

## THE IRRUPTION OF NATIVE HENS IN SOUTH AUSTRALIA IN 1972-73

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### SUMMARY

The principal breeding areas of the Native Hen *Gallinula ventralis* in South Australia are in the Far North, and numbers build up rapidly in good seasons. When food supplies become scarce, Native Hens irrupt into the southern districts. The 1972-73 irruption occurred when dry conditions followed a period of extremely favorable seasonal conditions in the Far North.

During the 1972-73 irruption, large numbers of Native Hens were reported from all the settled areas of the State with the exception of the inland portion of the Murray Mallee and the Upper South East. The birds fed chiefly on green crops and pastures, but were also seen feeding on insects and grain. Few crops were seriously damaged. The end of the irruption coincided approximately with the occurrence of widespread rains in the Far North in February, 1973. It is presumed that most birds migrated back to this area.

### PREVIOUS IRRUPTIONS

"Where did they come from and where did they go"? Probably the first person in South Australia to ask this question was Captain Charles Sturt in 1843 who wrote of "the Water Hen which . . . came to us in thousands, running about the streets and gardens (of Adelaide) and into houses as if it had never seen man before . . . They bent down my grain and destroyed acres of it and simultaneously disappeared some months after harvest" (quoted in Chisholm, 1964).

Chisholm added that we were still largely ignorant of the causes of these irruptions of Black-tailed Native Hens, *Gallinula ventralis* which occurred sporadically at least until the early part of this century. He was puzzled by certain aspects of the invasions, for example why the birds move off in large companies, how such weak winged birds can travel long distances, and, not least, why they appear and disappear so suddenly.

Native Hen irruptions were more frequent 50 to 100 years ago. Sturt observed that they migrated to the south in large numbers in at least three successive years. Holroyd (quoted in Campbell, 1901) reported that they irrupted into the Port Lincoln district "about once every five years." Morgan (quoted in North, 1913) stated that they were "irregular migrants to the Adelaide district," suggesting that an invasion occurred every few years. Captain S. A. White stated that the Native Hen "visits us in South Australia once in every few years coming from

the north and remaining generally from July to November" (quoted in Mathews, 1910).

There was a major irruption in 1917 when great numbers were seen as far apart as Snowtown, Lockleys (near Adelaide) and Kingston, while many were said to have nested at Robe (Morgan 1918, 1919). In 1919 "countless thousands" appeared in the Riverland or Upper Murray (Anon. 1919a). In 1920 great numbers appeared near Adelaide, and groups of 50 to 100 were seen on the swamps at Fulham (Anon. 1920). In 1922 another irruption occurred and some were seen at the Reedbeds, near Adelaide. Thousands were seen in the area between Cooke Plains and Lake Albert, and although they congregated in shallow swamps, many were also seen in the heart of the mallee scrub (Mellor, 1923). Boehm (1928) saw flocks containing hundreds of birds at Sutherlands in 1922, while Pearse (1929, 1938) reported large flocks at Florieton on several occasions.

Irruptions of Native Hens have been rarer in recent years. Chisholm (loc cit) suggested that probably changed conditions had reduced the species or modified its movements. (*The depletion of wetlands in the Murray-Darling region by irrigation and flood-control works may have reduced the species. See Frith, 1967, pp. 30-32. Editor*). It is also possible that the environmental conditions responsible for an irruption are less frequent. The best description of an irruption in South Australia was Glover's (1952) of the 1951-52 invasion, which covered most of the central and southern portions of the settled areas. The biggest groups were seen at Buckland Park (300 to 500), at Lake Alexandra and along the Broughton River south of Port Pirie. The birds were seen as far south as Beachport, Kingston and Reedy Creek in the South-East (Storr, Lendon and McKechnie, 1952).

The 1972-73 irruption appears to have been the most widespread hitherto reported—an impression which may be due to a relatively large number of observers.

### OCCURRENCE AND DISTRIBUTION

Slater (1970) gives the distribution of Native Hens as covering most of Australia with the exception of Cape York Peninsula, eastern Victoria and Tasmania. He apparently over-

looked a reference to the occurrence of this species in Tasmania (Green, 1963). There is little information about their distribution in South Australia. Their irregular visitations to the settled areas are brief, usually lasting only six to nine months, although there are probably small numbers in the more favoured areas most of the time. Condon (1969) and Rix and Terrill (1950) give their distributions as extending to all parts of the State. Glover (loc cit) states that the only locality near Adelaide where they can be regularly found is on the coastal flats north of Adelaide where small to large numbers are present most years.

According to Cox (1973) they are common on most watercourses in the Mannum district most of the time. They can always be found around Lake Alexandrina except when the water level is very low (J. Eckert, pers. comm.). The species is an irregular visitor to the Naracoorte district, although it has been recorded as breeding there (Attiwill, 1972). When conditions are favourable, they can probably breed throughout the southern districts of the State.

The main breeding range in South Australia lies in the interior of the continent, where large numbers commonly assemble to graze the fresh growth, which follows heavy rain or flooding. In 1844 Sturt found a fresh water creek near Lake. Blanche crowded with Native Hens (quoted in Cleland, 1937a); and in 1855 Hübbe found the banks of the Neales "lined" with Native Hens (quoted in Cleland, 1937b). Lyons (1901) noted that "great mobs" frequented the banks of Lake Eyre and he saw immense numbers on the waterholes of the Diamantina. McGilp (1922) reported seeing thousands at Lake Frome in good seasons, including some along the bore streams. In 1930 he saw thousands in the Coongie Lakes area (McGilp, 1931). Simpson (1932) reported seeing hundreds along the banks of the Edward Creek near Oodnadatta.

Additional evidence of the distribution of this species is provided by Mr. B. F. Evans, a member of the Pastoral Board, who lived in the Far North for many years and who now visits the area frequently. He informs me that Native Hens can always be found in small numbers along the vast stretches of lignum swamp *Muehlenbeckia cunninghamii* on the flood plains and lagoons of the northern rivers. These include the Diamantina, the Cooper and the Mulligan in the North-East, and the Macumba, the Alberga and the Neales in the Far North. All contain numerous large waterholes which could possibly serve as refuge areas

in times of drought. However, the numerous artesian bore drains and the mound springs with their permanent water and vegetation, are more likely to provide safe refuge areas.

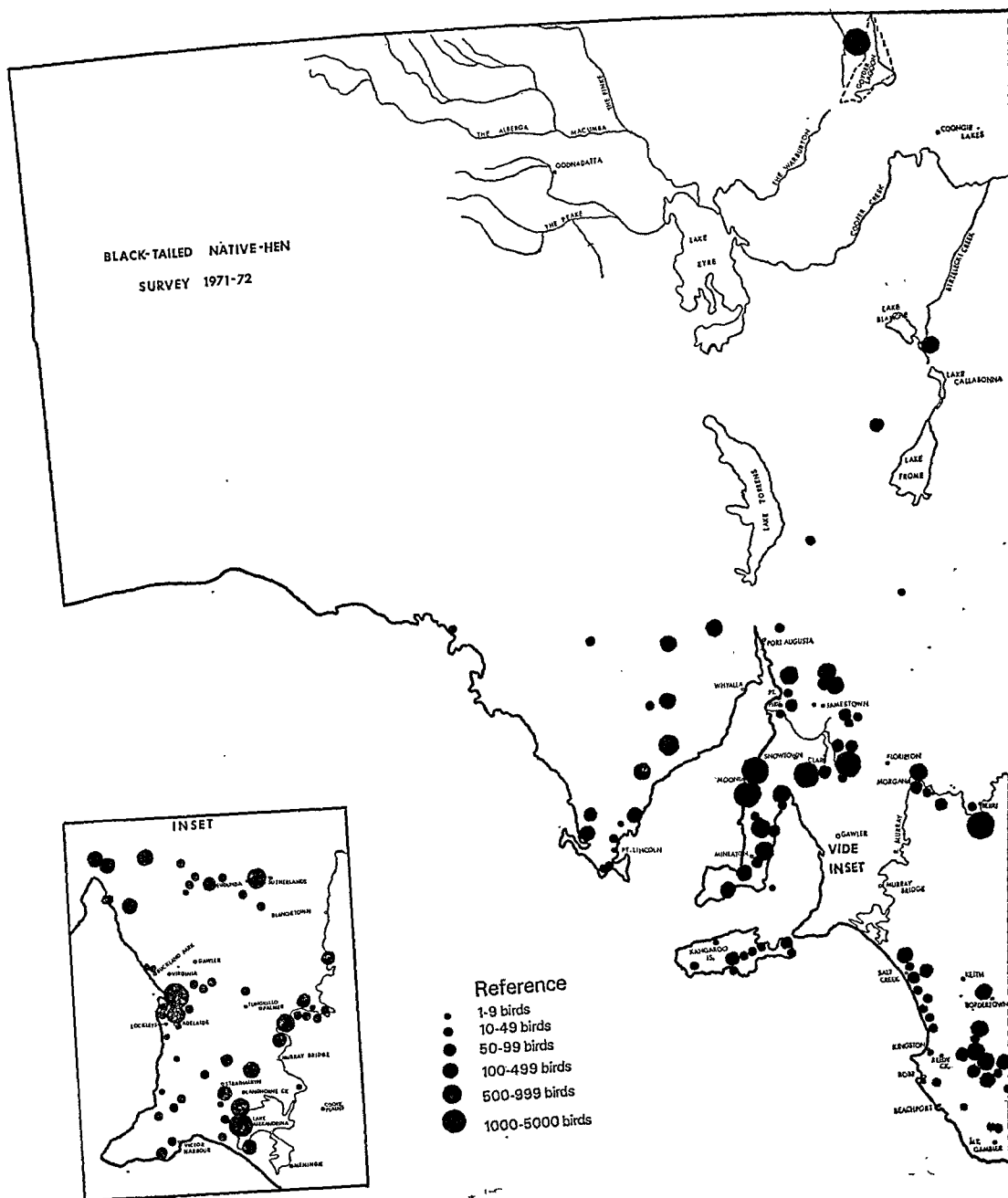
#### THE 1972-73 IRRUPTION

The first significant sighting was a flock of c. 80 at the Bolivar Sewage Treatment Works near Adelaide on 10 May, 1972. The next report was of a flock of 200 near Lochaber in the Naracoorte district on 1 June. On 15 June c. 100 were seen at Virginia. On the 18 June many groups were seen in the Keith district. By late June some birds reached Kangaroo Island, the first recorded sighting since the R.A.O.U. campout in 1905 (Sutton, 1926). Small parties were seen on Kangaroo Island during winter from Flinders Chase at the western end to Antechamber Bay in the east.

The widespread reports of large numbers of Native Hens in a few weeks suggests an irruption on a massive scale. It is difficult to explain why some of the earlier reports came from the South-East and Kangaroo Island. Possibly the vanguard of the irruption bypassed the central districts before stopping. The first birds seen in the Riverland were recorded at Waikerie in July. In September more than 1,000 birds were seen near Lake Alexandrina. Between November and January there were at least 5,000 birds concentrated on a marshy area of some 1,500 acres near Berri. Very large numbers were reported to have congregated near Lake Wangary on southern Eyre Peninsula.

By the end of 1972 Native Hens were reported from all districts of South Australia with the exception of the inland part of the Murray Mallee and the Upper South-East. The lack of reports from these two districts could be attributed to either a lack of observers, or more likely, a lack of surface waters. In dry seasons, e.g. 1972, there is little surface water in these districts. Thus, although Rich (1973) found considerable numbers which fed in the scrub in the Big Desert in Western Victoria (adjacent to the Upper South-East), they were never very far from small waterholes. Almost invariably, the Native Hens were seen near water. Dams, creeks, swamps, lagoons, channels and rivers were frequented as long as there was green vegetation nearby. At Eudunda, a large group camped near the town's effluent lagoon for some time.

The extent of the irruption can be gauged from Map 1. This shows that the larger groups were seen along the River Murray, near the Lakes, near swamps and lagoons in the Mid-and Upper North, and near swamps in the Lower



South-East and on Lower Eyre Peninsula. Large groups were seen in the pastoral areas of Upper Eyre Peninsula and the North-East (Lake Callabonna), and forty miles south of Birdsville on the Mulligan River. A similar widespread irruption occurred in Victoria in 1972-73, when Native Hens reached Geelong for the first time in 80 years (Wheeler, 1973).

Excluding the report of vast but uncertain numbers from Lake Wangary, at least 20,000 Native Hens were seen by observers whose reports were used in compiling this account. These reports were sent in to the S.A. Ornithological Association, or recorded in the record book circulated at the monthly meetings. More than 30 observers in widely separated areas of the State completed the details on questionnaires sent by the author.

#### FEEDING BEHAVIOUR

Cayley (1966) states that the food of Native Hens consists of grasses and aquatic plants and animals. According to Rutgers (1967) the food includes seeds and insects. They have been seen feeding on grasshoppers (Boehm, 1953, and Pearse, 1938), and on moths, flying ants and crickets (Christian, 1909). Captain S. A. White stated that "the food consists almost entirely of vegetation, grass, thistles, etc." (quoted in Mathews, 1910). Their preferred food is undoubtedly fresh green growth.

During the recent irruption, Native Hens were seen feeding chiefly on green vegetation such as grasses and other annuals. They were frequently seen feeding in farm homestead gardens, occasionally foraging among domestic poultry, and in one instance at Clare, they were fed regularly on wheat. At Yongala they helped themselves to barley fed to pigs. There were several reports of Hens feeding in and around coastal sand dunes, possibly on insects or insect larvae.

In one instance they were seen feeding in scrub along Chauncey's Line, a considerable distance from surface water (J. Eckert, pers. comm.). One interesting feeding record was from the Palmer-Tungkillo area where they were seen feeding on ground bared by the larvae of the cockchafer beetle (M. R. Daley, pers. comm.). Presumably they were feeding on the larvae as ibis do. In the Weetulta district they left cereal crops after the formation of the ear and foraged on fallow ground, again presumably on insects or insect larvae.

#### DAMAGE TO CROPS

The first report of serious damage to crops was that of Sturt in 1843. Subsequently there

were several reports of damage to crops (Serventy and Whittell, 1962; Pearse, 1929). Lucerne and fodder crops were attacked in the Riverland and drying apricots were damaged (Anon. 1919a). During the recent invasion, Native Hens were seen feeding on a young crop of oats at One Tree Hill, on young crops of barley and wheat at Moonta and Weetulta, and on barley crops at Minlaton. Serious damage was caused to a barley crop at Maitland. The birds grazed on irrigated lucerne at Berri and Mannum and on irrigated pastures at Woolpunda. Young field peas at Maitland and Jamestown, and dryland lucerne at Caltowie and Salt Creek, were also grazed by Native Hens.

Although there were few reports of serious damage to crops, the National Parks and Wildlife Service approved five applications to destroy a total of 700 Native Hens, chiefly in the Strathalbyn to Meningie area. The number of birds actually destroyed is unknown.

#### BREEDING

There were few reports of breeding during the recent irruption. On Kangaroo Island a pair nested near a bridge beside Lashmars Lagoon on the eastern end of the Island. Despite hazards from passing traffic, they successfully raised four young. (A. F. C. Lashmar, pers. comm.). In the Lochaber district Native Hens were seen building nests in lignum bushes. There were reports of breeding in both the North-East and North-West pastoral areas.

It is possible that the birds seen breeding in the southern districts were from the resident population. Lack (1954) states that a much higher proportion of juveniles than adults take part in irruptions. However Mr. G. B. Ragless (pers. comm.) has told me that he has evidence of breeding taking place where there were no resident birds. Swamps containing water in good years are used for nesting by visiting birds.

#### THE END OF THE IRRUPTION

Since Sturt's observations, many authors have commented on the sudden disappearances of Native Hens from a district. Sutton (loc cit) reported that they disappeared immediately after heavy rains on 26 April of that year. During an irruption in 1919 which caused some concern, Captain S. A. White rightly predicted that the birds would disappear "as soon as rain fell in their natural habitat" (Anon. 1919b). Native Hens seem to have an uncanny ability to locate areas where rain has fallen. McGilp (1922) noted that at Moolawatana Bore,

thousands disappeared during the night after a heavy thunderstorm 100 km away. The following day Native Hens arrived at the site of the thunderstorm. Near Blanchetown on 2 February, 1973, a flock of Native Hens arrived at a large pool of water which formed following heavy rain the previous day.

Few observers could say precisely when Native Hens left after the recent irruption, but it seems that most had gone by the end of February, 1973. None was seen at Berri after 5 February, the day after widespread heavy rains fell over much of the State, including the Far North. At Langhorne Creek, most had gone by mid-February. In the Naracoorte district none was seen after a week of hot weather in mid-January. At the Bolivar Sewage Treatment Works, few were seen after 6 February, 1973.

The decline in numbers of Native Hens began before the onset of the widespread heavy rains in the interior. Presumably the birds migrated back to the Far North, where there was soon a flourishing growth of feed, which preceded one of the best seasons on record for stock. It is significant that there were no reports of large concentrations in the southern districts after February, 1973. Lack (*loc cit*) states that the view that irrupting individuals stay in the invasion area and die out, is mistaken. Return movements by some species occur often enough to support Lack's statement.

#### POSSIBLE CAUSE OF THE IRRUPTION

Whereas in the interior, increases in numbers are associated with heavy rains or flooding, which result in rapid growth of green feed, irruptions into the southern districts are associated with dry periods in the interior. The irruptions reported above have all coincided with the onset of drier conditions in the interior. Those of 1952-53 and 1972-73 have in addition followed unusually wet periods in the Far North interior. I therefore suggest that the following conditions are necessary for a large scale irruption into the southern districts:

- (a) extremely favourable conditions in the Far North resulting in a rapid build-up of numbers, and followed by
- (b) A marked decrease in food supplies in the breeding areas, causing the birds to migrate south in search of food.

Lack (*loc cit*) suggests that high numbers in themselves may trigger irruption. He cited evidence that irruptions can occur when food is still abundant, but when perhaps a food short-

age is imminent. Irruptions are, in fact, a mechanism for survival.

Native Hens may possibly disperse in all directions when food becomes scarce; but there appears to be little information on this question. However Storr (1973) states that during droughts in Queensland, Native Hens disperse from the arid South-West of the State (Coopers Creek and the lower Bulloo) towards the coast.

Before the last large-scale irruption in 1951, there were several good seasons in the Far North, when as much as three times the average annual rainfall was recorded and Lake Eyre filled. This was followed by a drought in 1951, when less than half the annual rainfall was recorded. Assuming that the Native Hen population had built up over several years, there was probably widespread breeding in 1950. The onset of the 1951 drought undoubtedly caused the irruption in the South that year (Glover, 1952).

According to B. F. Evans (*pers. comm.*), Native Hens in the Far North feed on annual herbs and grasses and on the fresh growth from perennial grasses which follows summer rain. The periodic flooding of the northern rivers inundates extensive low-lying areas in the Cooper Basin. In 1971 many square miles were inundated to a depth of six to twelve inches following flooding of the Cooper. As the water receded a prolific growth of annuals occurred. Coloured photographs taken at the time show that these areas had the appearance of irrigated pastures.

Widespread rains in March and November, 1971, may also have contributed to the favourable conditions. An average of 2 in. and 1.6 in. respectively fell in those months throughout the Far Northern meteorological area (Bureau of Meteorology, 1971). A major flooding of the Cooper and two big rains must have resulted in abundant supplies of food for Native Hens, and provided favourable conditions for a population explosion. Nomadic species such as Native Hens can quickly exploit good conditions. This phenomenon is well documented for Grey Teal in Australia (Frith, 1967), and for many species in Europe (Lack, *loc cit*). By comparison, 1972 was a dry season in the Far North, a fact which easily accounts for the massive irruption of 1972-73. Chisholm (*loc cit*) seemed pessimistic about the possibility of future irruptions of Native Hens. However, it seems that following favourable conditions for breeding in the Far North, major

irruptions can still be expected from time to time. Following the heavy, widespread rains and the major flooding of all the northern rivers, which again occurred in the summer and autumn of 1973-74, we can probably expect another irruption with the onset of drier conditions.

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