PROC TITLE DEER;

PROC MODEL NPAR=66 ADDCELL;

INLINE PRD1=S(65)\*S(65)\*S(65)\*S(65)\*S(65)\*S(65)\*S(65)\*S(65)\*S(65);

INLINE PRD2=S(65)\*S(65)\*S(65)\*S(65)\*S(65)\*S(65)\*S(65)\*S(65);

INLINE PRD3=S(65)\*S(65)\*S(65)\*S(65)\*S(65)\*S(65)\*S(65);

INLINE PRD4=S(65)\*S(65)\*S(65)\*S(65)\*S(65)\*S(65);

INLINE PRD5=S(66)\*S(66)\*S(66)\*S(66)\*S(66)\*S(65)\*S(65)\*S(65)\*S(65);

INLINE PRD6=S(66)\*S(66)\*S(66)\*S(66)\*S(65)\*S(65)\*S(65)\*S(65);

INLINE PRD7=S(66)\*S(66)\*S(66)\*S(65)\*S(65)\*S(65)\*S(65);

INLINE PRD8=S(66)\*S(66)\*S(65)\*S(65)\*S(65)\*S(65);

COHORT=38 /\* Adult Males - Tagging-Harvest Survival - 2009\*/;

38:S(65);

COHORT=49;

47:S(65);

COHORT=58;

56:S(65);

COHORT=56;

55:S(65);

COHORT=53;

53:S(65);

COHORT=89;

89:S(65);

COHORT=86;

86:S(65);

COHORT=85;

84:S(65);

COHORT=84;

81:S(65);

COHORT=7 /\* Juvenile Males - Tagging-Harvest Survival - 2009\*/;

7:S(66);

COHORT=29;

28:S(66);

COHORT=46;

45:S(66);

COHORT=46;

44:S(66);

COHORT=43;

42:S(66);

COHORT=122 /\*Adult Females - Tagging-Harvest Survival - 2009\*/;

122:S(65);

COHORT=144;

141:S(65);

COHORT=159;

157:S(65);

COHORT=158;

154:S(65);

COHORT=151;

149:S(65);

COHORT=168;

167:S(65);

COHORT=161;

159:S(65);

COHORT=155;

154:S(65);

COHORT=153;

151:S(65);

COHORT=4 /\* Juvenile Females - Tagging-Harvest Survival - 2009\*/;

4:S(66);

COHORT=20;

20:S(66);

COHORT=27;

26:S(66);

COHORT=25;

24:S(66);

COHORT=24;

23:S(66);

COHORT=38 /\*Adult Males - Tagging-Harvest Survival - 2010\*/;

38:S(65);

COHORT=41;

40:S(65);

COHORT=46;

45:S(65);

COHORT=44;

43:S(65);

COHORT=42;

41:S(65);

COHORT=87;

87:S(65);

COHORT=86;

85:S(65);

COHORT=85;

85:S(65);

COHORT=83;

82:S(65);

COHORT=12 /\*Juvenile Males - Tagging-Harvest Survival - 2010\*/;

11:S(66);

COHORT=28;

28:S(66);

COHORT=46;

45:S(66);

COHORT=49;

49:S(66);

COHORT=48;

48:S(66);

COHORT=106 /\*Adult Females - Tagging-Harvest Survival - 2010\*/;

106:S(65);

COHORT=107;

107:S(65);

COHORT=114;

114:S(65);

COHORT=113;

110:S(65);

COHORT=108;

107:S(65);

COHORT=115;

113:S(65);

COHORT=113;

113:S(65);

COHORT=113;

113:S(65);

COHORT=113;

113:S(65);

COHORT=3 /\*Juveniles Female - Tagging-Harvest Survival - 2010\*/;

3:S(66);

COHORT=8;

8:S(66);

COHORT=13;

12:S(66);

COHORT=12;

12:S(66);

COHORT=12;

10:S(66);

COHORT=35 /\*Adult Males - Tagging-Harvest Survival - 2011\*/;

35:S(65);

COHORT=48;

48:S(65);

COHORT=51;

50:S(65);

COHORT=52 ;

51:S(65);

COHORT=48;

48:S(65);

COHORT=86;

84:S(65);

COHORT=83;

83:S(65);

COHORT=83;

83:S(65);

COHORT=82;

81:S(65);

COHORT=11 /\*Juvenile Males - Tagging-Harvest Survival - 2011\*/;

11:S(66);

COHORT=24;

24:S(66);

COHORT=45;

44:S(66);

COHORT=47;

46:S(66);

COHORT=44;

43:S(66);

COHORT=79 /\*Adult Females - Tagging-Harvest Survival - 2011\*/;

79:S(65);

COHORT=80;

80:S(65);

COHORT=84;

84:S(65);

COHORT=83;

82:S(65);

COHORT=81;

81:S(65);

COHORT=124;

122:S(65);

COHORT=118;

117:S(65);

COHORT=117;

117:S(65);

COHORT=113;

113:S(65);

COHORT=4 /\*Juvenile Females - Tagging-Harvest Survival - 2011\*/;

4:S(66);

COHORT=22;

22:S(66);

COHORT=49;

49:S(66);

COHORT=51;

50:S(66);

COHORT=48;

48:S(66);

COHORT=4 /\*2D - Adults - Tagged in Jan 2009\*/;

2:PRD1\*S(1);

0:PRD1\*S(25)\*S(2);

0:PRD1\*S(25)\*S(26)\*S(3);

COHORT=18 /\*Tagged in Feb 2009\*/;

1:PRD2\*S(1);

3:PRD2\*S(25)\*S(2);

0:PRD2\*S(25)\*S(26)\*S(3);

COHORT=20 /\*Tagged in March 2009\*/;

3:PRD3\*S(1);

2:PRD3\*S(25)\*S(2);

1:PRD3\*S(25)\*S(26)\*S(3);

COHORT=6 /\*Tagged in April 2009\*/;

3:PRD4\*S(1);

0:PRD4\*S(25)\*S(2);

0:PRD4\*S(25)\*S(26)\*S(3);

COHORT=14 /\*Tagged in Jan 2010\*/;

1:PRD1\*S(2);

1:PRD1\*S(26)\*S(3);

COHORT=13 /\*Tagged in Feb 2010\*/;

0:PRD2\*S(2);

0:PRD2\*S(26)\*S(3);

COHORT=22 /\*Tagged in March 2010\*/;

1:PRD3\*S(2);

1:PRD3\*S(26)\*S(3);

COHORT=6 /\*Tagged in April 2010\*/;

0:PRD4\*S(2);

0:PRD4\*S(26)\*S(3);

COHORT=9 /\*Tagged in Jan 2011\*/;

1:PRD1\*S(3);

COHORT=9 /\*Tagged in Feb 2011\*/;

2:PRD2\*S(3);

COHORT=16 /\*Tagged in March 2010\*/;

3:PRD3\*S(3);

COHORT=6 /\*Tagged in April 2010\*/;

1:PRD4\*S(3);

COHORT=13 /\*2D - Juveniles- Tagged in Feb 2009\*/;

2:PRD6\*S(4);

0:PRD6\*S(27)\*S(2);

2:PRD6\*S(27)\*S(26)\*S(3);

COHORT=18 /\*Tagged in March 2009\*/;

3:PRD7\*S(4);

2:PRD7\*S(27)\*S(2);

1:PRD7\*S(27)\*S(26)\*S(3);

COHORT=4 /\*Tagged in April 2009\*/;

0:PRD8\*S(4);

0:PRD8\*S(27)\*S(2);

1:PRD8\*S(27)\*S(26)\*S(3);

COHORT=9 /\*Tagged in Jan 2010\*/;

2:PRD5\*S(5);

0:PRD5\*S(28)\*S(3);

COHORT=7 /\*Tagged in Feb 2010\*/;

2:PRD6\*S(5);

1:PRD6\*S(28)\*S(3);

COHORT=10 /\*Tagged in March 2010\*/;

2:PRD7\*S(5);

0:PRD7\*S(28)\*S(3);

COHORT=3 /\*Tagged in April 2010\*/;

0:PRD8\*S(5);

0:PRD8\*S(28)\*S(3);

COHORT=8 /\*Tagged in Jan 2011\*/;

1:PRD5\*S(6);

COHORT=4 /\*Tagged in Feb 2011\*/;

0:PRD6\*S(6);

COHORT=4 /\*Tagged in March 2011\*/;

0:PRD7\*S(6);

COHORT=2 /\*Tagged in April 2011\*/;

0:PRD8\*S(6);

COHORT=26 /\*2G - Adults - Tagged in Jan 2009\*/;

0:PRD2\*S(7);

1:PRD2\*S(29)\*S(8);

0:PRD2\*S(29)\*S(30)\*S(9);

COHORT=19 /\*Tagged in March 2009\*/;

0:PRD3\*S(7);

4:PRD3\*S(29)\*S(8);

3:PRD3\*S(29)\*S(30)\*S(9);

COHORT=1 /\*Tagged in April 2009\*/;

1:PRD4\*S(7);

0:PRD4\*S(29)\*S(8);

0:PRD4\*S(29)\*S(30)\*S(9);

COHORT=12 /\*Tagged in Jan 2010\*/;

2:PRD1\*S(8);

2:PRD1\*S(30)\*S(9);

COHORT=18 /\*Tagged in Feb 2010\*/;

2:PRD2\*S(8);

3:PRD2\*S(30)\*S(9);

COHORT=8 /\*Tagged in March 2010\*/;

1:PRD3\*S(8);

1:PRD3\*S(30)\*S(9);

COHORT=1 /\*Tagged in April 2010\*/;

0:PRD4\*S(8);

0:PRD4\*S(30)\*S(9);

COHORT=4 /\*Tagged in Jan 2011\*/;

0:PRD1\*S(9);

COHORT=15 /\*Tagged in Feb 2011\*/;

1:PRD2\*S(9);

COHORT=18 /\*Tagged in March 2011\*/;

3:PRD3\*S(9);

COHORT=2 /\*Tagged in April 2011\*/;

1:PRD4\*S(9);

COHORT=7 /\*2G - Juveniles - Tagged in Jan 2009\*/;

0:PRD5\*S(10);

0:PRD5\*S(31)\*S(8);

0:PRD5\*S(31)\*S(30)\*S(9);

COHORT=10 /\*Tagged in Feb 2009\*/;

1:PRD6\*S(10);

0:PRD6\*S(31)\*S(8);

1:PRD6\*S(31)\*S(30)\*S(9);

COHORT=1 /\*Tagged in March 2009\*/;

0:PRD7\*S(10);

0:PRD7\*S(31)\*S(8);

0:PRD7\*S(31)\*S(30)\*S(9);

COHORT=6 /\*Tagged in Jan 2010\*/;

0:PRD5\*S(11);

0:PRD5\*S(32)\*S(9);

COHORT=4 /\*Tagged in Feb 2010\*/;

1:PRD6\*S(11);

0:PRD6\*S(32)\*S(9);

COHORT=8 /\*Tagged in March 2010\*/;

2:PRD7\*S(11);

1:PRD7\*S(32)\*S(9);

COHORT=2 /\*Tagged in Jan 2011\*/;

0:PRD5\*S(12);

COHORT=4 /\*Tagged in Feb 2011\*/;

2:PRD6\*S(12);

COHORT=1 /\*Tagged in March 2011\*/;

0:PRD7\*S(12);

COHORT=4 /\*3C - Adults - Tagged in Jan 2009\*/;

2:PRD1\*S(13);

0:PRD1\*S(33)\*S(14);

1:PRD1\*S(33)\*S(34)\*S(15);

COHORT=16 /\*Tagged in Fen 2009\*/;

5:PRD2\*S(13);

0:PRD2\*S(33)\*S(14);

0:PRD2\*S(33)\*S(34)\*S(15);

COHORT=19 /\*Tagged in March 2009\*/;

0:PRD3\*S(13);

0:PRD3\*S(33)\*S(14);

0:PRD3\*S(33)\*S(34)\*S(15);

COHORT=2 /\*Tagged in April 2009\*/;

0:PRD4\*S(13);

0:PRD4\*S(33)\*S(14);

0:PRD4\*S(33)\*S(34)\*S(15);

COHORT=12 /\*Tagged in Jan 2010\*/;

1:PRD1\*S(14);

0:PRD1\*S(34)\*S(15);

COHORT=37 /\*Tagged in Feb 2010\*/;

2:PRD2\*S(14);

2:PRD2\*S(34)\*S(15);

COHORT=13 /\*Tagged in March 2010\*/;

1:PRD3\*S(14);

1:PRD3\*S(34)\*S(15);

COHORT=2 /\*Tagged in April 2010\*/;

0:PRD4\*S(14);

0:PRD4\*S(34)\*S(15);

COHORT=21 /\*Tagged Jan 2011\*/;

1:PRD1\*S(15);

COHORT=37 /\*Tagged in Feb 2011\*/;

3:PRD2\*S(15);

COHORT=24 /\*Tagged in March 2011\*/;

5:PRD3\*S(15);

COHORT=5 /\*3C - Juveniles - Tagged in Jan 2009\*/;

0:PRD5\*S(16);

2:PRD5\*S(35)\*S(14);

0:PRD5\*S(35)\*S(34)\*S(15);

COHORT=9 /\*Tagged in Feb 2009\*/;

4:PRD6\*S(16);

1:PRD6\*S(35)\*S(14);

0:PRD6\*S(35)\*S(34)\*S(15);

COHORT=6 /\*Tagged in March 2009\*/;

0:PRD7\*S(16);

1:PRD7\*S(35)\*S(14);

2:PRD7\*S(35)\*S(34)\*S(15);

COHORT=1 /\*Tagged in April 2009\*/;

0:PRD8\*S(16);

0:PRD8\*S(35)\*S(14);

0:PRD8\*S(35)\*S(34)\*S(15);

COHORT=4 /\*Tagged in Jan 2010\*/;

0:PRD5\*S(17);

1:PRD5\*S(36)\*S(15);

COHORT=16 /\*Tagged in Feb 2010\*/;

1:PRD6\*S(17);

1:PRD6\*S(36)\*S(15);

COHORT=9 /\*Tagged in March 2010\*/;

1:PRD7\*S(17);

3:PRD7\*S(36)\*S(15);

COHORT=3 /\*Tagged in April 2010\*/;

0:PRD8\*S(17);

0:PRD8\*S(36)\*S(15);

COHORT=9 /\*Tagged in Jan 2011\*/;

0:PRD5\*S(18);

COHORT=11 /\*Tagged in Feb 2011\*/;

0:PRD6\*S(18);

COHORT=6 /\*Tagged in March 2011\*/;

1:PRD7\*S(18);

COHORT=4 /\*4B - Adults - Tagged in Jan 2009\*/;

0:PRD1\*S(19);

0:PRD1\*S(37)\*S(20);

0:PRD1\*S(37)\*S(38)\*S(21);

COHORT=14 /\*Tagged in Feb 2009\*/;

3:PRD2\*S(19);

2:PRD2\*S(37)\*S(20);

1:PRD2\*S(37)\*S(38)\*S(21);

COHORT=19 /\*Tagged in March 2009\*/;

4:PRD3\*S(19);

0:PRD3\*S(37)\*S(20);

1:PRD3\*S(37)\*S(38)\*S(21);

COHORT=8 /\*Tagged in April 09\*/;

1:PRD4\*S(19);

0:PRD4\*S(37)\*S(20);

0:PRD4\*S(37)\*S(38)\*S(21);

COHORT=6 /\*Tagged in Jan 2010\*/;

1:PRD1\*S(20);

0:PRD1\*S(38)\*S(21);

COHORT=20 /\*Tagged in Feb 2010\*/;

1:PRD2\*S(20);

3:PRD2\*S(38)\*S(21);

COHORT=25 /\*Tagged in March 2010\*/;

4:PRD3\*S(20);

2:PRD3\*S(38)\*S(21);

COHORT=11 /\*Tagged in Jan 2011\*/;

0:PRD1\*S(21);

COHORT=20 /\*Tagged in Feb 2011\*/;

4:PRD2\*S(21);

COHORT=15 /\*Tagged in March 2011\*/;

1:PRD3\*S(21);

COHORT=1 /\*Tagged in April 2011\*/;

0:PRD4\*S(21);

COHORT=4 /\*4B - Juveniles - Tagged in Jan 2009\*/;

0:PRD5\*S(22);

0:PRD5\*S(39)\*S(20);

0:PRD5\*S(39)\*S(38)\*S(21);

COHORT=19 /\*Tagged in Feb 2009\*/;

2:PRD6\*S(22);

4:PRD6\*S(39)\*S(20);

0:PRD6\*S(39)\*S(38)\*S(21);

COHORT=23 /\*Tagged in March 2009\*/;

2:PRD7\*S(22);

5:PRD7\*S(39)\*S(20);

1:PRD7\*S(39)\*S(38)\*S(21);

COHORT=4 /\*Tagged in April 2009\*/;

0:PRD8\*S(22);

0:PRD8\*S(39)\*S(20);

0:PRD8\*S(39)\*S(38)\*S(21);

COHORT=8 /\*Tagged in Jan 2010\*/;

1:PRD5\*S(23);

1:PRD5\*S(40)\*S(21);

COHORT=20 /\*Tagged in Feb 2010\*/;

1:PRD6\*S(23);

5:PRD6\*S(40)\*S(21);

COHORT=15 /\*Tagged in March 2010\*/;

2:PRD7\*S(23);

2:PRD7\*S(40)\*S(21);

COHORT=2 /\*Tagged in April 2010\*/;

0:PRD8\*S(23);

0:PRD8\*S(40)\*S(21);

COHORT=10 /\*Tagged in Jan 2011\*/;

1:PRD5\*S(24);

COHORT=12 /\*Tagged in Feb 2011\*/;

1:PRD6\*S(24);

COHORT=5 /\*Tagged in March 2011\*/;

0:PRD7\*S(24);

COHORT=3 /\*Tagged in April 2011\*/;

0:PRD8\*S(24);

COHORT=12 /\*2D - Adult - Radio Harvest in 2009\*/;

3:S(41);

COHORT=12 /\*Radio Harvest in 2010\*/;

2:S(42);

COHORT=14 /\*Radio Harvest in 2011\*/;

1:S(43);

COHORT=9 /\*2D - Juvenile – Radio Harvest in 2009\*/;

1:S(44);

COHORT=6 /\*Radio Harvest in 2010\*/;

1:S(45);

COHORT=9 /\*Radio Harvest in 2011\*/;

1:S(46);

COHORT=55 /\*2G - Adult – Radio Harvest in 2009\*/;

5:S(47);

COHORT=48 /\*Radio Harvest in 2010\*/;

7:S(48);

COHORT=18 /\*Radio Harvest in 2011\*/;

0:S(49);

COHORT=3 /\*2G - Juvenile – Radio Harvest in 09\*/;

0:S(50);

COHORT=0 /\*Radio Harvest in 2010\*/;

0:S(51);

COHORT=14 /\*Radio Harvest in 2011\*/;

3:S(52);

COHORT=10 /\*3C - Adult - Radio Harvest in 2009\*/;

3:S(53);

COHORT=16 /\*Radio Harvest in 2010\*/;

3:S(54);

COHORT=17 /\*Radio Harvest in 2011\*/;

0:S(55);

COHORT=6 /\*3C - Juvenile - Radio Harvest in 2009\*/;

1:S(56);

COHORT=3 /\*Radio Harvest in 2010\*/;

0:S(57);

COHORT=8 /\*Radio Harvest in 2010\*/;

2:S(58);

COHORT=50 /\*4B - Adult - Radio Harvest in 2009\*/;

7:S(59);

COHORT=26 /\*Radio Harvest in 2010\*/;

4:S(60);

COHORT=12 /\*Radio Harvest in 2011\*/;

2:S(61);

COHORT=2 /\*4B - Juvenile - Radio Harvest in 2009\*/;

0:S(62);

COHORT=0 /\*Radio Harvest in 2010\*/;

0:S(63);

COHORT=15 /\*Radio Harvest in 2011\*/;

3:S(64);

LABELS;

S(1)=2D A HARVEST 2009;

S(2)=2D A HARVEST 2010;

S(3)=2D A HARVEST 2011;

S(4)=2D J HARVEST 2009;

S(5)=2D J HARVEST 2010;

S(6)=2D J HARVEST 2011;

S(7)=2G A HARVEST 2009;

S(8)=2G A HARVEST 2010;

S(9)=2G A HARVEST 2011;

S(10)=2G J HARVEST 2009;

S(11)=2G J HARVEST 2010;

S(12)=2G J HARVEST 2011;

S(13)=3C A HARVEST 2009;

S(14)=3C A HARVEST 2010;

S(15)=3C A HARVEST 2011;

S(16)=3C J HARVEST 2009;

S(17)=3C J HARVEST 2010;

S(18)=3C J HARVEST 2011;

S(19)=4B A HARVEST 2009;

S(20)=4B A HARVEST 2010;

S(21)=4B A HARVEST 2011;

S(22)=4B J HARVEST 2009;

S(23)=4B J HARVEST 2010;

S(24)=4B J HARVEST 2011;

S(25)=2D A SURVIVAL 2009;

S(26)=2D A SURVIVAL 2010;

S(27)=2D J SURVIVAL 2009;

S(28)=2D J SURVIVAL 2010;

S(29)=2G A SURVIVAL 2009;

S(30)=2G A SURVIVAL 2010;

S(31)=2G J SURVIVAL 2009;

S(32)=2G J SURVIVAL 2010;

S(33)=3C A SURVIVAL 2009;

S(34)=3C A SURVIVAL 2010;

S(35)=3C J SURVIVAL 2009;

S(36)=3C J SURVIVAL 2010;

S(37)=4B A SURVIVAL 2009;

S(38)=4B A SURVIVAL 2010;

S(39)=4B J SURVIVAL 2009;

S(40)=4B J SURVIVAL 2010;

S(41)=2D A COLLAR HARVEST 2009;

S(42)=2D A COLLAR HARVEST 2010;

S(43)=2D A COLLAR HARVEST 2011;

S(44)=2D J COLLAR HARVEST 2009;

S(45)=2D J COLLAR HARVEST 2010;

S(46)=2D J COLLAR HARVEST 2011;

S(47)=2G A COLLAR HARVEST 2009;

S(48)=2G A COLLAR HARVEST 2010;

S(49)=2G A COLLAR HARVEST 2011;

S(50)=2G J COLLAR HARVEST 2009;

S(51)=2G J COLLAR HARVEST 2010;

S(52)=2G J COLLAR HARVEST 2011;

S(53)=3C A COLLAR HARVEST 2009;

S(54)=3C A COLLAR HARVEST 2010;

S(55)=3C A COLLAR HARVEST 2011;

S(56)=3C J COLLAR HARVEST 2009;

S(57)=3C J COLLAR HARVEST 2010;

S(58)=3C J COLLAR HARVEST 2011;

S(59)=4B A COLLAR HARVEST 2009;

S(60)=4B A COLLAR HARVEST 2010;

S(61)=4B A COLLAR HARVEST 2011;

S(62)=4B J COLLAR HARVEST 2009;

S(63)=4B J COLLAR HARVEST 2010;

S(64)=4B J COLLAR HARVEST 2011;

S(65)=MONTHLY ADULT SURVIVAL;

S(66)=MONTHLY JUVENILE SURVIVAL;

PROC ESTIMATE NSIG=3 MAXFN=100000 NOVAR NAME=A\*T\*Y /\*Age, Tag Type, and Year Effect\*/;

CONSTRAINTS;

S(51)=0;

S(63)=0;

PROC ESTIMATE MAXFN=100000 NOVAR NAME=A\*T /\*Age and Tag Type Effect\*/;

INITIAL;

RETAIN=A\*T\*Y;

CONSTRAINTS;

S(1)=S(2);

S(1)=S(3);

S(4)=S(5);

S(4)=S(6);

S(7)=S(8);

S(7)=S(9);

S(10)=S(11);

S(10)=S(12);

S(13)=S(14);

S(13)=S(15);

S(16)=S(17);

S(16)=S(18);

S(19)=S(20);

S(19)=S(21);

S(22)=S(23);

S(22)=S(24);

S(25)=S(26);

S(27)=S(28);

S(29)=S(30);

S(31)=S(32);

S(33)=S(34);

S(35)=S(36);

S(37)=S(38);

S(39)=S(40);

S(41)=S(42);

S(41)=S(43);

S(44)=S(45);

S(44)=S(46);

S(47)=S(48);

S(47)=S(49);

S(50)=S(52);

S(53)=S(54);

S(53)=S(55);

S(56)=S(57);

S(56)=S(58);

S(59)=S(60);

S(59)=S(61);

S(62)=S(64);

S(51)=0;

S(63)=0;

PROC ESTIMATE MAXFN=100000 NOVAR NAME=A\*Y /\*Age and Year Effect\*/;

INITIAL;

RETAIN=A\*T\*Y;

CONSTRAINTS;

S(1)=S(41);

S(2)=S(42);

S(3)=S(43);

S(4)=S(44);

S(5)=S(45);

S(6)=S(46);

S(7)=S(47);

S(8)=S(48);

S(9)=S(49);

S(10)=S(50);

S(12)=S(52);

S(13)=S(53);

S(14)=S(54);

S(15)=S(55);

S(16)=S(56);

S(17)=S(57);

S(18)=S(58);

S(19)=S(59);

S(20)=S(60);

S(21)=S(61);

S(22)=S(62);

S(24)=S(64);

S(51)=0;

S(63)=0;

PROC ESTIMATE MAXFN=100000 NOVAR NAME=A /\*Age Effect\*/;

INITIAL;

RETAIN=A\*T\*Y;

CONSTRAINTS;

S(1)=S(2);

S(1)=S(3);

S(1)=S(41);

S(1)=S(42);

S(1)=S(43);

S(4)=S(5);

S(4)=S(6);

S(4)=S(44);

S(4)=S(45);

S(4)=S(56);

S(7)=S(8);

S(7)=S(9);

S(7)=S(47);

S(7)=S(48);

S(7)=S(49);

S(10)=S(11);

S(10)=S(12);

S(10)=S(50);

S(10)=S(52);

S(13)=S(14);

S(13)=S(15);

S(13)=S(53);

S(13)=S(54);

S(13)=S(55);

S(16)=S(17);

S(16)=S(18);

S(16)=S(56);

S(16)=S(57);

S(16)=S(58);

S(19)=S(20);

S(19)=S(21);

S(19)=S(59);

S(19)=S(60);

S(19)=S(61);

S(22)=S(23);

S(22)=S(24);

S(22)=S(62);

S(22)=S(64);

S(25)=S(26);

S(27)=S(28);

S(29)=S(30);

S(31)=S(32);

S(33)=S(34);

S(35)=S(36);

S(37)=S(38);

S(39)=S(40);

S(51)=0;

S(63)=0;

PROC ESTIMATE MAXFN=100000 NOVAR NAME=T\*Y /\*Tag Type and Year Effect\*/;

INITIAL;

RETAIN=A\*T\*Y;

CONSTRAINTS;

S(1)=S(4);

S(2)=S(5);

S(3)=S(6);

S(7)=S(10);

S(8)=S(11);

S(9)=S(12);

S(13)=S(16);

S(14)=S(17);

S(15)=S(18);

S(19)=S(22);

S(20)=S(23);

S(21)=S(24);

S(25)=S(27);

S(26)=S(28);

S(29)=S(31);

S(30)=S(32);

S(33)=S(35);

S(34)=S(36);

S(37)=S(39);

S(38)=S(40);

S(41)=S(44);

S(42)=S(45);

S(43)=S(46);

S(47)=S(50);

S(49)=S(52);

S(53)=S(56);

S(54)=S(57);

S(55)=S(58);

S(59)=S(62);

S(61)=S(64);

S(51)=0;

S(63)=0;

PROC ESTIMATE MAXFN=100000 NOVAR NAME=T /\*Tag Type Effect\*/;;

INITIAL;

RETAIN=A\*T\*Y;

CONSTRAINTS;

S(1)=S(2);

S(1)=S(3);

S(1)=S(4);

S(1)=S(5);

S(1)=S(6);

S(7)=S(8);

S(7)=S(9);

S(7)=S(10);

S(7)=S(11);

S(7)=S(12);

S(13)=S(14);

S(13)=S(15);

S(13)=S(16);

S(13)=S(17);

S(13)=S(18);

S(19)=S(20);

S(19)=S(21);

S(19)=S(22);

S(19)=S(23);

S(19)=S(24);

S(25)=S(26);

S(25)=S(27);

S(25)=S(28);

S(29)=S(30);

S(29)=S(31);

S(29)=S(32);

S(33)=S(34);

S(33)=S(35);

S(33)=S(36);

S(37)=S(38);

S(37)=S(39);

S(37)=S(40);

S(41)=S(42);

S(41)=S(43);

S(41)=S(44);

S(41)=S(45);

S(41)=S(46);

S(47)=S(48);

S(47)=S(49);

S(47)=S(50);

S(47)=S(52);

S(53)=S(54);

S(53)=S(55);

S(53)=S(56);

S(53)=S(57);

S(53)=S(58);

S(59)=S(60);

S(59)=S(61);

S(59)=S(62);

S(59)=S(64);

S(51)=0;

S(63)=0;

PROC ESTIMATE MAXFN=100000 NOVAR NAME=Y /\*Year Effect\*/;;

INITIAL;

RETAIN=A\*T\*Y;

CONSTRAINTS;

S(1)=S(4);

S(1)=S(41);

S(1)=S(44);

S(2)=S(5);

S(2)=S(42);

S(2)=S(45);

S(3)=S(6);

S(3)=S(43);

S(3)=S(46);

S(7)=S(10);

S(7)=S(47);

S(7)=S(50);

S(8)=S(11);

S(8)=S(48);

S(9)=S(12);

S(9)=S(49);

S(9)=S(52);

S(13)=S(16);

S(13)=S(53);

S(13)=S(56);

S(14)=S(17);

S(14)=S(54);

S(14)=S(57);

S(15)=S(18);

S(15)=S(55);

S(15)=S(58);

S(19)=S(22);

S(19)=S(59);

S(19)=S(62);

S(20)=S(23);

S(20)=S(60);

S(21)=S(24);

S(21)=S(61);

S(21)=S(64);

S(25)=S(27);

S(26)=S(28);

S(29)=S(31);

S(30)=S(32);

S(33)=S(35);

S(34)=S(36);

S(37)=S(39);

S(38)=S(40);

S(51)=0;

S(63)=0;

PROC ESTIMATE MAXFN=100000 NOVAR NAME=NULL /\*No Effects\*/;

INITIAL;

RETAIN=A\*T\*Y;

CONSTRAINTS;

S(1)=S(2);

S(1)=S(3);

S(1)=S(4);

S(1)=S(5);

S(1)=S(6);

S(1)=S(41);

S(1)=S(42);

S(1)=S(43);

S(1)=S(44);

S(1)=S(45);

S(1)=S(46);

S(7)=S(8);

S(7)=S(9);

S(7)=S(10);

S(7)=S(11);

S(7)=S(12);

S(7)=S(47);

S(7)=S(48);

S(7)=S(49);

S(7)=S(50);

S(7)=S(52);

S(13)=S(14);

S(13)=S(15);

S(13)=S(16);

S(13)=S(17);

S(13)=S(18);

S(13)=S(53);

S(13)=S(54);

S(13)=S(55);

S(13)=S(56);

S(13)=S(57);

S(13)=S(58);

S(19)=S(20);

S(19)=S(21);

S(19)=S(22);

S(19)=S(23);

S(19)=S(24);

S(19)=S(59);

S(19)=S(60);

S(19)=S(61);

S(19)=S(62);

S(19)=S(64);

S(25)=S(26);

S(25)=S(27);

S(25)=S(28);

S(29)=S(30);

S(29)=S(31);

S(29)=S(32);

S(33)=S(34);

S(33)=S(35);

S(33)=S(36);

S(37)=S(38);

S(37)=S(39);

S(37)=S(40);

S(51)=0;

S(63)=0;

PROC ESTIMATE MAXFN=100000 NOVAR NAME= NoMort /\*No Tagging-Harvest Mortality\*/;

INITIAL;

RETAIN=A\*T\*Y;

CONSTRAINTS;

S(1)=S(2);

S(1)=S(3);

S(1)=S(4);

S(1)=S(5);

S(1)=S(6);

S(1)=S(41);

S(1)=S(42);

S(1)=S(43);

S(1)=S(44);

S(1)=S(45);

S(1)=S(46);

S(7)=S(8);

S(7)=S(9);

S(7)=S(10);

S(7)=S(11);

S(7)=S(12);

S(7)=S(47);

S(7)=S(48);

S(7)=S(49);

S(7)=S(50);

S(7)=S(52);

S(13)=S(14);

S(13)=S(15);

S(13)=S(16);

S(13)=S(17);

S(13)=S(18);

S(13)=S(53);

S(13)=S(54);

S(13)=S(55);

S(13)=S(56);

S(13)=S(57);

S(13)=S(58);

S(19)=S(20);

S(19)=S(21);

S(19)=S(22);

S(19)=S(23);

S(19)=S(24);

S(19)=S(59);

S(19)=S(60);

S(19)=S(61);

S(19)=S(62);

S(19)=S(64);

S(25)=S(26);

S(25)=S(27);

S(25)=S(28);

S(29)=S(30);

S(29)=S(31);

S(29)=S(32);

S(33)=S(34);

S(33)=S(35);

S(33)=S(36);

S(37)=S(38);

S(37)=S(39);

S(37)=S(40);

S(51)=0;

S(63)=0;

S(65)=1;

S(66)=1;

PROC TEST;

PROC STOP;