Tables

# 

Table 2. Model selection tests of time-dependency and linearity for the model using F-tests of nested models fit to log landings data. is the catch during Qtr 3 (Jul-Sep) of season . is the catch in the prior sardine season during the post-monsoon period (Oct-Jun, of the previous sardine season). is the same for two seasons prior. is a non-linear function of the response variable.

Model

Residual df

MASE

Adj.R2

F

p value

AIC

Naive Model 1982-2015 data

= +

34

1

129.25

&nbsp;

&nbsp;

&nbsp;

&nbsp;

&nbsp;

AR-1 Model

= + +

32

0.832

120.01

&nbsp;

&nbsp;

&nbsp;

&nbsp;

&nbsp;

Time dependency test

1. = + +

* 33
* 0.877
* 14.1
* 117.43
  1. = + +
  + 32
  + 0.822
  + 23.4
  + 4.88
  + 0.035
  + 114.47
    1. = + + +
    - 31
    - 0.828
    - 21.2
    - 0.12
    - 0.73
    - 116.34
      1. = + + +
      * 31
      * 0.805
      * 21.7
      * 0.31
      * 0.58
      * 116.13
      * &nbsp;
      * &nbsp;
      * &nbsp;
      * &nbsp;
      * &nbsp;
      * Linearity test
        1. = + +
        + 32
        + 0.822
        + 23.4
        + 114.47

= + +

30.6

0.788

26.9

1.74

0.199

113.76

= + + +

28.2

0.786

25.4

0.54

0.618

116.14

= + + +

27.7

0.75

27.9

0.97

0.419

115.33

# 

Table 3. Model selection tests for the model using AIC for models fit to log landings data. is the catch during the spawning season. is the catch during the non-spawning period (Qtrs 4, 1 and 2: Oct-Jun) of season (Jul-Jun). and are the catch during the prior sardine season during and after the spawning period respectively. and are the same for two seasons prior.

Model

Residual df

Residual deviance

F

p value

AIC

= + +

31

27.42

93.54

&nbsp;&nbsp;&nbsp;( = 39%, Var() = 0.88)

= + +

29.5

23.04

5.2

0.02

89.79

&nbsp;&nbsp;&nbsp;( = 47%, Var() = 0.77)

= + + +

27.2

19.95

2.28

0.115

88.81

&nbsp;&nbsp;&nbsp;( = 51%, Var() = 0.71)

= + + +

26.5

15.97

10

0.008

82.62

&nbsp;&nbsp;&nbsp;( = 60%, Var() = 0.58)

# 

Table 4. Top covariates for the spawner () and non-spawner () models. The models are nested; the roman numeral indicates the level of nestedness. Models at levels II and higher are shown with the component that is added to the base level model (M0 or M1) at top. The full set of covariate models tested are given in Appendix B. The fitted versus observed catches from the covariate models are shown in Figure 1.

Model

Residual df

Residual deviance

F

p value

AIC

Spawner catch models with covariates

= Jul-Sep SST current season

= Jan-Mar upwelling prior season

I-M0:

29.6

44.66

111.57

&nbsp;&nbsp;&nbsp;( = 27%, Var() = 1.49)

II:

27

35.62

2.73

0.073

108.26

&nbsp;&nbsp;&nbsp;( = 37%, Var() = 1.27)

III:

24.4

33.06

0.76

0.514

110.1

&nbsp;&nbsp;&nbsp;( = 37%, Var() = 1.28)

II:

26.9

42.45

0.53

0.648

114.3

&nbsp;&nbsp;&nbsp;( = 25%, Var() = 1.53)

&nbsp;

&nbsp;

&nbsp;

&nbsp;

&nbsp;

Spawner catch models with covariates

= Jul-Sep SST current season

= Oct-Dec upwelling prior season

I-M1:

25.6

15.58

80.66

&nbsp;&nbsp;&nbsp;( = 61%, Var() = 0.59)

II:

23.1

9.78

5.8

0.007

69.77

&nbsp;&nbsp;&nbsp;( = 73%, Var() = 0.4)

III:

22.1

9.61

0.44

0.505

71.14

&nbsp;&nbsp;&nbsp;( = 73%, Var() = 0.41)

II:

23.3

14.94

0.48

0.649

82.97

&nbsp;&nbsp;&nbsp;( = 59%, Var() = 0.6)