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Feral Cats in the Subtropics of Australia—The Shamrock Station Irrigation Project

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Simple Summary: In Australia, feral cats (*Felis catus*) have been a ubiquitous threatening process to Australian fauna since European colonisation. There is a concern that irrigating land on pastoral leases and storing agricultural produce may indirectly increase the abundance of feral cats and European red foxes (*Vulpes vulpes*), which in turn may negatively impact native species such as the threatened bilbies (*Macrotis lagotis*). Our baseline study on a pastoral lease in the arid subtropics of Western Australia revealed a high density of feral cats with dietary data that suggests the current native mammal assemblage on the lease is depauperate.

Abstract: Environmental damage caused by the intensification of agriculture may be compensated by implementing conservation projects directed towards reducing threatening processes and conserving threatened native species. In Australia, feral cats (*Felis catus*) have been a ubiquitous threatening process to Australian fauna since European colonisation. On Shamrock Station, in the north-west of Western Australia, the Argyle Cattle Company has proposed intensifying agriculture through the installation of irrigation pivots. There is concern that irrigating land and storing agricultural produce may indirectly increase the abundance of feral cats and European red foxes (*Vulpes vulpes*) on the property, which in turn may negatively impact threatened bilbies (*Macrotis lagotis*) that also inhabit the property. Feral cat control is required under the approved management plan for this project to mitigate this potential impact. Our baseline study revealed a high density of feral cats on Shamrock Station (0.87 cats km^{-2}) and dietary data that suggest the current native mammal assemblage on Shamrock Station is depauperate. Given the high density of feral cats in this area, the effective control of this introduced predator is likely to confer benefits to the bilby and other native species susceptible to cat predation. We recommend ongoing monitoring of both native species and feral cats to determine if there is a benefit in implementing feral cat control around areas of intensive agriculture and associated cattle production.

Keywords: feral cat; *Felis catus*; agriculture; development; intensification; bilby; *Macrotis lagotis*

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1. Introduction

Globally, nearly 40% of usable land has been appropriated for human use, primarily for agriculture, with 13% of habitable land converted to pastureland [1]. Over the next 50 years, as the human population increases, the demand to convert natural habitat to agriculture will escalate [2]. This will likely result in the loss of an additional 100 million km^2 of natural ecosystems and the subsequent eutrophication of waterways, ecosystem simplification, loss of ecosystem services, and ultimately species extinctions [3]. Analysis of BirdLife International's World Bird Database and North American Breeding Bird Survey data, for example, show that farming is the single greatest risk to threatened bird species [3]. Grasslands, where land can be converted with ease and the pressure to intensify agricultural production is greatest, are additionally vulnerable, along with their species assemblages [4,5].

Conservation biologists argue that the global application of wildlife-friendly farming methods would reduce the impact of agriculture on biodiversity. In the nine studies cited by Green et al. [3], wildlife-friendly farming methods include: the retention of patches of natural habitat; implementation of heterogeneous landscape features, such as hedgerows or oil mallee rows [6,7]; or planting a diversity of crops in close juxtaposition [8]; and farming in ways that minimize the negative effects of fertilizers and pesticides on non-target organisms. It is reported, however, that the biodiversity value of farmland declines with increasing yield [9]. All these studies review the direct impacts of agricultural practices on native biodiversity. They do not, however, consider the value of indirect land management practices on pre-existing threatening processes that are otherwise unmanaged, or their downstream effects on biodiversity in agricultural areas.

The Argyle Cattle Company Pty Ltd. (ACC) is seeking to develop a pivot irrigation project on 1200 ha of Shamrock Station in the northwest of Western Australia (Figure 1). The irrigation project entails the development of up to twelve 40 ha irrigation pivots, access tracks and water infrastructure for groundwater abstraction. The pivots will be used to produce irrigated fodder for station use that will be grazed and possibly baled as required. Approval for this development came with three ministerial conditions (6-1; 6-2 and 6-3 of MS 1086 and condition 2 of EPBC 2017/8004). Briefly, there is concern that irrigating land and storing agricultural produce may indirectly increase the population of rodents and subsequently the abundance of feral cats (*Felis catus*) and European red foxes (*Vulpes vulpes*) on the property, which in turn may negatively impact the threatened bilbies (dalgyte; *Macrotis lagotis*) that also inhabit the property [10]. The Argyle Cattle Company was required to fulfil an Operational Environmental Management Plan to meet these conditions (Table 1).

Feral cats were introduced to and dispersed across Australia by European colonists during the 19th century [11]. Compared to the establishment of Shamrock Station (1986), or its predecessor, La Grange Bay Downs Station (1903) [12], feral cats are a pre-existing and ubiquitous threatening process to Australian fauna in the region [13]. They have a near-global distribution, occurring wherever humans have colonised [14], with versatile habitat use [15] due to their ability to go without free drinking water [16] and a varied diet [17,18].

Historically, the bilby, which is 0.6–2.5 kg in weight, occupied a large part of arid and semi-arid Australia at the time of European settlement [19–22]. Bilbies now only occur in approximately 20% of their former range [23] and are listed nationally as vulnerable [24]. Predation by introduced predators is thought to be the primary threat for the bilby, with wildfire [20] and pastoralism [25] being landscape-scale factors also affecting bilby range and prevalence [26].

Here we report the results of a baseline study that surveyed for feral cats and foxes and estimated the abundance of feral cats on Shamrock Station, as required by the first provision within the Operational Environmental Management Plan (Table 1). Estimating the true abundance of feral cats on the landscape is extremely difficult. Feral cats are cryptic and elusive species that typically cannot be captured more than once unless tracking dogs, dart guns and extreme effort are implemented [27], and frequently cannot be reliably detected [28] or identified as individuals by remote survey techniques [29]. Under these conditions, abundance estimation via capture-recapture analysis or mark-resight analysis fails. We compare our results to studies with similar methodologies from other sites within Western Australia to provide a relative index of cat abundance. We also statistically compare the diet of feral cats caught on Shamrock Station to the diet of feral cats caught on the Matuwa Indigenous Protected Area, an ex-pastoral lease which has been managed for conservation for 20 years.

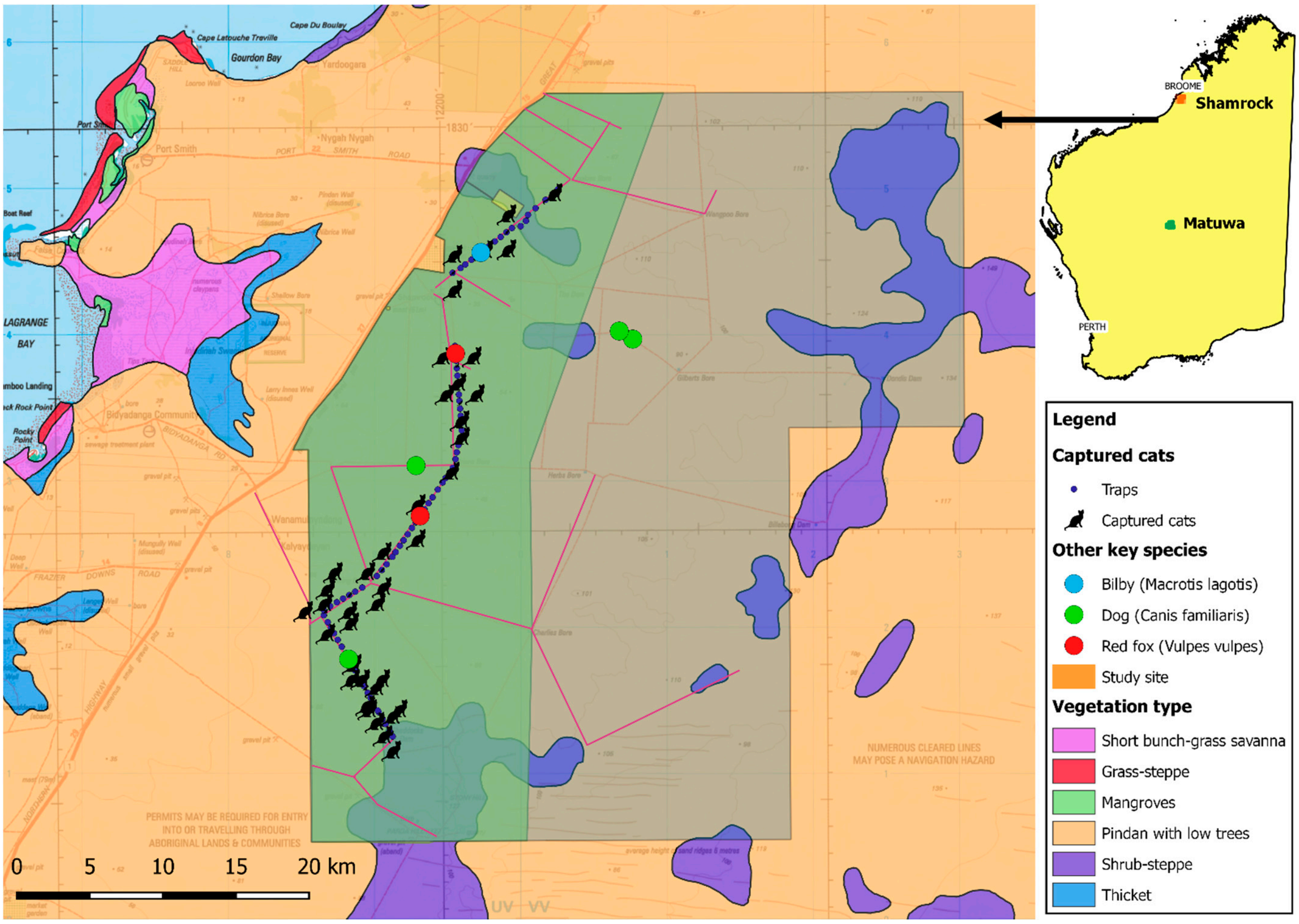

Figure 1. Map depicting the location of Shamrock Station (orange polygon) and Matuwa Indigenous Protected Area (green polygon) in relation to Western Australia (inset map), plus padded leg-hold trapping locations, feral cat captures, and observations of other key species and vegetation types on Shamrock station.

Table 1. Provisions within the Operational Environmental Management Plan that are relevant to the feral cat and fox trapping program.

Management Actions	Management Targets	Monitoring	Reporting
1. Undertake an initial feral cat and fox trapping survey within the control area to mitigate risk to bilbies and inform future feral cat and fox control. 2. Undertake annual monitoring of feral cats, foxes and rabbits (*Oryctolagus cuniculus*) within the control area to assess presence and abundance/activity level of each species. 3. Undertake feral cat and fox control within the control area and undertake rabbit control within the control area if monitoring detects their presence.	1. Demonstrated decrease in introduced predators (feral cats, or foxes) in the control area compared with the baseline; 2. No introduction of rabbits to the control area as a result of the project.	1. Annual monitoring and control program as outlined in the EMP.	1. Annual monitoring reports; 2. Written correspondence to Department of Water and Environmental Regulation if management target not met and/or failure to implement management action; 3. Annual Compliance Assessment Report.

2. Materials and Methods

2.1. Study Areas

The Shamrock Station Irrigation Project is located approximately 64 km south of Broome (coordinates 7,930,871 N, 400,611 E) in the Dampierland bioregion of Western Australia, adjacent to the Karrajarri Indigenous Protected Area and the Aboriginal community of Bidyadanga (Figure 1). The Dampierland bioregion is described as the transition between the wet/dry tropics and the arid interior [30]. It is characterised by extensive pindan plains or thickets (defined as shrubby vegetation, evergreen or deciduous, usually more or less impenetrable, often in clumps, with grass stratum absent or discontinuous), on deep red sands [31]. Temperatures (Bidyadanga Station 003030 [32]) range from a mean minimum of 20 °C (14–26 °C) to a maximum of 33 °C (30–36 °C). Mean rainfall is 514 mm, occurring predominantly in summer months (December–February) due to cyclonic and monsoonal activity [32].

The study area covered 71,307 ha along the western section of Shamrock Station (total 188,990 ha), encompassing an area where aerial baiting of feral cats has been proposed (Figure 1) as a management action under provision three of the Operational Environmental Management Plan (Table 1). A field survey for feral cats and foxes was undertaken from 29 June–14 July 2020 and included targeted padded leg-hold trapping of feral cats and foxes.

The Matuwa Indigenous Protected Area is an ex-pastoral lease in central Western Australia that has been managed for conservation for 20 years (2440 km^2; 7,097,616 N, 344,101 E; Figure 1). Feral cats have been controlled primarily through aerial baiting since 2007 and five native mammal species have been successfully reintroduced to the property [33–37]. The Western Shield baiting prescription consists of a fixed-wing aircraft, flying at a nominal speed of 160 kt and 500 ft. (Above Ground Level) to deploy batches of fifty *Eradicat*® baits (Kensington, WA, Australia), which each contain 4.5 mg of sodium monofluoroacetate (1080) at 1 km intervals, along flight transects 1 km apart, to achieve an application rate of 50 baits/km^2 [38]. Matuwa consists of two main land systems: spinifex (*Triodia* spp.) sand plains, and stony plains and breakaways dominated by mulga (*Acacia aneura*) and other acacia shrublands [39,40]. Matuwa is characterized by extreme temperatures along with low and erratic rainfall with an annual average of 261.7 mm, which predominantly falls in summer months due to remnant cyclonic activity (Wiluna Station 13012, 1898–2019 [41]). Temperatures range from 5–19 °C in winter to 23–38 °C in summer.

2.2. Feral Cat and Fox Survey

Eighty trapping sites were established at 0.5 km intervals and their locations were recorded using a Garmin GPS Rhino 650 (Garmin Ltd., Olathe, KS, USA), along a predominantly north-south track within the study area (Figure 1). Trapping of feral cats and foxes was conducted using pairs of padded leg-hold traps, Victor 'Soft Catch'® traps No. 1.5 (Woodstream Corp., Lititz, PA, USA), using a mixture of cat faeces and urine as the attractant. Lures were refreshed every second day. Traps were preferentially positioned in locations where feral cats and foxes were more likely to be encountered (intersections, high-quality habitat, etc.) or where signs of feral cat or fox activity (scats, tracks, etc.) were observed. Waterholes, gully crossings, or other areas where the capture of non-target wildlife was more likely were avoided. Vegetation was positioned at each trap site to limit access to the trap location to a single direction to aid in excluding non-target species. Trap pan tension was maintained at manufacturer standard to ensure that smaller cats were not excluded from the study, thereby reducing the risk of biased demographic data. All traps were checked each morning within three hours of sunrise, and any introduced predators captured were humanely euthanised using a 0.22-calibre rifle.

The traps were open for ten consecutive nights. Four traps were, however, closed early to reduce the possibility of non-target capture. Three traps were closed after being active for one trap-night and one trap was closed after eight trap-nights, resulting in 771 trap-nights.

2.3. Comparative Feral Cat Activity

Liberg et al. [42] documented a strong negative relationship between cat density and home range size; a relationship later verified and refined by Turner [43] and Bengsen et al. [44]. In the absence of capture-recapture or mark-resight data, Lohr and Algar [37] used these relationships to estimate feral cat abundance from track activity records on the Matuwa Indigenous Protected Area (henceforth 'Matuwa'). The padded leg-hold trapping techniques and field staff employed in this study were also involved in the feral cat research on Matuwa. Hence, we have used a comparative approach to estimate feral cat abundance on Shamrock Station, assuming a proportional relationship between cat density and captures per trap-night.

At Matuwa, a capture rate of 0.022 cats per trap-night was found to correlate with an estimated abundance of 458 individuals over an area of 2440 km^2, which equates to 0.19 cats km^{-2} [37]. A 10 km buffer around all traps on Shamrock Station was assumed to maintain a comparable trap density with the Matuwa study, yielding an effective trapping area of 1215 km^2 for this study.

After euthanasia, all animals captured were sexed and weighed. A broad estimation of age (as either kitten, juvenile or adult) was recorded using weight as a proxy for age [45]. Cats of both sexes <1.0 kg were considered to be kittens. Male cats 1.0 < 3.0 kg were considered juvenile animals, whereas male cats between 3.0 < 4.0 kg, a weight that approximates that for sexual maturity, were defined as young adults of between 1 and 2 years of age. Male cats weighing 4.0+ kg were considered to be greater than two years of age. Female cats 1.0 < 2.5 kg were considered to be juvenile animals, whereas female cats between 2.5 < 3.0 kg, a weight that approximates that for sexual maturity, were considered to be young adults of between 1 and 2 years of age, and female cats weighing 3.0+ kg were considered to be greater than two years of age. The pregnancy status of females was determined by examining the uterine tissue for embryos. We used chi-square tests to compare the proportions of animals in each category.

2.4. Diet Analysis

Stomachs and large intestines of all cats euthanised during the trapping program were collected, along with all cat scats opportunistically detected during the survey. Stomachs and large intestines were kept frozen until analysis, whereas scats were dried and kept at room temperature. Dietary analysis was conducted by Scats About Ecological (Majors Creek, NSW, Australia). Vertebrate samples present in gut contents were visually identified to the lowest possible taxonomic group by morphological assessment of bones and hair, as well as comparison with a library of reference samples. Minimum numbers of individuals of each prey species were calculated for each sample. The diets of cats from Shamrock Station were compared to the diets of 120 cats removed from Matuwa in August 2018 and March–April 2019 [37] via non-metric multi-dimensional scaling analysis and analysis of dissimilarities in the R package 'vegan' [46].

3. Results

3.1. Feral Cat Survey and Comparative Feral Cat Activity

Thirty-nine cats were captured along the 40 km of linear track (0.98 cats/linear km) over the 771 trap-nights (% trap success = 5.05 cats/trap-night) (Supplementary Materials S1). Only two non-target animals were captured in leg-hold traps: one dingo/wild dog hybrid (*Canis familiaris*), which was euthanised and the remains of one crested pigeon (*Ocyphaps lophotes*), which was presumably predated by a feral cat while trapped. No foxes were captured, but foxes were detected twice (tracks once, scat once) on the pindan plain approximately 12 km apart (Figure 1). Similarly, two dog tracks and one scat were detected. We did not analyse detections of foxes further due to a lack of data. One set of old bilby tracks from an adult individual were detected (Figure 1).

Assuming a proportional relationship between cat density and captures per trap-night, and an effective trapping area of 1215 km^2 for this study, we estimate that there were 0.87 cats km^{-2} on Shamrock Station in 2020.

There was no significant difference ($Chi^2 = 2.08$, df = 1, $p > 0.1$) between the total number of male ($n = 24$) and female cat captures ($n = 15$). Most cats were adult (84.6%), with only six subadult females captured. None of the female cats had kittens in utero. Three cats captured during the study had coat patterns not typically observed in feral cats in WA; two had tortoiseshell coat patterns and one was mostly black with white patches. The population demographic of cats captured is presented in Figure 2.

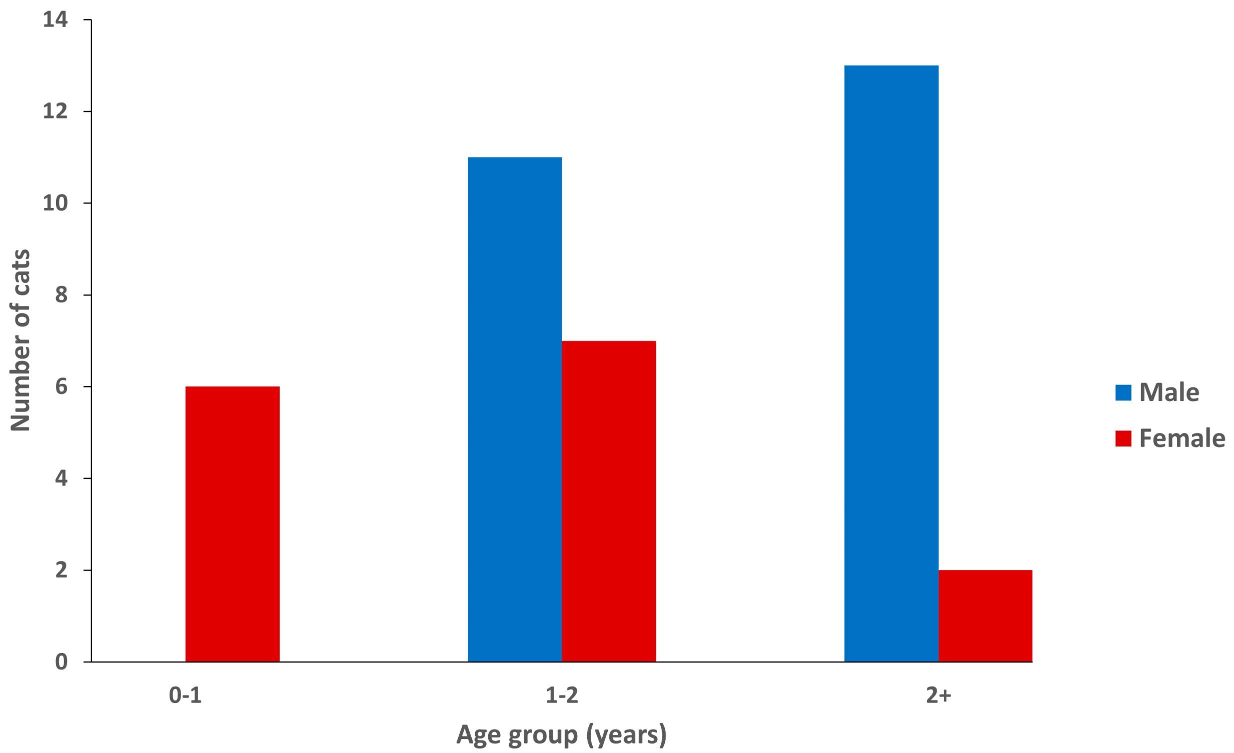

Figure 2. Age groups and sex of cats trapped on Shamrock Station.

3.2. Diet Analysis

Analysis of the gut contents of the 39 captured feral cats and three opportunistically collected cat scats yielded a minimum of 60 invertebrates (eight identified orders), 194 reptiles (16 identified species), 10 birds (unidentified) and 27 mammals (three identified species) (Supplementary Materials S2, Table S1). No bilby specimens were recovered from gut contents or scats. However, prey remains of one confirmed and two probable northern short-tailed mice (*Leggadina lakedownensis*; P4) were found in the gut contents of two trapped cats. Delicate mouse (*Pseudomys delicatulus*) and agile wallaby (*Notamacropus agilis nigrescens*) remains were also found in cat gut contents. By comparison, feral cats on Matuwa consumed at least seven invertebrates (two identified orders), nine reptiles (four identified families), eight birds (unidentified) and twelve mammal species (Supplementary Materials S2, Table S2). Multivariate analysis found that the diet of cats on Matuwa in August 2018 was not significantly different from their diet in March and April of 2019 (nMDS $r^2 = 9.00^{-4}$, $p = 0.89$; ANOSIM statistic $r = 0.07$, $p = 0.10$). Comparing the data from Shamrock Station to those of Matuwa (pooled data), there were significant differences (nMDS $r^2 = 0.49$, $p = 0.001$; ANOSIM statistic $r = 0.71$, $p = 0.001$) in the frequency of taxonomic groups consumed by cats (Figure 3). Cats from Matuwa were primarily consuming mammal prey, whereas cats on Shamrock Station were consuming reptiles and invertebrates.

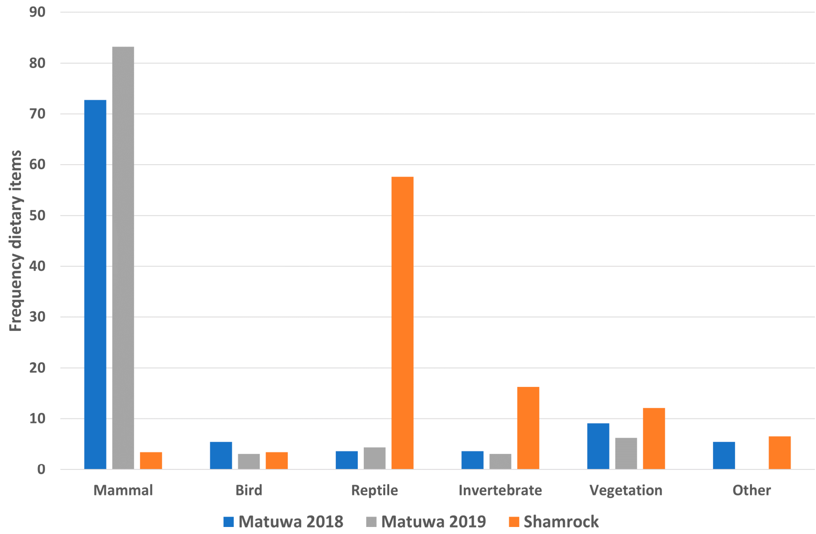

Figure 3. Comparative frequency of food items detected in stomach and intestinal contents of cats captured on the Matuwa Indigenous Protected Area and Shamrock Station or cat scats collected on Shamrock Station.

4. Discussion

4.1. Population Abundance and Demographics

While variation in lures, trap spacing, and prior cat control makes comparison across studies difficult, the number of feral cats captured per trap-night on Shamrock Station was higher than all similar published studies conducted in Western Australia [27,37]. Additional unpublished studies from areas with uncontrolled cat populations have observed 0.37 cats km^{-2} in Cape Arid National Park (2011), 0.16 cats km^{-2} on the Pimbee Pastoral Station (2002), and 0.33 cats km^{-2} on the Mt Keith and Yakabindi Pastoral Stations (2002) (unpublished data D. Algar).

The estimated cat density across the predicted effective trapping area of 1215 km^2 on Shamrock Station was 0.87 cats km^{-2}, which is substantially higher than the national average. From analysis of 91 site-based feral cat density estimates in Australia, the mean density of feral cats on the Australian continent is 0.27 cats km^{-2} (95% confidence interval = 0.18–0.45 cats km^{-2}) [47]. Feral cat density varies, however, among habitat types, and estimates suggest that there tend to be more feral cats in the southern half of Australia or in arid areas such as Matuwa (>1.5 cats km^{-2} after wet periods), and lower numbers in tropical and subtropical areas such as Shamrock Station [47]. Our estimate of cat abundance on Shamrock Station is in line with the expected density for a non-controlled feral cat population in the region after a wet period.

Several cats had unusual coat patterns, suggesting that the feral cat population is still being supplemented by domestic/stray cats.

The feral cat sex and age ratios at Shamrock are consistent with those of populations sampled elsewhere on mainland Western Australia where no control effort had been implemented (Algar unpub. Data). Parity in cat sex ratios is common in undisturbed populations [48]; however, trapping programs conducted in late winter, during the start of the breeding period, will often result in a sample population that may be slightly biased towards males as they roam in search of receptive females in oestrus [49]. Similarly, as females commence parturition in late spring, their movements become more localised [48], which will reduce their likelihood to encounter traps. Of the 15 females captured at Shamrock, none had kittens in utero, which is not unusual given they typically commence breeding as daylength increases following the winter solstice [45].

The timing of trapping programs will also influence the age groupings within the sampled population. With the onset of breeding in late winter and spring, kittens will be absent, and the juvenile cohort limited with most of the previous year's offspring attaining sexual maturity [48]. The age demographic tends to differ in a population that is controlled through baiting campaigns. For example, at Matuwa, where baiting campaigns have been conducted over a number of years, the cat population was dominated by older male cats [37]. These animals are more efficient, experienced hunters and less inclined to consume baits [50].

4.2. Baiting Effectiveness

In generalist predators, such as feral cats, the most simplistic models of diet suggest that the relative frequency of each prey type in the diet is positively correlated with the local abundance of the prey [51,52]. More complicated models support this basic hypothesis but incorporate some additional variation from foraging success, nutrient requirements and prey switching, and ultimately mean that when cats are hungry, they eat what is available; when they are less hungry, they are likely to be more choosy [53,54].

If the diet of feral cats is positively correlated with prey abundance, then the localised diet of feral cats can provide a method for monitoring the relative abundance of prey species on the landscape. Feral cats on Shamrock Station were primarily consuming reptiles and invertebrates. Cats in wetter tropical areas usually consume more small mammals, but fewer invertebrates and reptiles than cats in arid areas, with an expected frequency of occurrence of 0.46 (95% CI = 0.3–0.62) for mammals and 0.3 (95% CI = 0.19–0.5) for invertebrates and reptiles [17]. The frequency of occurrence for reptiles for Shamrock cats was 0.57, whereas for mammals it was 0.03 (Figure 3). These data suggest that Shamrock Station did not have well-established populations of small mammal species for cats to hunt.

We would expect cats on Matuwa, an arid site, to consume very slightly more reptiles and arthropods than on Shamrock Station [17]. The frequency of occurrence for mammals in the cats' diet on Matuwa was 0.8 (Figure 3). Matuwa is a site that has been managed for conservation for almost 20 years, with effective annual landscape-scale feral cat baiting occurring since 2007 [36,37]. Small mammal species like mulgara (*Dasycercus blythii*) and spinifex hopping mouse (*Notomys alexis*) are very common [55]. Additionally, feral cats on Matuwa were trapped in August 2018 and March/April 2019; these were years with particularly low rainfall that would have inhibited the abundance of short-lived invertebrates [37].

The high proportion of reptiles in feral cat diets at Shamrock Station suggests that aerial baiting will be most effective when reptiles and invertebrates are least active, during cooler, drier periods of the year. Mean temperatures vary little in the subtropics (29.7–35.8 °C) whereas rainfall does vary (1.2–137.4 mm) suggesting that the driest months, July–November, would be the most effective time for baiting. Baiting in late July/early August will likely ensure that females are not confined to a den and can access baits. Control of feral cats via aerial baiting is anticipated to be effective, with an expected 50–90% reduction in feral cat abundance [38]. Reducing the population of feral cats on Shamrock Station will likely have immediate benefits for threatened bilby and northern short-tailed mouse populations as well as other native fauna.

4.3. Value of In Situ Feral Cat Control

Bilbies are habitat generalists that were once present across the majority of the continent [19–21,56]. Correlative studies suggest that the reduced distribution of bilbies across the landscape is due to a combination of threatening processes, including predation by introduced predators, altered fire regimes, and the degradation of bilby habitats through introduced herbivores and land clearing [25,57]. Statistical model comparisons suggest that these threatening processes are equally important, with significant interactions between them [25,57]. There is concern that an irrigation project on Shamrock Station will negatively impact the vulnerable bilby populations on the property due primarily to the increased availability of water, facilitating an increase in the abundance of introduced herbivores such as rodents and rabbits and subsequently an increase in the abundance of foxes and cats [10,58,59].

Experimental studies have shown that feral cats are a threat to bilbies unless they are present in very low densities [60]. These results are supported by reintroductions of bilbies to Venus Bay and Matuwa in Western Australia, and Thistle Island in South Australia, which found that it is possible to establish a viable population of bilbies where there has been historic grazing and habitat clearance, provided that no or very few exotic predators are present [33,60,61]. Given the high density of feral cats on Shamrock Station, initiating feral cat control is likely to benefit the bilby, enabling the survival of individuals that disperse out of the greater La Grange area [10].

Furthermore, the concept of an 'umbrella species' or 'focal species' [62] suggests that working to conserve the bilby on Shamrock Station is likely to facilitate the conservation of many smaller species susceptible to cat predation, such as the northern short-tailed mouse and a multitude of reptile species. Bilbies are animals that require large areas of land [33,63], and they have proven sensitive to predation by introduced carnivores. Therefore, acting to reduce threatening processes for bilbies will likely confer protection on other species.

Over one third of Western Australia (2,532,974 km^2) is subject to pastoral leasing. The status quo for land management in the rangelands of Western Australia is that pastoral leases are leases of Crown land for pastoral purposes, and the primary activity is the commercial grazing of sheep (*Ovis aries*), cattle (*Bos indicus, Bos taurus*), horses (*Equus caballas*), and goats (*Capra hircus*) on native vegetation at the rate set by the Pastoral Lands Board [64], which is termed the Potential Carrying Capacity (PCC), and equates to approximately 11 *Bos taurus* steer of 2.25 years of age per km^2 [65]. Stocking rates of 30–100% of the PCC are considered acceptable and pastoral lease holders may destock their lease for up to five consecutive years before additional permitting requirements are implemented [66]. Additional permits are required for the use of more than two centre-pivots for irrigation [64]. Conservation activities on pastoral leases that do not require additional permits are limited to the use of best management practice, for the management of stock and for the management, conservation, and regeneration of pasture for grazing. Therefore, there is no requirement to monitor or conserve pre-existing threatened fauna, nor manage threatening processes, such as feral cats, on pastoral leases unless permits for activities outside of standard activities on pastoral leases are granted. Similarly, feral cats are a declared pest in Western Australia, but they have not been assigned to a control category, which means that, under the Biosecurity and Agriculture Management Act 2007, other land holders are not required to manage the species.

If agricultural development facilitates the implementation of threat mitigation, then the balance between the potential damage caused by the conversion of some land to intense agriculture along with the associated loss of habitat and the benefit to native species across the remainder of the property may be more positive than the status quo. Research on other pastoral leases in north-west Western Australia demonstrated that feral cat control, which was implemented as a result of a development offset, was somewhat beneficial for northern quolls (*Dasyurus hallucatus*) [67]. However, further baseline studies on the presence of native species on and adjacent to Shamrock Station and ongoing assessments of the response of native species to agricultural intensification and threat mitigation would be required to ascertain the degree of benefit.

Feral cats in Australia are a ubiquitous threatening process that needs effective landscape-scale management. Many of the suggested management targets for feral cats in Australia have not been met by existing conservation organisations [68], partially because management action is limited by tenure, whereas feral cats and native fauna are not. Globally, public and private funding for conserving threatened species is limited [69] and many conservation projects focused on threatened species would not occur without some form of offset funding or subsidies going towards primary producers [3,70]. Investments by proponents/developers towards the mitigation of threatening processes could be beneficial to the conservation of listed species with positive downstream effects on local communities and the provision of more social license to developers.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/su14031373/s1, Supplementary Materials S1, Excel: Cats captured on Shamrock Station.; Supplementary Materials S2, Excel: Cat diet.

Author Contributions: Conceptualization, M.T.L. and D.A.; Data curation, M.T.L.; Formal analysis, D.A. and C.A.L.; Funding acquisition, M.T.L.; Methodology, M.T.L., D.A. and N.H.; Project administration, M.T.L.; Resources, M.T.L. and N.H.; Visualization, C.A.L.; Writing—original draft, M.T.L.; Writing—review & editing, D.A. and C.A.L. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement: The study was conducted according to the guidelines of the Western Australia Animal Welfare Act 2002 and approved by the Department of Primary Industries and Regional Development Animal Ethics Committee, permit 20-1-02.

Informed Consent Statement: Not applicable.

Data Availability Statement: Data used in this study are available as Supplementary Materials.

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Conflicts of Interest: The Argyle Cattle Company Pty Ltd. was not involved in the collection, analysis, or interpretation of data and hence declares no conflict of interest. Funding was provided by the Argyle Cattle Company Pty Ltd. to Phoenix Environmental Sciences Pty Ltd. to collect data and generate an industry report.

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