

Campbell and grey-headed albatross population estimates

POP2012-04

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Population size and trend of breeding Campbell albatrosses and grey-headed albatrosses

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To determine the population size and trend of breeding Campbell albatrosses and grey-headed albatrosses on Campbell Island, based on photographs taken in Oct 2012 from each of 12 photo-points described by Moore (2004)



Campbell albatross – *Thalassarche impavida*

- Endemic species – breeds only on Campbell Island
- Annual breeder
- At colonies August-April
- During the breeding season forages mainly in the Tasman Sea, Campbell Plateau, SW Pacific Ocean to at least 70°S
- Outside of breeding season forages mainly in the Tasman Sea, off southern Australia and SW Pacific Ocean east of NZ
- Recorded in as bycatch in a number of fisheries within the NZ EEZ, mainly surface long-line and trawl fisheries



Grey-headed albatross – *Thalassarche chrysostoma*

- Circumpolar species in Southern Hemisphere, breeding on Campbell island within NZ EEZ
- Biennial breeder
- At colonies September – May
- During breeding season forages mainly east of NZ in the SW Pacific Basin, south to about 65°S
- After breeding generally remain south of 30°S and likely to circumnavigate the Southern Ocean between breeding attempts
- Very few observed captures in NZ commercial fisheries, but due to its circumpolar movements it is potentially vulnerable to pelagic fisheries throughout the Southern Ocean



Background

- Substantial declines in both species documented by Waugh et al (1999) and Moore (2004)
- Moore (2004) used counts of occupied nests in photographs taken since the 1940s plus ground counts completed during the 1990s to estimate population trends over the period 1942-1997
- He showed apparent continuous decreases in the numbers of grey-headed albatrosses of 82-88% (1.5-2.7%/annum) based on 3 colonies with the longest record
- Changes in numbers of Campbell albatrosses were more variable over the same period, with numbers in 1 colony apparently increasing by 11% between the 1942 and 1966, before declining 47% by the 1980s, and then recovering at 3.2%/annum through to 1997
- Both Waugh et al (1999) and Moore (2004) attributed the decline in numbers of grey-headed albatrosses to natural environmental processes, whilst trends in Campbell albatross numbers coincided with the development of longline and trawl fisheries within their foraging range.



Methods – photo-point counts (1)

- Population estimates were made using counts of occupied nests detected in digital photos
- The photographs were taken from the 12 standard photo-points labelled MP1-MP12 in Figs 2-4 of Moore (2004). In addition, the large & inaccessible colonies of Courrejolles Peninsula were photographed from photo-view C1
- In 2011, photos were taken from MP2-MP12 between 1000 and 1500 h on 28 Oct.; and from MP1 and C1 1100-1200 on 7 Nov.
- In 2012, photos were taken from MP5-MP11 on 28 Oct, MP12 on 4 Nov and MP1-MP4 & C1 on 6 Nov
- At this time both species of albatross were about the middle of their incubation stage.

Methods – photo-point counts (2)

- Following downloading to a PC albatrosses were counted individually on one image displayed on the screen in Paint.net
- Limits of colonies and counting areas were determined following close inspection of photographs and Figures in a digital copy of Moore & Blezard (1999) and the boundaries of each well-defined area were marked with a yellow line.
- Within each of the outlined areas the numbers of occupied nests were estimated, with each nest being marked by a yellow dot as it was counted.
- In all photographs the basic unit for counting purposes was a bird on a nest (Moore 2004) and where it was possible to distinguish standing birds or partners at a nest these extra birds were marked off but omitted from the count.
- To maintain comparability between counts I followed the photo-views, boundaries for counting purposes, and the subtotal areas detailed in Moore & Blezard (1999)

Factors affecting photo-point counts

- Loafers confused with breeding birds
- Quality of photographs, angle of view and distance to colony
- Counter bias
- Numbers of birds counted may vary with time of day
- Numbers of birds counted may vary with stage of the breeding season

Methods – ground counts

- A ground count of occupied nests and birds present was completed between 1000 h and 1300 h on 26 October 2011 in the area between the Bull Rock South study colony and photo-point MP10
- All birds occupying a nest with an egg in this area were sprayed with stock marker as they were counted. In addition, all loafing birds (those on the ground but not incubating) were also counted



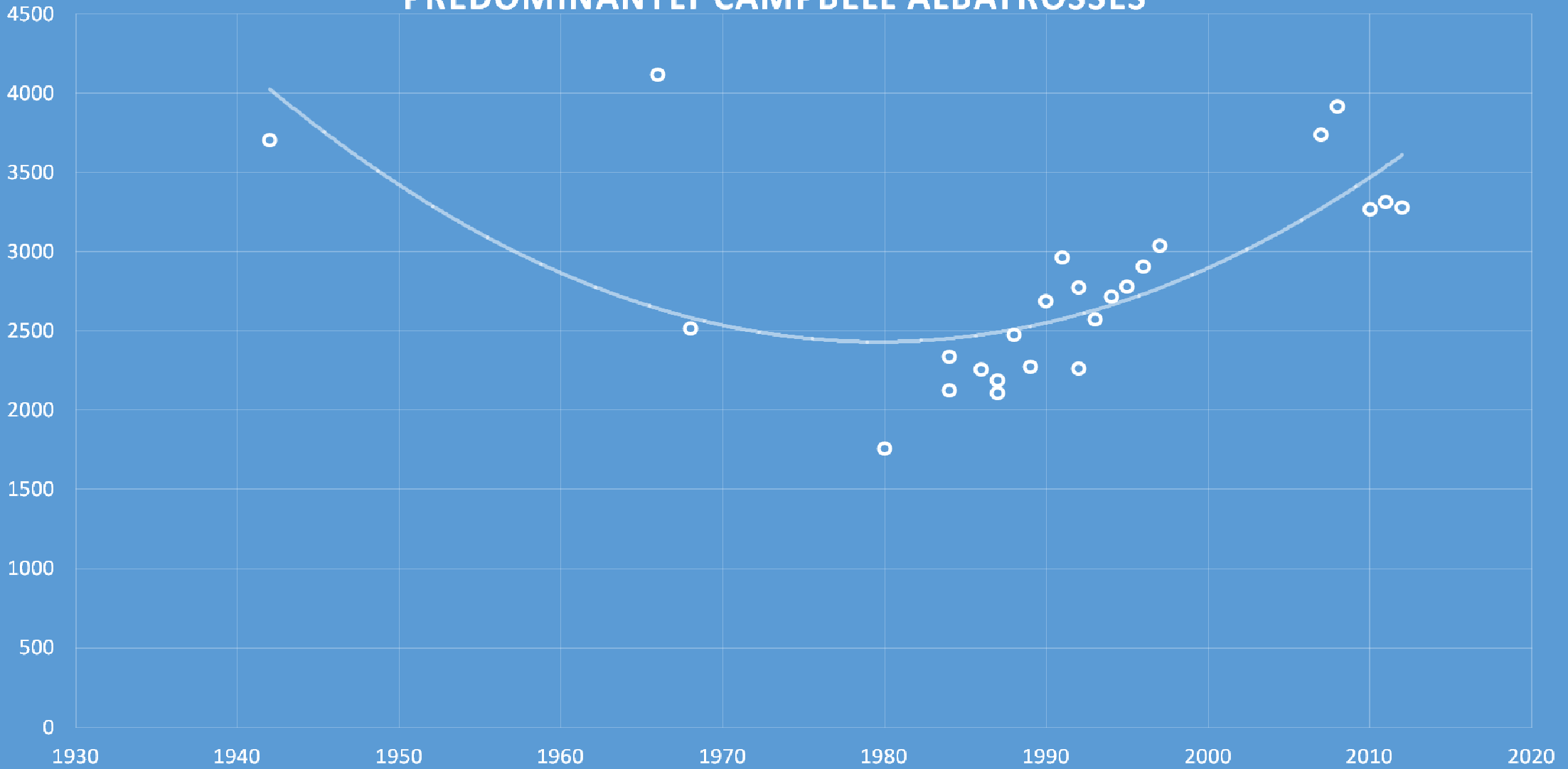
MP11 – Bull Rock North

- Campbell albatrosses occupied 84% of nests during ground counts in 1995-97
- Photopoint MP11 is c 250 m distant from Bull Rock North, but provides an unobstructed view of most of the Bull Rock North colony
- Six photos were taken of the colony before 1986 and then annually 1986-1997, to create the best photographic series for any colony on the island (Moore 2004)



TRENDS IN NUMBERS OF NESTS AT BULL ROCK NORTH 1942-2012

PREDOMINANTLY CAMPBELL ALBATROSSES

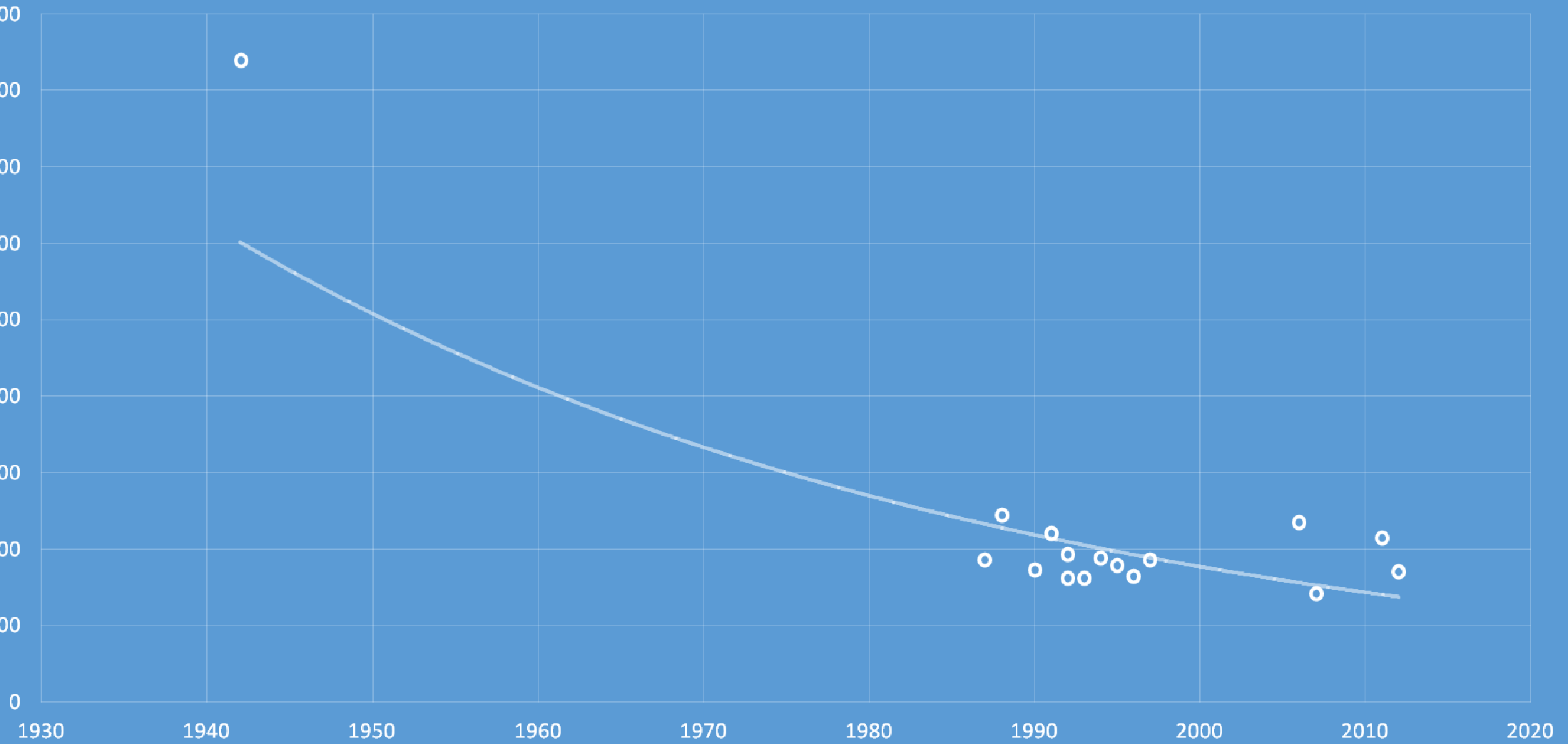


MP2 – Hookers Finger

- Grey-headed albatrosses occupied 65% of nests during ground counts in 1995-1997
- Large tussocks are visible in recent photos in areas formerly occupied by nests (Moore 2004)



TRENDS IN NUMBERS OF NESTS AT HOOKERS FINGER MP2, 1943-2012 PREDOMINANTLY GREY-HEADED ALBATROSS

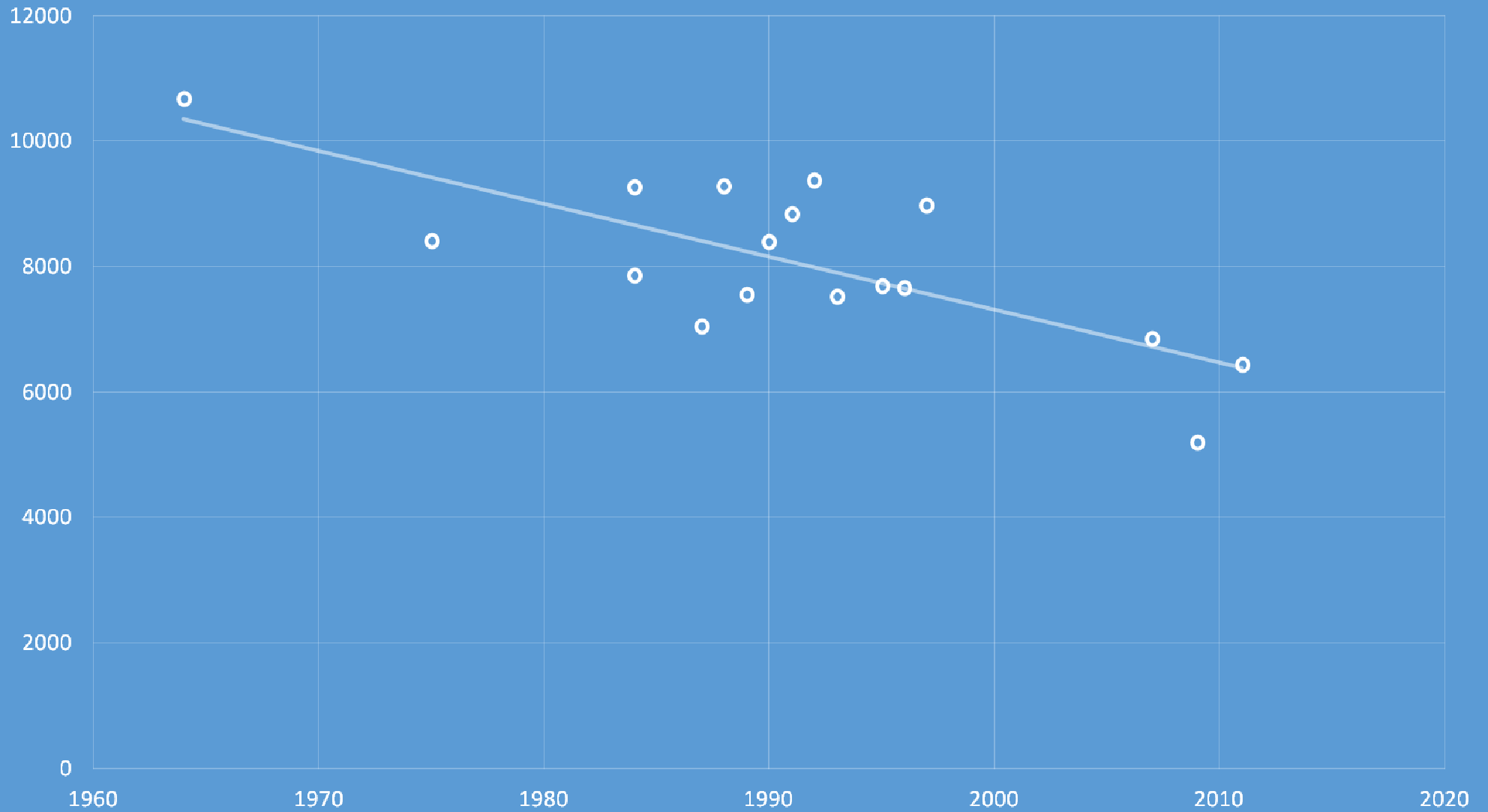


Courrejolles Peninsula

- Large & inaccessible colonies occur on the southern slopes
- Most of the photographs taken from the coast 2 km of the peninsula at photo-view C1
- Using a combination of photographic and telescope counts of nests during 1995-1997, Moore (2004) estimated that 67% of nests were occupied by Campbell albatrosses
- Large tussocks are visible in recent photos in areas formerly occupied by nests



TRENDS IN NUMBERS OF NESTS ON COURREJOLLES PENINSULA, 1964-2011



Ground counts – Bull Rock South (in part), 26 Oct 2011

	Nests with eggs	Loafers	Total	% loafers
Campbell albatross	1074	91	1165	7.8
Grey-headed albatross	73	8	81	9.9

Preliminary conclusions

- Following a period of decline in the 1940s to 1980s, numbers of breeding Campbell albatrosses increased from the mid 1980s through to 2012
- Numbers of breeding grey-headed albatrosses declined during the period 1940s to the mid 1980s, but there appears to have no further declines and the population appears to have remained at this level through to 2012

Acknowledgements

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