TWENTY-SEVEN YEARS OF WILDCATS AND KITTENS

Case history of a feral predator on the Pelican Lagoon Peninsula, Kangaroo Island

Dr. Peggy Rismiller, **Mike McKelvey**
Pelican Lagoon Research Centre, Kangaroo Island 5222

Summary

Feral cats have been a source of ongoing interest and concern to residents and visitors on the Pelican Lagoon Peninsula, Kangaroo Island. Facts presented in this community report were brought together from annual reports, research summaries, resident diaries and field notes from 1975 through 2002. Independent management programs have been implemented for control of ferals (including cats) by the community and in areas used by researchers working on the peninsula. This report presents a vignette of feral cats in one location on Kangaroo Island.

Study Area

Data was collected on the eastern end of Kangaroo Island, South Australia as part of ongoing biological studies begun in 1975. The Pelican Lagoon study site (35°47'S, 137°47'E) is a discrete geographical unit bounded on three sides by water. (Fig.1 Aerial photos 1954, 2000). The east-west running Pelican Lagoon Peninsula is about 5-km long and comprises about 1,200 ha. Much of the region is characterised by large expanses of near pristine vegetation. There are five distinct natural habitat types within this study site: woodland, shrubland, grassland, fresh water, and tidal swamp. The climate at Pelican Lagoon is temperate and Mediterranean. Average rainfall in the study area between 1984 –2002 was 545 mm. (Bureau of Meteorology Station 022836). Patterns of human settlement have changed since the 1970's. By 2002 the number of dwellings on the peninsula increased from sixteen to more than one hundred twenty.

Fig. 1. Aerial photos comparing changes in vegetation, roads and human occupation on the Pelican Lagoon Peninsula 1954, 2000, SA Dept of Lands.

Community involvement

Many peninsula residents keep property records with observations about feral cat activity, dens, road scavenging, visual identification of known individuals by colour markings as well as trapping and shooting records. Routine monitoring programs have been part of ongoing

research being conducted in the area. Opportunistic observations, live trapping and culling have continued as appropriate.

Biologist and community collected fresh cat scats. They were preserved and later analysed for content. A partial list of food species for the study site was determined from these samples. Further opportunistic observations of feeding and prey remains added more information. Records of prey brought to domestic cat owners by their pets were also recorded as part of the island wide food species list.

Movements of known and recognisable individuals with distinct colour patterns were recorded as an initial way of gathering information about activity patterns and home ranges used by feral cats. Beginning in 1990 radio telemetry was used to monitor movements of selected individuals. Community members were trained to help with radio monitoring as the transmittered animals moved from one area to another.

Records were made of feral cats seen by island bus driver's routinely travelling local roads. Data provided by the community resulted in 15 feral cats being trapped within a six-month period from a 1.7-km. section of road adjacent to the peninsula.

One island volunteer worked with local community to develop effective live traps built from recycled materials gleaned at the community tip (Fig. 2). Three independent cat management programs on private properties have a combined catch of more than four hundred feral cats over a 15-year period.

Fig. 2 Island resident Bill Ackerman worked with the local community to design and build effective cat traps from recycled materials.

Body mass & reproductive status

People are often familiar with the size of domestic cats and make assumptions about ferals based upon this information. Routine weights and measurements of live-trapped feral cats showed them to be smaller in weight and size than common public perception. Physiologically, the smaller an organism, the higher its metabolic rate. This is often reflected in food consumption.

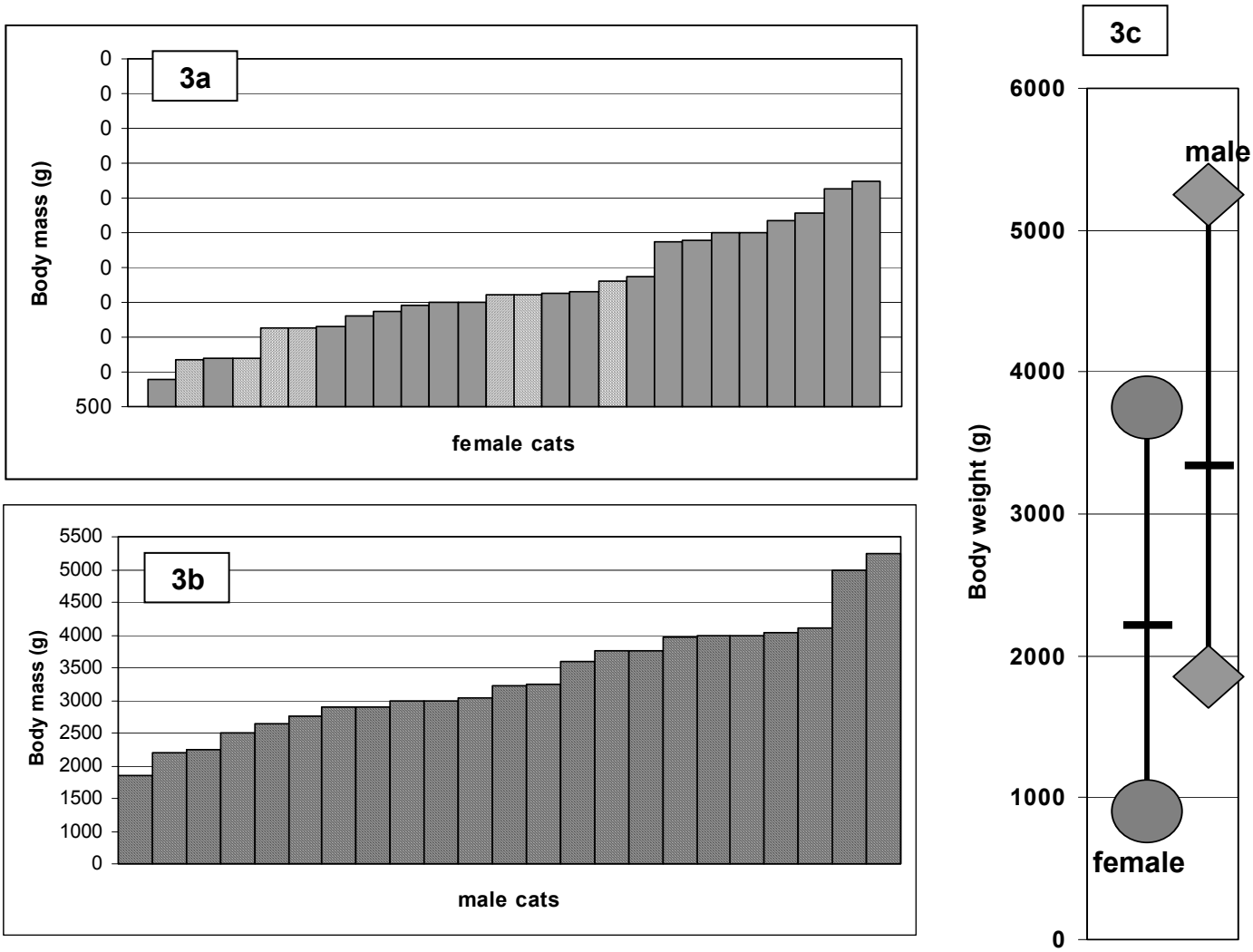

Fig. 3 a and b: Body weights of female and male feral cats caught at one site between 1999-2002. All individuals were sexually mature (>9 months old). Solid grey bars (a) are females that were lactating or gravid. 3c shows body weight range and mean for female and male feral cats.

Home ranges and territories/radio tracking

One feral "male cat was radio tracked for 12 months and used an area of approximately 8 square kilometres (Fig. 4). He returned to the area where he was original trapped approximately every five weeks. He used no regular home den but rather a series of dens while looking for females. (from annual report, One With Nature 1999)"

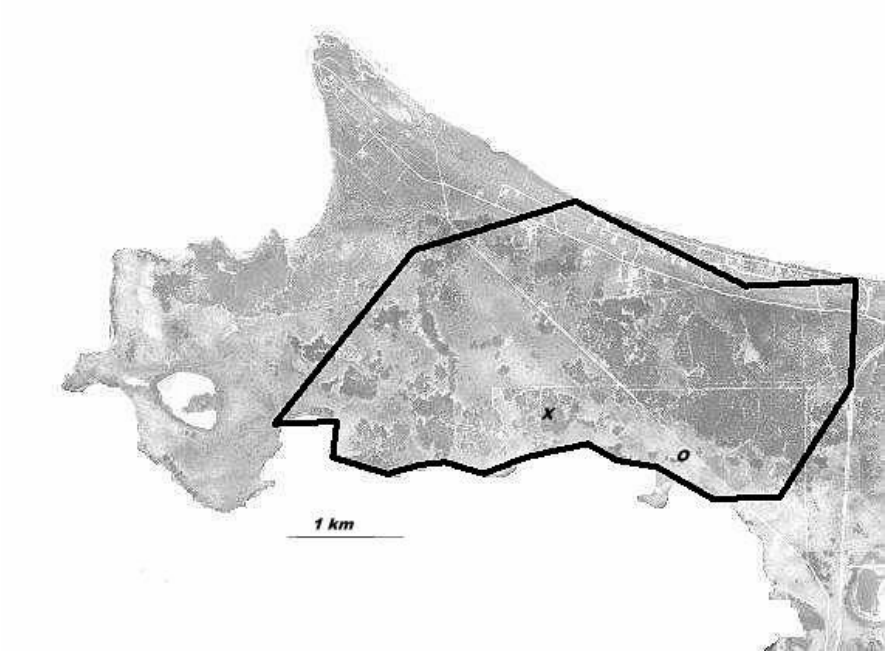

Figure 4. Map of Pelican Lagoon Peninsula showing outside parameter of area where male cat was tracked between 04 July and 28 September 1999. "X" marks the spot where the cat was first trapped and "O" shows where the collar was recovered. From 1999 Annual Report, One With Nature.

Habitat use

Feral cats were found to live in all major habitats on the peninsula. Males could move through all habitats in their circuit looking for females. Lactating females were found to have hunting areas of more than two square kilometres. Individuals living in proximity of highways showed greater activity along the road corridor than into the scrub. Some individuals were found to regularly scavenge road kills. Boulder rubble from road embankments was used as den sites.

High diversity of ground and mid story plants provided a rich habitat for feral cats. These intact systems with moderated microclimates also provided abundant hunting and living areas. In areas with rich native habitats both male and female feral cats used natural rock shelters, caves, mallee root burrows, unused wallaby and possum shelters in dense vegetation as rest areas and dens.

When working in areas of intact native vegetation it is not common to see feral cats. Using radio telemetry and night vision equipment ferals could be located in what might have otherwise been considered an 'empty area.' Mark and recapture programs can give a rough indication of numbers but many older individuals become 'trapshy' and skew short-term surveys.

As human occupation increased on the peninsula the incident of feral cats feeding from refuse increased. Some ferals used sheds, abandoned vehicles and rubbish piles for dens. Interaction between domestic and feral cats increased. Some residents opted to have domestic cats sterilised as a control for unwanted kittens.

Prey analysis

Residents and visitors reported regular "scat post" where fresh fecal samples were collected. Analysis of this material indicated diversity of prey species. Seasonal patterns for food preference was observed. More than fifty species of mammals, birds, reptiles, amphibians and insects have been recorded from feral cat stomach and faecal content.

During routine fieldwork, fresh regurgitated stomach contents are occasionally found. One feral female cat* had the following undigested and partially digested contents in her stomach when found at 7:25 AM on 14 April 1995:

> 1 western pigmy possum, 3 thicktail geckos, 1 New Holland Honeyeater, 1 Cricket, 1 Eastern Spine bill, 4 mice, 6 skinks, 1 tiger snake and the remains of a wallaby.

*This individual was first observed drinking at waterhole. She was having convulsions and died shortly after. Death was symptomatic of snakebite.

Fig 5. Fresh regurgitated material from feral cat 16 September 1997. Contents include thick tail gecko, native bush rat, and cockroach.

Food diversity

Food species used by feral cats on the Pelican Lagoon Peninsula

* determined from fresh scat using bone, hair, scale, feather or body parts
# identified from observed predation / carcass remains
= prey species brought to domestic cat owners by pets from other parts of the island
+ introduced species

Common name	Scientific name or group
Mammals	
Aitkens dunnart = (1979)	*Sminthopsis aitkenie*
brown rat *# = +	*Rattus norvegicus*

brushtail possum *#	*Trichosurus vulpecula*
bush rat *# =	*Rattus fuscipes*
goat *# + (scavenging)	*Capra hircus*
house mouse *# = +	*Mus domesticus*
lesser long-eared bat *	*Nyctophilus geoffroyi*
little pigmy possum *# =	*Cercartetus lepidus*
sheep*# + (scavenging)	*Ovis*
short beaked echidna *#	*Tachyglossus aculeatus multi-aculeatus*
southern brown bandicoot *# =	*Isodon obesulus*
wallaby *	*Macropus eugenii*
western grey kangaroo *# (scavenging)	*Macropus fuligninosus fuliginosus*
western pigmy possum =	*Cercartetus concinnus*

Birds

black tail native hen #	*Gallinula ventralis*
brush bronze wing pigeon *#	*Phaps elegans*
buff banded rail #	*Rallus philippensis*
cresent honeyeater *	*Phylidonyris pyrrhoptera*
eastern spine bill * =	*Acanthorhynchus tenuirostris*
grey fantail * =	*Rhipidura fuliginosa*
grey shrike thrush *	*Colluricincla harmonica*
hooded plover #	*Charadrius cucullatus*
house sparrow * = +	*Passer domesticus*
little blue penguin *# =	*Eudyptula minor*
masked Lapwing #	*Vanellus miles novaehollandiae*
peacock # +	*Pavo cristatus*
purple gaped honeyeater *	*Lichenostomus cratitus*
rainbow lorikeet # =	*Trichoglossus haematodus*
red browed firetail * =	*Aegintha temporalis*
red watyle bird * =	*Anthochaera carunculata*
restless flycatcher *	*Myiagra inquieta*
richards pipit # =	*Anthus novaeseelandiae*
rock parrot *#	*Neophema petrophila*
scarlet robin * =	*Petroica multicolor*
silver eye * =	*Zosterops lateralis*
spotted pardalote *	*Pardalotus punctatus*
spotted turtle dove * # = +	*Streptopelia chinensis*
striated pardalote * =	*Pardalotus striatus*
striated thornbill *	*Acanthiza lineata*
stubble quail * =	*Coturnix pectoralis*
superb fairy wren *# =	*Malurus cyaneus*
thick knee curlew *#	*Burhinus grallarius*
western whipbird #	*Psophodes nigrogularis*
white browed scrubwren *	*Sericornis frontalis*
white eared honeyeater *	*Lichenostomus leucotis*
willie wagtail *# =	*Rhipidura leucophrys*
yellow wing honeyeater (New Holland) *# =	*Phylidonyris novaehollandiae*

Reptiles

four toed skink *	*Hemiergis peronii*
lined worm lizard*	*Aprasia striolata*
marbled gecko *	*Phyllodactylus marmoratus*
pigmy copperhead * =	*Austrelaps* sp
Rosenberg's goanna *# =	*Varanus rosenbergi*
thick-tail gecko * =	*Underwoodisaurus milii*
three toed skink *	*Hemiergis decresiensis*
tiger snake *# =	*Notechis ater niger*
Whites skink *	*Egernia whitii*

Amphibians

brown frogglet *	*Ranidella signifera*
marbled frog *	*Limnodynastes tasmaniensis*

Insects

cockroach *	*Blattodea*
cricket *	*Grylloidea*
grasshopper *	*Acrididae*
walking stick *	*Phasmatidae*

Feral cat in live trap

Remains of cat killed echidna. Cat kills are characterised by the body being turned inside out.

Predation

Research with Rosenberg's Goanna (Green, Rismiller, McKelvey) has shown that feral cats are persistent predators. They frequently catch subadult goannas, opportunistically kill adults and in two cases have been documented to deliberately stalk and kill adult goannas. "…At 1600 hrs on 27 March 1996 we were radio tracking a female goanna which had been known in the study population for seventeen years. The signal came from an area that she seldom used. She was tracked to the entrance of a cat den in a mallee root burrow. The freshly killed carcass was found with six other dead goannas. All animals had been dead less than six hours. All had been killed with a single bite in the back of the head. Five were known individuals with implanted identification microchips. Using daily tracking records and home range maps for each individual goanna it was calculated that the greatest distance of probable catch from the cat den as approximately two kilometres. Circumstances suggest that the female cat had prior knowledge of each goannas activity pattern (at this time of year, many goannas have a daily foraging circuit) and had deliberately stalked, killed and brought the prey back to her kittens. The female cat was trapped and over the next five days six kittens were trapped or shot at the den (unpublished data, PLRC 1996)."

From the study sites on the Pelican Lagoon peninsula feral cats have killed about 10% of the Rosenberg's goanna study population. Since 1991, feral cats have killed six radio transmittered adult echidnas from one study site. In the same study site up to 20% of each years burrow young echidnas were killed by feral cats. This is in addition to the natural predation from goannas of 10%.