

Supplementary Table S2. Model Selection and Results of Generalized Additive Modeling (GAM)

3.1 Model fitting selection

Model	AIC	Adjusted R ²	Deviance explained (%)
GLM, <i>Plectropomus leopardus</i>	2,964.900	0.261	26.1
GAM, <i>Plectropomus leopardus</i>*	2,927.035	0.391	40.4
GLM, <i>Plectropomus maculatus</i>	2,295.100	0.186	18.6
GAM, <i>Plectropomus maculatus</i>*	2,246.611	0.142	29.4
GLM, <i>Epinephelus coioides</i>	2,491.600	0.151	15.1
GAM, <i>Epinephelus coioides</i>*	2,450.196	0.170	24.9
GLM, <i>Lutjanus malabaricus</i>	5,405.300	0.277	27.7
GAM, <i>Lutjanus malabaricus</i>*	5,398.663	0.136	26.9

*Selected model

GLM: Generalized Linear Modeling; GAM: Generalized Additive Modeling

3.2 Results of Generalized Additive Modeling

3.2.1 *Plectropomus leopardus*

Formula:

Pleopardus ~ Y2 + M + s(TH, bs = "cr") + G + s(Depth, bs = "cr") + s(GT, bs = "cr", k = 5) + s(P_Pleopardus, bs = "cr", k = 56)

Parametric coefficients:

	Estimate	Std. Error	z value	Pr(> z)	
(Intercept)	0.488474	0.149396	3.270	0.001077	**
Y22017	-0.178580	0.098849	-1.807	0.070825	.
Y22018	-0.332087	0.111266	-2.985	0.002839	**
Y22019	-0.461043	0.121389	-3.798	0.000146	***
M.L	-0.031030	0.112138	-0.277	0.782000	
M.Q	0.011999	0.102926	0.117	0.907194	
M.C	0.101244	0.091767	1.103	0.269911	
M^4	0.100273	0.093777	1.069	0.284945	
M^5	-0.143414	0.095824	-1.497	0.134485	
M^6	0.035310	0.092998	0.380	0.704182	
M^7	-0.012741	0.096587	-0.132	0.895053	
M^8	-0.005839	0.092696	-0.063	0.949777	
M^9	-0.077002	0.086631	-0.889	0.374084	
M^10	0.033348	0.087193	0.382	0.702119	
M^11	0.021700	0.087125	0.249	0.803305	
GPanah (Speargun)	0.634525	0.169741	3.738	0.000185	***
GPancing tonda (Troll line)	-0.064009	0.175957	-0.364	0.716027	
GPancing ulur (Handline)	-0.178503	0.141118	-1.265	0.205900	
GRawai dasar (Bottom longline)	-0.136980	0.118803	-1.153	0.248911	

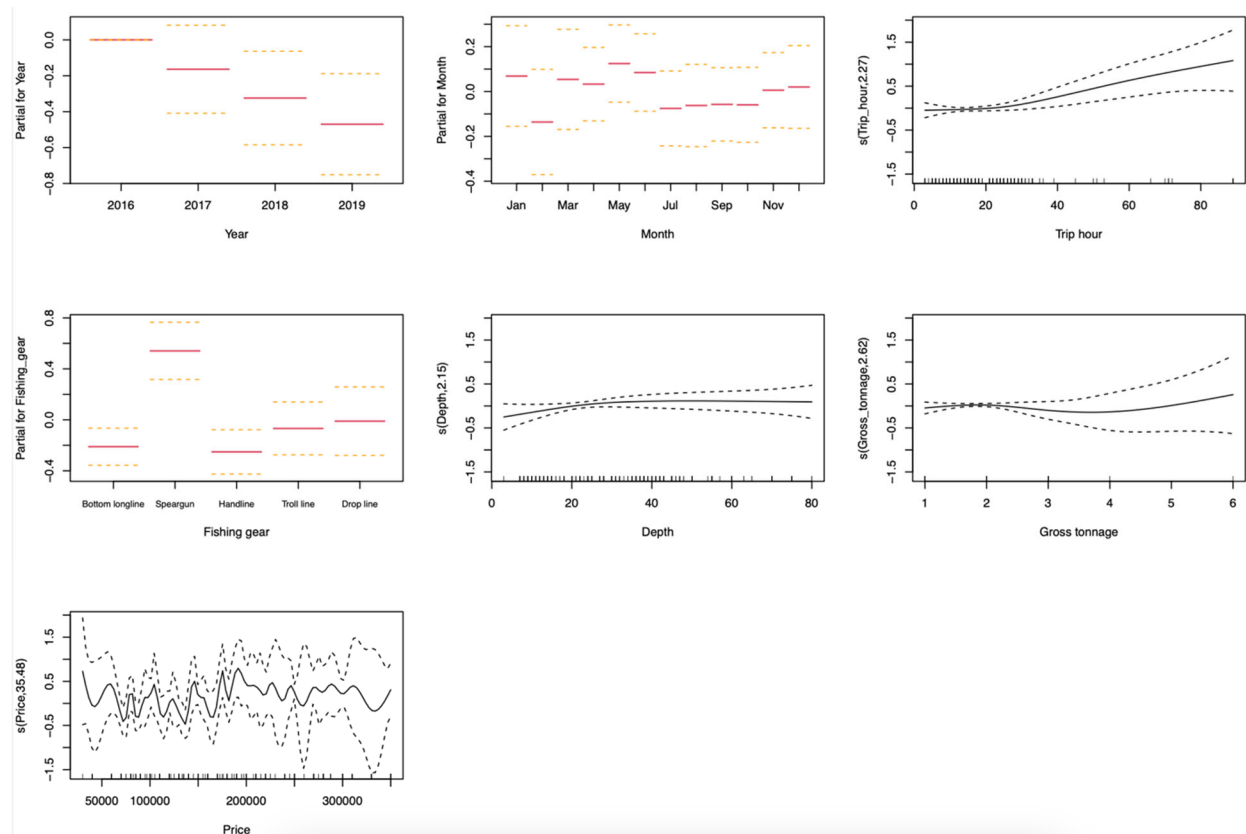
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Approximate significance of smooth terms:

	edf	Ref.df	Chi.sq	p-value	
s(TH)	1.881	2.285	14.659	0.00121	**
s(Depth)	2.624	3.326	8.253	0.06415	.
s(GT)	2.497	2.904	2.739	0.46595	
s(P_Pleopardus)	36.812	41.502	89.643	2.28e-05	***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

R-sq.(adj) = 0.352 Deviance explained = 37.2%
 UBRE = -0.47636 Scale est. = 1 n = 1014



3.2.2 *Plectropomus maculatus*

Family: poisson
 Link function: log

Formula:

$\text{Pmaculatus} \sim Y2 + M + s(\text{TH}, \text{bs} = "cr", k = 30) + G + s(\text{Depth}, \text{bs} = "cr") + s(\text{GT}, \text{bs} = "cr", k = 5) + s(\text{P_Pmaculatus}, \text{bs} = "cr")$

Parametric coefficients:

	Estimate	Std. Error	z	value	Pr(> z)	
(Intercept)	0.782981	0.212122	3.691	0.000223	***	
Y22017	0.006185	0.097611	0.063	0.949475		
Y22018	0.007669	0.108537	0.071	0.943669		
Y22019	-0.112164	0.129158	-0.868	0.385161		
M.L	-0.230402	0.126710	-1.818	0.069013	.	
M.Q	-0.025370	0.114738	-0.221	0.825003		
M.C	-0.067707	0.110819	-0.611	0.541220		

M^4	0.079717	0.114279	0.698	0.485450
M^5	-0.127453	0.114353	-1.115	0.265042
M^6	0.087366	0.110481	0.791	0.429076
M^7	-0.183065	0.114514	-1.599	0.109904
M^8	-0.033616	0.109295	-0.308	0.758407
M^9	-0.058331	0.104012	-0.561	0.574925
M^10	-0.045047	0.104183	-0.432	0.665461
M^11	0.032735	0.100299	0.326	0.744141
GPanah (Speargun)	-0.193429	0.269499	-0.718	0.472921
GPancing tonda (Troll line)	-0.460531	0.210733	-2.185	0.028861 *
GPancing ulur (Handline)	-0.553664	0.202646	-2.732	0.006292 **
GRawai dasar (Bottom longline)	-0.588381	0.172623	-3.408	0.000653 ***

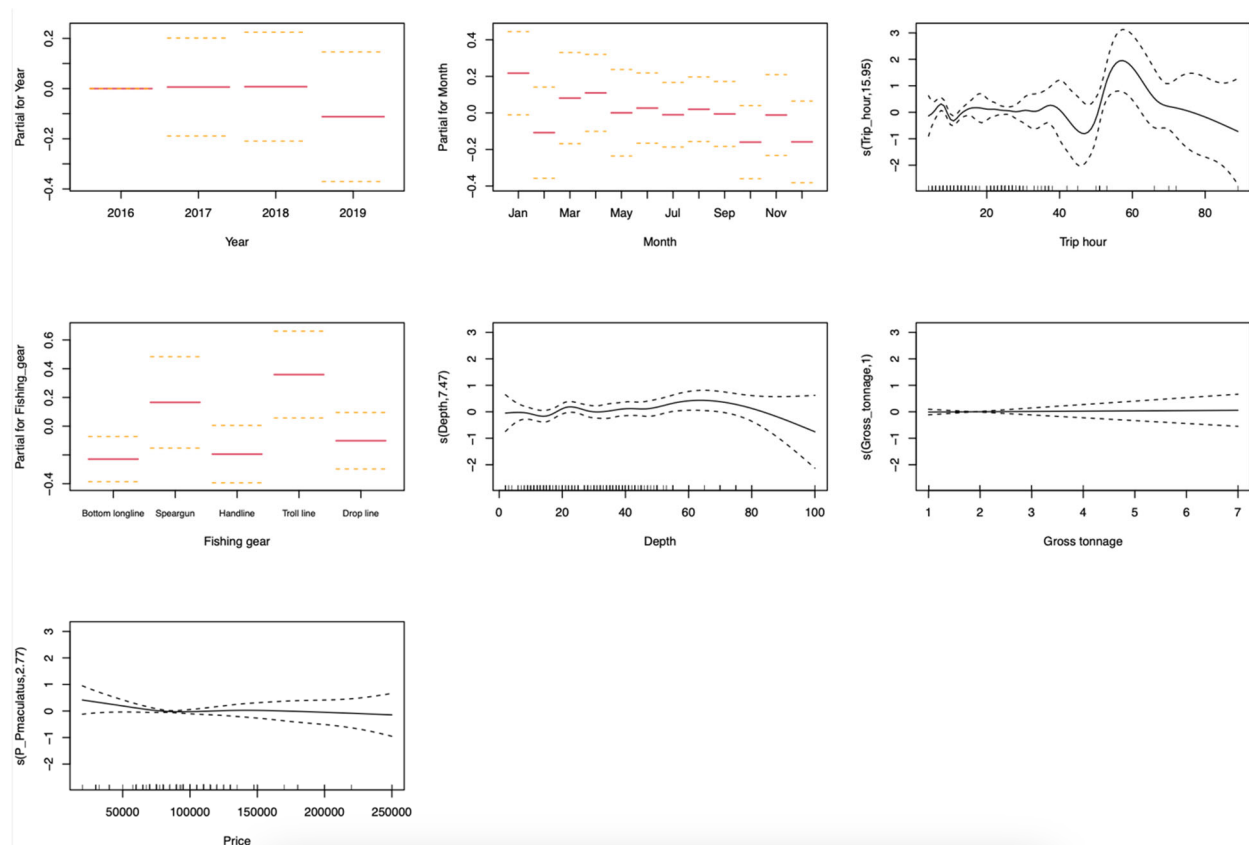
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Approximate significance of smooth terms:

	edf	Ref.df	Chi.sq	p-value
s(TH)	15.953	18.955	35.098	0.0136 *
s(Depth)	7.467	8.384	12.372	0.2194
s(GT)	1.000	1.001	0.036	0.8507
s(P_Pmaculatus)	2.770	3.479	3.674	0.4000

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

R-sq.(adj) = 0.0954 Deviance explained = 22.6%
 UBRE = -0.36973 Scale est. = 1 n = 773



3.2.3 *Epinephelus coioides*

Family: poisson
Link function: log

Formula:
Ecoioides ~ Y2 + M + s(TH, bs = "cr", k = 38) + G + s(Depth,
bs = "cr") + s(GT, bs = "cr", k = 4) + s(P_Ecoioides, bs = "cr",
k = 30)

Parametric coefficients:

	Estimate	Std. Error	z value	Pr(> z)	
(Intercept)	0.543799	0.301379	1.804	0.0712	.
Y22017	-0.202520	0.131894	-1.535	0.1247	
Y22018	-0.313631	0.147029	-2.133	0.0329	*
Y22019	-0.356263	0.153436	-2.322	0.0202	*
M.L	-0.111202	0.138076	-0.805	0.4206	
M.Q	-0.122480	0.137020	-0.894	0.3714	
M.C	0.037586	0.124174	0.303	0.7621	
M^4	-0.056876	0.122444	-0.465	0.6423	
M^5	-0.128820	0.118554	-1.087	0.2772	
M^6	0.160748	0.106940	1.503	0.1328	
M^7	-0.036199	0.107466	-0.337	0.7362	
M^8	0.002711	0.099924	0.027	0.9784	
M^9	-0.072078	0.087752	-0.821	0.4114	
M^10	-0.125074	0.096509	-1.296	0.1950	
M^11	0.003814	0.100429	0.038	0.9697	
GPanah (Speargun)	0.223374	0.316592	0.706	0.4805	
GPancing tonda (Troll line)	-0.252144	0.417531	-0.604	0.5459	
GPancing ulur (Handline)	-0.310146	0.309564	-1.002	0.3164	
GRawai dasar (Bottom longline)	0.067150	0.279642	0.240	0.8102	

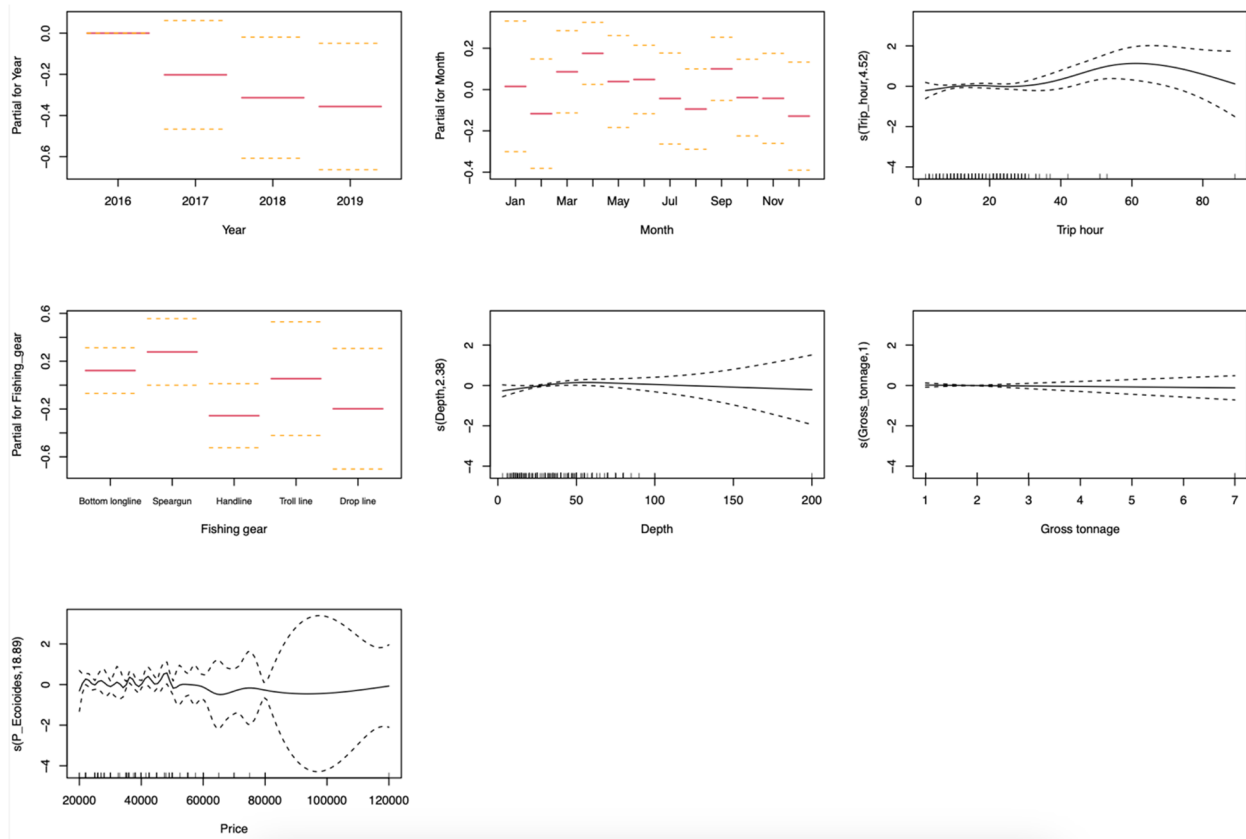
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Approximate significance of smooth terms:

	edf	Ref.df	Chi.sq	p-value	
s(TH)	4.519	5.578	11.971	0.0467	*
s(Depth)	2.380	3.029	4.642	0.2085	
s(GT)	1.001	1.001	0.152	0.6965	
s(P_Ecoioides)	18.895	21.285	25.765	0.2225	

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

R-sq.(adj) = 0.16 Deviance explained = 21.9%
UBRE = -0.54159 Scale est. = 1 n = 887



3.2.4 *Lutjanus malabaricus*

Family: poisson
Link function: log

Formula:
Lmalabaricus ~ Year + Month + s(Trip_hour, bs = "cr", k = 20) +
Fishing_gear + s(Depth, bs = "cr", k = 30) + s(P_Lmalabaricus,
bs = "cr", k = 11)

Parametric coefficients:

	Estimate	Std. Error	z value	Pr(> z)	
(Intercept)	0.624322	0.147930	4.220	2.44e-05	***
Year2017	-0.356202	0.106593	-3.342	0.000833	***
Year2018	-0.246113	0.124655	-1.974	0.048341	*
Year2019	-0.206029	0.114901	-1.793	0.072957	.
Month.L	-0.234494	0.142077	-1.650	0.098846	.
Month.Q	-0.027380	0.143014	-0.191	0.848174	
Month.C	0.058143	0.134855	0.431	0.666360	
Month^4	-0.194738	0.122801	-1.586	0.112784	
Month^5	0.001696	0.113035	0.015	0.988030	
Month^6	-0.164735	0.100722	-1.636	0.101934	
Month^7	-0.034426	0.097580	-0.353	0.724243	
Month^8	-0.138172	0.090879	-1.520	0.128413	
Month^9	-0.168797	0.086959	-1.941	0.052244	.
Month^10	-0.025101	0.094217	-0.266	0.789919	
Month^11	-0.021037	0.098688	-0.213	0.831200	
Fishing_gear.L	0.173981	0.211168	0.824	0.409997	
Fishing_gear.Q	0.205117	0.184657	1.111	0.266653	
Fishing_gear.C	-0.451333	0.349723	-1.291	0.196863	
Fishing_gear^4	0.026124	0.266494	0.098	0.921908	

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Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

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Approximate significance of smooth terms:

	edf	Ref.df	Chi.sq	p-value
s(Trip_hour)	5.338	6.710	11.646	0.101990
s(Depth)	4.795	5.949	5.517	0.448351
s(P_Lmalabaricus)	4.994	5.779	24.297	0.000441 ***

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Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

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R-sq.(adj) = 0.116 Deviance explained = 19%
 UBRE = -0.47869 Scale est. = 1 n = 884

