



**SOUTHERN OCEAN
SEABIRD STUDY
ASSOCIATION INC.**

Special points of interest

- Lindsay Smith OAM
- Observer on longliner accused of shooting seabirds
- SOSSA helps study of short-tailed albatrosses
- Terns on the news

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The Albatross

Issue No. 31

April 2004

SOSSA's Lindsay Smith awarded the Order of Australia Medal

Lindsay Smith, a founding member and tireless supporter of SOSSA, was awarded the Order of Australia Medal in the 2003/04 New Year's honours list.

Lindsay's medal was awarded 'for service to wildlife preservation through the Southern Ocean Seabird Study Association.' Roughly translated this means that he's bugged a lot of people for a long time to make sure wildlife gets a fair go!

Lindsay's passion for wildlife began as an avid bird watcher but his expertise soon expanded to include frogs, reptiles, many plant species and Australia's native freshwater fish. When only nine years old Lindsay was credited with the discovery of a Green and Gold Bell Frog colony in the Illawarra area of NSW.

Although a fitter and turner by trade, Lindsay continued to dedicate his life to understanding local wildlife. In the late 1970s Lindsay's interest turned to the birds that visit coastal NSW, and that nest on Wollongong's Five Islands. In 1984, with the passing of the founder members of the NSW Albatross Study Group, Lindsay and Harry Battam took charge of the seabird study that had started in 1956. This study is now the longest continuous seabird study in the world



Lindsay pictured in front of his precious Five Islands (Illawarra Mercury).

and is approaching its fiftieth anniversary.

In 1994, Lindsay and Harry Battam founded SOSSA, and as a result of the association's work, the profile of albatrosses and other seabirds has been enhanced significantly not just regionally but throughout the world.

Lindsay is rarely out of the newspapers and continues to highlight the plight of local and global wildlife. Congratulations on this award Lindsay Smith OAM - SOSSA is very proud of you!

Around the Globe: “Maya V” observer “loved shooting sea birds”

By MercoPress: South Atlantic News Agency

Serious accusations were aired in the Montevideo press against the Uruguayan Fisheries Department observer of the longliner “Maya V”, apprehended by the Australian Navy for allegedly illegally fishing.

The captain and 41 crew members of the Uruguayan flagged “Maya V” are currently free on bail awaiting trial in Perth and could be sanctioned with heavy fines and/or prison terms.

According to an article published in a Montevideo daily, Uruguayan crew members interviewed by phone from Montevideo claim that “Mario Andrés Moreira, DINARA’s observer aboard the “Maya V” was well aware of what was going on onboard (illegal fishing) and with a powerful rifle belonging to one of the Spanish officers he liked to shoot from the



23 January, 2004: The boarding team of HMAS Warramunga fast-ropes onto Maya V from a Seahawk helicopter.

(Photo courtesy Australian Government, Dept. of Defence)

bridge sea gulls, sea lions and young whales”. A “hobby” also enjoyed by Captain Charles Thomas.

Mr. Moreira apparently “spent much of the time sleeping, drinking (on occasions too much) and playing cards with the officers in the bridge. He really didn’t do

much work.

We started fishing December 24 and he only appeared in the cold storage three or four days later to check the size and weight of the fish”, and then for a month long he didn’t come back, when allegedly he spent his time firing at sea birds and sea mammals.

Crew members also claim that Mr. Moreira changed his testimony in Australia, “following DINARA’s instructions he incriminated “Maya V” officers saying they knew they were operating in a banned area.”

According to the article crew members are divided; Chileans and Peruvians are willing to plead guilty “which means they will be expelled from Australia after paying a fine”, whereas the Uruguayans “will plead innocence saying they ignored the dealings of Captain Thomas and his Spanish and Chilean officers”. Uruguayan crew members fear that if they plead guilty they won’t have a chance to go back to sea.

Captain Thomas and officers will be going to court on March 23, 2004.

Grey Ternlet by Lindsay Smith

A Grey Ternlet was collected by Mike Henderson on March 9th 2004, 100 metres east of Martin Island in the Five Islands Group off Port Kembla, NSW.

The exhausted, bird landed aboard a small fishing vessel (17’ run-about) despite being only 100 metres from Martin Island!

The bird was passed on

to myself for rehabilitation. Unfortunately, the bird weighed only 45 grams! By all accounts it should have been in the order of 60-70 grams.

Sadly, the bird eventually succumbed to exhaustion.

Grey Ternlets are rarely recorded off the Illawarra coast, with most records occurring



An exhausted Grey Ternlet (Lindsay Smith)

between Feb – March. However, three Grey Ternlets were recorded on the Wollongong pelagic of February 28th, 2004.

Wedge-tailed Shearwater 'At Sea' Project by Lindsay Smith

Australian Bird Study Association's pelagic day. March 21st 2004.

Ten hardy souls ventured to sea and were well rewarded, with a variety of species including dark-phase and light-phase Artic and dark-phase Pomarine Jaegers together - both species in resplendent plumages. The central tail streamers were quite long and could be clearly seen.

Though conditions were not ideal for catching birds we made several attempts and whilst luring the shearwaters to the boat, we attained clear views of all species present.

In all a satisfying day on the ocean topped off by good views of a Streaked Shearwater.

We were successful in capturing 12 Wedge-tailed Shear-

waters, none of which had been previously banded. In addition, five Flesh-footed Shearwaters were also caught and banded.

New Members

Alex Farias

Next SOSSA meeting ...

24TH April 2004
held at HQ. – 7.00 pm
10 Jenkins Street -
Unanderra. NSW.

We only supply
Coffee or Tea.

All welcome - hope you
can join us!

2004 Sandra K boat trip dates

24th April 2004

22nd May 2004

26th June 2004

24th July 2004

28th August 2004

25th September 2004

23rd October 2004

27th November 2004

December boat trip falls on Xmas Day so it has been brought forward to:

18th December 2004

Five Islands Report by Lindsay Smith

January 16th 2004: An expedition to mark as many Wedge-tailed Shearwater burrows which contained eggs. Also to capture and band or re-trap as many Wedge-tailed Shearwaters as possible in conjunction with the 'at sea' banding project aboard the Sandra K.

Participants: Lindsay Smith, Mike Jarman, Darryl McKay, Sally Weaks, Ci Ci Legoc.

During our visit this time we managed to capture a total of 104 Wedge-tailed Shearwaters, of which 63 birds were re-traps. Eldest known-age bird was 16 years. 32 shearwater burrows were also marked.

Few Little Penguins were banded (shearwater work took priority) but there were many large chicks on the surface at night, indicating that double brooding or late breeding may have taken place.

We hope to band as many Wedge-tailed Shearwater chicks this season as possible.

Sacred Ibis were observed breeding on the tops of Bitou and Coprosma bushes on Big Island No 1. 70 nests and 110 birds were present in small



Sacred Ibis nesting on Big Island, Five Islands, Wollongong (Lindsay Smith).

groups among the Australian Pelicans.

Any persons willing to assist with island work, should contact Lindsay Smith at SOSSA HQ.

Wedge-tailed Shearwaters on Mutton Bird Island, Coffs Harbour: the 2002-2003 season

By Narelle Swanson

Narelle Swanson leads a dedicated group of locals in the study of Wedge-tailed Shearwaters, commonly called muttonbirds, in the Coffs Harbour area. Narelle's group of ten or so regulars made 76 visits to Mutton Bird Island between 10th August 2002 and 4th May 2003. They banded 395 Wedge-tailed Shearwaters, recaptured 447 individuals aged between 1 and 22 years since banding and collected a total of 1463 adult weight records.

When the Shearwater breeding season started last August it was drought on land and sea. El Nino conditions meant seafood was not abundant and so birds were away from Muttonbird Island for many nights, searching for food. Shearwaters need to be in good condition to breed. Many birds it seems were underweight and not ready to undertake the tasks required in producing offspring. Shearwaters need a good energy store to dig and scrape metres of soil to make a burrow and then sit on their one egg for fifty-two days or more in five to six day shifts.

In November quite a few birds arrived for the first time that season, apparently now with fuller bellies, but too late to breed - but they courted just the same. By December the adults' weight had increased suggesting that conditions were changing.

A Shearwater chick is the closest you could get to an overweight wild bird. Both parents bring in the food at night and the young chicks can become so fat that they are too big to get out of the burrow. Imagine being trapped in a burrow because you are too fat! I found a few of the early chicks very fat but chicks in early April were not so well fed. Normally chicks have enough energy to survive for a week or so after the parents leave on their annual migration north to tropical waters off the Philippines.



Above: an adult Wedge-tailed shearwater (Tony Palliser)
Below: Narelle and Lil, chick banding on Mutton Bird Island.



We watched a number of chicks grow. One called Thumper was a heavy 360g on the 12th February, but was down to 330g the night it left. Thankfully no chicks were found dead in the burrows this year unlike the previous season.

Young birds started to leave this year on the 21st April and the last on the 12th May. A successful take-off on their first trip north for the Shear-

water chicks depends on being not too fat or too thin, the wind in the right direction and not being disoriented by the white lights of Coffs Harbour. Again this year dedicated WIRES volunteers patrolled the Jetty area for stranded birds and released many brought in by other people. The greatest problem area identified by WIRES collectors was a white light at the boat ramp where the birds circled until they dropped. Caring people collected many birds from other parts of the city and northern beaches. Over

240 live birds were released on the Island to try again. I banded some of these birds and to date I have no reports that these birds made a second wrong turn.

For many years Shearwater chicks have been rescued and helped on their way north after becoming stranded on the mainland. Back in 1970 students from Coffs Harbour High School were collecting muttonbird chicks and delivering them to the Art Room where they spent the day in cardboard boxes in the storeroom to be released in the evening. The Pet Porpoise Pool has been a collecting point for stranded Shearwater chicks for many years. In 1987 staff at the Porpoise Pool, helped the late Bill Lane, band and release 160 stranded chicks. This season, sixteen years later, three of these birds were recaptured on Mutton Bird Island. This goes to show we can make a difference if we care about our wildlife.

SOSSA expertise used in Alaskan study of short-tailed albatrosses

By Ed Melvin and Rob Suryan

This past August a team of five scientists spent two weeks at sea in the Aleutian Islands area off Alaska USA attempting to capture endangered Short-tailed Albatrosses (*Phoebastria albatrus*; STALs) using methods gleaned from SOSSA. Our purpose was to capture STALs at sea and attach satellite transmitters (PTTs) to track their migrations and better map their at sea distribution relative to longline fisheries. Opportunities to apply PTT's on the colonies are limited for a number of reasons - attempts to date are few and have had mixed success.

STAL's, once numbering in the millions, were thought to be extinct in the late 1940's due extensive feather harvesting on the breeding colonies. Most of the populations of 1600 plus birds breed on Torishima Island – an active volcano about 300 nm south of Tokyo, Japan in the North Pacific Ocean. They are now listed as endangered under the US Endangered Species Act. Under the Act, the take of 6 STAL's in a two-year period by the 2,000-vessel Alaska longline fleet could trigger the closure or interruptions of this US \$250 million fishery.

In two weeks at sea we recorded 35 short-tailed albatross sightings of at least 17 different individuals. We captured and deployed PTTs on four birds; two hatch year birds, one second year bird, and one adult (23-year-old from banding data). Captures were made with hoop nets

which were constructed using a design provided by Peter Milburn (SOSSA pelagic guide). Although equipped with landing nets, STAL's proved extremely wary and never came within range of our 3 to 4 meter handled nets despite our best efforts to entice them with squid and a variety of burley. Their wariness and constant wind over 10 knots limited our capture attempts. Typically hundreds of Black-footed Albatrosses and to a lesser extent Laysan Albatrosses surrounded the boat and proved relatively easy to lure into the boat and capture.



Above: All at sea; a short-tailed albatross soon to fitted with a satellite tracking device. The soft netting on the hoop net does not harm the bird in any way - although albatrosses rarely look this undignified! Below: An adult short-tailed albatross



We obtained over 2,200 locations in 3.5 months, primarily from three STALs. Unfortunately, the transmitter on the single breeder failed within days of deployment. Two of the PTTs were still operational as of 24 November 2003. Most satellite locations were in the Bering Sea and along the Aleutian Islands. In November 2003, two of the birds began moving south on opposite sides of the Pacific Ocean, with position fixes off the Kurile Islands (Russia), British Columbia (Canada), and Washington and Oregon (USA).

Although we would have liked to capture more than four STALs, we did demonstrate that STALs could be successfully captured at sea for satellite tagging studies – a first for this species. Plans are to continue this work in 2004 and 2005 and expand efforts to include capturing and tracking all three North Pacific Albatross species. Help from Peter Milburn and SOSSA is gratefully acknowledged.

Tern on the News by Michael Jarman

The southeast Australian population of Little Terns has experienced more than a bit of publicity this nesting season mainly due to some unfortunate events. At Wallaga Lake on the far south coast of NSW an entire colony was destroyed overnight by trespassers of the human kind while a storm with hail the size of golf balls

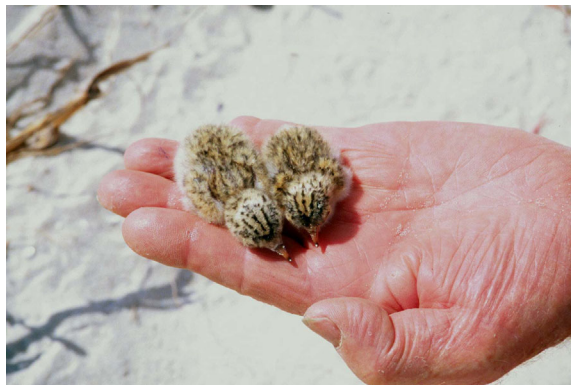
ended nesting attempts at Windang near Wollongong killing many chicks, runners, fledglings and adults. Wild weather including sand storms and flooding also destroyed many nests at other locations. A family with a dog were suspected to have prematurely ended the nesting season at Botany Bay, whilst minor incidents of people entering fenced areas were reported all along the coast. Foxes took their usual toll and caused havoc at some sites while avian predators such as Ravens, Silvergulls and even Gull-billed terns feasted on Little Tern eggs and chicks at others.

Despite the onslaught the Little Tern continues to survive and breed on our coastline and by all indications their population is increasing. Surveys showed that the number of breeding pairs of Little Tern in NSW was reduced to as few as 110 in the 1970s. In the 1950s tern numbers were much higher with a number of recognised colonies throughout NSW and Victoria that are now defunct. The decline in the species triggered the NSW National Parks and Wildlife to implement a number of recovery strategies de-

signed to increase the numbers of breeding birds. These included fencing and signing major nesting sites, feral animal control and monitoring of colonies by staff, volunteers and bird clubs. The result has been an increase to over 450 nesting pairs of Little Terns in NSW.



Above: Adult Little Tern on nest
Below: Little Tern chicks



With the increase in numbers of breeding birds, populations have spread from the initial managed sites to locations where they have not been seen nesting for many years such as The Entrance on the Central Coast and at Windang, near Wollongong. The sand spit at Windang had not experi-

enced nesting Little Terns for 40 years until this last season. Over 30 clutches were laid with at least 5 fledglings surviving. Over 30 fledglings were recorded at The Entrance, which has consistently produced a good number of fledglings for each of the last 3 years.

The most successful nesting sites are reliant on a number of management actions. These include effective fox control using toxic 1080 baiting and soft jaw traps. Many sites are difficult to manage for foxes as 1080 baits are not permitted to be used within one kilometre of a dwelling. In these instances electric fences are often installed or soft jaw traps are used. Having “friendly people” at the sites to help inform beach users about the birds and to chase off predators such as ravens has proven very successful at some locations. At Mogareeka, at the mouth of the Bega River a vigilant group of local volunteers patrol the site daily ensuring the birds safety. This year over 50 fledg-

Tern on the News by Michael Jarman—continued.

lings were counted on the surrounding sand spit as well as a single Pied Oystercatcher fledgling. Informative signage about the birds and their requirements, as well as warning and no dog signs have been very helpful in protecting nesting areas.

This season an attempt was made to attract Little Terns to a small island in Lake Wollumboola by some local school kids. Earlier in 2003 Pat Hall from the Department of Conservation and Environment received an email from Japan wishing to exchange information on Little Terns. After several communications Pat discovered that the Japanese encourage their little terns to nest in “safe” locations by attracting them with wooden decoys painted to look like the real thing. In Japan many of the nesting sites have been lost to various development pressures. Terns have been encouraged to nest in safe sites using decoys including the rooftop of a large sewage farm. This gave Pat an idea. “Maybe we could do the same thing for the terns at Lake Wollumboola and attract the birds to the little island.” The island would provide safer nesting habitat than the sand dunes as the eggs and chicks would be more protected from predators such as foxes and dogs and accidental trampling by people. After a few phone calls and meetings with the Shoalhaven Woodcraft Society 45 replica wooden terns were produced. The students from years 3 and 4 at Culburra Primary School

painted the birds to look exactly like the real thing and were given lessons on Little Tern ecology.

Following much anticipation the day when the wooden birds were to be deployed arrived. Each of the school children with wooden tern



Above and below: Students from Culburra Primary School with model Little Terns.



in hand was fitted with a life jacket and escorted by boat to the island by the Waterways Authority. The students were shown how to place the birds in the sand complete with a nest scrape. After all the wooden birds were placed, a speedy boat trip delivered the kids back to the shore.

A week later eight real Little Terns were seen regularly sitting amongst the replicas signifying that the decoys worked. Attracting birds with decoys has been utilised by humans for many thousands of years, especially by duck hunters. Unfortunately the Terns did not attempt to breed on the island but instead split into two colonies and nested at entirely different lakes where they had not been seen breeding for many years.

Although not entirely successful the exercise proved to be valuable in raising the awareness in the community of the plight of a local endangered species and demonstrated a “hands on” approach to learning about conservation. The event received a great deal of media attention including the popular television show, *Totally Wild*. The students from Culburra Public School are now communicating regularly with Japan via email describing the work they have done here to help save the Little Tern.

Wrecks of Seabirds in Bass Strait Victoria during 1984-2003

Chris Gray Unit 2/ 87 Ocean throughway Ocean Grove Victoria 3226

Wrecks of seabirds are arbitrarily defined when an area of more than 5 kilometer of coastline has been surveyed in a month and seabird numbers greater than 5 birds per kilometer are present (Reid 1998).

The following records of beach cast seabirds "wrecks" in Bass Strait Victoria 1984-2003 appear to be linked with cyclic weather patterns changes associated with global warming. Since 1976, El-Niño Southern Oscillation (ENSO) events have been appearing more frequently with effects that last longer than ever. Prior to 1976 the prominent return period of ENSO was around 6 years but post 1976 records show a return of 3.5 years (Pearce 1999). Seabird wrecks in Bass Strait appear to come from three components; seabirds that migrate from ENSO caused changes to weather systems in eastern ocean waters, resident seabirds of Bass Strait mortalities during ENSO events in Bass Strait and surrounding waters and finally seabirds that migrate from western oceans waters on the prevailing westerly wind systems during winter.

1984—Blue and Kerguelen Petrels beach cast along Victorian coastline between 23 June-8 September (Brown et al. 1986). The description of weather conditions and possible cause of mortality perhaps explains most of the following wrecks from the west—"In June enhanced westerly flow extended from Western Australia to the east of Tasmania, and beyond, between 50° and 60° south. Surface water temperature at this time was 1-3 °C lower than normal to the south of south-west Australia, and a relative high pressure anomaly was present south of West Australia and a low pressure anomaly affected south-east Australia. In August areas to the south, and including South Australia, were affected by severe low-pressure systems, which moved

slowly eastward by September. One consequence of this was a series of depression and associated cold fronts, which penetrated Southern Australia and once established, produced cold and strong winds. The strong winds which finally drove them ashore may have been the proximate cause of death but it is likely that such birds were already weakened by starvation and depleted food resources." **Little penguin** wreck in Port Phillip Bay July-September-October (Norman et al. 1992).

1985—Common diving Petrel wreck (Norman and Brown 1987) on Victorian shoreline. "Food was not present in the esophagi and gizzards and birds were emaciated, with no obvious body fat and apparently atrophied muscles. The petrels represented birds, (perhaps of local origin) wrecked just following egg laying, presumably due to severe storms." **Little penguin** wreck in port Philip Bay (Norman et al. 1992) cause was starvation.

1986—Little penguin wrecks reported in Western Victoria, cause parasites and starvation (Norman et al. 1992).

1987—Little penguin wreck report in Western Victoria, cause starvation (Norman et al. 1992).

1988—Little penguin wreck report, Phillip Island west, cause starvation (Norman et al. 1992).

1994—Short-tailed Shearwater wreck at Ocean Grove Victoria. Mortality rate 29.6 birds per kilometer (n=178). The condition of the beach cast birds varied, some alive only to die later in the dunes; some relatively fresh and some waterlogged from being adrift for some time. This event was similar to what Gibson and Sefton (1995) described about the condition of beach cast shearwaters in the article 'Mortality of Shearwater on New South Wales beach site in 1954.'

1995 to 2003 Wreck of Little Penguin- From surveys of beach cast seabirds at

Wrecks of Seabirds in Bass Strait Victoria during 1984-2003-continued

Chris Gray Unit 2/ 87 Ocean throughway Ocean Grove Victoria 3226

Ocean Grove Victoria as part of Birds Australia beach patrol scheme found wrecks of Little Penguins occurred during the 1995-2003 period. Mortality rate per kilometer appears to be

a term that permits comparison of how serious the death rate of the specimens occurs in one period. The mortality rate of Little Penguins during the period 1991-94 (4 years) average was 1.5 birds per kilometer per year; after the 1995 massive pilchard die-off in Bass Strait and surrounding waters the mortality rate for 1995-2000 was 17.3 birds/km/year. The frequency distribution of numbers beach cast Little Penguins appears to correlate to the period when the massive pilchard die-off 1995-98 caused major disruptions to the food webs. With most of the breeding stock of the pilchard removed in this die-off this would lead to a high mortality of juveniles of all other species as seabirds and sea animals preyed on the other species; leading to a slow recovery of the food web. This is a similar situation to what scientists have observed studying Antarctic Krill abundance; where their studies found that when global warming reduced sea ice cover the breeding stock of krill was consumed by seabirds and other animals. They found that in the following seasons the krill populations took some time to recover.

1996—Short-tailed Shearwaters mortality rate 33.4 birds/km/year (n = 167)

1997—Short-tailed shearwater mortal-

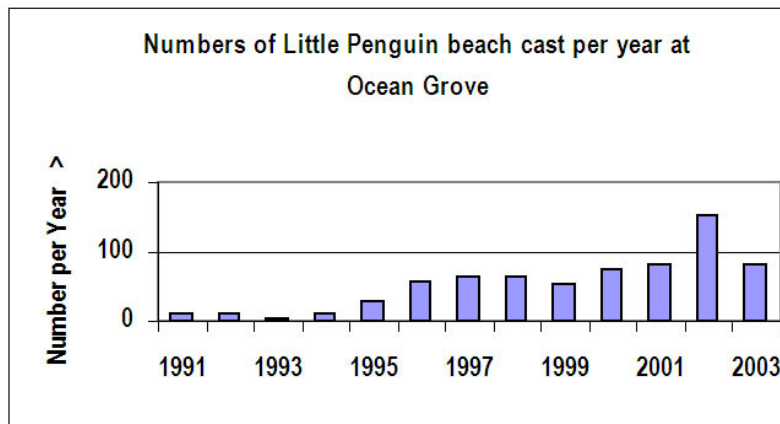


Figure 1. Frequency distribution of the mortality rate of Little Penguins beach cast at Ocean Grove Victoria during 1991-2003.

ity rate 63.4 birds/km/year (n = 317).

1998—Short-tailed Shearwater mortality rate 25 birds/km/year (n = 125).

1999—Short-tailed Shearwater mortality rate 32.4 birds/km/year (n = 162).

2000—Short-tailed Shearwater mortality rate 530.8 bird/km/year (n = 2654). Years when there were high mortalities of Short-tailed Shearwaters was noted by Serventy *et.al.* (1971) when Krill *Nyctiphanes australis* was in low abundance in Bass Strait waters. It appears that the Shearwaters were possibly in a weak state before leaving on their migration flight by food shortages in Western American waters (Gray 1988). A wreck of Short-tailed Shearwaters was reported by Skira (2000) all along the southeastern coast of New South Wales and Tasmania. This appears to correlate with scientists studying krill abundance in the Southern Oceans who predicted a slump in krill abundance in the 1999-2000 austral summers (Breirly and Rae 1999). **Common Diving Petrel** Although the Common Diving Petrel breeds in Bass Strait Islands it is a specimen that is rarely beach cast on local beaches (Pescott 1983). A wreck of 20 specimens occurred in May that was among a number of Short-tailed Shearwaters, Little Penguins and Fairy prions. By comparing the morphometric data of the Ocean Grove specimens with the data range found by Norman and Brown (1987); only the mass range was lighter (62-75g) compared to the Norman and Brown range of 86-126g.

Wrecks of Seabirds in Bass Strait Victoria during 1984-2003-continued

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2001—Short-tailed Shearwater mortality rate 19

bird/km/year (n = 95). **Little Penguin** mortality rate 17 birds /km/ year (n = 84).

2002—Little Penguins mortality rate 30.8

birds/km/year (n = 154). **Short-tailed Shearwater** mortality rate 19.6 birds /km/ year (n = 98).

2003—White-faced Storm-petrels, Little Penguins, Short-tailed Shearwaters, Fairy Prions, Slender-billed Prions and Antarctic Prion.

A large wreck event occurred at Ocean Grove-Collindina after a storm event on Friday 10 October 2003. The White-faced Storm-petrels were distributed along the high tide line in a dry condition; eyes intact and wings slightly spread displaying the bright colored feathers along the wings, back and tail. The Little Penguins exhibited a long residence time adrift with several in various stage of decay. The Short-tailed Shearwater was in fresh condition with two specimens partly eaten. Most of the Prion spp. were in a fresh condition with some waterlogged. The wreck of White-faced Storm-petrels appears to be the first record of such a high mortality which may be of special concern because of the decline of the colony on Mud Island in Port Phillip Bay due to crowding of their nesting sites by Silver Gulls (Pescott 1983; Simpson 1982). Seabird studies along the western coastline of America found how the El-Niño Southern Oscillation (ENSO) events caused a lack of nutrients replenishment that resulted in a reduction in primary production, disrupting food webs, which apparently resulted in

Date	White faced storm Petrels	Little Penguins	Short tailed Shearwaters	Fairy Prions	Slender billed Prions	Antarctic Prions	Totals
Sat 11	108	11	15	20	3		157
Sun 12	47	4	9	10			70
Mon. 13	94	8	28	15		3	148
Tues 14	32	1	2	8			43
Wed 15							
Thurs. 16	2	1	2	2			7
Fri. 17	6			3			9
Total	289	25	56	58	3	3	434
Mortality rate	57.7 / Km.	5 / Km.	11.2 / Km.	11.6 / Km.	0.5 / Km.	0.5 / Km.	86.8 / Km.

Table 1. Record of the numbers of specimens beach cast daily and the relative mortality rates during October 2003

breeding success reduction and mortalities of several seabird species (DeeBoersm 1976; Schreiber & Schreiber 1982; Hodder & Gray-Bill 1983; Gray 1988).

The Antarctic Krill *Euphausia*

superba is vital to the health of the entire southern ocean marine ecosystem. In years when the breeding success of seabirds and other animals is poor then the acoustic Krill surveys at sea usually suggest low Krill abundance. Years when there is low sheet ice cover Krill are exposed to massive predation by marine animals and seabirds resulting in a depletion of breeding stock for following years. A cyclic periodic slump in Krill abundance appears to be linked with the Antarctic Circumpolar Wave (ACW), a complex multifaceted climate feature that brings changes in atmosphere pressure, sea surface temperature and most importantly the sea ice cover in Antarctic waters and appears to rotate every 3-4 years (Brierly and Rae 1999). A 20-year echo sounding study of Krill abundance by David Dener at National Fisheries' Services South West Fisheries' Science Center La-Jolla California U.S.A. found a 3-4 year Krill abundance pattern. Surprisingly they predicted a Krill abundance slump during the Austral 1999-2000 summer period (Brierly and Rae 1999). This was the year when high mortalities of Short-tailed Shearwaters were recorded all along the South-eastern New South Wales coastline, Bass Strait and the Tasmanian coastlines (Skira 2000; Gray 2002). Of the 16 species of breeding seabirds in Bass Strait waters there was only 12 species beach cast during 1991-

Wrecks of Seabirds in Bass Strait Victoria during 1984-2003-continued

Chris Gray Unit 2/ 87 Ocean throughway Ocean Grove Victoria 3226

2003, Little Penguins, White-faced Storm-petrels, Short-tailed Shearwater, Fairy Prion, Common Diving Petrel, Black-faced Cormorant, Australian Gannet, Crested Tern and Silver Gulls. Wrecks occurred of only 5 species Little Penguin, Short-tailed Shearwater White-faced Storm-petrels, Fairy Prion, and Common Diving Petrels.

In Bass Strait drought conditions along the south-eastern coast of Victoria King Island and northern Tasmanian

coastline during 1995-1998 ENSO event was linked with the massive die-off of the pilchard *Sardinops sagas*. The wide spread Pilchard mortality in Bass Strait and surrounding waters March-May 1995 was associated with significant mortalities in central-northern Bass Strait and a reduction success of Penguin breeding at the Phillip Island colony (Dann et al. 2000). A study of the breeding biology and feeding ecology of Little Penguin at Phillip Island suggested the decline in breeding success was related to food abundance (Chiarada 2000).

The Pilchard die-off had a drastic effect on food webs in Bass Strait and as seabirds and sea animals sought alternative food items this depleted the breeding stock that resulted in depleted food webs during 1995-2002 which in turn could be responsible for

Table 2. The records of beach cast seabirds from the western waters appears to have a cyclic pattern that relates to the Krill abundance cycle in the Southern Ocean. 1975-83 data from Pescott (1983); the 1984 Kerguelen and Blue Petrel data from Brown et al. (1986).

Year	ENSO Years	Kerguelen Petrels	Blue Petrel	Antarctic Prion	Slender Bill Prion	Salvins Prion
1975		3				
1976	1976		5			
1977			1		94	
1978		3	1			
1979		1	1			
1980						
1981						
1982	1982					
1983	1983					
1984		Wreck	Wreck			
1985						
1986						
1987						
1988						
1989						
1990						
1991					1	
1992				3	4	3
1993						
1994		3	3			
1995	1995	1	1			
1996						
1997					1	2
1998				3	4	
1999		1		2		2
2000				1	2	1
2001					4	
2002					1	1
2003				3	3	

some of the sea bird wrecks. Many seabirds move in winter ahead of the prevailing Westerly wind systems of winter (Pescott 1983) and in ENSO events there is an increase in westerly winds which may effect seabirds flight paths. The deposit rate (mortality rate) of seabirds beach cast pattern appears to be related with the El-Niño-La Niña southern oscillation phase changes in weather patterns and oceanographic conditions. Wind pattern changes can influence the movement of seabirds at sea, fierce storms can push foraging and migrating birds considerable distances from normal flight paths. The ENSO weather pattern changes have significant effect on flight paths flown by seabirds at sea

(Ashby 1998). The ENSO weather patterns changes to the usual flight paths of seabirds is thought to be the reason why rare specimens turn up on the southern Australian coastline (Reid 1988). The pattern of occurrence of records of beach cast seabirds Kerguelen and Blue Petrels, Antarctic, Slender-billed and Salvins Prions (Table 2) appears to have some relation to El-Niño-La Niña event years and also the cyclic pattern of Krill abundance in the Southern Ocean (Brierly and Rae 1999). Years when there were high mortalities of Short-tailed Shearwaters was noted by Serventy et al. (1971) when Krill was in low abundance in Bass Strait waters.

References cited in this article can be found at:
<http://www.ozemail.com/~sossa/Pages/Newsletters/April2004newsletterextras.htm>