

The Local Ecological Effect of Long Tailed Jaegers Nesting in the Subarctic

While carrying out geomorphological field work in the Ruby Range, Yukon Territory (Fig. 1) during the summers of 1967 and 1968, an extension of the known breeding grounds of the long tailed jaeger (*Stercorarius longicaudus*) was observed¹. A pair of these birds nested on the same southeast-facing slope both years and their presence affected the local ecology in significant ways.

For example, they maintained a constant vigil and promptly chased away any predator which came close to the slope. This provided an umbrella for other animals on the slope such as ground squirrels, pika, marmot, and ptarmigan. As a result the population of these animals was higher and their behaviour was more uninhibited than in surrounding areas. This became even more noticeable, by contrast, upon returning to the field in the summer of 1972 and finding the jaegers missing. The feather remains of one adult jaeger was discovered and the atmosphere on the slope was very different.

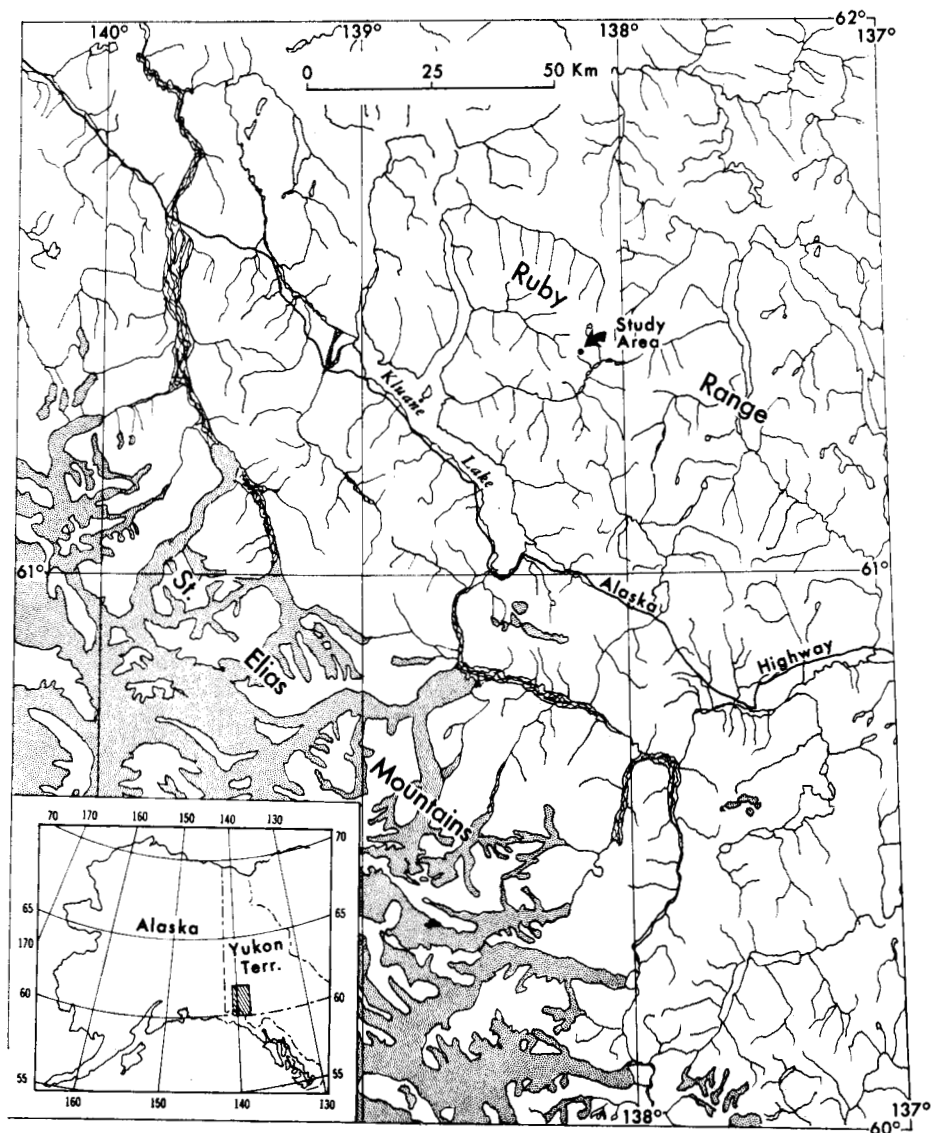


FIG. 1. Location of Study Area.

The Ruby Range is a small granitic mountain group 130 km. long by 65 km. wide oriented northwest-southeast in southwest Yukon Territory, located immediately to the east of the towering St. Elias Mountains (Fig. 1). The higher elevations of the Ruby Range average 2,100 m. and treeline occurs at about 1200 m. Owing to its latitude, altitude, and continentality, the area has a subarctic alpine tundra environment². Although the Ruby Range is approximately 900 km. south of the previously documented nesting area of the long tailed jaeger³, several jaegers were sighted here.

My research was concerned with solifluction lobe development in the Ruby Range and detailed work was carried out on four adjacent slopes facing southeast, southwest, east, and north. The elevations, gradients, and rock types are similar for these slopes but the local environments are considerably different owing to melt water from late snow lie and exposure to solar radiation. Solifluction lobes and vegetation are well-developed on the southeast-facing slope but become less so on the east-southwest-north-facing slopes. The vegetation is distributed in sharply delineated bands across the step-like form of the lobes but the dominant plant cover occurs on the lobe treads and consists of mossy hummocks⁴. The jaegers' nest was located in approximately the same place both years, on a lobe tread in a small basin between two mossy hummocks.

One of the attributes of the jaeger is its marvellous eyesight. They can see for great distances and very little happens within the surrounding area without their knowing about it. For example, any eagle that came closer than 2 or 3 km. to the southeast slope was promptly chased away. Occasionally we would hear the jaegers begin their high shrill calls and look in the direction they were flying to see an eagle — just a speck in the sky. The same treatment was allotted other predators such as wolf, fox, bear, and wolverine. The jaegers' diving and screaming was enough to drive any self-respecting animal to distraction as we had ourselves experienced on several occasions while looking for their nest (Fig. 2). The virtual elimination of predators from the slope during the summer was somewhat counterbalanced by the jaegers themselves, however, since they harvested many small rodents on the slope, i.e., shrews, lemmings, voles, and mice of various kinds. But for the larger burrowing mammals, such as ground squirrels, pika, marmot, as well as the ptarmigan, it provided a rather trouble-free existence. On a comparative basis the population of burrowing animals was vastly greater on the southeast-facing slope than the



FIG. 2. Long tailed Jaeger diving at us while we were searching for its nest.

other exposures, and although the major explanation for this may be because of the more favourable environment on the southeast, it is nevertheless felt that the jaegers' presence contributed significantly to the relatively high population. This assumption is supported by the observed behaviour of animals on the slope in 1967 and 1968 as compared with 1972 when the jaegers were gone.

The slope had a very different atmosphere in the jaegers' absence. I was aware of this but did not immediately identify the difference until one day while eating lunch on the southeast slope we heard a commotion and turned to see a gyrfalcon with a ground squirrel in its talons. He landed less than 100 m. away and finished the kill. I had never once seen a ground squirrel taken by a predator in the two previous seasons. In the following days the falcon was spotted near by several times, as well as were eagles, and at the same time the ground squirrels on the slope were not nearly as visible and friendly as in the previous summers. There was also a noticeable difference in ptarmigan behaviour. During the earlier field seasons it was not unusual to see several small groups of ptarmigan any day of the season, but during the 1972 summer (actually August) we did not see any ptarmigan on the southeast slope during the day. Instead they spent the day on nearby talus and blockfield slopes, presumably where protection was better. On-

ly at night would they venture onto the slope in search of food. Therefore, the behaviour of both the ground squirrels and ptarmigan had been noticeably affected by the absence of the jaegers.

It is very possible that the falcon was also responsible for the death of the jaeger as well. The feather remains were identified by Dr. W. Earl Godfrey of the Canadian Museum of Natural Sciences, as remiges, rectrices, and scapulars from an adult long tailed jaeger⁶. In addition, Dr. Godfrey postulated that it had probably been killed by an avian predator rather than a mammalian predator owing to the undamaged condition of the feather roots. A fox, for example, would probably have broken the base of the feathers⁶.

It is not known how long the jaegers have been nesting on this slope and elsewhere in the area, or if they will continue, but there is every reason to expect that they will. If so they will probably continue to have an effect on the local ecological balance and allow somewhat higher populations of certain animals in localized areas than would otherwise occur. As is usual in nature every relationship has additional implications. For example, it is well known (although poorly documented) that burrowing animals may have a considerable geomorphic impact on the landscape. This is particularly true for the southeast-facing slope in question since on the basis of my measurements the arctic ground squirrel has been excavating 320 lbs. of material per acre annually based on a total 53-acre area (8 tons per acre when calculated for actual area of occurrence)⁷. At the same time the southwest, east, and north-facing slopes are little affected. To stretch a point, this has even further implications in terms of valley asymmetry. But suffice it to say that there was a clear and observable difference in the ecology of the slope because of the jaegers' presence. Such ecological relationships are replete in nature and we have a great deal to learn about and from them.

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An Archaeological Site on the North Coast of Ellesmere Island

In July 1965, at the end of a long walk westward from Alert, I marked down an Eskimo site on the south side of the well-developed delta terrace at the mouth of the Wood River, 82°30'N., 63°07'W. In setting and lay-out it resembled sites of the Independence I and II cultures that we found at Tanquary Fjord in 1963 and that were excavated and identified by Count Eigil Knuth in August 1965¹. It was not until August 1972 that I was able to revisit the delta of the Wood River, during the course of a helicopter flight in connexion with other work.

The Eskimo site is 11.5 m. above sea level (as measured by a Wallace and Tiernan surveying altimeter) and lies 3 m. from the edge of the delta terrace and about 60 m. from the sea. The level terrace, composed mainly of shingle and gravel with scattered flat rocks and small boulders, ends above the foreshore in a steep bank, the material of which is more or less at angle of rest and lightly vegetated. The distinctive feature of the site is the central hearth, which measures 260 cm. in length by 69 cm. in breadth. It is oriented at right angles to the shore so that the entrance of the tent ring faces the sea, and it is formed in the usual way of flat slabs (in this case 3 in number) of fissile rock set on edge in the ground. Outside the central hearth only 4 rocks define the tent ring — a flat rock, 47 cm. long and about 10 cm. wide; two small boulders near the entrance; and a larger boulder measuring about 16 by 12 cm. at a distance of 165 cm. from the entrance on the south side. About 6 m. to the north of this main structure there is a rough circle (1.5 m. in diameter) of small boulders,