DO KEAS ATTACK SHEEP?

By J. R. JACKSON

For nearly a hundred years it has been widely believed among runholders and shepherds of the South Island high country that Keas attack and kill sheep. Consequently during much of this period a bounty has been paid for Keas. In 1886 the Government bounty was £1 and to-day many runholders pay about the same amount.) After studying Keas I have concluded this destruction is not justified.

The whole subject is part of the folklore of New Zealand. It has been collected by Benham (1906) and by Marriner (1906 and 1908) and to-day most of the tales told can be matched by what these authors put on record. One variant, not to be found in these authors, is described below.

The discovery of Keas attacking sheep is lost in confusion. Marriner traced the first published account back to 1868 and attacks to 1867. I have been unable to check Marriner's 1868 and indeed Benham gives a different source for a newspaper article which Potts (1871) refers to a "local paper." Also Benham points out how two men on neighbouring stations, J. McDonald on Wanaka Station in 1867 and J. Campbell on West Wanaka Station in 1870 both claim to have first discovered Keas attacking sheep. Beattie (1936, 1937 and 1938) mentions a third independent discovery. Possibly the dislike of the Kea is older; perhaps it is a transmuted hatred of cockatoos brought to New Zealand by Australian shepherds, the "shagroons." Certainly Mr. D. A. Cameron, the original runholder of Nokomai and one of Marriner's correspondents, was from Australia, and Beattie (1936, 1937 and 1938) makes apparent the large Australian element among the early Otago and Southland settlers.

The year 1867 is of interest for, as Barker (1870) describes from 29th July to 6th August was the first heavy and persistent snowfall experienced by the runholders. Losses of sheep were very large. Yet in the early accounts as Potts (1871) no mention is made of Keas feeding on carrion with which they were so well supplied in 1867. They are mentioned feeding at the gallows and a theory built on this basis. The heavy snowfall in August was followed in February 1868 by record floods (Brown 1940).

This account is largely an internal analysis of the folklore and it is my purpose to show:—

1. The accounts differ greatly;
2. Several accounts contain inaccurate descriptions. The authors may have had difficulty in describing what they saw but even so public policy should not be based on faulty accounts;
3. A geographic variation of account.

DIFFERENCES

A. Difficulty of Witnessing Attack

As Marriner points out when he began collecting evidence there were no first-hand descriptions of Kea attack. He says he obtained thirty descriptions and it is possible by comparing his accounts and Benham's to identify twenty witnesses. Benham has ten descriptions, four in common with Marriner. Since 1906 this topic has been discussed

in the newspapers every few years and usually one or two more witnesses write their descriptions. It is notable that there have been few witnesses; yet four of Marriner's twenty and five of Benham's ten witnesses claimed to have seen Kea attack two or more times. Typical is J. Sutherland of Benmore (Marriner 1906) who claimed "on several occasions I saw them attack sheep."

Also a common tale is of scoffing shearers being convinced by a runholder who knew where to ride to get a sheep killed the previous night.

B. The Loss of Sheep caused by Keas.

Most observers believe that one or two sheep are killed at a time and perhaps a dozen in a season. Like R. McKenzie, Birchwood Station (Benham) they regard large losses as "gross exaggerations." He says, "On one occasion, during a snow storm, when two or three hundred sheep had been hemmed in for a few days, I found three or four sheep killed. . . ."

On the other hand, A. Watherston of Rees Valley Station (Marriner 1908) describes how a flock of 40 Keas killed 38 wethers from a camp of 300 to 400 sheep overnight. Watherston also claimed 700 sheep were lost from a flock of 1300 during a summer; and E. Cameron (Benham) tells how 200 from 400 were lost in winter up the Matukituki Valley.

Cautiously Marriner (1908) reckons that overall "5 per cent. would well cover the annual loss due to Keas." It is interesting to compare this estimate with some figures given by Clarke (1960). Clarke found that prior to 1950 annual losses on Mount Hay Station, McKenzie Country, were 12%. This was reduced to 4% by various improvements. He records that on Mt. Cook Station winter snow losses were 2%.

Now it is possible to estimate the severity of Kea attack and the evidence shows the rate must be very low. This bird normally feeds on nectar, berries, grub and beetles, roots and buds. It has learnt to recognise carrion as food and, it is alleged, became a predator, preying on an animal much larger than itself, all within the last one hundred years. It would be expected to be an inefficient predator. It would make many more unsuccessful attacks than successful. These unsuccessful attacks would more or less severely wound the sheep. There are several descriptions of wounded sheep being found on the run and scarred sheep being noticed at shearing. They were noticed at shearing in 1867 on Wanaka Station, but as Benham describes by 1906 they were seldom noticed for the character of attack had changed. To-day few men with a lifetime experience would claim to have seen at shearing more than a dozen sheep bearing healed Kea wounds. Perhaps the rate is one sheep that has severe Kea wounds in twenty-thousand shorn.

For a year I worked in G. L. Bowron and Co. Ltd.'s tannery and we handled many sheep pelts. During the year nearly 2000 dozen sheep skins of all grades from Canterbury and Otago were tanned and if we use the fraction 1/10 (given me by the Canterbury Frozen Meat Co. Ltd. in 1959) as the ratio of high country to low country sheep killed, then approximately 2000 high country sheep were tanned. None of these bore scars which we would attribute to Kea attack. Further, the grader, Mr. J. O'Neill, who had been grading for 10 years previously

during which time he would have inspected between 20,000 and 40,000 high country pelts, was confident that none bore scars from Kea attack.

KILLER KEAS

In North Canterbury where it is usually claimed that only a few sheep are lost at a time, this is considered to be the work of a "killer Kea." When he is in a flock he will kill the sheep and the other Keas join in feeding on the dead sheep. He is usually found to be an adult male and when he is destroyed there is no further loss of sheep.

The large losses cannot be work of a few Keas nor can the theory of killer Keas explain the rapid spread of the habit of attacking sheep. If reports are to be believed in a few years every station along the length of the Southern Alps from Marlborough to Southland had experience of Keas killing sheep and has continued to. Every small remote valley has and has had its killers. This points to learning by Keas, as would be expected in such an intelligent bird.

BLOOD POISONING

If the low rate of injury, less than 1/20,000, is conceded then either Keas attack few sheep, or most sheep attacked die. The latter is sometimes explained by "blood poisoning." By one variant the death of sheep with small wounds, perhaps a quarter-inch tear of the skin, is explained. Not infrequently these sheep with small wounds are found dead among other sheep more typically "kea-ed," that is among sheep with their body cavity open. I found an instance, 4/1/58, after a prolonged spell of very bad weather. In a small bay at the bush-edge were two sheep, both only a few days dead, and with frothing of blood from the nostrils. One was a typical "kea-ed" sheep, whereas the other had no wound that I could find. The frothing of blood indicates a haemorrhage, perhaps the result of an infection like gas-gangrene. If so, on occasion Keas might carry the infection after feeding on carrion, but also sheep would be expected to be infected more often naturally. In other cases of poisoning there are extensive areas blackened under the skin on the back. This blackening may be bruising and subsequent gangrene, and in J. H. King's description (Marriner 1906) "bruising" is used. Unfortunately I have seen no such sheep.

It seemed worth looking to find a pathogen. Prof. J. A. R. Miles of Otago University has helped. He has looked especially for psittacosis and haematozoa, but failed to find them. Eighteen Keas have been examined at the Otago Medical School and blood samples from another ten also. Laird (1949) reports his examination of three blood smears and I have examined 32 smears. All the results have been negative. It has been found that some Keas have a haemolytic anaemia. This is a stress disease and there seem to be no associated microbes. Some Keas have bumble-foot, almost certainly as in poultry and many other vertebrates, a staphylococcal infection. These would not be the poison. Further I have handled more than 500 different Keas and have been occasionally scratched and bitten, but not poisoned. Therefore if Keas do carry a poison only a small proportion can be carriers and few sheep receive a poison from Keas.

An ideal way to tackle this problem of blood-poisoning would be to send live poisoned sheep to Otago University for expert examination, so that the organism responsible could be found. Then it might be worth looking further to find the organism on Keas.

One point does arise: if the small wounds heal, and if small wounds are usual, then the rates of attack may be greater than the above estimates.

INACCURATE DESCRIPTION

Many accounts reveal that the authors have not watched Keas carefully. While Kea is the subject, the description is of attack by man or a mammalian predator, not by that fastidious bird, the Kea.

Keas Covered in Blood.

Several times I have had described to me Keas covered in blood, their chest and head covered in gore. A simple experiment is to smear some blood on a Kea. On 12/8/61 I chose the Kea L1218, a first year male, the boss of about a dozen juveniles about. The first difficulty was in wetting the plumage, for the blood tended to roll off. It was necessary to rub the blood into the plumage as I did on the crown, chest and a leg. He flew 25 yards away, fluffed up his feathers and spent five minutes preening, but made little impression on the blood. Then he began walking back for more food. As he walked past another Kea, they stopped and it preened the blood on his crown for a minute. Then he came back by me and fed. For the next hour, while I watched, his feathers remained fluffed up and he was uneasy. Next morning his plumage was clean, his manner normal, and again he was boss.

Yet by careful observation Keas when feeding on carrion will be seen with blood on part of their plumage, on the small feathers at the base of the upper mandible. They have got it on when the mandible has been driven into carrion up to the hilt. Similarly when feeding on roots often a little mud gets on these feathers.

They do not get covered in gore like an inexperienced butcher.

The Kea's Feeding.

R. Guthrie of Burke's Pass (Marriner 1908) describes the Kea as "viciously striking" and many others similarly. The Kea is careful and slow in the use of its bill, though a big pressure is exerted as it closes. It will wriggle and heave its body to drive the upper mandible slowly in and then lever. Never does it strike viciously and repeatedly and quickly.

A Kea is loath to feed in small corners or where its view is blocked. Their vision with eyes on the side, and directed slightly down, is far wider than ours, so while feeding they can see your movements out of the corner of their eyes. A local variant told by H. Heckler, Lumsden (Marriner 1908) and still common there, is how Keas so engrossed in feeding on carrion are easily hit and killed with a stick. The Keas would flush at the preparatory back-swing.

KEAS' NOCTURNAL ACTIVITY

Another common error is to emphasise the darkness of the night when attack occurs. Normally a Kea goes to roost half an hour or so before nightfall, but if they have found rich feeding they may continue after dark. Their night vision is not as good as man's. After dark they will be seen misjudging their landing on a branch. I have been able to see baits from six feet which Keas failed to see from three inches. They will continue feeding after dark on a sheep corpse but as night becomes blacker the adults will slip away to their usual roosts. The juveniles may roost nearby. If Keas have not come up to you

before nightfall they will not come after. They may wake and feed actively an hour or so before daybreak by a full moon. After daybreak and before sunrise and again after sunset and before nightfall Keas feed on the open riverbeds. With the rise of the sun they retreat to the forest.

KEAS GRIMLY HANGING ON TO FRANTIC SHEEP

Many accounts are like R. McKenzie's, Birchwood (Marriner 1906) who describes the Kea ignoring the sheep's frantic efforts to rid itself of the bird. He writes: "The frenzied sheep jumped and ran about in any direction for dear life, then, separating itself from the mob, made a direct line down a steep slope and in its mad career finally dropped over a precipice, until which moment the bird held on with its claws, its wings slightly extended as if to steady itself or to be ready to fly off at any moment."

Actually the spread wings would not help the take-off, which begins with a low body, a swing forward and a spring, when the wings are raised.

More credible is J. Morgan's Mesopotamia (Marriner 1906) description: "Then it inserted its beak; at this the sheep ran into the mob, and the Kea just flew off, and when the sheep was quiet again it once more got on to its back. . ."

I find it easy to entice Keas on to my body, but at any movement they take flight.

I would judge eight of the fourteen accounts in Marriner (1908) as containing false statements.

GEOGRAPHIC VARIATION

Despite the mobile human population of New Zealand, I believe a geographic variation in the type of tale has developed.

In North Canterbury, from the Waimakariri Valley north, many will describe the Kea sitting on a sheep's back. The sheep is often undisturbed and the Kea apparently inactive, or pulling tufts of wool until flushed by the approach of a man. Here the runholder often tells how: "When I took over, the place was over-run with Keas. In two or three years I had cleaned them up and have had no trouble since. I do not bother to destroy them now as I have got rid of the killer Keas." It is here that killer Keas are emphasised.

In Mid-Canterbury by the Rakaia and Rangitata Rivers runholders complain of large losses and most actively destroy Keas. The Keas seem to attack at all seasons. Local tales still told are of a Kea riding a sheep into the shearing shed and a sheep with a Kea on its back trying to brush the Kea off by running under a rock.

In the McKenzie Country there is more emphasis on attack in winter and spring snow falls. Here the frightened sheep often run over bluffs and in fact in the steeper mountain parts many sheep are lost over bluffs but in most Keas are not incriminated.

In Otago and Southland by the lakes where Keas were discovered attacking sheep, the largest losses are claimed like those described above. Even fifteen years ago, before the destruction of the rabbits, some runholders would claim to be considering giving up their runs because of Kea losses, and rumours continued about actually giving up runs, despite Marriner's (1908) scotching one such rumour.

As described above by Lumsden the tale of hitting Keas for a six with the shepherd's crutch persists.

POSITIVE EVIDENCE OF THE KEA AS A PREDATOR

Now Keas do feed on carrion and about the bush edge on most stations there is a good supply of this food. In an acre on the Bruce Spur 11/10/58 I found eight dead sheep from the previous summer. Three in the bush had certainly not been "kea-ed." Of the five in the open the Keas fed on one and the others had not been investigated recently.

Also Keas will attack live prey. Mr. R. Gillet of Lincoln had a tame Kea which would catch and disembowel any mice thrown in its cage. Mr. A. G. MacIntyre, formerly a trapper at Wainihinihi, found a Kea on a branch above a trapped opossum, with its entrails pulled out. Besides being sick with the shock of trapping the opossum was cold, wet and hungry when the Kea found it and presumably attacked.

I have seen a juvenile Kea pursue a Blackbird *(T. merula)*. On 2/4/61 there was a flock of 50 juvenile Keas on an avalanche fan at the foot of Mt. Oates. The ground was very broken with big blocks of rock, brought down by the winter avalanches surrounded by a thick alpine scrub. A male Blackbird flushed and a Kea chased it 200 yards across the fan for two or three minutes until both were lost from my sight. The Blackbird would swerve round the boulders and shrubs, climb sharply 20 feet and plunge down. The Kea easily followed every manoeuvre. While this one Kea chased the Blackbird, the other Keas were quite indifferent. This Kea, perhaps recently fledged, may have made a mistake and thought he was playing in flight as with his parents.

It is not difficult to encourage a Kea to sample a man. Once on a man they soon start investigating and tearing his clothes. Then the Keas probe the flesh and the inevitable flinch causes the Keas to take flight.

CONCLUSION

It is credible that Keas do attack sheep trapped in snow, sick sheep, sheep injured by falls or sheep they mistake as dead. When such a sheep reacted they would take flight, but return when it relaxed. If such occurs, the evidence suggests it must be very rarely; so rarely, that the destruction of Keas is not justified. This destruction, or the clearing of the forest, has made Keas much less common in the run-land than in the forest alps further west.

I consider that the protection which most native birds enjoy should be extended to Keas.

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