

Weather and Nesting Success in Whooping Cranes

The whooping crane has long been in danger of becoming an extinct species. Its population has been carefully studied by the Canadian Wildlife Service since its breeding grounds in Wood Buffalo National Park were discovered in 1954. The whooping crane migrates north from the Aransas Refuge in Texas. It builds its nest in marshy areas of Wood Buffalo National Park and feeds in numerous nearby shallow potholes. The weather in the summer breeding areas has a substantial effect on the nesting and feeding habits of these birds. Heavy rainfall may flood nests and cause a high mortality in young birds. Temperature extremes or heavy snowfall early in the season may also disturb the nesting success.

Data are presented that show the bird population of the northerly migrating whooping cranes over 15 years. Nest sites were carefully examined without disturbing the birds and the number of hatching eggs counted. Measurements of snowfall and rainfall during the summer period were recorded. Not all of the birds that migrated north from the winter area in Texas were in the same breeding area. The results of the study are summarized in Table 1.

Table 1

Year	Migrating Adults	Number of Nests	Eggs Laid	Hatched Eggs	Rainfall* (inches)	Snowfall* (inches)
1955	21	6	6	4	3.5	1.4
1956	20	3	2	0	5.9	0.2
1957	20	4	4	3	4.6	0.8
1958	22	5	5	4	2.4	1.1
1959	23	4	6	2	2.5	5.6
1960	23	8	8	4	3.2	1.8
1961	30	6	6	5	2.9	0.03
1962	32	0	0	0	7.6	3.0
1963	28	4	6	2	5.9	0.5
1964	26	10	10	7	3.2	0.8
1965	32	10	10	6	2.9	1.0
1966	36	2	2	0	5.4	2.9
1967	30	4	4	3	3.5	0.4
1968	32	3	4	3	2.8	0.7
1969	33	3	3	1	5.8	2.4
1970	32	5	5	4	2.1	0.6

*In this study precipitation was measured in inches rather than metric units.

Questions

1. On a separate sheet of paper, plot a graph to show how the crane population has changed over the past 15 years.
2. When was the population highest? When did it reach its lowest level?

3. During which years did the population increase the most? In which year was adult mortality the greatest?

4. Which 6 years were the poorest breeding years for the cranes? When were the most eggs laid and hatched successfully?

5. Rainfall and snowfall were high some years. During which four summers was rainfall greatest? Was snowfall ever high the same year as the rainfall? How was the hatching success those years?

6. What percentage of the eggs hatched when rainfall and snowfall were lowest?

7. On a separate sheet of paper, plot a graph that relates hatching success to rainfall. Why would a daily or weekly account of rainfall be more helpful?

8. What other factors besides weather might influence the population growth of the whooping cranes? What do you think lowered its population to the endangered level in the first place?

9. Suppose 1964 and 1965 had been poor years due to high precipitation. Would this have greatly altered the population?

10. What factors prevent a rapid increase in the number of cranes? Suggest natural or human-related factors that could rapidly cause the extinction of this species.

