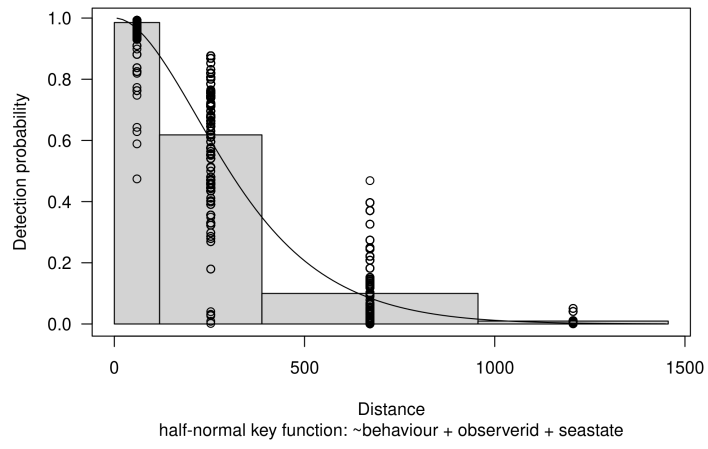
Exploration

Fit detection function

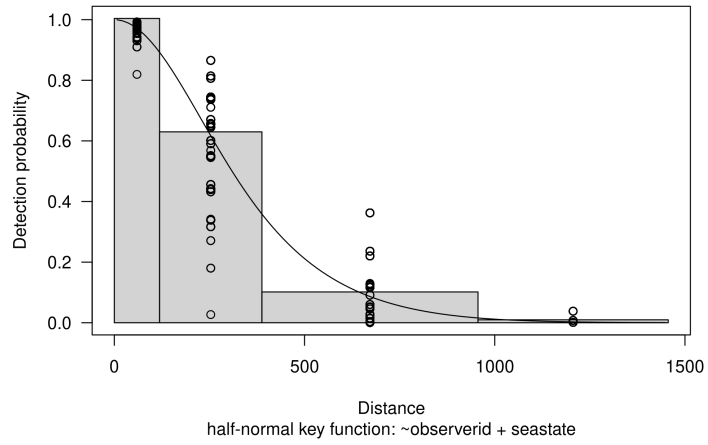
AIC table

Plots

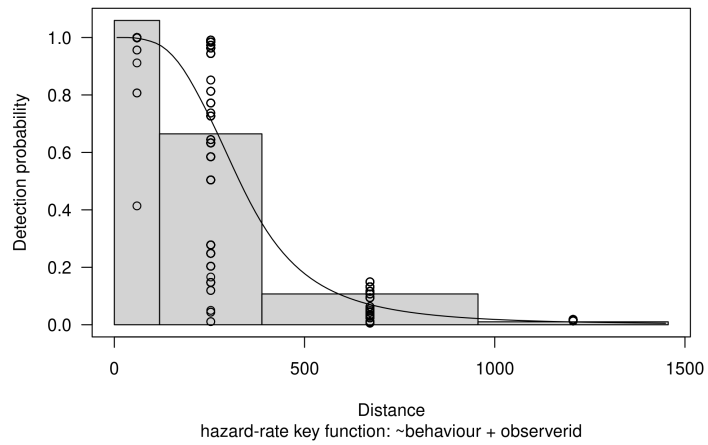
Sortand. Estimated abundance 288459 (LCL:209502, UCL:397174)



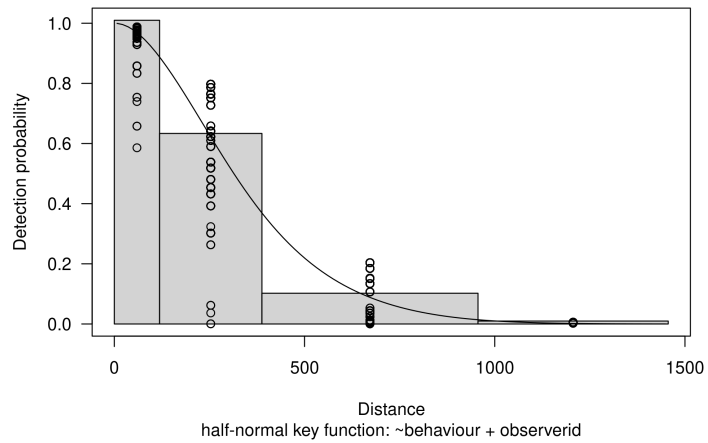
Sortand. Estimated abundance 284556 (LCL:206874, UCL:391407)



Sortand. Estimated abundance 273214 (LCL:196520, UCL:379839)



Sortand. Estimated abundance 286153 (LCL:207521, UCL:394578)



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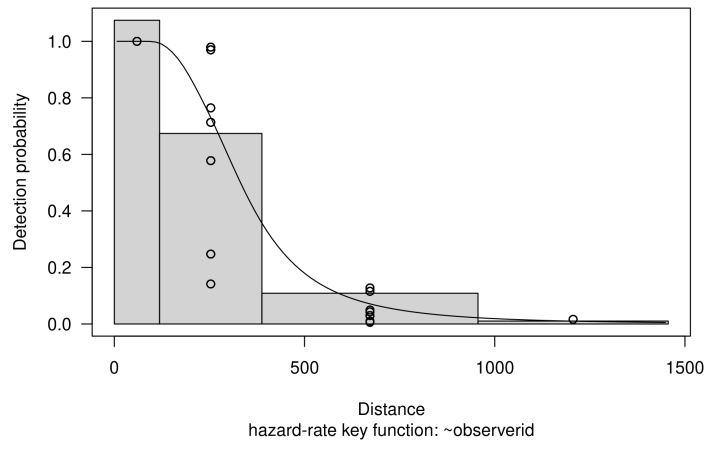
Exploration

Fit detection function

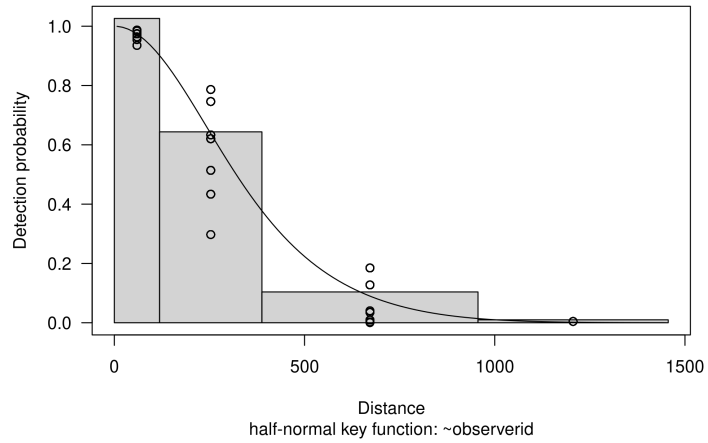
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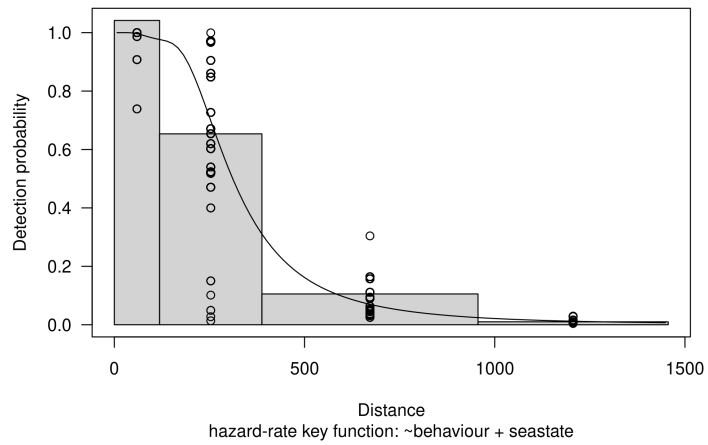
Sortand. Estimated abundance 270171 (LCL:194625, UCL:375041)



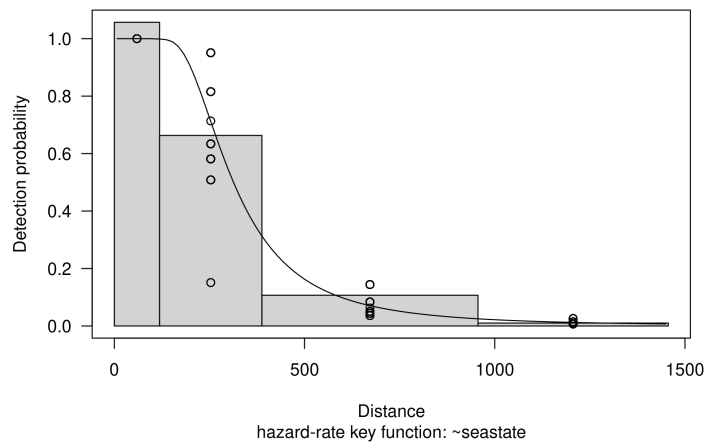
Sortand. Estimated abundance 282902 (LCL:205393, UCL:389661)



Sortand. Estimated abundance 268061 (LCL:197041, UCL:364680)



Sortand. Estimated abundance 263164 (LCL:193661, UCL:357610)



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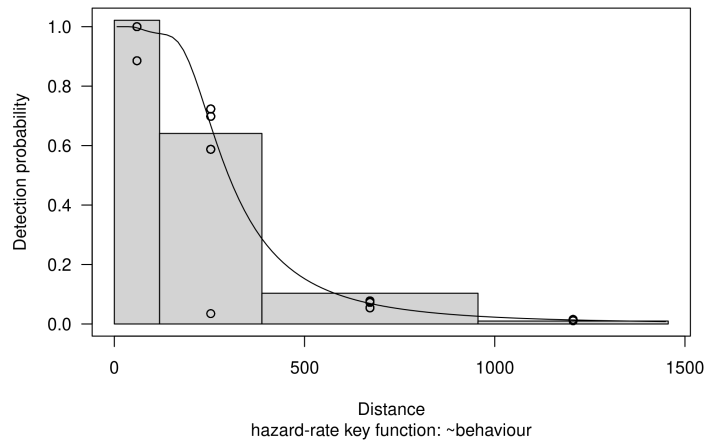
Exploration

Fit detection function

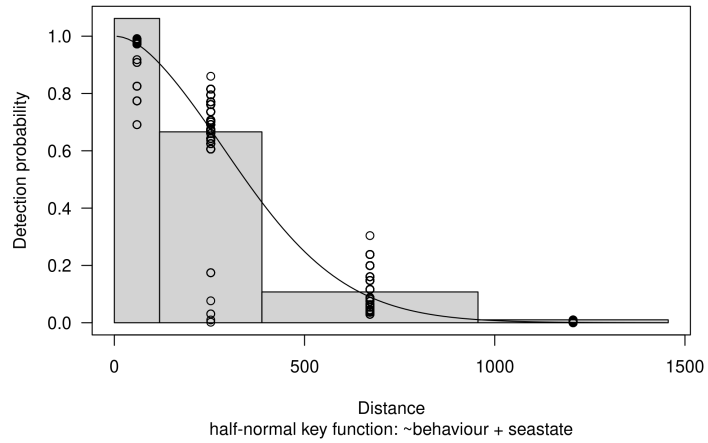
AIC table

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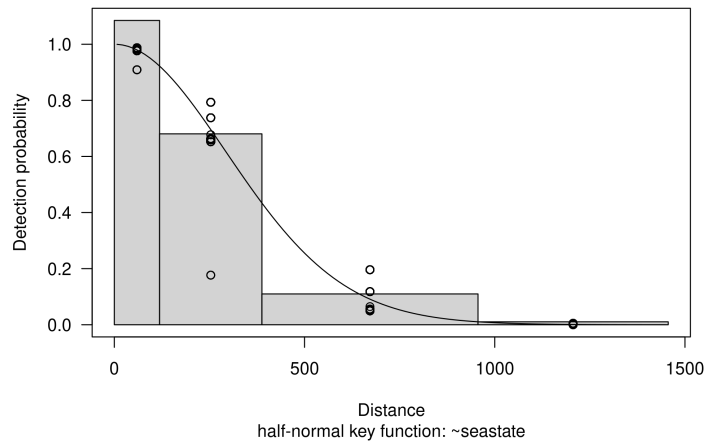
Sortand. Estimated abundance 284520 (LCL:208429, UCL:388389)



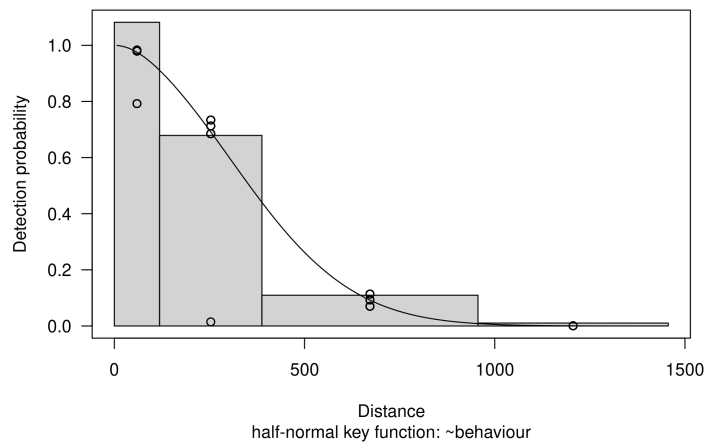
Sortand. Estimated abundance 262646 (LCL:193607, UCL:356303)



Sortand. Estimated abundance 257976 (LCL:190333, UCL:349659)



Sortand. Estimated abundance 266637 (LCL:195827, UCL:363053)



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Detection function fitting *Fløjsand*

Lars Dalby

Sun Jan 29 20:44:03 2023

Settings

Settings used while compiling this document: Species = Fløjsand, surveyid = 1, 34, 35, 36, 37, 38, 39, 40, 42, 43, 44, 45, 46, 67.

Campaign overview

Campaign info

Number of birds	Average flock size	Max flock size	Total transect length	Survey area
5935	4	70	7899.721	37075.76

Observer statistics

Observer	Number of observations	Number of birds	Percent of all birds observed
OBS1	794	3425	57.71
OBS2	379	1410	23.76
OBS3	67	558	9.40
OBS4	50	158	2.66
OBS5	28	237	3.99
OBS6	27	138	2.33
OBS7	3	9	0.15

Modelling input overview

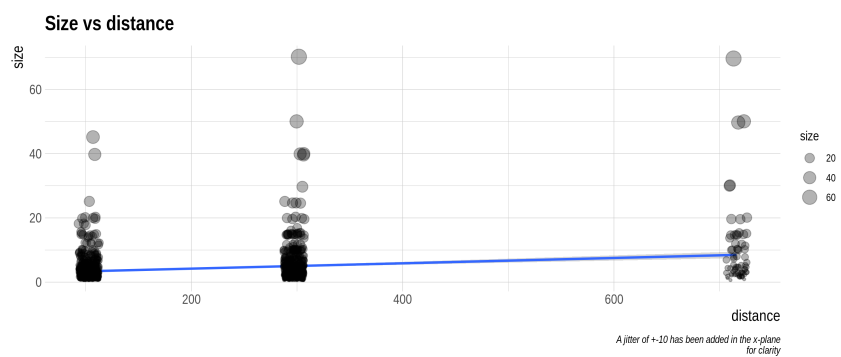
Campaign info

Number of birds	Average flock size	Max flock size	Total transect length	Survey area
5926	4	70	7899.721	37075.76

Observer statistics

Observer	Number of observations	Number of birds	Percent of all birds observed
OBS1	794	3425	57.80
OBS2	379	1410	23.79
OBS3	67	558	9.42
OBS4	50	158	2.67
OBS5	28	237	4.00
OBS6	27	138	2.33

Exploration



Fit detection function

AIC table

Model selection table

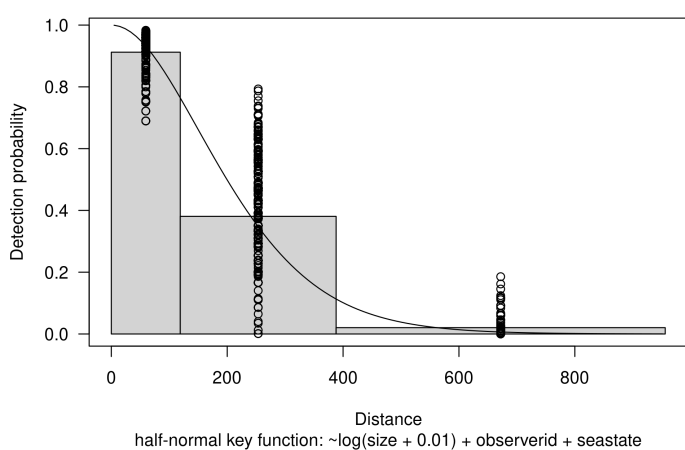
Model	Key function	Formula	χ^2 p-value	\hat{P}_a	$se(\hat{P}_a)$	ΔAIC
16	Half-normal	$\sim \log(\text{size} + 0.01) + \text{observerid} + \text{seastate}$	NA	0.233	0.006	0.000
15	Half-normal	$\sim \log(\text{size} + 0.01) + \text{observerid}$	NA	0.236	0.006	9.727
6	Hazard-rate	$\sim \log(\text{size} + 0.01) + \text{observerid}$	NA	0.254	0.007	13.613
13	Half-normal	$\sim \log(\text{size} + 0.01) + \text{seastate}$	NA	0.241	0.006	34.995
11	Half-normal	$\sim \log(\text{size} + 0.01)$	NA	0.244	0.006	40.948

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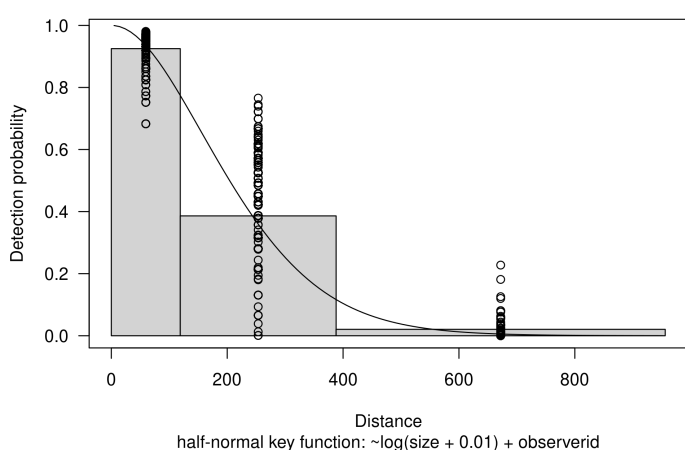
Model	Key function	Formula	χ^2 p-value	\hat{P}_a	se(\hat{P}_a)	Δ AIC
14	Half-normal	~behaviour + log(size + 0.01)	NA	0.242	75.057	44.627
2	Hazard-rate	~log(size + 0.01)	NA	0.259	0.007	45.603
5	Hazard-rate	~log(size + 0.01) + seastate	NA	0.261	0.007	46.180
7	Hazard-rate	~behaviour + log(size + 0.01) + seastate	NA	0.260	0.007	49.174
12	Half-normal	~observerid + seastate	NA	0.240	0.006	49.269
4	Hazard-rate	~observerid + seastate	NA	0.255	0.008	54.757
10	Half-normal	~observerid	NA	0.245	0.006	70.823
8	Half-normal	~seastate	NA	0.249	0.006	84.315
1	Hazard-rate	~seastate	NA	0.258	0.007	89.779
3	Hazard-rate	~behaviour + seastate	NA	0.254	0.036	90.389
9	Half-normal	~behaviour	NA	0.252	79.606	101.119

Plots

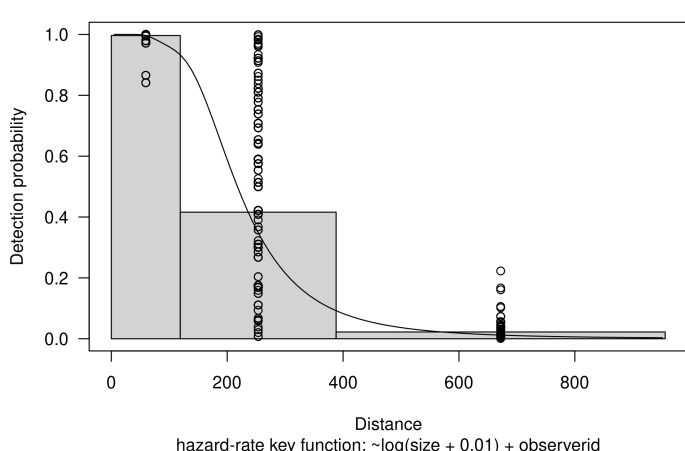
Fløjsland. Estimated abundance 45079 (LCL:33112, UCL:61371)



Fløjsland. Estimated abundance 44389 (LCL:32778, UCL:60112)



Fløjsland. Estimated abundance 40398 (LCL:29853, UCL:54669)



Settings

Campaign overview

Modelling input overview

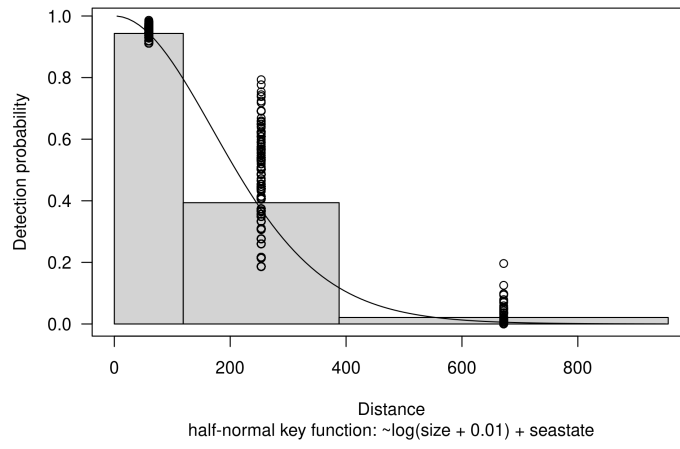
Exploration

Fit detection function

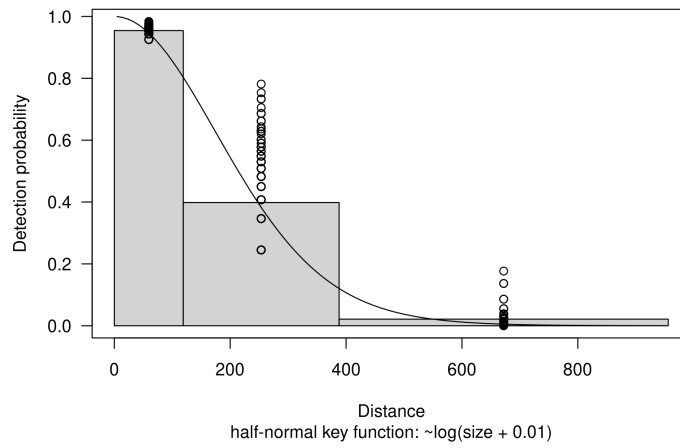
AIC table

Plots

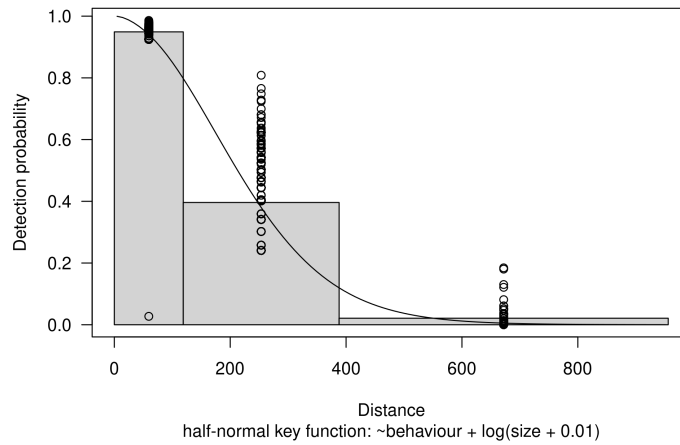
Fløjsand. Estimated abundance 42478 (LCL:30729, UCL:58718)



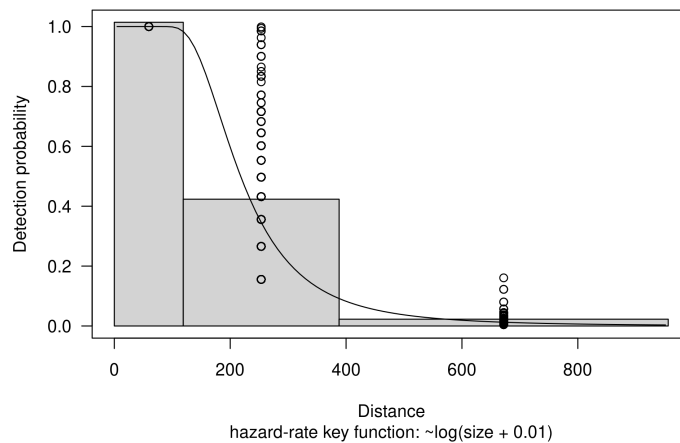
Fløjsand. Estimated abundance 42094 (LCL:30598, UCL:57908)



Fløjsand. Estimated abundance 42150 (LCL:79, UCL:22437957)



Fløjsand. Estimated abundance 38887 (LCL:28213, UCL:53599)



Settings

Campaign overview

Modelling input overview

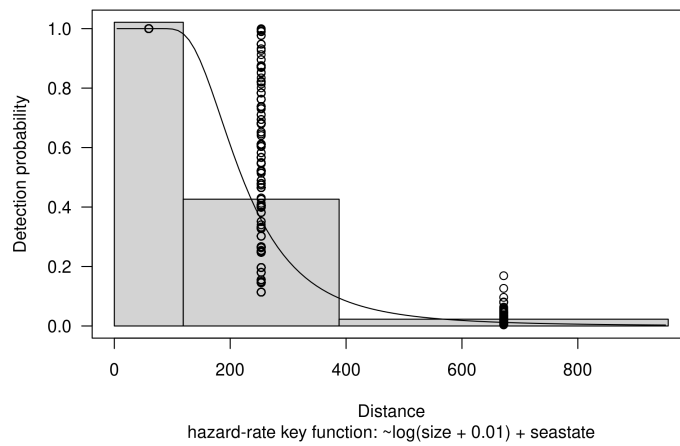
Exploration

Fit detection function

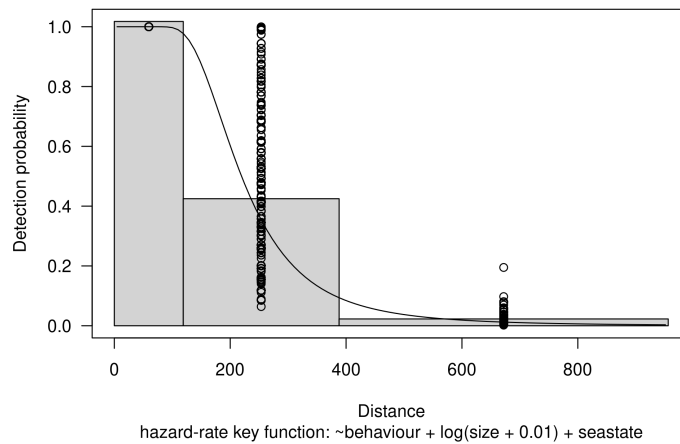
AIC table

Plots

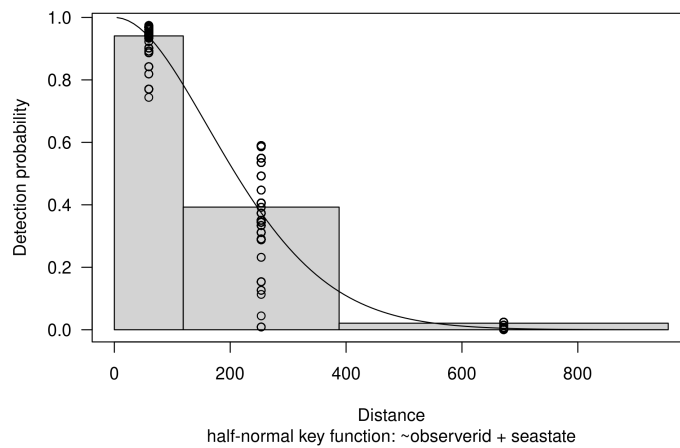
Fløjlsand. Estimated abundance 38539 (LCL:27845, UCL:53341)



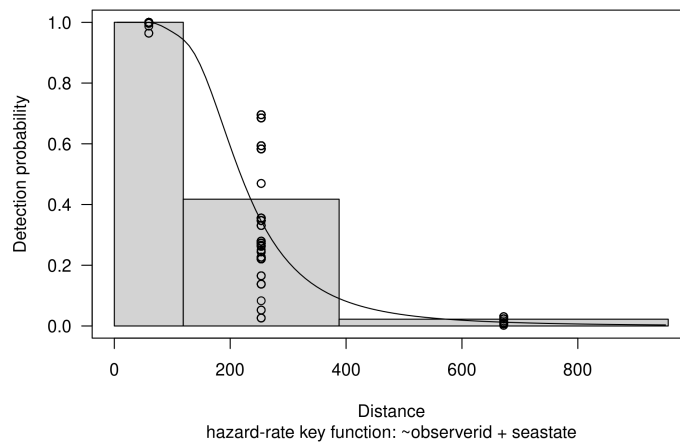
Fløjlsand. Estimated abundance 38642 (LCL:27909, UCL:53503)



Fløjlsand. Estimated abundance 51134 (LCL:37527, UCL:69676)



Fløjlsand. Estimated abundance 48085 (LCL:35216, UCL:65657)



Settings

Campaign overview

Modelling input overview

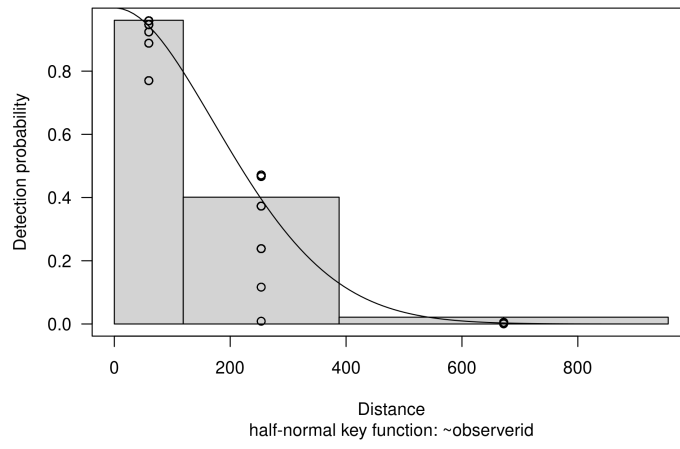
Exploration

Fit detection function

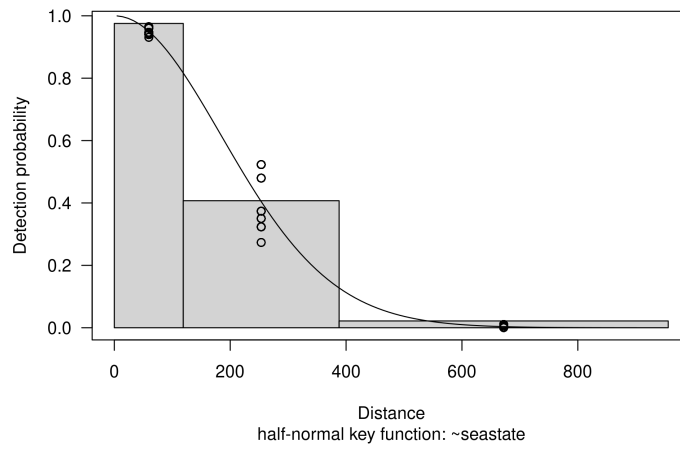
AIC table

Plots

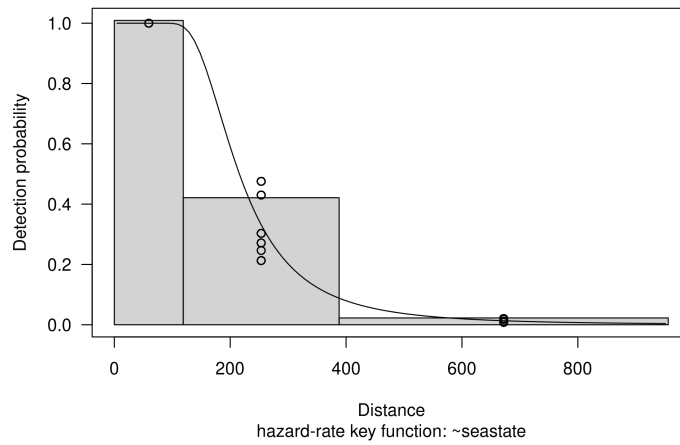
Fløjsand. Estimated abundance 50778 (LCL:37395, UCL:68952)



Fløjsand. Estimated abundance 47879 (LCL:34557, UCL:66336)



Fløjsand. Estimated abundance 46305 (LCL:33356, UCL:64281)



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Campaign overview

Modelling input overview

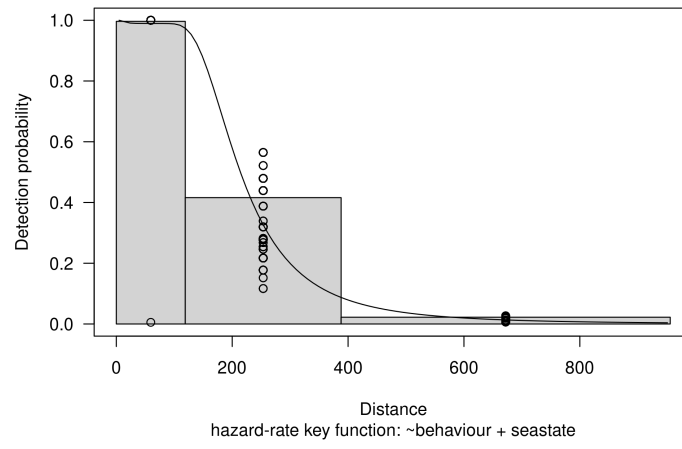
Exploration

Fit detection function

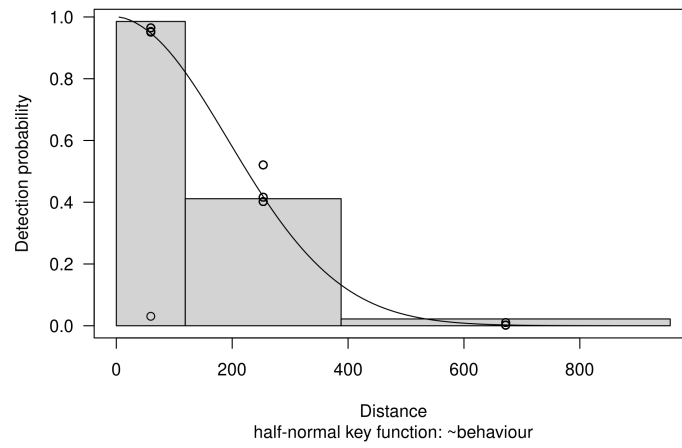
AIC table

Plots

Fløjsand. Estimated abundance 46431 (LCL:32690, UCL:65947)



Fløjsand. Estimated abundance 47771 (LCL:98, UCL:23301114)



Settings

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Fit detection function

AIC table

Plots

Detection function fitting *Toppet skallesluger*

Lars Dalby

Sun Jan 29 20:44:03 2023

Settings

Settings used while compiling this document: Species = Toppet skallesluger, surveyId = 1, 34, 35, 36, 37, 38, 39, 40, 42, 43, 44, 45, 46, 67.

Campaign overview

Campaign info

Number of birds	Average flock size	Max flock size	Total transect length	Survey area
3037	5	150	7899.721	37075.76

Observer statistics

Observer	Number of observations	Number of birds	Percent of all birds observed
OBS1	233	852	28.05
OBS2	169	1278	42.08
OBS3	106	276	9.09
OBS4	80	613	20.18
OBS5	5	10	0.33
OBS6	2	4	0.13
OBS7	2	4	0.13

Modelling input overview

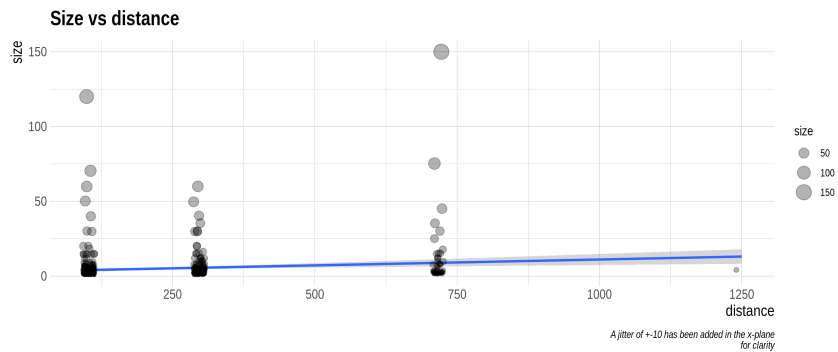
Campaign info

Number of birds	Average flock size	Max flock size	Total transect length	Survey area
3019	5	150	7899.721	37075.76

Observer statistics

Observer	Number of observations	Number of birds	Percent of all birds observed
OBS1	233	852	28.22
OBS2	169	1278	42.33
OBS3	106	276	9.14
OBS4	80	613	20.30

Exploration



Fit detection function

AIC table

Model selection table

Model	Key function	Formula	χ^2 p-value	\hat{P}_a	se(\hat{P}_a)	Δ AIC
12	Hazard-rate	$\sim \log(\text{size} + 0.01) + \text{observerid} + \text{seastate}$	NA	0.164	0.008	0.000
25	Half-normal	$\sim \log(\text{size} + 0.01) + \text{observerid} + \text{seastate}$	NA	0.161	0.006	1.353
22	Half-normal	$\sim \log(\text{size} + 0.01) + \text{observerid}$	NA	0.163	0.005	1.473
26	Half-normal	$\sim \text{behaviour} + \log(\text{size} + 0.01) + \text{observerid}$	NA	0.163	0.006	6.434

Settings

Campaign overview

Modelling input overview

Exploration

Fit detection function

AIC table

Plots

Model	Key function	Formula	χ^2 p-value	\hat{P}_a	se(\hat{P}_a)	Δ AIC
27	Half-normal	~behaviour + log(size + 0.01) + observerid + seastate	NA	0.161	0.006	6.631
6	Hazard-rate	~observerid + seastate	NA	0.162	0.008	18.084
10	Hazard-rate	~behaviour + observerid + seastate	NA	0.161	0.007	20.955
18	Half-normal	~observerid + seastate	NA	0.165	0.006	22.164
23	Half-normal	~behaviour + observerid + seastate	NA	0.165	0.006	25.252
3	Hazard-rate	~observerid	NA	0.165	0.007	25.755
15	Half-normal	~observerid	NA	0.169	0.006	26.433
7	Hazard-rate	~behaviour + observerid	NA	0.166	0.008	28.196
19	Half-normal	~behaviour + observerid	NA	0.168	0.006	28.817
8	Hazard-rate	~log(size + 0.01) + seastate	NA	0.162	0.008	53.507
11	Hazard-rate	~behaviour + log(size + 0.01) + seastate	NA	0.162	0.007	58.702
1	Hazard-rate	~seastate	NA	0.160	0.008	67.191
5	Hazard-rate	~behaviour + seastate	NA	0.160	0.008	70.231
4	Hazard-rate	~log(size + 0.01)	NA	0.164	0.008	70.621
20	Half-normal	~log(size + 0.01) + seastate	NA	0.180	0.005	72.232
9	Hazard-rate	~behaviour + log(size + 0.01)	NA	0.164	0.008	75.562
24	Half-normal	~behaviour + log(size + 0.01) + seastate	NA	0.180	0.006	75.839
2	Hazard-rate	~behaviour	NA	0.161	0.008	81.850
16	Half-normal	~log(size + 0.01)	0	0.186	0.005	85.159
21	Half-normal	~behaviour + log(size + 0.01)	NA	0.185	0.006	89.331
13	Half-normal	~seastate	NA	0.185	0.005	91.126
17	Half-normal	~behaviour + seastate	NA	0.184	0.005	94.049
14	Half-normal	~behaviour	NA	0.190	0.005	107.544

Plots

Settings

Campaign overview

Modelling input overview

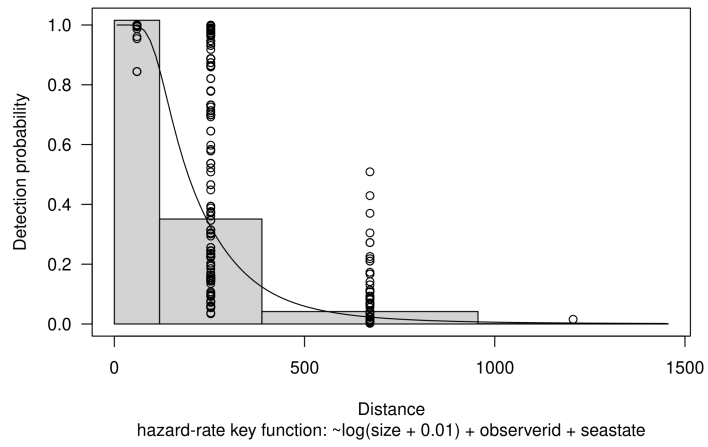
Exploration

Fit detection function

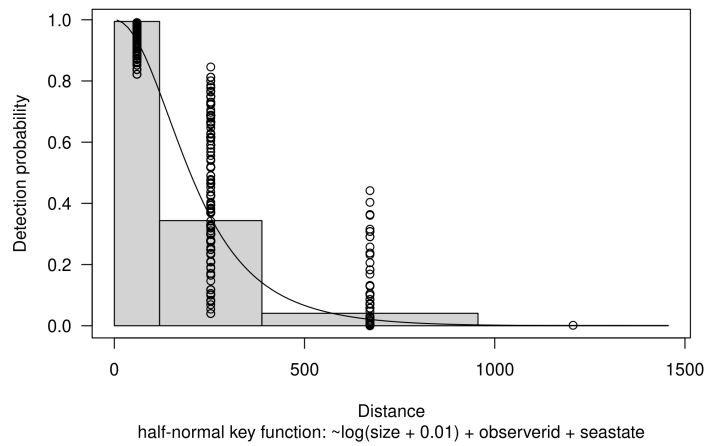
AIC table

Plots

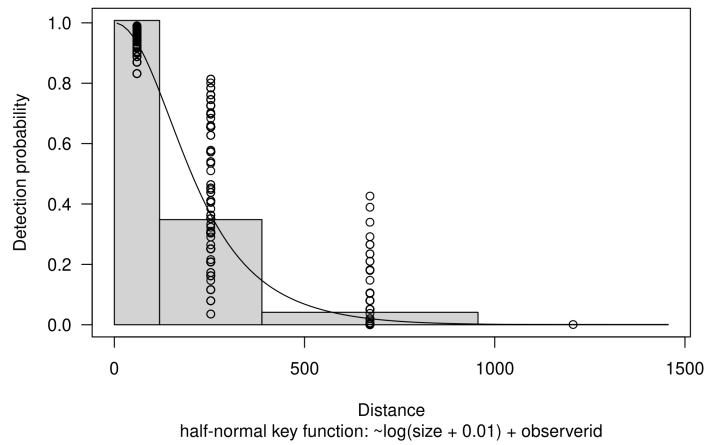
Toppet skallesluger. Estimated abundance 25421 (LCL:19170, UCL:3371)



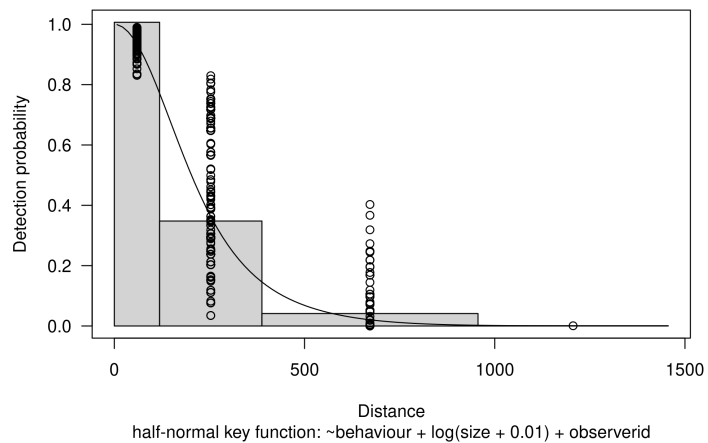
Toppet skallesluger. Estimated abundance 26565 (LCL:20030, UCL:3523)



Toppet skallesluger. Estimated abundance 26116 (LCL:19703, UCL:3461)



Toppet skallesluger. Estimated abundance 26059 (LCL:19665, UCL:3453)



Settings

Campaign overview

Modelling input overview

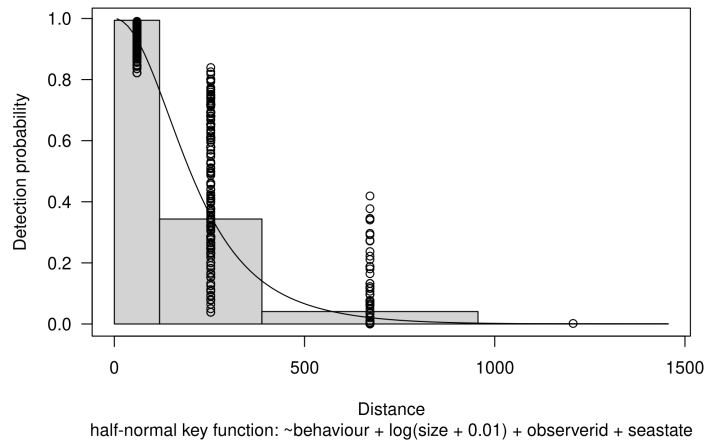
Exploration

Fit detection function

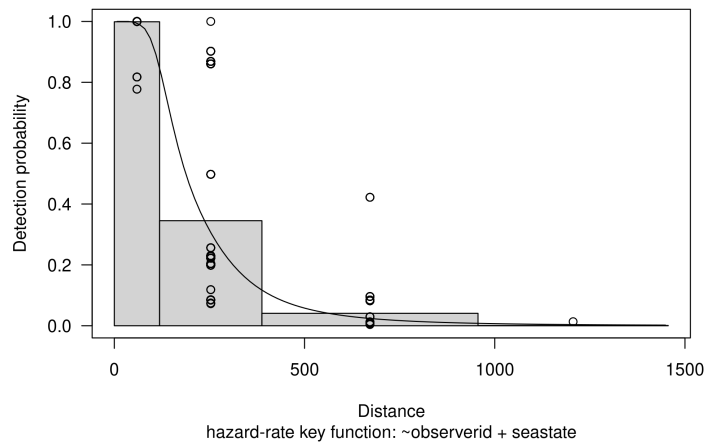
AIC table

Plots

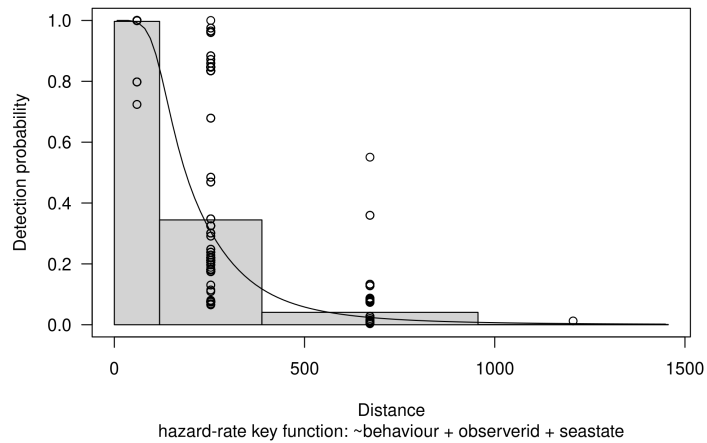
Toppet skallesluger. Estimated abundance 26501 (LCL:19991, UCL:3513)



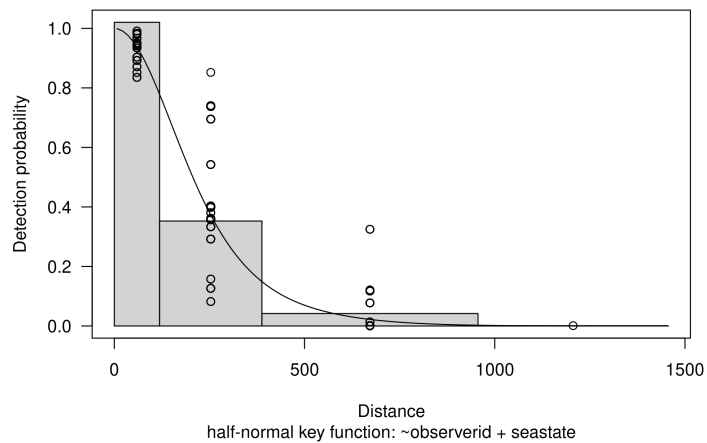
Toppet skallesluger. Estimated abundance 33697 (LCL:24577, UCL:4620)



Toppet skallesluger. Estimated abundance 32740 (LCL:24024, UCL:4461)



Toppet skallesluger. Estimated abundance 32747 (LCL:24135, UCL:4443)



Settings

Campaign overview

Modelling input overview

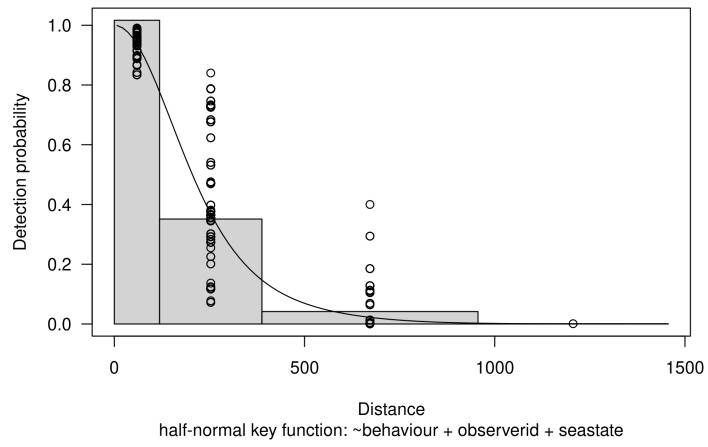
Exploration

Fit detection function

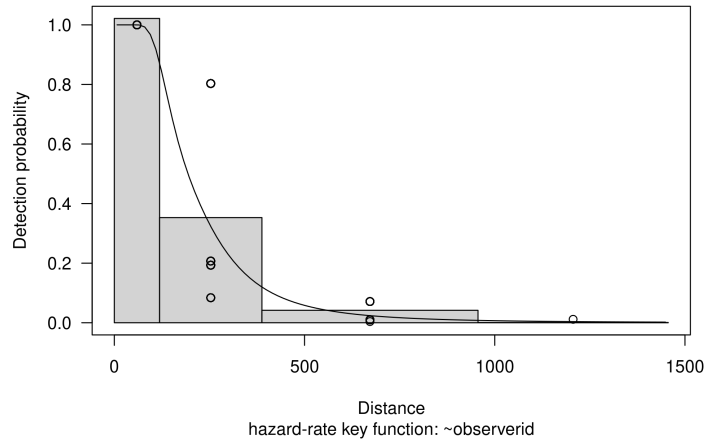
AIC table

Plots

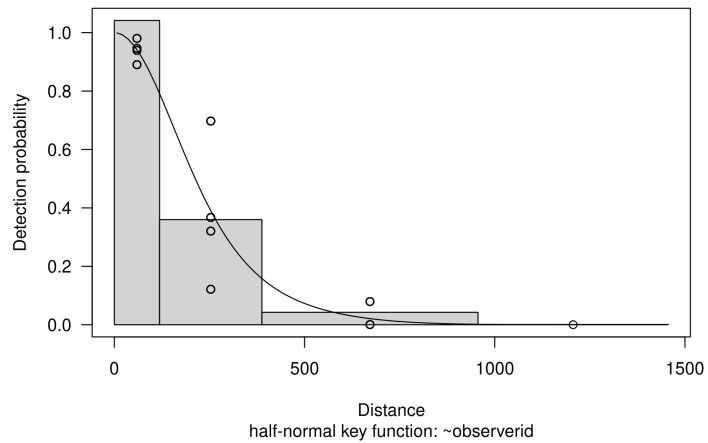
Toppet skallesluger. Estimated abundance 32078 (LCL:23750, UCL:4332)



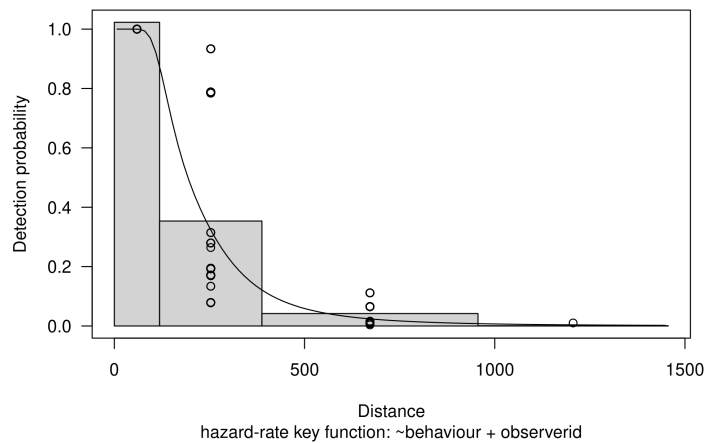
Toppet skallesluger. Estimated abundance 33775 (LCL:24522, UCL:4651)



Toppet skallesluger. Estimated abundance 32694 (LCL:23971, UCL:4459)



Toppet skallesluger. Estimated abundance 32622 (LCL:23797, UCL:4471)



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Campaign overview

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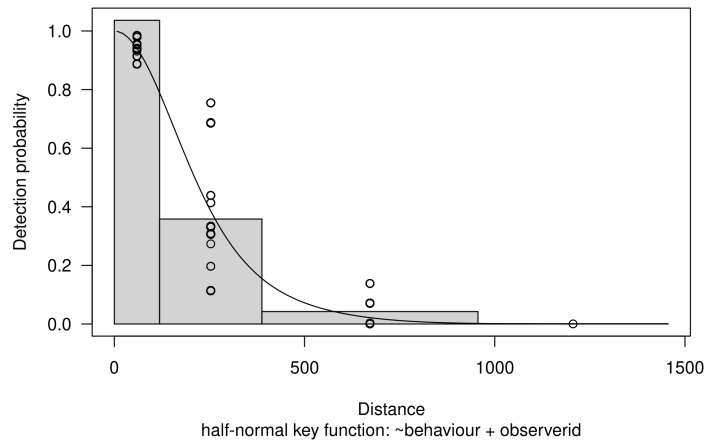
Exploration

Fit detection function

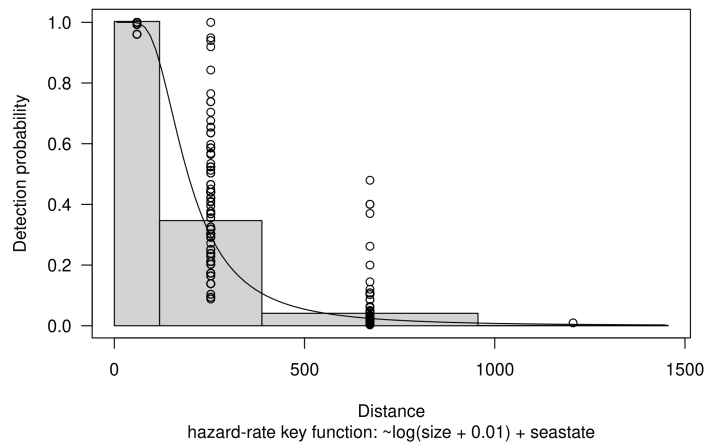
AIC table

Plots

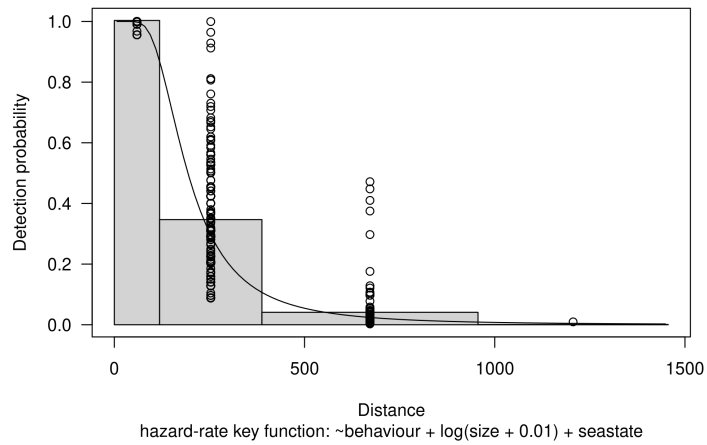
Toppet skallesluger. Estimated abundance 31990 (LCL:23567, UCL:4342)



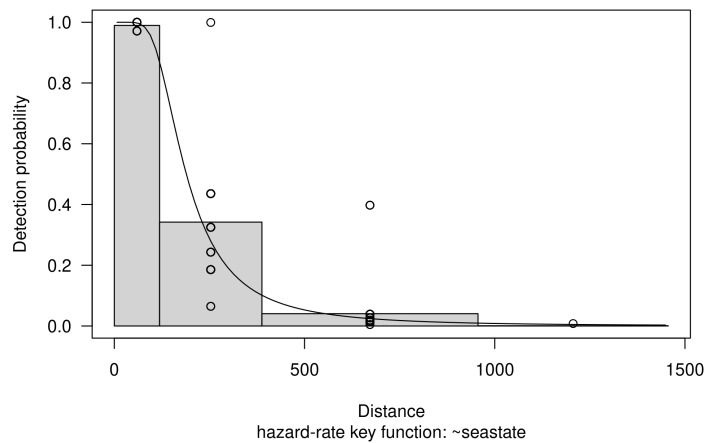
Toppet skallesluger. Estimated abundance 24689 (LCL:18992, UCL:3209)



Toppet skallesluger. Estimated abundance 24672 (LCL:19005, UCL:3202)



Toppet skallesluger. Estimated abundance 31950 (LCL:24044, UCL:4245)



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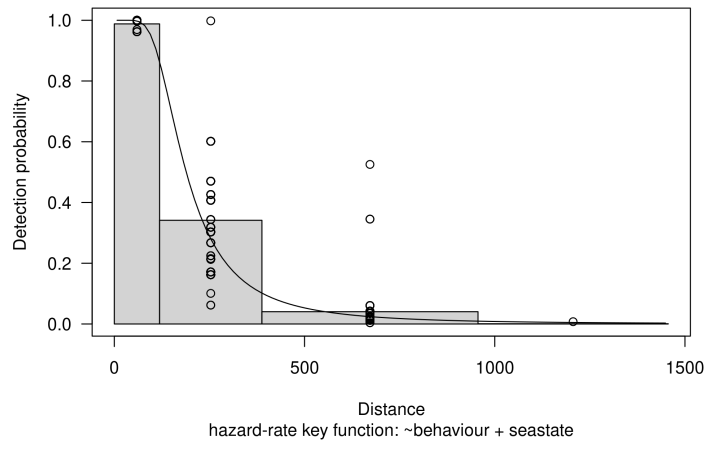
Exploration

Fit detection function

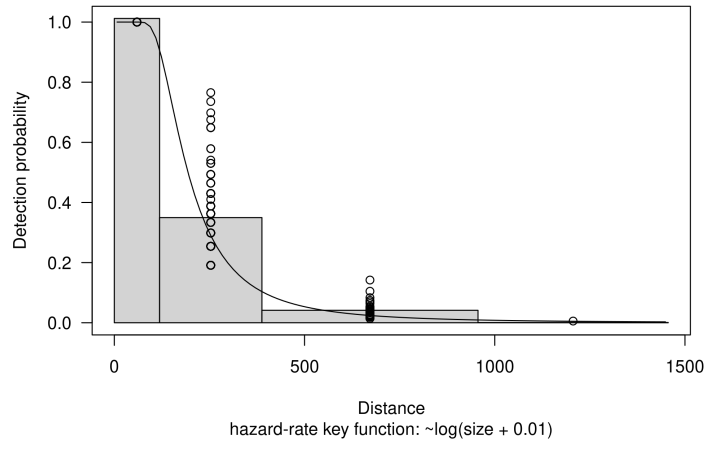
AIC table

Plots

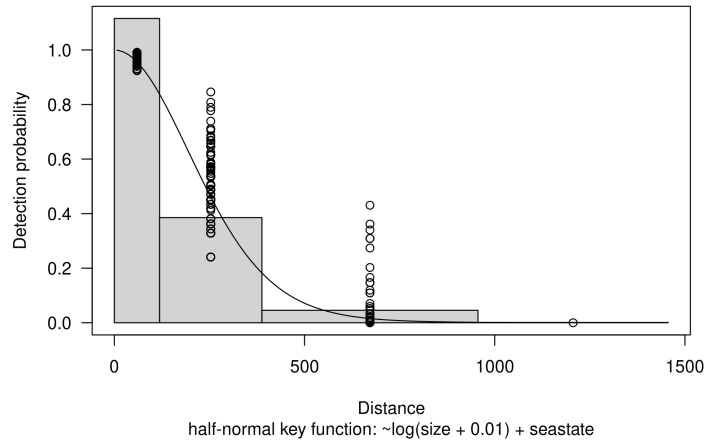
Toppet skallesluger. Estimated abundance 31053 (LCL:23495, UCL:4104)



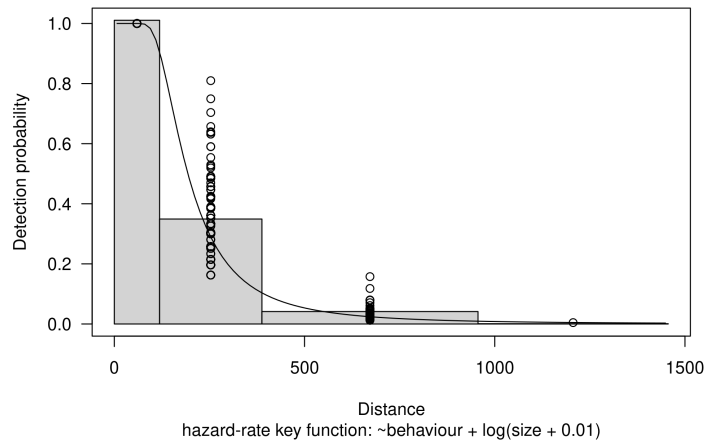
Toppet skallesluger. Estimated abundance 25204 (LCL:19193, UCL:3309)



Toppet skallesluger. Estimated abundance 22864 (LCL:17737, UCL:2947)



Toppet skallesluger. Estimated abundance 25152 (LCL:19169, UCL:3300)



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Campaign overview

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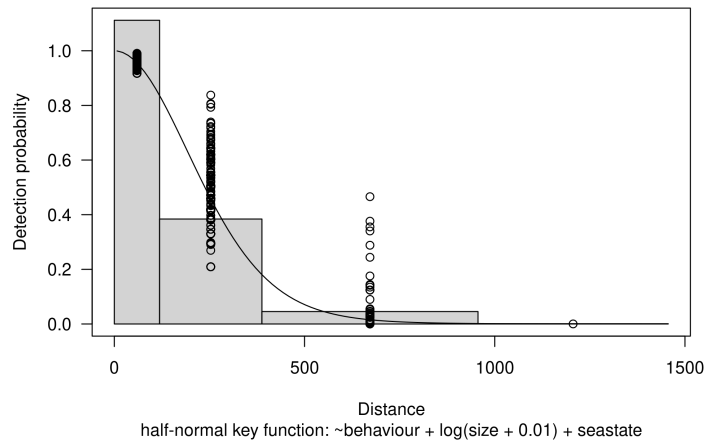
Exploration

Fit detection function

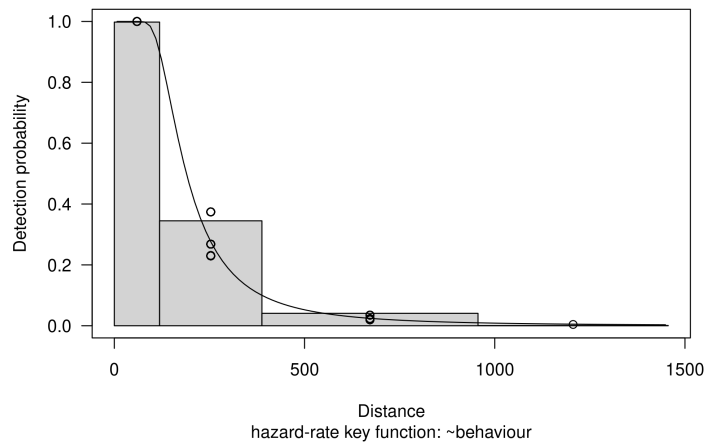
AIC table

Plots

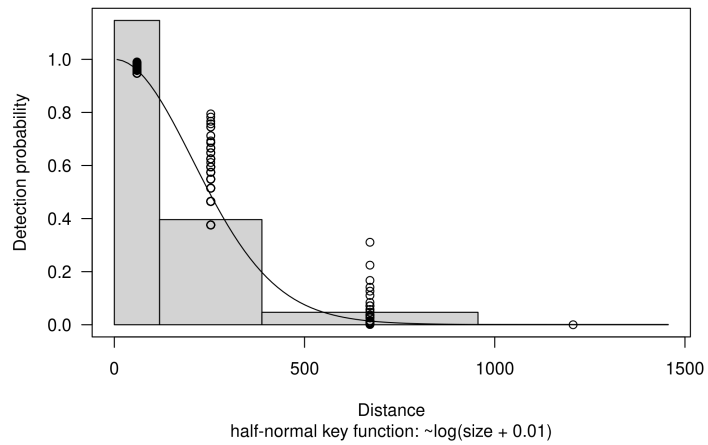
Toppet skallesluger. Estimated abundance 22830 (LCL:17718, UCL:2941)



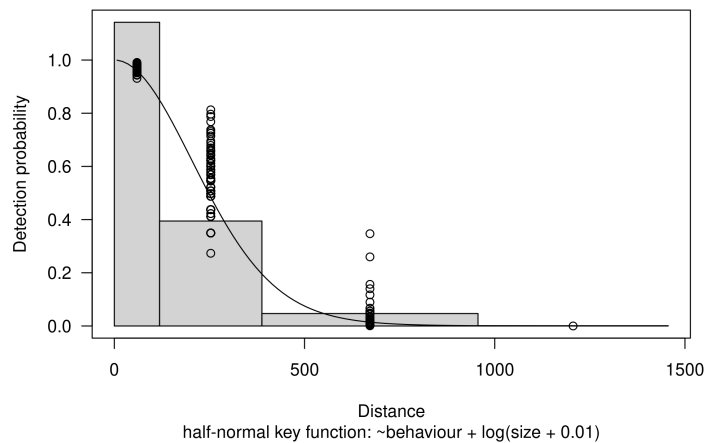
Toppet skallesluger. Estimated abundance 30795 (LCL:23100, UCL:4105)



Toppet skallesluger. Estimated abundance 21985 (LCL:17043, UCL:2836)

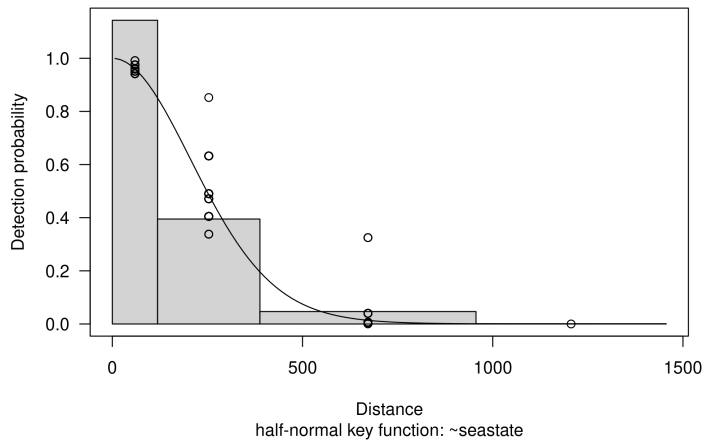


Toppet skallesluger. Estimated abundance 21955 (LCL:16995, UCL:2836)

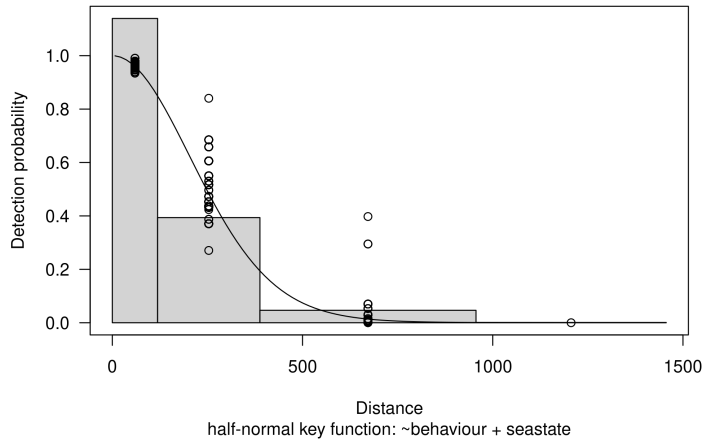


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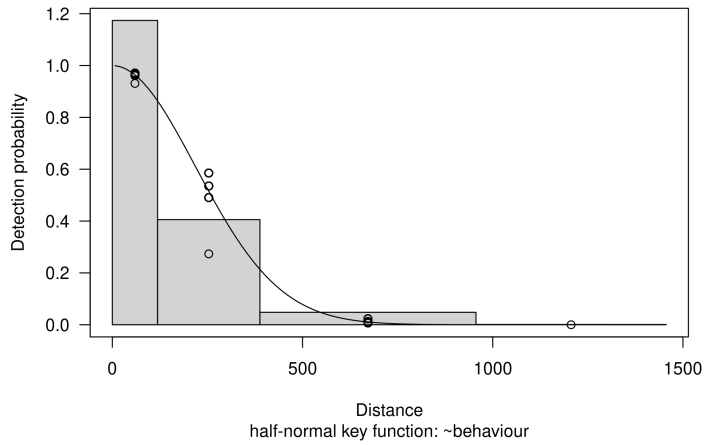
Toppet skallesluger. Estimated abundance 27781 (LCL:21150, UCL:3649)



Toppet skallesluger. Estimated abundance 27387 (LCL:20886, UCL:3591)



Toppet skallesluger. Estimated abundance 26421 (LCL:19952, UCL:3498)



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Detection function fitting *Alkefugle*

Lars Dalby

Sun Jan 29 20:44:03 2023

Settings

Settings used while compiling this document: Species = Alkefugle, surveyid = 1, 34, 35, 36, 37, 38, 39, 40, 42, 43, 44, 45, 46, 67.

Campaign overview

Campaign info

Number of birds	Average flock size	Max flock size	Total transect length	Survey area
3170	2	40	7899.721	37075.76

Observer statistics

Observer	Number of observations	Number of birds	Percent of all birds observed
OBS1	466	922	29.09
OBS2	289	782	24.67
OBS3	253	663	20.91
OBS4	250	443	13.97
OBS5	115	312	9.84
OBS6	15	38	1.20
OBS7	3	10	0.32

Modelling input overview

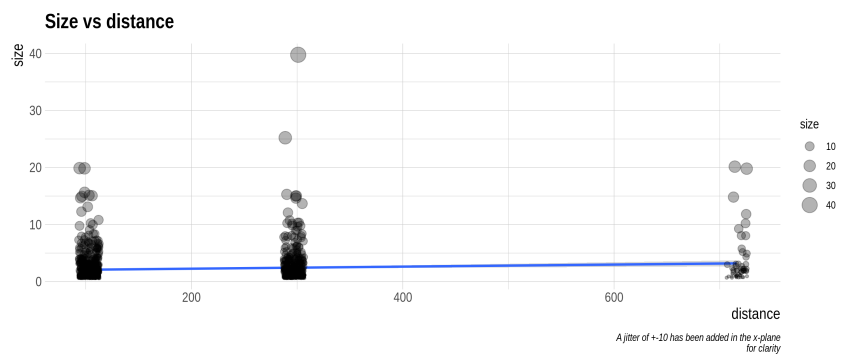
Campaign info

Number of birds	Average flock size	Max flock size	Total transect length	Survey area
3122	2	40	7899.721	37075.76

Observer statistics

Observer	Number of observations	Number of birds	Percent of all birds observed
OBS1	466	922	29.53
OBS2	289	782	25.05
OBS3	253	663	21.24
OBS4	250	443	14.19
OBS5	115	312	9.99

Exploration



Fit detection function

AIC table

Model selection table

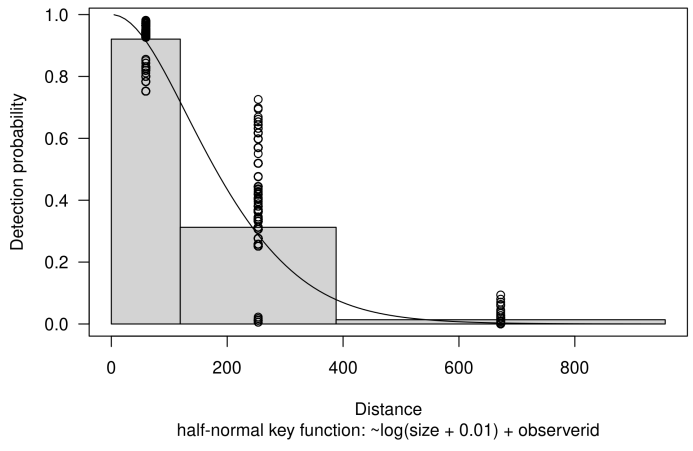
Model	Key function	Formula	χ^2 p-value	\hat{P}_a	$se(\hat{P}_a)$	ΔAIC
10	Half-normal	$\sim \log(\text{size} + 0.01) + \text{observerid}$	NA	0.211	0.005	0.000
11	Half-normal	$\sim \log(\text{size} + 0.01) + \text{observerid} + \text{seastate}$	NA	0.210	0.005	3.555
3	Hazard-rate	$\sim \text{observerid} + \text{seastate}$	NA	0.225	0.007	8.007
6	Half-normal	$\sim \text{observerid}$	NA	0.212	0.005	8.682
8	Half-normal	$\sim \text{observerid} + \text{seastate}$	NA	0.211	0.005	10.691
2	Hazard-rate	$\sim \log(\text{size} + 0.01)$	NA	0.229	0.006	94.062

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- Fit detection function
- AIC table
- Plots

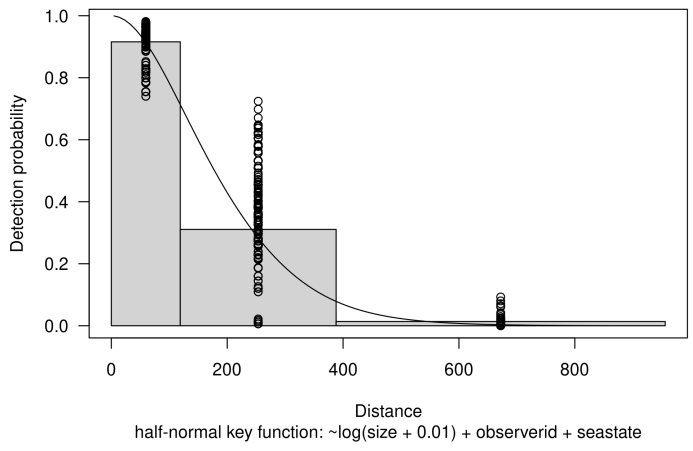
Model	Key function	Formula	χ^2 p-value	\hat{P}_a	se(\hat{P}_a)	Δ AIC
4	Hazard-rate	$\sim \log(\text{size} + 0.01) + \text{seastate}$	NA	0.229	0.006	99.044
1	Hazard-rate	$\sim \text{seastate}$	NA	0.228	0.006	102.623
9	Half-normal	$\sim \log(\text{size} + 0.01) + \text{seastate}$	NA	0.226	0.005	103.681
7	Half-normal	$\sim \log(\text{size} + 0.01)$	NA	0.228	0.005	104.812
5	Half-normal	$\sim \text{seastate}$	NA	0.227	0.005	111.420

Plots

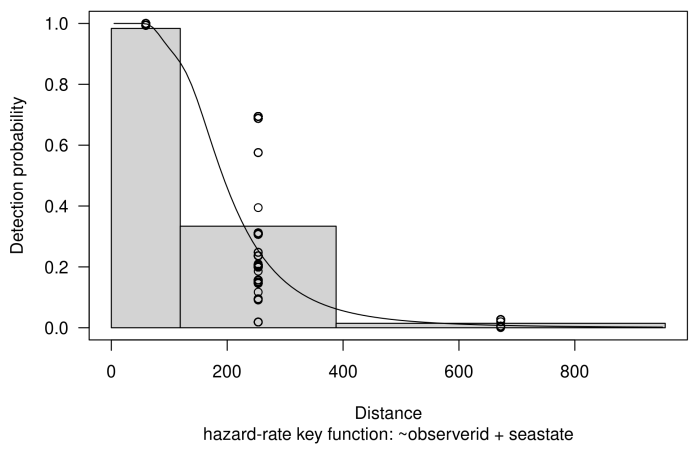
Alkefugle. Estimated abundance 28043 (LCL:20863, UCL:37693)



Alkefugle. Estimated abundance 28240 (LCL:21145, UCL:37717)



Alkefugle. Estimated abundance 28060 (LCL:20919, UCL:37639)



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Campaign overview

Modelling input overview

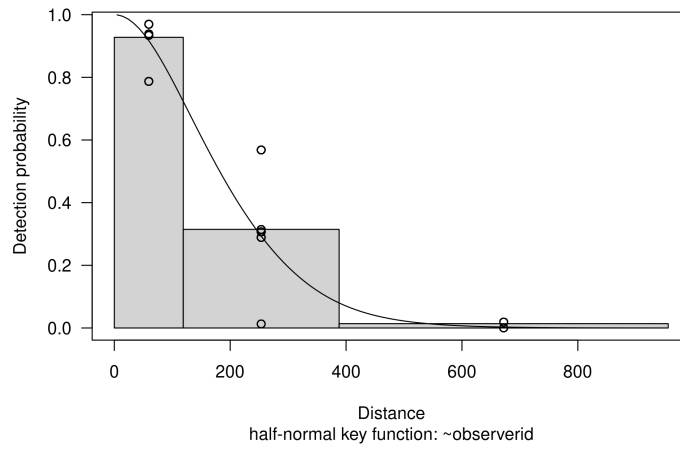
Exploration

Fit detection function

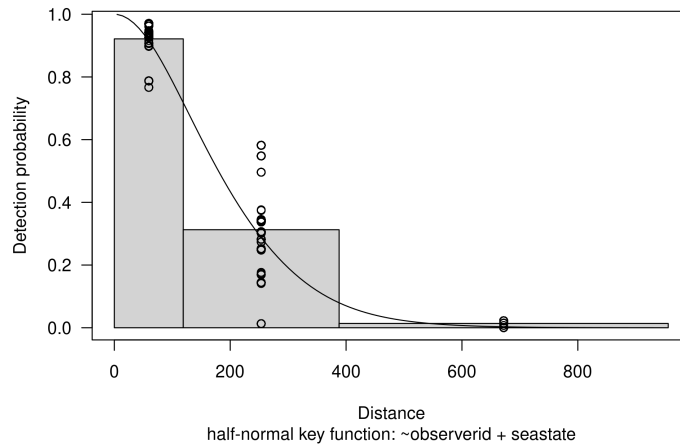
AIC table

Plots

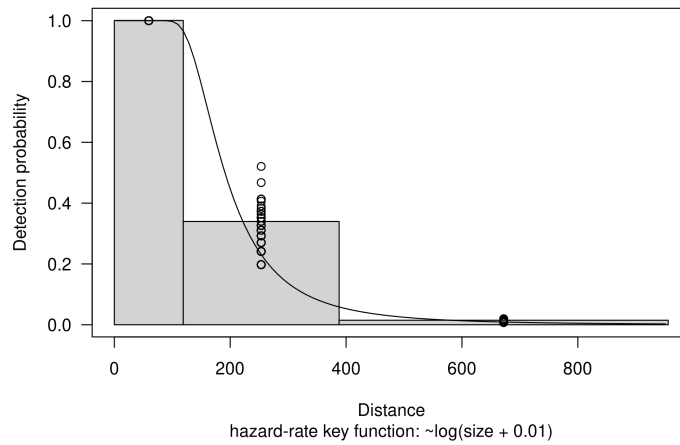
Alkefugle. Estimated abundance 29758 (LCL:22133, UCL:40010)



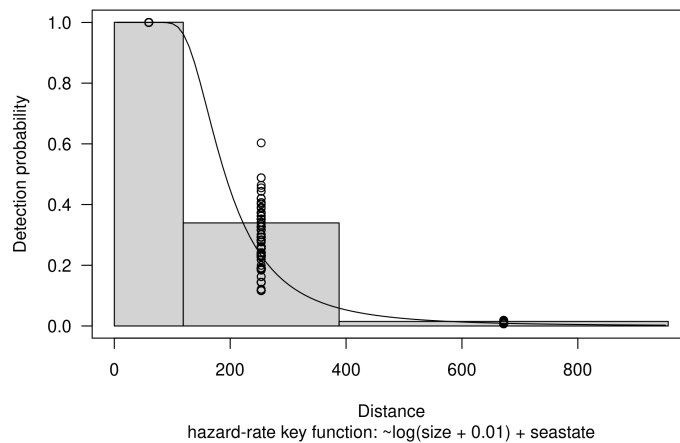
Alkefugle. Estimated abundance 29855 (LCL:22366, UCL:39852)



Alkefugle. Estimated abundance 25946 (LCL:19464, UCL:34586)



Alkefugle. Estimated abundance 25945 (LCL:19550, UCL:34432)



Settings

Campaign overview

Modelling input overview

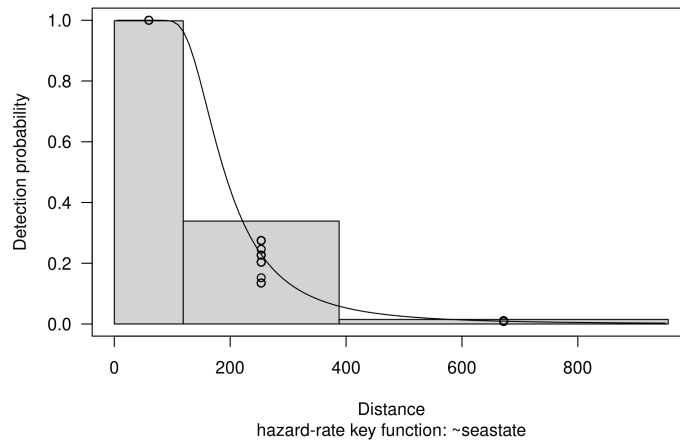
Exploration

Fit detection function

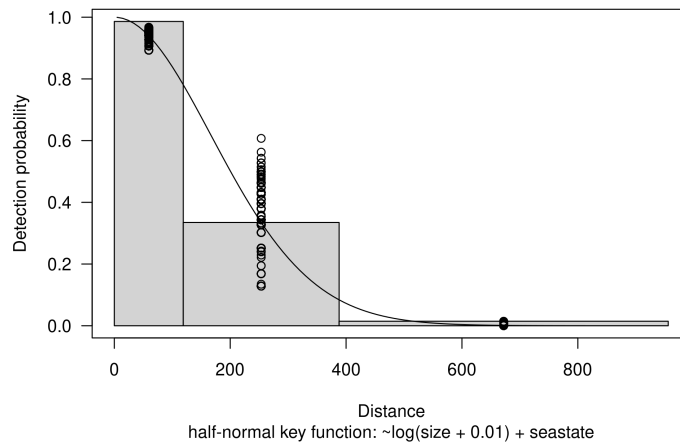
AIC table

Plots

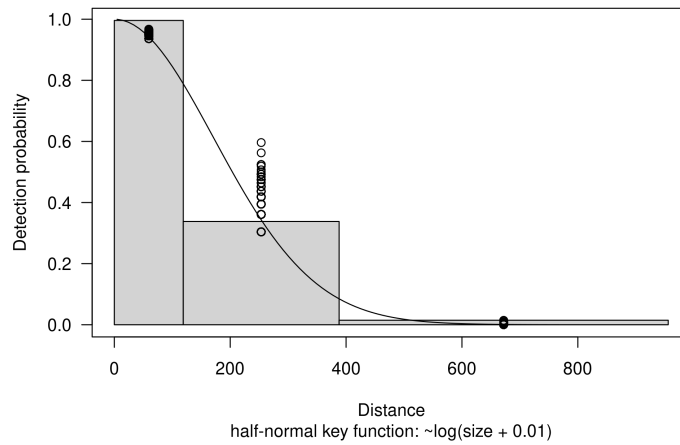
Alkefugle. Estimated abundance 27559 (LCL:20798, UCL:36519)



Alkefugle. Estimated abundance 25995 (LCL:19719, UCL:34269)



Alkefugle. Estimated abundance 25750 (LCL:19385, UCL:34206)



Alkefugle. Estimated abundance 27520 (LCL:20883, UCL:36266)

