

THE MOOSE AND WOLVES of ISLE ROYALE

A Study of Population Change

Background: Isle Royale is a small island (45 miles long by 9 miles wide) located in Lake Superior. In roughly 1949, due to a thick ice pack on Lake Superior, timber wolves crossed the ice pack and began to live on Isle Royale. In 1958, one of the longest wolf/moose interaction studies began. Far more information can be found at: www.isleroyalewolf.org or www.wolf.org or <http://www.nps.gov/isro/>

Read the directions completely before starting this exercise.

Below is a data table that shows the estimated population numbers of moose, wolves, and balsam fir trees on Isle Royale from 1960 to 2008. Your job is to use the data to create a line graph that shows the relationship between these organisms. To do so, you will need to make two Y-axes with different scales: one for moose and one for wolves. Use a different color line on the graph for each species.



When you are finished graphing the moose and wolf populations, graph the balsam fir data on the same graph, but as a **bar graph**, using the bottom inch or two of the graph for the bars. Create your own scale for the estimated values of “low, below average” etc.

Be sure your graph has a title, axes are labeled, you have a legend, and so on. When you are finished, answer the questions on the next page **on a separate sheet of paper**. Staple your graph and answers to this sheet, and hand it all in together. **Due Wednesday, 1/8/14.**

Year	Wolves	Moose	Balsam Fir
1959	20	563	
1960	22	610	A
1961	22	628	
1962	23	639	
1963	20	663	
1964	26	707	
1965	28	733	AA
1966	26	765	
1967	22	912	
1968	22	1042	
1969	17	1268	
1970	18	1295	L
1971	20	1439	
1972	23	1493	
1973	24	1435	
1974	31	1467	

1975	41	1355	L
1976	44	1282	
1977	34	1143	
1978	40	1001	
1979	43	1028	
1980	50	910	A
1981	30	863	
1982	14	872	
1983	23	932	
1984	24	1038	
1985	22	1115	VH
1986	20	1192	
1987	16	1268	
1988	12	1335	
1989	12	1397	
1990	15	1216	A
1991	12	1313	H

1992	12	1590	BA
1993	13	1879	A
1994	17	1770	A
1995	16	2422	BA
1996	22	1163	BA
1997	24	500	A
1998	14	699	A
1999	25	750	A
2000	29	850	A
2001	19	900	A
2002	17	1100	
2003	19	900	
2004	29	750	
2005	30	540	
2006	30	450	
2007	21	385	
2008	23	650	

Estimates of balsam fir growth

L = low

BA = below average

A = average

AA = above average

H = high

VH = very high

Blank = No data collected

QUESTIONS:

- a) In what year did the wolf population peak?
 - b) In what year did the moose population peak?
- As the moose population rises, what happens to the wolf population?
- a) What do you think might have happened to the wolf population in the early 1980s?
 - b) AFTER answering Question 3, read about the history of the Isle Royale (see websites above) and find out what really happened. Write it down.
- What do you think might have happened to the moose population in 1996 and 1997? (Hint: It's not the same reason as #3)
- Why wasn't the wolf population also affected in 1996 and 1997?
- What long-term effects could a large moose die-off have on the wolf population?
- What will happen to the ecosystem if the wolf population numbers rose drastically?
- How many wolves do you think will be living on Isle Royals five years from now? Explain.
- Consider that the wolf numbers continue to decline so that they eventually become extinct on the island. If this occurs, do you think wolves should be reintroduced into the Isle Royale ecosystem? Explain your reasoning.
- Is there any relationship between the moose population and balsam fir growth rates? Explain.

