

# **Research on Grazing Land.**

## **Artemis Station (North Queensland.)**

The Shephard Family were the first Europeans to take up holdings on Artemis station a property on Cape York Peninsula that covers approximately 100 square kilometres. Tom Shephards' father owned a bullock team that shifted supplies from Port Stewart on the east coast of the Peninsula, over the Great Dividing Range to the Goldfields around Coen. At the turn of the last century he and another bullock team family the Costellos' were offered pastoral leases to the south around the overland telegraph station called Musgrave.(Photo 1) The Costellos' took up holdings on Violet Vale Station which has been owned by a number of parties and is now operated by the Stoddart Family. Artemis station has remained under the control of the Shephard family since the pastoral lease was granted.(Photo 2)

In the late 1970's and early 80's National Parks and Wildlife ranger, Mark Weaver carried out extensive vegetation surveys on Cape York Peninsula. Around this time it was recognised that the Golden-shouldered Parrot had vanished from certain parts of its' range. Towards the end of the 80's it was established that grassland that had covered much of the Peninsular were being encroached upon by trees, in particular the Broad-leafed Tea-tree.(Photo 3) In 1992 two researchers Dr. Stephen Garnett and Dr. Gabriel Crowley with the help of Sue Shephard started an extensive study into why the Parrots were in decline. They established and implemented practices based on methods that had been used by the Shephard Family for many years to save this endearing little gem from extinction.

There are two main populations of Golden-shouldered Parrots remaining in the wild. The biggest population exists on working cattle stations around the head waters of the Morehead River.(Photo 4) The other is on an isolated National Park west of Mareeba. There are other smaller and very isolated flocks that still exist outside these two main populations but these will face problems caused by a lack of genetic diversity in the future suffering from the effects of limited gene pools. (Photo 5)

Because Artemis had always been owned by the Shephard family and had always been and still is a working cattle station the land management practices employed on this property were looked at in depth. To measure the affects cattle have on grasslands thirty research plots were set up in ten different vegetation and terrain types. At each site one plot was fenced to exclude cattle and pigs. One plot was fenced to exclude only cattle and the other marked by four star pickets to compare the effect that grazing cattle has. Some plots were where the parrots breed, some were where they feed and some were where the parrots had never been observed.

Everything inside these plots was measured and recorded on a seasonal basis. The Shephards' employed their normal land management practices of storm and cool burn fire regimes and continued to graze and muster cattle the way they had for many years. Termite mounds inside each research plot were measured for growth and external mounds measured and monitored for interference from cattle.( Photos 6 to 8)

Perennial grasses are important to the Golden-shouldered Parrots as they are the first grasses to start to seed after the storm season and are one of the triggers for the commencement of the parrots breeding cycle. These grasses are also favoured by feral pigs that up root them killing the plants. (Photos 9 & 10) It is of interest that the plots that are fenced to exclude pigs are the plots where the perennial grasses do the best. Macrapods also enjoy up rooting these grasses. On a number of occasions I have observed Wallabies feeding in these same fenced plots without the same destructing effects caused by feral pigs.(Photo 11)

As always a picture tells a thousand words so I have included photos from two of the research plots. The next nine photos show a plot on a typical sand ridge where Golden-shouldered Parrots feed during the dry season after cool post wet season fires have burnt the grass off and made it easy for the parrots to find the toasted seeds.. The images highlight the changes from the wet through to the dry and again after a post wet season burn. The Shephards' manage fires on Artemis extremely well using lightning strikes during the storm season to form a mosaic burnt pattern across the station and cool post wet season fires are used to control vegetation fuel loads. Many perennial grasses rely on the ash from fires to fertilise the flowers that later form viable seeds for the parrots to eat. Photo 21 shows the toasted grass seeds left behind after such a fire. Photo 22 shows a male parrot feeding inside this plot after it was burnt and photo 23 is of a wallaby feeding inside the fenced area. Wallabies can clear the fences that exclude cattle and pigs and even though they uproot Perennial grasses like Cockatoo Grass they generally cause minimal damage.

Photos 24 to 27 show inside a plot fenced to exclude cattle at the same site. These shots were taken after a fire showing the grass recovering. Photos 28 to 36 show the unfenced plot on the sand ridge. 28 and 29 show the flush of green seed available post the wet season. 30 to 33 were taken in the dry and 34 to 36 show after a storm season fire. Fire is an important tool if used correctly and can be of great benefit to the Golden-shouldered parrots. Photos 37 shows a storm season fire burning at Windmill Creek, a Golden-shouldered parrot hotspot on Artemis Station. 38 was taken a few days after the fire and 39 & 40 after the wet season.

One of the main reasons for the loss of grasslands on Cape York Peninsular was the change in fire regimes where fires were lit either during the dry season or before there was enough moisture in the soil to promote new growth. Photo 41 shows a flat on Strathgordon Station an aboriginal controlled property that was burnt during the dry season where Broad-leafed Tea tree is starting to take over what was a grassy flat. Photo 42 shows another area on Strathgordon where the Tea Tree has taken hold. Up until the mid 1990's Golden-shouldered Parrots were breeding on this cattle property.

Fires lit at the correct time of the year stunt the growth of Tea-trees and promote vigorous growth of native grasses. Photo 43 shows that small Broad-leafed Tea-trees that shot up in heavy grass cover are prone to disease. If the tall grasses are burnt when there is moisture in the soil Tea-trees are smothered by the faster growing grasses and die off as shown in photo 44. Photo 44 shows a Magnetic termite mound surrounded by perennial grasses and free from Tea-tree suckers.

The next 18 photos are taken on the edge of a grassy flat where the parrots breed. Although there are suitable termite mounds inside these fenced areas to my knowledge the parrots have never nested inside these fenced areas though the parrots have nested in a mound less than 20 metres from one of these plots. Photos 45 to 47 were taken inside a plot fenced to exclude cattle and pigs and show seeding perennial grasses. Photos 48 to 50 show the same plot during the dry season. Again photos 51 to 53 show the perennial grasses inside a plot fenced to exclude cattle and photos 54 to 56 show the same plot during the dry. Photos 57 to 62 are from the same flat where four star pickets have been driven in a square.

Perennial grasses are an important food source for the Golden-shouldered parrots as their seeds provide the extra proteins and amino acids that act as one of the stimulants for the breeding cycle of the parrots. From the research carried out on these plots it was recognised that certain areas were needed to be fenced off to help these important perennial grasses recover from the effects of grazing. The Shephards' entered into a Conversation Agreement with the State Government Environment Department who provided 20 kilometres of fencing to help control the movement of live stock. (20kms=5kms x 5kml or 25 square kms of land) One year in every three or four the block is rested. Sue Shephard said that one year the wet season was late coming and it was this

block that carried their cattle until the rains started as it still had feed.

Cape York Peninsular has two seasons, a hot wet season and a warm dry season. I observed my first wild Golden-shouldered parrots in September 2004 during the dry season. Over the years on a number of occasions I saw the parrots feeding on what looked like bare ground on the side of the road or in the table drains beside the road. (In fact much of the ABC documentary "A particular Parrot" was filmed along the Peninsular Development Road.) It wasn't until recent years when I travelled the road when it was first opened after the wet season that I realised how much grass seed lies along the road verge.(Photos 63 to 65)

Golden-shouldered Parrots are basically seed eaters. For nine months of the year the parrots eat the seeds of Fire Grass. This grass produces over one thousand seeds per square metre of ground. When the chicks are in the nest and even when they start to fledge these seeds are green but for the majority of the year they are eaten dry. At the start of the storm season it's Fire Grass seeds that have blown onto bare or rocky ground that are the last to shoot and sprout. The seeds produced by Fire Grass are very small in size and of a similar consistency to the millets that are feed to finches.

There is a dietary bottleneck at the start of the wet season when the Fire Grass has started to sprout and the perennial grasses haven't yet started producing their seed. It is at this time that the parrots turn to the green shoots, flowers and herbs for their sustenance. These foods while very high in vitamins and minerals but are low in carbohydrates and proteins. At this time of year the Golden-shouldered Parrots spend extended hours finding food. The seeds of the small thistles and herbs contain high levels of fatty amino acids similar to Sunflower seeds though they are much smaller in size.

While no longer used for research today the fences are maintained by volunteers who clear the fallen trees and branches and repair broken wire. (Photos 66 to 69) The population of Golden-shouldered Parrots is stable for now at Artemis but Tom and Sue are fast approaching their 70's. Their son Trevor has been well groomed to carry on the work his parents have pioneered so with continued responsible land management practices this property is one shining light for a parrot that is on the brink of being lost.

Much of what we know about the feeding and breeding habits of these parrots and the way forward in developing guidelines to protect them from future extinction has been learnt by the many scientists that have studied the grazing practices that the Shephard family have continued with for three generations. For graziers to set aside such a large area of their property to assist in the survival of these endangered birds while maintaining a working property speaks volumes for the passion that they have to ensure the survival of the Golden-shouldered Parrot.

**John Griffith.**