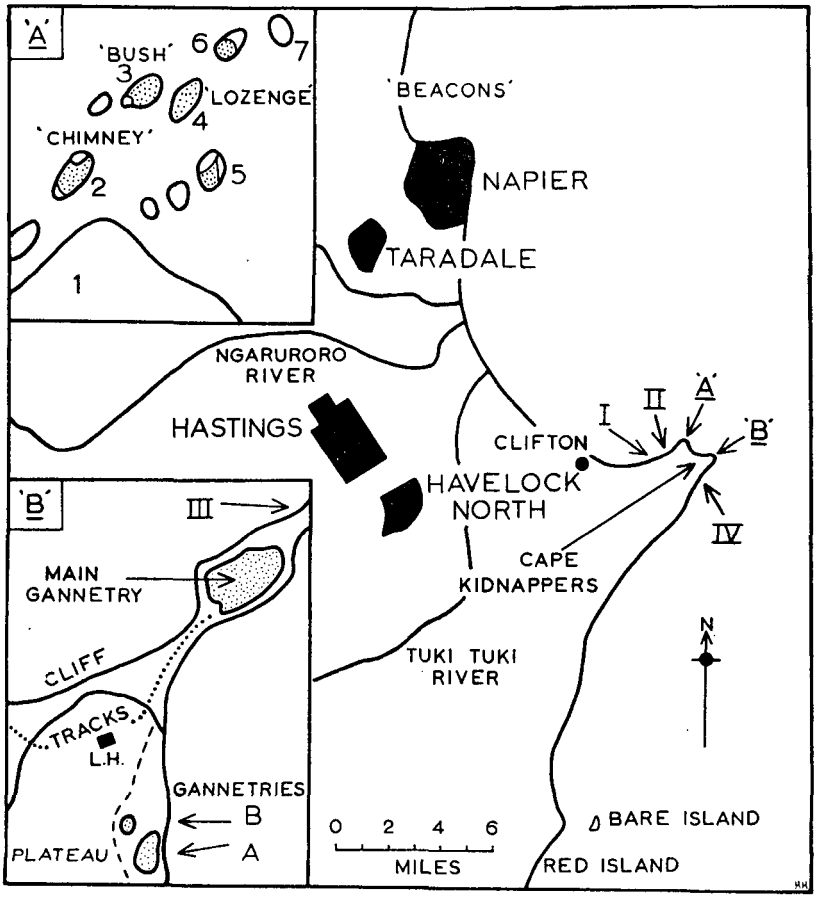
OBSERVATIONS ON BLACK-BACKED GULL PREDATION AT THE CAPE KIDNAPPERS GANNETRIES: 1959 - 1963

By C. J. R. ROBERTSON

INTRODUCTION

The Gannet *(Sula bassana serrator)* breeds at Cape Kidnappers, Hawke's Bay, in three different areas (Fig. 1). On the Lighthouse Plateau two distinct colonies named 'Old B' and 'New B' are recorded by Wodzicki and Robertson, 1953. These are here called Plateau Colony A and B respectively. Of the gannetries, the Main and the



I–IV GULL COLONIES. L.H. LIGHTHOUSE. 'A' & 'B' INSETS.

Fig. I — Location Map to show Black-backed Gull Colonies and the Cape Kidnapper's Gannetries. For details see text.

Black Reef colonies are part of the Sanctuary administered by the Cape Kidnapper Sanctuary Board. The Plateau colony is on private land just outside the Sanctuary. Four major colonies of the Black-backed Gull *(Larus dominicanus)* are known within a radius of 30 miles of the gannetries.

Some ornithologists hold that predation on colonies of nesting sea birds is a habit universally shown by the larger gull species. There is evidence that the Black-backed Gull in the Cape Kidnappers region preys on Gannet eggs, but this was not directly observed by the author during the four nesting seasons covered by this study.

In November 1956 a Black-backed Gull was observed taking the egg of a Gannet on the Lighthouse Plateau colony by Mr. A. Cochrane. Subsequently, Mr. R. Williams, the Sanctuary ranger, and Mr. C. F. Bundenberg observed the removal of an egg from the Main colony in October 1957, while predation was observed and photographed on the Black Reef colony by Taylor and Wodzicki, 1958. During the 1957/58 nesting season predation was frequently observed by the Sanctuary ranger and others on all three colonies, and it was suggested by Mr. R. Williams that predation could become a factor seriously affecting the Gannet population. As a result of this observation the ranger and the local Acclimatization Society shot 127 gulls during the 1958/59 nesting season. A further 27 gulls were destroyed in the 1959/60 season.

Between November 1959 and February 1963 the author made twenty-six visits of two to eight days' duration, to Cape Kidnappers and its environs, to observe the Black-backed Gull and Gannet colonies and obtain information on —

(a) The number of Black-backed Gulls.

(b) The number of gulls 'patrolling' the gannetries.

(c) The nesting habits and the population trends of the Gannet.

(d) The external circumstances and the prevalence of predation.

Further observations were made in periods of the author's absence during 1961 and 1962 by the Sanctuary ranger and others.

In recording the number of birds present in the Black-backed Gull population, a count was taken by field glasses of the birds present on the colonies. A record of the movement of birds to and from the colonies was made by the same method. The reaction of the Black-backed Gulls and the Gannets to the movements of tourists was also noted. In the study of the Gannet nesting habits both the Plateau gannetries were mapped. For the smaller colony each nest was recorded on a grid plan and a record of the nesting status was kept throughout the three seasons 1960 - 1963. The nest sites of colour banded birds of known age were recorded for the study of nest ownership and nesting success.

THE BLACK-BACKED GULL COLONIES

There are four major Black-backed Gull colonies within a radius of 30 miles from Cape Kidnappers. (Fig. 1).

(a) Ahuriri Lagoon — "Beacons." 1,200 pairs (estimate).

(b) Maraekakaho (Ngaruroro River). (No estimate).

(c) Bare and Karamea Islands. 500 pairs (estimate).

(d) Cape Kidnappers I - IV. 100 pairs (estimate).

(i) On cliffs 1½ miles on Clifton side of Black Reef.
(ii) On cliffs ¾ mile on Clifton side of Black Reef.
(iii) At beached cove near the tip of the Cape on the Northern side.
(iv) Situated on headlands of a small bay 1½ miles south of the Cape. (N.B. This colony was recorded in the 1959/60 nesting season only and was probably a transitory nesting site with less than 10 pairs.)

Throughout the study all Black-backed Gull colonies have had more or less the same number of nesting pairs.

TABLE 1 — **Estimated Population of the Black-backed Gull on Kidnappers Colonies I - III**

	Nesting Pairs			
	No. I	No. II	No. III	Total
18/11/59	4	39	6	49
29/12/59	47	41	11	99
17/11/60	28	42	8	78
21/1/61	35	11	–	46
4/2/61	30	8	–	38
29/8/61	16	–	–	16
14-15/12/61	47	46	6	99
8/1/62	39	38	9	86
25/8/62	45	23	No Count	68+
29/8/62	20	25	No Count	45+
6/10/62	25	30	5	60
17/12/62	33	42	No Count	75+

It was established early in this study that considerable movement of adult gulls takes place within a 15 mile radius of Cape Kidnappers.

(a) A movement at dawn past Clifton, towards the main river mouths and Napier, and returning at dusk.

(b) Movement mainly at the above times between gull colonies I and II and Black Reef, the Cape and Plateau localities, and vice versa.

(c) Throughout the day, with no evident peak, southwards down the coast.

Within the immediate locale of the Main and Plateau Gannetries a more specific movement was noted. This took the form of a flight pattern which can be described as "patrolling." These flights, depending on the weather and the gulls' inclinations, were first noted on the Main Colony. The most frequent movement was east to west over the nesting area and pinnacles, at some height above the circling Gannets. During observations, gulls rarely came lower than this except to roost. This pattern was also prevalent at Black Reef.

Over the Plateau Gannetry the movement was above the circling Gannets, but low flights were more frequently observed.

In most cases gulls appeared from the northern end of the Plateau, flying parallel to the cliff, and up to 50 feet above the

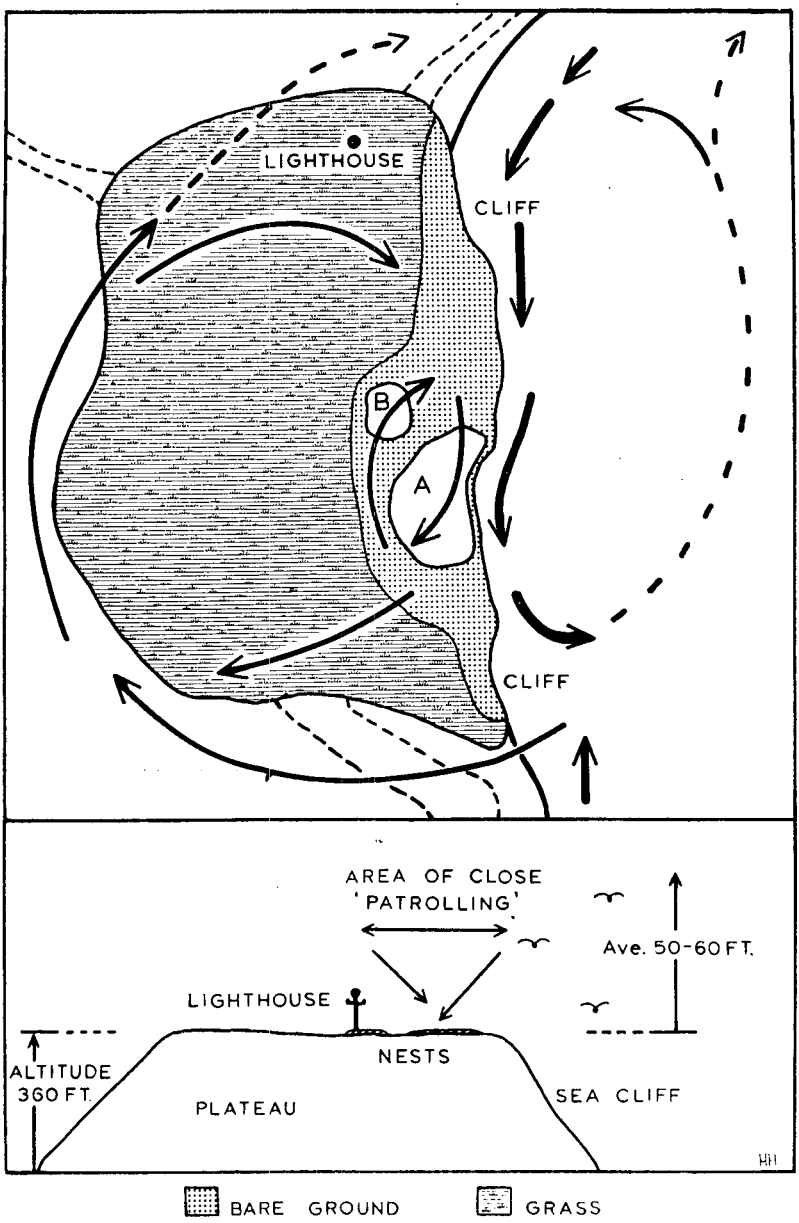


Fig. II — Pattern of Black-backed Gull "Patrolling" over the Plateau Gannetries.

level of the Plateau. On reaching the southern end, they would sweep down and out to sea or to the rear of the Plateau. They returned to the north, either to the Main Colony or for a further sweep over the Plateau Colonies.

The gull is an effortless glider and moves easily up, down and across wind, rarely using wing motivation except to steady flight or gain speed. During "patrolling" the beak is pointed towards the ground, as the bird scans the area below with sharp sweeping movements of the head.

The number of birds "patrolling" at any one time varied according to the time of the day. The most common grouping was that of one to two birds, though numbers of up to 20 were seen. "Patrolling" over the Plateau and Main Colonies was at a peak immediately after dawn and just before dusk. During the day occasional visits with no regular pattern were observed. However, it was noticeable on the Plateau Colony that "patrolling" tended to increase following observations by tourists and became very marked if the Gannets were disturbed.

Immature and juvenile gulls were rarely seen in the vicinity of the gannetries. Both D. Brathwaite and F. Kinsky *(pers. comm.)* suggest that these young birds move to some other part of the district until they are ready to breed. Whilst no predation by birds of this age group was personally observed it has been reported and, as common roosting areas are only 8 - 10 miles from Cape Kidnappers, it is possible for the young gulls to visit the gannetries regularly. Observations at Clifton show extensive movements north and south along the foreshore at dawn and dusk.

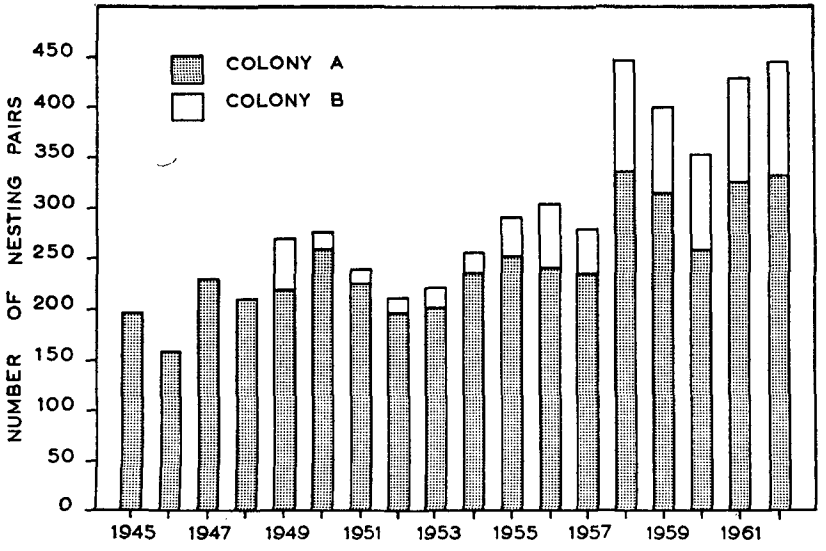


Fig. III — Pre-Christmas Counts of Nesting Pairs, 1945 - 62 at the Plateau Gannetry, Cape Kidnappers.

As a scavenger, the gulls' main incentive for "patrolling" the colonies is the number of Gannet regurgitations which are commonly found on a colony. It was very evident that the amount of regurgitated matter increased with disturbance by photographers or by fights in the colony.

According to Taylor and Wodzicki, 1958, a "patrolling" gull removed an egg from an unattended nest and carried it outside the nesting area to eat the contents. However, on the more isolated and often unattended nests on the outskirts of the colony the eggs were eaten at the nest. In all cases, the nest was unattended at time of predation.

The writer observed that following intensive "patrolling" a gull occasionally lands on the bare guano between Colonies A and B. A feature of this ground movement is the lack of interference or threat from "roosting" Gannets. However, on any approach to a nesting bird, signs of threat are shown by the Gannet. Mr. R. Williams reports predation on the colony margins, with the egg being taken from beneath the standing birds, during the greeting ceremony.

THE GANNET COLONIES

Since 1945 a regular count of nesting pairs of Gannets has been made in the week prior to Christmas (Wodzicki and Robertson, 1953, and Dr. K. Wodzicki, *pers. comm.*). While annual variation may occur, the pre-Christmas count represents 80 - 90% of the peak nesting population for a season. There are no pre-Christmas records for 1955, 1956, 1958, and 1960. Estimates have been made for these years from counts taken in November and January of the seasons concerned.

Between 1949 and 1952 a sub-colony (Plateau Colony B) appeared about 15 yards to the N.W. of Plateau Colony A (Wodzicki and Robertson, 1953). Because of its smaller size, nesting success was more easily recorded. As predation seems to be confined to eggs, nesting success has been considered only on the number of eggs hatched to chicks. The following terms, used here to describe the status of a nest, are defined:—

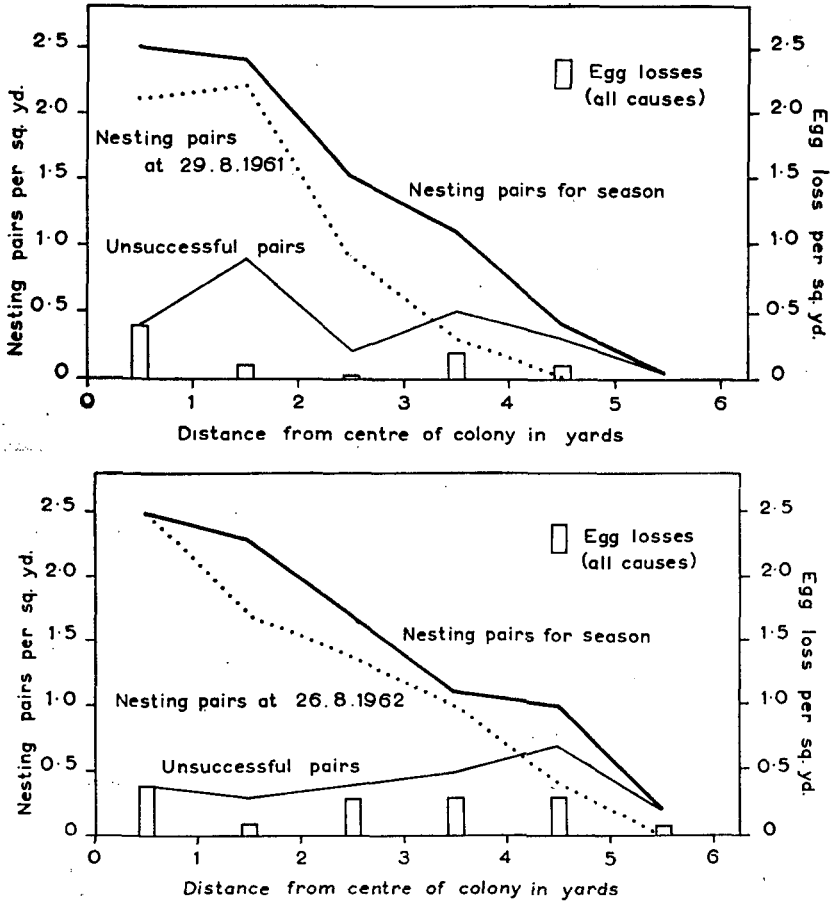
(a) *Possible nest* = one showing signs of a mound, but with only intermittent indication of nest building or sitting.
(b) *Empty nest* = showing evident signs of nest building and regular sitting, but containing no recorded egg.
(c) *Known loss* = a nest recorded with an egg, but found to be empty at a later date.
(d) *"Addled" egg* = eggs not hatched after 55-60 days. (Normal incubation period 43-46 days). This is a general term covering many factors affecting lack of development in the egg.

TABLE II — **Percentage Analysis of Nesting Success Plateau Colony 'B' 1960-1963**

Status	60/61	61/62	62/63
	%	%	%
Possible or Empty nests	23	19.45	23.5
Known Egg Loss	12	10.7	14.35
"Addled"	10 (Est.)	11.6	5.35
Chick Hatched	55	58.25	56.8
	100	100.00	100.00

When assessing the nesting success of a pair it can be shown that there is a definite correlation between the position in the colony of a nesting pair, the time of arrival at their nesting site, and the age of the birds.

Figures IVa and IVb show how nesting success decreases and known losses from all causes increase, the greater the distance from the central core of the nesting colony. *Note.* Figures IVa and IVb were calculated from nesting data obtained throughout the seasons concerned. The Nesting Pairs for Season data represent the maximum number of nesting pairs recorded during a season, while the counts taken in August were of birds showing definite signs of occupation and nest building. It will be observed that, while there is no evident increase in egg losses toward the margin of the colony, the number of



Figs. IV a and b — Relationship of Nesting Success to Position and Time of Arrival of Gannets on Plateau Colony B, Cape Kidnappers, 1961 and 1962.

chicks hatched declines with the reduction in density, and that on a proportion basis egg losses show an increase.

The age of birds, from chicks banded since 1951, shows a concentration of older birds in the centre of the colony.

Distance from centre of colony in yards			
0-2	2-3	3-5	5-6
11	11-8	8-6	6-4

Age of birds in years.

VISITORS

With the publicity that Cape Kidnappers has obtained during the past 12 years an increasing number of tourists has been visiting the gannetries. (An average of 3,500 per year during 1959-62.) The majority of visitors view the habits of the Gannet outside the Sanctuary, at the Plateau Colony, because of ease of access. Figure V illustrates the movement pattern of visitors. Quite apart from disturbance for photography and inspection of eggs and chicks, the presence of a large body of people is unsettling, especially to the birds nesting on the margin of a colony. While supervision will alleviate some of this problem much harm can be done by unsupervised parties.

These unsettling results of photography were seen on the Main Colony in the 1959/60 season. Any attempt to disturb the birds when most eggs were present was strongly resisted, and a quick return to the nest followed after disturbance. (Noted also by F. H. Robertson, December 1945). The same feature was noted on the "Lozenge Rock" at Black Reef (all available nesting positions occupied), where difficulty was encountered when an attempt was made to gain standing room inside the colony. On nearby "Chimney Rock," however, a colony not yet using all available space, the birds were more easily disturbed, especially on the margin of the colony. On the Plateau, birds on the margins of the colonies showed restlessness on the approach of visitors. The first birds to leave were roosting and unattached birds, followed by those with empty nests. Birds sitting on eggs showed signs of restlessness and threat on approach under 4 feet. If this occurred a few times in a short space of time, or throughout a day, the bird left the nest on subsequent occasions, becoming more easily disturbed as the day progressed. If disturbed off the nest to show eggs or chicks, the bird was more readily affected by the next group of visitors. The landward margins of Colony A and the complete perimeter of Colony B are prone to continual disturbance as these areas are the most accessible to visitors. This indicates that in an *expanding* colony, the birds are more likely to be disturbed even when sitting on eggs.

DISCUSSION

It has been shown that the Black-backed Gull at Cape Kidnappers will take the eggs of the Gannet if a suitable situation is provided. It is doubtful whether it is a relatively new activity as gulls have frequented the gannetries since at least 1916.

Observations and published material indicate that three correlated factors must be considered when discussing the causes of predation.

(a) The Gannet is a colonial bird dependent on both individual and mass defence to protect its eggs and young.

(b) Young birds (usually those nesting for the first or second time) through the structure of the colony, nest predominantly on the outskirts of the mass of birds.

(c) Disturbance by man, while photographing and observing the birds on the margin of the colony, creates situations suitable for predation.

With the soft nests of droppings and vegetable matter it may take 3 - 4 years for a permanent nest structure, capable of withstanding

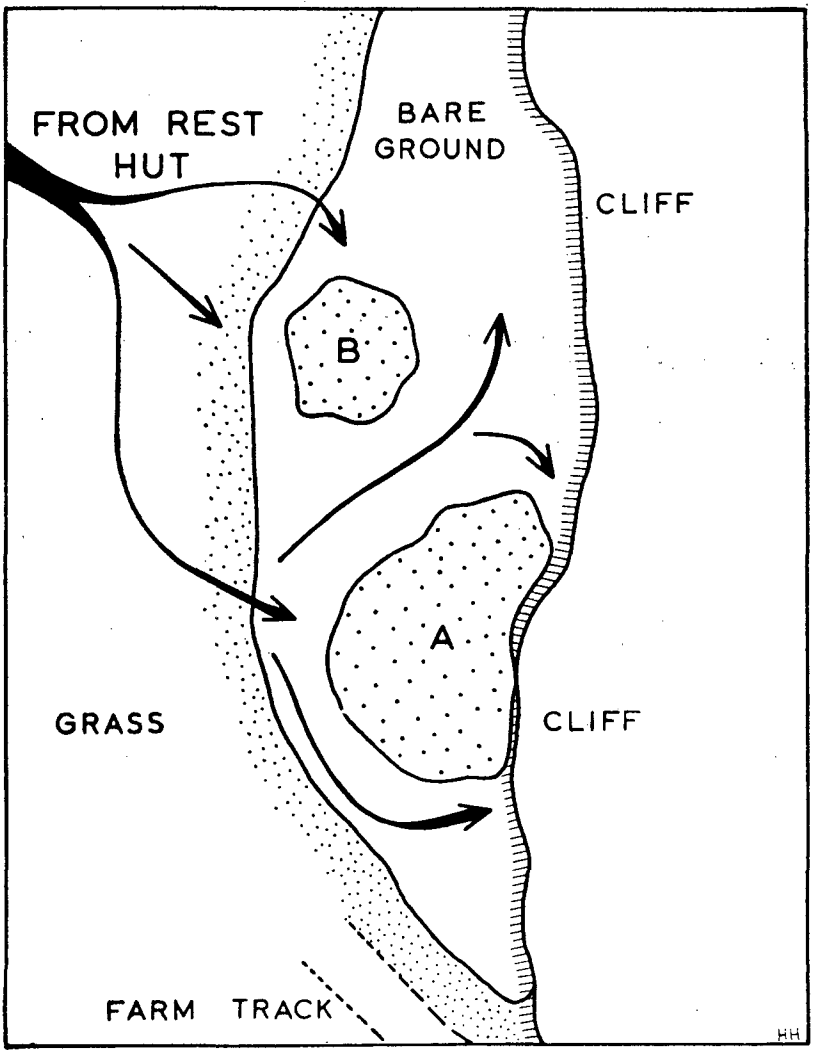


Fig. V — Movement Pattern of Tourists and Visitors at the Plateau Gannetries, Cape Kidnappers.

winter rain and stock trampling, to be built. Indications are that a core of at least 15-20 permanent nests and a population of from 40-50 pairs is necessary before a colony may start to increase in size.

While the margins of the colony may be populated by young or inexperienced birds, predation will increase if there is some vacant space where a gull may "parade" in search of regurgitations and await a suitable opportunity to take an egg.

On the outskirts of a colony this opportunity may arise during the greeting ceremony. The act of predation is greatly facilitated, however, if the bird is absent from its nest. If, in certain wind conditions, a bird is disturbed from its nest, a considerable period of time may elapse, even when visitors are no longer present. Also, a bird continually disturbed from its nest (by spaced parties of visitors or a large group — both of which are present over a long period of time) may remain absent for as much as 10 hours, as was observed in one case. This absence not only provides an opportunity for predation, but reduces the success of the egg through loss of incubation. It is evident also that disturbance by visitors is most marked on an expanding colony, for only in these colonies is there enough room for easy access and movement. Once the eggs are removed the sitting birds are not as constant in defence and are more easily disturbed. This increases the chances of the inner nests losing their eggs as they then become the nesting fringe of the colony.

While predation on the margins of colonies may be explained by nesting habits and disturbance, predation in the centre of a colony is not so definitely explicable. There is a number of possible reasons:—

(a) The mate of the sitting bird may have died or been kept away by a storm.

(b) The sitting bird may have been unable to feed for some days owing to weather conditions and have left the nest to do so.

(c) Young and inexperienced birds may be nesting on a vacated mound.

The result however, is that the gull has a resting space from which to take eggs. Thus the centre of a colony may be robbed, though not to such an extent as the outer margins.

The population of the Plateau gannetries and other colonies within the Sanctuary has shown a steady increase irrespective of an estimated 10-15% egg loss from *all causes*. Black-backed Gull predation, though related to human disturbance, does not at present seem to be a serious menace to the nesting success of the Gannet on established Cape Kidnappers colonies. However, any situation which reduces the protective margin of young Gannets surrounding established birds, will render the colony prone to reduction.

SUMMARY

Four colonies of Black-backed Gulls (of which only the three main ones are considered extensively) exist in the close proximity of Cape Kidnappers. While gulls move extensively within the area, no large increase in numbers has been noted between 1959 and 1963.

Distinct gull movements, or "patrolling" have been observed near all gannetries at Cape Kidnappers. Mainly adult birds are concerned in this activity.

Edible matter, in particular regurgitations or eggs, may be taken by gulls from the Cape Kidnappers colonies, as elsewhere, if the opportunity occurs during "patrolling" movements in the air or "parading" on land.

The placing of Plateau Colony B on a grid has shown empty nests on the periphery.

It was found that the Gannets nesting in the centre of the colony had the highest percentage nesting success and returned earlier for the breeding season.

Banding has established that young pairs of Gannets arrive later at the gannetries, nest on the outer margins of the colony, and have smaller nesting mounds. This marginal area also coincides with the main areas of movement by tourists.

Figures from 1945-62 indicate a steady increase in the Gannet population of the Plateau Gannetries.

Because of publicity an increasing number of the public are visiting the Gannetries each year.

With gull populations at their present levels, there is no evidence that Black-backed Gull predation is having a depressing effect on Gannet numbers.

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