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Group Movements of the White-winged Chough

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SUMMARY

Observations on group movements of the White-winged Chough, *Corcorax melanorhamphus,* were made during a study period of seven years and nine months, at Inverell, New South Wales.

This paper describes the movement of groups, fluctuating population of the nesting group, determination of sex and age in the field, marking of feeding and nesting territory, and associated behaviour.

It will be shown that the large groups of *Corcorax* are composed of independent sub-groups each dominated by a male, assisted by an immature male. The breeding line is patrilineal; the female population inconstant. There were two main study areas.

HABITAT

Study Area 1 covers a square mile near and including the homestead at "Gwydir Park", which is 11 miles south-west of Inverell. Small areas of cultivated land surrounded by granite and basalt rises, with good tree and shrub cover, provide ample litter and ploughed mulch, from which the White-winged Chough gets much food. The period of study was from January 1, 1962, to December 31, 1965. Daily notes were made with the exception of two periods totalling seven weeks. Casual notes were made during 1966.

Study Area 2 at Gilgai, six miles south of Inverell, comprises 200 acres with cultivated land to the south and west, eucalyptus sapling regrowth east, and a rocky granite hill with many trees and thick understorey of smaller rock plants to the north. Study period January 1, 1967, to September 30, 1969, with an absence of two months.

SEX AND AGE

The sex of the White-winged Chough was determined in the field by certain morphological characters and behaviour. Apart from the white wing-patch, which is not seen in repose, the adult bird is black with a brown tinge on the head and body; tail and primaries glossy green-black; bill slate-blue; eye red.

The immature is browner, distinctly so on the primaries and tail; bill brown; eye brown until about twelve months old. An immature male hatched on September 20, 1968, and now twelve months old still has a brown eye, which has been noticed flashing red only when danger threatens the chicks. Full adult colouring is reached at the age of two years.

The dominant male in Sub-group A is two years old and has a longer tail, distinguishable in the field, than the females of comparable age; the immature male has a shorter tail than either.

Adults only of both sexes often show a glimpse of white feather in the folded wing, and they are larger than the immature of twelve months; there is a difference in the length of the bill.

An almost infallible clue to sex is the hoppy condition of the male acquired in fights for territory. The dominant male is often severely handicaped with protuberances on the foot, which could be mistaken for the bumble-foot of domestic fowls. Immature males are less hoppy. The injury to the foot results in a lopsided gait, which becomes a habit. Lame males fly well but land with one wing up for balance; when running the wing on the lamed side is raised.

Females will fight other species if the nest or young be threatened and have been seen with broken wings but not with injured feet.

MOVEMENT OF GROUPS

Method. Once the determination of sex and age in the field was achieved it was comparatively easy to follow the movements of a selected sub-group.

Sub-group A, which nested four times in Study Area 2, always came to the house for food and went to the old nest, even after an absence of months. Strange sub-groups did neither. This behaviour coupled with similarity of sex and age left little room for error.

When the birds were circling for food their position and direction of movement were noted at short intervals of time, and these records allowed accurate maps to be drawn up. Seventeen groups passed through the two study areas during the periods of observation, and these were sufficient to present a definite pattern of movement.

Post-breeding groups. Nesting in July-August was followed in November by a gathering of post-breeding sub-groups into groups of 20 to 30 birds, which moved into the study areas from the north-east and travelled south-west.

March, with its usual hot dry conditions, was noted for an absence of flocks. However, on March 3, 1965, a group, which had been present for several months on the northern boundary of Study Area 1, was absent after good rains when food would have been plentiful, thus postulating movement for purposes other than food gathering.

Rainfall figures for Inverell for 75 years show that March and September are the months of least precipitation.

Six post-breeding groups passed through the two study areas during the summer period from November to February inclusive. Two of these groups remained for eight and twelve days, the others for only a few hours.

Pre-breeding Groups. Eleven groups numbering from four to 24 birds were noted in the winter period from April to August,

and they showed a tendency to split into smaller parties, with a great deal of fighting amongst the sub-groups. General movement of the groups varied, some coming from the north to north-east, others from the south-west. One of the parties which arrived in July stayed for 66 days close to the territory of Sub-group A, and may have nested there.

One group which arrived in Study Area 2 on August 15, 1967, split into sub-groups, one of which (Sub-group A) remained to nest. This sub-group left on January 12, 1968, and returned almost four months later, on April 28. Four more appearances of one day each were noted before the birds returned on July 19, and stayed to nest. The choughs built twice and were absent from February 3, 1969, for varying periods, commencing to nest again on July 18.

POPULATION OF A NESTING GROUP

Over a period of two years to September 1969, the number of birds in the nesting group varied from four to nine. On October 19, 1967, the dominant male was missing after a severe hailstorm. The birds were nesting at the time and the immature male of twelve months took over the duties of head bird.

A system of play-fighting was indulged in by the dominant and immature males. On November 12, 1968, a dominant male and an immature male of two months stood upright, chests out, bills snapping. The adult stroked the breast of the immature with his right claw, turned and leaped over the young one sideways; stroked breast again, turned immature over by grasping his left foot; sat on the young one and pecked it. On April 2, 1969, dominant and immature males of seven months were fighting for ten minutes. Calling low and harshly, catching each other by the foot and turning over.

Surplus adult males are hunted away. This happened on December 27, 1968, when the sub-dominant male was hunted off by the dominant male, when the immature male chick was three months old. When fighting the two males face each other with chests out, wings fanning open, tails spread, heads up calling their weird high piping. They embrace tumbling over and over, each trying to grasp the left foot of his opponent. After one fight both birds were lamed to such an extent that they were unable to hold food down with the injured foot.

An injured female will leave the group of her own accord. No attempt was made by the choughs to hunt a female away who had suffered a broken wing-tip when fighting magpies. Females, adult and immature will join a sub-group and are welcomed even if sitting has begun. Immature females leave the nesting group to go with other groups. Two which left Sub-group A were females of four and ten months.

TERRITORY MARKING

The White-winged Chough marks out a circle for a feeding territory and one twice the size for a nesting territory. The circling

movement is particularly noticeable with the post-breeding groups; the tendency of pre-breeding groups to split into smaller parties somewhat obscures the pattern.

Feeding Territory. In Study Area 1 a group of 30 birds commenced to circle for food near the homestead on February 16, 1965, and so precise were their movements that the time of their arrival at a given point could be forecast with accuracy.

For the first two days the birds were seen at intervals on the roadway gathering Poona Pea seed, which had been spilt during sowing operations.

For three years the observations of the general bird population had been made at mid-morning and again in the afternoon, so when the choughs were seen to breast the rise into the clover patch at 0915 hours, and again at 1500 hours, on each of two days it was noted as a matter of course. Observations otherwise were somewhat meagre but the general movement of the birds was clockwise.

On February 20 the birds moved east into a lucerne paddock and there commenced to circle. A close watch was kept, measurements of the feeding circle were taken and position noted at half-hourly intervals. The feeding circle was 200 yards across, the general movement clockwise. Within this circle the birds moved in anti-clockwise smaller circles working from the perimeter of the larger circle to the centre and back. The small circles overlapped so that none of the ground was left uncovered as the birds moved forward in irregular lines of six and eight. Four large circles were completed each day. If driven back by other species, the choughs recovered lost ground by flying forward thus keeping the time factor correct.

After completing the last circle at 1750 hours the birds moved west where they fed for 30 minutes in the cowyard, before flying further west to some large angophoras on the creek bank, where they roosted for the night. Food in this circle was sufficient for eight days.

During the circling movement in the clover paddock and that shown in Figure 1, a tendency to move out to the south-east about 20 yards was noticed, and this, combined with the fact that the centre of the second feeding circle was 60 yards south of the centre of the feeding circle in the clover paddock, suggested a still larger circling movement, but the birds left on February 28, before this could be verified.

This group of birds was unquestionably composed of four post-breeding sub-groups, for when molested they again formed into parties under a dominant male, who attacked or led them away from harm. Then too, they fed in sub-groups mingling amicably when a flush of food brought them close together. Feeding of immatures was noticed in sub-groups. There was no suggestion of a super-dominant male controlling the major group.

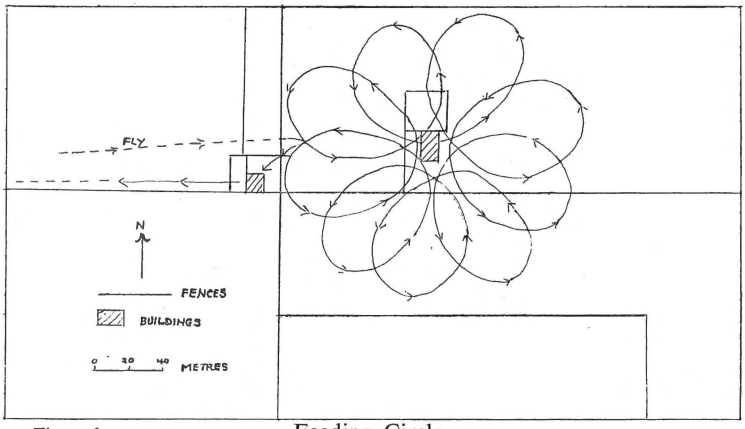

Figure 1. Feeding Circle

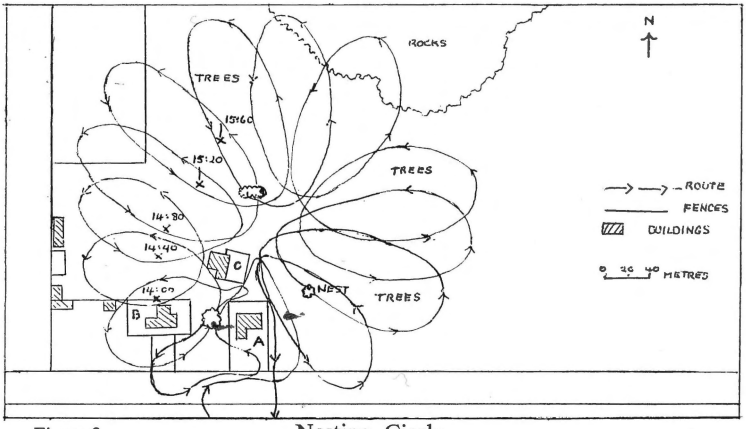

Figure 2. Nesting Circle

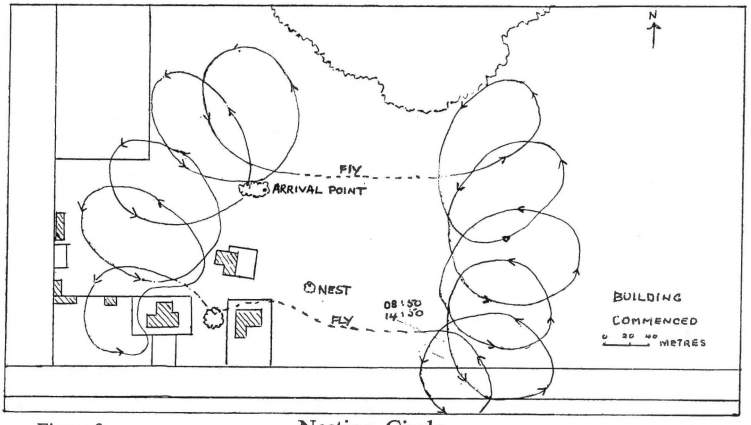

Figure 3. Nesting Circle

As each sub-group is sufficient unto itself, the purpose of this post-breeding gathering is not clear. Post-breeding groups which stayed for only a few hours, circled in the same fashion once or twice then flew away.

Nesting Territory. On August 15, 1967, a group of 24 White-winged Choughs came from the north-east into Study Area 2, and settled where stringybark and angophora saplings grew on a rocky granite knob. Time 1100 hours; wind north; warmer and springlike after a cold change. The birds were noisy as they fluttered down from the trees.

On the ground the choughs split into four parties of six and fed towards the south, keeping in these parties for 20 minutes, then moved east into the timber. At 1350 hours the birds were seen coming in from the west and feeding south.

These movements suggested anti-clockwise circling within a larger clockwise circle, and this was subsequently proved correct.

The circle was 400 yards across and centred on the granite knob where the choughs first settled and to which they returned at night, after completing two circles.

At 1300 hours times were forecast for the arrival of the circling birds at points 1 to 5, Figure 2, and proved correct.

When three birds advanced to meet a party of six the latter displayed in a threatening manner, causing the three to move off with little running steps, but two birds joined another party and were accepted without fuss. Two parties met and there was much noisy squeaky greeting before each resumed its way.

Parties of eight-six-six were present in the late afternoon but four were missing. Next day presumably the first three parties were present and two birds flew in singly from the south-west, one going to a feeding party which clamoured loudly and hunted it away.

Once the birds began to build, anti-clockwise circling where they fed from the perimeter of the circle to the centre and back, was changed to a smaller circle 100 yards across based on the perimeter and leaving a 200 yard space around the nest tree untouched. This was later the source of much quickly obtained food for the chicks. As the nest was located off centre towards the south-east the large circle swung out about 100 yards in this direction; a tendency noted in the Feeding Circle.

Once nesting began the birds left the north-east sector of the nesting territory circle alone, and when the chicks left the nest they were taken straight there to a plentiful supply of easily obtained food, such as granite worms which abound in the deep leaf litter amongst the granite rocks.

Chicks, hatched on October 16, 1967, September 20, 1968, January 18, 1969, were taken to this north-east sector immediately they vacated the nest. Observations made on 30 consecutive days show that Sub-group A fed south-east at the edge of the timber at 0850 hours each day, and again at 1450 hours. As in the Feeding Circle their movements could be forecast with accuracy.

The strange flock which fed for 66 days on the north-west boundary of the nesting territory of Sub-group A appeared north at 1900 hours, moved west and reappeared from the north at 1500 hours.

The choughs followed some fences but crossed those opposed to their path. This habit resulted in a distortion of the circling pattern as shown in Figure 2 x, where the birds made an effort to complete the small circle by moving in an alien direction, that is, clockwise along the lane.

BEHAVIOUR ASSOCIATED WITH GROUP MOVEMENTS

Voice. The White-winged Chough has two main voices; a hoarse *"Charr"* rising when greatly excited to a squeal, and a clear liquid pipe. The *"Charr"* is used when gossiping together or when alarmed suddenly. The piping is an alarm call given when strange choughs are seen or heard near the territory boundary; when danger threatens young; when accosted by other species, or when humans approach.

Several birds in a group will call *"see"* in a high mournful pipe which is answered by a low *"saw"*, possibly the reassuring call of the dominant male.

The ventriloquial quality of the piping whistle is achieved by the bird turning its head in various directions; thus with head up and the bill wide open the call seems near, but when the bill is lowered and swung to the side the call is distant.

When mimicked a bird has flown from 400 yards and settled overhead looking down out of bright red eyes. Fighting males make a low rumbling noise. A husky sibilant note is used when displaying. Once, an immature male was heard to make a queer knocking noise in his throat.

Food Gathering. The curved bill of the chough is used for digging or scratching, and the rapid side to side movement of the bill scatters loose debris. Holes four inches wide and six inches deep have been rooted by choughs after cut worms, a staple food. Weeds are dug round for the grub beneath the root. Insects are taken from under cowpats, and sprouting oats, beans and peas are dug out.

Grain sorghum, rolled oats, bread soaked or dry, and cooked meat are eaten. So cleanly are the bones picked that they have a polished appearance.

Display. Back feathers fluffed, wings spread and dragging, tail fanned rising and falling to touch the ground; head up; bill open making a harsh whispering sound. Often several choughs will form a line of defence swinging along together like dancers with billowing skirts. An adult will rush to an immature, feed the bird then bow low while displaying. If an adult approaches a feeding party all display politely then resume feeding.

This display is used when hunting strange choughs or other species from a territory, but then the head is lowered and the birds rush at the enemy. Choughs will leave with little running steps and

then they in turn display and drive the first party back. When a sub-group is disturbed by other species the dominant male will display, then run ahead of the party with wings raised; the others follow but do not display.

Tail flopping in which the tail is raised and banged to the ground is employed when strange choughs are heard or seen and is often accompanied by weird piping.

When agitated by the advent of a strange party, the choughs flop their tails, their eyes glow red and they dig into the ground with their bills, savagely pulling flowers and leaves off and scattering them about.

Locomotion. The White-winged Chough stands at an angle of 45°, tail just clearing the ground; neck vertical; head horizontal. The erect position of the head is maintained when walking or running.

The tail flops about awkwardly when the bird sits on a limb, sways from side to side as it walks, and when it runs, especially with upraised wings, the tail bounces up, down and to the side.

Flight is a varying number of quick wing beats alternating with short glides. They will glide up to or down from a tree, and float for a moment in groups with wings spread like large butterflies before settling or changing course.

They float off a post to the ground, hop, usually twice, then walk or run away. They fly up occasionally as if frightened, sometimes settling in trees, more often back on the ground where they were feeding.

OTHER SPECIES

The Black-backed Magpie, *Gymnorhina tibicen,* is the main enemy of the White-winged Chough, many battles for territory taking place.

When accosted by magpies a group of choughs will form into sub-groups tightly packed together under a dominant male, and all display. In the case of post-breeding groups the magpies usually drive the choughs off, but this does not apply to pre-breeding groups which make a firmer stand and fight fiercely for their rights.

A pair of magpies will go, one to each side of a group of choughs and harass them until they run, then the magpies go to the rear of the group and there fly backwards and forwards "working" them in the manner of sheep dogs.

Magpies have been seen to drive choughs half a mile away before returning. After a short period the choughs come back to the place from which they were driven, and it is remarkable that often they are not again molested by the magpies.

The Pied Butcher Bird, *Cracticus nigrogularis,* often fights beside the Black-backed Magpie.

Pied Currawongs. *Strepera graculina,* are a nuisance to the choughs. watching the nest. interfering with it and taking food. but seldom fighting.

Apostle Birds, *Struthidea cinerea,* are accepted by the choughs and will visit the nest, chattering excitedly. They fly to welcome a party of choughs and follow them for some distance as they move on. The White-winged Chough will fly straight up and spear down with the bill on the back of an unsuspecting bird. Apostles and Crested Pigeons, *Ocyphaps lophotes,* have been the victims of sharp jabs.

CONCLUSION

It will be seen from these notes made in the field, that *Corcorax* has a highly developed social structure and a complex system of territory marking, which gives complete coverage of a definite food zone.

It may be thought that there is considerable room for error in the method of working, and that would be correct, perhaps, of short term observations, but not of periods embracing several years, when during constant study intimate details of the sub-group materialize; so no apology is offered for the autoptical approach.

One could argue whether instinct or reasoning is responsible for the reservation of certain areas for the exclusive use of unborn chicks.

House Sparrows Crossing the Tweed River

By T. H. GUTHRIE, Banora Point, N.S.W.

The writer's house is situated on a basalt rock knoll, called Barney's Point (now Banora Point), which projects into the Tweed River, about three miles above the river mouth, at Coolangatta, Queensland, and Tweed Heads, New South Wales.

This knoll has been an island in the river during past ages and practically becomes so again in times of flood. The only reason that it is not surrounded by water during heavy rain is that the Main Roads Board has routed the Pacific Highway across the river here, as it affords the shortest crossing for the bridge.

Toward the end of summer during the years 1967, '68, '69, the writer had noticed large numbers of House Sparrows, *Passer domesticus,* passing over his garden and then crossing the river at this narrow point before continuing to the south-east.

Previously, during the above-mentioned years, the opportunity to watch this passage closely had not occurred and, anyway, it had been dismissed as a nomadic movement. However, in 1970, it was possible to observe more consistently and, as a result, to wonder whether something with a more definite structure than nomadism was occurring.

The Sparrows come from a north-west direction. This is not proof that Brisbane, which lies precisely in this direction, is their source, but it is a city quite large enough to supply them.

Arriving in groups averaging 25 birds, they invariably pause shortly on the knoll and then cross the river after coalescing into a group of perhaps 100 birds. Once something checked them,