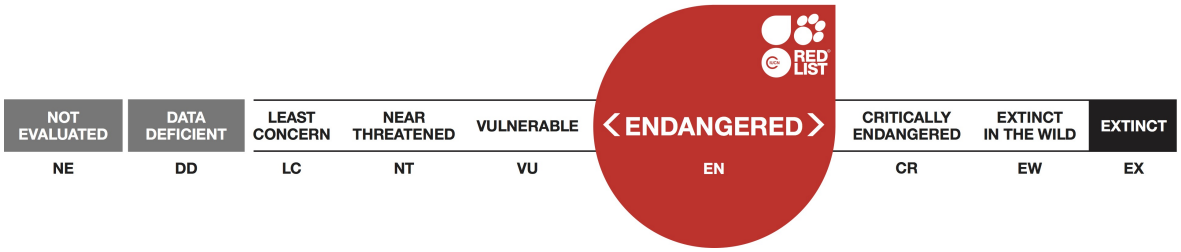
The IUCN Red List of Threatened Species™
ISSN 2307-8235 (online)
IUCN 2008: T17026A1306343

Phocarctos hookeri, New Zealand Sea Lion

Assessment by: Chilvers, B.L.



View on www.iucnredlist.org

Citation: Chilvers, B.L. 2015. *Phocarctos hookeri. The IUCN Red List of Threatened Species 2015*: e.T17026A1306343. http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T17026A1306343.en

Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Carnivora	Otariidae

Taxon Name: *Phocarctos hookeri* (Peters, 1866)

Common Name(s):

- English: New Zealand Sea Lion, Hooker's Sealion, Hooker's Sea Lion, New Zealand Sealion

Taxonomic Notes:

The taxonomy of sea lions in New Zealand (*Phocarctos*) and Australia (*Neophoca*) was confused until it was resolved in a paper by King (1960).

Assessment Information

Red List Category & Criteria: Endangered A4bd ver 3.1

Year Published: 2015

Date Assessed: November 18, 2014

Justification:

The New Zealand Sea Lion population is significantly reduced in size from historical levels and is projected to continue declining in the future. Threats to New Zealand Sea Lions have been identified (fishing related mortality, climate/nutritional stress, disease), they are not fully understood (Roberts and Doonan 2014). Management measures have been introduced to mitigate fisheries interactions, but declines in Sea Lion numbers have not ceased. The generation time is estimated to be 10.75 years with three generations being equivalent to approximately 32 years. Projecting the pup estimate from 1997/98 (3,021) at the Auckland Islands for three generations forward with a decline of 4%/year, the number of pups born in 2029/30 is estimated to be 840, which is a 72% reduction meeting the category Endangered under criterion A4bd. A population viability analysis (PVA) has also been carried out on the largest population (in the Aukland Islands), which predicts a 98% probability of extinction of this population within five generations (calculation based on model used in Chilvers 2012b).

Previously Published Red List Assessments

2008 – Vulnerable (VU)

1996 – Vulnerable (VU)

1994 – Vulnerable (V)

Geographic Range

Range Description:

New Zealand Sea Lions have a highly restricted distribution for a marine mammal. Their primary habitat is several subantarctic islands south of New Zealand, and their surrounding waters. The principal

http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T17026A1306343.en

breeding colony is at the Auckland Islands, with the most of the remaining animals breeding at Campbell Island (Maloney *et al*. 2012). New Zealand Sea Lions regularly occur in small numbers at Stewart Island and on the southeast coast of the South Island of New Zealand, where there are some births (McConkey *et al*. 2002). However, most of the animals hauling out on the South Island are males ranging in age from 2 to 11 years old. Wandering New Zealand Sea Lions also reach Macquarie Island. Before human occupation (Maori and European), New Zealand Sea Lions had a more extensive range that appears to have included most of the New Zealand mainland and subantarctic islands. Polynesian midden records show pup and adult bones from the top of the North Island, through the South Island and into the subantarctic islands of New Zealand (Childerhouse and Gales 1998).

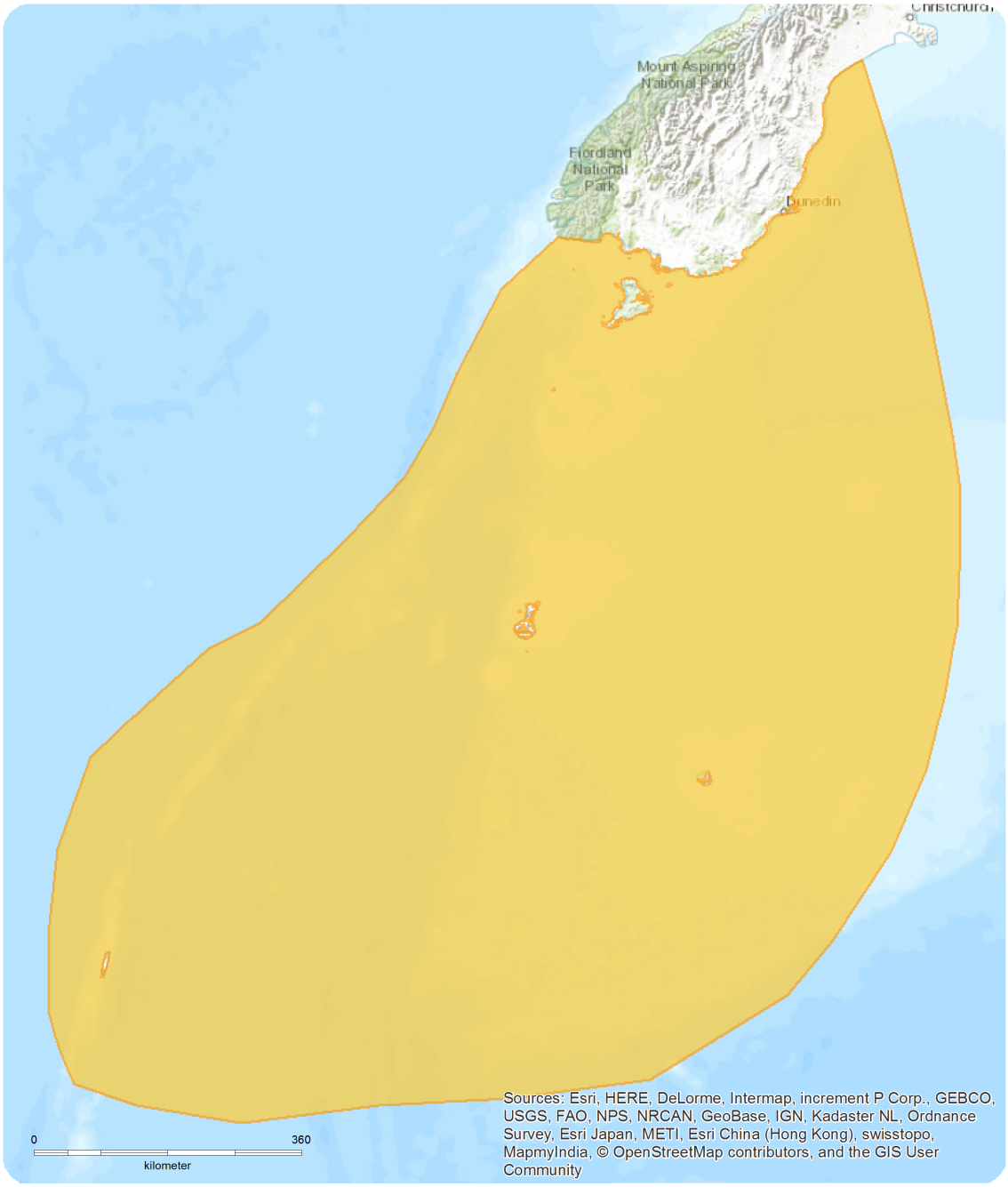
Country Occurrence:

Native: Australia (Macquarie Is.); New Zealand (South Is.)

FAO Marine Fishing Areas:

Native: Pacific - southwest

Distribution Map



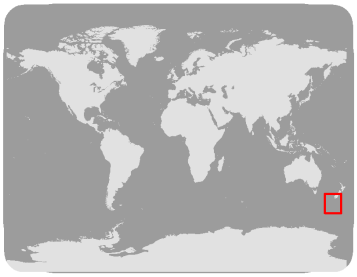
Phocarctos hookeri

NE DD LC NT VU **EN** ENDANGERED CR EW EX

Range

Extant (resident)

Compiled by:
Louise Chilvers



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.

http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T17026A1306343.en

Population

Counts of pups are commonly used as an index of abundance for pinniped populations (Berkson and DeMaster 2011). New Zealand Sea Lion pups are estimated to account for ~65% of the total number of mature females, and additional to this it has been estimated that 20% of all mature females will never breed (Chilvers *et al*. 2010). Using those assumptions, in 2008-09 New Zealand Sea Lions numbered approximately 9,880 (95% CI, 8,604–11,297; Geschke and Chilvers 2009) based on total pup production of 2,084, with the number of mature individuals estimated as less than 3,000 (Baker *et al*. 2010). Using 2013/14 data indicating total pup production of 2,189, the number of mature individuals is estimated to be 3,031 (Chilvers, unpublished). There is no historical population estimate but it is assumed that they were more abundant in the past due to the more extensive range they occupied (Childerhouse and Gales 1998).

The majority of pups are born at the Auckland Islands and annual pup production estimates have been made there since 1994/95 (pups are mostly born in December-January). Estimates suggest that the population was largely stable until 1997/98, but has declined since then at a rate of 4%/year (see the Table 1 in the Supplementary Material - see below). The number of pups counted in 2013/14 was 18% less than in 2012/13, and 48% less than 1997/98 (Childerhouse 2014). The decrease in pup production at Auckland Islands has been linked with decreasing numbers of adult females (Chilvers 2012a).

The other location where a substantial number of pups are born is Campbell Island. While there have been some counts made there (Childerhouse *et al*. 2005; Maloney *et al*. 2009, 2012; see Table 1) effort has been intermittent with significantly varying methods (including timing of surveys) and the data cannot be used to estimate meaningful trends. Therefore, while pup count results indicate that Sea Lions on Campbell Island are not in decline, the apparent upward trend is not predicted to continue (Maloney *et al*. 2012). Campbell Island is at the southern limit of the New Zealand Sea Lion range and pup mortality is very high there, apparently due to cold and wet conditions during the pupping season and substrates unsuitable for a breeding colony and early pup survival (Maloney *et al*. 2012).

A few pups are also born on the south coast of the South Island of New Zealand and on Stewart Island not far offshore (see Table 1 in the Supplementary Material - see below). The pups born at Stewart Island were only discovered in 2010/2011 and since that year regular searches of the most likely places Sea Lions would pup have been undertaken. The apparent increasing trend of Stewart Island pup counts (see Table 1 in the Supplementary Material - see below) is an artefact of better search techniques and areas searched on Stewart Island since 2010/2011 rather than an increase in pup numbers. The number of pups born at those locations has been about 30/year, which is less than 1% of the total pup production.

The mean age of reproduction for female New Zealand Sea Lions is 10.75 years (Childerhouse 2007) hence the generation time is estimated to be 10.75 years with 3 generations being equivalent to approximately 32 years.

The best information that can be used to project future abundance of New Zealand Sea Lions is the trend in pup production at the Auckland Islands. If the pup estimate from 1997/98 (3,021) is projected three generations forward with a decline of 4%/year the number of pups born in 2029/30 is estimated to be 840, which is a 72% reduction. While threats to New Zealand Sea Lions have been identified

(fishing related mortality, climate/nutritional stress, disease), they are not fully understood (Roberts and Doonan 2014). Management measures have been introduced to mitigate fisheries interactions, but declines in Sea Lion numbers have not ceased.

A population viability analysis has been undertaken for the Auckland Island population of New Zealand sea lions (Chilvers 2012b). The PVA was only for this population because it makes up three-quarters of the species and has the most reliable population parameter estimates for modelling. The results show that at the current rate of decline in the Auckland Island population, this population could be functionally extinct (less than 1,000 animals within the population) by 2035 (24 years, less than three New Zealand Sea Lion generations). The modelling of the severest known fisheries and bacterial impacts shows that with a probability of 0.982, the Auckland Island population will be functionally extinct in 59 years with a mean annual population decline rate (r) of -0.039 (Chilvers 2012b).

Recent demographic assessment of the decline in the Auckland Island subpopulation has identified the main proximate causes for decline that include generally low pupping rates, declining trends in cohort survival to age 2 since the early 1990s, and low adult survival (age 6-14 years) since 1999 which may account for declining pup numbers at Sandy since the late 1990s (Roberts *et al*. 2014). Analyses to identify the ultimate causes have been compromised by a short time series mostly covering the period of decline (Roberts and Doonan 2014). However, juvenile (2-5 years) and adult (6-14 years) survival was poorly correlated to estimated fishing related mortality in the squid trawl fishery at the Auckland Islands. Correlative assessment with cohort survival to age 2 was consistent with disease-related mortality impacting survival after 2005. Roberts and Doonan (2014) consider that declines in maternal conditions, variable diet composition, changes in milk quality and pup mass, and reduced pupping rates are consistent with changes in the nutritional status of the subpopulation; however they noted that some of these responses could also occur in response to pup mortality not driven by nutritional stress factors.

See the Supplementary Material for further information about New Zealand Sea Lion pup production at Auckland Islands, Campbell Island, Otago Peninsula and Catlins (mainland New Zealand), and Stewart Island.

For further information about this species, see Supplementary Material.

Current Population Trend: Decreasing

Habitat and Ecology **(see Appendix for additional information)**

New Zealand Sea Lions are large heavy-bodied sexually dimorphic animals. Adult males are 1.2-1.5 times longer and 3-4 times heavier than adult females. Adult males are 2.1-2.7 m long and may weigh 300-450 kg (Geschke and Chilvers 2009). Adult females are 1.8-2.0 m long and weigh 90-165 kg (Chilvers et al. 2005). Newborns are approximately 70-100 cm long and weigh 8-10 kg (Chilvers *et al*. 2006a). Pups are born in a thick, long, dark brown lanugo with a lighter crown, nape, and mystacial area, and with a pale stripe on the top of the muzzle, originating on the crown. Female pups are lighter than male pups. Pups begin to molt their birth coat at two months old and at the end of the molt look like adult females.

Males become sexually mature at the age of five years. The age of maturity for females is 3-4 years. The average estimated reproductive rate of adult female New Zealand Sea Lions is 65% per year (Chilvers *et*

al. 2010). Pup mortality at the end of one year was 30-55% for the Auckland Islands area (Chilvers and MacKenzie 2010), and pup mortality was 55% for the first 6 weeks after birth at Campbell Island (Maloney *et al*. 2012). Males live at least 23 years and females to at least 26 years (Reijnders *et al*. 1993, Childerhouse 2007).

The breeding season for the New Zealand Sea Lion begins in late November when adult males return and establish themselves on territories through displays, vocalizing, and fighting. Adult females arrive in early December and give birth on average within 2.1 days after returning to the rookery (Chilvers *et al*. 2006b). Males may have as many as 25 females within their territories. The bulls are frequently challenged by newly arriving males and neighbours, and turn-over of males is a regular occurrence. Many territorial bulls depart the rookery in mid-January with the end of the pupping period (Robertson *et al*. 2006).

The onset of oestrous occurs 7-10 days after a female gives birth. Prior to this, females continuously attend their newborn pup. Following mating, females begin a phase of short foraging trips followed by pup attendance, typical of many otariids. Foraging trips average 2.7 days and are followed by 1.5 days of pup attendance and feeding ashore (Chilvers *et al*. 2005). Pups gather into groups while their mothers are away. Pups are weaned at approximately 10 months. The primary causes of pup deaths within the first two months of life are trauma (35%), bacterial infections (24%), hookworm infection (13%), starvation (13%), and stillbirth (4%; Castinel *et al*. 2007a). Adult males are a source of mortality to pups, occasionally trampling them during territorial disputes and also through incidents of cannibalism.

New Zealand Sea Lions are not migratory, although males disperse widely over their range during the non-breeding season (Robertson *et al*. 2006). Some animals can be found at the major rookeries and haulouts year-round. At sea they are active divers that forage on both benthic and pelagic prey. Individual New Zealand Sea Lions have been found to have two distinct dive profile types or foraging patterns: a benthic diving profile and a deeper, more varied meso-pelagic diving profile (Chilvers and Wilkinson 2009). Mean dive depths for female New Zealand Sea Lions are to 129 m and mean dive duration is 3.9 minutes. Maximum dive depths are over 600 m and dives have been recorded to last as long as 14.5 minutes (Chilvers *et al*. 2006b). Mean total travel distances during foraging trips for lactating females are 423 km (SE = 43.9, max. = 1,087, n = 183). Satellite tracking data collected from 59 female New Zealand Sea Lions from all breeding sites at the Auckland Islands, indicates that they forage over the entire Auckland Island shelf, with extensive overlap with subantarctic trawl fisheries (Chilvers 2008, 2009; Chilvers *et al*. 2011).

New Zealand Sea Lions eat a wide variety of vertebrate and invertebrate prey. Frequently eaten species include Opalfish, Munida, Hoki, Oblique-banded Rattail, salps, octopus, squid, and crustaceans (Childerhouse *et al*. 2001; Meyneir *et al*. 2010). Antarctic, Subantarctic, and New Zealand Fur Seal pups and juveniles are taken as prey by adult male Sea Lions. Penguins are also occasionally taken (Lalas *et al*. 2007).

Great White Sharks are the only known predator of New Zealand Sea Lions (Robertson and Chilvers 2011).

Systems: Terrestrial, Marine

Use and Trade

The Maori people of New Zealand have traditionally hunted Sea Lions, presumably since first contact, as did Europeans upon their arrival much later. Commercial sealing in the early 19th century decimated the population in the Auckland Islands, but despite the depletion sealing continued until the mid-20th century when it was halted.

Threats (see Appendix for additional information)

Commercial sealing in the early 19th century decimated the New Zealand Sea Lion population in the Auckland Islands, but despite the depletion sealing continued until the mid-20th century. The population has yet to fully recover from the period of overexploitation (Childerhouse and Gales 1998).

At the present time, New Zealand Sea Lions have a highly restricted distribution, a small population, and nearly all of the breeding activity is concentrated in two subantarctic island groups. This restricted and small breeding population in combination makes them vulnerable to disease outbreaks, environmental change, and human activities.

The commercial Arrow Squid trawl fishery near the Auckland Islands reported their first New Zealand Sea Lion bycatch mortalities in 1978. Reported or estimated mortality between 1995 and 2007 averaged 92 animals annually (range 17-143) which was 3.7% of the estimated number of mature individuals in the Auckland Island area (Thompson and Abraham 2009). Of particular concern is that most bycatch animals are females (up to 91%; Chilvers 2008). New Zealand Sea Lions are also incidentally caught in other trawl fisheries around the Auckland and Campbell Islands (Chilvers 2008, Thompson *et al*. 2013). Apart from direct mortality, competition and habitat modification caused by fishing activity may also be impacting New Zealand Sea Lion foraging areas (Robertson and Chilvers 2011).

Epizootic outbreaks at the Auckland Islands in 1998, 2002, and 2003 led to more than 50%, 33%, and 21% early pup mortality respectively, and were also responsible for the deaths of some animals from other age classes during 1998. The source of the suspected bacterial agent and cause of the outbreak and subsequent mortality for the 1998 outbreak are unknown, however the 2002 and 2003 outbreaks have been identified as being caused by Klebsiella pneumoniae (Castinel *et al*. 2007b).

Conservation Actions (see Appendix for additional information)

The New Zealand government has provided protection to New Zealand Sea Lions with laws that date back to 1881. The Marine Mammal Protection Act of 1978 added additional measures, stating that no marine mammal could be caught, killed, injured, attracted, poisoned, tranquillized, herded, harassed, disturbed, or possessed. However, those measures do not afford protection from incidental captures in commercial fisheries if they are reported to the appropriate officials as required. The uninhabited Auckland Fauna Reserve forms part of the habitat of New Zealand Sea Lions (Reijnders *et al*. 1993). Tourism is regulated on islands and at some mainland beaches on the South Island. Due to the declining population, the New Zealand Sea Lion was listed as a Nationally Critical New Zealand Species in 2010 under the New Zealand threat classification system (Baker *et al*. 2010, Townsend *et al*. 2008).

There are three main management strategies currently in place to mitigate New Zealand Sea Lion bycatch interactions in trawl fisheries off the Auckland Islands:

http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T17026A1306343.en

1) Input controls: a Marine Mammal Sanctuary and Marine Reserve surrounding the Auckland Islands extending 22.2 km offshore, within which no trawling or any other form of fishing is allowed. However, satellite tracking data indicate that this closure only protects a small part of the foraging areas of adult females (Chilvers *et al*. 2005, Chilvers 2009).

2) Output controls: restrict the number of New Zealand Sea Lions the trawl fishery may kill incidentally within designated fishery management zones before the zone is closed for the season (Chilvers 2008).

3) Sea Lion exclusion devices (SLEDs): SLEDs were introduced to the fishery in 2001. A SLED is a metal grid fixed inside the trawl net that allows smaller objects, such as squid, to pass into the cod-end, while larger objects are directed to an escape hatch opening. There is uncertainty about the efficacy of SLEDs and the overall impact of fishery interactions on New Zealand Sea Lion populations.

Credits

Assessor(s): Chilvers, B.L.

Reviewer(s): Goldsworthy, S.D.

Contributor(s): Gales, N.J.

Facilitators(s) and Compiler(s): Lowry, L., Chiozza, F., Ahonen, H. & Battistoni, A.

Bibliography

Baker, C.S., Chilvers, B.L., Constantine, R., DuFresne, S., Mattlin, R.H., van Helden, A. and Hitchmough, R. 2010. Conservation status of New Zealand marine mammals (suborders Cetacea and Pinnipedia), 2009. *New Zealand Journal of Marine and Freshwater Research* 44(2).

Berkson, J.M. and DeMaster, D.P. 2011. Use of pup counts in indexing population changes in pinnipeds. *Canadian Journal of Fisheries and Aquatic Sciences* 42: 873-879.

Castinel, A., Duignan, P.J., Pomroy, W.E., Lopez-Villalobos, N., Gibbs, N.J., Chilvers, B.L. and Wilkinson, I. 2007. Neonatal mortality in New Zealand sea lions (*Phocarctos hookeri*) at Sandy Bay, Enderby Island, Auckland Islands from 1998 to 2005. *Journal of Wildlife Diseases* 43: 461-474.

Castinel, A., Grinberg, A., Pattison, R., Pomroy, B., Rogers, L. and Wilkinson, I. 2007. Characterization of Klebsiella pneumoniae isolates from NZ sea lions (*Phocarctos hookeri*) pups during and after the epidemics on Enderby Island, Auckland Islands. *Veterinary Microbiology* 122: 178-184.

Childerhouse, S. 2007. Conservation biology of New Zealand sea lions (*Phocarctos hookeri*). Thesis, Otago University.

Childerhouse, S. 2014. Preliminary Report for CSP Project 4522 New Zealand sea lion ground component 2013/14. .

Childerhouse, S. and Gales, N. 1998. Historical and modern distribution and abundance of the New Zealand sea lion, *Phocarctos hookeri*. *New Zealand Journal of Zoology* 25: 1-16.

Childerhouse, S., Dix, B. and Gales, N.J. 2001. Diet of New Zealand sea lions (*Phocarctos hookeri*) at the Auckland Islands. *Wildlife Research* 28: 291-298.

Childerhouse, S., Gibbs N., McAlister G., McConkey S., McConnell H., McNally N. and Sutherland D. 2005. Distribution, abundance and growth of New Zealand sea lion *Phocarctos hookeri* pups on Campbell Island. *New Zealand Journal of Marine and Freshwater Research* 39: 889-898.

Chilvers, B.L. 2008. New Zealand sea lions (*Phocarctos hookeri*) and squid trawl fisheries: bycatch problems and management options. *Endangered Species Research*.

Chilvers, B.L. 2009. Foraging locations of a decreasing colony of New Zealand sea lions (*Phocarctos hookeri*). *New Zealand Journal of Ecology* 33: 106-113.

Chilvers, B.L. 2012a. Life-history traits of New Zealand sea lions, Auckland Islands, during a period of significant pup production decline. *Journal of Zoology, London* 287: 240-249.

Chilvers, B.L. 2012b. Population viability analysis of New Zealand sea lions, Auckland Islands, New Zealand's sub-Antarctics: assessing relative impacts and uncertainty. *Polar Biology* 35: 1607-1615.

Chilvers, B.L., Amey, J.M., Huckstadt, L.A. and Costa, D.P. 2011. Investigating foraging utilization distribution of female New Zealand sea lions, Auckland Islands. *Polar Biology* 34: 565-574.

Chilvers, B.L. and Mackenzie, D. 2010. Age and sex specific survival estimates incorporating tag loss for New Zealand sea lions, *Phocarctos hookeri*. *Journal of Mammology* 91: 758-767.

Chilvers, B.L. and Wilkinson, I.S. 2009. Diverse foraging strategies in lactating New Zealand sea lions. *Marine Ecology Progress Series* 378: 299-308.

Chilvers, B.L., Robertson, B.C., Wilkinson, I.S. and Duignan, P.J. 2006. Growth and survival of New Zealand sea lions, *Phocarctos hookeri*: birth to 3 months. *Polar Biology* 30: 459–469.

http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T17026A1306343.en

Chilvers, B. L., Wilkinson, I. S. and Childerhouse, S. 2007. New Zealand sea lion, *Phocarctos hookeri*, pup production – 1995 to 2005. *New Zealand Journal of Marine and Freshwater Research* 41: 205–213.

Chilvers, B.L., Wilkinson, I.S. and McKenzie, D. 2010. Predicting life-history traits for female New Zealand sea lions, *Phocarctos hookeri*: intergrating short-term mark-recapture data and population modeling. *Journal of Agricultural, Biological and Ecological Statistics* 15: 259-278.

Chilvers, B.L., Wilkinson, I.S., Duignan, P.J. and Gemmell, N.J. 2005. Summer foraging areas for lactating New Zealand sea lions, *Phocarctos hookeri*. *Marine Ecology Progress Series* 304: 235–247.

Chilvers, B.L., Wilkinson, I.S., Duignan, P.J. and Gemmell, N.J. 2006a. Diving to extremes: are New Zealand sea lions pushing their limits in a marginal habitat? *Journal of Zoology, London* 269: 233–240.

Geschke, K. and Chilvers, B.L. 2009. Managing big boys: a case study on remote anaesthesia and satellite tracking of adult male New Zealand sea lions (*Phocarctos hookeri*). *Wildlife Research* 36: 666-674.

IUCN. 2015. The IUCN Red List of Threatened Species. Version 2015.2. Available at: www.iucnredlist.org. (Accessed: 23 June 2015).

King, J. 1960. Sea-lions of the genera *Neophoca* and *Phocarctos*. *Mammalia* 24: 445-456.

Lalas, C., Ratz, H., McEwan, K. and McConkey, S.D. 2007. Predation by New Zealand sea lions (*Phocarctos hookeri*) as a threat to the viability of Yellow-eyed Penguins (*Megadyptes antipodes*) at Otago Peninsula, New Zealand. *Biological Conservation* 135: 235-246.

Maloney, A., Chilvers, B.L., Muller, C.G. and Haley, M. 2012. Increasing pup production of New Zealand sea lions at Campbell Island/Motu Ihupuku: can it continue? *New Zealand Journal of Zoology* 39: 19-29.

Mcconkey, S., Lalas, C. and Dawson, S. 2002. Moult and changes in body shape and pelage in known-age male New Zealand sea lions (*Phocarctos hookeri*). *New Zealand Journal of Zoology* 29: 53-61.

Meynier, L., Morel, P.C.H., Chilvers, B.L., Mackenzie, D.D.S. and Duignan, P.J. 2010. Quantitative fatty acid signature analysis on New Zealand sea lions: model sensitivity and diet estimates. *Journal of Mammalogy* 91: 1484-1495.

Reijnders, P., Brasseur, S., van der Toorn, J., van der Wolf, P., Boyd, I., Harwood, J., Lavigne, D. and Lowry, L. 1993. *Seals, Fur Seals, Sea Lions, and Walrus. Status survey and conservation action plan*. IUCN/SSC Seal Specialist Group. IUCN, Gland, Switzerland.

Roberts, J. and Doonan, I. 2014. New Zealand sea lion: demographic assessment of the causes of decline at the Auckland Islands. Demographic model options: correlative assessment. Draft report prepared for Department of Conservation, NIWA .

Roberts, J., Fu, D., Doonan, I. and Francis, C. 2014. New Zealand sea lion: demographic assessment of the causes of decline at the Auckland Islands. Demographic model options: demographic assessment. Report prepared for Department of Conservation, NIWA client report No: WLG2014-60.

Robertson B.C. and Chilvers, B.L. 2011. New Zealand sea lions *Phocarctos hookeri* possible causes of population decline. *Mammal Review* 41: on line.

Robertson, B.C., Chilvers, B.L., Duignan, P.J., Wilkinson, I.S. and Gemmell, N.J. 2006. Dispersal of breeding, adult male *Phocarctos hookeri*: implications for disease transmission, population management and species recovery. *Biological Conservation* 127: 227-236.

Thompson, F.N. and Abraham, E.R. 2009. Estimation of the capture of New Zealand sea lions (*Phocarctos hookeri*) in trawl fisheries from 1995–96 to 2006–07. New Zealand Aquatic Environment and Biodiversity Report No. 41.

http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T17026A1306343.en

Thompson, F.N., Berkenbusch, K., and Abraham, E.R. 2013. Marine mammal bycatch in New Zealand trawl fisheries, 1995–96 to 2010–11. New Zealand Aquatic Environment and Biodiversity Report No. 105. Ministry for Primary Industries, New Zealand.

Townsend, A.J., de Lange, P.J., Duffy, C.A.J., Miskelly, C.M., Molloy, J. and Norton, D.A. 2008. *New Zealand Threat Classification System Manual*. Department of Conservation, Wellington.

Wilkinson, I., Burgess, J. and Cawthorn, M. 2003. New Zealand sea lions and squid: Managing fisheries impacts on a threatened marine mammal. In: N. Gales, M. Hindell and R. Kirkwood (eds), *Marine mammals: fisheries, tourism, and management issues*, pp. 192-207. CSIRO Publishing, Collingwood, Victoria Australia.

Citation

Chilvers, B.L. 2015. *Phocarctos hookeri. The IUCN Red List of Threatened Species 2015*: e.T17026A1306343. http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T17026A1306343.en

Disclaimer

External Resources

For Supplementary Material, and for Images and External Links to Additional Information, please see the Red List website.

Appendix

Habitats

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Habitat	Season	Suitability	Major Importance?
1. Forest -> 1.3. Forest - Subantarctic	Resident	Suitable	Yes
3. Shrubland -> 3.2. Shrubland - Subantarctic	Resident	Suitable	Yes
9. Marine Neritic -> 9.1. Marine Neritic - Pelagic	Resident	Suitable	Yes
10. Marine Oceanic -> 10.1. Marine Oceanic - Epipelagic (0-200m)	Resident	Suitable	Yes
10. Marine Oceanic -> 10.2. Marine Oceanic - Mesopelagic (200-1000m)	Resident	Suitable	Yes
12. Marine Intertidal -> 12.1. Marine Intertidal - Rocky Shoreline	Resident	Suitable	Yes
12. Marine Intertidal -> 12.2. Marine Intertidal - Sandy Shoreline and/or Beaches, Sand Bars, Spits, Etc	Resident	Suitable	Yes
12. Marine Intertidal -> 12.3. Marine Intertidal - Shingle and/or Pebble Shoreline and/or Beaches	Resident	Suitable	Yes
13. Marine Coastal/Supratidal -> 13.1. Marine Coastal/Supratidal - Sea Cliffs and Rocky Offshore Islands	Resident	Suitable	No

Threats

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Threat	Timing	Scope	Severity	Impact Score
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.4. Unintentional effects: (large scale)	Ongoing	Majority (50-90%)	Slow, significant declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality		
8. Invasive & other problematic species & genes -> 8.2. Problematic native species	Ongoing	-	-	-
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
10. Geological events -> 10.2. Earthquakes/tsunamis	Unknown	Unknown	Causing/could cause fluctuations	Unknown
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion		

Conservation Actions in Place

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Conservation Actions in Place
In-Place Land/Water Protection and Management

http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T17026A1306343.en

Conservation Actions in Place
Occur in at least one PA: Yes

Conservation Actions Needed

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Conservation Actions Needed
1. Land/water protection -> 1.2. Resource & habitat protection
3. Species management -> 3.2. Species recovery
4. Education & awareness -> 4.3. Awareness & communications
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.2. National level

Research Needed

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Research Needed
1. Research -> 1.2. Population size, distribution & trends
1. Research -> 1.3. Life history & ecology
1. Research -> 1.5. Threats
2. Conservation Planning -> 2.1. Species Action/Recovery Plan
3. Monitoring -> 3.1. Population trends

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km²): 882408
Continuing decline in area of occupancy (AOO): No
Extreme fluctuations in area of occupancy (AOO): No
Estimated extent of occurrence (EOO) (km²): 939120
Continuing decline in extent of occurrence (EOO): No
Extreme fluctuations in extent of occurrence (EOO): No
Continuing decline in number of locations: No
Extreme fluctuations in the number of locations: No
Lower elevation limit (m): 0
Upper elevation limit (m): 500

Distribution
Lower depth limit (m): 700
Upper depth limit (m): 0
Population
Number of mature individuals: 3031
Continuing decline of mature individuals: Yes
Extreme fluctuations: No
Population severely fragmented: No
Continuing decline in subpopulations: No
Extreme fluctuations in subpopulations: No
All individuals in one subpopulation: Yes
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: No
Generation Length (years): 10.75
Movement patterns: Not a Migrant
Congregatory: Congregatory (and dispersive)

The IUCN Red List Partnership

The IUCN Red List of Threatened Species™ is produced and managed by the IUCN Global Species Programme, the IUCN Species Survival Commission (SSC) and The IUCN Red List Partnership. The IUCN Red List Partners are: BirdLife International; Botanic Gardens Conservation International; Conservation International; Microsoft; NatureServe; Royal Botanic Gardens, Kew; Sapienza University of Rome; Texas A&M University; Wildscreen; and Zoological Society of London.