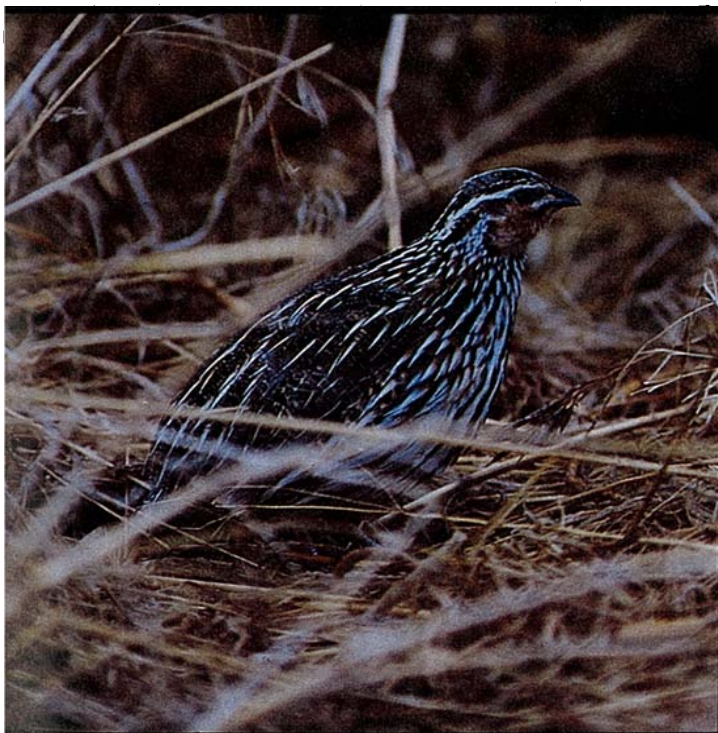




A stubble quail . . .



. . . and its habitat.



## Quail study suggests hunting dates need review

There is a case for postponing the opening of the season for shooting stubble quail in Victoria and South Australia, according to a study by two CSIRO scientists.

For 14 years, members of the Division of Wildlife Research have been collecting and examining stubble quail at sites in New South Wales, Victoria, and South Australia. Dr. Harry Frith, Chief of the Division, and Ms Sue Carpenter of the Division of Mathematics and Statistics have recently completed an analysis of the mass of information gathered so far in this exercise, involving more than 7000 birds.

They found that the quail has a regular annual breeding cycle, beginning with pair-formation in August and extending to the independence of young birds in February or later. How much later depends on rain, which can prolong the birds' breeding if it falls at any time in the preceding 6 months.

If a game species is to be

conserved, hunting should not begin until a short while after the birds have finished breeding, when the population is swollen by 'birds of the year'. Shooting at this time to some extent replaces the natural mortality that would otherwise thin the bird's numbers, without necessarily depleting the stock available to breed the following season.

The CSIRO study showed that breeding frequently extends into April. Dr Frith and Ms Carpenter point out that their analysis makes it clear that hunting in February or March would in many years destroy nesting birds, and that April often finds a large number of young birds still unable to fly strongly.

They therefore suggest that the open season for stubble quail should be the months May-July in all three States. Hunting in August would disrupt pair-formation.

New South Wales adopted this season some time ago, in the light of the study's early results. It was that State's Fauna Protection Panel - now the National Parks and Wildlife Service - that prompted the study by asking the CSIRO in the mid 1960s to find out the quail's breeding dates.

Victoria adopts a split season: March and May-June. In South Australia the season opens on 21 February except near Adelaide, where shooting is permitted from 3 April; throughout the State the season ends on 26 June. Both States are reviewing their dates in the light of this study.

A plump, brown bird weighing about 100 g, the stubble quail occurs widely in Australian open country south of the Tropic of

Capricorn. As its name suggests, the bird particularly frequents the wheat belt, nesting on the ground and feeding almost exclusively on seeds.

The quail has adapted well to the changes wrought since European settlement, both because forest felling has created suitable new habitat and thanks to the introduction of the cereals and pasture grasses whose seeds now make up most of the bird's diet.

Only two native birds are widely recognized as upland game, and of these the stubble quail is the more important; the other is the brown quail.

Rain has been shown to influence regular breeding cycles in some other birds, namely grey teal, black duck, zebra finch, and several species of pigeon. To stubble quail, rain is important because it stimulates the growth of vegetation and therefore brings both food and cover, without either of which the quail raise fewer young or do not breed at all.

The importance of food was strikingly demonstrated in 1969 and 1970, when a plague of mice ate so much seed that the quail had to find alternative food. The new diet was probably unsatisfactory, for breeding was less successful than usual, despite good cover.



At some of the study sites, and particularly in the arid plains near Maude, N.S.W., birds face the converse difficulty: abundant food but no cover. Large areas there have seed on the ground, but sheep graze the vegetation and the quail are confined to small patches of cover in moist places.

Despite the continuing statistical onslaught, the stubble quail is still keeping some details of its private life to itself.

For example, scientists are not sure whether females lay more than one clutch in a season. There are two breeding peaks, in spring and autumn, so second broods seem likely, but it is possible that the autumn broods are raised by young birds that hatched the previous spring.

This raises another unsolved question: how long does a stubble quail take to mature? As yet, nobody is certain, but this study produced evidence that a quail may become adult at the early age of 4 months.

Breeding of the stubble quail, *Coturnix pectoralis*, in south-eastern Australia. H.J. Frith and S.M. Carpenter. *Australian Wildlife Research*, 1980, 7, 117-37.