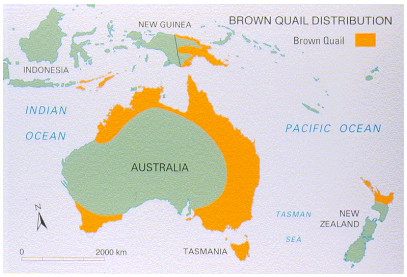
Management of Brown quail in Tasmania

Adult Brown quail

The Brown quail (*Coturnix ypsilophora*) is the most widespread of the 11 species of true quail and Button quail in Australia. Brown quail are found naturally in Indonesia, Papua New Guinea, and many parts of coastal Australia, and has been introduced to New Zealand and Fiji.



Brown quail distribution

In Tasmania, Brown quail are widely distributed from the Bass Strait islands in the north, coastal and moister areas on the mainland Tasmania, and through to the off-shore islands of Storm Bay.

Throughout its range Brown quail prefer grassy habitats that provide a mix of dense cover for nesting; open, sunny spaces for feeding and basking; and secure areas to escape from predators. If properly managed the tussock grasslands of Tasmania can provide all of these ingredients, and quail populations can be maintained for many years.

Life history

The sharp one-note whistle made by males in early spring to attract a female is the earliest sign that the reproductive season is beginning. Courting pairs are initially formed in September, but pair bonds will form and break, then re-form during the breeding season, which runs from October to March in Tasmania. In any given breeding season, individual birds may mate and initiate nesting with several partners. Nests are incubated by both the cock and hen bird, but quail rarely alternate incubation duties. This complex social structure allows multiple nesting attempts during the breeding season and contributes to the species high reproductive potential.

Brown quail nest

Quail select a nest site where grasses are the dominant vegetation. Brown quail prefer knee-high cover for nesting, near an edge that adjoins an opening or bare ground. The nest is built on a slight depression in the soil, using available dead grasses and stems. The hen lays one egg daily until a clutch of 8-12 eggs is produced.

Hens incubate the majority of the nests, and thus, are most susceptible to nest predators. After 22-23 days of incubation, the eggs hatch. Once hatching begins, most of the chicks emerge together within a few hours.

Brood rearing: Peak hatch is around late December – early January. Depending on the location, the seasonal conditions and the age of the birds, not all pairs successfully produce a brood. However, through repeat re-nesting most birds surviving a breeding season do ultimately hatch a nest. Double clutching is known in Brown quail, but the significance on populations is unknown.


Newly hatched chick

Newly hatched chicks are covered in a natal down, weigh 8 grams, and are not much larger than a walnut. They are very alert, move around in jerky movements and are flightless for the first 13 days. Hens take the chicks to open, insect-rich 'bugging' habitat that also provides protection from predators, intense heat or wet and cold conditions, and yet allows free movement of the tiny chicks. The first two weeks of life are critical, because losses to predators and bad weather may take 50% or more of the hatch.


12 day old chick

Between 14 and 28 days, chicks complete their juvenile plumage and gain the ability to fly. By 30 days of age the birds resemble the adults in size. By 100 days quail have the plumage that will be worn until the next breeding season. Also by this time hens are easily identified from cocks by the darker bars on the chest feathers, the broader white stripe on the shoulder feathers, and the more intense stripes on the head.


LHS: Male RHS: Female

Juveniles can be identified from adults by the ratio of the length:width of the 10th primary feather – in juveniles the ratio is >58 while in adult birds the ratio is <56. Most broods have hatched by mid-February.

Summer life for all ages of birds consists of daytime activities such as feeding, dusting to clean feathers and loafing. By late summer, Brown quail begin to exhibit the characteristic night roosting habits of forming a circle on the ground with tails together and heads pointing out. The exact reason for this behaviour is unknown, but it may have social implications, or be for escape and heat conservation purposes.

During late summer, birds begin to form coveys, or social groups, that may be of 20-30 birds. These groups may eventually be reduced to coveys of 10-15 birds as winter approaches. This transitional period is when populations have peaked for the year. As winter develops bird movement is reduced, and the coveys are composed of mainly juvenile birds.

In some cases as much as 80% of the autumn population may be lost to natural mortality by the following spring. Shortage of food, poor cover, and predators take their toll on populations.

Habitat needs

Brown quail have adapted to survive and flourish in habitats that provide early successional stages of plant succession, whether in native grasslands, around old-cultivated areas, or lands that are actively grazed. Quail are affected by soil and site quality and do best on moderately fertile, moist but well-drained soils with a high clay-silt component.

If left undisturbed, natural plant communities gradually change over time. Following initial disturbance, an annual plant community develops. Within 2-3 years this community is replaced by a perennial plant community, which gradually becomes a

grass/shrub/old plant community. This whole process may take 5-10 years depending on soil fertility, moisture and the length of the growing season, and is known as 'natural succession'. Brown quail depend on different early successional stages of this continuum to meet specific needs. Therefore the management of the habitat must aim to create early successional plant communities.

Habitat management


An example of Brown quail habitat

Sustainable quail populations require careful thought and planning, followed by on-ground management practises. The objective of habitat management is to provide a mosaic of early successional habitat attractive to quail and meet all of their seasonal food and cover requirements. In general, interspersing habitats as close together as possible, and providing the maximum amount of edge and transition zones will achieve this goal. For example, small patches of food areas adjacent to weedy banks and fences and a fallow rotation of 3-5 years provide ideal habitat for Brown quail.

One of the most important techniques is the careful use of prescribed fire, which is a cost-effective and efficient tool. Fire is best employed on a 3-5 year cycle outside of the nesting season. Late-winter burns are often the safest, because it removes dead plant material, stimulates desirable legume growth, exposes mineral soil and provides open, early successional vegetation stages.

Soil disturbance is also critical, and can easily be achieved by judicious use of grazing. Removing dense grasses provides room for better seed producers. Light grazing by cattle is preferred because it develops a mosaic of vegetation, whereas sheep grazing tends to produce a uniform vegetation community that is not suitable as quail habitat. Light to moderate grazing holds succession in check, but overgrazing reduces available cover and selectively eliminates food plants such as legumes.

Finally, predators such as feral cats must be controlled if quail populations are to thrive. As a ground-nesting bird, Brown quail hens are particularly susceptible to stealth predators such as feral cats. A mosaic of various habitats plays an important role for quail to escape from feral cats. Regular shooting or trapping of feral cats, in conjunction with good habitat management, will ensure that your Brown quail population is healthy and sustainable into the future.