



SCIENCE FOR CONSERVATION 323

# Predicting the distribution and relative abundance of fishes on shallow subtidal reefs around New Zealand

Supplement 2

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Supplement 2 of

Smith, A.N.H.; Duffy, C.A.J.; Leathwick, J.R. 2013: Predicting the distribution and relative abundance of fishes on shallow subtidal reefs around New Zealand. *Science for Conservation* 323. Department of Conservation, Wellington. 25 p. + 2 supplements.

## Supplement 2—partial dependence plots of responses to predictor variables

This supplement contains graphs showing the influence of the environmental, geographic and dive-specific predictor variables on the relative abundance of 72 species of reef fish on shallow subtidal reefs around New Zealand. A set of graphs is shown for each species, containing one graph for each predictor variable used in the model for that species. Below each graph are the variable names and, in parentheses, the relative influence that each variable exerted on the model, expressed as a percentage value. The graphs themselves show the overall effects of the variables on the abundance of any given species, shown on a relative scale. The *x*-axis represents the range of the predictor variable, and the *y*-axis (the ‘fitted function’) corresponds to the influence of the variable on the relative abundance of the species at various parts of this range. A positive value of the fitted function at a given value of a predictor variable suggests that the species will tend to have higher relative abundance at this value. Similarly, negative values of the fitted function indicate that these values of the variable are negatively associated with the abundance of the species. See Elith et al. (2008) for more details.

Variables offered to the models were *sstwint* (wintertime sea surface temperature), *seabedsal* (salinity at the sea bed), *sstanamp* (annual amplitude of sea surface temperature), *logdisorgm* (log of dissolved organic matter), *logtidalspeed* (log of tidal speed), *logsuspartmat* (log of suspended particulate matter), *sstanom* (sea surface temperature anomaly), *logsstgrad* (log of sea surface temperature gradient), *chl<sub>a</sub>* (concentration of chlorophyll *a*) *avefetch* (average fetch), *dcoast* (distance from coast), *dmax* (maximum depth of dive), *dur* (duration of dive), *dmin* (minimum depth of dive) and *vis* (visibility of dive) (see Table 2).

## Aldrichetta forsteri : Yellow-eyed mullet

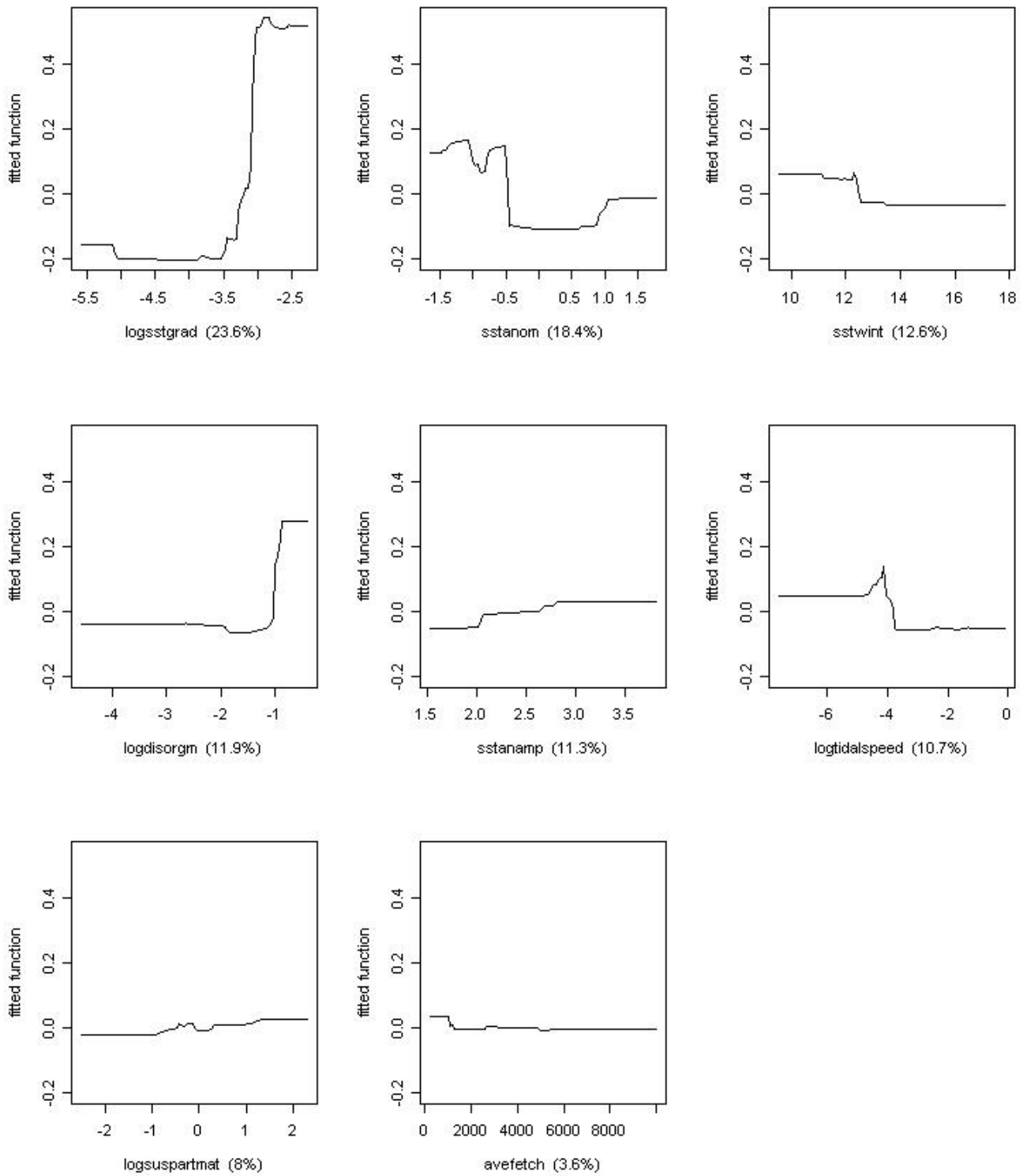


Figure S2.1. Partial dependence plots for *Aldrichetta forsteri* (yellow-eyed mullet) on rocky reefs around New Zealand.

## Amphichaetodon howensis : Lord Howe coralfish

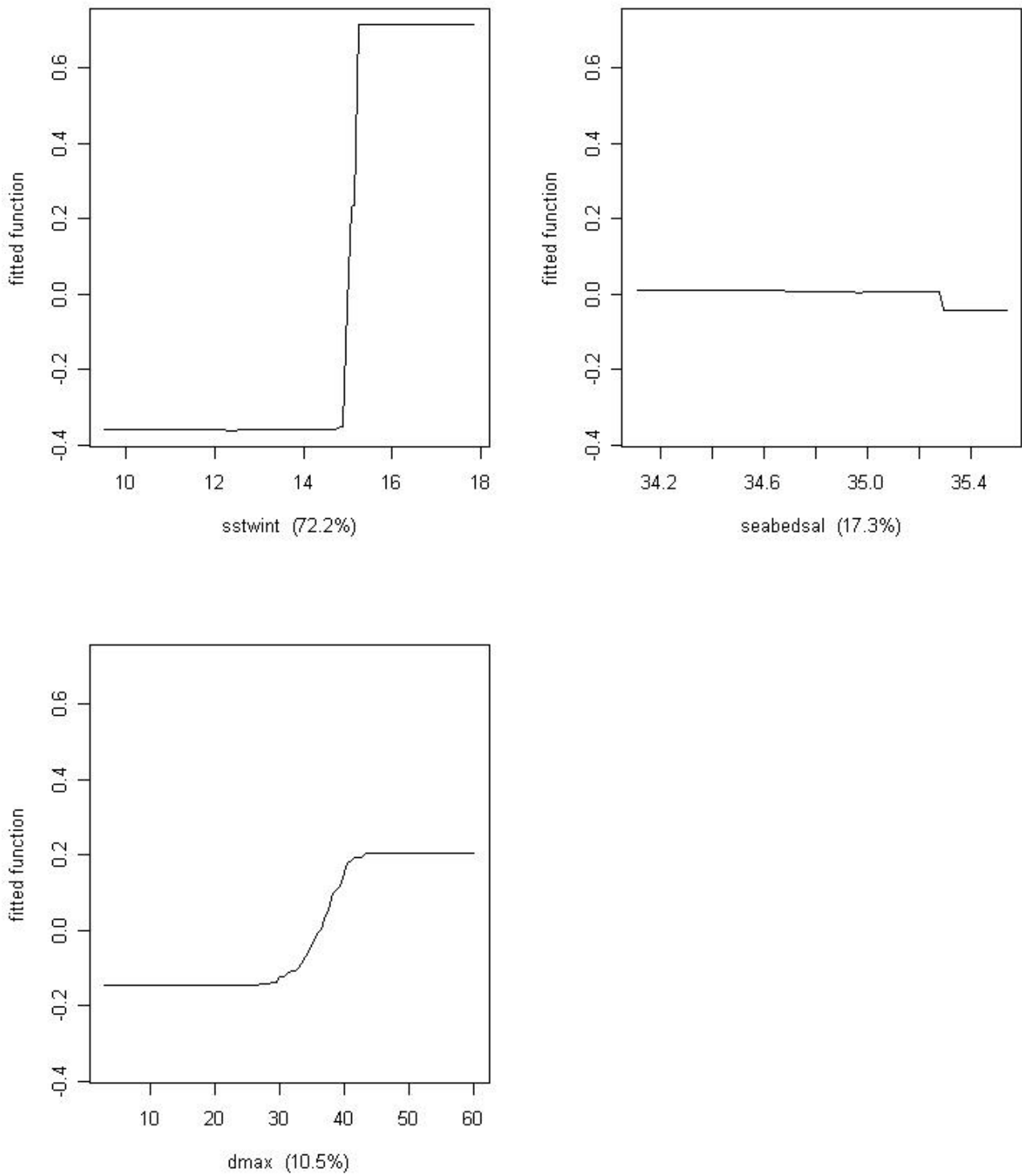


Figure S1.2. Partial dependence plots for *Amphichaetodon howensis* (Lord Howe coralfish) on rocky reefs around New Zealand.

## Anampses elegans : Elegant wrasse

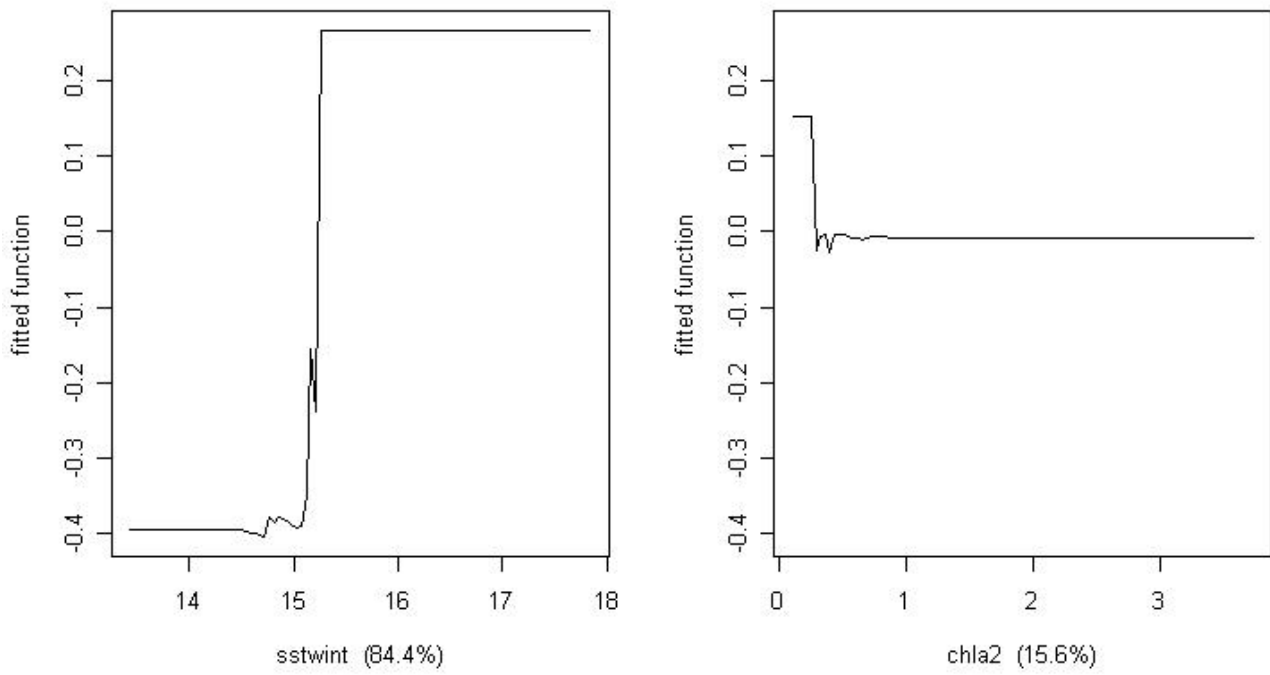


Figure S2.3. Partial dependence plots for *Anampses elegans* (elegant wrasse) on rocky reefs around New Zealand.

## *Aplodactylus arctidens* : Marblefish

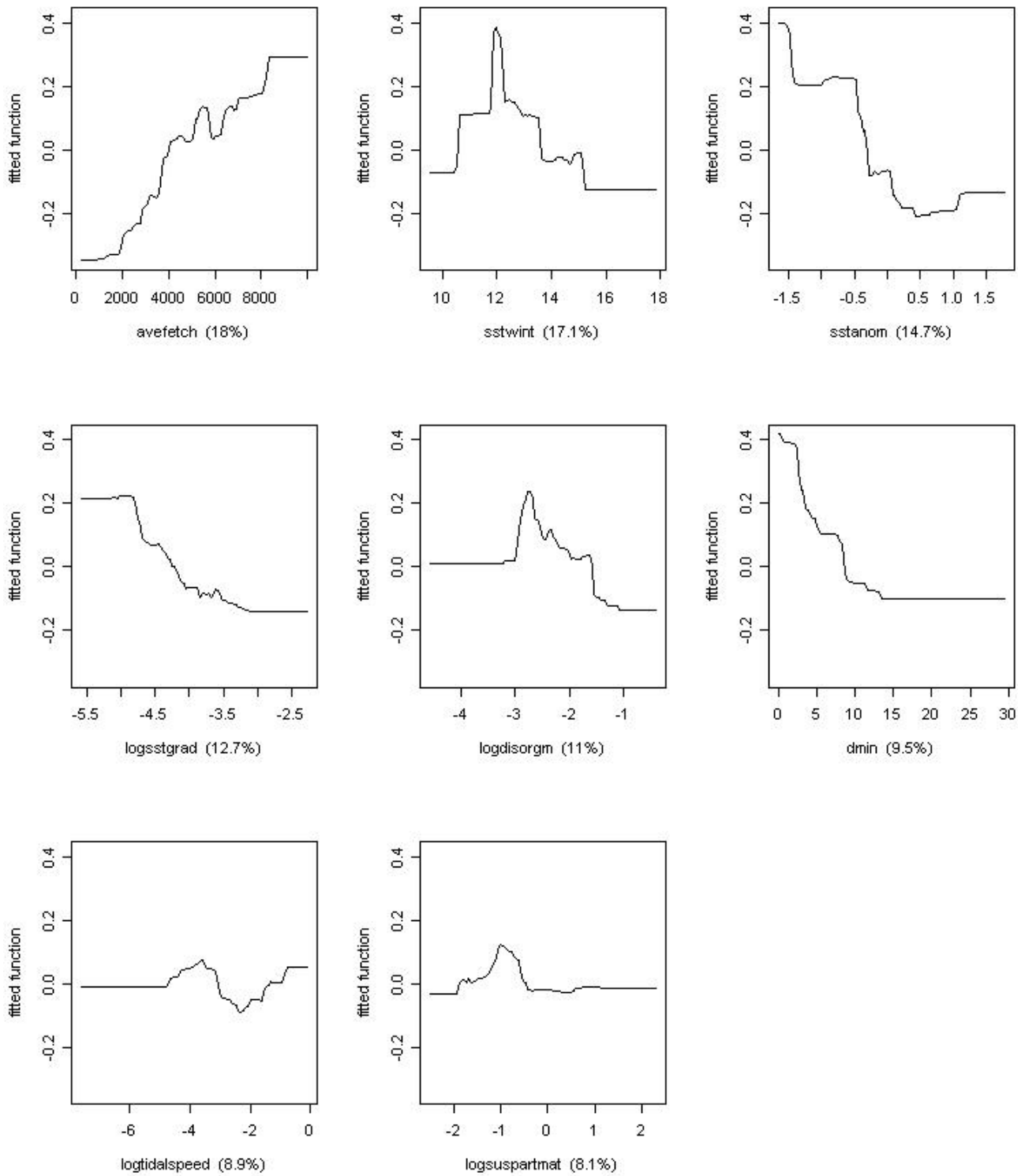


Figure S2.4. Partial dependence plots for *Aplodactylus arctidens* (marblefish) on rocky reefs around New Zealand.

## *Aplodactylus etheridgii* : Notch-head marblefish

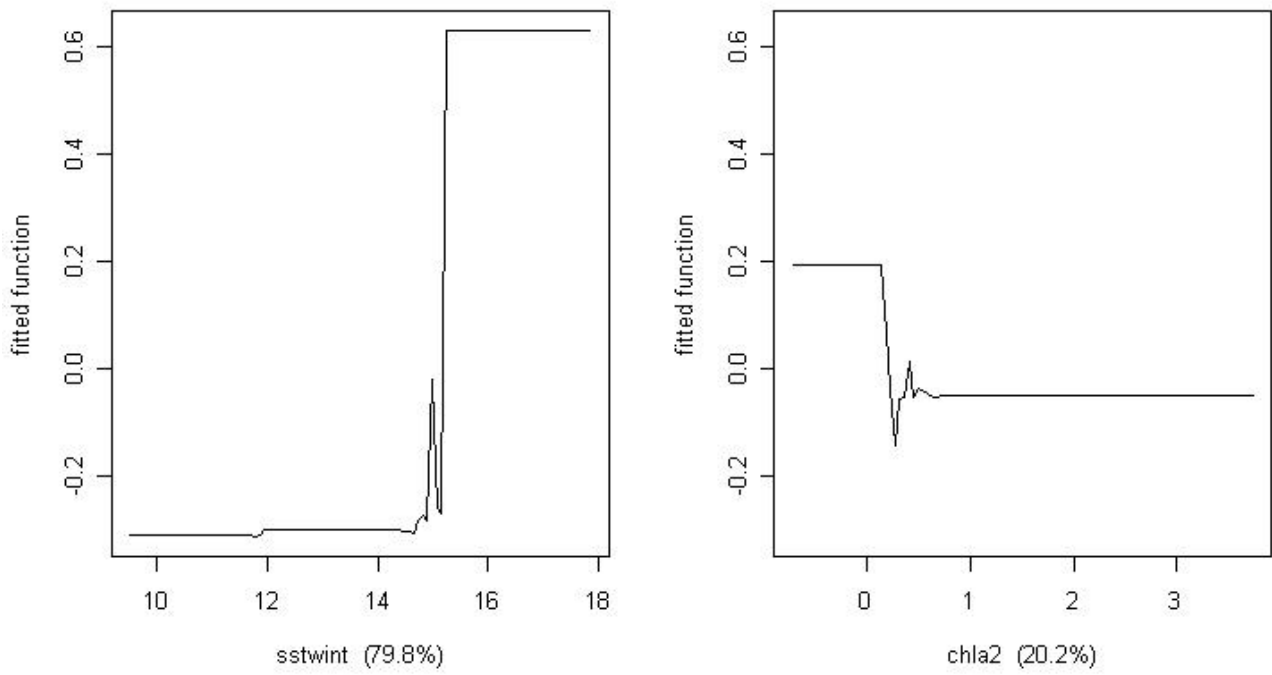


Figure S2.5. Partial dependence plots for *Aplodactylus etheridgii* (notch-head marblefish) on rocky reefs around New Zealand.



### Atypichthys latus : Mado

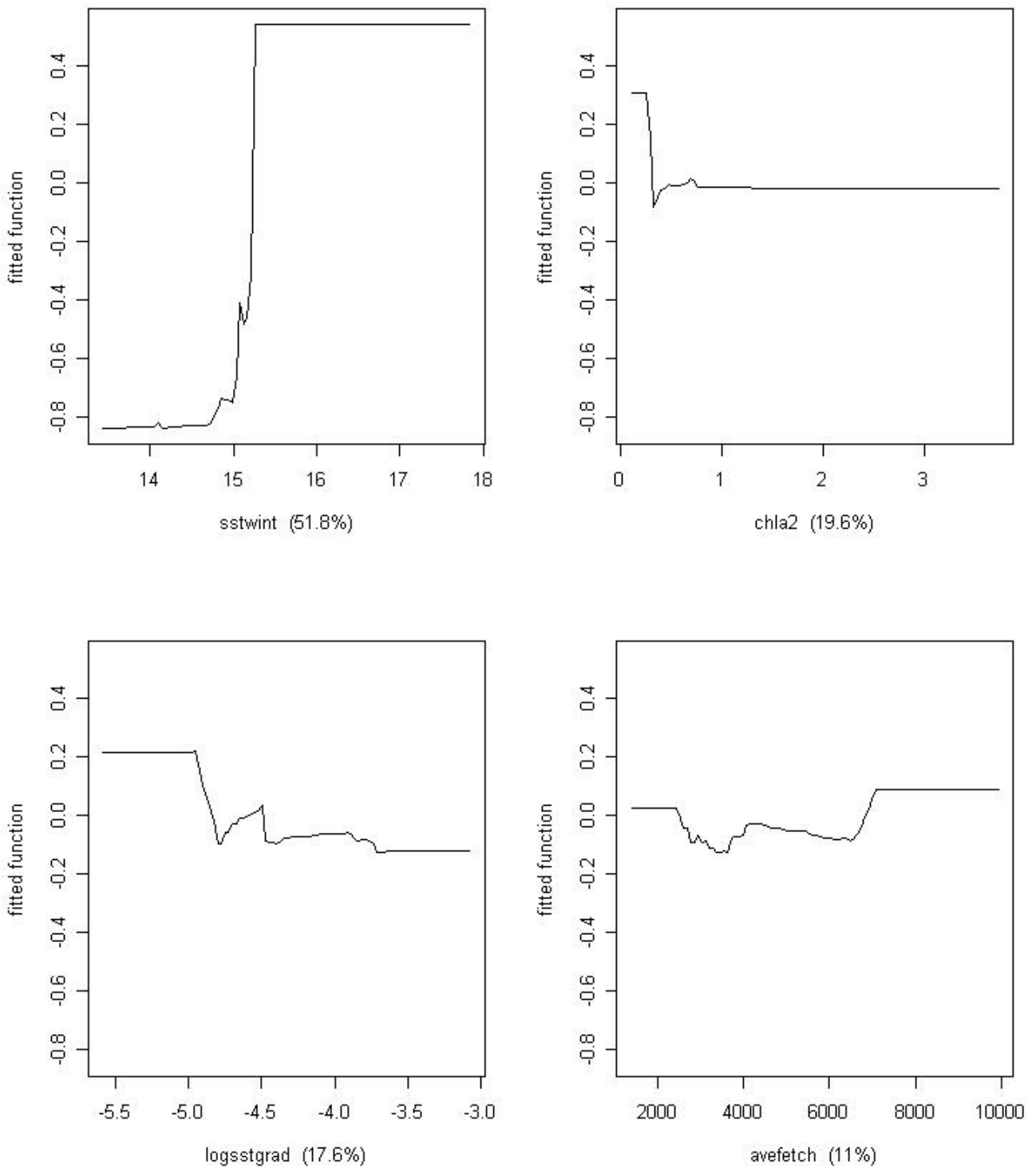


Figure S2.6. Partial dependence plots for *Atypichthys latus* (mado) on rocky reefs around New Zealand.

## Bodianus unimaculatus : Red pigfish

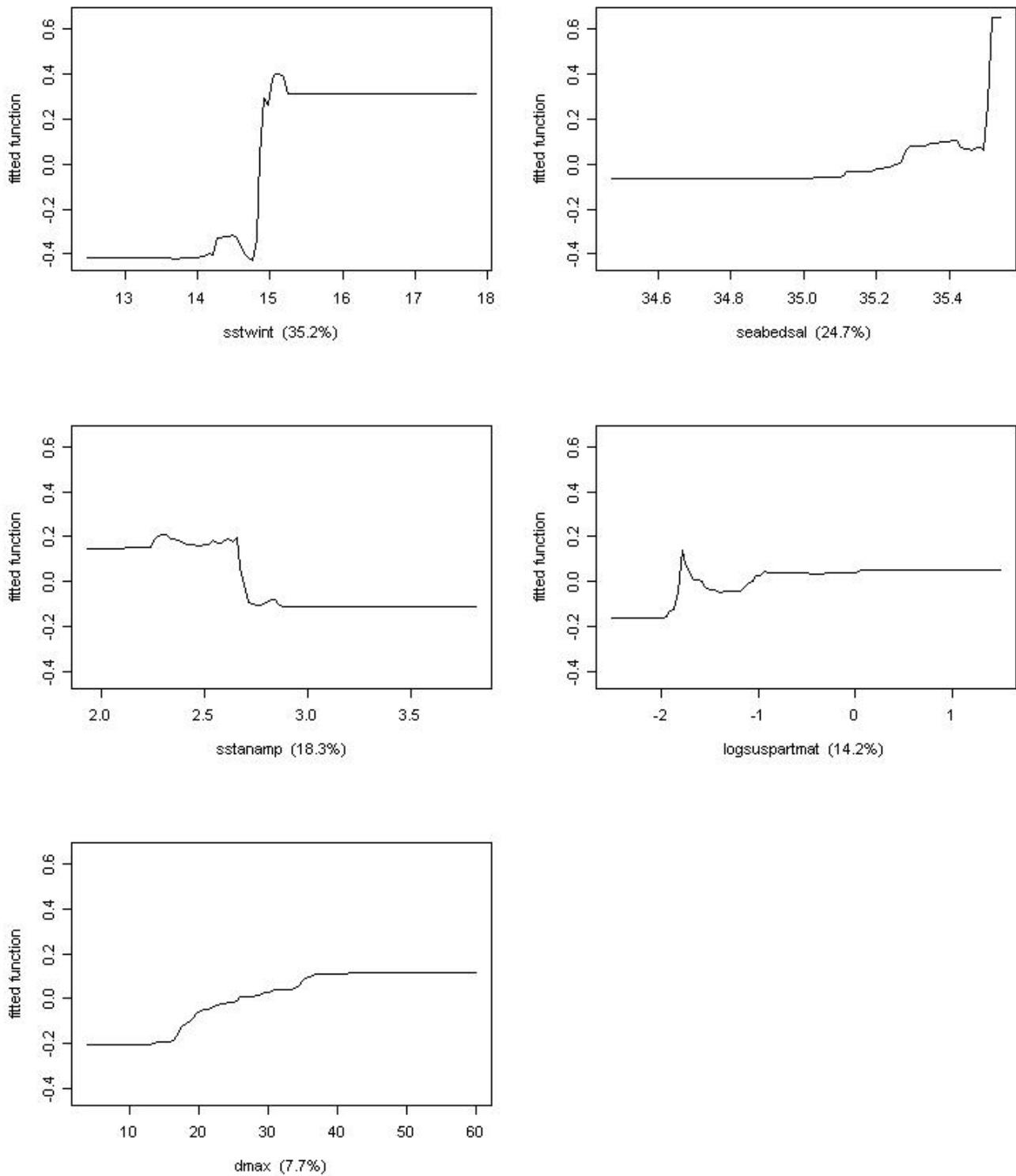


Figure S2.7. Partial dependence plots for *Bodianus unimaculatus* (red pigfish) on rocky reefs around New Zealand.

## Caesioperca lepidoptera : Butterfly perch

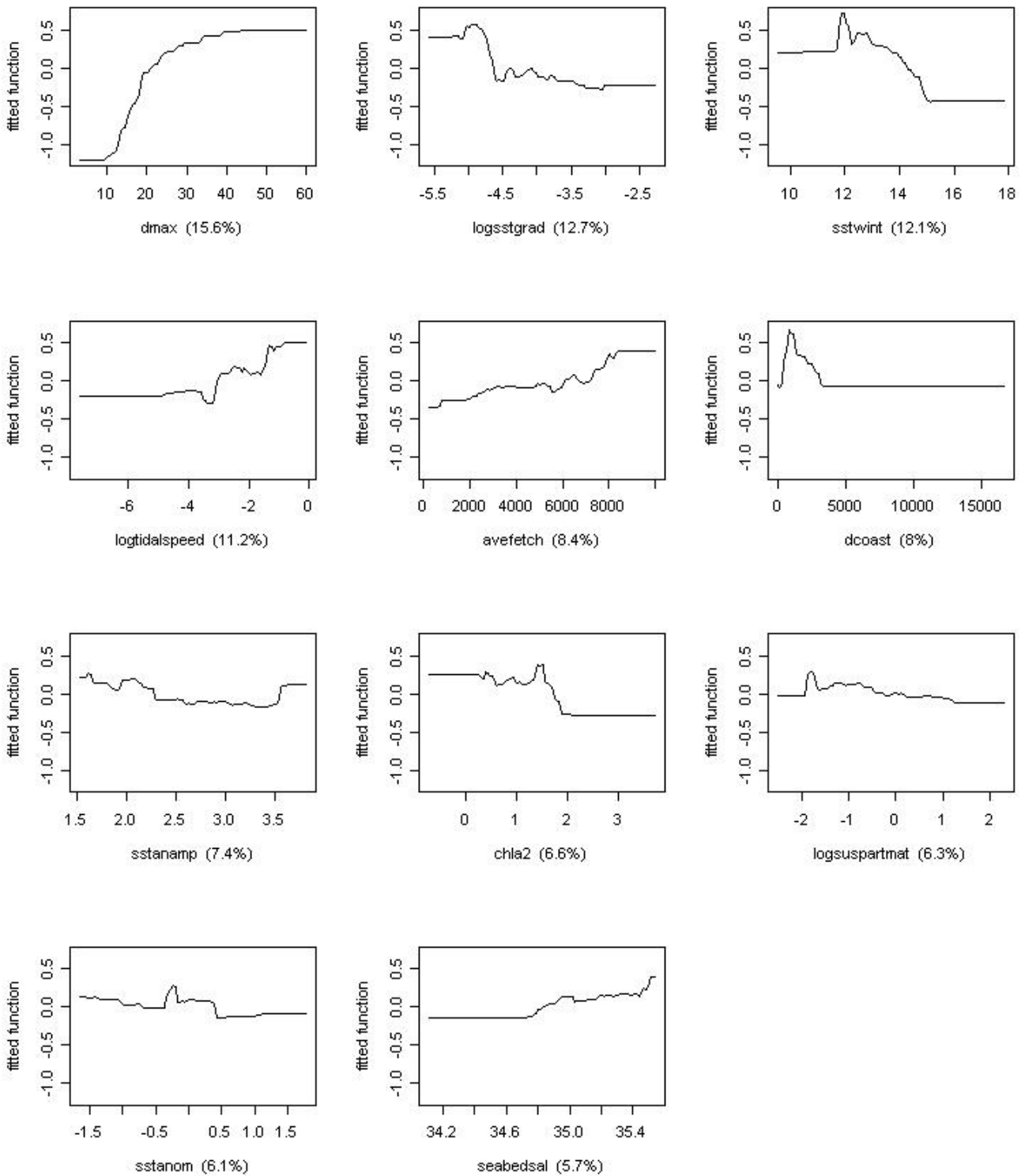


Figure S2.8. Partial dependence plots for *Caesioperca lepidoptera* (butterfly perch) on rocky reefs around New Zealand.

### Canthigaster callisterna : Clown toado

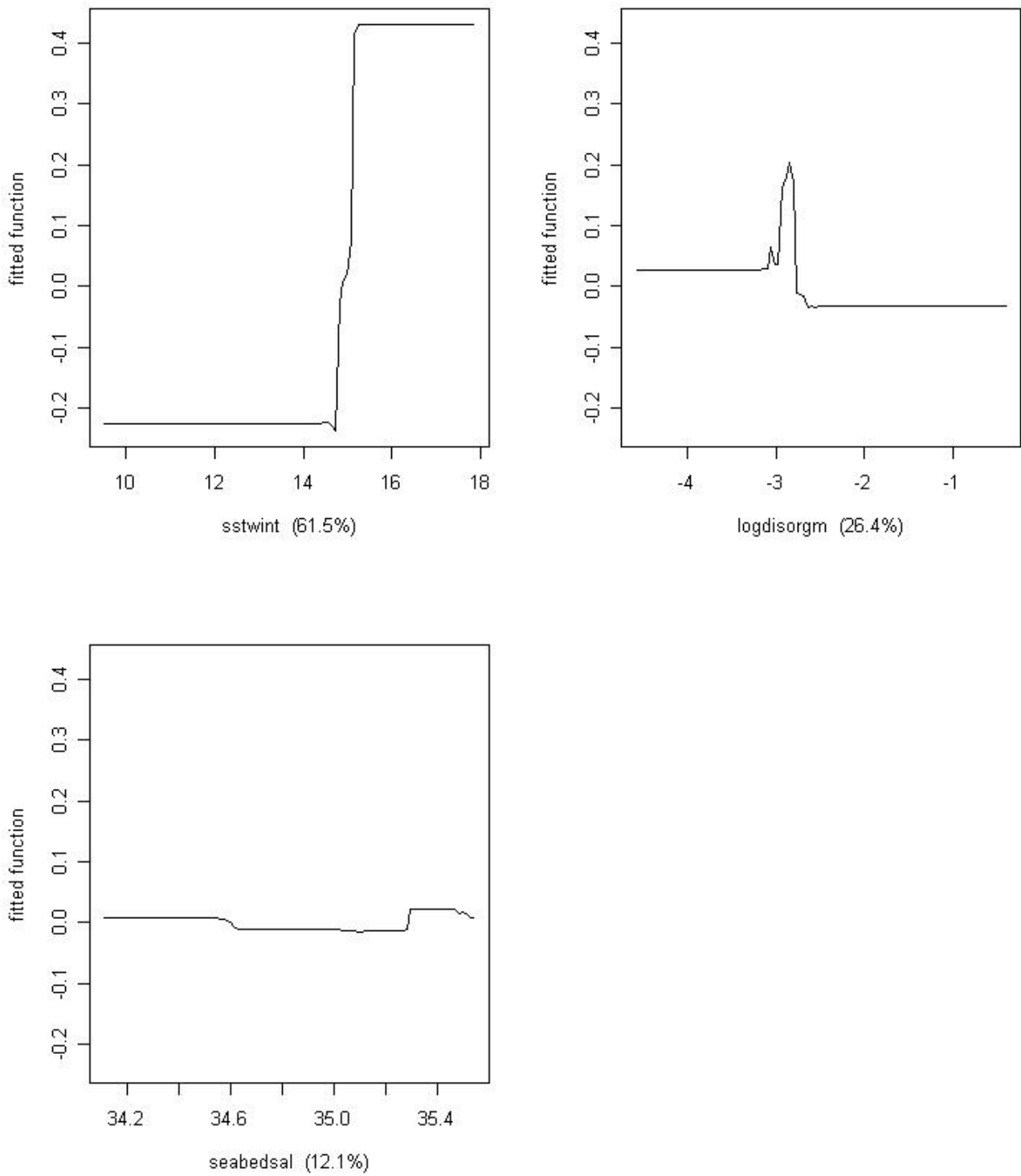


Figure S2.9. Partial dependence plots for *Canthigaster callisterna* (clown toado) on rocky reefs around New Zealand.

### Caprodon longimanus : Pink maomao

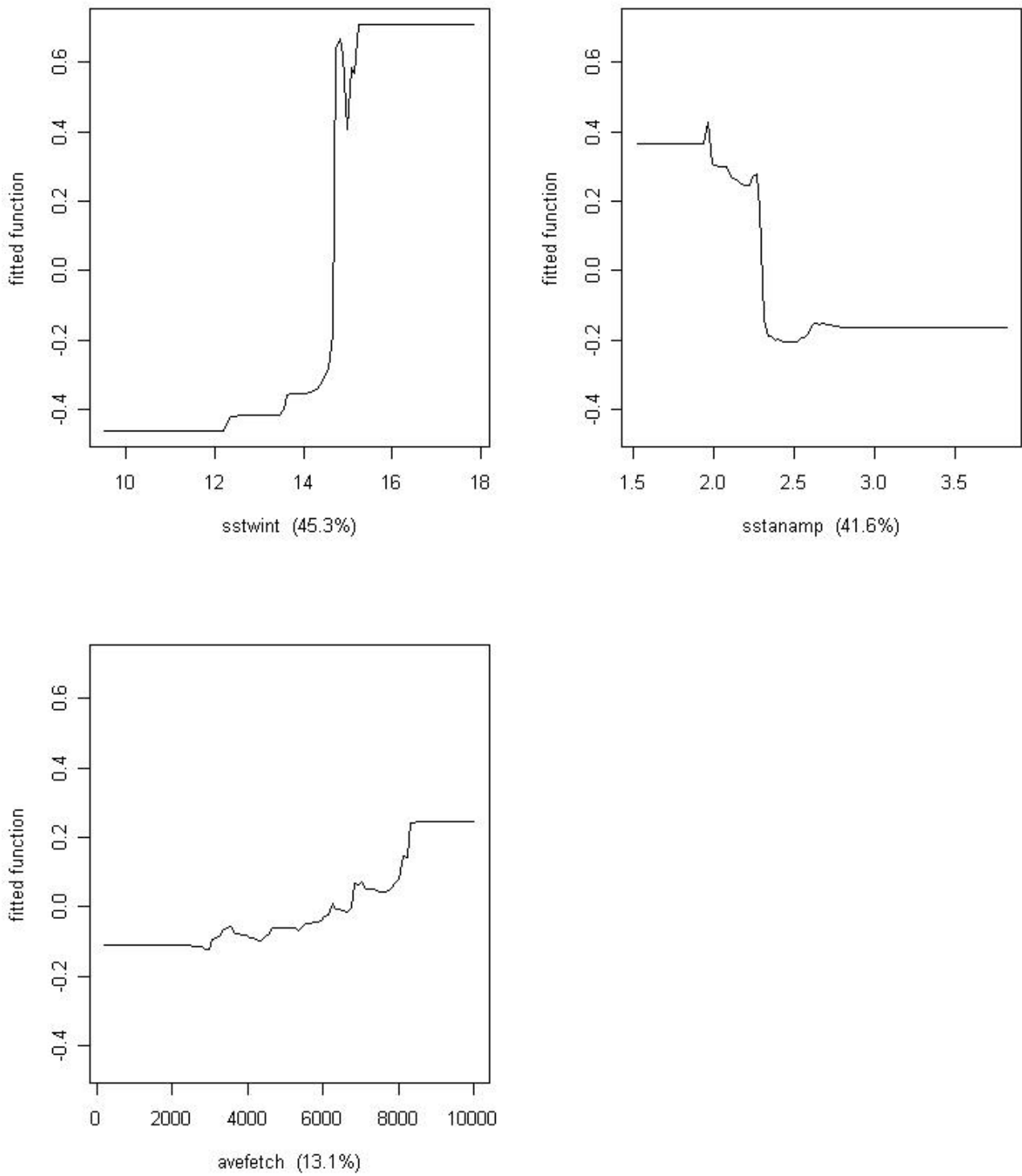


Figure S2.10. Partial dependence plots for *Caprodon longimanus* (pink maomao) on rocky reefs around New Zealand.

### Centroberyx affinis : Golden snapper

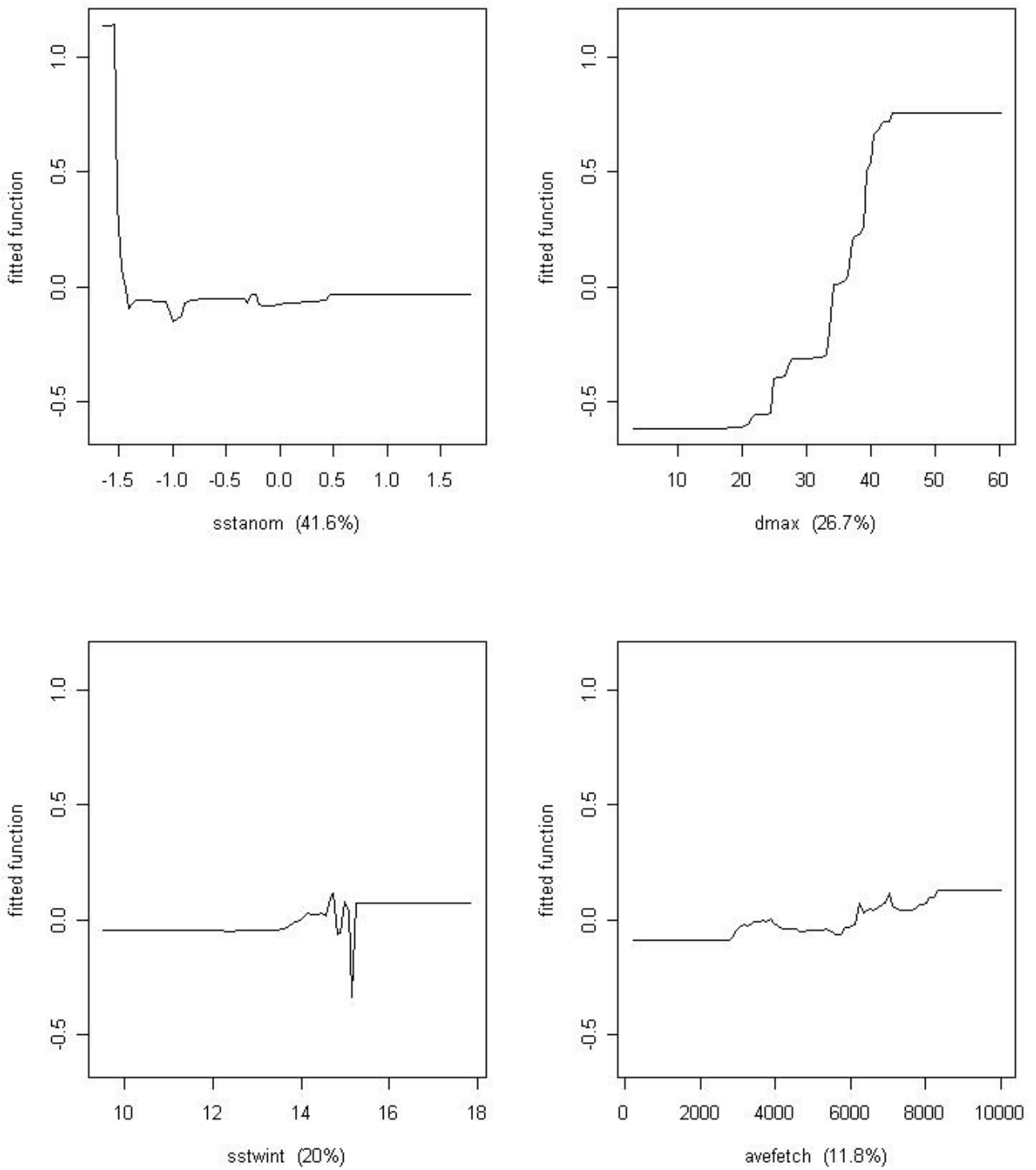


Figure S2.11. Partial dependence plots for *Centroberyx affinis* (golden snapper) on rocky reefs around New Zealand.

## Cheilodactylus spectabilis : Red moki

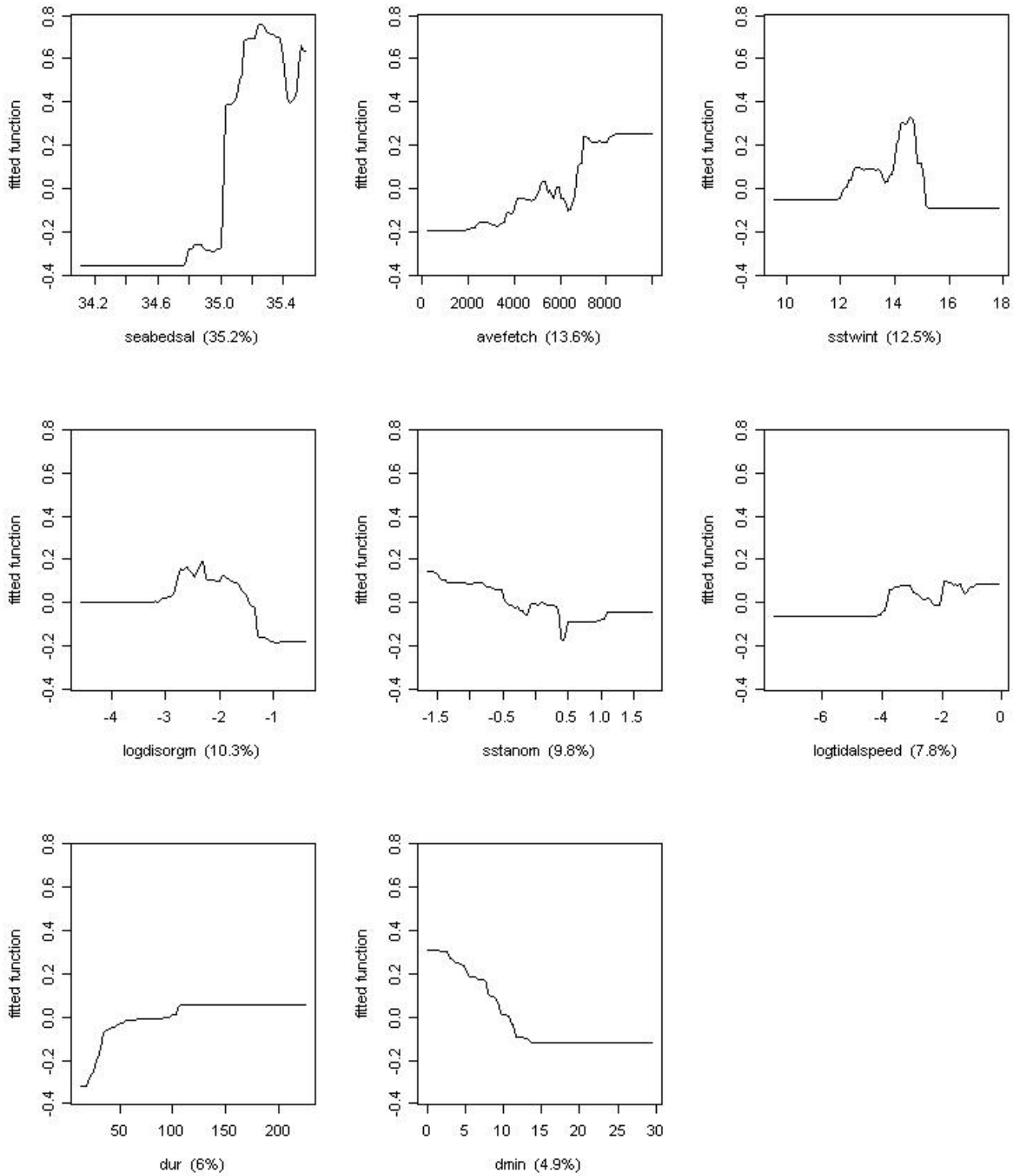


Figure S2.12. Partial dependence plots for *Cheilodactylus spectabilis* (red moki) on rocky reefs around New Zealand.

## Chironemus marmoratus : Hiwihiwi

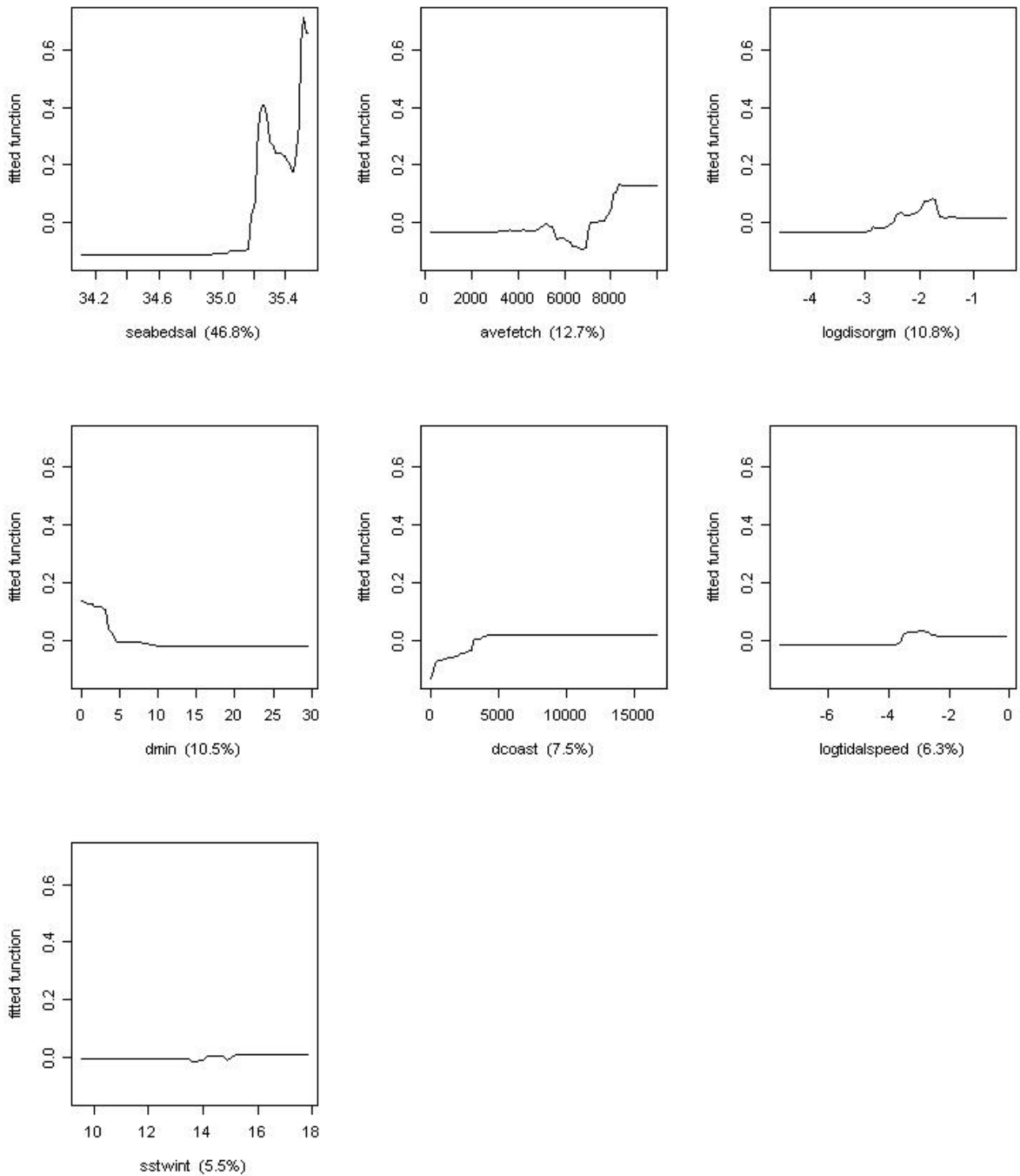


Figure S2.13. Partial dependence plots for *Chironemus marmoratus* (hiwihiwi) on rocky reefs around New Zealand.



## Chromis dispilus : Demoiselle

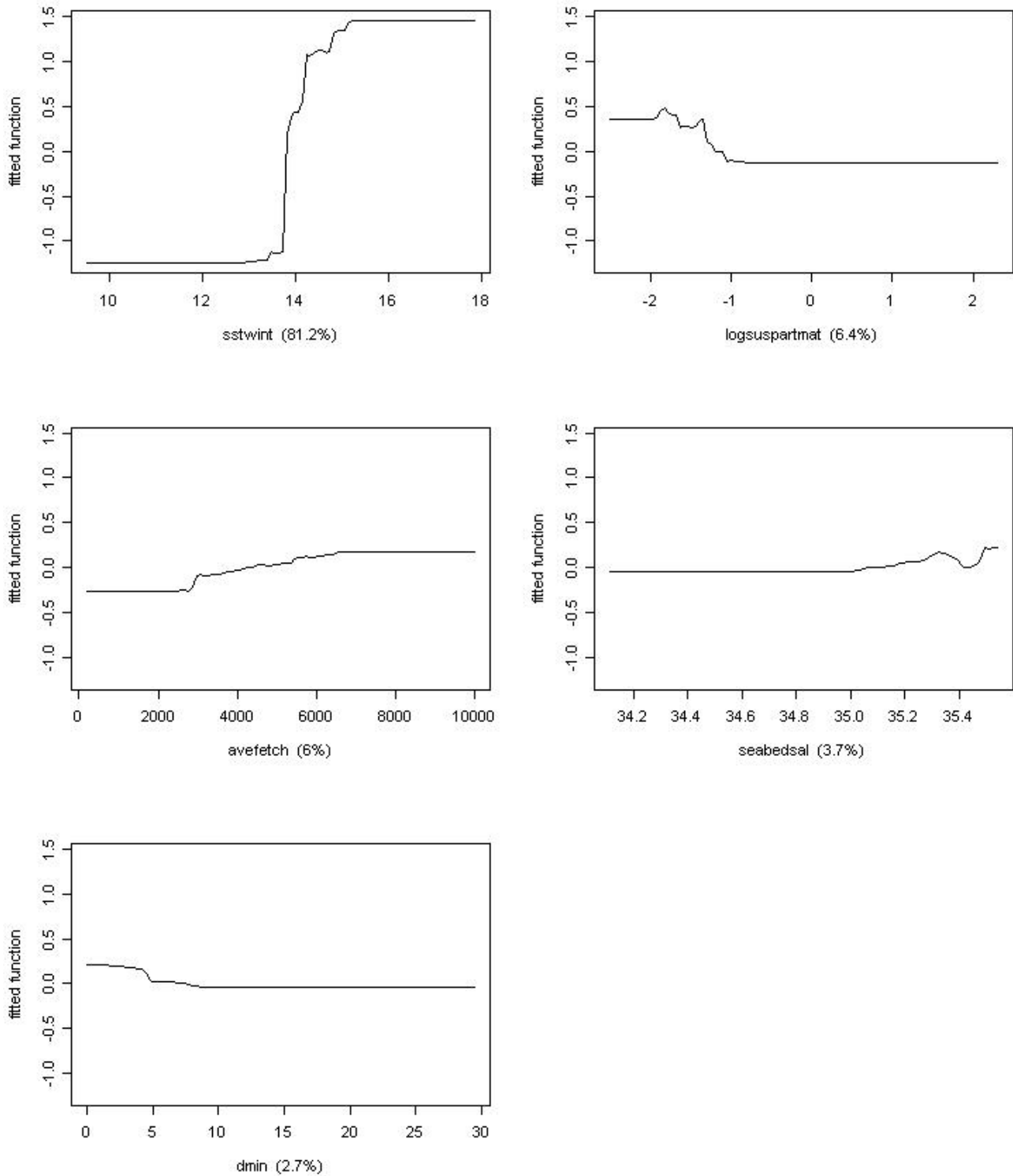


Figure S2.14. Partial dependence plots for *Chromis dispilus* (demoiselle) on rocky reefs around New Zealand.

## Conger verreauxi : Common conger eel

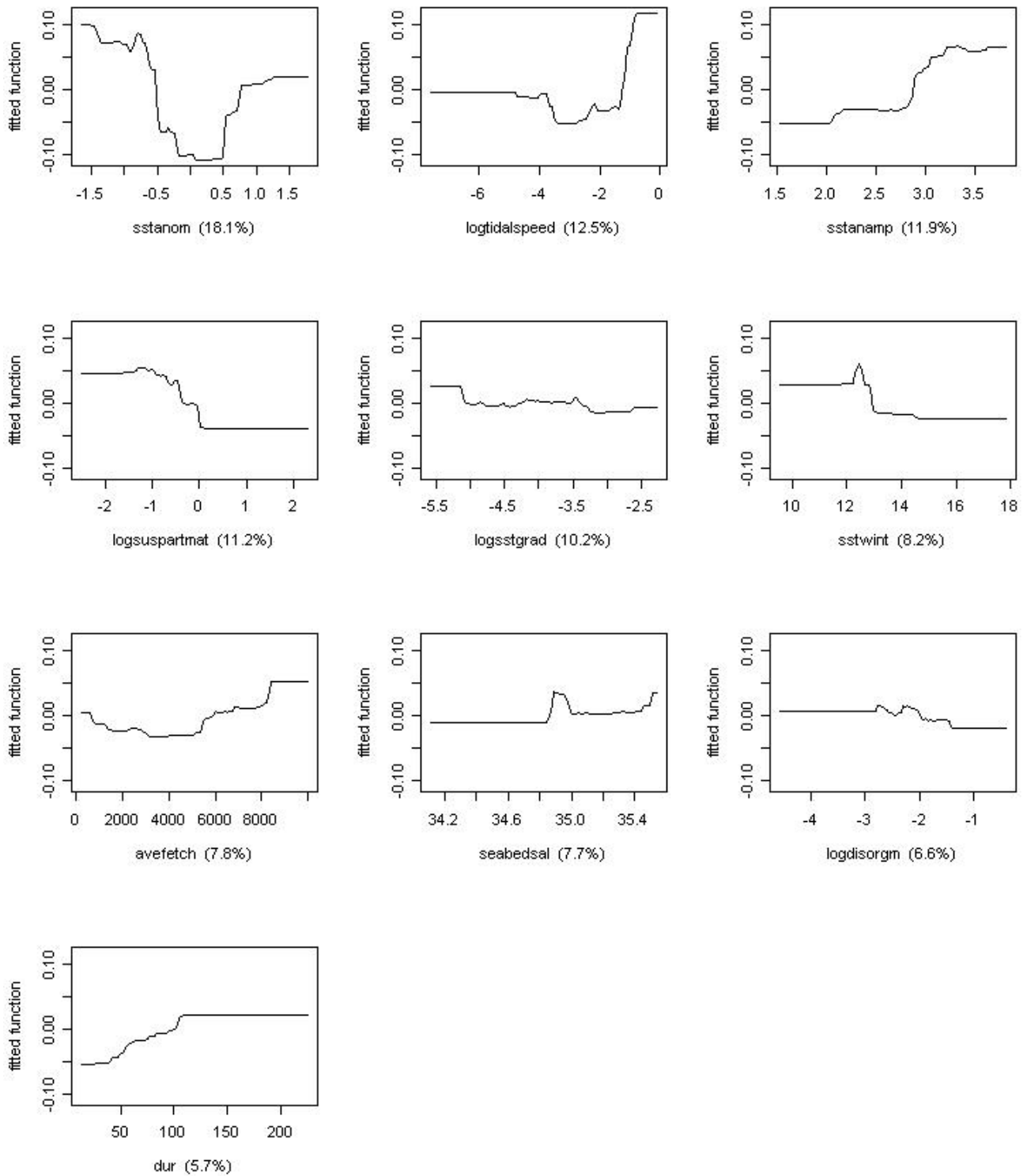


Figure S2.15. Partial dependence plots for *Conger verreauxi* (common conger eel) on rocky reefs around New Zealand.

### Coris sandageri : Sandager's wrasse

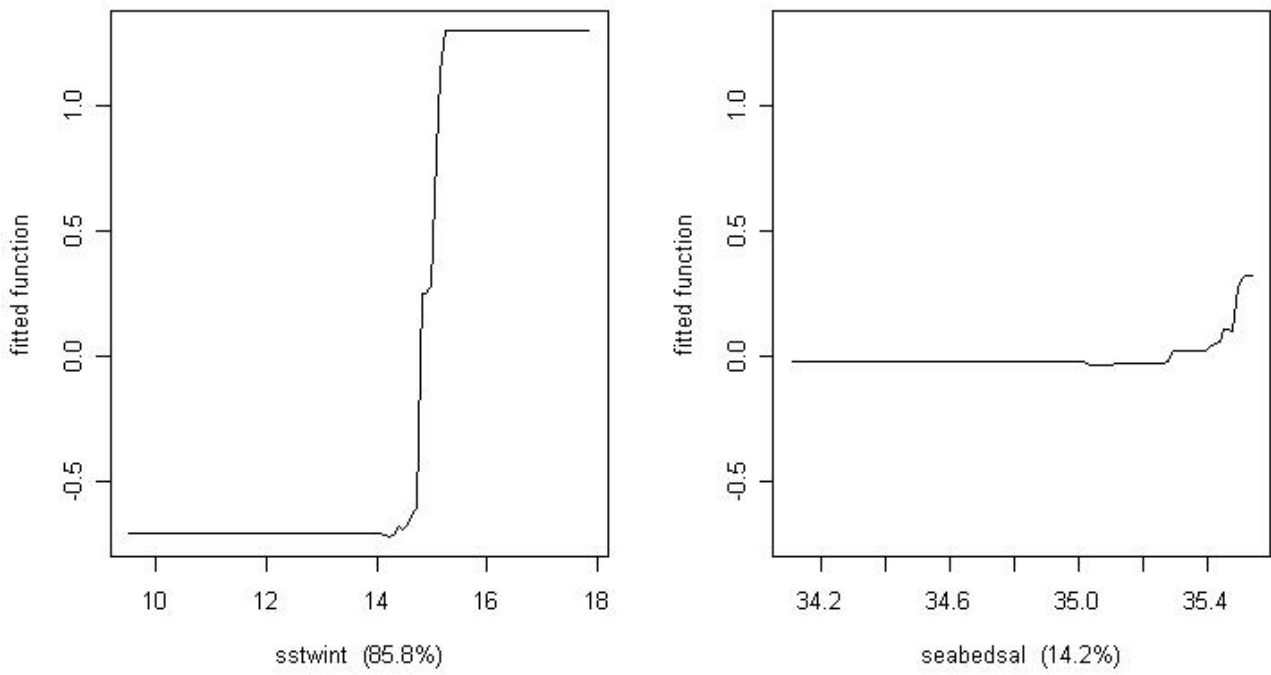


Figure S2.16. Partial dependence plots for *Coris sandageri* (Sandager's wrasse) on rocky reefs around New Zealand.

## Decapterus koheru : Koheru

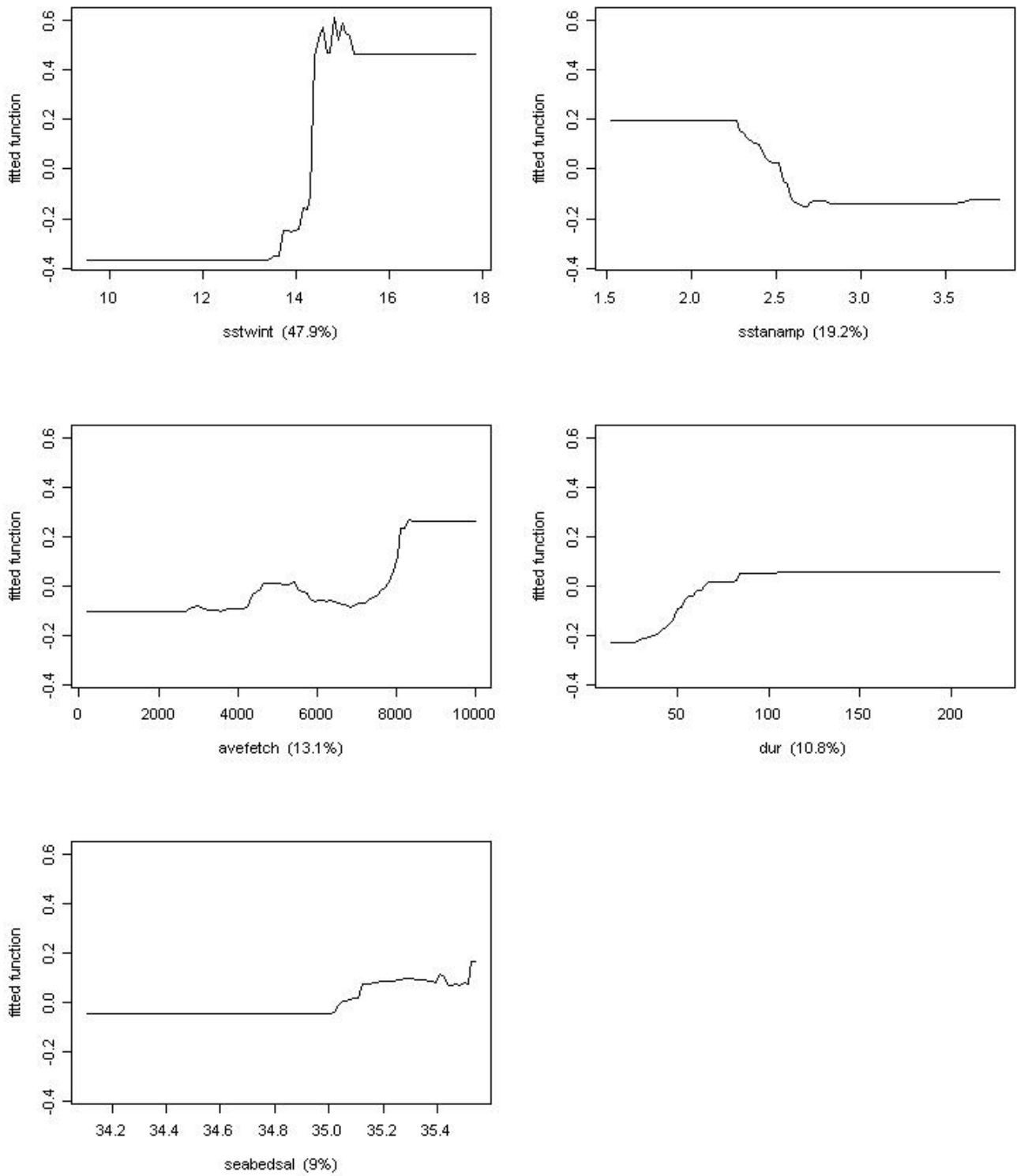


Figure S2.17. Partial dependence plots for *Decapterus koheru* (koheru) on rocky reefs around New Zealand.

## Epinephelus daemeli : Spotted black grouper

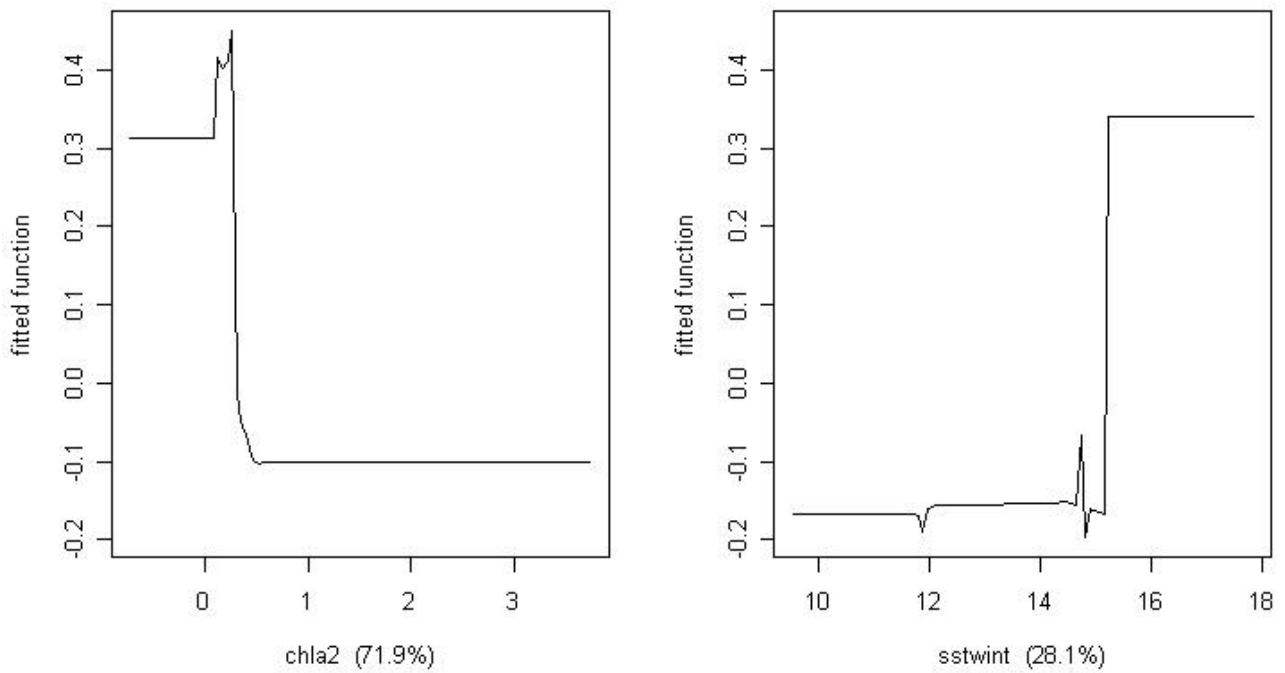


Figure S2.18. Partial dependence plots for *Epinephelus daemeli* (spotted black grouper) on rocky reefs around New Zealand.

### Forsterygion lapillum : Common triplefin

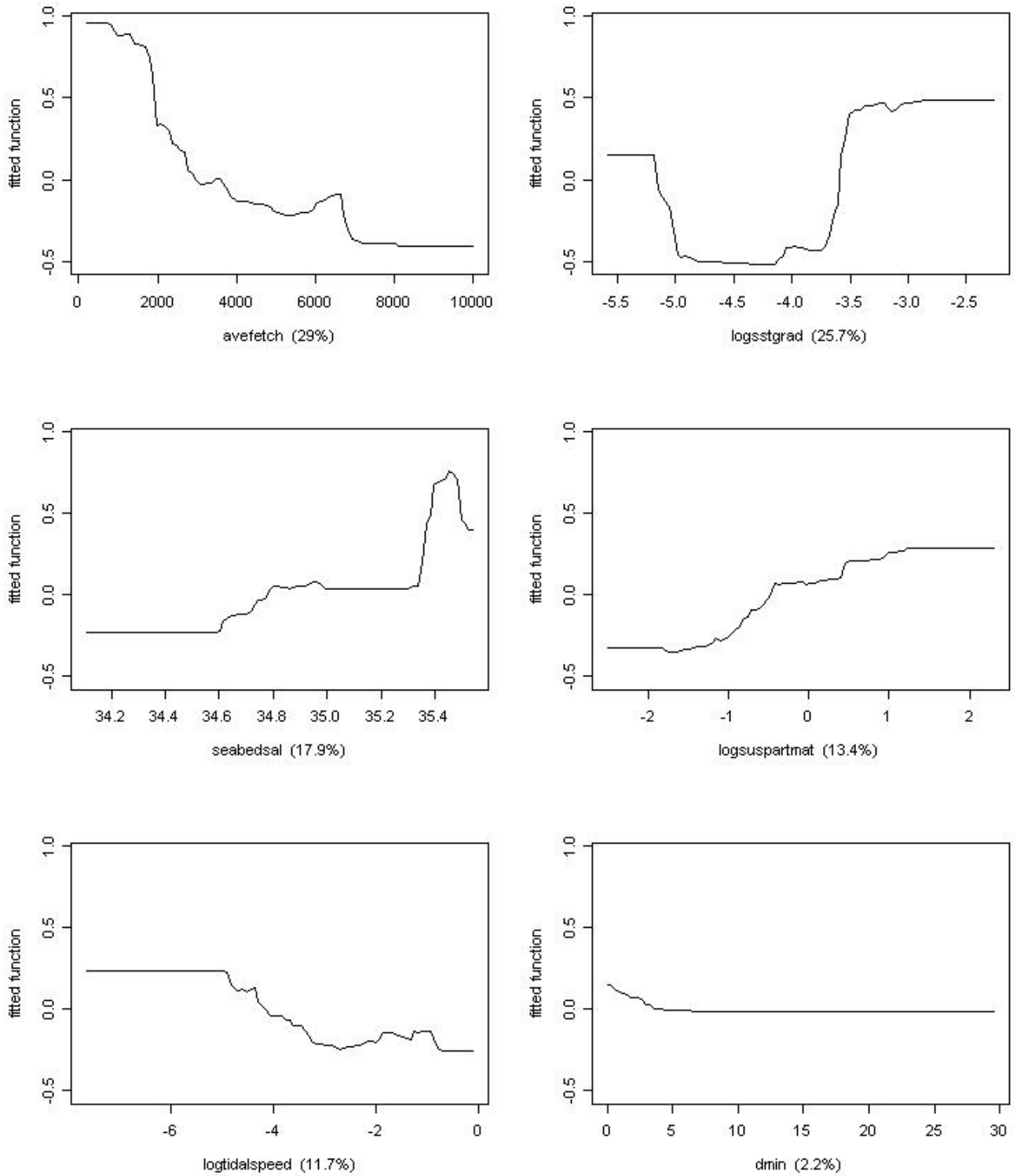


Figure S2.19. Partial dependence plots for *Forsterygion lapillum* (common triplefin) on rocky reefs around New Zealand.

### Forsterygion malcolmi : Banded triplefin

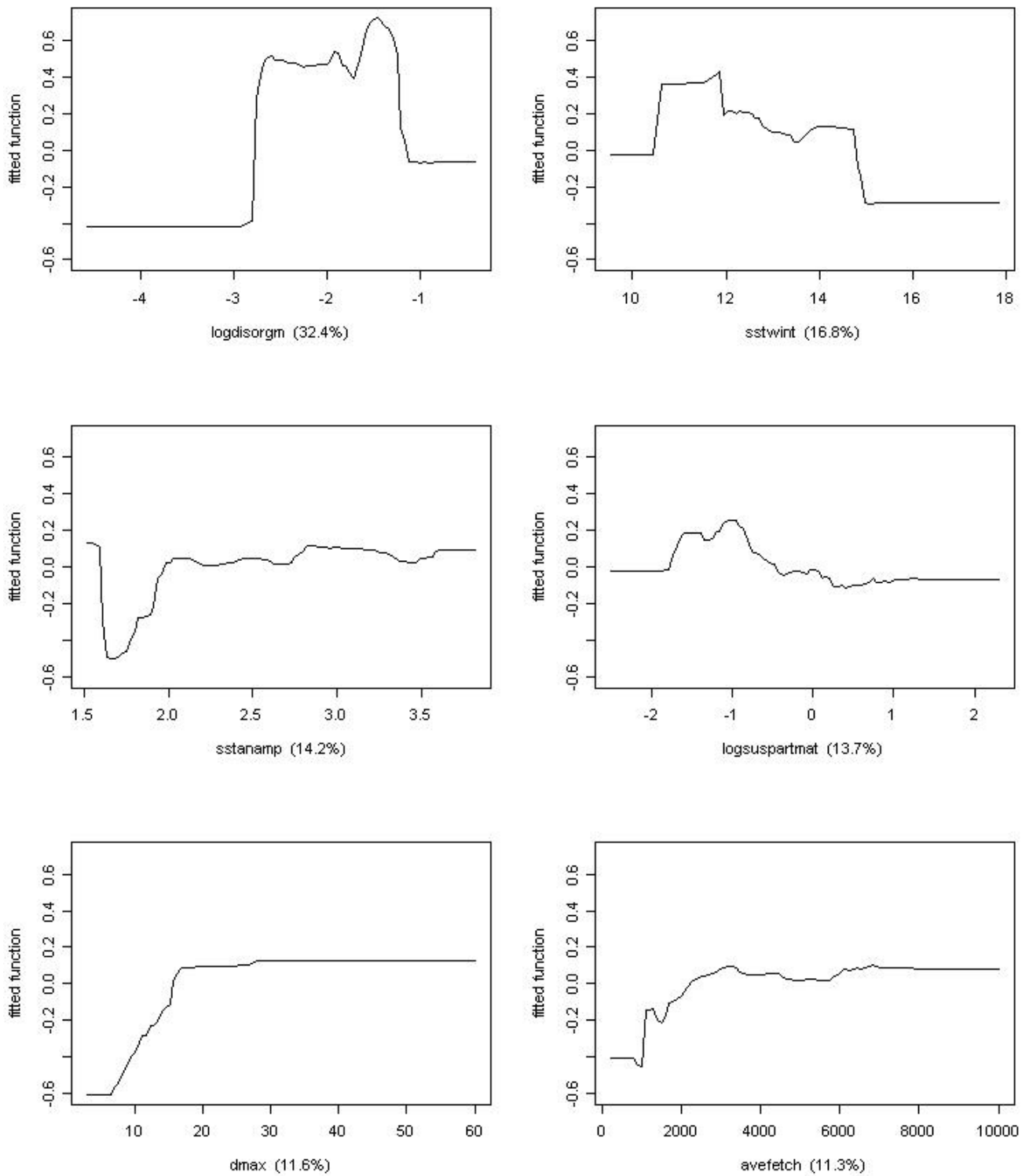


Figure S2.20. Partial dependence plots for *Forsterygion malcolmi* (banded triplefin) on rocky reefs around New Zealand.

## Forsterygion varium : Variable triplefin

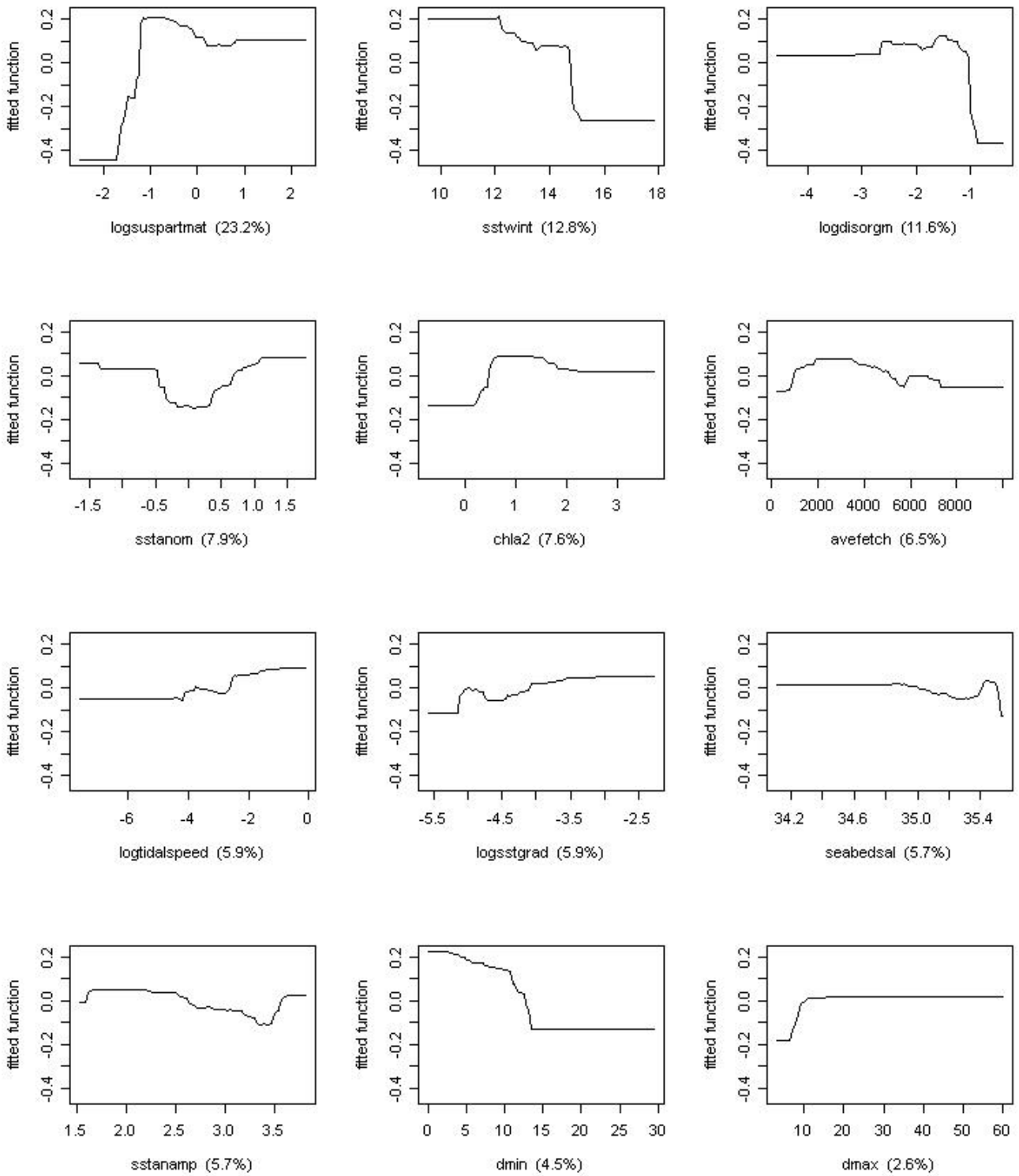


Figure S2.21. Partial dependence plots for *Forsterygion varium* (variable triplefin) on rocky reefs around New Zealand.



## Forsterygion flavonigrum : Yellow-black triplefin

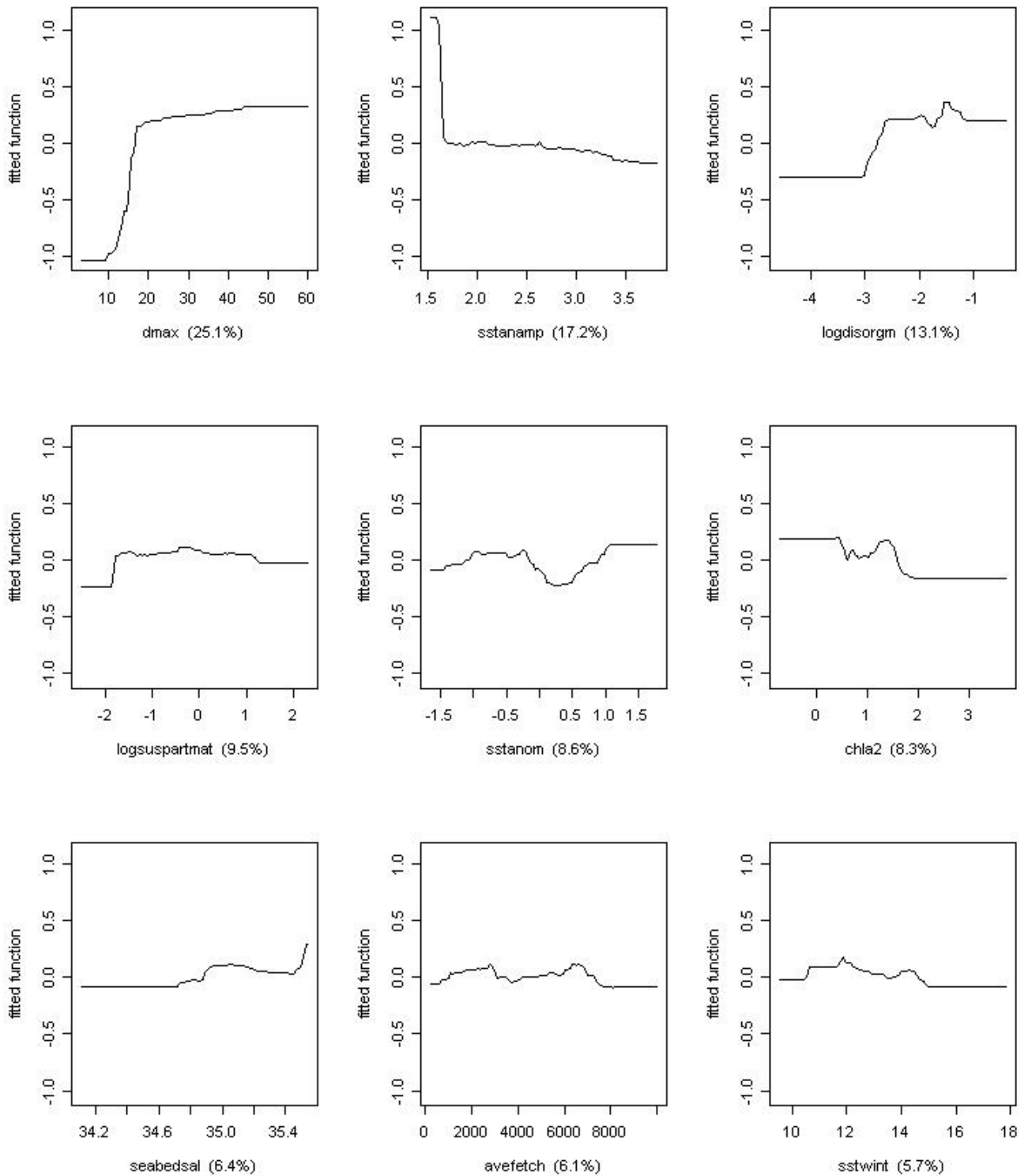


Figure S2.22. Partial dependence plots for *Forsterygion flavonigrum* (yellow-black triplefin) on rocky reefs around New Zealand.

## Girella cyanea : Bluefish

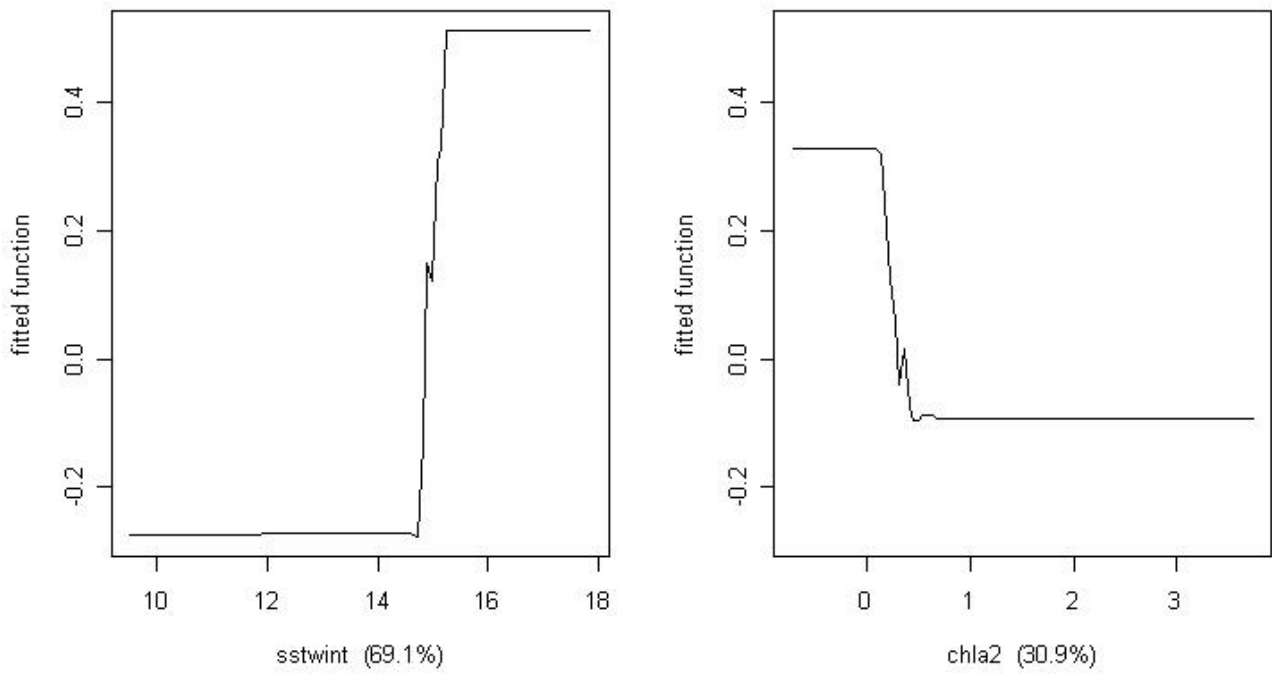


Figure S2.23. Partial dependence plots for *Girella cyanea* (bluefish) on rocky reefs around New Zealand.

## Girella tricuspidata : Parore

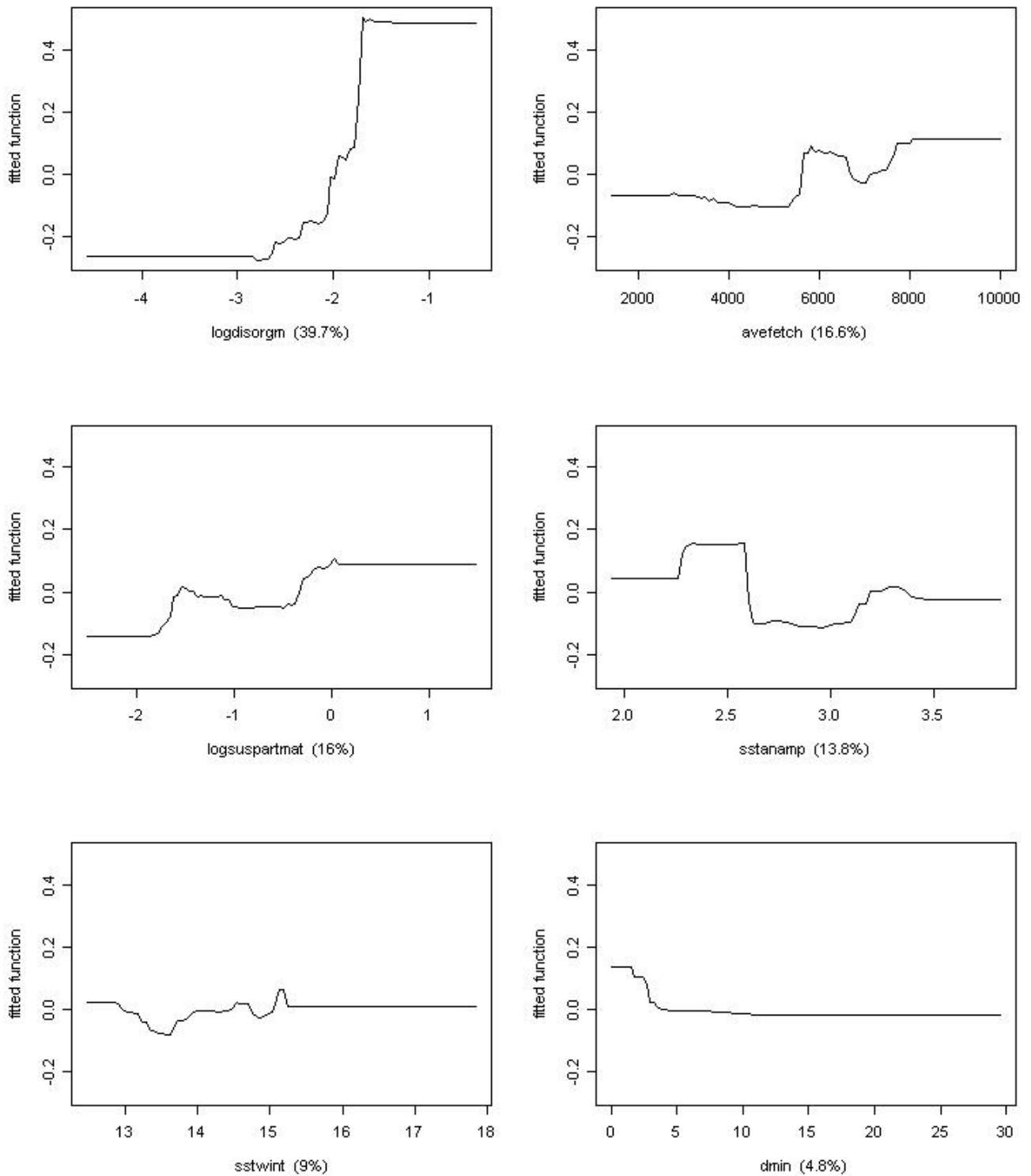


Figure S2.24. Partial dependence plots for *Girella tricuspidata* (parore) on rocky reefs around New Zealand.

## Grahamina gymnota : Robust triplefin

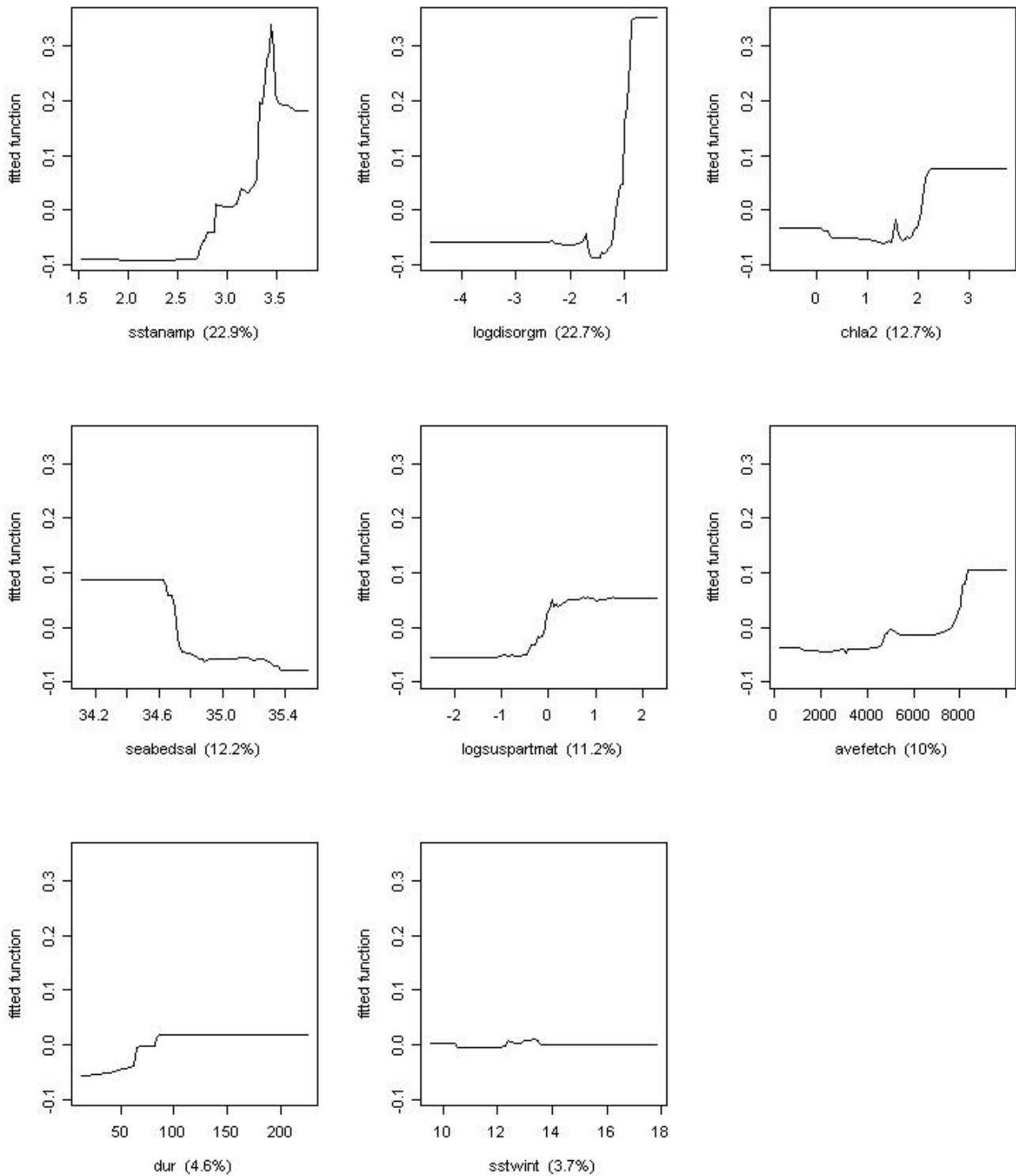


Figure S2.25 Partial dependence plots for *Grahamina gymnota* (robust triplefin) on rocky reefs around New Zealand.

### Gymnothorax prasinus : Yellow moray

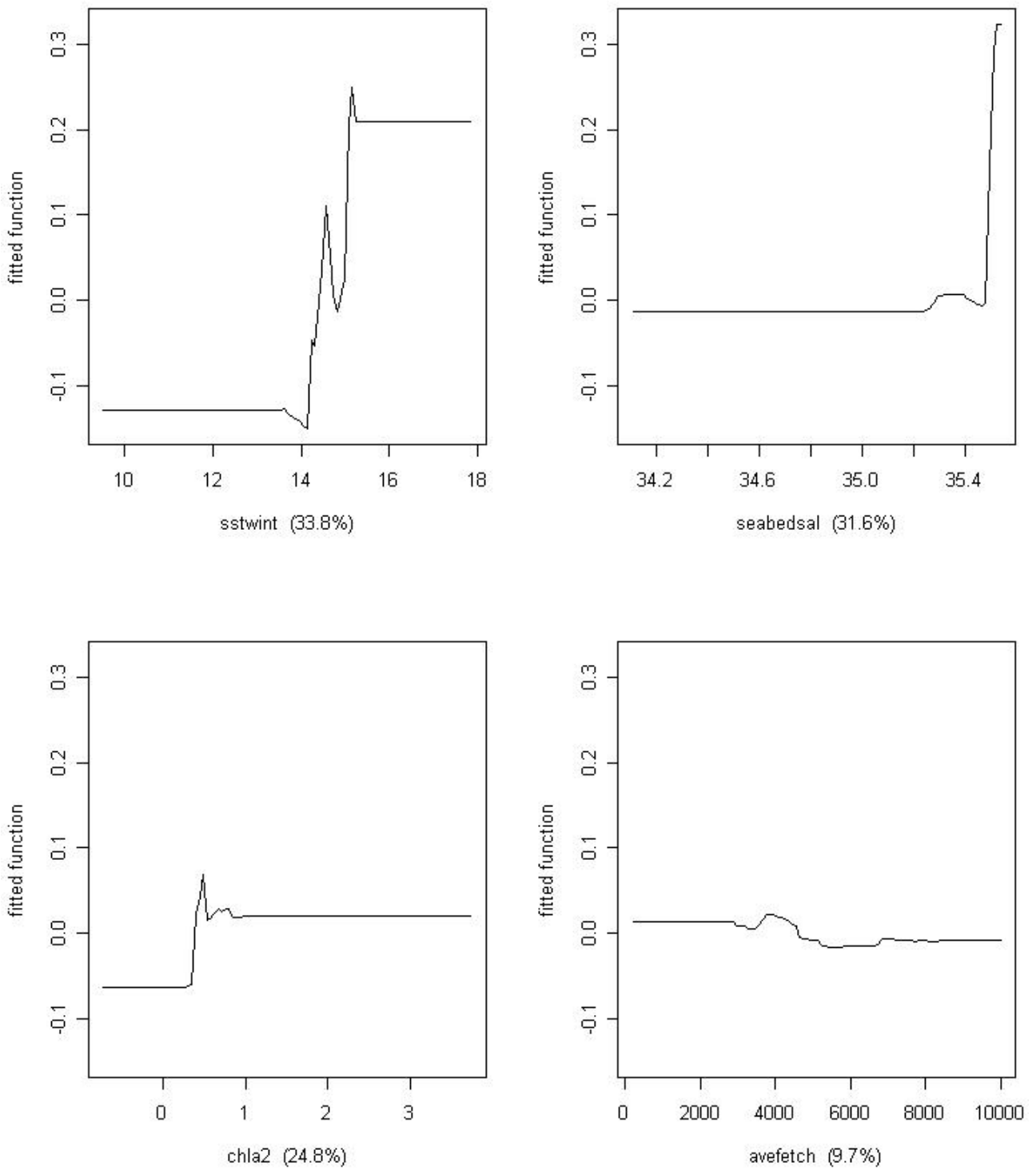


Figure S1.26. Partial dependence plots for *Gymnothorax prasinus* (yellow moray) on rocky reefs around New Zealand.

## Helicolenus percoides : Sea perch

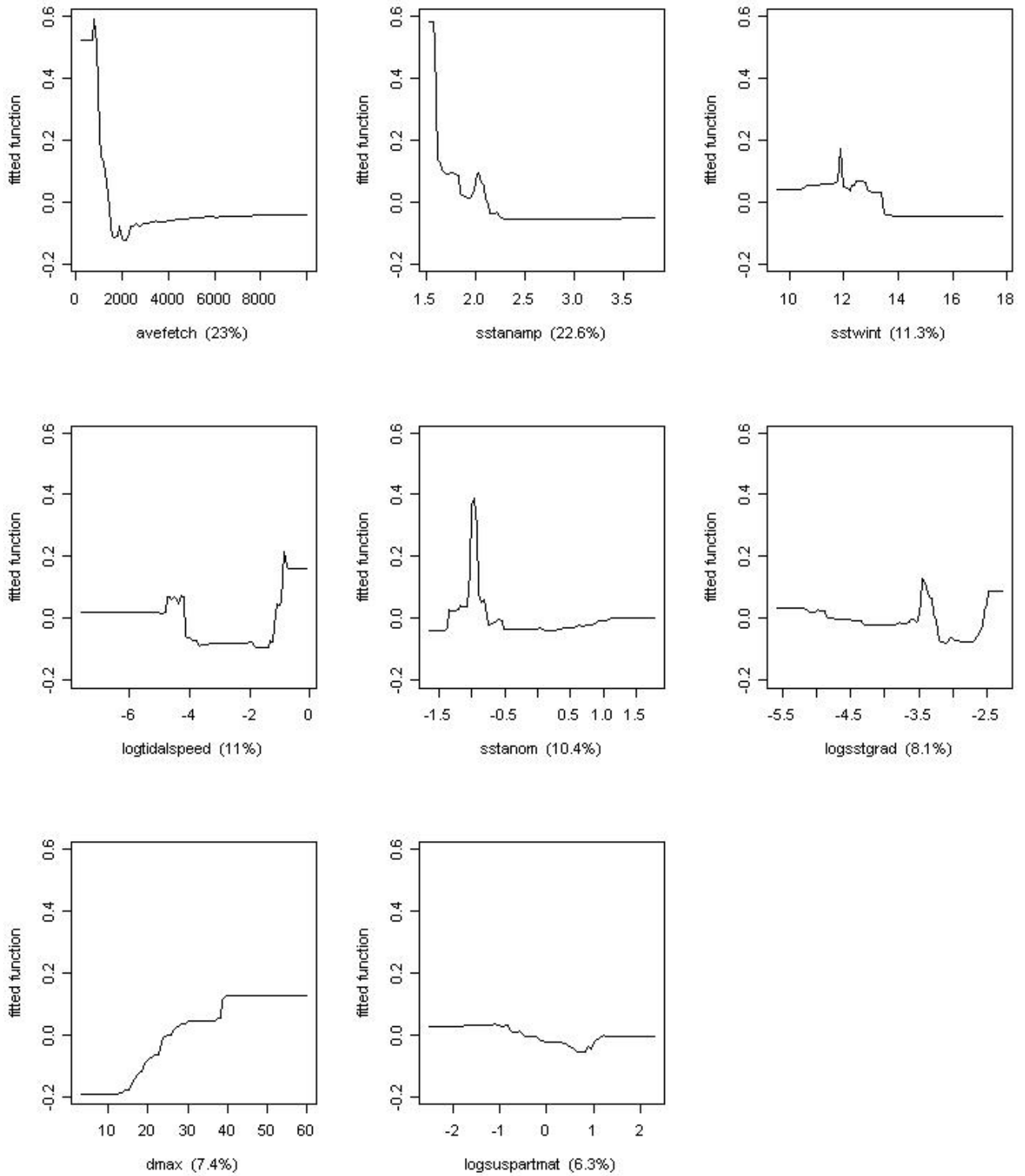


Figure S2.27. Partial dependence plots for *Helicolenus percoides* (sea perch) on rocky reefs around New Zealand.

## Hypoplectrodes huntii : Red-banded perch

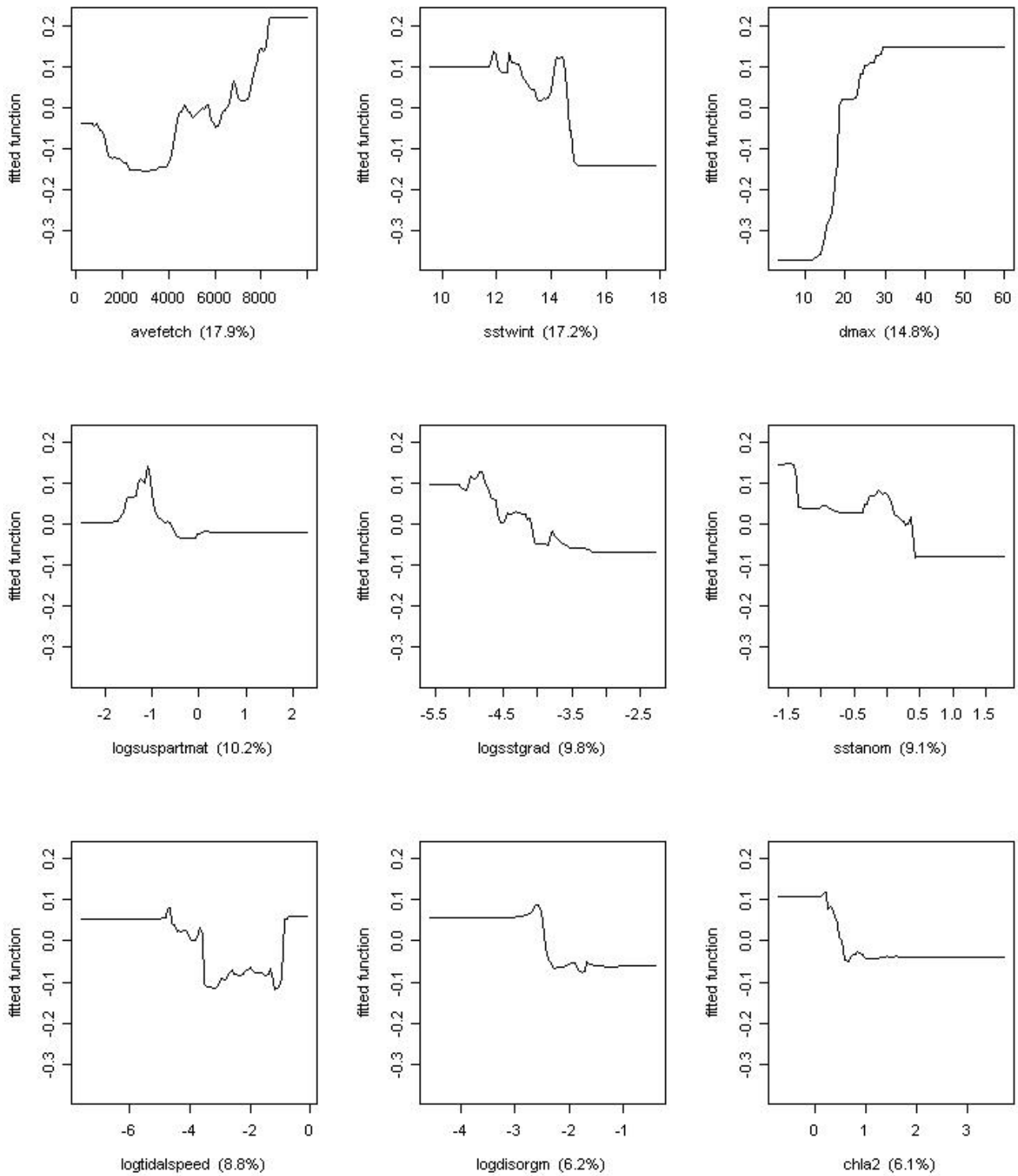


Figure S2.28. Partial dependence plots for *Hypoplectrodes huntii* (red-banded perch) on rocky reefs around New Zealand.

### Hypoplectrodes sp.B : Half-banded perch B

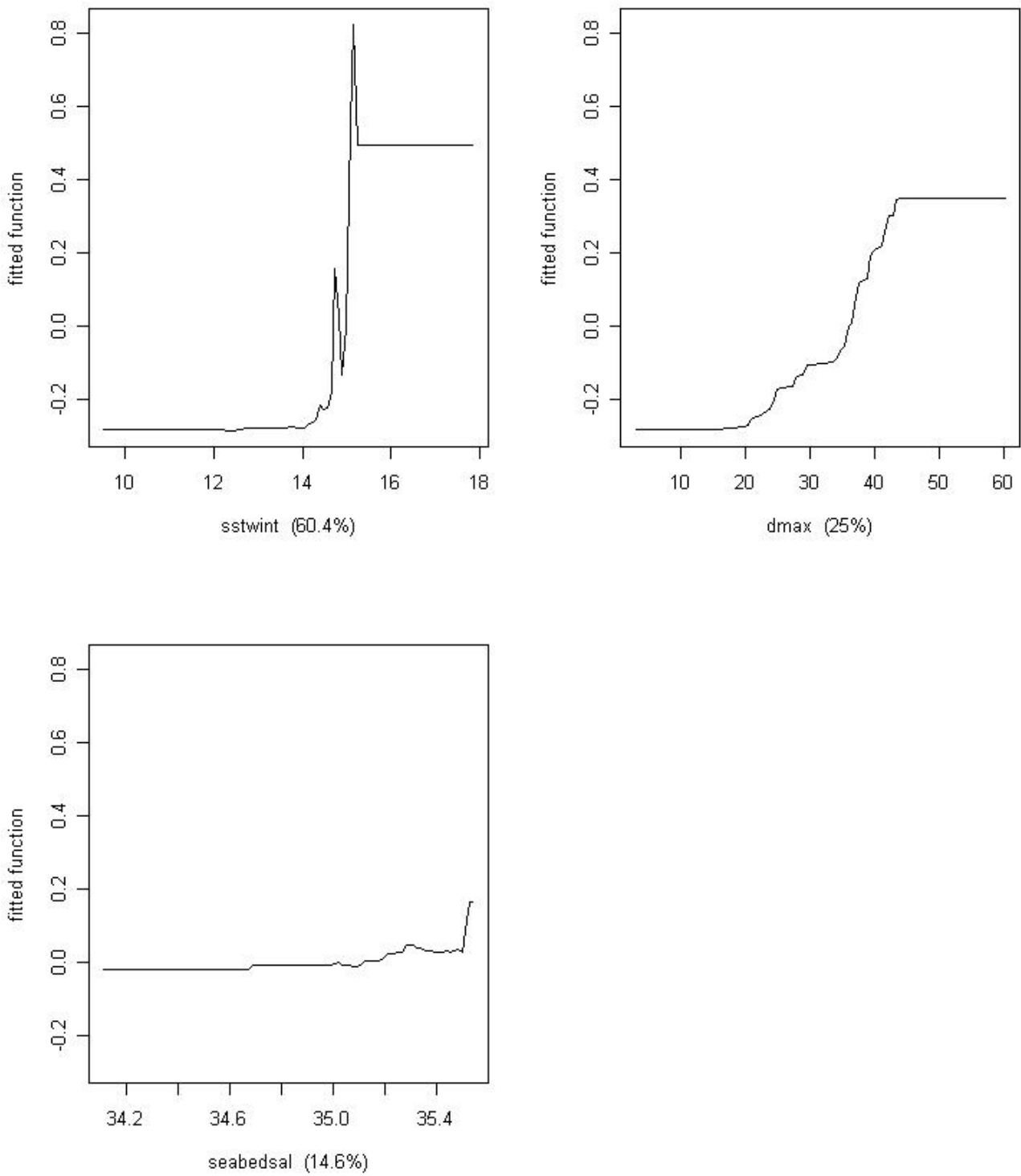


Figure S2.29. Partial dependence plots for *Hypoplectrodes* sp. B (half-banded perch B) on rocky reefs around New Zealand.



## Karalepis stewarti : Scaly-headed triplefin

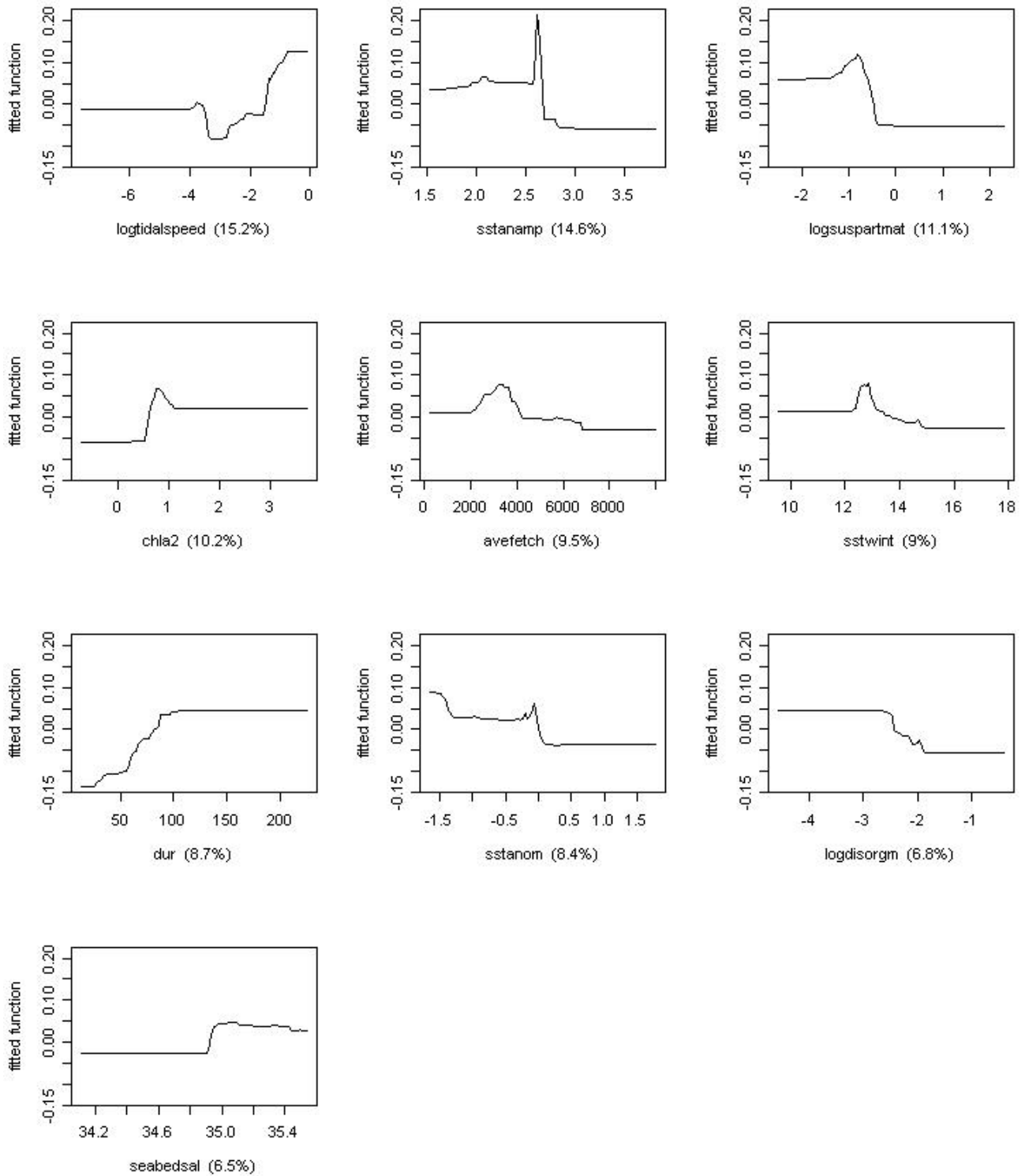


Figure S2.30. Partial dependence plots for *Karalepis stewarti* (scaly-headed triplefin) on rocky reefs around New Zealand.

## Kyphosus sydneyanus : Silver drummer

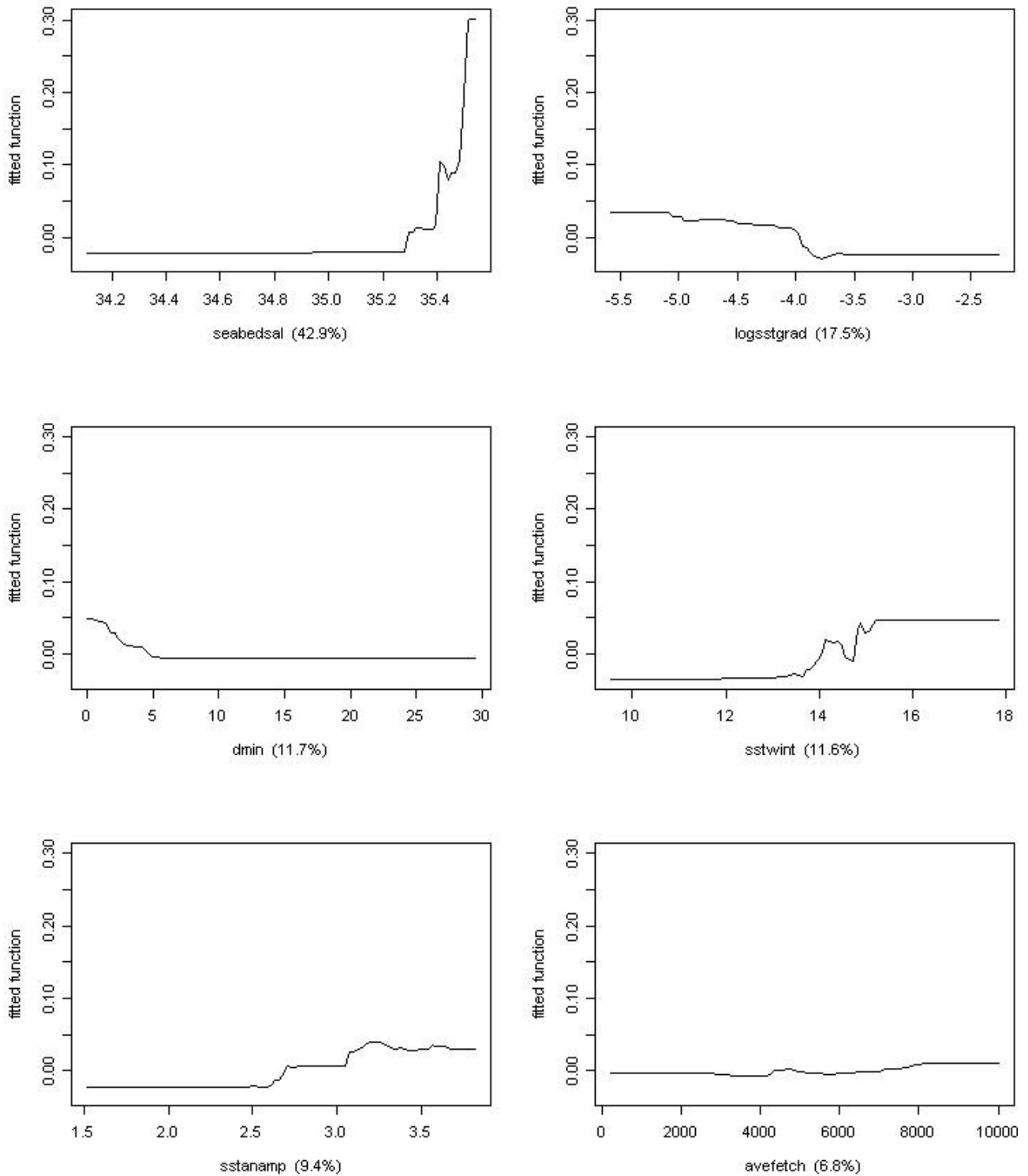


Figure S2.31. Partial dependence plots for *Kyphosus sydneyanus* (silver drummer) on rocky reefs around New Zealand.

## Latridopsis ciliaris : Blue moki

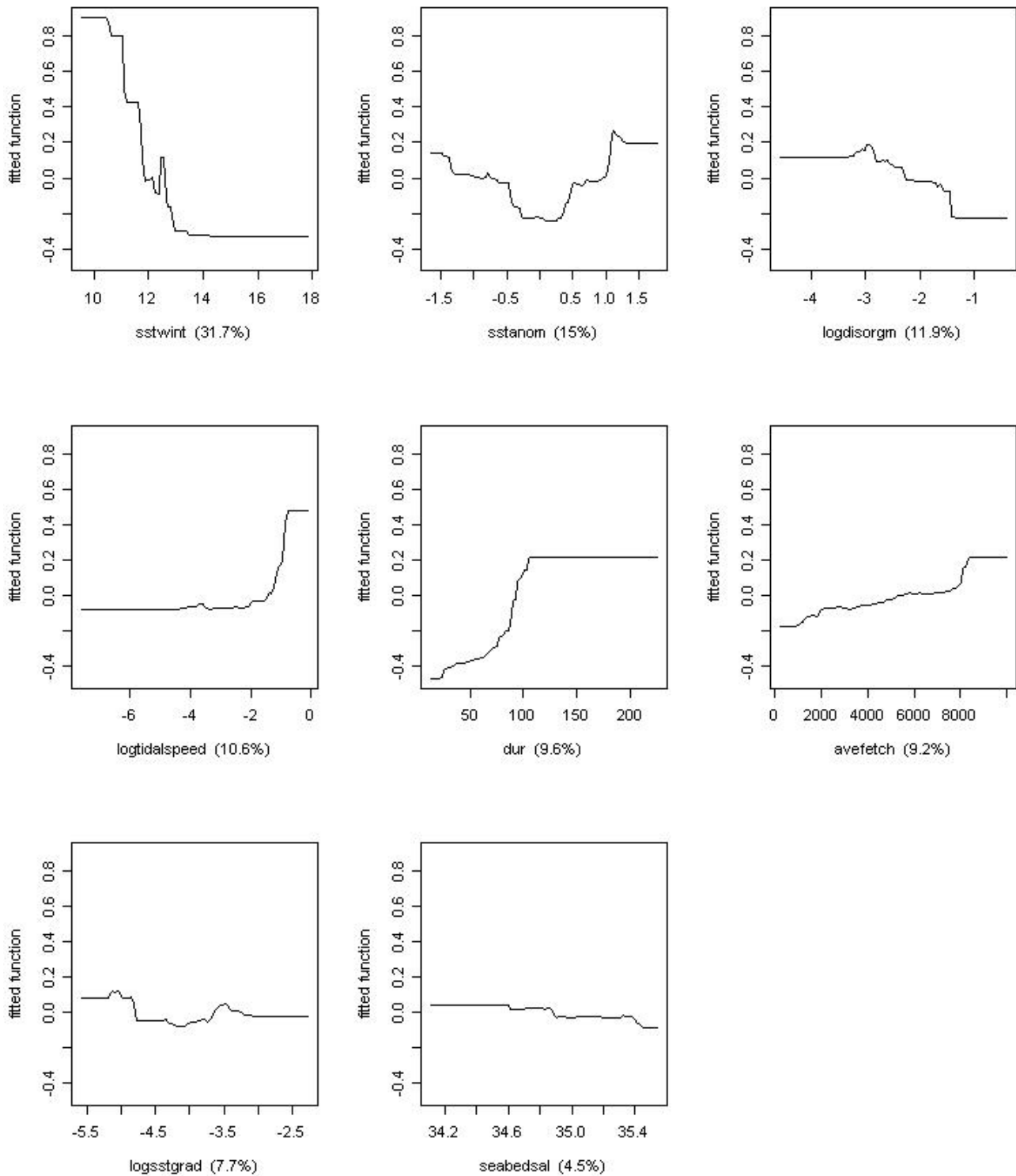


Figure S2.32. Partial dependence plots for *Latridopsis ciliaris* (blue moki) on rocky reefs around New Zealand.

### Latris lineata : Trumpeter

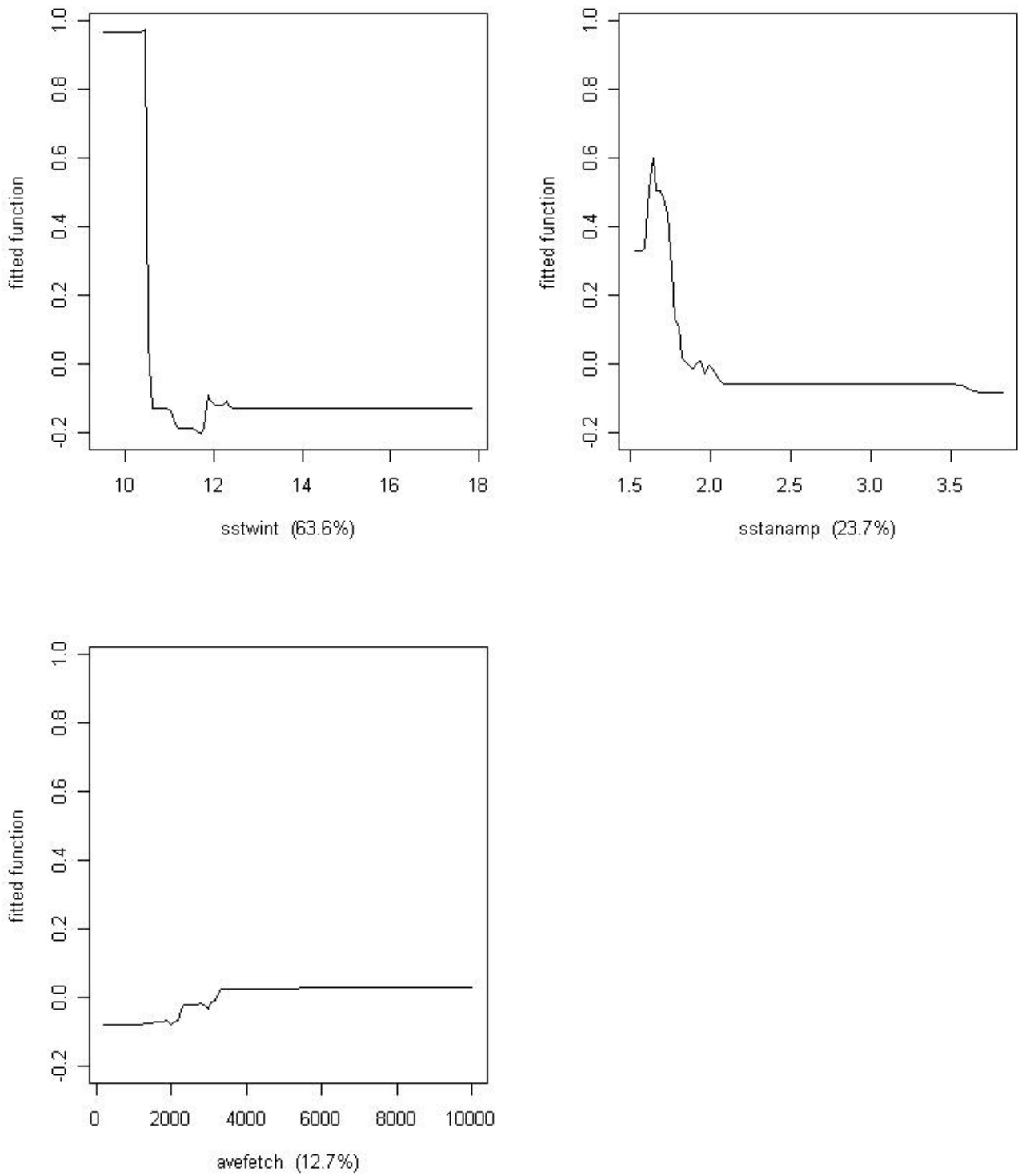


Figure S2.33. Partial dependence plots for *Latris lineata* (trumpeter) on rocky reefs around New Zealand.

## Lotella rhacina : Rock cod

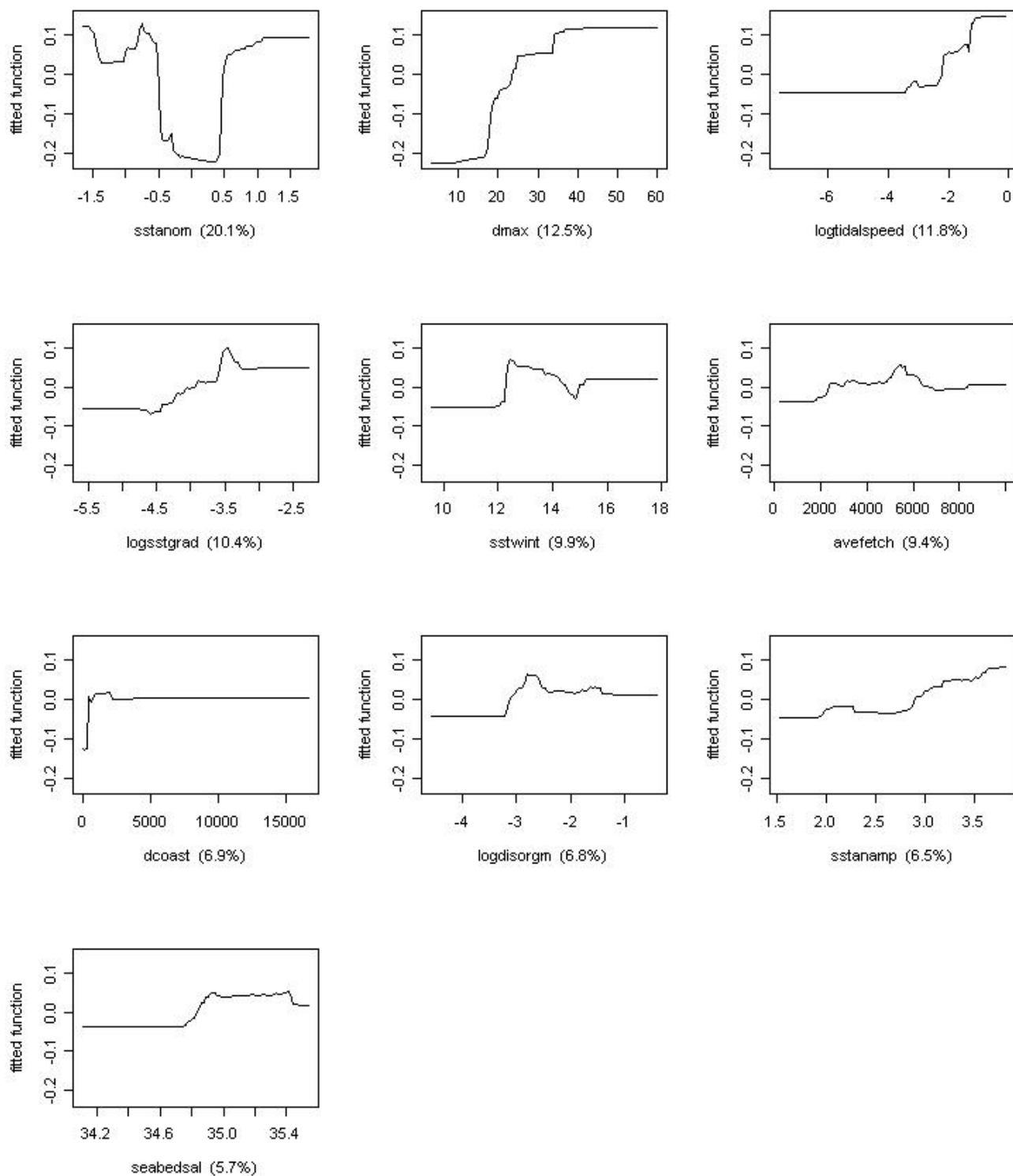


Figure S2.34. Partial dependence plots for *Lotella rhacina* (rock cod) on rocky reefs around New Zealand.

## Mendosoma lineatum : Telescopefish

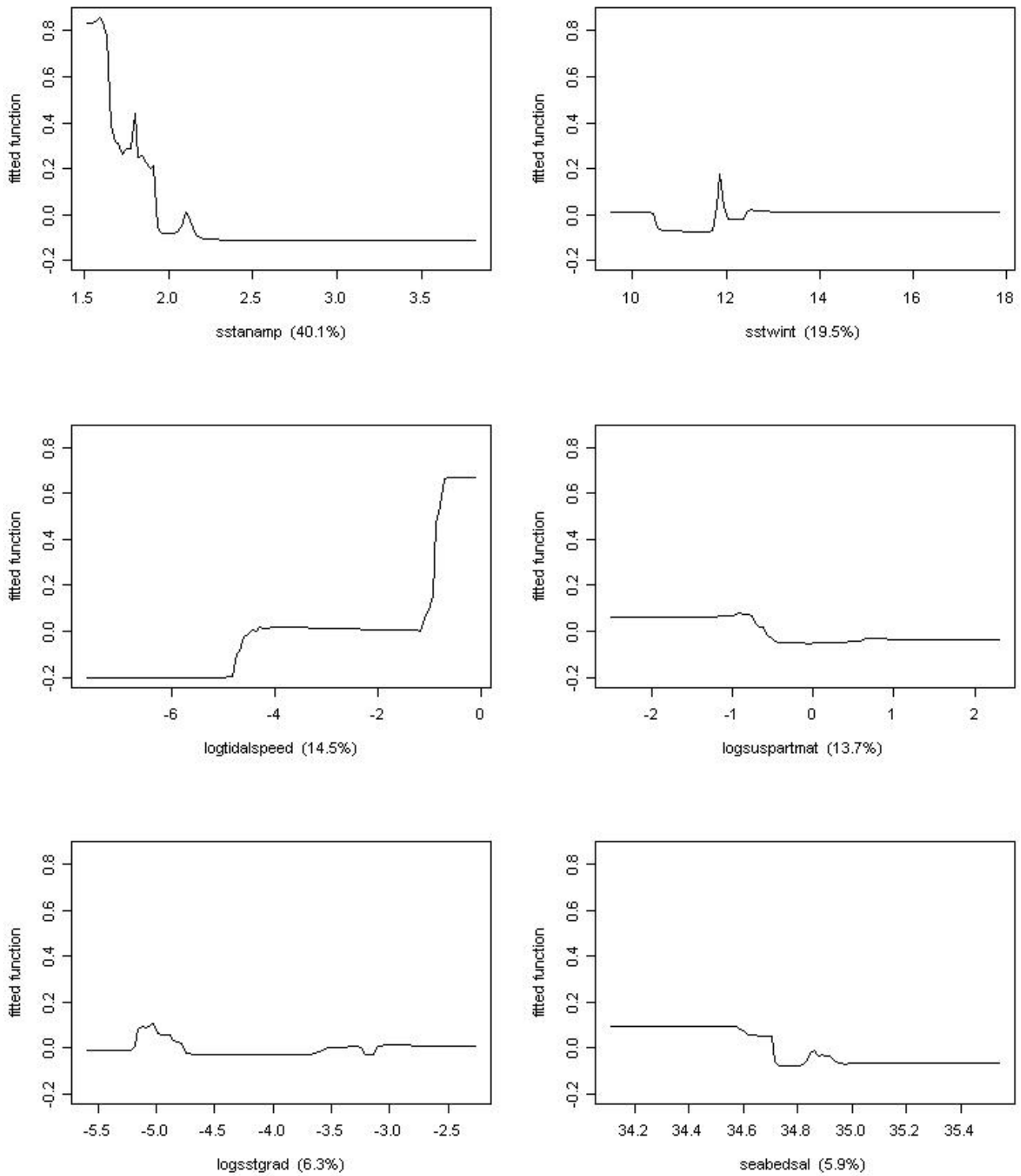


Figure S2.35. Partial dependence plots for *Mendosoma lineatum* (telescope fish) on rocky reefs around New Zealand.

## Nemadactylus douglasii : Porae

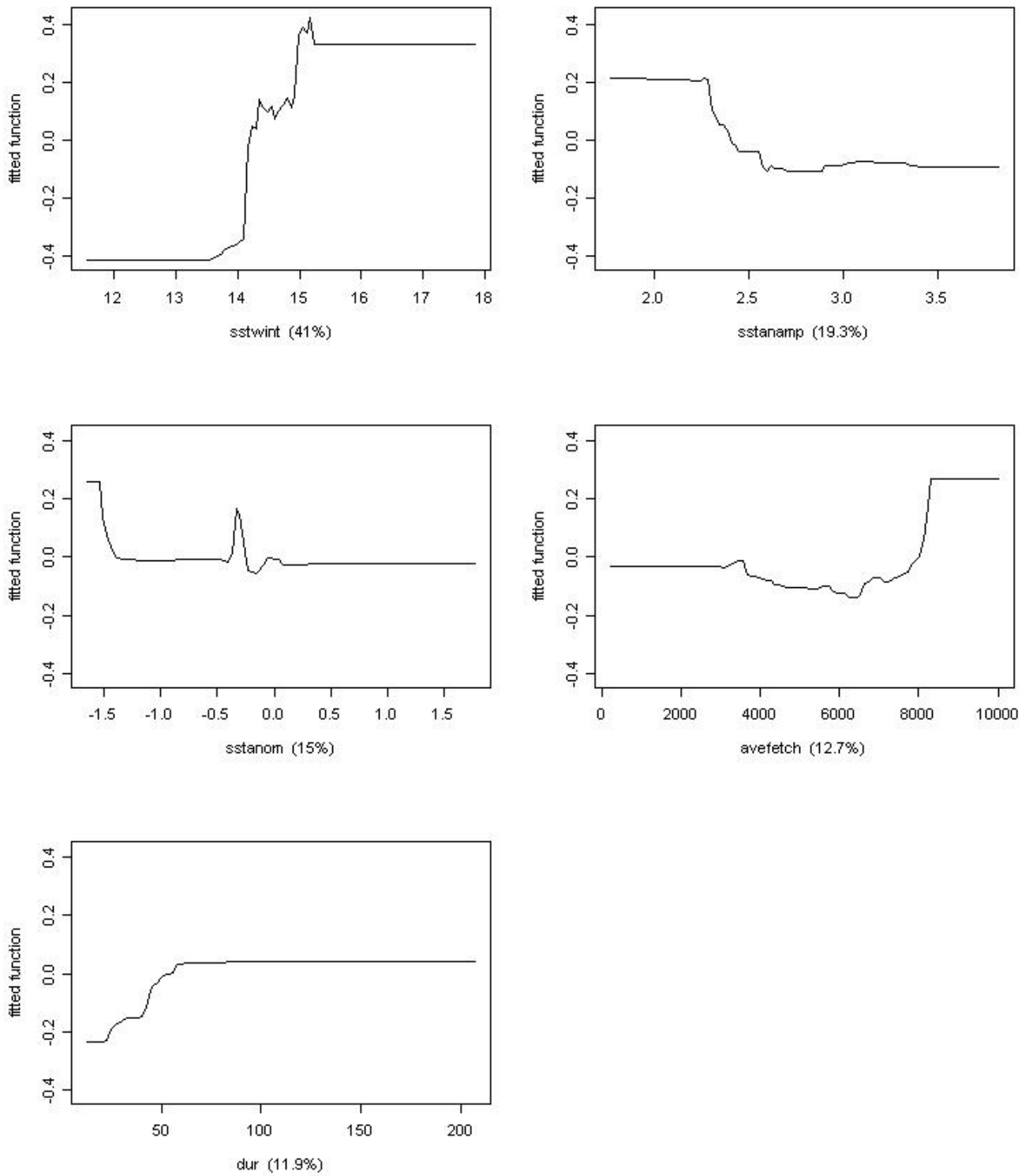


Figure S2.36. Partial dependence plots for *Nemadactylus douglasii* (porae) on rocky reefs around New Zealand.

## Nemadactylus macropterus : Tarakihi

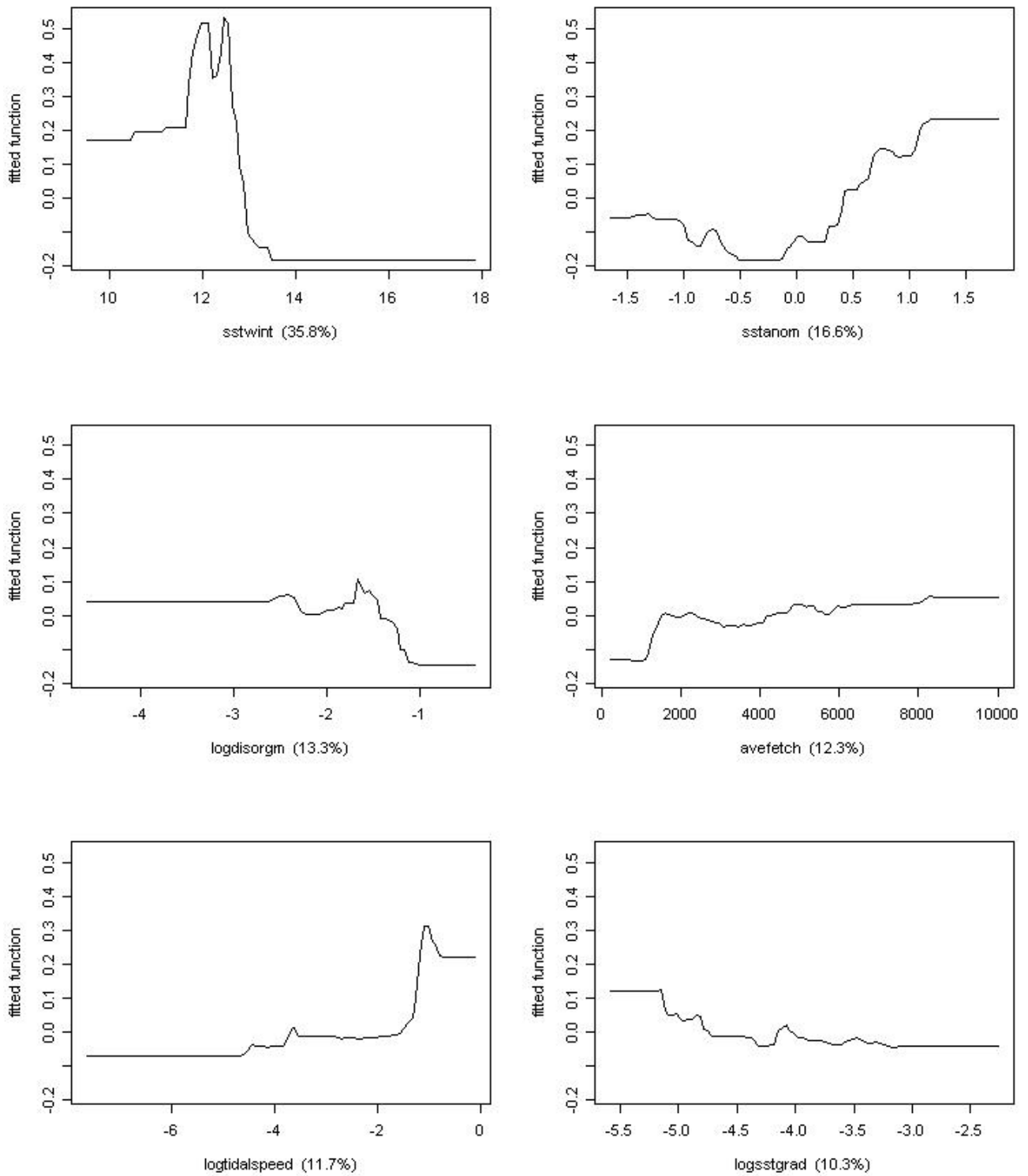


Figure S2.37. Partial dependence plots for *Nemadactylus macropterus* (tarakihi) on rocky reefs around New Zealand.



## Notoclinops caerulepunctus : Blue dot triplefin

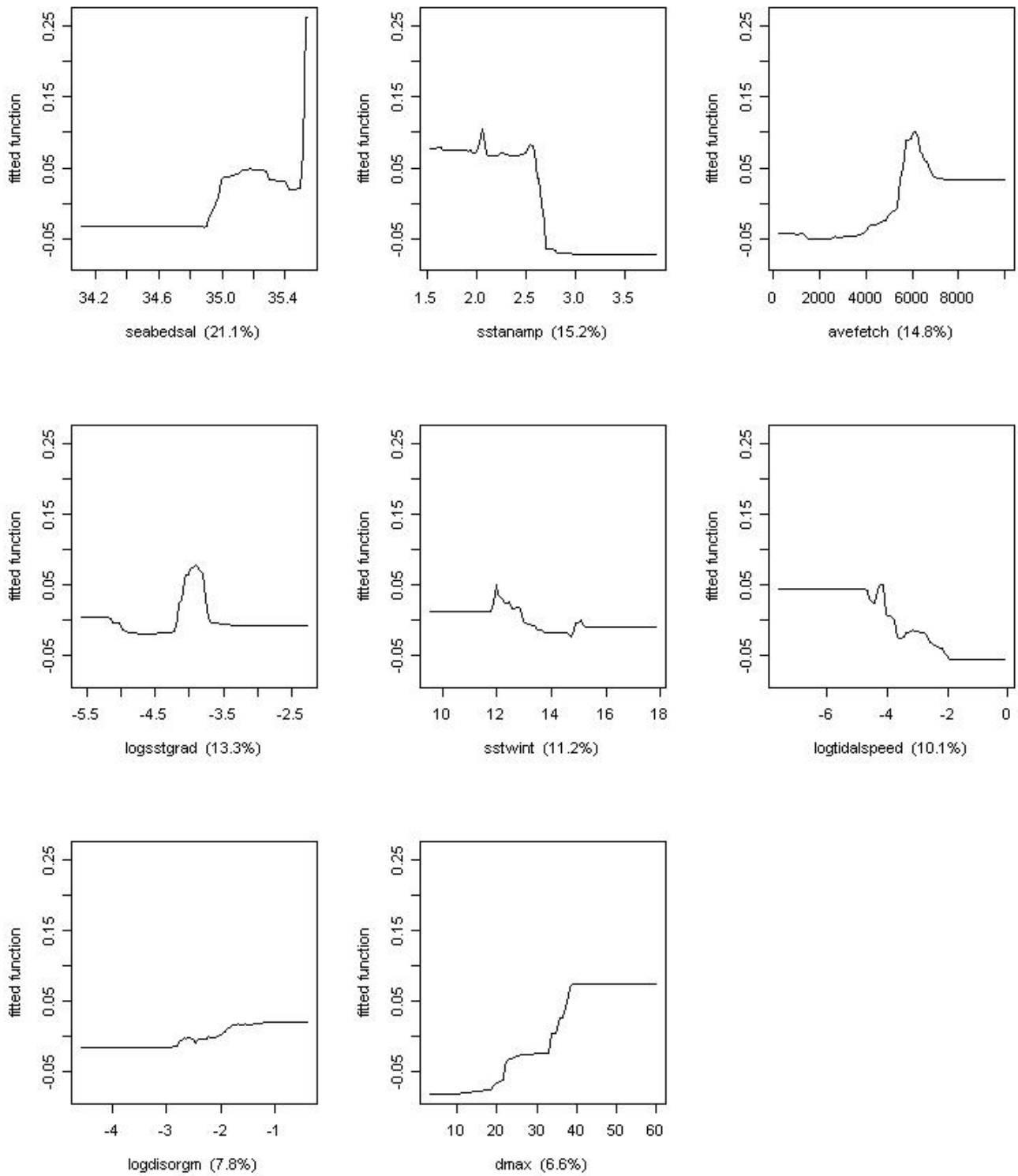


Figure S2.38. Partial dependence plots for *Notoclinops caerulepunctus* (blue dot triplefin) on rocky reefs around New Zealand.

## Notolabrus celidotus : Spotty

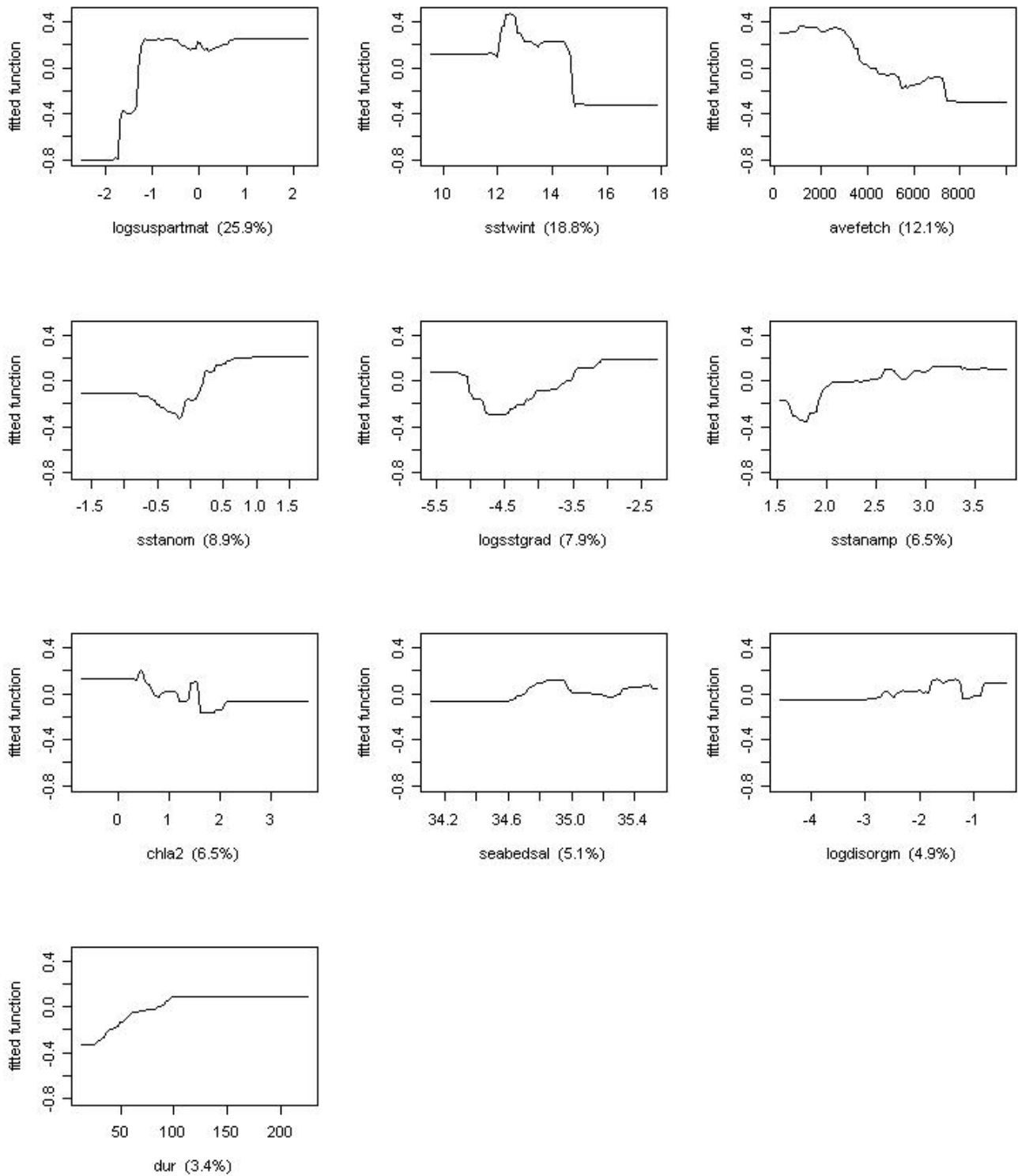


Figure S2.39. Partial dependence plots for *Notolabrus celidotus* (spotty) on rocky reefs around New Zealand.

## Notolabrus cinctus : Girdled wrasse

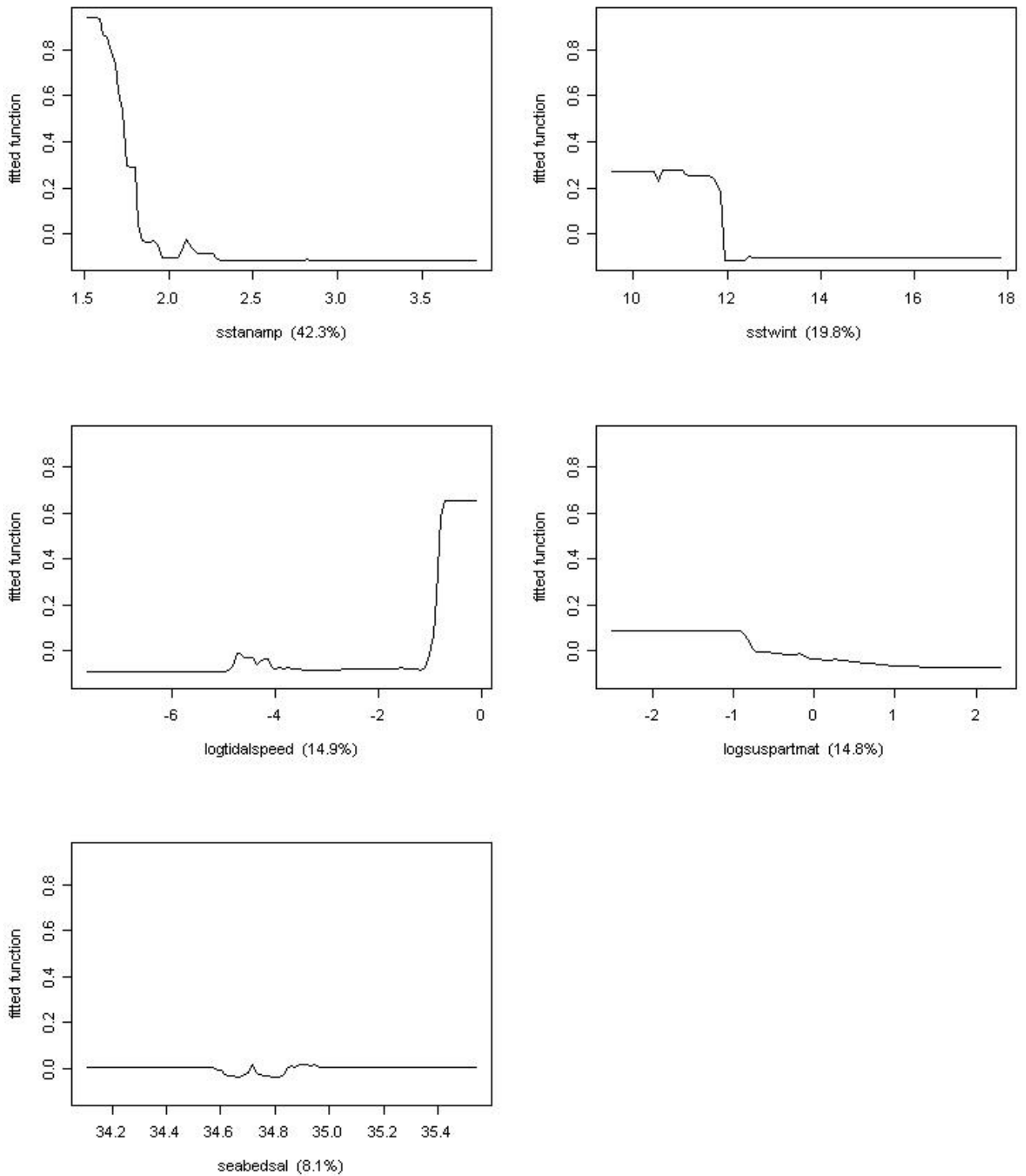


Figure S1.40. Partial dependence plots for *Notolabrus cinctus* (girdled wrasse) on rocky reefs around New Zealand.

## Notolabrus fucicola : Banded wrasse

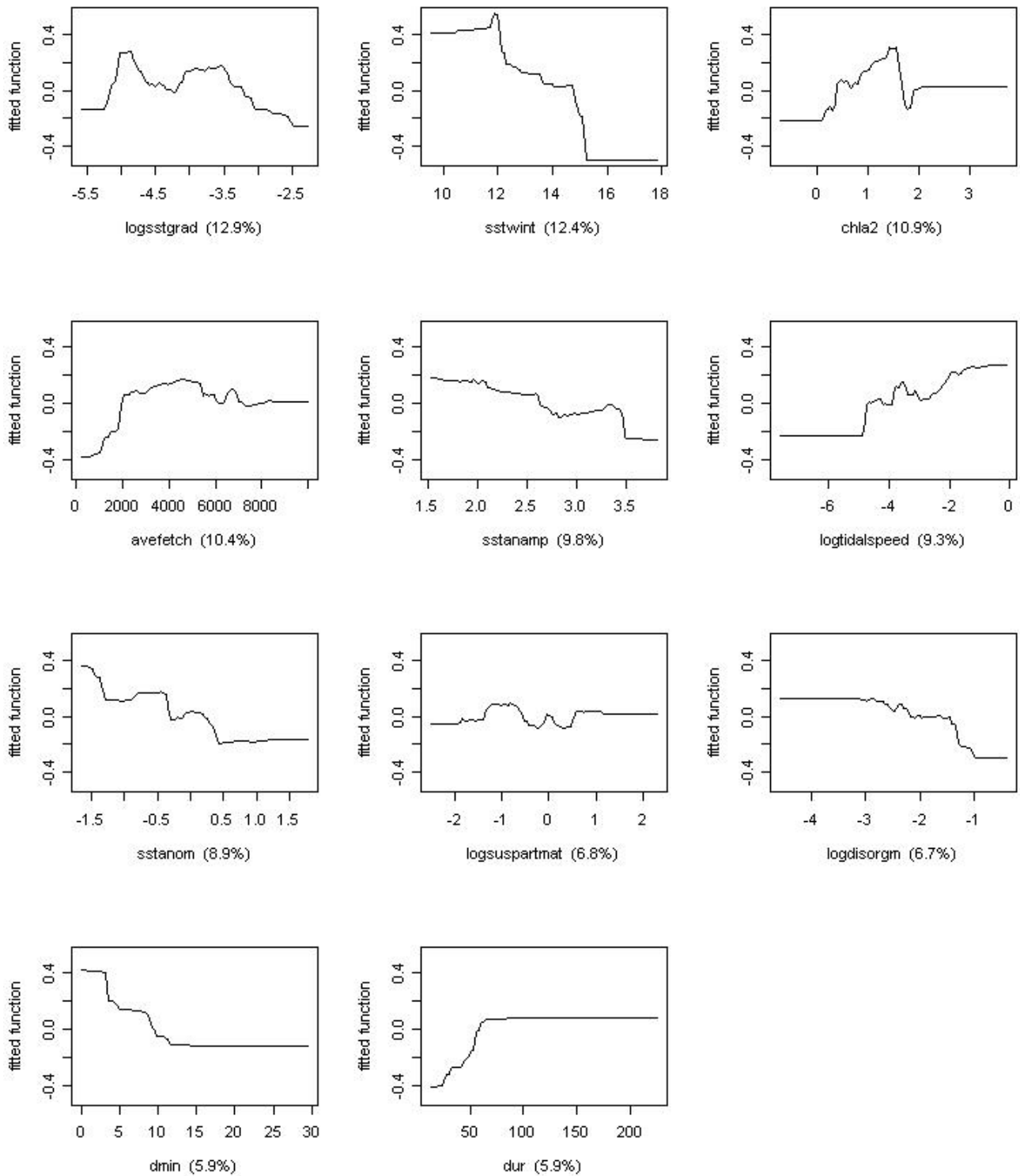


Figure S2.41. Partial dependence plots for *Notolabrus fucicola* (banded wrasse) on rocky reefs around New Zealand.

### Notolabrus inscriptus : Green wrasse

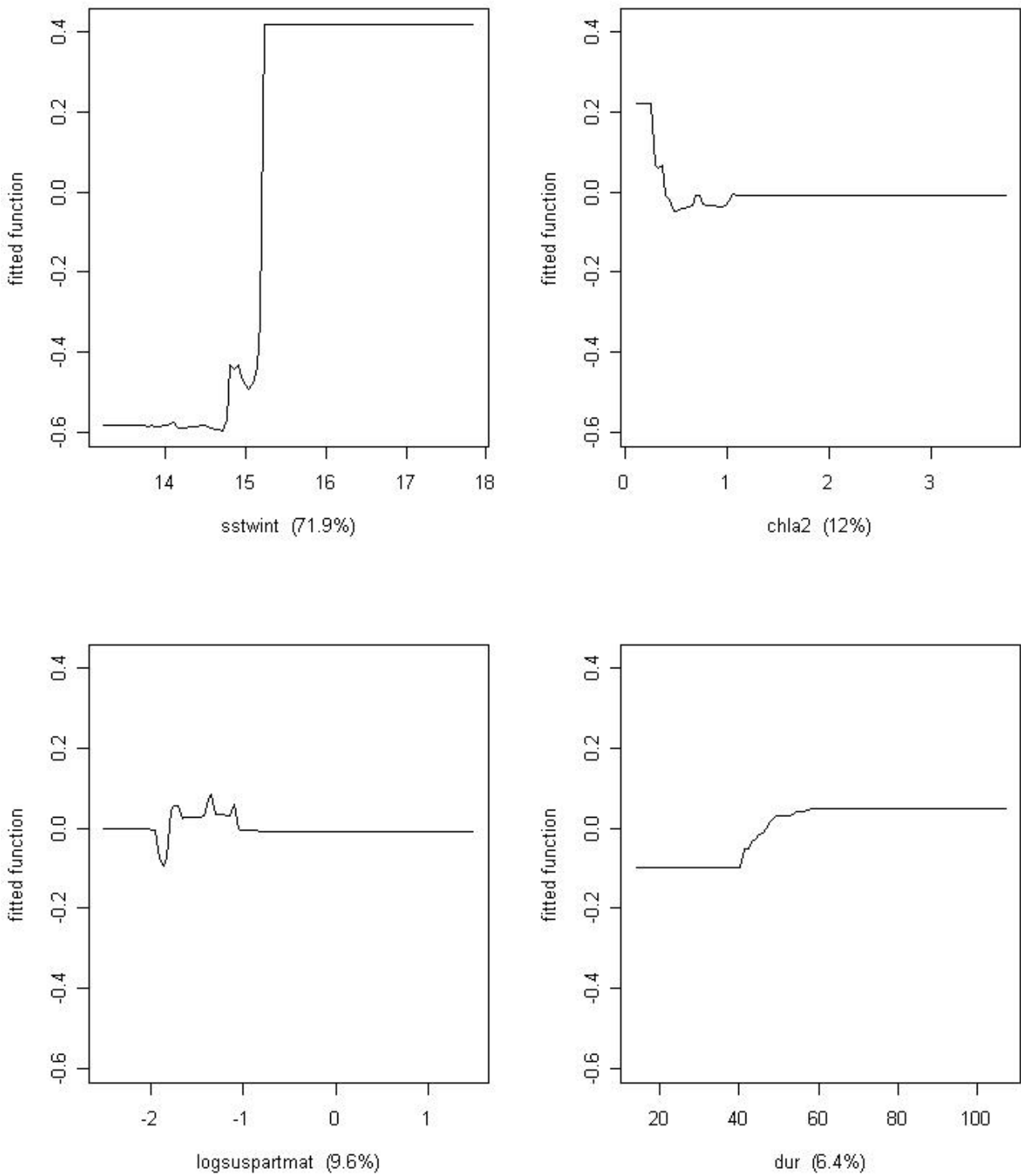


Figure S2.42. The predicted abundance of Partial dependence plots for *Notolabrus inscriptus* (green wrasse) on rocky reefs around New Zealand.

## Notoclinops segmentatus : Blue-eyed triplefin

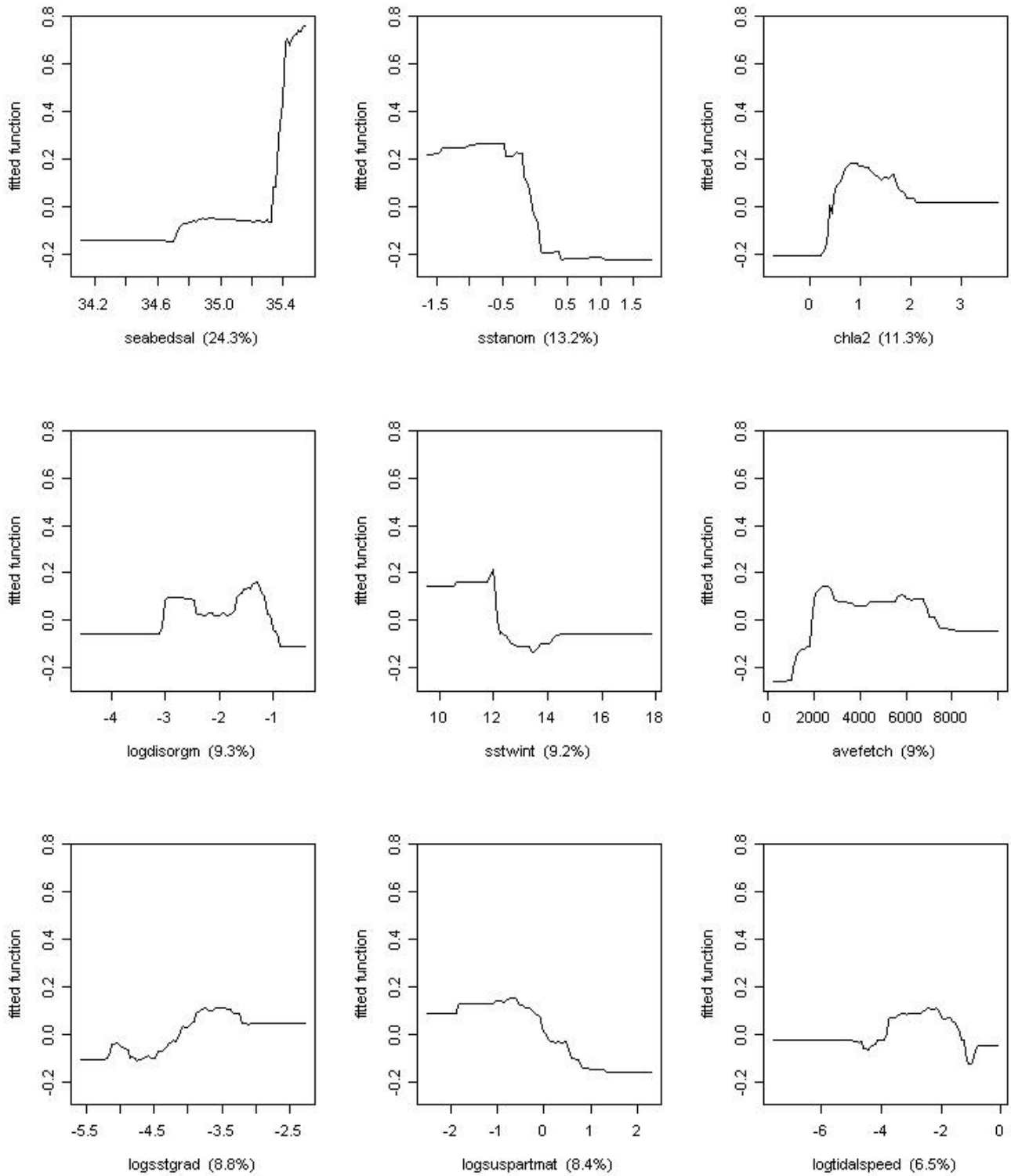


Figure S2.43. Partial dependence plots for *Notoclinops segmentatus* (blue-eyed triplefin) on rocky reefs around New Zealand.

## Notoclinops yaldwyni : Yaldwyn's triplefin

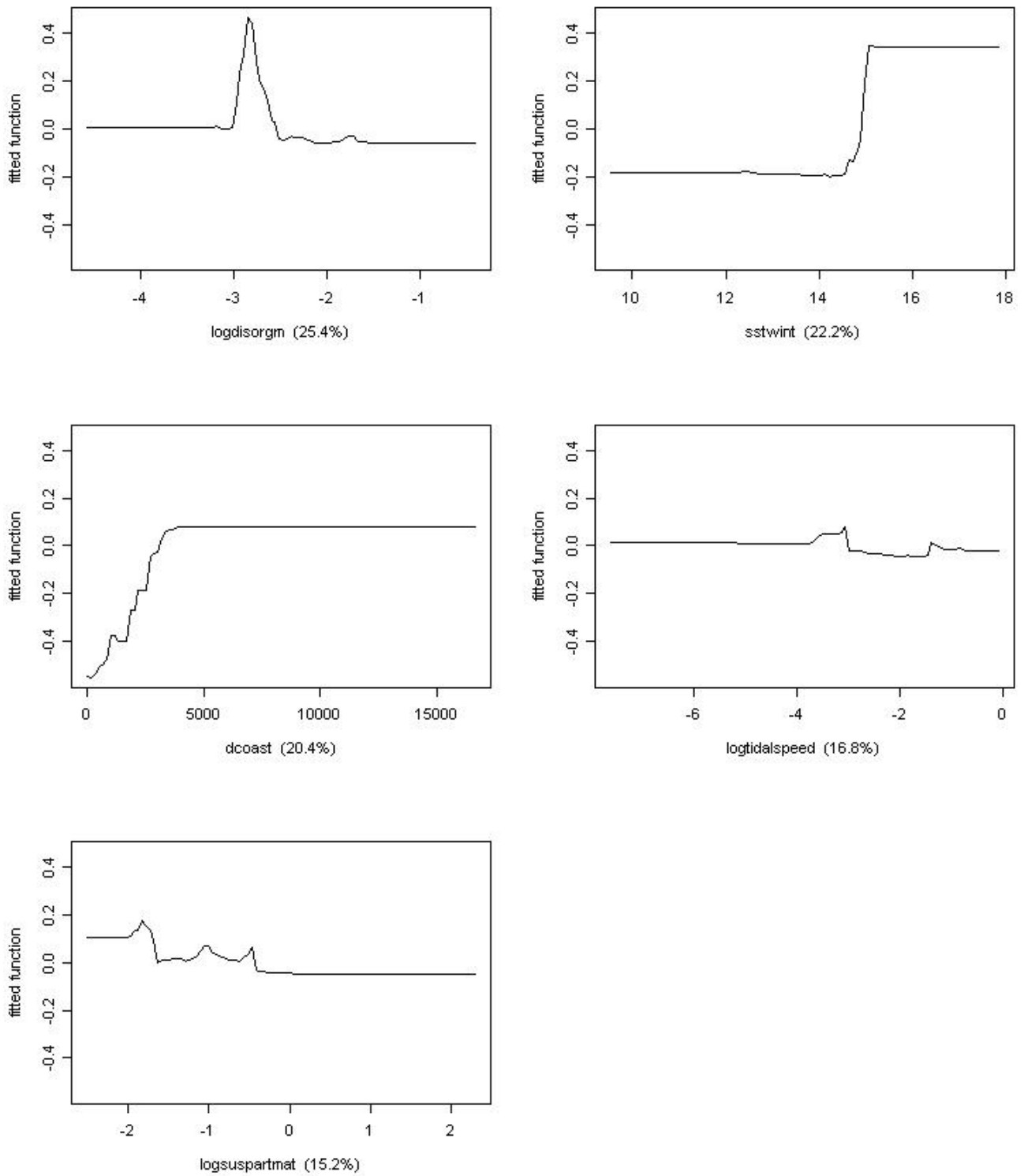


Figure S2.44. Partial dependence plots for *Notoclinops yaldwyni* (Yaldwyn's triplefin) on rocky reefs around New Zealand.

## Obliquichthys maryannae : Oblique-swimming triplefin

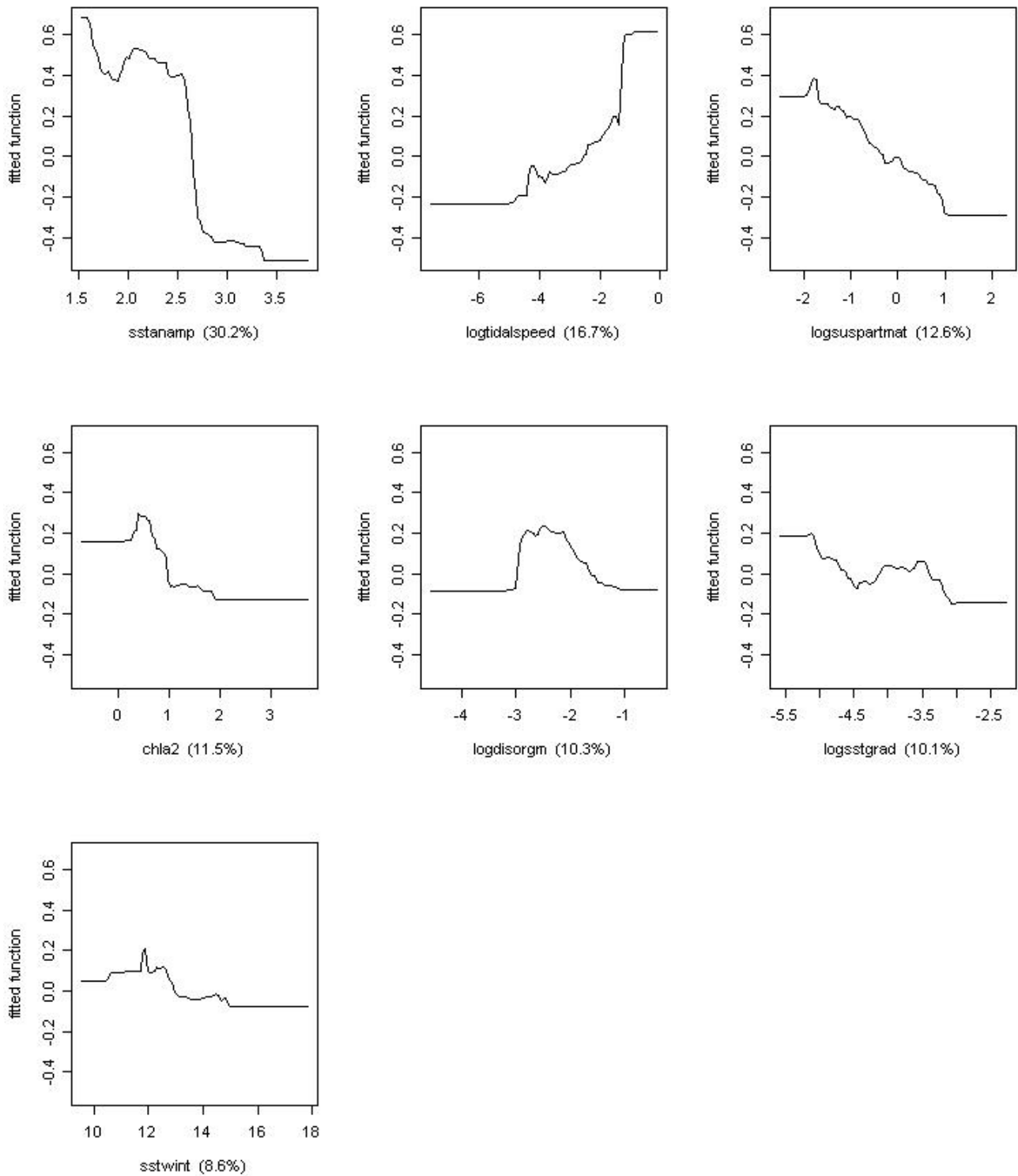


Figure S2.45. Partial dependence plots for *Obliquichthys maryannae* (oblique-swimming triplefin) on rocky reefs around New Zealand.



### Odax cyanoallix : Blue-finned butterflyfish

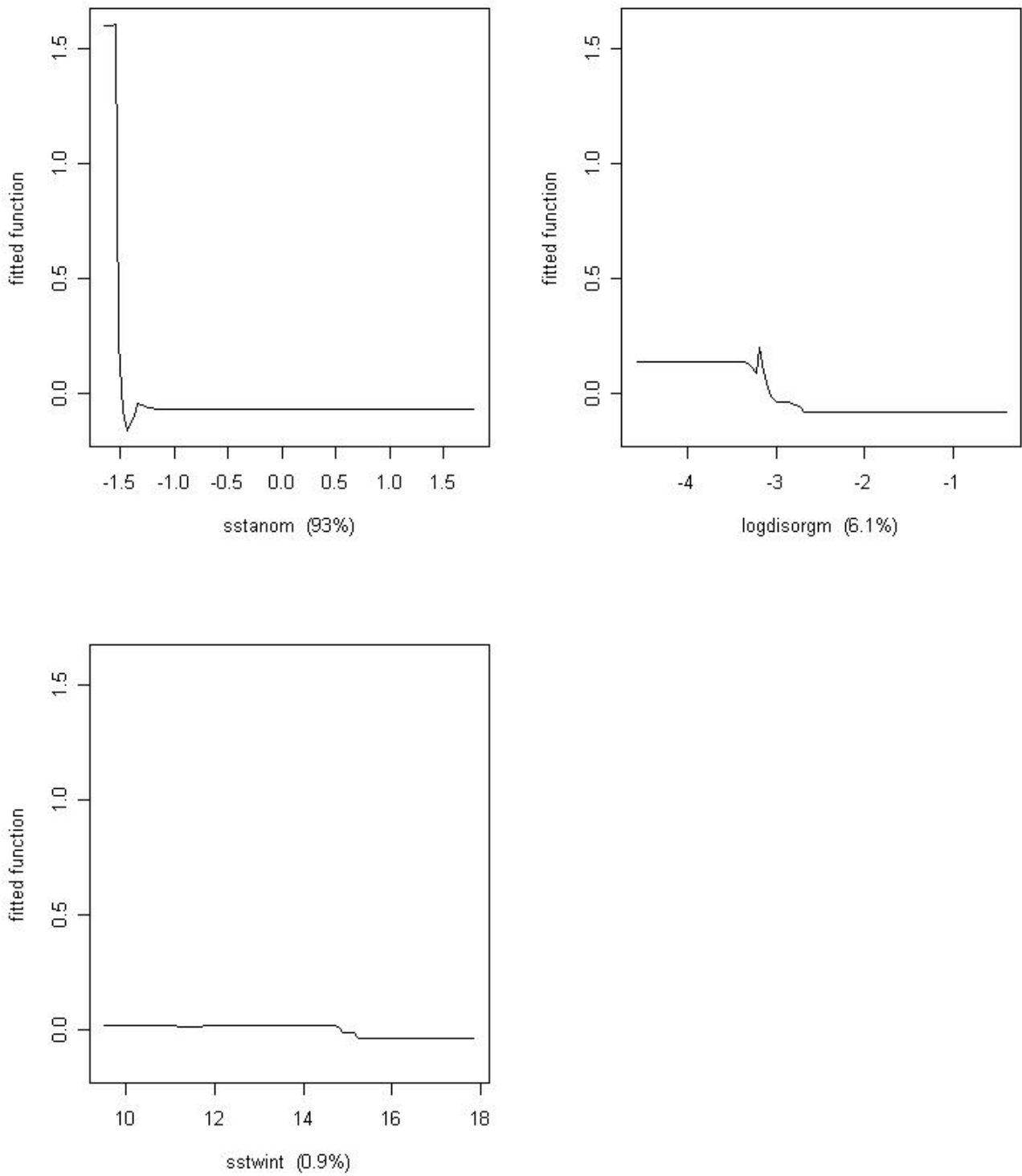


Figure S2.46. Partial dependence plots for *Odax cyanoallix* (blue-finned butterflyfish) on rocky reefs around New Zealand.

### Odax pullus : Butterfish

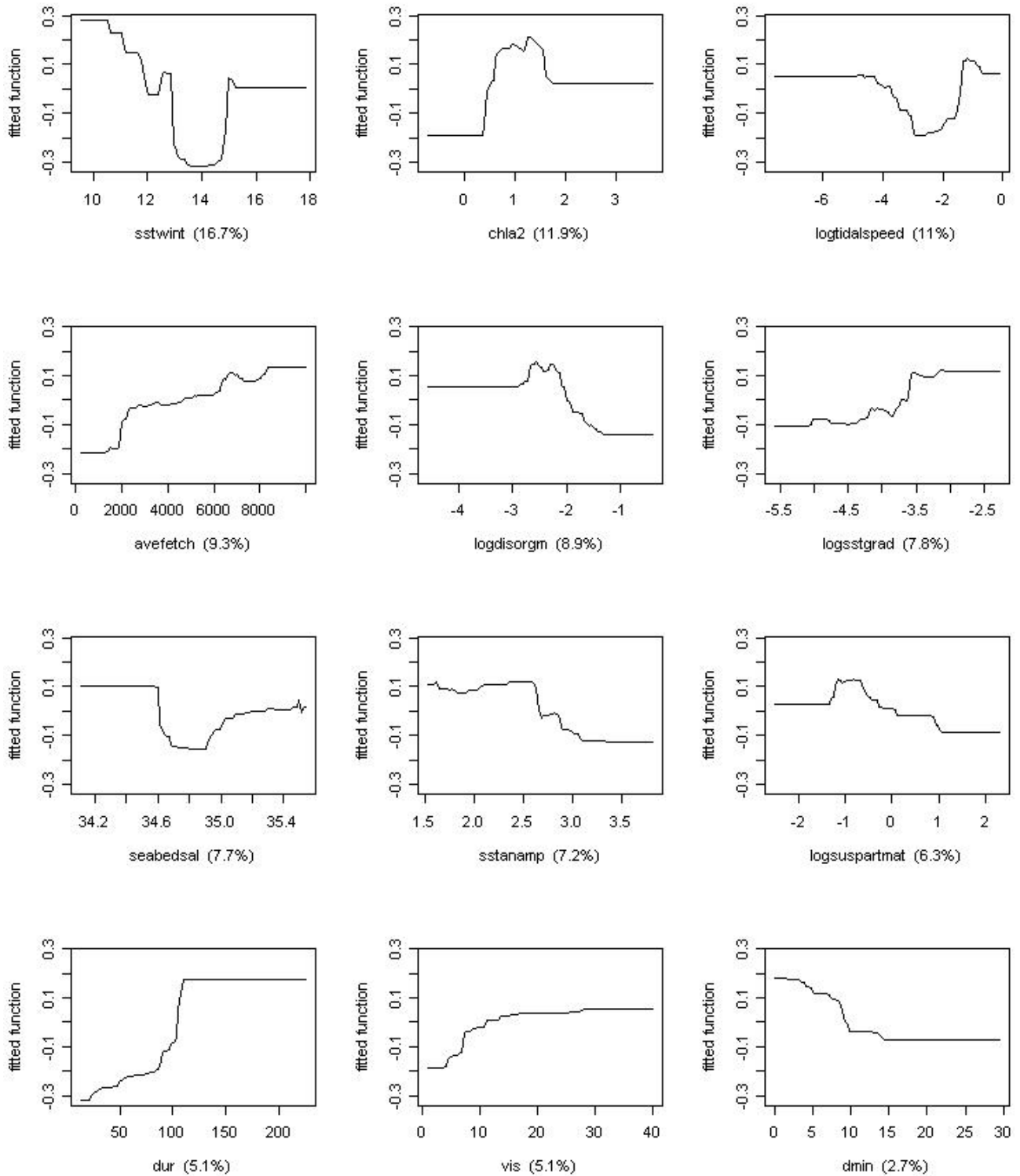


Figure S2.47. Partial dependence plots for *Odax pullus* (butterfish) on rocky reefs around New Zealand.

## Optivus elongatus : Slender roughy

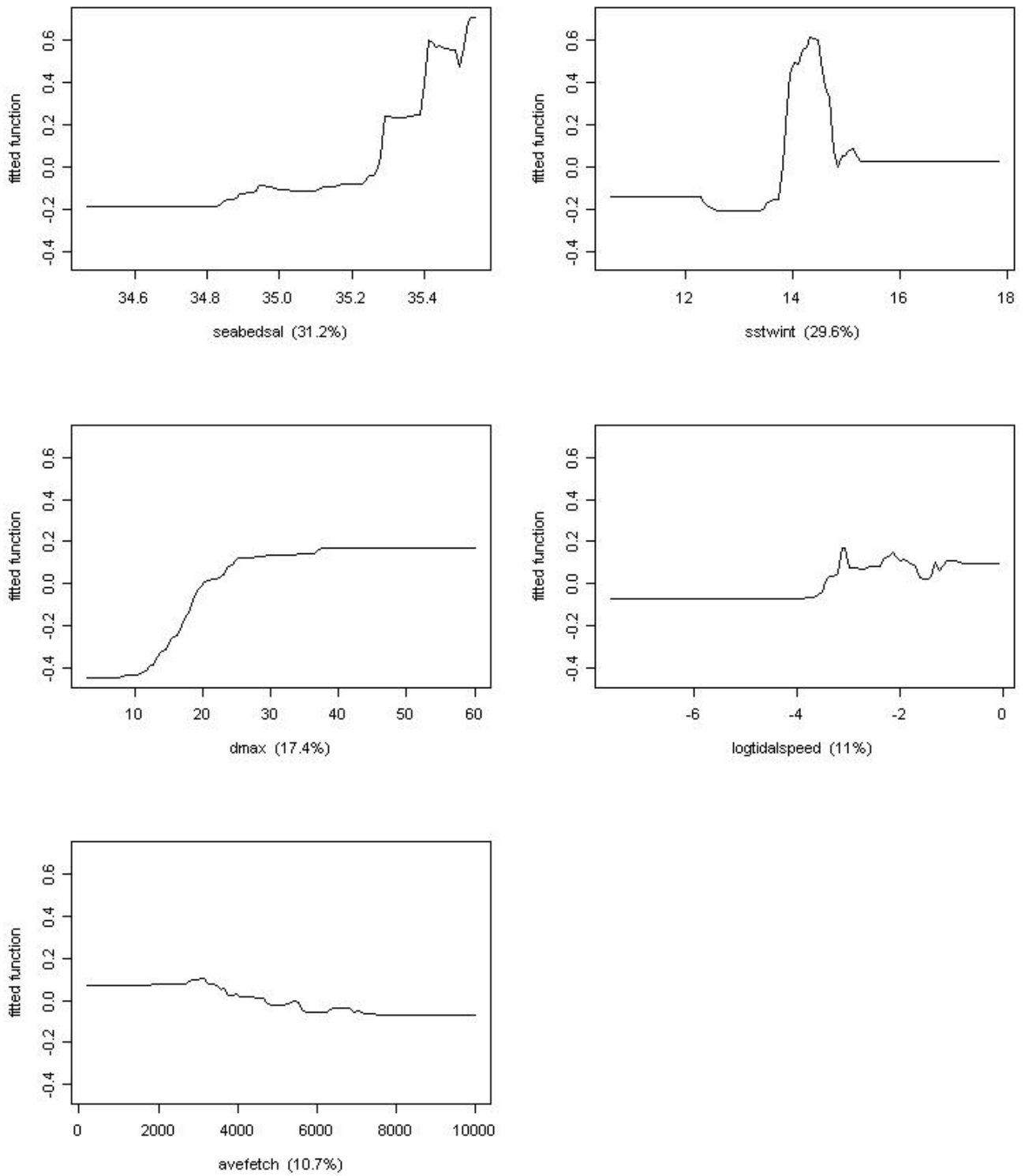


Figure S2.48. Partial dependence plots for *Optivus elongatus* (slender roughy) on rocky reefs around New Zealand.

## Pagrus auratus : Snapper

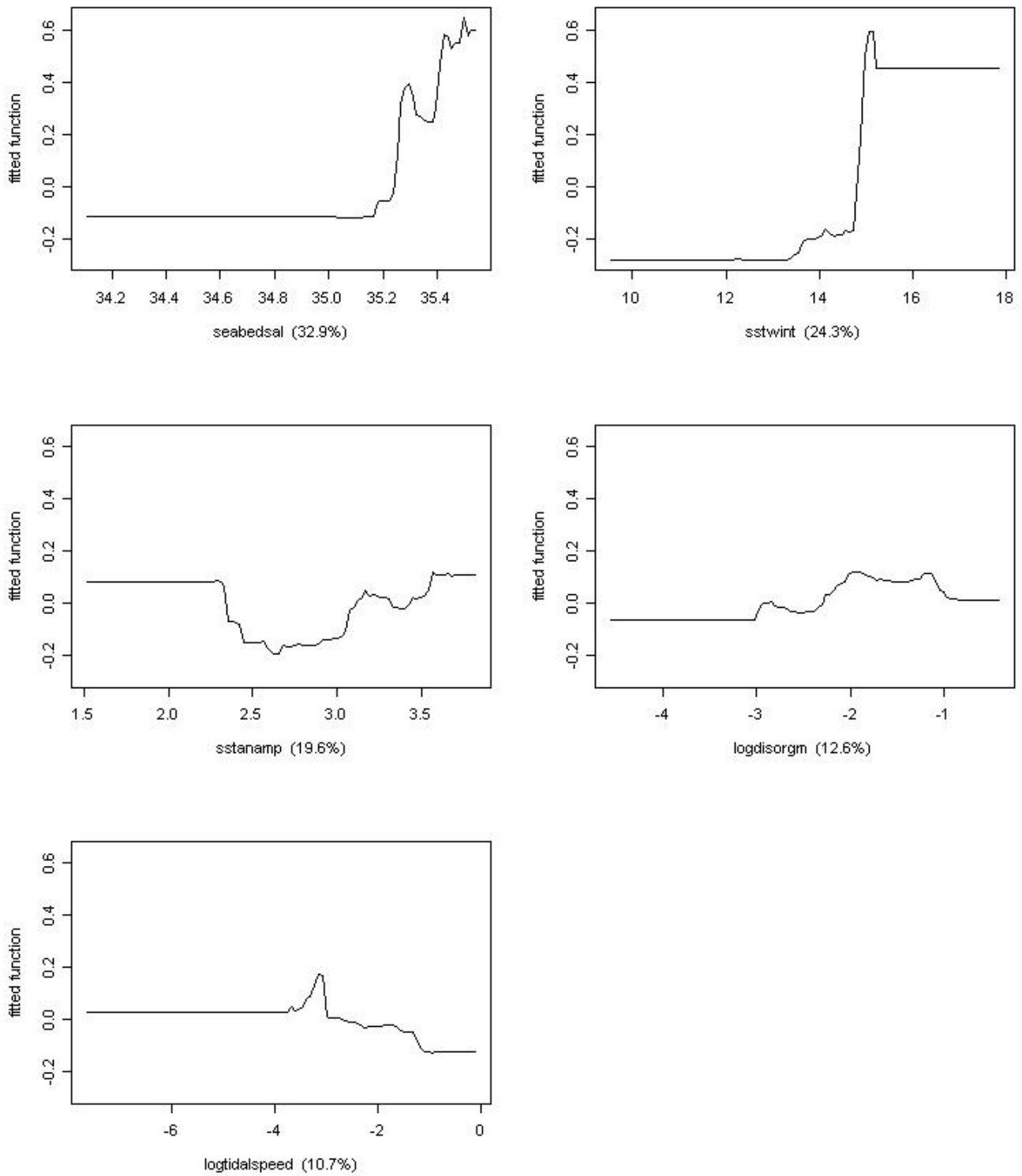


Figure S2.49. Partial dependence plots for *Pagrus auratus* (snapper) on rocky reefs around New Zealand.

### Parma alboscapularis : Black angelfish

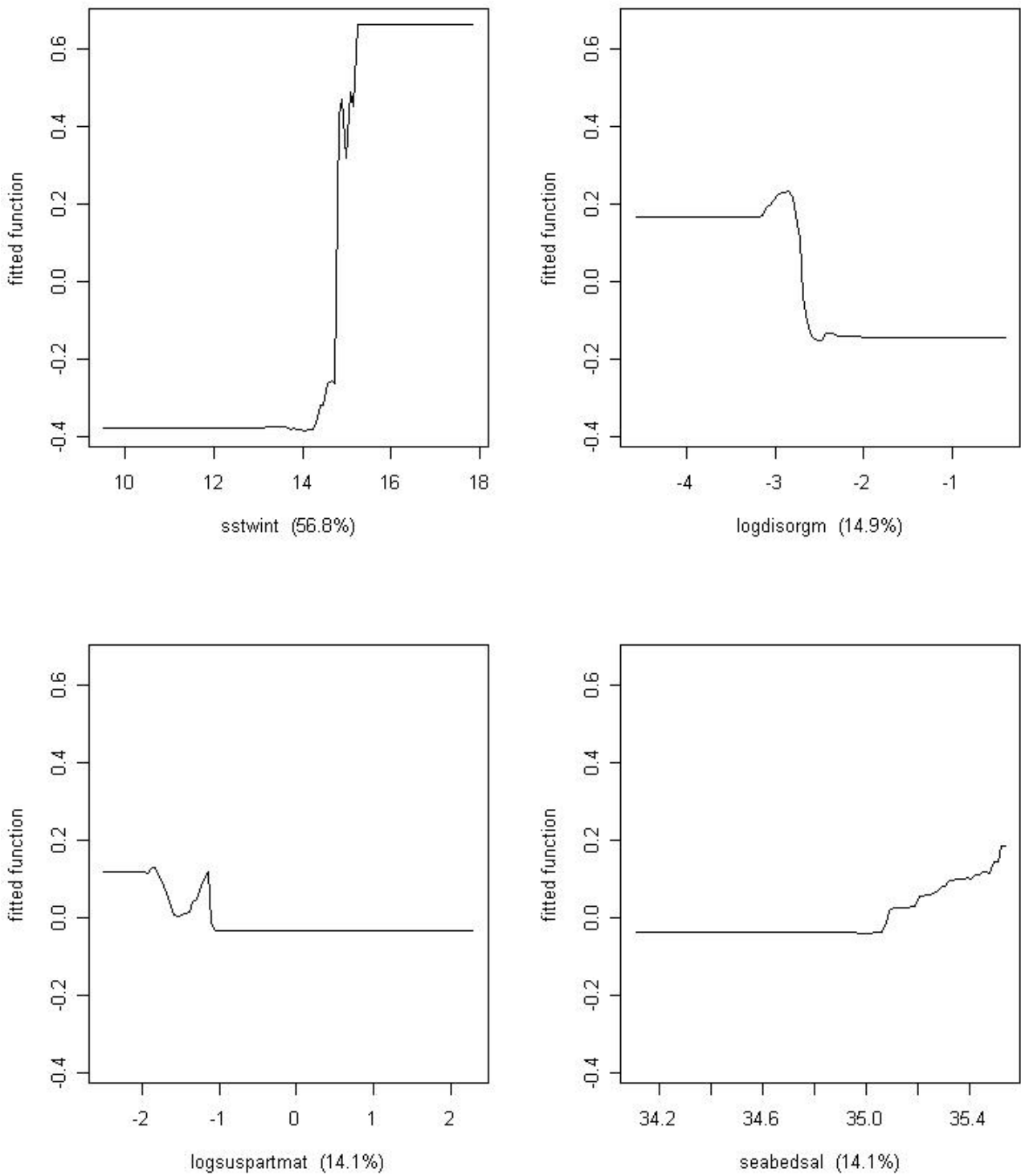


Figure S2.50. Partial dependence plots for *Parma alboscapularis* (black angelfish) on rocky reefs around New Zealand.

## Parapercis colias : Blue cod

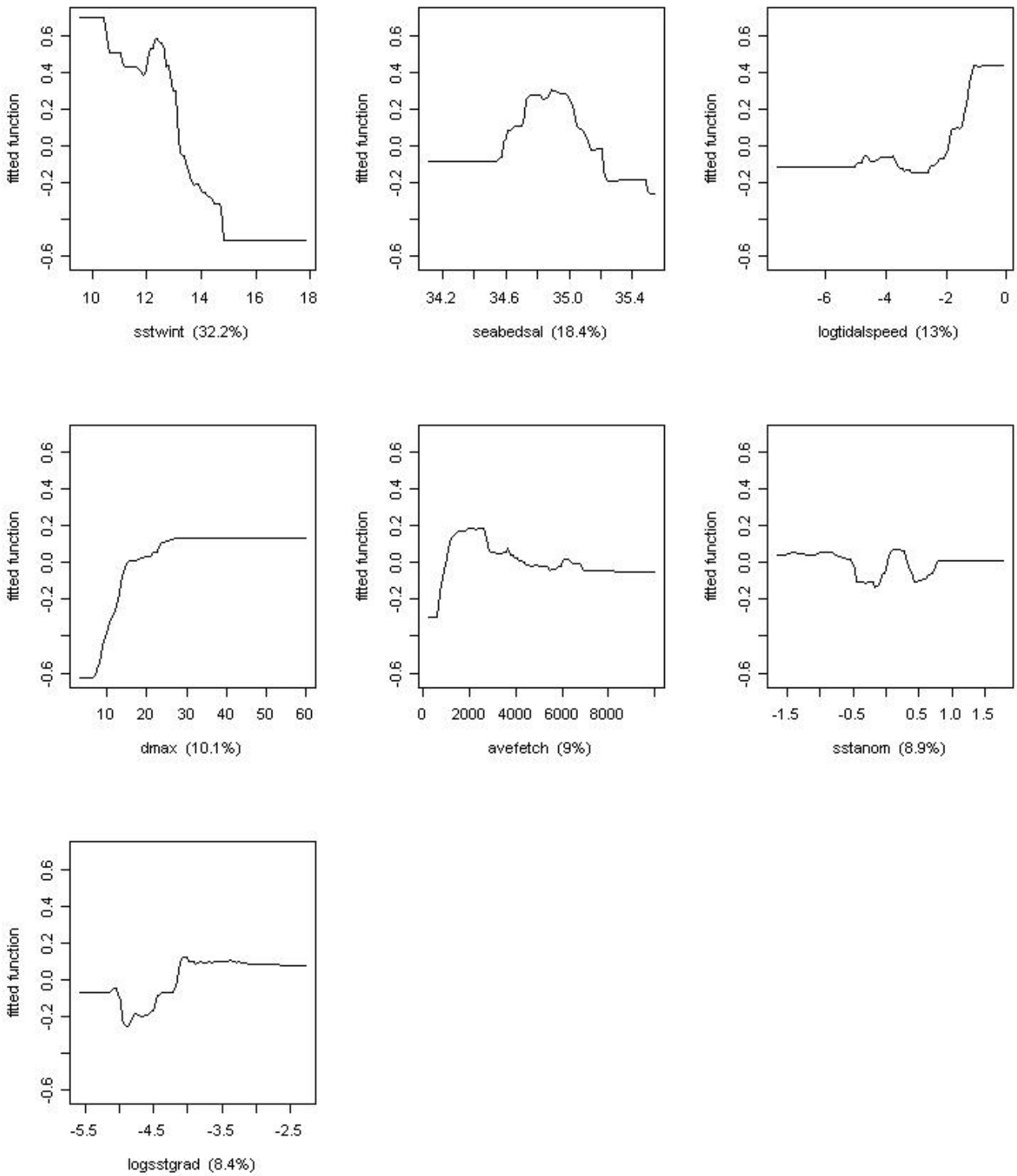


Figure S2.51. Partial dependence plots for *Parapercis colias* (blue cod) on rocky reefs around New Zealand.

## Parablennius laticlavus : Crested blenny

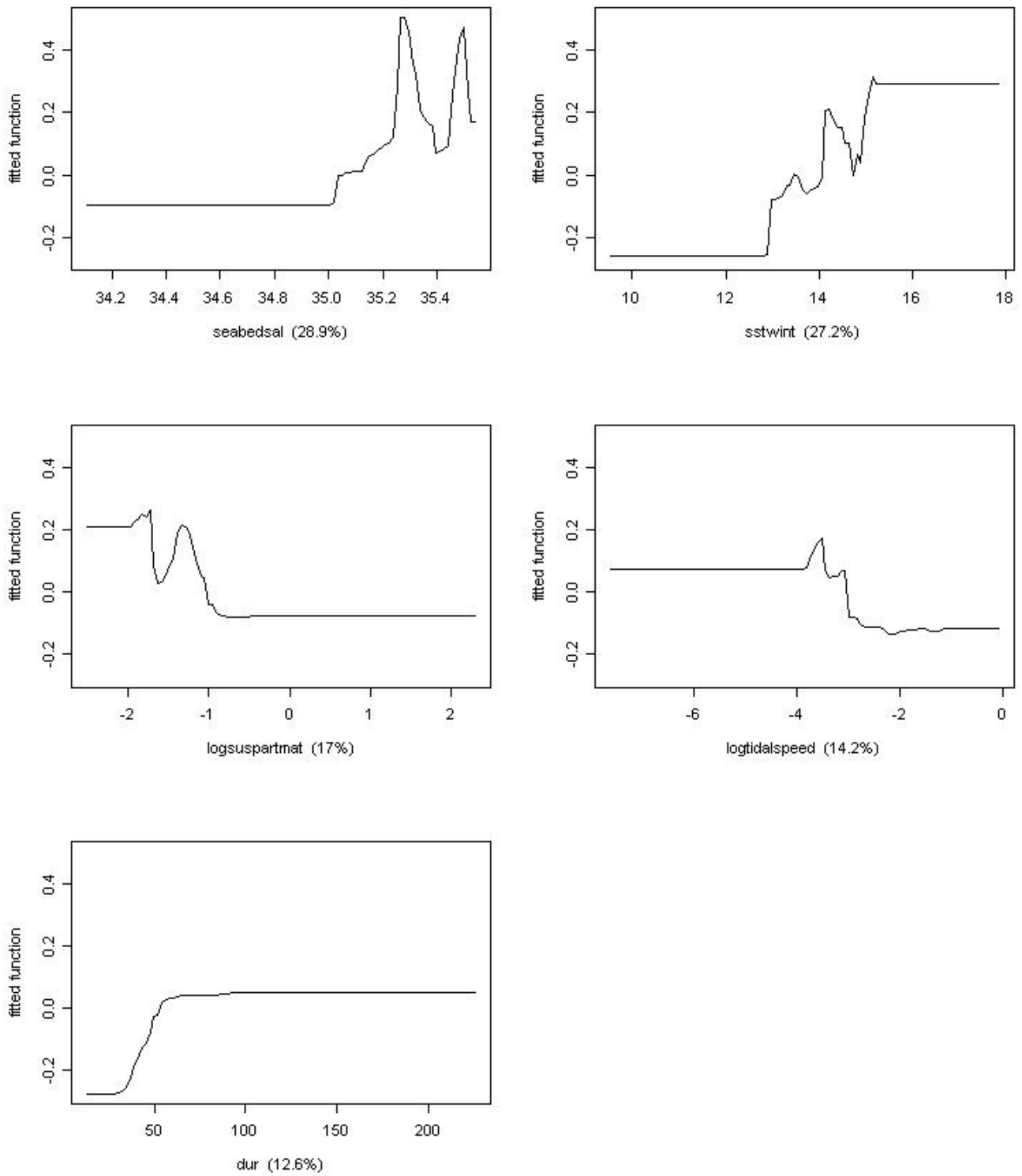


Figure S2.52. Partial dependence plots for *Parablennius laticlavus* (crested blenny) on rocky reefs around New Zealand.

## Parika scaber : Leatherjacket

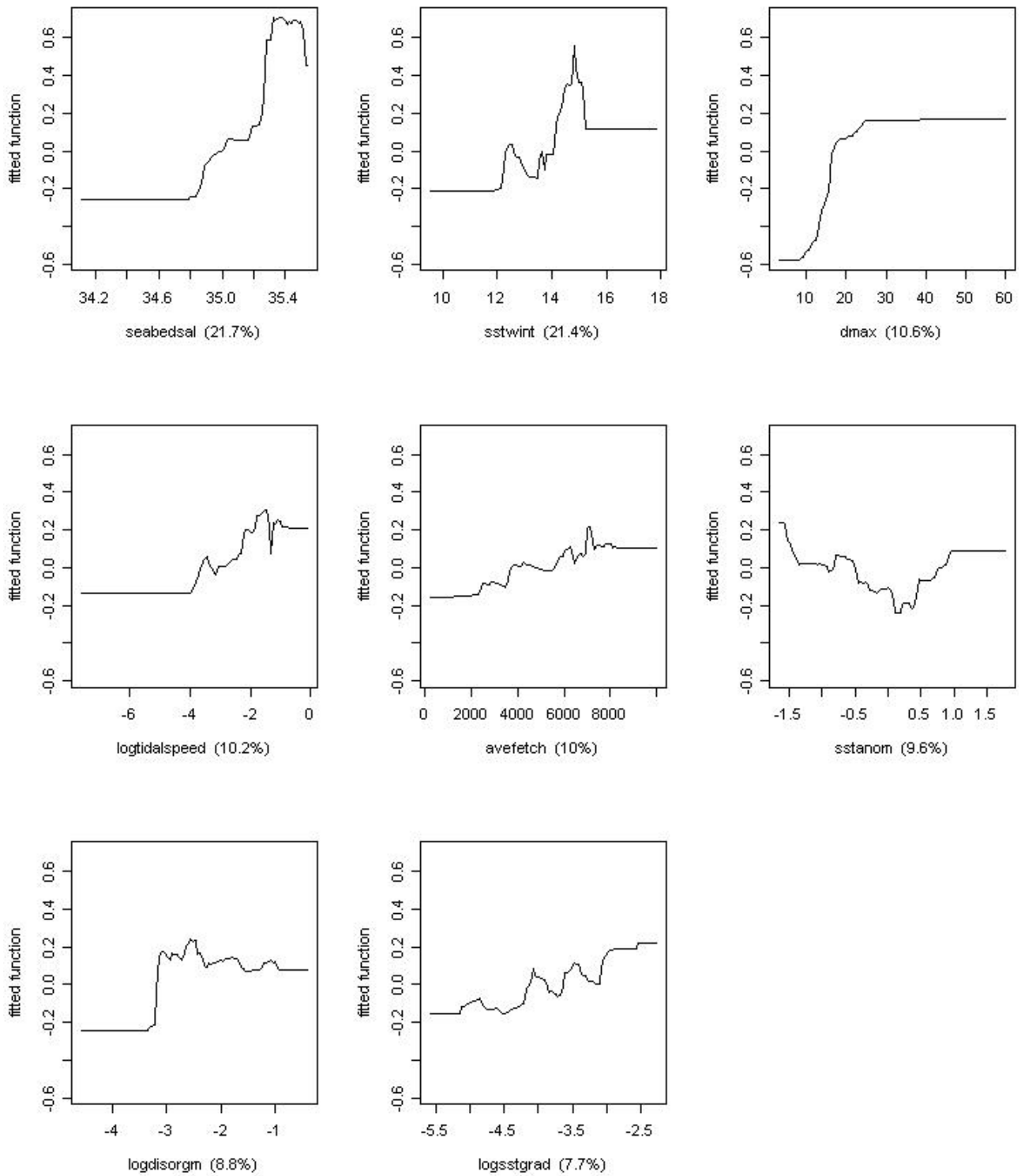


Figure S2.53. Partial dependence plots for *Parika scaber* (leatherjacket) on rocky reefs around New Zealand.



## Paratrachichthys trilli : Common roughy

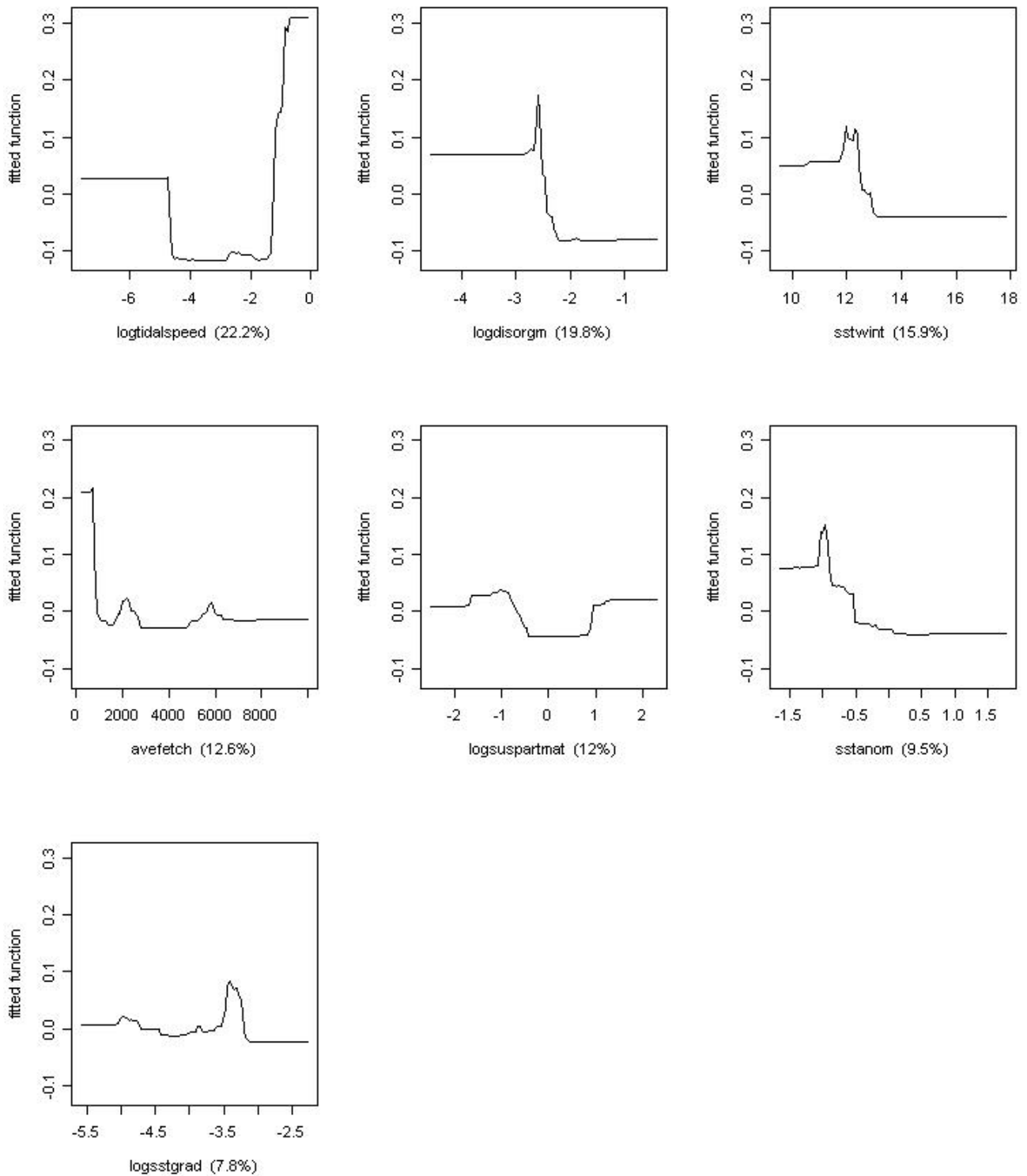


Figure S2.54. Partial dependence plots for *Paratrachichthys trilli* (common roughy) on rocky reefs around New Zealand.

## Pempheris adspersa : Bigeye

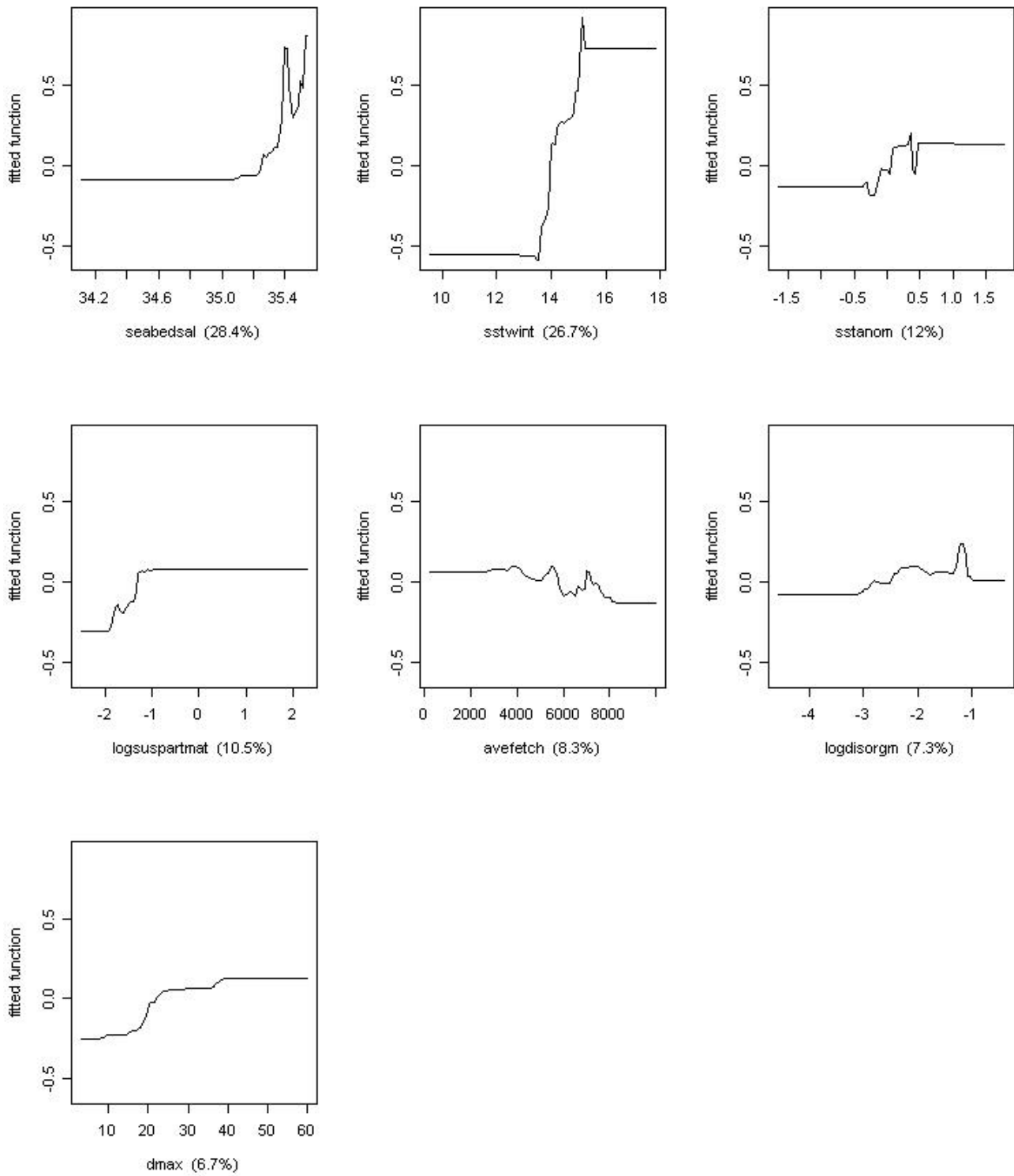


Figure S2.55. Partial dependence plots for *Pempheris adspersa* (bigeye) on rocky reefs around New Zealand.

Plagiotremus tapeinosoma : Mimic blenny

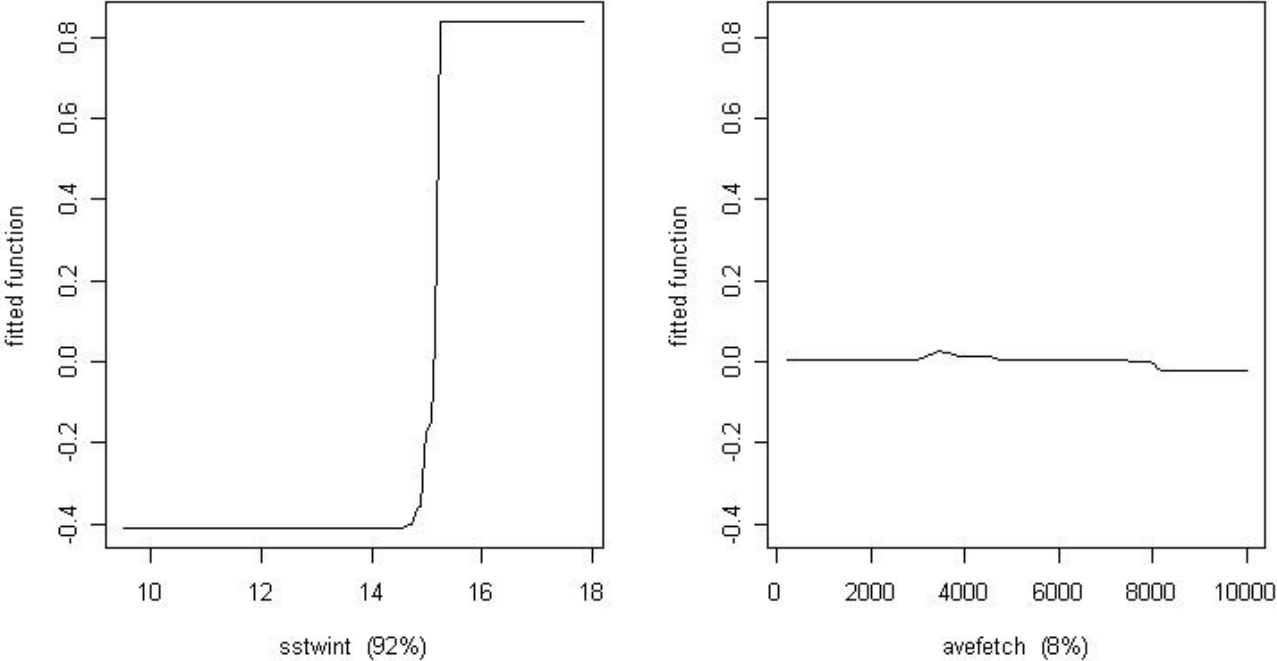


Figure S2.56. Partial dependence plots for *Plagiotremus tapeinosoma* (mimic blenny) on rocky reefs around New Zealand.

## Pseudophycis barbata : Southern bastard cod

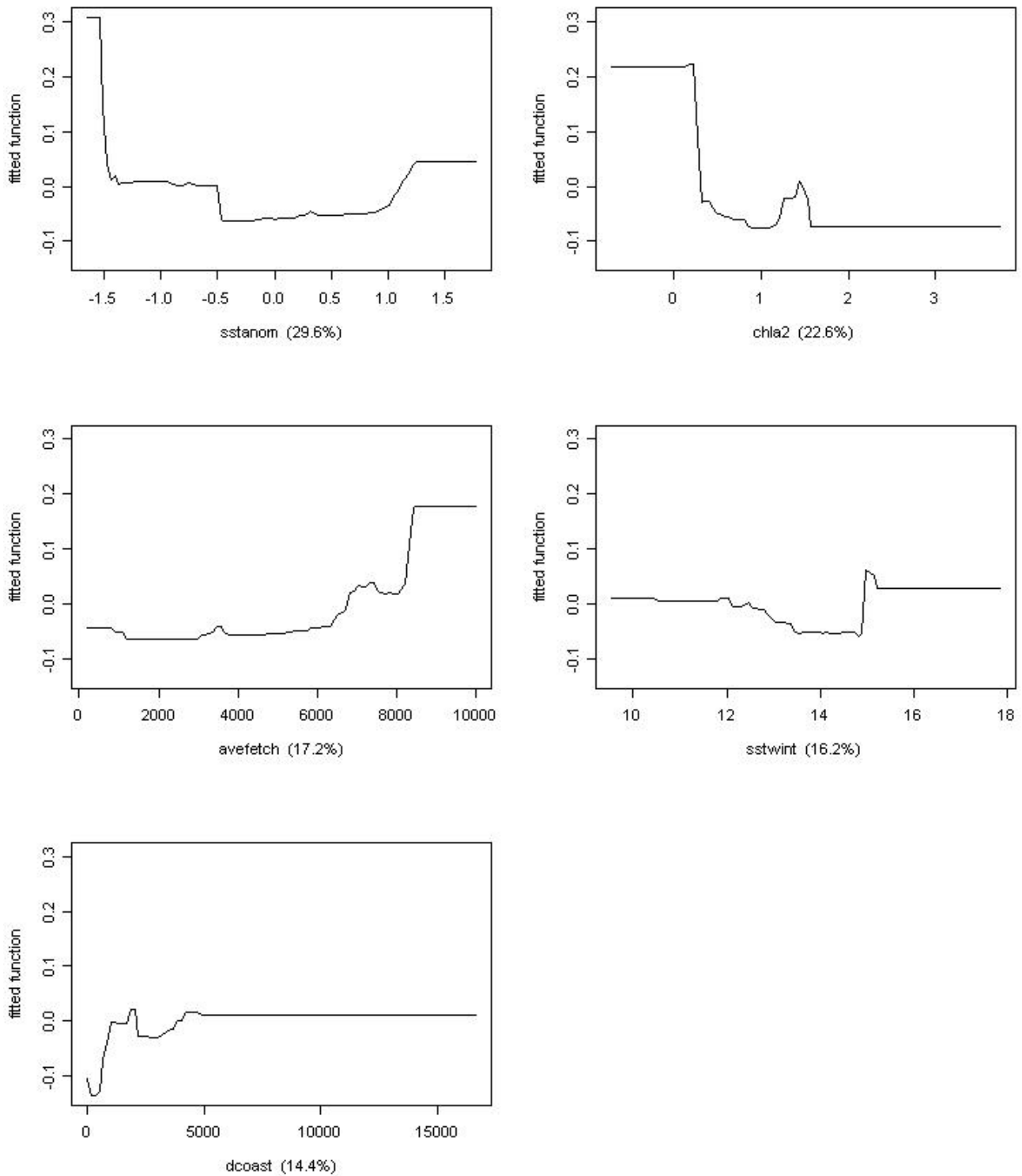


Figure S2.57. Partial dependence plots for *Pseudophycis barbata* (southern bastard cod) on rocky reefs around New Zealand.

### Pseudocaranx dentex : Trevally

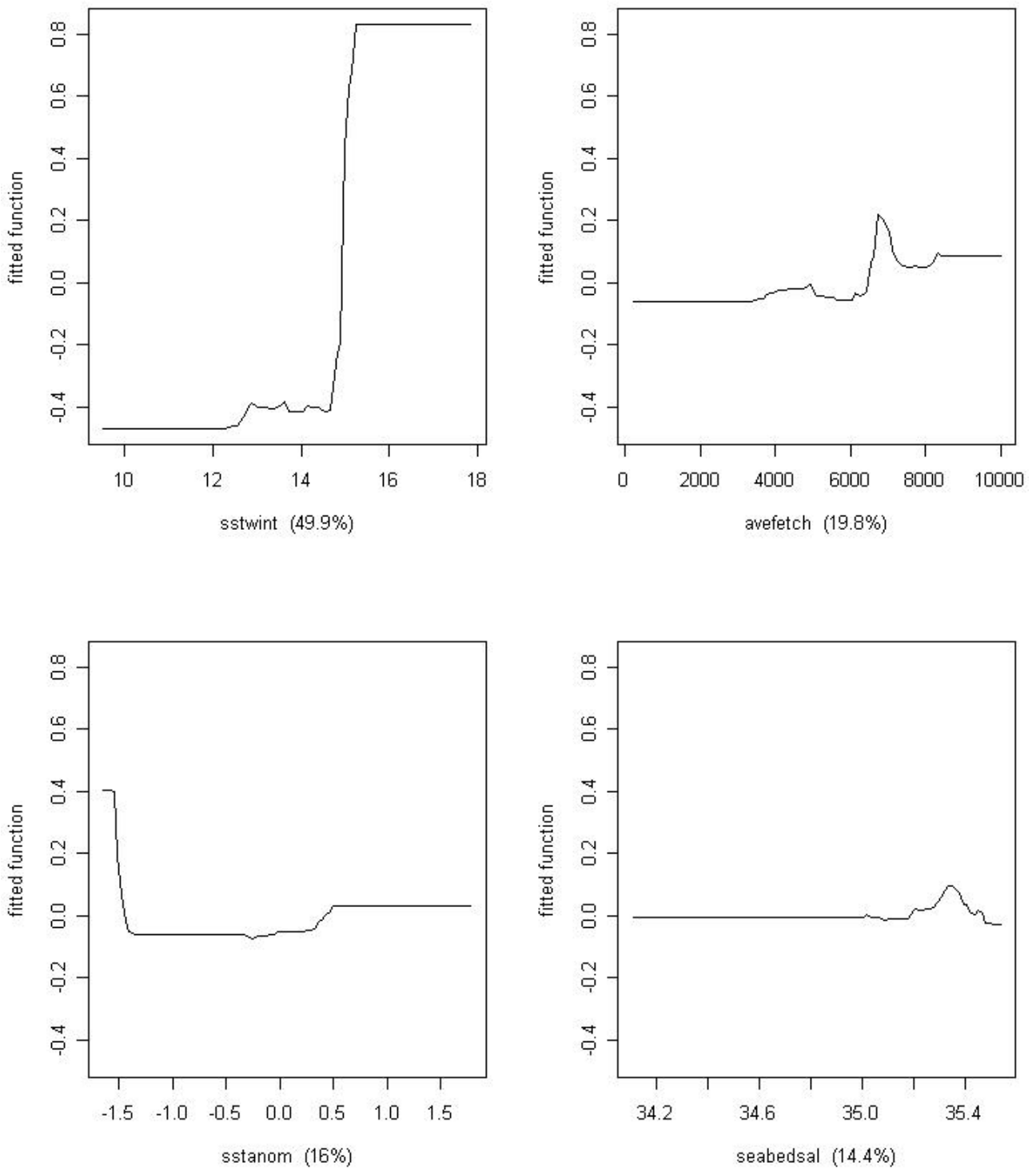


Figure S2.58. Partial dependence plots for *Pseudocaranx dentex* (trevally) on rocky reefs around New Zealand.

### Pseudolabrus luculentus : Orange wrasse

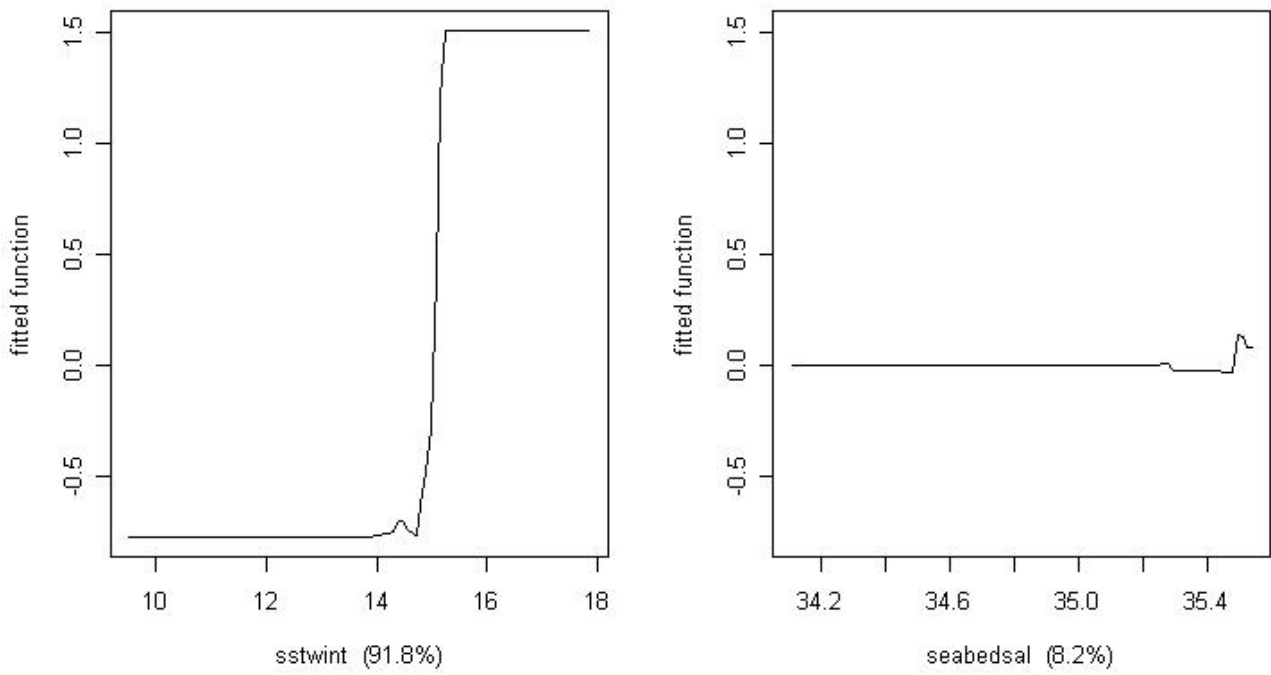


Figure S2.59. Partial dependence plots for *Pseudolabrus luculentus* (orange wrasse) on rocky reefs around New Zealand.

## Pseudolabrus miles : Scarlet wrasse

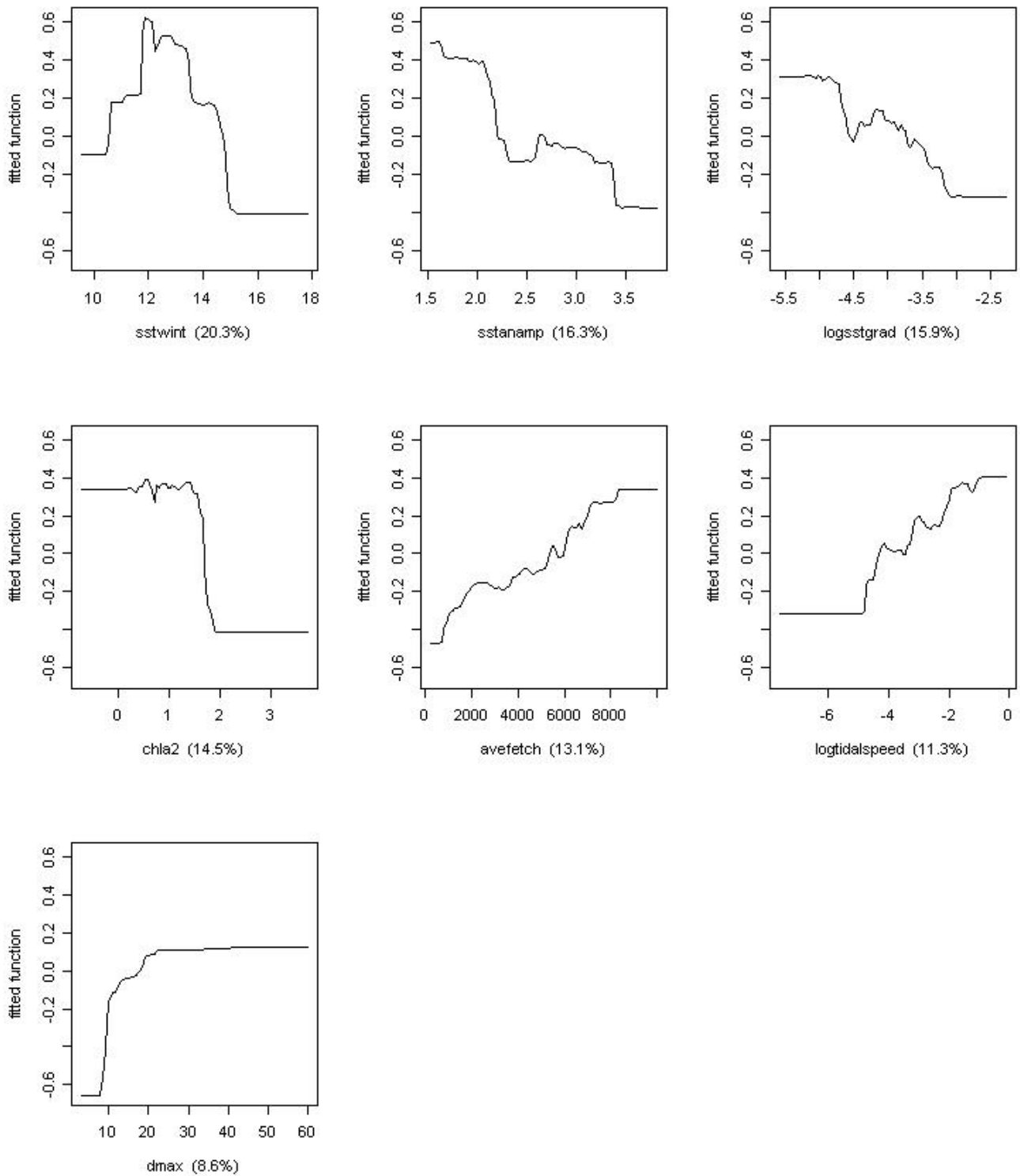


Figure S2.60. Partial dependence plots for *Pseudolabrus miles* (scarlet wrasse) on rocky reefs around New Zealand.

## Ruanoho whero : Spectacled triplefin

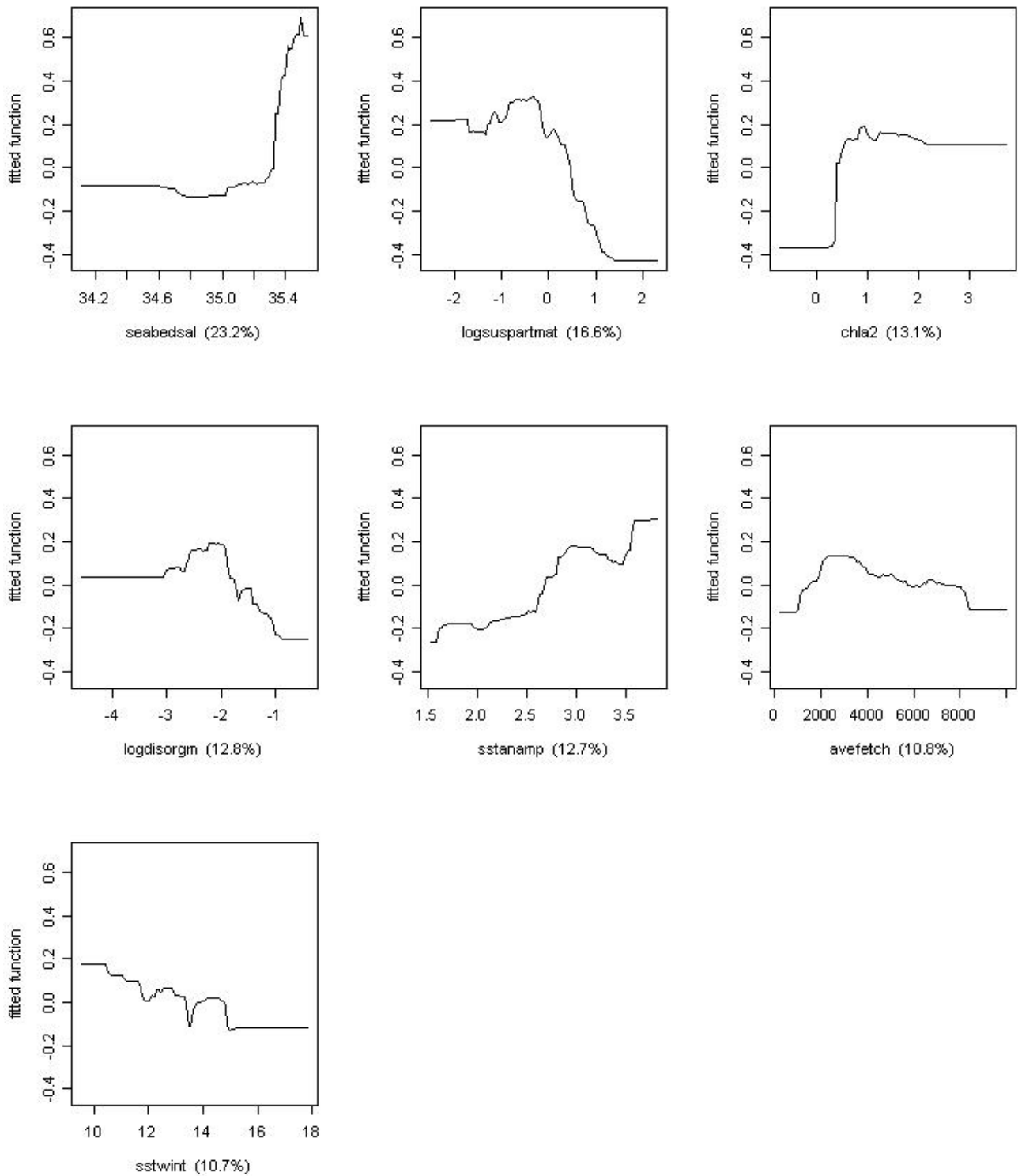


Figure S2.61. Partial dependence plots for *Ruanoho whero* (spectacled triplefin) on rocky reefs around New Zealand.



## Scorpaena cardinalis : Northern scorpionfish

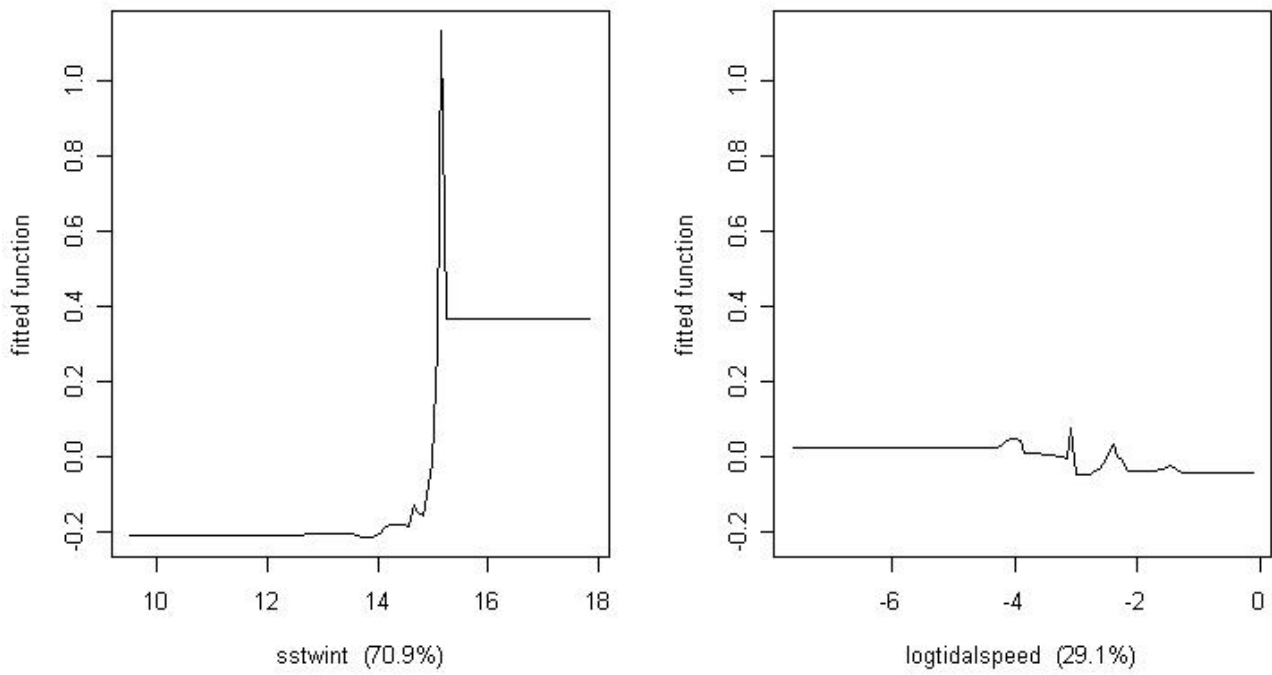


Figure S2.62. Partial dependence plots for *Scorpaena cardinalis* (northern scorpionfish) on rocky reefs around New Zealand.

### Scorpis lineolatus : Sweep

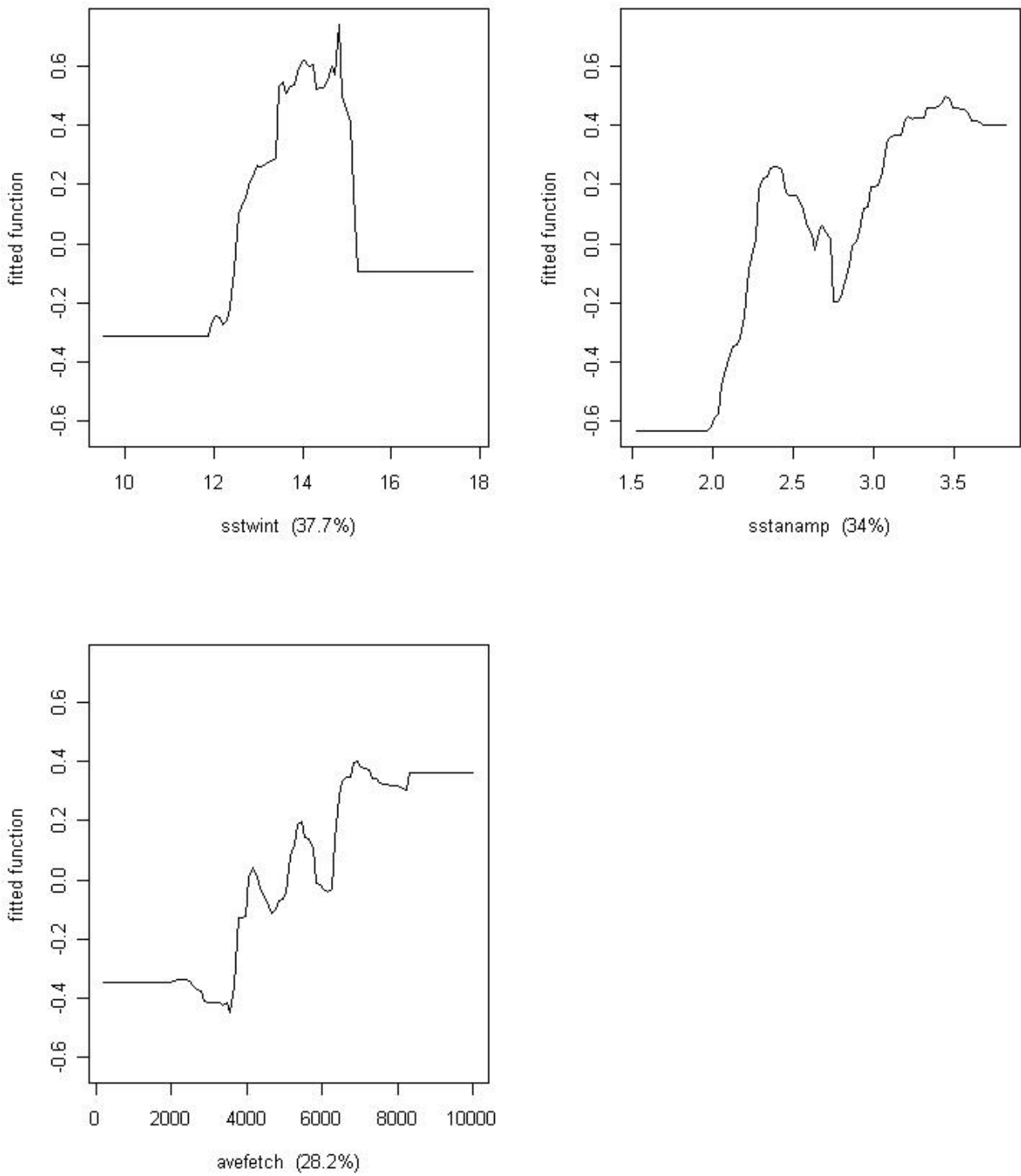


Figure S2.63. Partial dependence plots for *Scorpis lineolatus* (sweep) on rocky reefs around New Zealand.

## Scorpaena papillosus : Dwarf scorpionfish

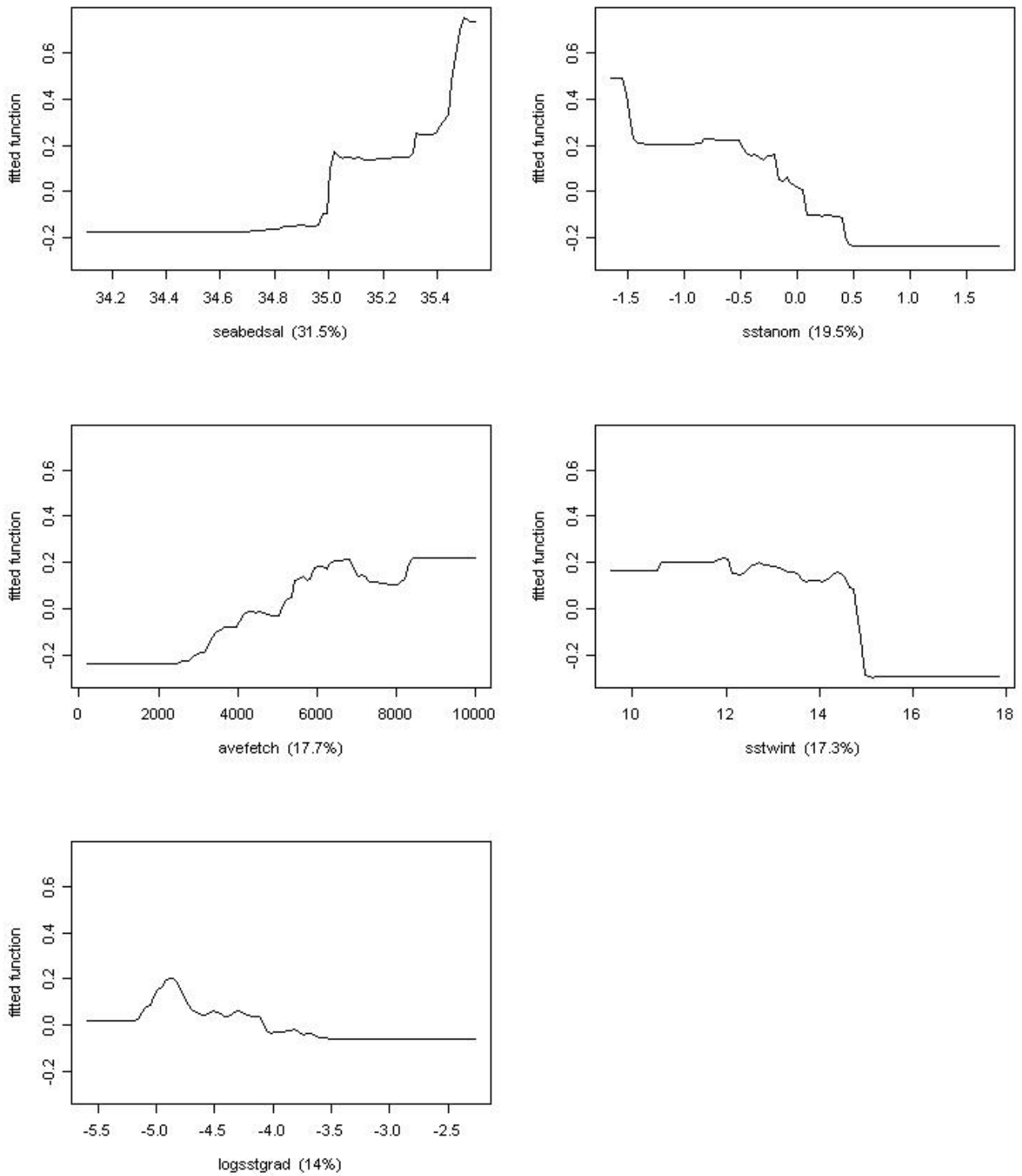


Figure S2.64. Partial dependence plots for *Scorpaena papillosus* (dwarf scorpionfish) on rocky reefs around New Zealand.

### Scorpius violaceus : Blue maomao

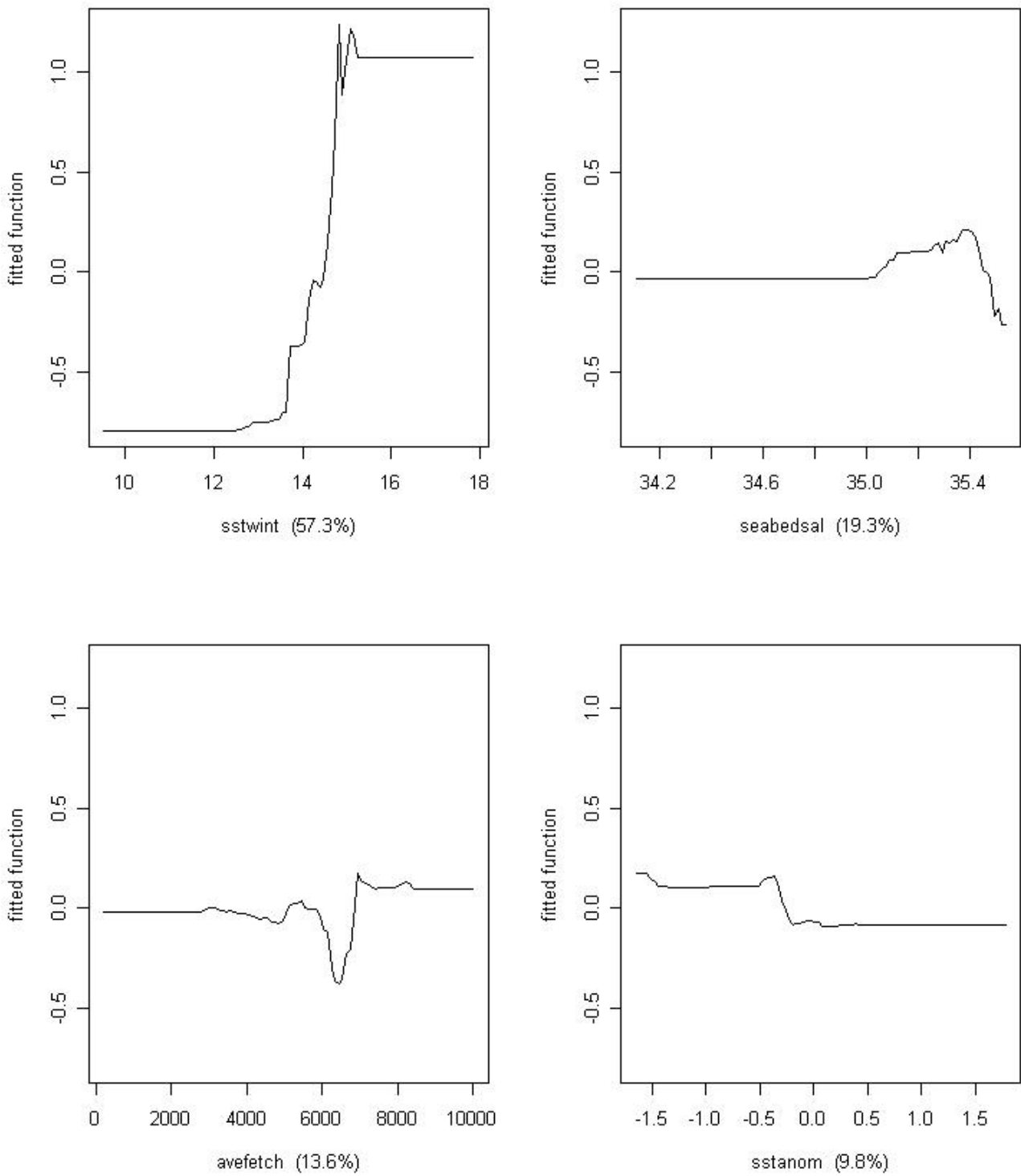


Figure S2.65. Partial dependence plots for *Scorpius violaceus* (blue maomao) on rocky reefs around New Zealand.

## Seriola lalandi : Kingfish

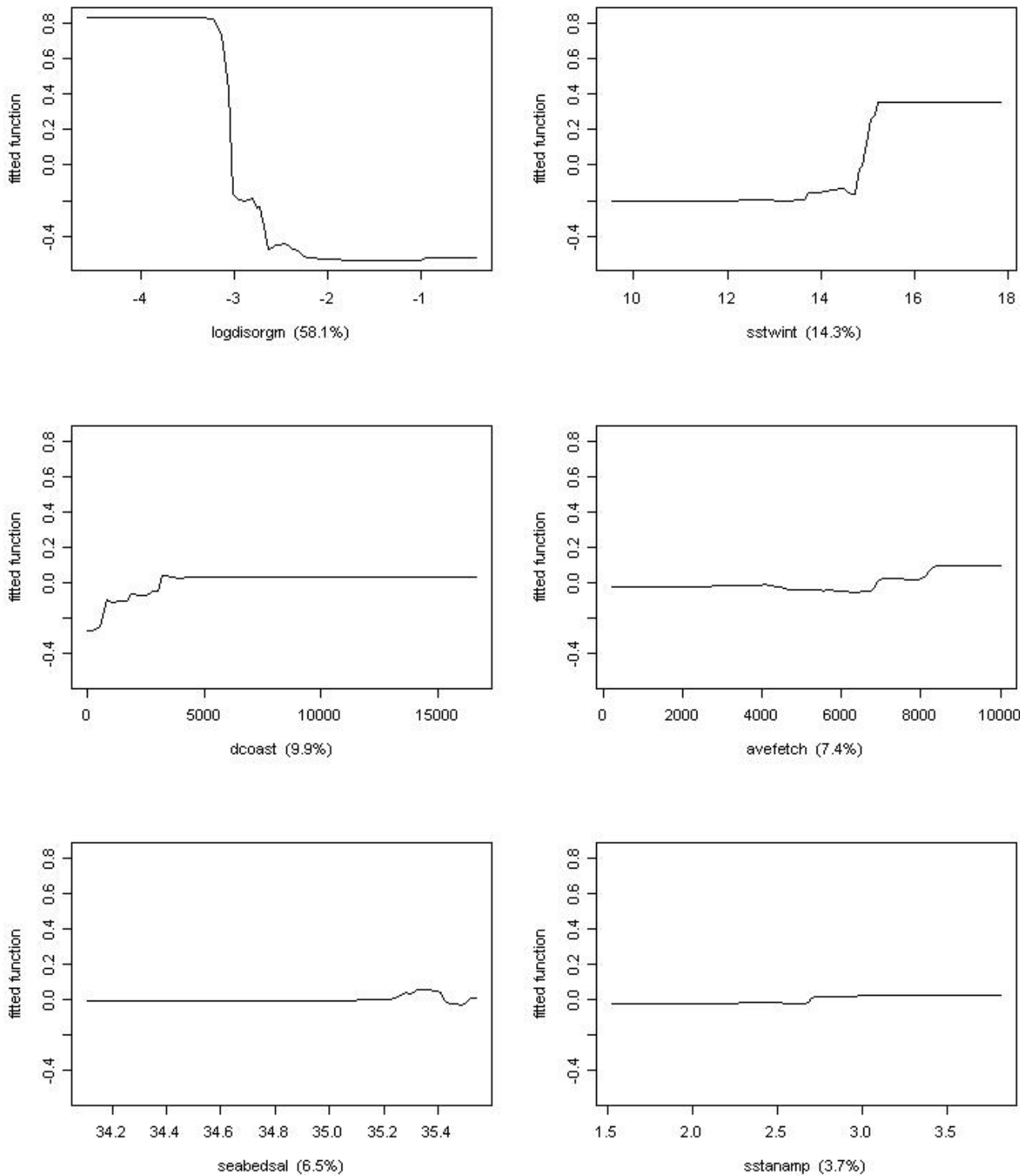


Figure S2.66. Partial dependence plots for *Seriola lalandi* (kingfish) on rocky reefs around New Zealand.

### Suezichthys ayingi : Crimson cleanerfish

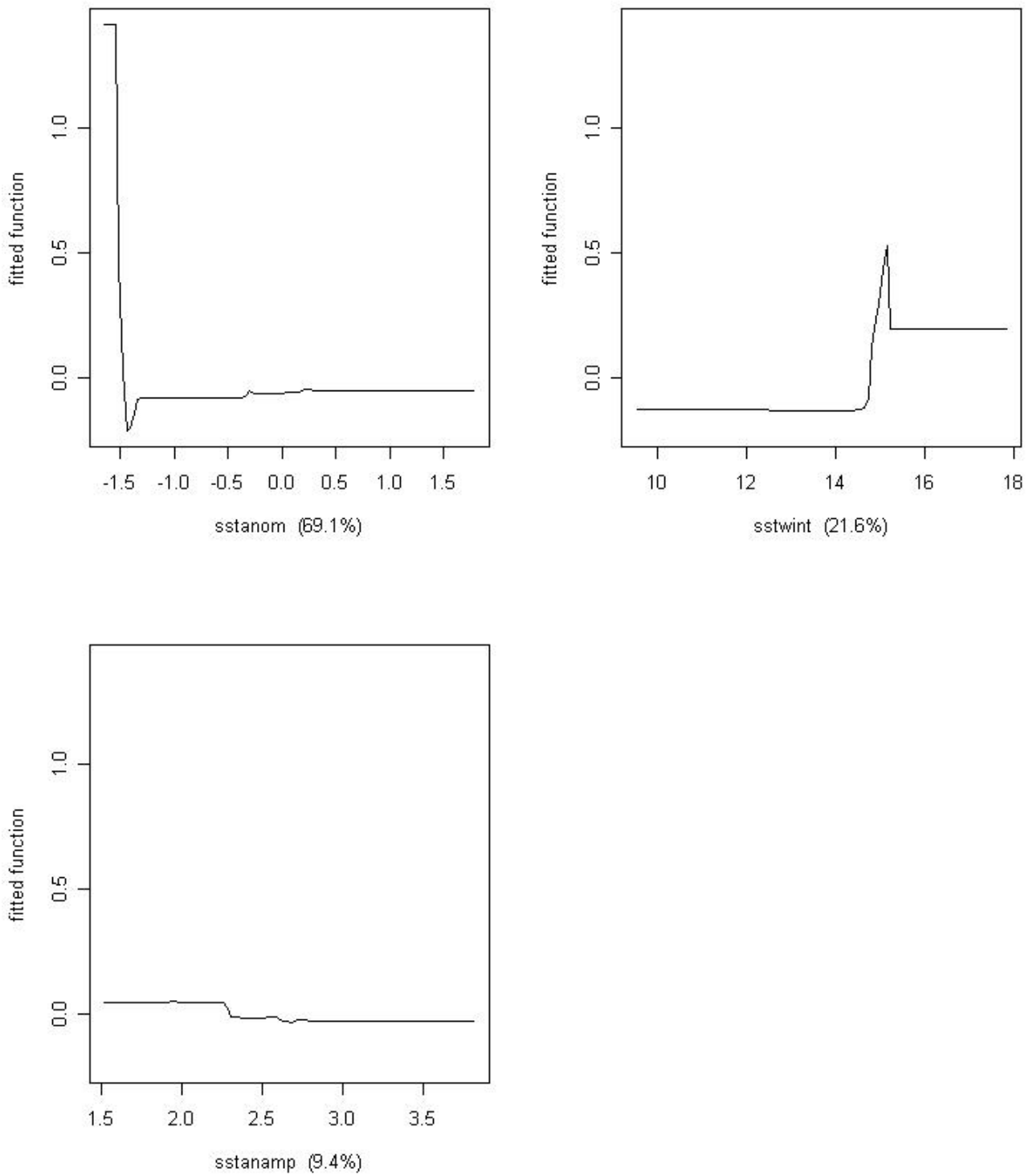


Figure S2.67. Partial dependence plots for *Suezichthys ayingi* (crimson cleanerfish) on rocky reefs around New Zealand.

## Trachypoma macracanthus : Toadstool grouper

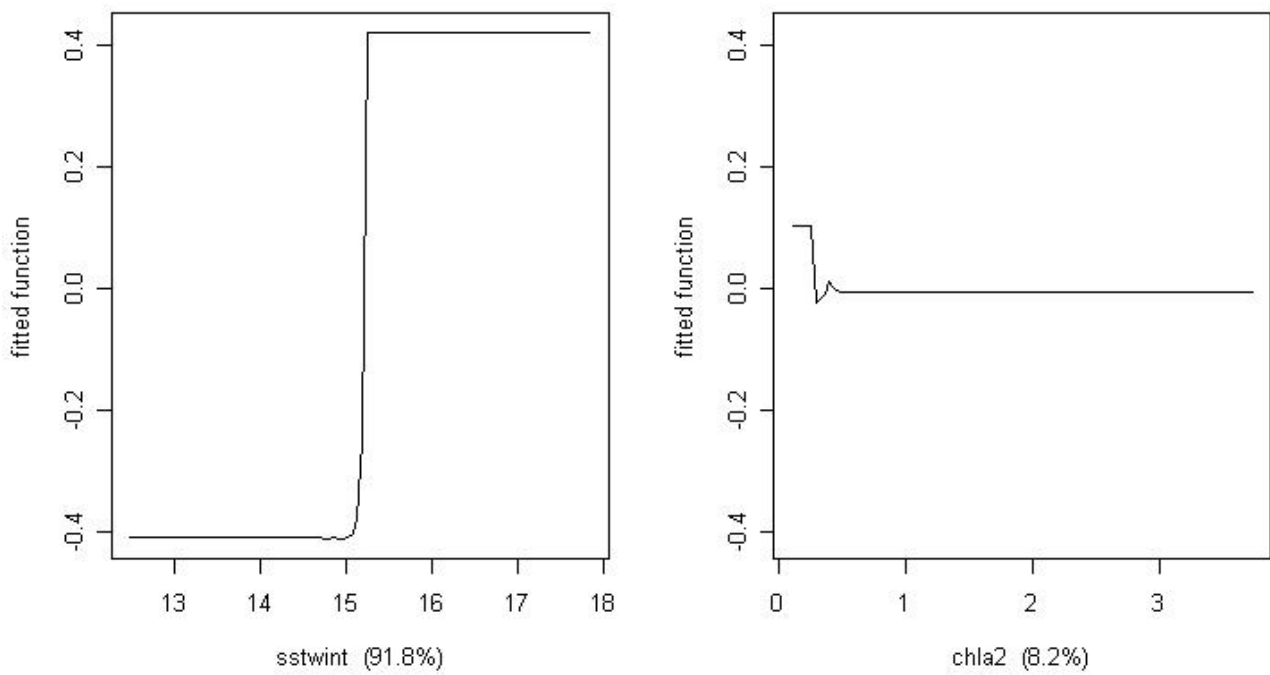


Figure S2.68. Partial dependence plots for *Trachypoma macracanthus* (toadstool grouper) on rocky reefs around New Zealand.

### Trachurus novaezelandiae : Jack mackerel

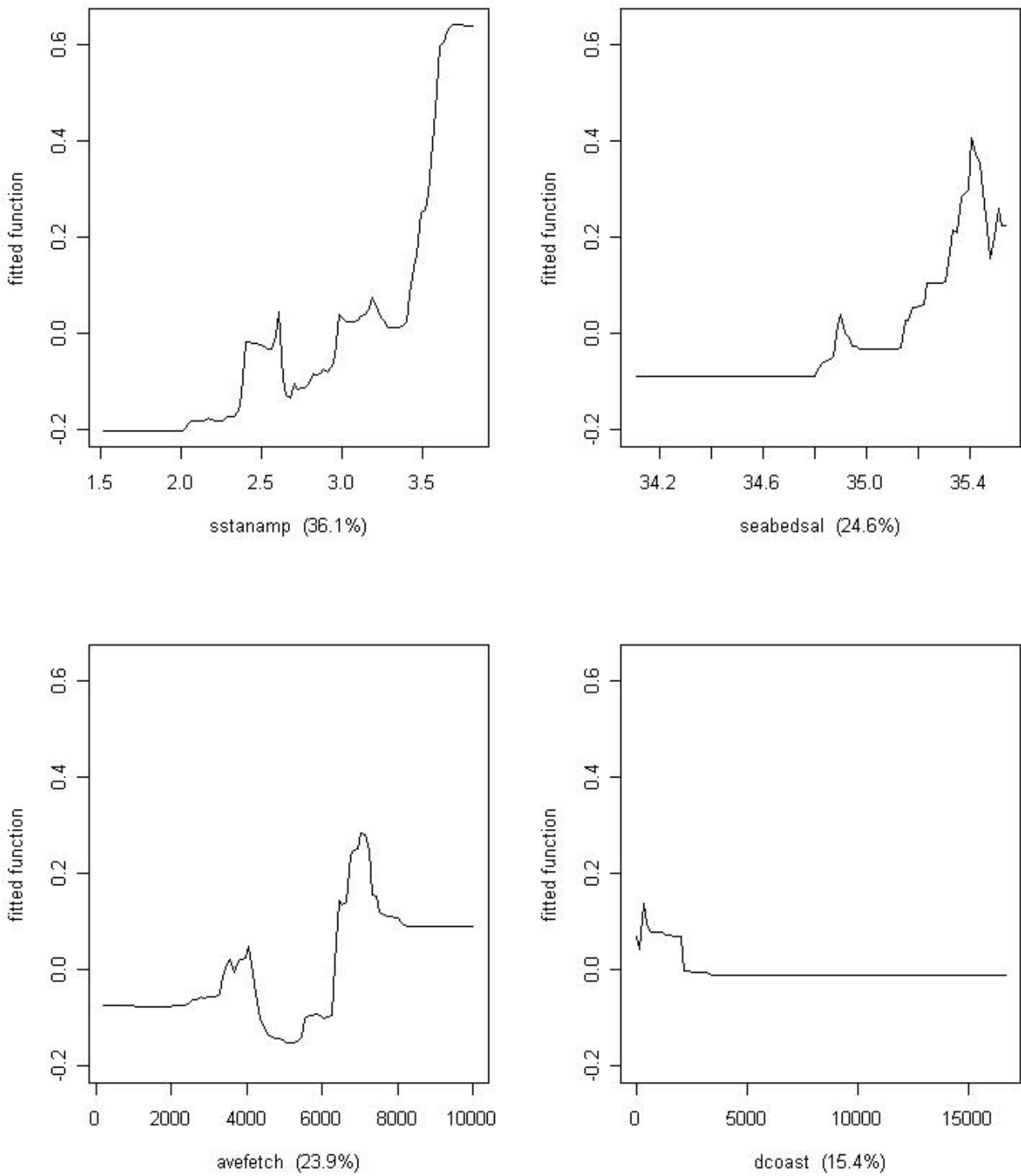


Figure S2.69. Partial dependence plots for *Trachurus novaezelandiae* (jack mackerel) on rocky reefs around New Zealand.



## Upeneichthys lineatus : Goatfish

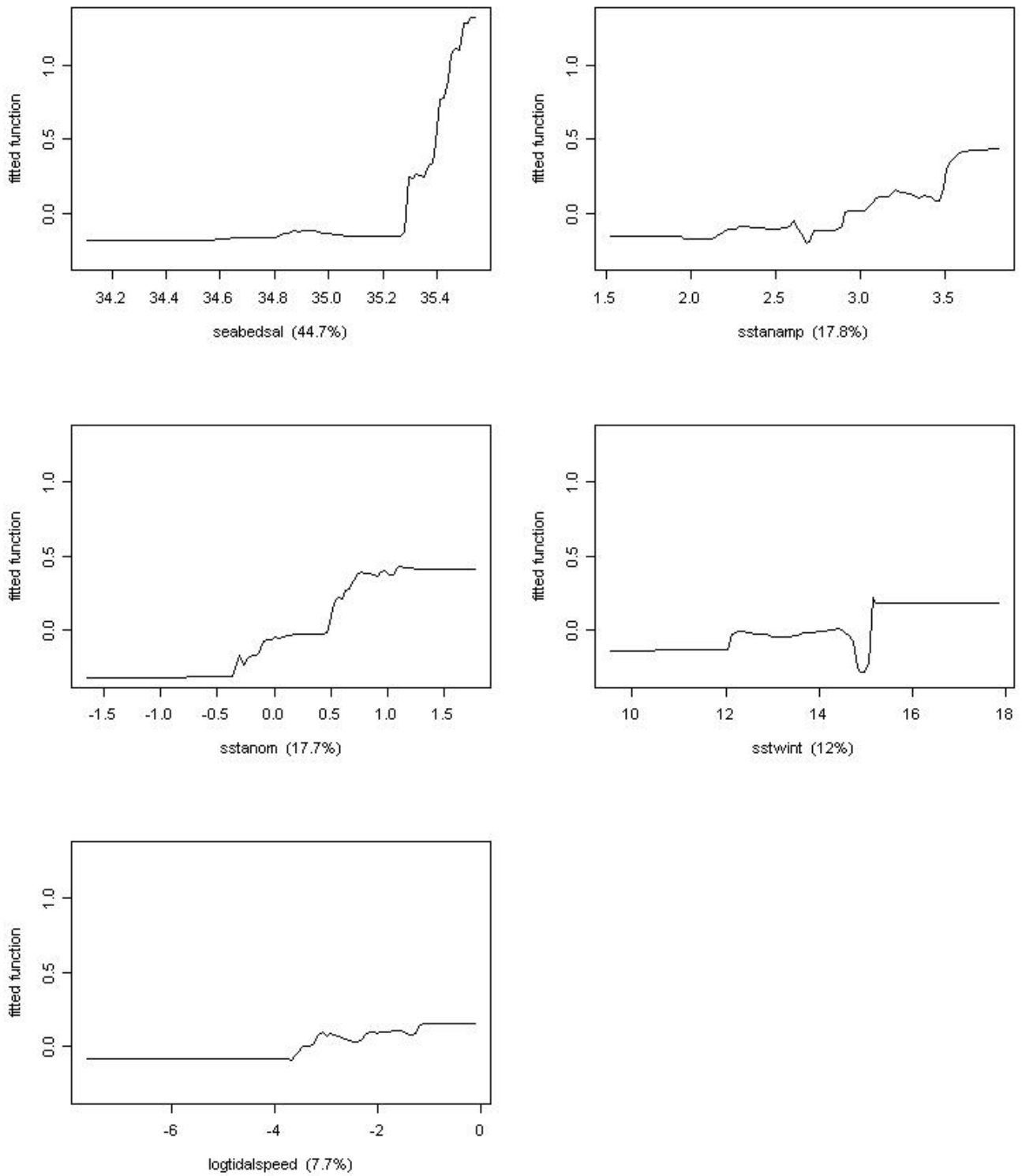


Figure S2.70. Partial dependence plots for *Upeneichthys lineatus* (goatfish) on rocky reefs around New Zealand.

### Zanclistius elevatus : Long-finned boarfish

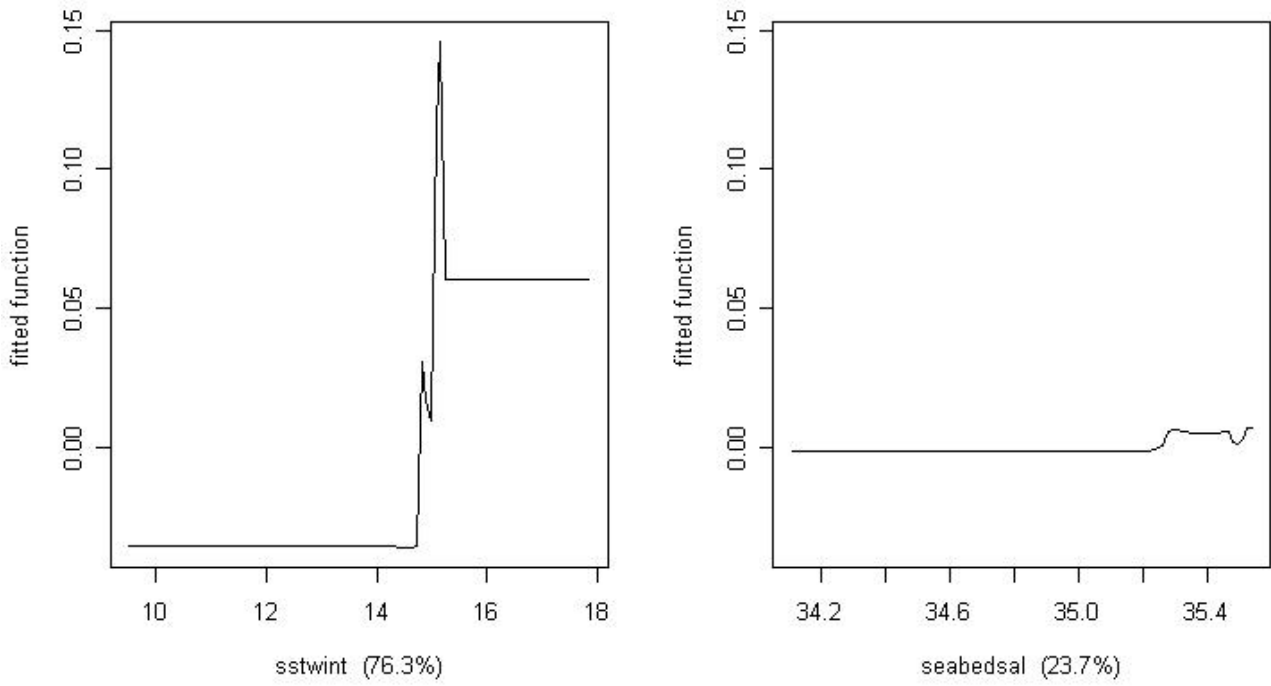


Figure S2.71. Partial dependence plots for *Zanclistius elevatus* (long-finned boarfish) on rocky reefs around New Zealand.

### Zeus faber : John dory

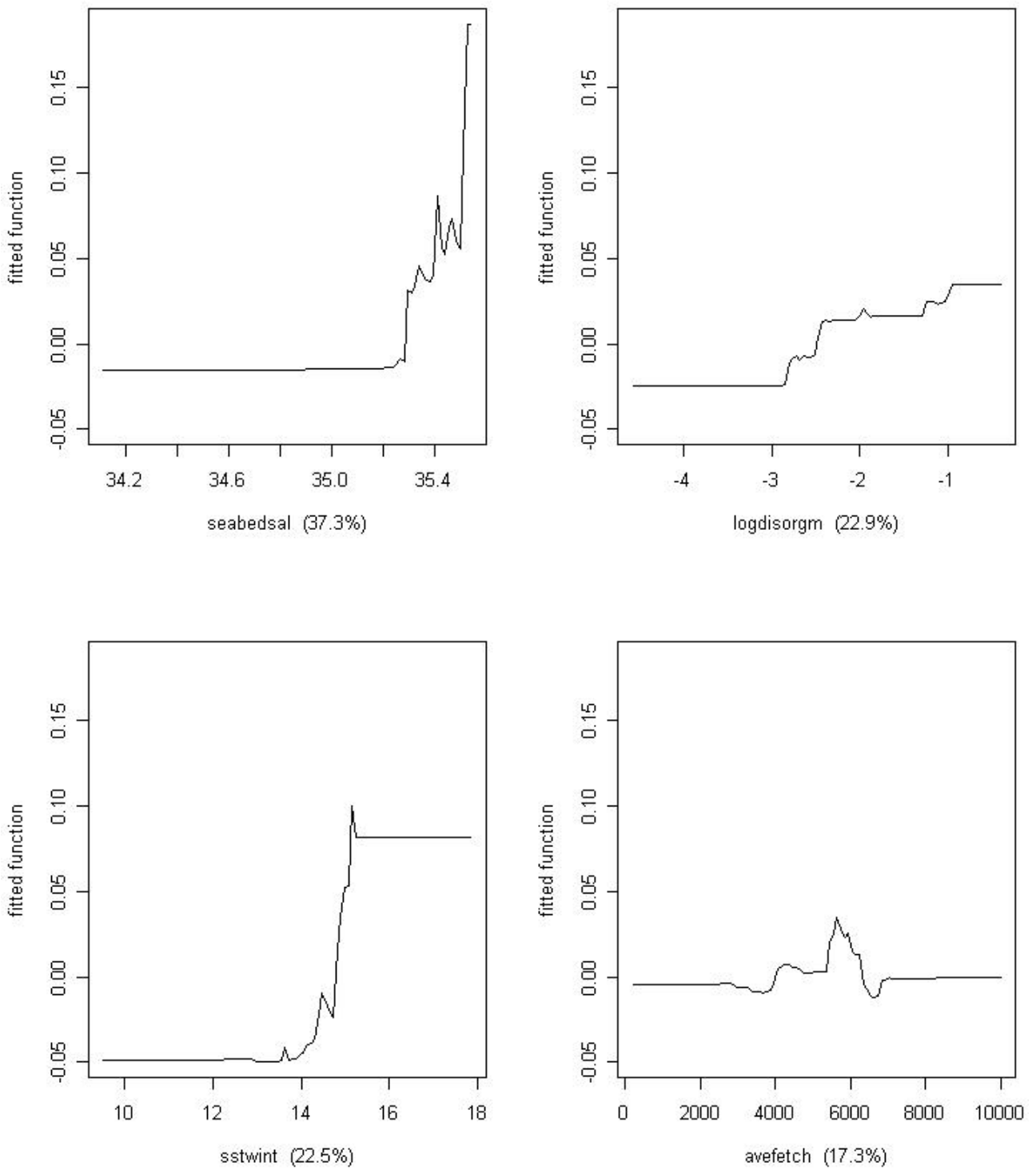


Figure S2.72. Partial dependence plots for *Zeus faber* (john dory) on rocky reefs around New Zealand.