Appendix 1 The following data list was used in the statistical analysis in this paper.[5]

Year	Wolves	Moose	Year	Wolves	Moose	Year	Wolves	Moose
1959	20	538	1980	50	788	2001	19	1120
1960	22	564	1981	30	767	2002	17	1100
1961	22	572	1982	14	780	2003	19	900
1962	23	579	1983	23	830	2004	29	750
1963	20	596	1984	24	927	2005	30	540
1964	26	620	1985	22	976	2006	30	450
1965	28	634	1986	20	1014	2007	21	385
1966	26	661	1987	16	1046	2008	23	650
1967	22	766	1988	12	1116	2009	24	530
1968	22	848	1989	12	1260	2010	19	510
1969	17	1041	1990	15	1315	2011	16	515
1970	18	1045	1991	12	1496	2012	9	750
1971	20	1183	1992	12	1697	2013	8	975
1972	23	1243	1993	13	1784	2014	9	1050
1973	24	1215	1994	17	2017	2015	3	1250
1974	31	1203	1995	16	2117	2016	2	1300
1975	41	1139	1996	22	2398	2017	2	1600
1976	44	1070	1997	24	900	2018	2	1475
1977	34	949	1998	14	925	2019	15	2060
1978	40	845	1999	25	997			
1979	43	857	2000	29	1031			

Appendix 2 The following QB64 code determines the system dynamic solutions via nonlinear simulation and the time path of the linearized system for alternative parameter values.

```
REM
REM LV_sim_PL 210123_1207
REM
DIM m(100000), w(100000), ma(1000), wa(1000), u(1000), v(1000)
SCREEN _NEWIMAGE(1500, 800, 32)
CLS

LINE (100, 600)-(1400, 600)
LINE (100, 600)-(100, 100)
CIRCLE (70, 587), 10, , , , 2
CIRCLE (100, 630), 10, , , , 2

FOR n = 0 TO 8
 LINE (100, 600 - 100 * n)-(90, 600 - 100 * n)
NEXT n

FOR n = 0 TO 15
 LINE (100 + 100 * n, 600)-(100 + 100 * n, 600 + 10)
NEXT n

m1 = 0
```

```
w1 = 0
FOR m2 = 100 TO 2100 STEP 50
 w2 = (0.372 * m2 - 0.000178 * m2 * m2) / 6.593
 LINE (100 + m1 / 2, (600 - 10 * w1))-(100 + m2 / 2, (600 - 10 * w2)), _RGB(255, 255, 0)
 m1 = m2
 w1 = w2
NEXT m2
meq = 1061
weq = 29.47

LINE (100 + meq / 2, 620)-(100 + meq / 2, 100), _RGB(0, 255, 0)
LINE (80, 600 - 10 * weq)-(100 + meq / 2, 600 - 10 * weq), _RGB(0, 100, 255)
LINE (55, 590 - 10 * weq)-(75, 610 - 10 * weq), _RGB(0, 100, 255), BF ' a blue box
LINE (90 + meq / 2, 640)-(110 + meq / 2, 660), _RGB(0, 255, 0), BF ' a green box
LINE (90 + meq / 2, 590 - 10 * weq)-(110 + meq / 2, 610 - 10 * weq), _RGB(255, 0, 0), BF ' a red box

m0 = 1200
w0 = 25
m(0) = m0
w(0) = w0

REM Remove REM from the next line if the path of the nonlinear system is not wanted.
GOTO 100

FOR t = 1 TO 20000

 dm = 0.372 * m(t - 1) - 0.000178 * m(t - 1) * m(t - 1) - 6.593 * w(t - 1)
 dm = dm / 100
 dw = -0.244 * w(t - 1) + 0.000230 * m(t - 1) * w(t - 1)
 dw = dw / 100
 m(t) = m(t - 1) + dm
 IF m(t) < 0 THEN m(t) = 2
 w(t) = w(t - 1) + dw
 IF w(t) < 0 THEN w(t) = 2
 LINE (100 + m(t - 1) / 2, (600 - 10 * w(t - 1)))-(100 + m(t) / 2, (600 - 10 * w(t)))
NEXT t

FOR t = 0 TO 20000 STEP 100
 CIRCLE (100 + m(t) / 2, 600 - 10 * w(t)), 3
NEXT t

t = 0
FOR dia = 1 TO 10
 CIRCLE (100 + m(t) / 2, 600 - 10 * w(t)), dia, _RGB(255, 0, 255), BF ' a purple circle
NEXT dia

t = 20000
FOR dia = 1 TO 10
 CIRCLE (100 + m(t) / 2, 600 - 10 * w(t)), dia, _RGB(255, 255, 0), BF ' a yellow circle
NEXT dia

100 REM

REM Remove REM from the next line if the path of the linearized system is not wanted.
REM GOTO 200
```

```
phi = -0.002858
psi = 0.21137
gamma = -0.005716
omega = -6.593

u(0) = m0 - meq
v(0) = w0 - weq

A = u(0)
B = (omega * v(0) + (gamma - phi) * A) / psi

ma(0) = meq + u(0)
wa(0) = weq + v(0)

FOR t = 1 TO 200
 u(t) = EXP(phi * t) * (A * COS(psi * t) + B * SIN(psi * t))
 v(t) = EXP(phi * t) / omega * (((phi - gamma) * A + psi * B) * COS(psi * t) + ((phi - gamma) * B - psi * A) *
SIN(psi * t))
 ma(t) = meq + u(t)
 wa(t) = weq + v(t)
NEXT t

FOR t = 1 TO 200
 LINE (100 + ma(t - 1) / 2, (600 - 10 * wa(t - 1)))-(100 + ma(t) / 2, (600 - 10 * wa(t))), _RGB(255, 100, 0)
NEXT t

FOR t = 0 TO 200 STEP 1
 CIRCLE (100 + ma(t) / 2, 600 - 10 * wa(t)), 3, _RGB(255, 100, 0)
NEXT t

t = 0
FOR dia = 1 TO 10
 CIRCLE (100 + ma(t) / 2, 600 - 10 * wa(t)), dia, _RGB(255, 0, 255), BF ' a purple circle
NEXT dia

t = 200
FOR dia = 1 TO 10
 CIRCLE (100 + ma(t) / 2, 600 - 10 * wa(t)), dia, _RGB(255, 255, 0), BF ' a yellow circle
NEXT dia

200 REM
END
```

Appendix 3 The following QB64 code determines the optimal solutions for alternative parameter values.

```
REM StabCtrl.bas
REM Peter Lohmander 210122_1929
CLS
OPEN "C:\Users\Peter\Desktop\RESULTS\StabOut.txt" FOR OUTPUT AS #1

REM Parameters:
a = 0.372
b = 0.000178
c = 6.593
g = 0.244
h = 0.000230
```

```
PR = 1000
PS = 1000
PW = 20000

FOR solution = 1 TO 2
 PRINT ""
 PRINT "Solution = "; solution
 PRINT ""
 PRINT #1, ""
 PRINT #1, "Solution = "; solution
 PRINT #1, ""



 PRINT " PW M W R SW PRR PSSW PROF PWLNW TOTRES"
 PRINT #1, " PW M W R SW PRR PSSW PROF PWLNW TOTRES"

 REM Parameter loop starts here:
 FOR PW = 10000 TO 200000 STEP 10000
 REM PRINT "PW = "; PW

 P = (-2 * b * c * PR * PR - 2 * b * g * PR * PS - a * h * PR * PS) / (2 * b * h * PR * PS)
 Q = (a * c * PR * PR + a * g * PR * PS + h * PS * PW) / (2 * b * h * PR * PS)
 Mopt1 = -P / 2 + (P * P / 4 - Q) ^ 0.5
 Mopt2 = -P / 2 - (P * P / 4 - Q) ^ 0.5
 Wopt1 = PR * (2 * b * Mopt1 - a) / (PS * h)
 Wopt2 = PR * (2 * b * Mopt2 - a) / (PS * h)

 REM Solution 1
 M = Mopt1
 W = Wopt1
 R = a * M - b * M * M - c * W
 s = -g + h * M
 SW = s * W
 PRR = PR * R
 PSSW = PS * SW
 PROF = PRR + PSSW
 PWLNW = PW * LOG(W)
 totres = PROF + PWLNW

 IF solution = 1 THEN PRINT USING "#######.##"; PW; M; W; R; SW; PRR; PSSW; PROF; PWLNW; totres
 IF solution = 1 THEN PRINT #1, USING "#######.##"; PW; M; W; R; SW; PRR; PSSW; PROF; PWLNW; totres

 REM Solution 2
 M = Mopt2
 W = Wopt2
 R = a * M - b * M * M - c * W
 s = -g + h * M
 SW = s * W
 PRR = PR * R
 PSSW = PS * SW
 PROF = PRR + PSSW
 PWLNW = PW * LOG(W)
 totres = PROF + PWLNW

 IF solution = 2 THEN PRINT USING "#######.##"; PW; M; W; R; SW; PRR; PSSW; PROF; PWLNW; totres
```

```
 IF solution = 2 THEN PRINT #1, USING "#######.##"; PW; M; W; R; SW; PRR; PSSW; PROF; PWLNW; totres

 NEXT PW
 PRINT ""
 PRINT ""
 PRINT #1, ""
 PRINT #1, ""
NEXT solution
CLOSE #1
END
```