

***Kennedy II - Rainbow Trout Mortality at 30 days
part of the raw data***

Obs	species	hardness	dose	tub	eggs	dead	eggs30	dead30	nweight30	weight30
1	RB	6	0	1	30	0	30	1	29	835
2	RB	50	41	1	30	1	29	0	29	877
3	RB	100	82	1	30	0	30	1	29	888
4	RB	250	267	1	30	0	30	0	30	846
5	RB	6	0	1	30	1	29	0	29	910
6	RB	50	41	1	30	0	30	0	30	803
7	RB	100	82	1	30	0	30	0	30	826
8	RB	250	267	1	30	0	30	0	30	823
9	RB	6	0	1	30	0	30	0	30	847
10	RB	50	41	1	30	0	30	0	30	856
11	RB	100	82	1	30	0	30	1	29	892
12	RB	250	267	1	30	0	30	0	30	841
13	RB	6	0	1	30	0	30	0	30	821
14	RB	50	41	1	30	0	30	0	30	823
15	RB	100	82	1	30	1	29	0	29	821
16	RB	250	267	1	30	1	29	1	28	877
17	RB	6	0	1	30	0	30	0	30	857
18	RB	50	41	1	30	0	30	1	29	855
19	RB	100	82	1	30	1	29	0	29	825
20	RB	250	267	1	30	1	29	0	29	900

***Kennedy II - Rainbow Trout Mortality at 30 days
Summary of number of replicates in the study***

species RB

		tub		
		1	2	3
		N	N	N
hardness	dose			
6	0	5	5	5
	125	5	5	5
	250	5	5	5
	500	5	5	5
	1000	1	4	1
50	41	5	5	5
	125	5	5	5
	250	5	5	5
	500	5	5	5
	1000	5	5	5
100	82	5	5	5
	125	5	5	5
	250	5	5	5
	500	5	5	5
	1000	5	5	5
	2000	2	.	1

(Continued)

Kennedy II - Rainbow Trout Mortality at 30 days
Summary of number of replicates in the study

species RB

		tub		
		1	2	3
		N	N	N
hardness	dose			
250	267	5	5	5
	500	5	5	5
	750	5	5	5
	1000	5	5	5
	1500	5	5	5
	2000	4	4	5
All		102	103	102

***Kennedy II - Rainbow Trout Mortality at 30 days
Summary of number of replicates in the study***

species RB

		eggs	dead	eggs30	dead30
		Sum	Sum	Sum	Sum
hardness	dose				
6	0	450	2	448	6
	125	450	47	403	20
	250	450	55	395	34
	500	450	161	289	33
	1000	180	143	37	21
50	41	450	4	446	6
	125	450	9	441	12
	250	450	44	406	23
	500	450	60	390	33
	1000	450	252	198	51
100	82	450	5	445	8
	125	450	7	443	9
	250	450	19	431	16
	500	450	48	402	21
	1000	450	103	347	33
	2000	90	66	24	8

(Continued)

***Kennedy II - Rainbow Trout Mortality at 30 days
Summary of number of replicates in the study***

species RB

		eggs	dead	eggs30	dead30
		Sum	Sum	Sum	Sum
hardness	dose				
250	267	450	4	446	8
	500	450	27	423	9
	750	450	63	387	13
	1000	450	81	369	18
	1500	450	190	260	29
	2000	390	286	104	36

Kennedy II - Rainbow Trout Mortality at 30 days
Experimental conditions where mortality cells were blank - ignored

species	hardness	dose	tub	eggs	dead	eggs30	dead30	nweight30	weight30	p_dead30
RB	6	1000	1	30	26	4	.	.	.	.
RB	6	1000	1	30	27	3	.	.	.	.
RB	6	1000	1	30	26	4	.	.	.	.
RB	6	1000	1	30	26	4	.	.	.	.
RB	6	1000	2	30	27	3	.	.	.	.
RB	6	1000	3	30	29	1	.	.	.	.
RB	6	1000	3	30	30	0	.	.	.	.
RB	6	1000	3	30	21	9	.	.	.	.
RB	6	1000	3	30	27	3	.	.	.	.
RB	6	2000	1	30	30	0	.	.	.	.
RB	50	2000	1	30	29	1	.	.	.	.
RB	6	2000	1	30	30	0	.	.	.	.
RB	50	2000	1	30	30	0	.	.	.	.
RB	100	2000	1	30	27	3	.	.	.	.
RB	6	2000	1	30	29	1	.	.	.	.
RB	50	2000	1	30	30	0	.	.	.	.
RB	250	2000	1	30	30	0	.	.	.	.
RB	6	2000	1	30	30	0	.	.	.	.
RB	50	2000	1	30	30	0	.	.	.	.
RB	100	2000	1	30	29	1	.	.	.	.
RB	6	2000	1	30	30	0	.	.	.	.
RB	50	2000	1	30	30	0	.	.	.	.
RB	100	2000	1	30	26	4	.	.	.	.
RB	6	2000	2	30	30	0	.	.	.	.
RB	50	2000	2	30	28	2	.	.	.	.

***Kennedy II - Rainbow Trout Mortality at 30 days
Experimental conditions where mortality cells were blank - ignored***

species	hardness	dose	tub	eggs	dead	eggs30	dead30	nweight30	weight30	p_dead30
RB	100	2000	2	30	30	0	.	.	.	.
RB	6	2000	2	30	30	0	.	.	.	.
RB	50	2000	2	30	30	0	.	.	.	.
RB	100	2000	2	30	29	1	.	.	.	.
RB	6	2000	2	30	30	0	.	.	.	.
RB	50	2000	2	30	29	1	.	.	.	.
RB	100	2000	2	30	30	0	.	.	.	.
RB	250	2000	2	30	26	4	.	.	.	.
RB	6	2000	2	30	30	0	.	.	.	.
RB	50	2000	2	30	30	0	.	.	.	.
RB	100	2000	2	30	28	2	.	.	.	.
RB	6	2000	2	30	30	0	.	.	.	.
RB	50	2000	2	30	30	0	.	.	.	.
RB	100	2000	2	30	26	4	.	.	.	.
RB	6	2000	3	30	30	0	.	.	.	.
RB	50	2000	3	30	30	0	.	.	.	.
RB	6	2000	3	30	30	0	.	.	.	.
RB	50	2000	3	30	28	2	.	.	.	.
RB	100	2000	3	30	27	3	.	.	.	.
RB	6	2000	3	30	29	1	.	.	.	.
RB	50	2000	3	30	30	0	.	.	.	.
RB	100	2000	3	30	28	2	.	.	.	.
RB	6	2000	3	30	30	0	.	.	.	.
RB	50	2000	3	30	30	0	.	.	.	.
RB	100	2000	3	30	28	2	.	.	.	.

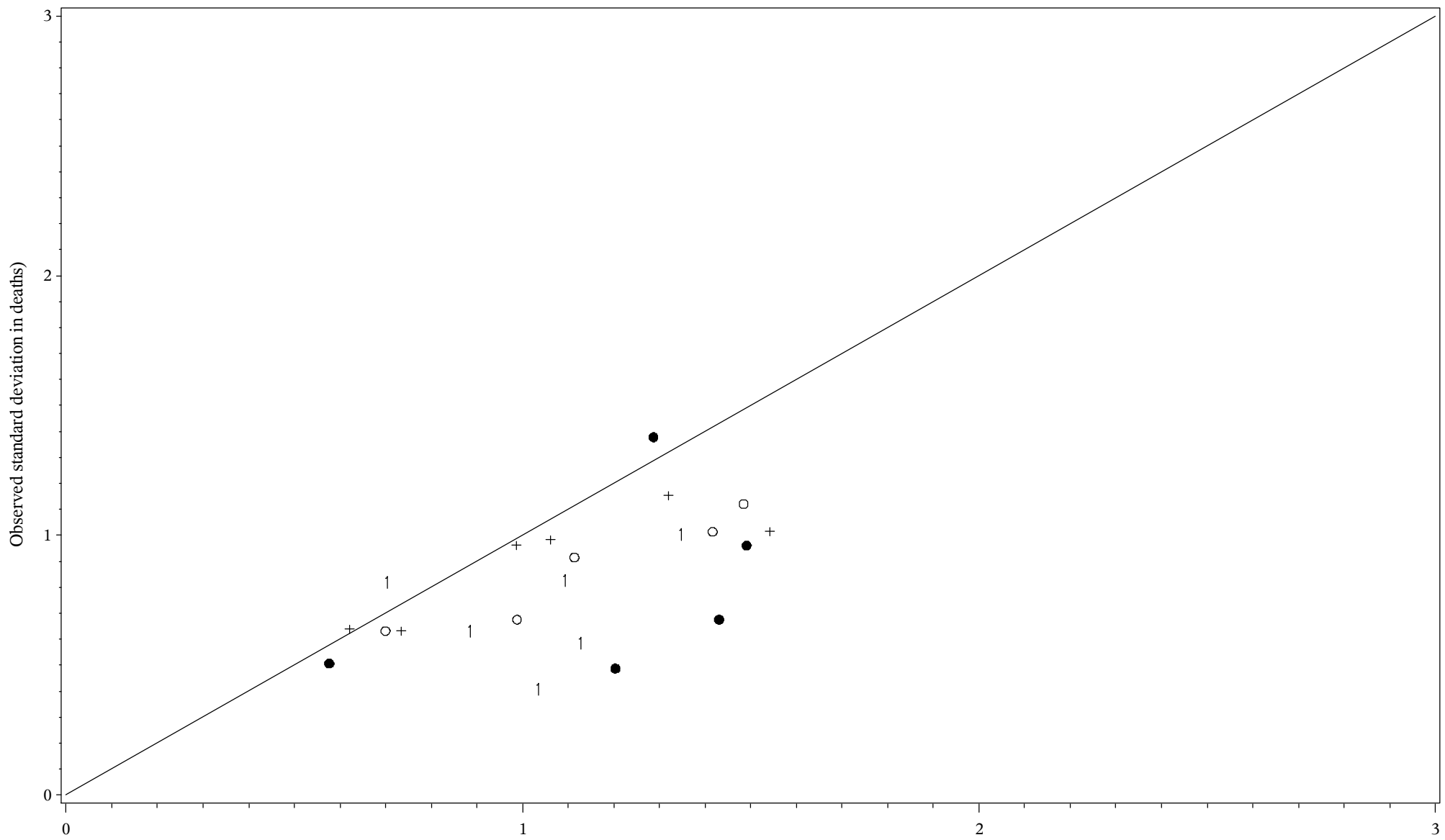
Kennedy II - Rainbow Trout Mortality at 30 days
Experimental conditions where mortality cells were blank - ingnored

species	hardness	dose	tub	eggs	dead	eggs30	dead30	nweight30	weight30	p_dead30
RB	6	2000	3	30	30	0	.	.	.	.
RB	50	2000	3	30	30	0	.	.	.	.
RB	100	2000	3	30	29	1	.	.	.	.

Kennedy II - Rainbow Trout Mortality at 30 days

Check for overdispersion at 30 day mortality

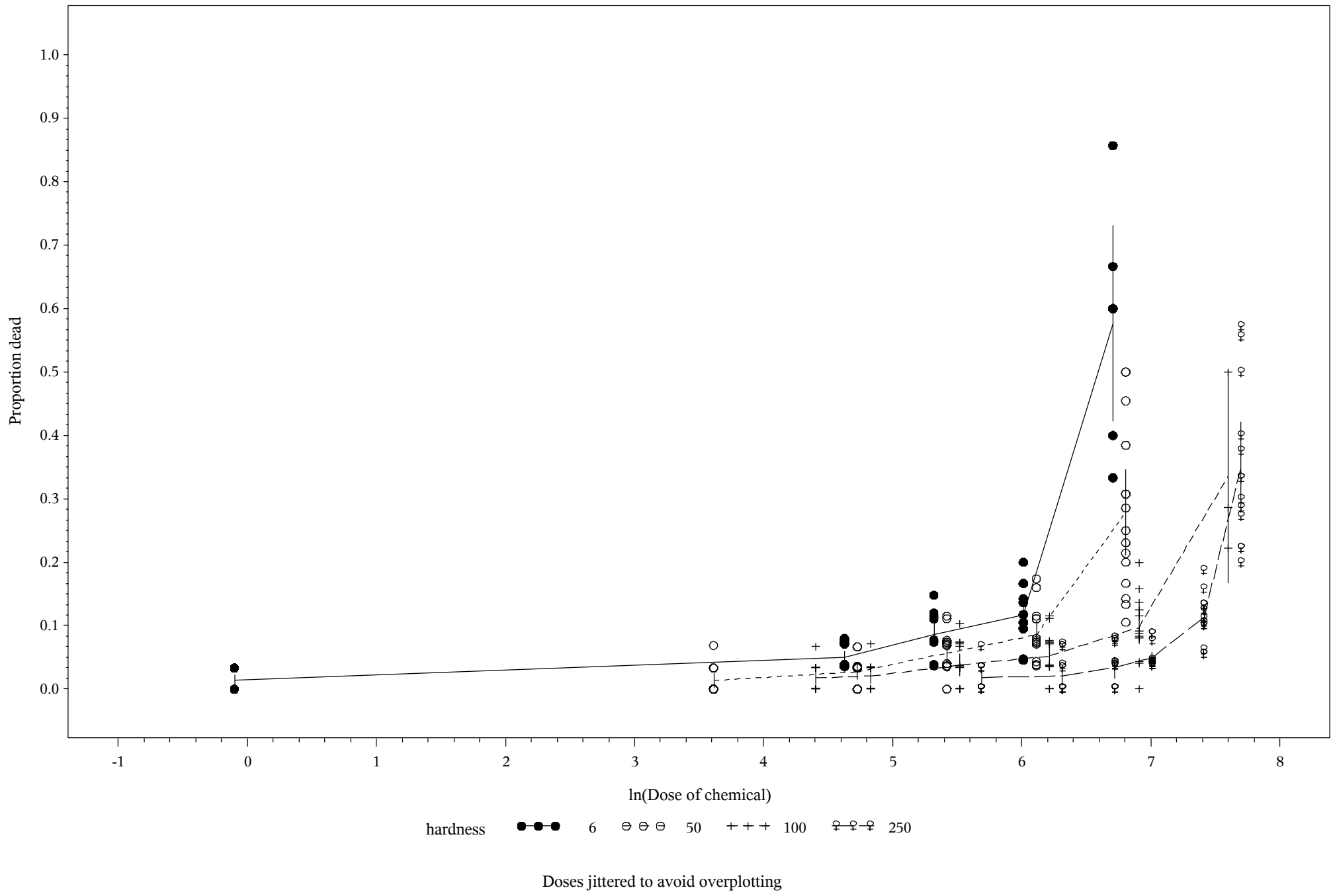
species=RB



hardness ● ● ● 6 ○ ○ ○ 50 + + + 100 | | | 250

Line x=y reflect obs and actual binomial variation equal

Kennedy II - Rainbow Trout Mortality at 30 days
Preliminary plot of the conditional mortality curve by dose at 30 days
species=RB



The LOGISTIC Procedure

species=RB

Model Information	
Data Set	WORK.ALLDATA
Response Variable (Events)	dead30
Response Variable (Trials)	eggs30
Model	binary probit
Optimization Technique	Fisher's scoring

Number of Observations Read	507
Number of Observations Used	307
Sum of Frequencies Read	92821
Sum of Frequencies Used	32821

Response Profile		
Ordered Value	Binary Outcome	Total Frequency
1	Event	5759
2	Nonevent	27062

Note: 200 observations were deleted due to missing values for the response or explanatory variables.

Kennedy II - Rainbow Trout Mortality at 30 days
Probit: hardness | log_dose for 30 day conditional survival

The LOGISTIC Procedure

species=RB

Class Level Information				
Class	Value	Design Variables		
hardness	6	1	0	0
	50	0	1	0
	100	0	0	1
	250	-1	-1	-1

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics			
Criterion	Intercept Only	Intercept and Covariates	With Constant
AIC	30489.407	26679.541	3003.250
SC	30497.806	26746.731	3070.441
-2 Log L	30487.407	26663.541	2987.250

Kennedy II - Rainbow Trout Mortality at 30 days
Probit: hardness | log_dose for 30 day conditional survival

The LOGISTIC Procedure

species=RB

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	3823.8665	7	<.0001
Score	2432.8438	7	<.0001
Wald	2155.5654	7	<.0001

Type 3 Analysis of Effects			
Effect	DF	Wald Chi-Square	Pr > ChiSq
hardness	3	252.0880	<.0001
log_dose	1	1880.1184	<.0001
log_dose*hardness	3	242.6176	<.0001

Analysis of Maximum Likelihood Estimates						
Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept		1	-7.7693	0.1605	2343.3596	<.0001
hardness	6	1	-0.2137	0.2632	0.6591	0.4169
hardness	50	1	2.5144	0.2462	104.2867	<.0001
hardness	100	1	2.3210	0.2589	80.3614	<.0001
log_dose		1	0.9992	0.0230	1880.1184	<.0001
log_dose*hardness	6	1	0.1374	0.0398	11.9350	0.0006

Kennedy II - Rainbow Trout Mortality at 30 days
Probit: hardness | log_dose for 30 day conditional survival

The LOGISTIC Procedure

species=RB

Analysis of Maximum Likelihood Estimates						
Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
log_dose*hardness	50	1	-0.3268	0.0360	82.1990	<.0001
log_dose*hardness	100	1	-0.3726	0.0371	100.6622	<.0001

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	71.5	Somers' D	0.522
Percent Discordant	19.4	Gamma	0.574
Percent Tied	9.1	Tau-a	0.151
Pairs	155850058	c	0.761

***Kennedy II - Rainbow Trout Mortality at 30 days
Probit: hardness log_dose for 30 day conditional survival***

The LOGISTIC Procedure

species=RB

Model Information	
Data Set	WORK.ALLDATA
Response Variable (Events)	dead30
Response Variable (Trials)	eggs30
Model	binary probit
Optimization Technique	Fisher's scoring

Number of Observations Read	507
Number of Observations Used	307
Sum of Frequencies Read	92821
Sum of Frequencies Used	32821

Response Profile		
Ordered Value	Binary Outcome	Total Frequency
1	Event	5759
2	Nonevent	27062

Note: 200 observations were deleted due to missing values for the response or explanatory variables.

Kennedy II - Rainbow Trout Mortality at 30 days
Probit: hardness log_dose for 30 day conditional survival

The LOGISTIC Procedure

species=RB

Class Level Information				
Class	Value	Design Variables		
hardness	6	1	0	0
	50	0	1	0
	100	0	0	1
	250	-1	-1	-1

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics			
Criterion	Intercept Only	Intercept and Covariates	With Constant
AIC	30489.407	26952.066	3275.776
SC	30497.806	26994.060	3317.770
-2 Log L	30487.407	26942.066	3265.776

Kennedy II - Rainbow Trout Mortality at 30 days
Probit: hardness log_dose for 30 day conditional survival

The LOGISTIC Procedure

species=RB

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	3545.3409	4	<.0001
Score	2196.8201	4	<.0001
Wald	1887.9699	4	<.0001

Type 3 Analysis of Effects			
Effect	DF	Wald Chi-Square	Pr > ChiSq
hardness	3	1526.4196	<.0001
log_dose	1	1646.7362	<.0001

Analysis of Maximum Likelihood Estimates						
Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept		1	-7.6261	0.1678	2065.9431	<.0001
hardness	6	1	0.6088	0.0192	1003.9159	<.0001
hardness	50	1	0.2547	0.0161	250.3546	<.0001
hardness	100	1	-0.3353	0.0189	315.6456	<.0001
log_dose		1	0.9860	0.0243	1646.7362	<.0001

Kennedy II - Rainbow Trout Mortality at 30 days
Probit: hardness log_dose for 30 day conditional survival

The LOGISTIC Procedure

species=RB

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	70.8	Somers' D	0.507
Percent Discordant	20.1	Gamma	0.558
Percent Tied	9.1	Tau-a	0.147
Pairs	155850058	c	0.754

***Kennedy II - Rainbow Trout Mortality at 30 days
 Probit: log_dose for 30 day conditional survival***

The LOGISTIC Procedure

species=RB

Model Information	
Data Set	WORK.ALLDATA
Response Variable (Events)	dead30
Response Variable (Trials)	eggs30
Model	binary probit
Optimization Technique	Fisher's scoring

Number of Observations Read	507
Number of Observations Used	307
Sum of Frequencies Read	92821
Sum of Frequencies Used	32821

Response Profile		
Ordered Value	Binary Outcome	Total Frequency
1	Event	5759
2	Nonevent	27062

Note: 200 observations were deleted due to missing values for the response or explanatory variables.

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Kennedy II - Rainbow Trout Mortality at 30 days
Probit: log_dose for 30 day conditional survival

The LOGISTIC Procedure

species=RB

Model Fit Statistics			
Criterion	Intercept Only	Intercept and Covariates	With Constant
AIC	30489.407	28797.503	5121.212
SC	30497.806	28814.300	5138.010
-2 Log L	30487.407	28793.503	5117.212

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	1693.9047	1	<.0001
Score	1188.4770	1	<.0001
Wald	1232.0027	1	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-4.2289	0.0956	1955.9197	<.0001
log_dose	1	0.4848	0.0138	1232.0027	<.0001

Kennedy II - Rainbow Trout Mortality at 30 days
Probit: log_dose for 30 day conditional survival

The LOGISTIC Procedure

species=RB

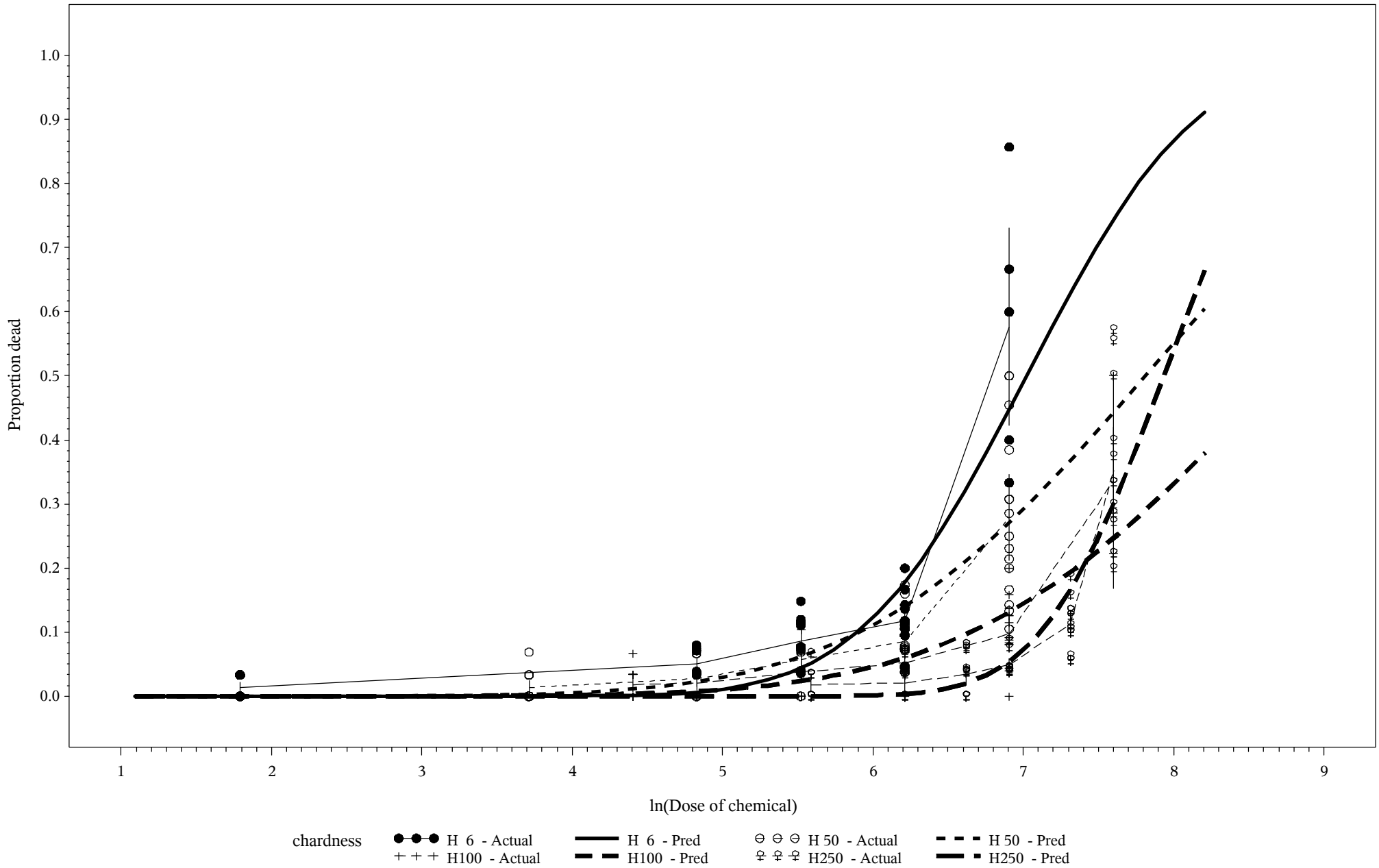
Association of Predicted Probabilities and Observed Responses			
Percent Concordant	53.7	Somers' D	0.307
Percent Discordant	23.0	Gamma	0.400
Percent Tied	23.2	Tau-a	0.089
Pairs	155850058	c	0.654

***Kennedy II - Rainbow Trout Mortality at 30 days
Comparison of models using AICc - smaller is better***

species=RB

Obs	species	model	nparms	LogL	AICc	delta_aicc	aicc_weight
1	RB	H*D	8	-1493.63	3003.25	0.00	1.00
2	RB	H+D	5	-1632.89	3275.78	272.53	0.00
3	RB	D	2	-2558.61	5121.21	2117.96	0.00

Kennedy II - Rainbow Trout Mortality at 30 days
 Fitted lines from the H*D model - conditional 30 day mortality
 species=RB

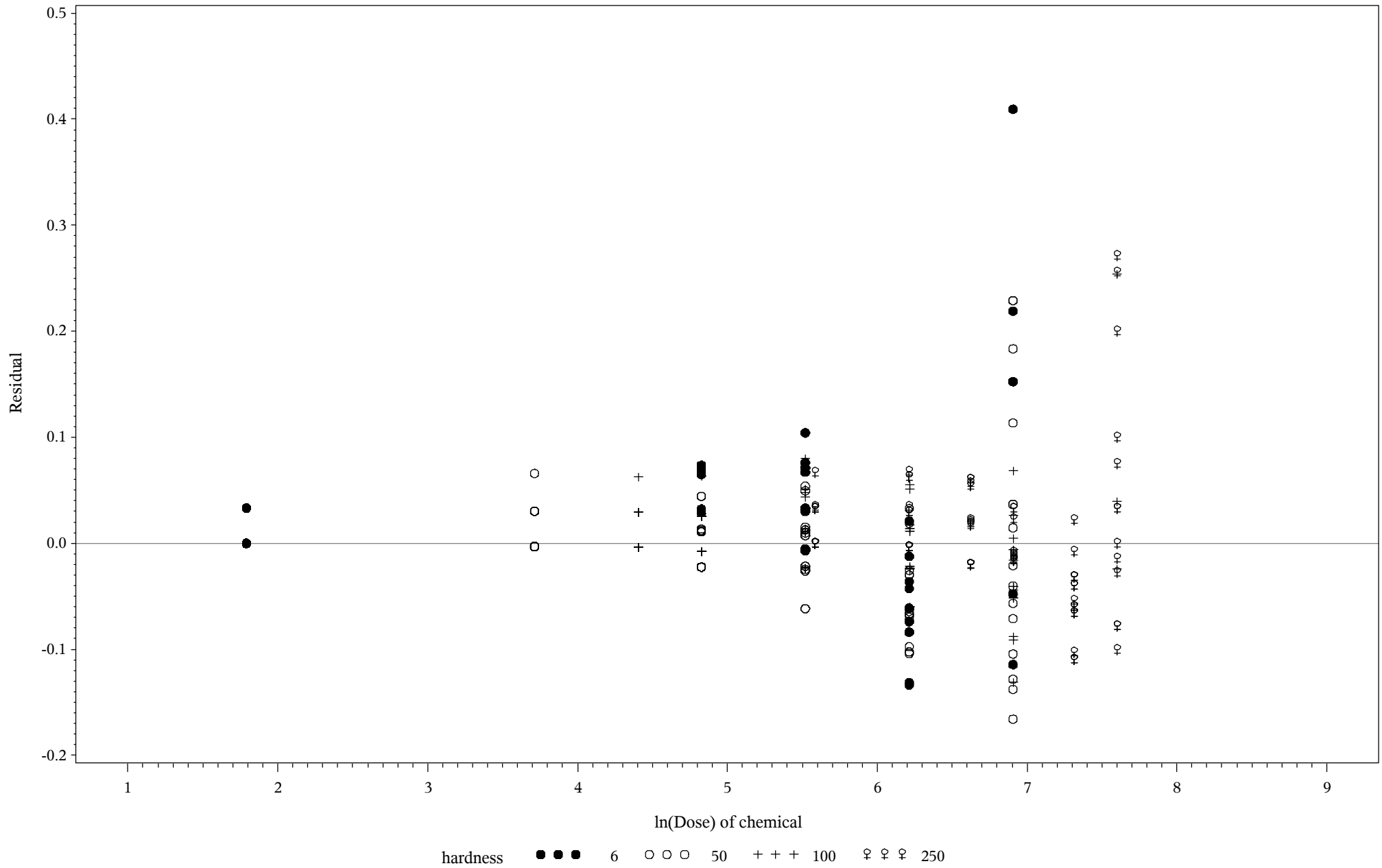


Kennedy II - Rainbow Trout Mortality at 30 days
Fitted lines from the H*D model - conditional 30 day mortality

Obs	species	hardness	dose	tub	eggs	dead	eggs30	dead30	nweight30	weight30	p_dead	p_dead30	log_dose
1	RB	6	0	1	.	.	30	1	29	835	0.000000	0.033333	1.79176
2	RB	6	0	1	.	.	29	0	29	910	0.033333	0.000000	1.79176
3	RB	6	0	1	.	.	30	0	30	847	0.000000	0.000000	1.79176
4	RB	6	0	1	.	.	30	0	30	821	0.000000	0.000000	1.79176
5	RB	6	0	1	.	.	30	0	30	857	0.000000	0.000000	1.79176
6	RB	6	0	2	.	.	30	1	29	916	0.000000	0.033333	1.79176
7	RB	6	0	2	.	.	30	0	30	833	0.000000	0.000000	1.79176
8	RB	6	0	2	.	.	30	0	30	857	0.000000	0.000000	1.79176
9	RB	6	0	2	.	.	30	1	29	813	0.000000	0.033333	1.79176
10	RB	6	0	2	.	.	30	1	29	888	0.000000	0.033333	1.79176

Obs	type	fit_prob	lowerci	upperci	model
1	Actual	1.3699E-9	9.8176E-11	1.6123E-8	H*D
2	Actual	1.3699E-9	9.8176E-11	1.6123E-8	H*D
3	Actual	1.3699E-9	9.8176E-11	1.6123E-8	H*D
4	Actual	1.3699E-9	9.8176E-11	1.6123E-8	H*D
5	Actual	1.3699E-9	9.8176E-11	1.6123E-8	H*D
6	Actual	1.3699E-9	9.8176E-11	1.6123E-8	H*D
7	Actual	1.3699E-9	9.8176E-11	1.6123E-8	H*D
8	Actual	1.3699E-9	9.8176E-11	1.6123E-8	H*D
9	Actual	1.3699E-9	9.8176E-11	1.6123E-8	H*D
10	Actual	1.3699E-9	9.8176E-11	1.6123E-8	H*D

Kennedy II - Rainbow Trout Mortality at 30 days
 residual plot from the H*D model - conditional 30 day survival
 species=RB



***Kennedy II - Rainbow Trout Mortality at 30 days
Estimated endpoints***

species RB, endpoint 0.1

	D		H*D		H+D	
	Est log dose	SE log dose	Est log dose	SE log dose	Est log dose	SE log dose
hardness						
6	6.08	0.03	5.90	0.03	5.81	0.02
50	6.08	0.03	5.91	0.05	6.18	0.02
100	6.08	0.03	6.65	0.04	6.77	0.02
250	6.08	0.03	7.11	0.01	6.97	0.02

***Kennedy II - Rainbow Trout Mortality at 30 days
Estimated endpoints***

species RB, endpoint 0.2

	D		H*D		H+D	
	Est log dose	SE log dose	Est log dose	SE log dose	Est log dose	SE log dose
hardness						
6	6.99	0.02	6.28	0.02	6.26	0.02
50	6.99	0.02	6.56	0.03	6.62	0.02
100	6.99	0.02	7.35	0.04	7.22	0.02
250	6.99	0.02	7.39	0.01	7.41	0.01

***Kennedy II - Rainbow Trout Mortality at 30 days
Estimated endpoints***

species RB, endpoint 0.25

	D		H*D		H+D	
	Est log dose	SE log dose	Est log dose	SE log dose	Est log dose	SE log dose
hardness						
6	7.33	0.02	6.43	0.02	6.43	0.02
50	7.33	0.02	6.81	0.03	6.79	0.02
100	7.33	0.02	7.62	0.06	7.39	0.02
250	7.33	0.02	7.50	0.01	7.58	0.02

***Kennedy II - Rainbow Trout Mortality at 30 days
Estimated endpoints***

species RB, endpoint 0.5

	D		H*D		H+D	
	Est log dose	SE log dose	Est log dose	SE log dose	Est log dose	SE log dose
hardness						
6	8.21	0.00	7.02	0.03	7.12	0.02
50	8.21	0.00	7.81	0.07	7.48	0.02
100	8.21	0.00	8.21	0.00	8.07	0.03
250	8.21	0.00	7.94	0.02	8.21	0.00

***Kennedy II - Rainbow Trout Mortality at 30 days
Estimated endpoints***

species RB, endpoint 0.1

	D		H*D		H+D	
	Est dose	SE dose	Est dose	SE dose	Est dose	SE dose
hardness						
6	436.4	12.3	363.2	9.3	335.0	7.5
50	436.4	12.3	367.9	19.9	481.2	11.3
100	436.4	12.3	771.7	31.2	874.3	20.4
250	436.4	12.3	1224.7	15.9	1061.4	17.3

***Kennedy II - Rainbow Trout Mortality at 30 days
Estimated endpoints***

species RB, endpoint 0.2

	D		H*D		H+D	
	Est dose	SE dose	Est dose	SE dose	Est dose	SE dose
hardness						
6	1081.9	18.8	534.4	8.9	524.0	9.3
50	1081.9	18.8	707.7	20.1	751.5	14.0
100	1081.9	18.8	1559.0	68.5	1366.1	31.0
250	1081.9	18.8	1626.4	14.9	1660.2	23.6

***Kennedy II - Rainbow Trout Mortality at 30 days
Estimated endpoints***

species RB, endpoint 0.25

	D		H*D		H+D	
	Est dose	SE dose	Est dose	SE dose	Est dose	SE dose
hardness						
6	1528.8	32.1	619.3	9.6	621.3	10.9
50	1528.8	32.1	907.6	24.5	889.8	15.9
100	1528.8	32.1	2036.2	114.0	1618.1	38.4
250	1528.8	32.1	1813.7	17.4	1968.3	30.8

***Kennedy II - Rainbow Trout Mortality at 30 days
Estimated endpoints***

species RB, endpoint 0.5

	D		H*D		H+D	
	Est dose	SE dose	Est dose	SE dose	Est dose	SE dose
hardness						
6	3670.0	0.0	1122.8	31.6	1232.9	29.8
50	3670.0	0.0	2477.5	170.1	1765.7	43.7
100	3670.0	0.0	3670.0	0.0	3212.3	107.7
250	3670.0	0.0	2797.8	60.2	3670.0	0.0

Kennedy II - Rainbow Trout Mortality at 30 days
Summary of model averaged estimates of LCxx at various hardness levels

endpoint=0.1 species=RB hardness=6

Obs	endpoint	species	hardness	model	estimate	se	AICc	delta aicc	aicc weight	ma estimate	ma standard error	lower ci	upper ci
1	0.1	RB	6	H*D	5.90	0.03	3003.3	0.0	1.00	.	.	.	.
2	0.1	RB	6	H+D	5.81	0.02	3275.8	272.5	0.00	.	.	.	.
3	0.1	RB	6	D	6.08	0.03	5121.2	2118.0	0.00	.	.	.	.
4	0.1	RB	6	99-Model Averaged	.	.	.	.	.	5.90	0.03	5.84	5.95
5	0.1	RB	6	99-Model Averaged on antilog	.	.	.	.	.	363.22	9.34	345.38	381.99

endpoint=0.1 species=RB hardness=50

Obs	endpoint	species	hardness	model	estimate	se	AICc	delta aicc	aicc weight	ma estimate	ma standard error	lower ci	upper ci
6	0.1	RB	50	H*D	5.91	0.05	3003.3	0.0	1.00	.	.	.	.
7	0.1	RB	50	H+D	6.18	0.02	3275.8	272.5	0.00	.	.	.	.
8	0.1	RB	50	D	6.08	0.03	5121.2	2118.0	0.00	.	.	.	.
9	0.1	RB	50	99-Model Averaged	.	.	.	.	.	5.91	0.05	5.80	6.01
10	0.1	RB	50	99-Model Averaged on antilog	.	.	.	.	.	367.90	19.91	330.88	409.06

Kennedy II - Rainbow Trout Mortality at 30 days
Summary of model averaged estimates of LCxx at various hardness levels

endpoint=0.1 species=RB hardness=100

Obs	endpoint	species	hardness	model	estimate	se	AICc	delta aicc	aicc weight	ma estimate	ma standard error	lower ci	upper ci
11	0.1	RB	100	H*D	6.65	0.04	3003.3	0.0	1.00	.	.	.	.
12	0.1	RB	100	H+D	6.77	0.02	3275.8	272.5	0.00	.	.	.	.
13	0.1	RB	100	D	6.08	0.03	5121.2	2118.0	0.00	.	.	.	.
14	0.1	RB	100	99-Model Averaged	.	.	.	.	.	6.65	0.04	6.57	6.73
15	0.1	RB	100	99-Model Averaged on antilog	.	.	.	.	.	771.66	31.20	712.86	835.31

endpoint=0.1 species=RB hardness=250

Obs	endpoint	species	hardness	model	estimate	se	AICc	delta aicc	aicc weight	ma estimate	ma standard error	lower ci	upper ci
16	0.1	RB	250	H*D	7.11	0.01	3003.3	0.0	1.00	.	.	.	.
17	0.1	RB	250	H+D	6.97	0.02	3275.8	272.5	0.00	.	.	.	.
18	0.1	RB	250	D	6.08	0.03	5121.2	2118.0	0.00	.	.	.	.
19	0.1	RB	250	99-Model Averaged	.	.	.	.	.	7.11	0.01	7.08	7.14
20	0.1	RB	250	99-Model Averaged on antilog	.	.	.	.	.	1224.67	15.92	1193.85	1256.28

Kennedy II - Rainbow Trout Mortality at 30 days
Summary of model averaged estimates of LCxx at various hardness levels

endpoint=0.2 species=RB hardness=6

Obs	endpoint	species	hardness	model	estimate	se	AICc	delta aicc	aicc weight	ma estimate	ma standard error	lower ci	upper ci
21	0.2	RB	6	H*D	6.28	0.02	3003.3	0.0	1.00	.	.	.	.
22	0.2	RB	6	H+D	6.26	0.02	3275.8	272.5	0.00	.	.	.	.
23	0.2	RB	6	D	6.99	0.02	5121.2	2118.0	0.00	.	.	.	.
24	0.2	RB	6	99-Model Averaged	.	.	.	.	.	6.28	0.02	6.25	6.31
25	0.2	RB	6	99-Model Averaged on antilog	.	.	.	.	.	534.41	8.90	517.25	552.13

endpoint=0.2 species=RB hardness=50

Obs	endpoint	species	hardness	model	estimate	se	AICc	delta aicc	aicc weight	ma estimate	ma standard error	lower ci	upper ci
26	0.2	RB	50	H*D	6.56	0.03	3003.3	0.0	1.00	.	.	.	.
27	0.2	RB	50	H+D	6.62	0.02	3275.8	272.5	0.00	.	.	.	.
28	0.2	RB	50	D	6.99	0.02	5121.2	2118.0	0.00	.	.	.	.
29	0.2	RB	50	99-Model Averaged	.	.	.	.	.	6.56	0.03	6.51	6.62
30	0.2	RB	50	99-Model Averaged on antilog	.	.	.	.	.	707.68	20.09	669.38	748.17

Kennedy II - Rainbow Trout Mortality at 30 days
Summary of model averaged estimates of LCxx at various hardness levels

endpoint=0.2 species=RB hardness=100

Obs	endpoint	species	hardness	model	estimate	se	AICc	delta aicc	aicc weight	ma estimate	ma standard error	lower ci	upper ci
31	0.2	RB	100	H*D	7.35	0.04	3003.3	0.0	1.00	.	.	.	.
32	0.2	RB	100	H+D	7.22	0.02	3275.8	272.5	0.00	.	.	.	.
33	0.2	RB	100	D	6.99	0.02	5121.2	2118.0	0.00	.	.	.	.
34	0.2	RB	100	99-Model Averaged	.	.	.	.	.	7.35	0.04	7.27	7.44
35	0.2	RB	100	99-Model Averaged on antilog	.	.	.	.	.	1559.02	68.47	1430.44	1699.17

endpoint=0.2 species=RB hardness=250

Obs	endpoint	species	hardness	model	estimate	se	AICc	delta aicc	aicc weight	ma estimate	ma standard error	lower ci	upper ci
36	0.2	RB	250	H*D	7.39	0.01	3003.3	0.0	1.00	.	.	.	.
37	0.2	RB	250	H+D	7.41	0.01	3275.8	272.5	0.00	.	.	.	.
38	0.2	RB	250	D	6.99	0.02	5121.2	2118.0	0.00	.	.	.	.
39	0.2	RB	250	99-Model Averaged	.	.	.	.	.	7.39	0.01	7.38	7.41
40	0.2	RB	250	99-Model Averaged on antilog	.	.	.	.	.	1626.40	14.94	1597.38	1655.95

Kennedy II - Rainbow Trout Mortality at 30 days
Summary of model averaged estimates of LCxx at various hardness levels

endpoint=0.25 species=RB hardness=6

Obs	endpoint	species	hardness	model	estimate	se	AICc	delta aicc	aicc weight	ma estimate	ma standard error	lower ci	upper ci
41	0.25	RB	6	H*D	6.43	0.02	3003.3	0.0	1.00	.	.	.	.
42	0.25	RB	6	H+D	6.43	0.02	3275.8	272.5	0.00	.	.	.	.
43	0.25	RB	6	D	7.33	0.02	5121.2	2118.0	0.00	.	.	.	.
44	0.25	RB	6	99-Model Averaged	.	.	.	.	.	6.43	0.02	6.40	6.46
45	0.25	RB	6	99-Model Averaged on antilog	.	.	.	.	.	619.33	9.64	600.73	638.51

endpoint=0.25 species=RB hardness=50

Obs	endpoint	species	hardness	model	estimate	se	AICc	delta aicc	aicc weight	ma estimate	ma standard error	lower ci	upper ci
46	0.25	RB	50	H*D	6.81	0.03	3003.3	0.0	1.00	.	.	.	.
47	0.25	RB	50	H+D	6.79	0.02	3275.8	272.5	0.00	.	.	.	.
48	0.25	RB	50	D	7.33	0.02	5121.2	2118.0	0.00	.	.	.	.
49	0.25	RB	50	99-Model Averaged	.	.	.	.	.	6.81	0.03	6.76	6.86
50	0.25	RB	50	99-Model Averaged on antilog	.	.	.	.	.	907.56	24.47	860.84	956.81

Kennedy II - Rainbow Trout Mortality at 30 days
Summary of model averaged estimates of LCxx at various hardness levels

endpoint=0.25 species=RB hardness=100

Obs	endpoint	species	hardness	model	estimate	se	AICc	delta aicc	aicc weight	ma estimate	ma standard error	lower ci	upper ci
51	0.25	RB	100	H*D	7.62	0.06	3003.3	0.0	1.00	.	.	.	.
52	0.25	RB	100	H+D	7.39	0.02	3275.8	272.5	0.00	.	.	.	.
53	0.25	RB	100	D	7.33	0.02	5121.2	2118.0	0.00	.	.	.	.
54	0.25	RB	100	99-Model Averaged	.	.	.	.	.	7.62	0.06	7.51	7.73
55	0.25	RB	100	99-Model Averaged on antilog	.	.	.	.	.	2036.19	114.00	1824.57	2272.36

endpoint=0.25 species=RB hardness=250

Obs	endpoint	species	hardness	model	estimate	se	AICc	delta aicc	aicc weight	ma estimate	ma standard error	lower ci	upper ci
56	0.25	RB	250	H*D	7.50	0.01	3003.3	0.0	1.00	.	.	.	.
57	0.25	RB	250	H+D	7.58	0.02	3275.8	272.5	0.00	.	.	.	.
58	0.25	RB	250	D	7.33	0.02	5121.2	2118.0	0.00	.	.	.	.
59	0.25	RB	250	99-Model Averaged	.	.	.	.	.	7.50	0.01	7.48	7.52
60	0.25	RB	250	99-Model Averaged on antilog	.	.	.	.	.	1813.74	17.37	1780.02	1848.10

Kennedy II - Rainbow Trout Mortality at 30 days
Summary of model averaged estimates of LCxx at various hardness levels

endpoint=0.5 species=RB hardness=6

Obs	endpoint	species	hardness	model	estimate	se	AICc	delta aicc	aicc weight	ma estimate	ma standard error	lower ci	upper ci
61	0.5	RB	6	H*D	7.02	0.03	3003.3	0.0	1.00	.	.	.	.
62	0.5	RB	6	H+D	7.12	0.02	3275.8	272.5	0.00	.	.	.	.
63	0.5	RB	6	D	8.21	0.00	5121.2	2118.0	0.00	.	.	.	.
64	0.5	RB	6	99-Model Averaged	.	.	.	.	.	7.02	0.03	6.97	7.08
65	0.5	RB	6	99-Model Averaged on antilog	.	.	.	.	.	1122.79	31.59	1062.54	1186.45

endpoint=0.5 species=RB hardness=50

Obs	endpoint	species	hardness	model	estimate	se	AICc	delta aicc	aicc weight	ma estimate	ma standard error	lower ci	upper ci
66	0.5	RB	50	H*D	7.81	0.07	3003.3	0.0	1.00	.	.	.	.
67	0.5	RB	50	H+D	7.48	0.02	3275.8	272.5	0.00	.	.	.	.
68	0.5	RB	50	D	8.21	0.00	5121.2	2118.0	0.00	.	.	.	.
69	0.5	RB	50	99-Model Averaged	.	.	.	.	.	7.81	0.07	7.68	7.95
70	0.5	RB	50	99-Model Averaged on antilog	.	.	.	.	.	2477.48	170.11	2165.53	2834.38

Kennedy II - Rainbow Trout Mortality at 30 days
Summary of model averaged estimates of LCxx at various hardness levels

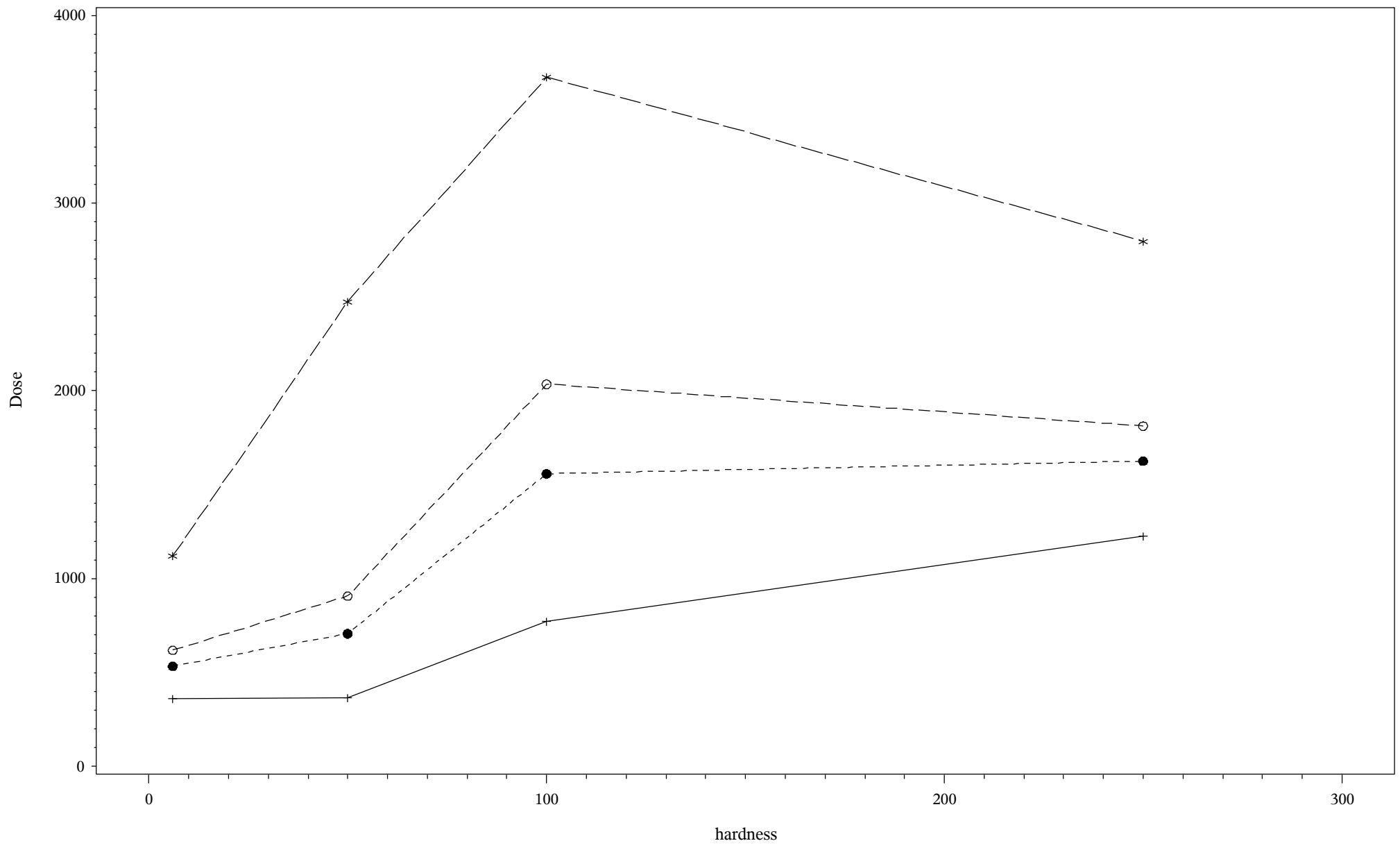
endpoint=0.5 species=RB hardness=100

Obs	endpoint	species	hardness	model	estimate	se	AICc	delta aicc	aicc weight	ma estimate	ma standard error	lower ci	upper ci
71	0.5	RB	100	H*D	8.21	0.00	3003.3	0.0	1.00	.	.	.	.
72	0.5	RB	100	H+D	8.07	0.03	3275.8	272.5	0.00	.	.	.	.
73	0.5	RB	100	D	8.21	0.00	5121.2	2118.0	0.00	.	.	.	.
74	0.5	RB	100	99-Model Averaged	.	.	.	.	.	8.21	0.00	8.21	8.21
75	0.5	RB	100	99-Model Averaged on antilog	.	.	.	.	.	3670.05	0.00	3670.05	3670.05

endpoint=0.5 species=RB hardness=250

Obs	endpoint	species	hardness	model	estimate	se	AICc	delta aicc	aicc weight	ma estimate	ma standard error	lower ci	upper ci
76	0.5	RB	250	H*D	7.94	0.02	3003.3	0.0	1.00	.	.	.	.
77	0.5	RB	250	H+D	8.21	0.00	3275.8	272.5	0.00	.	.	.	.
78	0.5	RB	250	D	8.21	0.00	5121.2	2118.0	0.00	.	.	.	.
79	0.5	RB	250	99-Model Averaged	.	.	.	.	.	7.94	0.02	7.89	7.98
80	0.5	RB	250	99-Model Averaged on antilog	.	.	.	.	.	2797.81	60.22	2682.24	2918.36

Kennedy II - Rainbow Trout Mortality at 30 days
 Estimated model-averaged end-points (anti-log scale)
 species=RB

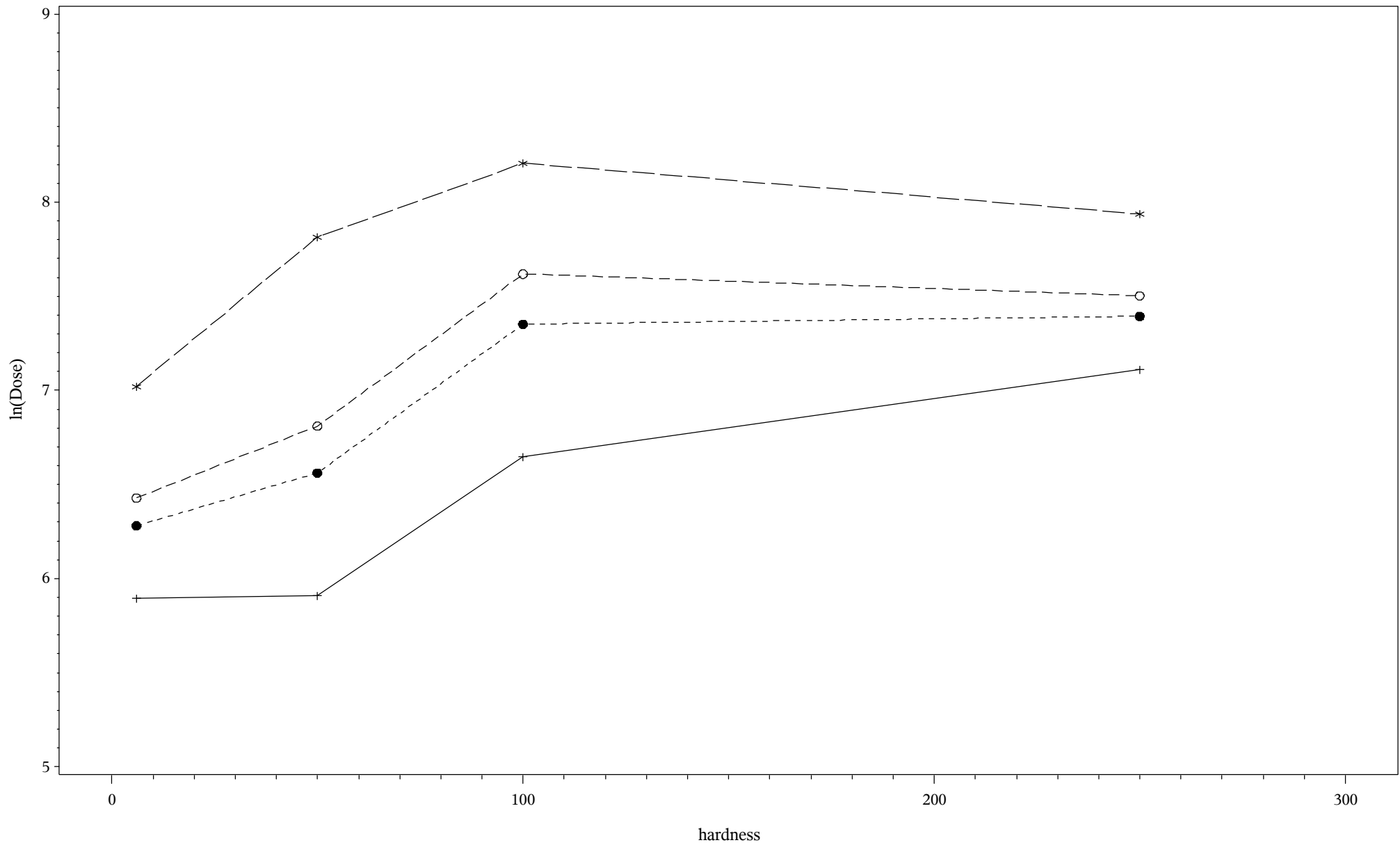


Plotting positions jittered at the hardness levels

Kennedy II - Rainbow Trout Mortality at 30 days

Estimated model-averaged end-points (log-scale)

species=RB



type + + + Est LC10 ● ● ● Est LC20 ○ ○ ○ Est LC25 * * * Est LC50 ——— Mean LC10 - - - Mean LC20 - - - Mean LC25 — — — Mean LC50

Plotting positions jittered at the hardness levels

Kennedy II - Rainbow Trout Mortality at 30 days
Summary of model averaged estimates of LCxx at various hardness levels - log scale

	endpoint															
	0.1				0.2				0.25				0.5			
	Est	SE	LCL	UCL	Est	SE	LCL	UCL	Est	SE	LCL	UCL	Est	SE	LCL	UCL
hardness																
6	5.90	0.03	5.84	5.95	6.28	0.02	6.25	6.31	6.43	0.02	6.40	6.46	7.02	0.03	6.97	7.08
50	5.91	0.05	5.80	6.01	6.56	0.03	6.51	6.62	6.81	0.03	6.76	6.86	7.81	0.07	7.68	7.95
100	6.65	0.04	6.57	6.73	7.35	0.04	7.27	7.44	7.62	0.06	7.51	7.73	8.21	0.00	8.21	8.21
250	7.11	0.01	7.08	7.14	7.39	0.01	7.38	7.41	7.50	0.01	7.48	7.52	7.94	0.02	7.89	7.98

All estimates are model averaged

Kennedy II - Rainbow Trout Mortality at 30 days
Summary of model averaged estimates of LCxx at various hardness levels - antilog scale

	endpoint															
	0.1				0.2				0.25				0.5			
	Est	SE	LCL	UCL	Est	SE	LCL	UCL	Est	SE	LCL	UCL	Est	SE	LCL	UCL
hardness																
6	363	9	345	382	534	9	517	552	619	10	601	639	1123	32	1063	1186
50	368	20	331	409	708	20	669	748	908	24	861	957	2477	170	2166	2834
100	772	31	713	835	1559	68	1430	1699	2036	114	1825	2272	3670	0	3670	3670
250	1225	16	1194	1256	1626	15	1597	1656	1814	17	1780	1848	2798	60	2682	2918

All estimates are model averaged