

CONCLUSIONS AND RECOMMENDATIONS

Marlborough’s extensive and intricate coastline has a diverse marine environment. A total of 129 sites of biological significance have been identified in the area stretching from Cape Soucis (Croisilles Harbour), through the Marlborough Sounds and down the east coast of Marlborough to Willawa Point*.

Due to the nature of the marine environment and the difficulties associated with underwater surveys there are large areas of Marlborough’s marine environment that have never been surveyed and the knowledge of the ecosystem is limited. Therefore the list and location of significant sites in this report is not complete. Sites not shown on the maps may well still have significant biological value. Interpretation and use of this report must keep these limitations in mind. For example, there will be many significant sites that have yet to be discovered or recorded. Also, many marine sites have been ranked “L” because they are not well known and it is probable that some could have been ranked higher if more information was available. Therefore it should not be assumed that sites with no identified status do not support “M” or “H” values. Many sites that did not achieve medium or high scores still have ecological value and should not be regarded as being of “no value”.

The amount and type of information for each site varied considerably. Some sites have had extensive scientific assessments, others have only been briefly visited by scientists and some are known only through personal accounts from fishers or divers. The spatial extent of sites that have not been surveyed cannot be accurately mapped. It is important that these sites be surveyed to describe biological attributes and determine boundaries. A list of sites with limited information but potentially supporting higher biological values is listed in Table 11.

The type and size of significant sites identified varies greatly, from large marine areas with highly mobile marine mammals, such as the Hector’s dolphin in Cloudy and Clifford Bays, through to small sites occupied by non-mobile species such as the 1.9 ha rhodolith bed in Picnic Bay, Tawhitinui Reach. There are significant sites that support threatened species, such as the sea sedge, and sites that are significant for their broader biodiversity or ecological values. Some sites, such as biogenic reefs, are significant because environmental conditions have enabled a species or number of species to become so abundant that they form three dimensional structures on the sea floor. These biogenic reefs provide habitat for many other species including commercially important ones^{90,320}.

Many of the significant sites identified in this report are fragile and therefore vulnerable to human disturbance and damage from a variety of sources. Many more sites could be considered significant in the future if they were managed and allowed to recover to the state they would have been before human activities degraded them.

At present, only one significant marine site is totally protected (Long Island-Kokomohua Marine Reserve^{91,113,114}) despite the many benefits of protected marine areas^{18,64,66,80,91,98,145,146,208,210,244,293,345,346}. The majority of significant sites are largely unprotected, apart from some fisheries restrictions, and

Waitata Bay
(Rob Davidson)



* NOTE: Some significant sites are made up of multiple parts.



remain vulnerable, particularly the offshore soft sediment habitats and communities^{40,90}. Many of the biological communities that are found at these sites are easily damaged and the recovery process slow.

There are still many pressures facing the marine environment. Infilling and reclamation gradually removes habitat available for many species and therefore any applications to infill or reclaim areas such as within marinas and ports should be carefully assessed in terms of scale, need and impacts. It is important to continue to control and reduce the amount of contaminants reaching the marine environment. This can be achieved by managing effluent, chemical use and disposal, and by establishing buffer zones between the sea and contaminant sources such as farms, towns, and industrial areas. Ongoing border and vector control is important in order to minimise the chance of new pest species arriving in New Zealand as it is virtually impossible to control subtidal marine pests once they establish.

It is important that long-term, co-ordinated management of significant marine sites in Marlborough, including surveying and identifying new sites, is supported. This programme should have the following aims.

- 1 Survey the significant sites identified in this report where the values and boundaries are uncertain.
- 2 Identify and describe new sites through field surveys and interviews with scientists, iwi, fishers, conservationists and local community groups.
- 3 Identify threats relevant to individual sites (not all sites or values are necessarily threatened).
- 4 Co-ordinate a multi-agency approach to manage each significant site or group of sites to ensure long-term sustainability and protection.
- 5 Ensure biological information is stored in a database for future use.

Table 11 - List of Sites that have been included in the present report, but require further investigation to determine ecological values and significance

Number	Name	Type	Information source	Information required
2.3	Northwest D’Urville Islands	Biogenic soft bottom habitat	Commercial fisher, mention in paper (Bradstock & Gordon 1983)	Determine presence/absence biogenic habitats, boundary and quality of any biogenic habitats
2.20	Chetwodes	Biogenic soft bottom habitat	C. Duffy pers. comm.	Determine presence/absence biogenic habitats, boundary and quality of any biogenic habitats
2.31	Port Gore - outer	Biogenic soft bottom habitat	Commercial fisher, mention in paper (Bradstock & Gordon 1983)	Determine presence/absence biogenic habitats, boundary and quality of any biogenic habitats
2.32	Port Gore	Biogenic soft bottom habitat	Information from scientist (Cameron Hay)	Determine presence/absence biogenic habitats, boundary and quality of any biogenic habitats
3.21	Kenepuru Estuary	Estuary	Davidson et al., 1995	Qualitative and quantitative survey of habitats and associated species
4.11	Bob’s Bay and Waikawa Bay	Shell tubeworm bed	Duffy et al., in prep. Waikawa marina proposal	Identify sabellid tubeworm, determine extent of beds
7.2	Cape Jackson	Biogenic soft bottom habitat	Commercial fisher	Determine presence/absence biogenic habitats, boundary and quality of any biogenic habitats
9.2	Offshore Cape Campbell to Ward Beach	Macroalgal forest	Observations	Determine presence/absence biogenic habitats, boundary and quality of any biogenic habitats



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*Hallam Cove
(Rob Davidson)*





REFERENCES

- 1 Adams, N. 1994. Seaweeds of New Zealand, an illustrated guide. Canterbury University Press.
- 2 Aldridge, A. E. 1999. Brachiopod outline and episodic growth. *Paleobiology: Vol. 25, No. 4: 471–482.*
- 3 Allan, H.H. 1982. Flora of New Zealand. Volume 1. P.D. Hasselberg, Government Printer, Wellington.
- 4 Allan, L.; Walshe, K. 1984. Update on New Zealand horse mussel research. *Catch '84, 11(8): 14.*
- 5 Anderson, O. F.; Bagley, N. W.; Hurst, R. J.; Francis, M. P.; Clark, M. R.; McMillan, P. J. 1998. Atlas of New Zealand fish and squid distributions from research bottom trawls. *NIWA Technical Report 42.* NIWA, Wellington. 303 pp.
- 6 Annala, J.H. 1979. Mortality estimates for the New Zealand rock lobster, *Jasus edwardsii*. *Fishery Bulletin. 77:471-480.*
- 7 Annala, J. H. 1983. New Zealand rock lobsters: biology and fishery. Occasional Publications, Fisheries Research Division, N. Z. Ministry of Agriculture and Fisheries, 42: 1–36.
- 8 Annala, J.H. 1991. Factors influencing fecundity and population egg production of *Jasus* species. Pp. 301–315 In Wenner, A. and Kuris, A. (eds.), Crustacean Issues 7, Crustacean Egg Production. A.A. Balkema, Rotterdam.
- 9 Annala, J.H.; Breen, P.A. 1989. Yield- and egg-per-recruit analyses for the New Zealand rock lobster, *Jasus edwardsii*. *New Zealand Journal of Marine and Freshwater Research, 23: 93–105.*
- 10 Annala, J.H.; Bycroft, B.L. 1985. Growth rate of juvenile rock lobsters (*Jasus edwardsii*) at Stewart Island, New Zealand. *New Zealand Journal of Marine and Freshwater Research, 19: 445 – 454.*
- 11 Annala, J.H.; Bycroft, B.L. 1987. Fecundity of the New Zealand red rock lobster, *Jasus edwardsii*. *New Zealand Journal of Marine and Freshwater Research, 21: 591–597.*
- 12 Annala, J. H.; Bycroft, B. L. 1988. Growth of rock lobster (*Jasus edwardsii*) in Fiordland, New Zealand. *New Zealand Journal of Marine and Freshwater Research, 22: 29–41.*
- 13 Annala, J.H.; Bycroft, B.L. 1993. Movements of rock lobsters (*Jasus edwardsii*) tagged in Fiordland, New Zealand. *New Zealand Journal of Marine and Freshwater Research, 27: 183–190.*
- 14 Annala, J.H.; McKoy, J.L.; Booth, J.D.; Pike, R.B. 1980. Size at the onset of sexual maturity in female rock lobsters *Jasus edwardsii* (Decapoda: Palinuridae) in New Zealand. *New Zealand Journal of Marine and Freshwater Research, 14: 217-227.*
- 15 Anon. 2001. Horse mussels enhance biodiversity in coastal soft sediments. *Biodiversity Update, 2: 5.*
- 16 Arnould, John P. Y. 2002. Southern Fur Seals. In: W. F. Perrin, B. Wursig, J. G. M. Thewissen (Eds). Encyclopedia of Marine Mammals. Academic Press. pp 1146-1151.
- 17 Atabey, N. 1998. Facies characteristics and geographic distribution of rhodoliths and maerls (red algae) in southern shelf of the Sea of Marmara. *Mineral Res. Expl. Bull., 120: 55-61.*
- 18 Babcock, R. C.; Kelly, S.; Shears, N. T.; Walker, J. W.; Willis T. J. 1999. Changes in community structure in temperate marine reserves. *Marine Ecology Progress Series, 189:125–134.*
- 19 Bagley, N. W.; Anderson, O. F.; Hurst, R. J.; Francis, M. P.; Taylor, P. R.; Clark, M. R.; Paul, L. J. 2000. Atlas of New Zealand fish and squid distributions from midwater trawls, tuna longline sets, and aerial sightings. *NIWA Technical Report 72.* NIWA, Wellington. 171 pp.
- 20 Baker, A. N. 1972. Reproduction, early life history and age growth relationships of the New Zealand pilchard, *Sardinops neopilchardus* (Steindachner). *Fisheries Research Bulletin 5.* New Zealand Marine Department, Wellington. 64 pp.
- 21 Baker, A. N. 1973. Spawning and development of the New Zealand sprat, *Sprattus antipodum* (Hector). *Zoology Publications Victoria University of Wellington, 62.* 12 pp.
- 22 Baker, A. N., B. Madon. 2007. Bryde's whales (*Balaenoptera cf. brydei* Olsen 1913) in the Hauraki Gulf and northeastern New Zealand waters. Science for Conservation 272. Department of Conservation, Wellington, New Zealand. 23p.
- 23 Baldwin, R. 1987. Dinoflagellate resting cysts isolated from sediments in Marlborough Sounds, New Zealand. *New Zealand Journal of Marine and Freshwater Research, 21: 543-533.*
- 24 Barr, K. 1997. The impacts of marine tourism on the behaviour and movement patterns of dusky dolphins (*Lagenorhynchus obscurus*) at Kaikoura, New Zealand. Thesis. University of Otago, Dunedin, New Zealand. 97 pp.
- 25 Barr, K. and E. Slooten. 1999. Effects of tourism on dusky dolphins at Kaikoura. Conservation Advisory Science Notes No 229, Department of Conservation, Wellington, New Zealand.

- 26 Basso, D.; Nalin, R.; Nelson, C. S. 2009. Shallow-water sporolithon rhodoliths from North Island (New Zealand). *Palaios*, 24(2): 92-103.
- 27 Batson, P.B. and Probert, P.K. 2000. Bryozoan thickets off Otago Peninsula. New Zealand Fisheries Assessment Report 2000/46: 1-31.
- 28 Behrens, S., R. Constantine. 2008. Large whale and vessel collisions in northern New Zealand. Paper SC/60/BC9, presented to IWC, Santiago, Chile, 2008. 14p.
- 29 Bejder, L., S.M. Dawson, and J.A. Harraway. 1999. Responses by Hector's dolphins to boats and swimmers in Porpoise Bay, New Zealand. *Marine Mammal Science*. 15:738-750.
- 30 Bell, M.; Bell, B.D. and Bell, E.A. 2005. Translocation of fluttering shearwater (*Puffinus gavia*) chicks to create a new colony. *Notornis* 52: 11-15.
- 31 Bell, B.D. 1986. The conservation status of New Zealand wildlife. New Zealand Wildlife Service. Occasional Publication No. 12. 103 p.
- 32 Black, C.S. 1978. The distribution of flounder in the Vernon Lagoons, Blenheim. Bachelor of Science Thesis, Victoria University of Wellington.
- 33 Blocher, J. and Philipp, M. 1985. Aspects of the reproductive biology of *Mimulus repens* (Scrophulariaceae) at Lake Eilesmere, Canterbury, New Zealand. *New Zealand Journal of Botany*, 1985, Vol. 23: 141-149.
- 34 Booth, J.D. 2001: Habitat preferences and behaviour of newly settled *Jasus edwardsii* (Palinuridae). *Marine and Freshwater Research*, 52: 1055-1065.
- 35 Booth J.D.; Ayers, D. 2005. Characterising shelter preferences in captive juvenile *Jasus edwardsii* (Palinuridae). *New Zealand Journal of Marine and Freshwater Research*, 39: 373-382.
- 36 Booth, J. D.; Bradford, E.; Chiswell, S. M.; Forman, J. S.; Renwick, J. A.; Stotter, D. R. 1999. Recruitment of the red rock lobster, *Jasus edwardsii*, with management implications. New Zealand Fisheries Assessment Research Document 99/10. Ministry of Fisheries, Wellington. 103 pp.
- 37 Booth, J.D.; Tarring, S.C. 1986. Settlement of the red rock lobster (*Jasus edwardsii*), near Gisborne, New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 20(2): 291-297.
- 38 Bradford, J. M.; Lapennas, P. P.; Murtagh, R. A.; Chang, F. H.; Wilkinson, V. 1986. Factors controlling summer phytoplankton production in greater Cook Strait, New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 20: 253-279.
- 39 Bradford, R. W.; Bruce, B. D.; Chiswell, S. M.; Booth, J. D.; Jeffs, A. G.; Wotherspoon, S. 2005. Vertical distribution and diurnal migration patterns of *Jasus edwardsii* phyllosomas off the east coast of the North Island, New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 39: 593-604.
- 40 Bradstock, M., and Gordon, D.P. 1983. Corallike bryozoan growths in Tasman Bay, and their protection to conserve commercial fish stocks. *N.Z. Journal Marine Freshwater Research Vol. 8., pp 1516.*
- 41 Brown, D.A. 2000. Stephens Island, Ark of light. Cloudy Bay publishing.
- 42 Brown, D.A. and Wilson, P.R. 2004. Establishment and growth of an Australasian gannet colony at Waimaru, Pelorus Sound and a new colony at Arapawa Island, Queen Charlotte Sound. *Notornis* 51: 227-229.
- 43 Brown, M. T.; Nyman, M. A.; Keogh, J. A.; Chin, N. K. M. 1997. Seasonal growth of the giant kelp *Macrocystis pyrifera* in New Zealand. *Marine Biology*, 129: 417-424.
- 44 Brownell Jr., R. L. 2002. Illegal and pirate whaling. In: W. F. Perrin, B. Wursig, J. G. M. Thewissen (Eds). Encyclopedia of marine mammals. Academic Press. pp 608-612.
- 45 Burns, D. A. 1977. Distribution of planktonic diatoms in Pelorus Sound, South Island, New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 11: 275-295.
- 46 Butler, M. J.; MacDiarmid, A. B.; Booth, J. D. 1999. The cause and consequence of ontogenetic changes in social aggregation in New Zealand spiny lobsters. *Marine Ecology Progress Series*, 188:179-191.
- 47 Butler, D. 1998. Birdlife of the Marlborough Sounds - report of National Parks and Reserves bird mapping scheme. Unpublished.
- 48 Campbell, D.J. 1967. The Trio Islands, Marlborough Sounds; an ecological study of a bird modified island. MSc thesis, Victoria University of Wellington.
- 49 Carbines, G.; Jiang, W.; Beentjes, M.P. 2004. The impact of oyster dredging on the growth of blue cod, *Parapercis colias*, in Foveaux Strait, New Zealand. *Aquatic Conservation: Marine and Freshwater Ecosystems*, Vol. 14 Issue 5, 491 - 504.

- 50 Carbines, G. 2004b. Age, growth, movement and reproductive biology of blue cod (*Parapercis colias*-Pinguipedidae): implications for fisheries management in the South Island of New Zealand. Unpublished PhD thesis, University of Otago, Dunedin, New Zealand. 211 p.
- 51 Carbines, G. D. 1999. Large hooks reduce catch-and-release mortality of blue cod *Parapercis colias* in the Marlborough Sounds of New Zealand. *North American Journal Fish Management*. 19: 992-998.
- 52 Carbines, G.D., 1993. The ecology and early life history of *Notolabrus celidotus* (Pisces: Labridae) around mussel farms in the Marlborough Sounds. Unpublished MSc thesis, Department of Zoology, University of Canterbury. Christchurch, New Zealand.
- 53 Carter, S. 1995. *Pachycerianthus* (Anthozoa: Ceriantharia: Cerianthidae); two newly described species from Port Jackson, Australia. *Records of the Australian Museum* 47 (1):1-6.
- 54 Chang, F. H. 1983. The mucilage-producing *Phaeocystis pouchetii* (Prymnesiophyceae) cultured from the "Tasman Bay Slime". *New Zealand journal of marine and freshwater research*, 17: 165-168.
- 55 Chapman, A. R. O. 1981. Stability of sea urchin dominated barren grounds following destructive grazing of kelp in St. Margaret's Bay, Eastern Canada. *Marine Biology*, 62(4): 307-311.
- 56 Chapman, B.E. and J.R. Richardson 1981. Recent species of *Neothyris* (Brachiopoda: Terebratellinae). *New Zealand Journal of Zoology*, 8(2):157-161.
- 57 Childerhouse, S. and A Baxter. 2010. Human interactions with dusky dolphins: A management perspective. In: The dusky dolphin: master acrobat off different shores, Ed. by B. and M. Wursig, Academic/Elsevier Press, London, UK. pp 245-275.
- 58 Chipman, W.A.; Hopkins, J.G. 1954. Water filtration by the bay scallop, *Pecten irradians*, as observed with the use of radioactive plankton. *The Biological Bulletin*, 107: 80-91.
- 59 Chiswell, S. M.; Booth, J. D. 1999. Rock lobster *Jasus edwardsii* larval retention the Wairarapa Eddy off New Zealand. *Marine Ecology Progress Series*, 183: 227-240.
- 60 Clapham, P. J. 2002. Humpback Whale. In: W. F. Perrin, B. Wursig, J. G. M. Thewissen (Eds). Encyclopedia of marine mammals. Academic Press. pp 589-592.
- 61 Cocito, S. 2004. Bioconstruction and biodiversity: their mutual influence. *Scientifica Marina*, 68: 137-144.
- 62 Cohen, B. L. 2000. Monophyly of brachiopods and phoronids: reconciliation of molecular evidence with Linnaean classification (the subphylum Phoroniforrea nov.). *Proc. R. Soc. Lond. B* (2000): 267, 225-231.
- 63 Cohen, B. L. 2001. Chapter 13. Brachiopod molecular phylogeny. Pp 121-128, in C. Howard, C. Brunton, L. Robin, M. Cocks and S. L. Long (eds): Brachiopods Past and Present. Taylor & Francis, London. 438 pp. (note: this includes specimens collected from Blackwood Bay, Queen Charlotte Sound).
- 64 Cole, R. G.; Villouta, E.; Davidson, R. J. 2000. Direct evidence of limited dispersal of the reef fish *Parapercis colias* (Pinguipedidae) within a marine reserve and adjacent fished areas. *Aquatic Conservation*, 10(6): 421-436.
- 65 Cole, R.; Grange, K. 1996. Under the mussel farm. *Seafood New Zealand*, Vol. 4, No. 10, pp 25-26.
- 66 Cole, R.G.; Ayling, T.M.; Creese, R.G. 1990. Effects of marine reserve protection at Goat Island, northern New Zealand. *New Zealand Journal of Marine and Freshwater Research* 24(2): 197-210.
- 67 Collins, A.G.; Schuchert, P.; Marques, A.C.; Jankowski, T. Medina, M. Schier Water, B. 2006. Medusozoan phylogeny and character evolution clarified by new large and small subunit rDNA data and an assessment of the utility of phylogenetic mixture models. *Systematic Biology*, 55(1): 97-115
- 68 Constantine, R. 2002. The behavioural ecology of the bottlenose dolphins (*Tursiops truncatus*) of Northeastern New Zealand: a population exposed to tourism. Unpub. PhD thesis, University of Auckland, New Zealand. 195p.
- 69 Constantine, R., E. S. Baker. 1997. Monitoring the commercial swim-with-dolphin operations in the Bay of Islands, New Zealand. Department of Conservation, Wellington, New Zealand. 59 pp.
- 70 Courtney, S. 1990. Biological values of Forsyth Island - a reconnaissance survey. Internal Report No 6. Department of Conservation.
- 71 Cranfield, H.W.; Carbines, G.; Michael, K.P.; Dunn, A.; Stotter, D.R.; Smith, D.J. 2001. Promising signs of regeneration of blue cod and oyster habitat changed by dredging in Foveaux Strait, southern New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 2001, Vol. 35: 897-908.
- 72 Cranfield, H. J.; Gordon, D. P.; Willan, R. C.; Marshall, B. A.; Battershill, C. N.; Francis, M. P.; Nelson, W. A.; Glasby, C. J.; Read, G. B. 1998. Adventive marine species in New Zealand. NIWA Technical Report 34. National Institute of Water and Atmospheric Research, Wellington. 48 pp.



- 73 Cruz, J.B.; Lalas, C.; Jillett, J.B.; Kitson, J.C.; Lyver, P.O'B.; Imber, M.; Newman, J.E.; Moller, H. 2001. Prey spectrum of breeding sooty shearwaters (*Puffinus griseus*) in New Zealand. *New Zealand Journal of Marine and Freshwater Research*. Vol. 35: 817-829. <http://www.rsnz.org/publish/nzjmf/2001/71.php>.
- 74 Cryer, M.; O'Shea, S.; Gordon, D.; Kelly, M.; Drury, J.; Morrison, M.; Hill, A.; Saunders, H.; Shankar, U.; Wilkinson, M.; Foster, G. 2000. Distribution and structure of benthic invertebrate communities between North Cape and Cape Reinga. Final Research Report for Ministry of Fisheries Research Project ENV9805 Objectives 1-4: 1-154.
- 75 Cummings, V.J.; Thrush, S.F.; Hewitt, J.E.; Turner, S.J. 1998. The influence of the pinnid bivalve *Atrina zelandica* (Gray) on benthic macroinvertebrate communities in soft-sediment habitats. *Journal of Experimental Marine Biology and Ecology*, 228: 227-240
- 76 Dann, P. 1994. The abundance, breeding distribution and nest sites of blue penguins in Otago, New Zealand. *Notornis* 41: 157-166.
- 77 Davidson, R. J. 2005. Report on freshwater and estuarine ecological values of the Kaiuma Bay area in relation to a proposed residential subdivision. Prepared by Davidson Environmental Limited for RMco. Ltd. Survey and Monitoring Report No. 488.
- 78 Davidson, R. J. 2004. Long Island-Kokomohua Marine Reserve, Queen Charlotte Sound, 1992-2003. Research, survey and monitoring report n. 343. Davidson Environmental Ltd. Unpublished report for Nelson/Marlborough Conservancy, Department of Conservation, Nelson. 124 pp.
- 79 Davidson, R. J. 2002. Summary of known ecological values of Paterson Inlet Prepared by Davidson Environmental Ltd. for Department of Conservation. Research, survey and monitoring report No. 176.
- 80 Davidson R. J. 2001. Changes in population parameters and behaviour of blue cod (*Parapercis colias*) in Long Island-Kokomohua Marine Reserve, Marlborough Sounds, New Zealand *Aquatic Conservation: Marine & Freshwater Ecosystems* 11: 417-435.
- 81 Davidson, R. J. 2001a. Biological report on a proposed marine farm extension located in Little Nikau Bay, Pelorus Sound. Survey and Monitoring Report No. 403. Prepared by Davidson Environmental Limited for Ngati Rarua Atiawa Iwi Trust.
- 82 Davidson, R.J. 2000. Additional information on a proposed marine farm located west of Grant Bay, Pelorus Sound. Survey and Monitoring Report No. 344. Prepared by Davidson Environmental Limited for A. and S. King.
- 83 Davidson, R. J. 2000a. Biological report on a proposed marine farm located in Tawhitinui Reach, Pelorus Sound. Prepared by Davidson Environmental Limited for Talley's Fisheries. Survey and Monitoring Report No. 336.
- 84 Davidson, R. J. 2000c. Biological monitoring of boulder and cobble shores in Tory Channel and Queen Charlotte Sound in relation to ferry wakes: 1995 to 2000. Prepared by Davidson Environmental Limited for the Marlborough District Council. Research, Survey and Monitoring Report No. 341.
- 85 Davidson, R. J. 1998. Ecological baseline for intertidal and shallow subtidal cobble dominated shore, northern entrance, Queen Charlotte Sound. Report no. 163 prepared for Department of Conservation, Nelson by Davidson Environmental Ltd.
- 86 Davidson, R.J. 1998a. Biological report on proposed marine farm sites located in Pig Bay, Port Gore. Survey and Monitoring Report No. 174. Prepared by Davidson Environmental Limited for the Department of Conservation.
- 87 Davidson, R. J. 1998b. Preliminary report on ecological issues related to mussel harvesting activities. Report prepared for the Department of Conservation, Wellington by Davidson Environmental Ltd.. Survey and Monitoring Report No. 158, 23p.
- 88 Davidson, R. J. 1995. Long Island-Kokomohua Marine Reserve: subtidal biological baseline report. *Nelson/Marlborough Conservancy Occasional Publication No. 17*. Department of Conservation, Nelson. 83 pp.
- 89 Davidson, R.J.; Richards, L.A.; Abel, W., 2010. Biological monitoring of the ferry route in Tory Channel and Queen Charlotte Sound: 1995 - 2010. Prepared by Davidson Environmental Limited for Marlborough District Council and Department of Conservation. Survey and Monitoring Report No. 643.
- 90 Davidson, R.J.; Richards, L.A.; Duffy, C.A.J.; Kerr, V.; Freeman, D.; D'Archino, R.; Abel, W. 2001. Location and biological attributes of some biogenic habitats located on soft bottom substrata in the Marlborough Sounds. Prepared by Davidson Environmental Limited for Department of Conservation and Marlborough District Council. Survey and Monitoring Report No. 575.
- 91 Davidson, R.J.; Abel, W.; Richards, L.A. 2009. Biological monitoring update of Long Island-Kokomohua Marine Reserve, Queen Charlotte Sound: 1992-2009 Prepared by Davidson Environmental Limited for Department of Conservation, Nelson. Survey and Monitoring Report No. 573.
- 92 Davidson, R.J.; Richards L.A. 2005. Biological monitoring of a relocated mussel farm located in Otanerau Bay, East Bay 2002-2005. Prepared by Davidson Environmental Limited for Marlborough District Council. Survey and Monitoring Report No. 478.

- 93 Davidson, R. J.; Richards, L.A. 2005a. Fisheries Permit biological survey for a paua farm (extension to Li 309) located in Hitaua Bay, Tory Channel. Prepared by Davidson Environmental Ltd. for Tory Channel Aquaculture. Survey and Monitoring Report No. 477.
- 94 Davidson, R.J.; Richards L.A. 2005. Monitoring report on biological communities in Tory Channel and Queen Charlotte Sound in relation to the 18 knot speed restriction. Prepared by Davidson Environmental Limited for Marlborough District Council and the Department of Conservation. Survey and Monitoring Report No. 496.
- 95 Davidson, R. J.; Richards L. 2003a. Biological report on a cockle bed located at the head of Deep Bay, Tory Channel, in relation to log harvesting activities. Prepared by Davidson Environmental Limited for Sounds of Forest. Survey and Monitoring Report No. 449.
- 96 Davidson, R.J. and Richards, L.A. 2003b. Biological report on three sites in Tory Channel in relation to recent or proposed forestry activities. Survey and Monitoring Report No. 444. Unpublished report prepared by Davidson Environmental Ltd for the Marlborough District Council.
- 97 Davidson, R.J. and Pande, A. 2002. Biological report on the benthos under and adjacent to a relocated mussel farm site located in East Bay. Prepared by Davidson Environmental Limited for Marlborough District Council. Survey and Monitoring Report No. 419.
- 98 Davidson, R.J.; Villouta, E.; Cole, R.G.; Barrier, R.G.F. 2002. Effects of marine reserve protection on spiny lobster abundance and size at Tonga Island Marine Reserve, New Zealand. *Aquatic Conservation: Marine & Freshwater Ecosystems*, 12: 213-227.
- 99 Davidson, R. J.; Brown D. A. 2000. A report on the ecology of Havelock Estuary. Pelorus Sound, Marlborough Sounds. Prepared by Davidson Environmental Limited for Marlborough District Council. Survey and Monitoring Report No. 342.
- 100 Davidson, R. J; Abel, W. 1998. Ecological baseline for intertidal and shallow subtidal cobble dominated shores, northern entrance, Queen Charlotte Sound. Prepared by Davidson Environmental Limited for Department of Conservation, Nelson/Marlborough. Survey and Monitoring Report No. 163, 34p.
- 101 Davidson, R. J.; Courtney, S. P.; Millar, I. R.; Brown, D. A.; Deans, N. A.; Clerke, P. R.; Dix, J. C. 1995. Ecologically important marine, freshwater, Island and mainland areas from Cape Soucis to Ure River, Marlborough, New Zealand: recommendations for protection. Department of Conservation report, Nelson/Marlborough Conservancy.
- 102 Davidson, R.J.; Brown, D.A. 1994. Ecological report on four marine reserve options: eastern D'Urville Island area. Department of Conservation. Nelson/Marlborough Conservancy, Occasional Publication No. 22., 41 p.
- 103 Davidson, R. J.; Duffy, C. A. J. 1992. Preliminary intertidal and subtidal investigation of Croisilles Harbour, Nelson. Nelson/Marlborough Conservancy Occasional Publication No. 5, 33 p.
- 104 Dawson, E W. 1990. The systematics and biogeography of the living Brachiopoda of New Zealand. 431-437pp in: Brachiopods Through Time. Mackinnon, D.I.; Lee, D.E.; Campbell, J.D. (eds). Proceedings of the 2nd International Brachiopod Congress, University of Otago, Dunedin, New Zealand, 5-9 February 1990. A.A. Balkema, Rotterdam, Brookfield.
- 105 Dawson, S., E. Slooten. 2005. Management of gillnet bycatch of cetaceans in New Zealand. *Journal of Cetacean Research and Management* 7(1): 59-64.
- 106 Dawson, S., E. Slooten, S. DuFresne, P. Wade, D. Clement. 2004. Small-boat surveys for coastal dolphins: line-transect surveys for Hector's dolphin (*Cephalorhynchus hectori*). *Fishery Bulletin* 102(3): 441-451.
- 107 Daly, M.; Brugler, M. R.; Cartwright, P.; Collins, A. G.; Dawson, M. N.; Fautin, D. G.; France, S. C.; McFadden, C. S.; Opreko, D. M.; Rodriguez, E.; Romano, S. L.; Stake, J. L. 2007. The phylum Cnidaria: A review of phylogenetic patterns and diversity 300 years after Linnaeus. *Zootaxa* 1668: 127-182.
- 108 Dayton, P. K.; Tegner, M. J.; Parnell, P. E.; Edwards, P. B. 1992. Temporal and spatial patterns of disturbance and recovery in a kelp forest community. *Ecological Monographs* 62:421-445.
- 109 Dell, R. K. 1951. Some animal communities of the sea bottom from Queen Charlotte Sound, New Zealand. *New Zealand Journal of Science and Technology*, B, 33: 19-29.
- 110 Dell, R.K. 1956. Some new off-shore Mollusca from New Zealand. *Records of the Dominion Museum*, 3(1): 27-59.
- 111 De Jong, R. J. 1994. The effects of mussel farming on the benthic environment. MSc Thesis, University of Auckland. 150 p.
- 112 Department of Conservation and Ministry for the Environment 2000. The New Zealand Biodiversity Strategy. Our chance to turn the tide. Whakakohukihukitia Te Tai Roroku Ki Te Tai Oranga. Department of Conservation and Ministry for the Environment, Wellington, New Zealand.



- 113 Department of Conservation and Ministry of Fisheries 2005 (a). Marine protected areas policy and implementation Plan. Department of Conservation and Ministry of Fisheries, Wellington, New Zealand.
- 114 Department of Conservation and Ministry of Fisheries 2005 (b). Marine protected areas. A new approach to marine protection. Department of Conservation and Ministry of Fisheries, Wellington, New Zealand.
- 115 Didier, D.A. 1995. Phylogenetic systematics of extant chimaeroid fishes (Holocephali, Chimaeroidei). *American Museum Novitates* 3119: 1-86.
- 116 Dieter, B.E.; Wion, D.A.; McConnaughey, R.A. 2003. Mobile fishing gear effects on benthic habitats: a bibliography (Second Edition). U.S. Department of Commerce. NOAA Tech. Memo. NMFS-AFSC-135, 206 p.
- 117 Doherty, J. and Brager, S. 1997. The breeding population of spotted shags (*Stictocarbo punctatus punctatus*) on Banks Peninsula: 36 years later. *Notornis* 44: 49-56.
- 118 Duffy, C. A. J.; Smith, A.; Davidson R. J.; Cook, S.; Briden, K. in prep. Shallow subtidal species assemblages and benthic habitats of the Marlborough Sounds. Department of Conservation report.
- 119 Duffy, C. A. J.; Brown, D. A. 1994. Recent observations of marine mammals and a leatherback turtle (*Dermochelys coriacea*) in the Marlborough Sounds, New Zealand, 1981-1990. *Nelson/Marlborough Conservancy Occasional Publication No. 9*. Department of Conservation, Nelson. 58 pp.
- 120 Du Fresne, S. P., A. R. Grant, W. S. Norden, J. P. Pierre. 2007. Factors affecting cetacean bycatch in a New Zealand trawl fishery. DOC Research & Development Series 282. Department of Conservation, Wellington, New Zealand. 18p.
- 121 Dulvy, N.K. and Reynolds, J.D. 1997. Evolutionary transitions among egg-laying, live-bearing and maternal inputs in sharks and rays. *Proceedings of the Royal Society of London, Series B: Biological Sciences*, 264: 1309-1315.
- 122 Dymond, J.R.; Ausseil, A.; Shepherd, J.D.; Buetter, L. 2006. Validation of a region-wide model of landslide susceptibility in the Manawatu-Wanganui region of New Zealand. *Geomorphology* 74, 70-79.
- 123 Edgar, A.T. 1978. The reef heron (*Egretta sacra*) in New Zealand. *Notornis* 25:25-58.
- 124 Eleftheriou, A.; Basford, D. J. 1983. The general behaviour and feeding of *Cerianthus lloydi* Gosse (Anthozoa, Coelenterata). *Cahiers de biologie marine, Paris*, 24(2): 147-158.
- 125 Elliott, G.P. 1989. The distribution of banded rail and marsh crake in coastal Nelson and the Marlborough Sounds. *Notornis* 36: 117-123.
- 126 Ellis, J.; Cummings, V.; Hewitt, J.; Thrush, S.; Norkko, A. 2002. Determining effects of suspended sediment on condition of a suspension feeding bivalve (*Atrina zelandica*): results of a survey, a laboratory experiment and a field transplant experiment. *Journal of Experimental Marine Biology and Ecology*, 267: 147-174.
- 127 Emig, C. C. 1974. The systematics and evolution of the phylum Phoronida. Sonderdruck aus Z. F. zool. Systematik u. *Evolutionsforschung Bd.12 (1974), H.2, S.:128-151*.
- 128 Emig, C. C.; García Carrascosa, A. M.; Roldán, C.; Viéitez, J. M. 1999. The occurrence in the Chafarinas Islands (S.E. Alboran Sea, western Mediterranean) of four species of Phoronida (Lophophorata) and their distribution in the north-eastern Atlantic and Mediterranean areas. *Cah. Biol. Mar.*, 40: 129-133.
- 129 Emig C. C.; Herberts C.; Thomassin B. A. 1972. Sur l'association de Phoronis australis (Phoronida) avec *Cerianthus maua* (Ceriantharia) dans les zones récifales de Madagascar. *Marine Biology*, 15: 304-315.
- 130 Estcourt, I. N. 1967. Distributions and associations of benthic invertebrates in a sheltered water soft-bottom environment (Marlborough Sounds, New Zealand). *New Zealand Journal of Marine and Freshwater Research*, 1: 352-370.
- 131 Fahey, B.D.; Coker, R.J. 1992: Sediment production from forest roads in Queen Charlotte Forest and potential impact on water quality, Marlborough Sounds, New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 1992, 26, pp. 187-195. <http://www.rsnz.org/publish/nzjmr/1992/18.php>.
- 132 Fahey, B. D.; Coker, R. J. 1992. Sediment production from forest roads in Queen Charlotte Forest and potential impact on marine water quality, Marlborough Sounds, New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 26: 187-195.
- 133 Farr, T.; Nelson, W.; Hart, A.; Broom, J. 2006. Rhodoliths in New Zealand. Presented at the International Rhodolith Meeting, La Paz, Mexico, October 2006.
- 134 Ford, J. K. B. 2002. Killer whale. In: W. F. Perrin, B. Wursig, J. G. M. Thewissen (Eds). *Encyclopedia of Marine Mammals*. Academic Press. Pp 669-676.
- 135 Forrest B, Keeley N, Gillespie P, Hopkins G, Knight B, Govier D. 2007. Review of the ecological effects of marine finfish aquaculture: final report. Prepared for Ministry of Fisheries. Cawthron Report No. 1285. 71p

- 136 Forrest, B. 1995. Overview of ecological effects from shellfish farms in the Marlborough Sounds: background information for marine farm applications. Report prepared for Sanford South Island Limited by Cawthron Institute. Cawthron Report No. 282.
- 137 Foster, M.W. 1989. Brachiopods from the extreme south Pacific and adjacent waters. *Journal of Paleontology* 63(3): 268-301.
- 138 Foster, M.S.; Schiel, D.R. 1985. The ecology of giant kelp forests in California: a community profile. United States Fish and Wildlife Service Biological Report 85: 1-152.
- 139 Francis, M. 1988. Coastal Fishes of New Zealand: a diver's identification guide. Heinemann Reed. 63pp.
- 140 Francis, M. 1996. Coastal fishes of New Zealand. Reed Publishing, 72 p.
- 141 Francis, M. 1997. A summary of biology and commercial landings and a stock assessment of rough and smooth skates (*Raja nasuta* and *R. innominata*). Ministry of Fisheries, Wellington, New Zealand.
- 142 Francis, M.P. 1997. Spatial and temporal variation in the growth rate of Elephant fish (*Callorhinchus milii*). *New Zealand Journal of Marine and Freshwater Research*. 31(1):9-23.
- 143 Francis, M. P.; Duffy, C. A. J. 2002. Distribution, seasonal abundance and bycatch composition of basking sharks (*Cetorhinus maximus*) in New Zealand, with observations on their winter habitat. *Marine Biology*, 140: 831-842.
- 144 Francis, M.P.; Ó Maolagáin, C.; Stevens, D. 2001. Age, growth, and sexual maturity of two New Zealand endemic skates, *Dipturus nasutus* and *D. innominatus*. *New Zealand Journal of Marine and Freshwater Research*, 35: 831-842.
- 145 Freeman D. J.; Macdiarmid A. B. 2009. Healthier lobsters in a marine reserve : effects of fishing on disease incidence in the spiny lobster, *Jasus edwardsii*. *Marine and Freshwater Research*, 60(2): 140-145.
- 146 Freeman, D. J.; MacDiarmid, A. B.; Taylor, R. B. 2009. Habitat patches that cross marine reserve boundaries: consequences for the lobster *Jasus edwardsii*. *Marine Ecology Progress Series*, 388:159-167.
- 147 Fuller, S. D.; Murillo Perez, F.J.; Wareham, V.; Kenchington, E. 2008. Vulnerable marine ecosystems dominated by deep-water corals and sponges in the NAFO Convention Area. Northwest Atlantic Fisheries Organisation Serial No. N5524, NAFO SCR DOC. 08/22. 23 pp.
- 148 Fyfe, J. 2000. Population biology and dynamics of *Macrocystis pyrifera* kelp beds on wave exposed offshore reefs in Otago. MSc thesis, University of Otago.
- 149 Fyfe, J.; Israel, S. A.; Chong, A.; Ismail, N.; Hurd, C. L.; Probert, K. 1999. Mapping marine habitats in Otago, Southern New Zealand. *Geocarto International*, 14(3): 17 – 28.
- 150 Garrigue, C., T. Franklin, K. Russel, D. Burns, M. Poole, D. Paton, N. Hauser, M. Oremus, R. Constantine, S. Childerhouse, D. Mattila, N. Gibbs, W. Franklin, J. Robbins, P. Clapham, C. S. Baker. 2007. First assessment of interchange of humpback whales between Oceania and the east coast of Australia. Paper SC/59/SH15. IWC, Anchorage, Alaska, USA 2007. 9p.
- 151 Gaston, A. J; Scofield, P. 1995. Birds and tuatara on North Brother Island, Cook Strait, New Zealand. *Notornis* 42: 27-41. www.notornis.org.nz/free_issues/Notornis_42-1995/Notornis_42_1_27.pdf.
- 152 Gaze, P. 2000. The response of a colony of sooty shearwater (*Puffinus griseus*) and flesh-footed shearwater (*P. carneipes*) to the cessation of harvesting and the eradication of Norway rats (*Rattus norvegicus*). *New Zealand Journal of Zoology*, 27:375-379.
- 153 Gibbs, M. M. 1991. Nutrient availability and cycling in the water column associated with green-lipped mussel farming in the Marlborough Sounds on a spatial, tidal and seasonal basis. Unpublished contract report for the Director, Science and Research, Department of Conservation. Investigation No. S3045/361. DSIR Marine and Freshwater, Taupo.
- 154 Gibbs, M. M. 1993. Morphometrically induced estuarine phytoplankton patchiness in Pelorus Sound, New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 27: 191-199.
- 155 Gibbs, M. M.; Pickmere, S. E.; Woods, P. H.; Payne, G. W.; James, M. R.; Hickman, R. W.; Illingworth, J. 1992. Nutrient and chlorophyll a variability at six stations associated with mussel farming in Pelorus Sound, 1984-85. *New Zealand Journal of Marine and Freshwater Research*, 26: 197-211.
- 156 Gibbs, M. M.; James, M. R.; Pickmere, S. E.; Woods, P. H.; Shakespeare, B. S.; Hickman, R. W.; Illingworth, J. 1991. Hydrodynamic and water column properties at six stations associated with mussel farming in Pelorus Sound, 1984-85. *New Zealand Journal of Marine and Freshwater Research*, 25: 239-254.
- 157 Gibbs, M.; James, M. R.; Pickmere, S. E.; Woods, P. H.; Shakespeare, B. S.; Hickman, R. W.; Gillespie, P. A. 1989. The impact of long-line mussel culture on benthic habitat. Prepared for the Department of Conservation by Cawthron Institute. Report No. 1638, 16 p.



- 158 Gibbs, N., S. Childerhouse. 2000. Humpback whales around New Zealand. Conservation Advisory Science Notes, no.287. Department of Conservation, Wellington, New Zealand. 32p.
- 159 Gillespie, P. A. 1989. The impact of long-line mussel culture on benthic habitat. Report for Coastal and Marine Resources Directorate, Department of Conservation, Wellington. Cawthron Report No. 1638. 18 p.
- 160 Goldberg, N. 2006. Age estimates and description of rhodoliths from Esperance Bay, Western Australia. *Journal of the Marine Biological Association of the United Kingdom*, 86(6): 1291-1296.
- 161 Gordon, D.P. 1989. The marine fauna of New Zealand: Bryozoa: Gymnolaemata (*Cheilostomida Ascophorina*) from the western south Island continental shelf and slope. *New Zealand Oceanographic Institute Memoir* 97, 158 p.
- 162 Gordon, J., R. Leaper, F. Hartley and O Chappell. 1992. Effects of whale watching vessels on the surface and underwater acoustic behaviour of sperm whales off Kaikoura, New Zealand. Science and Research Series Number 52. Department of Conservation, Wellington, New Zealand.
- 163 Graham, M. H.; Vásquez, J. A.; Buschmann, A. H. 2007: Global ecology of the giant kelp *Macrocystis*: from ecotypes to ecosystems. *Oceanography and Marine Biology: An Annual Review*, 45: 39-88
- 164 Grange, K.R.; Tovey, A.; Hill, A.F. 2003. The spatial extent and nature of the bryozoan communities at Separation Point, Tasman Bay. *Marine Biodiversity Biosecurity Report* 4, 22 p.
- 165 Grange, K.; Cole, R.; Handley, S. 1999. Benthic survey of a proposed marine farm site, Otanerau Bay West, Queen Charlotte Sound. NIWA Client Report MUS90408/2. Unpublished report prepared for K. & L. Oldham.
- 166 Grant-Mackie, E. 1987. Aspects of the biology of the horse mussel, *Atrina zelandica*. Unpublished M.Sc. Thesis, University of Auckland.
- 167 Gray J.S., Dayton P.A., Thrush S.F. & Kaiser M.J. 2007. Fishing for facts on the environmental effects of trawling and dredge fisheries: Reply to Lokkeborg. *Marine Pollution Bulletin* 54: 497-500.
- 168 Gray J.S., Dayton P.A., Thrush S.F. & Kaiser M.J. 2006. On effects of trawling, benthos and sampling design. *Marine Pollution Bulletin* 52: 840-843.
- 169 Gurr, L. and Kinsky, F.C. 1965. The distribution of breeding colonies and status of the red-billed gull in New Zealand and its outlying islands. *Notornis* 12: 223-240.
- 170 Handley, S. J. 1995. Spionid polychaetes in Pacific oysters, *Crassostrea gigas* (Thunberg) from Admiralty Bay, Marlborough Sounds, New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 29: 305-309.
- 171 Handley, S. and Alcock, N. 1999. Benthic survey of proposed southwest expansion of a marine farm, Licence 7, East Bay, Queen Charlotte Sound. NIWA Client Report MUS00407/2. Unpublished report prepared for Okiwi Bay Oysters Ltd.
- 172 Hare, J. 1992. Paterson Inlet benthic assemblages. DOC Technical Series. No. 5.
- 173 Harris, T. F. W. 1990. Greater Cook Strait: form and flow. DSIR Marine & Freshwater. Wellington. 212 pp.
- 174 Harvey, A. S.; Bird, F. L. 2008. Community structure of a rhodolith bed from cold-temperate waters (southern Australia). *Australian Journal of Botany*, 56(5): 437-450.
- 175 Harvey, A. S.; Woelkerling, W. J.; Farr, T. J.; Neill, K. F.; Nelson, W. A. 2005. Coralline algae of central New Zealand: An identification guide to common 'crustose' species. In NIWA Information Series Vol. 57, National Institute of Water and Atmospheric Research Ltd., Wellington, New Zealand.
- 176 Hay, C. 1990. The distribution of *Macrocystis* (Phaeophyta: Laminariales) as a biological indicator of cool sea surface temperature, with special reference to New Zealand waters. *Journal of the Royal Society of New Zealand*, 20: 313-336.
- 177 Hayward, B.W.; Morley, M.S.; Hayward, J.J.; Stephenson, A.B.; Blom, W.M.; Hayward, K.A.; Grenfell, H.R. 1999. Monitoring studies of the benthic ecology of Waitemata Harbour, New Zealand. *Records of the Auckland Museum*, 36: 95-117.
- 178 Heath, R. A. 1976a. Tidal variability of flow and water properties in Pelorus Sound, South Island, New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 10: 283-300.
- 179 Heath, R. A. 1976a. Broad classification of New Zealand inlets with emphasis on residence time. *New Zealand Journal of Marine and Freshwater Research*, 10: 429-444.
- 180 Heath, R. A. 1976b. Circulation in Tasman Bay. *New Zealand Journal of Marine and Freshwater Research*, 10: 469-483.
- 181 Heath, R. A. 1985. A review of the physical oceanography of the seas around New Zealand – 1982. *New Zealand Journal of Marine and Freshwater Research*, 19: 79-124.

- 182 Heather, B.D. and Robertson, H.A. 1996. Field guide to the birds of New Zealand. Viking.
- 183 Hetzinger, S.; Halfar, J.; Riegl, B.; Godinez-Orta, L. 2006. Sedimentology and acoustic mapping of modern rhodolith facies on a non-tropical carbonate shelf (Gulf of California, Mexico). *Journal of Sedimentary Research*; 76(4): 670-682.
- 184 Hewitt, J.; Thrush, S.; Gibbs, M.; Lohrer, D.; Norkko, A. 2006. Indirect effects of *Atrina zelandica* on water column nitrogen and oxygen fluxes: The role of benthic macrofauna and microphytes. *Journal of Experimental Marine Biology and Ecology*, 330: 261-273.
- 185 Hewitt, J. E.; Thrush, S. F.; Halliday, J.; Duffy, C. 2005. The importance of small-scale habitat structure for maintaining beta diversity. *Ecology*, 86(6): 1619–1626.
- 186 Hiddink J.G., Jennings S. & Kaiser M.J. 2007. Assessing and predicting the relative ecological impacts of disturbance on habitats with different sensitivities. *Journal of Applied Ecology* 44: 405-413.
- 187 Hiddink J.G., Hutton T., Jennings S. & Kaiser M.J. 2006. Predicting the effects of area closures and fishing effort restrictions on the production, biomass, and species richness of benthic invertebrate communities. *ICES Journal of Marine Science* 63: 822-830. doi:10.1016/j.icesjms.2006.02.006.
- 188 Hine, P.M.; Diggles, B.K. 2002. Prokaryote infections in the New Zealand scallops *Pecten novaezelandiae* and *Chlamys delicatula*. *Diseases of Aquatic Organisms*, 50(2): 137-144.
- 189 Hine, P. M.; Weysney, B. 1997. Virus-like particles associated with cytopathology in the digestive gland epithelium of scallops *Pecten novaezelandiae* and toheroa *Paphies ventricosum*. *Dis. Aquat. Org.* 29: 197-204.
- 190 Hitchmough, R. 2002. New Zealand Threat Classification System List. Threatened species occasional publication 23. Department of Conservation, Wellington, New Zealand. 210 pp.
- 191 Hooker, S.H. and Creese, R.G. 1995. Reproduction of paua, *Haliotis iris* Gmelin 1791 (Mollusca: Gastropoda), in north-eastern New Zealand. *Marine and Freshwater Research*, 46(3): 617 – 622.
- 192 Hopkins, G. 2002. Aspects of the biology of the horse mussel, *Atrina zelandica* (Gray) in Doubtful Sound and off the Otago coast, New Zealand. University of Otago, MSc Thesis.
- 193 Hume, T.M.; Bell, R.G.; deLange, W.P.; Healy, T. R.; Hicks, D.M.; Kirk, R.M. 1992. Oceanography and sedimentology in New Zealand, 1967-91. *New Zealand Journal of Marine and Freshwater Research*, 1992, Vol. 26: 1-36.
- 194 Hurley, D. E. 1959. Some features of the benthic environment in Cook Strait. *New Zealand Journal of Science*, 2: 137-147.
- 195 Ip, D. T.; Wong, K. B.; Wan, D. C. 2007. Characterization of novel orange fluorescent protein cloned from cnidarian tube anemone *Cerianthus* sp. *Marine Biotechnology (New York)*, 9(4): 469-478.
- 196 Jefferson, T. A., M. A. Webber, R. L. Pitman. 2008. Marine mammals of the world - A comprehensive guide to their identification, Academic Press. 573p.
- 197 Jiang, W.; Carbines, G. 2002. Diet of blue cod, *Parapercis colias*, living on undisturbed biogenic reefs and on seabed modified by oyster dredging in Foveaux Strait, New Zealand. *Aquatic Conservation: Marine and Freshwater Ecosystems, Volume 12 Issue 3*, 257 – 272.
- 198 Johnston, A. 1983. The southern Cook Strait groper fishery. Fisheries Technical Report No.159. Ministry of Agriculture and Fisheries, Wellington. 33 pp.
- 199 Jones, C. 2000. Sooty shearwater (*Puffinus griseus*) breeding colonies on mainland South Island, New Zealand: evidence of decline and predictors of persistence. *New Zealand Journal of Zoology*, 2000, Vol. 27: 335-345. <http://www.rsnz.org/publish/nzjz/2000/39.php>.
- 200 Jones, P. D., D. J. Hannah, S. J. Buckland, T. van Maanen, S. V. Leatham, S. Dawson, E. Slooten, A. van Helden, M. Donoghue. 1999. Polychlorinated dibenzo-p-dioxins, dibenzofurans and polychlorinated biphenyls in New Zealand cetaceans. *Journal of Cetacean Research and Management (Special Issue 1)*: 157- 167.
- 201 Jensen, P. 1992. *Cerianthus vogti* Danielssen, 1890 (Anthozoa: Ceriantharia). A species inhabiting an extended tube system deeply buried in deep-sea sediments off Norway. *Sarsia*, 77(1): 75-80.
- 202 Kahui, V.; Alexander, W. R. J. 2008. A bioeconomic analysis of marine reserves for paua (abalone) management at Stewart Island, New Zealand. *Environmental and Resource Economics*, 40(3): 339-367.
- 203 Kaiser M.J., Clarke K.R., Hinz H., Austen M.C.V., Somerfield P.J., & Karakassis I. 2006. Global analysis and prediction of the response of benthic biota and habitats to fishing. *Marine Ecology Progress Series* 311: 1-14.
- 204 Kaiser M.J. & De Groot S.J. (eds) 2000. The effects of trawling on non-target species and habitats: biological, conservation and socio-economic issues. Blackwell Science, Oxford. 399 pp.



- 205 Kaspar, H. F., Gillespie, P. A., Boyer, I. C., MacKenzie, A. L. 1985. Effects of mussel aquaculture on the nitrogen cycle and benthic communities in Kenepuru Sound, Marlborough Sounds, New Zealand. *Marine Biology* 85: 127–136.
- 206 Keely, N. 2001. Seston supply and scallop (*Pecten novaezelandiae*) production in the Firth of Thames, New Zealand. Unpublished MSc thesis, The University of Waikato.
- 207 Keeley, N., Forest, B., Hopkins, G., Gillespie, P., Knight, B., Webb, S., Clement, D., Gardner, J. 2009. Sustainable aquaculture in New Zealand: Review of the ecological effects of farming shellfish and other non-fish species. Prepared for Ministry of Fisheries. Cawthron Report No. 1476, 150p plus appendices.
- 208 Kelly, S. 1999. Marine reserves and the spiny lobster, *Jasus edwardsii*. Unpublished PhD thesis, University of Auckland.
- 209 Kelly, S.; MacDiarmid, A.B. 2003. Movement patterns of mature spiny lobsters, *Jasus edwardsii*, from a marine reserve. *New Zealand Journal of Marine and Freshwater Research* 37(1): 149–158.
- 210 Kelly, S.; MacDiarmid, A. B.; Babcock, R. C. 1999. Characteristics of spiny lobster, *Jasus edwardsii*, aggregations in exposed reef and sandy areas. *Marine and Freshwater Research*, 50: 409–416
- 211 Kenney, R. D. 2002. North Atlantic, North Pacific and southern right whales. In: W. F. Perrin, B. Wursig, J. G. M. Thewissen (Eds). *Encyclopedia of Marine Mammals*. Academic Press. Pp 806–813.
- 212 Knox, G.A. 1990. An investigation of the Vernon Lagoons and Wairau River Estuary. Report prepared for Department of Conservation, Nelson/Marlborough Conservancy, 60 p..
- 213 Knox, G.A. 1983. An ecological survey of the Wairau River Estuary. Estuarine Research Group Report No 27, University of Canterbury. 141 p.
- 214 Kregting, L. T.; Hurd C. L.; Pilditch, C. A.; Stevens, C. L. 2008. The relative importance of water motion on nitrogen uptake by the subtidal macroalga *Adamsiella chauvinii* (Rhodophyta) in winter and summer. *Journal of Phycology* 44: 320–330.
- 215 Kupriyanova, E.K.; Nishi, E.; Hove, H.A. ten; Rzhavsky, A.V. 2001. Life-history patterns in serpulimorph polychaetes: ecological and evolutionary perspectives. *Oceanography and Marine Biology: an Annual Review*, 39: 1–101.
- 216 Laing, R. M. 1901. Revised list of New Zealand seaweeds: Part II. *Transactions and Proceedings of the Royal Society of New Zealand*, 34: 327–359.
- 217 Lalas, C. 1983. Comparative feeding ecology of New Zealand marine shags (Phalacrocoracidae). Unpublished PhD thesis. University of Otago, Dunedin.
- 218 Lalas, C., C. J. A. Bradshaw. 2001. Folklore and chimerical numbers: review of a millennium of interaction between fur seals and humans in the New Zealand region. *New Zealand Journal of Marine and Freshwater Research* 35(3): 477–497.
- 219 Lalas, C. and Brown, D. 1998. The diet of New Zealand king shags (*Leucocarbo carunculatus*) in Pelorus Sound. *Notornis* 45: 129–140.
- 220 Lauder, W. R. 1970. The ancient drainage of the Marlborough Sounds. *New Zealand Journal of Geology and Geophysics* 13: 747–749.
- 221 Lauder, G. A. 1987. Coastal landforms and sediments of the Marlborough Sounds. Unpublished Ph.D. thesis. University of Canterbury, Christchurch.
- 222 Laffan, M. D. 1980. Some observations of regoliths and landslides in the Marlborough Sounds. *New Zealand Soil News* 28(3): 96–102.
- 223 Lands and Survey, 1981. Marlborough Sounds landscape study. Lands and Survey Environmental Series No. 2.
- 224 Langlois, T. J. 2005. Influence of reef-associated predators on adjacent soft-sediment communities. Ph.D. thesis, The University of Auckland.
- 225 Langlois, T. J.; Anderson, M. J.; Brock, M.; Murman, G. 2006. Importance of rock lobster size–structure for trophic interactions: choice of soft-sediment bivalve prey. *Marine Biology*, 149(3): 447–454.
- 226 Leatherwood, S.; Reeves, R. R.; Foster, L. 1983. The Sierra Club handbook of whales and dolphins. Sierra Club Books, San Francisco. 302 pp.
- 227 Lee, D.E. 1978. Aspects of the ecology and paleoecology of the brachiopod *Notosaria nigricans* (Sowerby). *Journal of the Royal Society of New Zealand*, 8: 395–417.
- 228 Lee, D.E. 1987. Cenozoic and recent inarticulate brachiopods from New Zealand: *Discinisca*, *Pelagodiscus* and *Neocrania*. *Journal of the Royal Society of New Zealand*, 17: 49–72.

- 229 Lee, D.E. 1990. Aspects of the ecology and distribution of the living Brachiopoda of New Zealand. 273-279pp in: *Brachiopods Through Time*. Mackinnon, D.I.; Lee, D.E.; Campbell, J.D. (eds). Proceedings of the 2nd International Brachiopod Congress, University of Otago, Dunedin, New Zealand, 5-9 February 1990. Balkema, A. A, Rotterdam, Brookfield.
- 230 Lee, D.; Robinson, J. 2009. Brachiopoda. In: Gordon, D. (Ed.) (2009). *New Zealand Inventory of Biodiversity. Volume One: Kingdom Animalia*. 584 pp.
- 231 Lewis, K. B.; Mitchell, J. S. 1980. Cook Strait sediments. *New Zealand Oceanographic Institute Coastal Chart Series*. Department of Scientific and Industrial Research, Wellington.
- 232 Lloyd, B.D. 2003. Potential effects of mussel farming on New Zealand's marine mammals and seabirds: a discussion paper. Department of Conservation, Wellington.
- 233 Lusseau, D. 2003a. Male and female bottlenose dolphins *Tursiops* spp. have different strategies to avoid interactions with tour boats in Doubtful Sound, New Zealand. *Marine Ecology Progress Series* 257:267-274.
- 234 Lusseau, D. 2003b. Effects of tour boats on the behaviour of bottlenose dolphins: using Markov chains to model anthropogenic impacts. *Conservation Biology*, 17:1785- 1793.
- 235 Lusseau, D. 2004. The hidden cost of tourism: detecting long-term effects of tourism using behavioural information. *Ecology and Society*, 9(1): 2. [online] URL: <http://www.ecologyandsociety.org/vol9/iss1/art2/>.
- 236 Lusseau, D. 2005. Residency pattern of bottlenose dolphins, *Tursiops* spp. in Milford Sound, New Zealand, is related to boat traffic. *Marine Ecology Progress Series*. 295:265-272.
- 237 Lusseau, D. 2006. The short-term behavioural reactions of bottlenose dolphins to interactions with boats in Doubtful Sound, New Zealand. *Marine Mammal Science* 22(4):802-818.
- 238 Lusseau, D., E. Slooten. 2002. Cetacean sightings off the Fiordland coastline: Analysis of commercial marine mammal viewing data 1996–99, *Science for Conservation* 187. Department of Conservation, Wellington, New Zealand. 42p.
- 239 Lyver, P.O'B, 2000. Sooty shearwater (*Puffinus griseus*) harvest intensity and selectivity on Poutama Island, New Zealand. *New Zealand Journal of Ecology* Vol. 24, 169--180. http://www.newzealandecology.org/nzje/free_issues/NZJEcol24_2_169.pdf.
- 240 Mace, J.; Johnston, A. D. 1983. Tagging experiments on blue cod (*Parapercis colias*) in the Marlborough Sounds, New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 17: 207-211.
- 241 MacDiarmid, A.B. 1985. Sunrise release of larvae from the palinurid rock lobster *Jasus edwardsii*. *Marine Ecology Progress Series*, 21: 313-315.
- 242 MacDiarmid, A.B. 1989. Moulting and reproduction of the spiny lobster *Jasus edwardsii* (Decapoda: Palinuridae) in northern New Zealand. *Marine Biology*, 103(3): 303-310.
- 243 MacDiarmid, A. B. 1991. Seasonal changes in depth distribution, sex ratio and size frequency of spiny lobster (*Jasus edwardsii*) on a coastal reef in northern New Zealand. *Marine Ecology Progress Series*, 70:129–141.
- 244 MacDiarmid, A.B.; Breen, P.A. 1992. Spiny lobster population changes in a marine reserve. Pp 47-56 in Battershill et al. (eds.) *Proceedings of the Second International Temperate Reef Symposium*, 7-10 January 1992, Auckland, New Zealand. NIWA Marine, Wellington, New Zealand. 252 pp.
- 245 MacDiarmid, A.B.; Butler, M.J. 1999. Sperm economy and limitation in spiny lobsters. *Behavioral Ecology and Sociobiology*, 46: 14-24.
- 246 MacDiarmid, A. B.; Hickey, B.; Maller, R.A. 1991. Daily movement patterns of the spiny lobster *Jasus edwardsii* (Hutton) on a shallow reef in northern New Zealand. *Journal of Experimental Marine Biology and Ecology*, 147:185–205.
- 247 MacKenzie, A. L.; Kaspar, H. F.; Gillespie, P. A. 1986. Some observations on phytoplankton species composition, biomass, and productivity in Kenepuru Sound, New Zealand, 1982-83. *New Zealand Journal of Marine and Freshwater Research*, 20: 397-405.
- 248 Marchant, S. & Higgins, P.J. (Coordinators) 1990. *Handbook of Australian, New Zealand and Antarctic Birds*. Oxford University Press, Melbourne.
- 249 Markowitz, T. 2004. Social organisation of the New Zealand dusky dolphin. Unpub. PhD thesis. Wildlife and Fisheries Sciences, Texas A&M University, Galveston, TX, USA. 255p.
- 250 Markowitz, T., S Du Fresne and B. Würsig (Eds) 2009. Tourism effects on dusky dolphins at Kaikoura, New Zealand. Final report submitted to the New Zealand Department of Conservation, 30 June 2009. Unpublished report held by the Department of Conservation, Nelson, New Zealand. 93pp.

- 251 Markowitz, T., A. D. Harlin, B. Wursig, C. J. McFadden. 2004. Dusky dolphin foraging habitat: overlap with aquaculture in New Zealand. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 14: 133-149.
- 252 Markwell, Timothy J. 1999. Keystone species on New Zealand offshore islands: ecological relationships of seabirds, rats, reptiles and invertebrates on Cook Strait islands. PhD thesis, Victoria University of Wellington.
- 253 Marston, J. 1996. The molluscs of the Chatham Islands–1994. *Cookia*, 7(3): 15–56.
- 254 Mattern, T. 2001. Foraging strategies and breeding success in the little penguin, *Eudyptula minor*: a comparative study between different habitats. MSc thesis, University of Otago.
- 255 Mattlin, R. 1998. New Zealand fur seals, Report to WWF (NZ), 14 January 1998. 7p.
- 256
- 257 McKnight, D. G. 1969. Infaunal benthic communities of the New Zealand continental shelf. *New Zealand Journal of Marine and Freshwater Research*, 3: 409-444.
- 258 McKnight, D. G.; Grange, K. R. 1991. Macrobenthos-sediment-depth relationships in Marlborough Sounds. Unpublished contract report for the Director, Science and Research, Department of Conservation. Investigation No. P692. New Zealand Oceanographic Institute, Wellington. 1991/14. 43 pp.
- 259 McKoy, J. L. 1985. Growth of tagged rock lobsters (*Jasus edwardsii*) near Stewart Island, New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 19: 457–466.
- 260 McKoy, J. L.; Esterman, D. B. 1981. Growth of rock lobsters (*Jasus edwardsii*) in the Gisborne region. *New Zealand Journal of Marine and Freshwater Research*, 15: 121–136.
- 261 McShane P.E.; Naylor, J.R. 1995. Depth can affect post-settlement survival of *Haliotis iris* (Mollusca: Gastropoda). *Journal of Experimental Marine Biology and Ecology*, 187(1): 1-12.
- 262 McShane, P.E.; Mercer, S.F.; Naylor, J.R. 1994. Spatial variation and commercial fishing of New Zealand populations of abalone (*Haliotis iris* and *H. australis*). *New Zealand Journal of Marine and Freshwater Research*, 28: 345-355.
- 263 McShane, P.E.; Schiel, D.R.; Mercer, S.F.; Murray, T.M. 1994. Morphometric variation in *Haliotis iris* (Mollusca: Gastropoda): analysis of 61 populations. *New Zealand Journal of Marine and Freshwater Research*, 28: 357-364.
- 264 Merriman, M. G. 2007. Abundance and behavioural ecology of bottlenose dolphins (*Tursiops truncatus*) in the Marlborough Sounds, New Zealand. Unpub. MSc thesis, Massey University, Albany, New Zealand. 151p.
- 265 Merriman, M. G.; Markowitz, T. M.; Harlin-Cognato, A. D. Stockin, K. A. 2009. Bottlenose dolphin (*Tursiops truncatus*) abundance, site fidelity, and group dynamics in the Marlborough Sounds, New Zealand. *Aquatic Mammals* 35(4):511-522.
- 266 Mills, J.; Yarrall, J.; Bradford-Grieve, J.; Uddstrom, M.; Renwick, J. and Merila, J. 2008. The impact of climate fluctuation on food availability and reproductive performance of the planktivorous red-billed gull *Larus novaehollandiae scopulinus*. *Journal of Animal Ecology*, 77(6): 1129-1142.
- 267 Miskelly, C. and Williams, R. 2002. Transfer of fairy prion (titiwainui) chicks from Takapourewa to Mana Island, January 2002. Department of Conservation, Wellington.
- 268 Møhlenberg, F.; Riisgård, H.U. 1979. Filtration rate, using a new indirect technique, in thirteen species of suspension-feeding bivalves. *Marine Biology*, 54(2): 143-147.
- 269 Molloy, J. and Davis, A. 1994. Setting priorities for the conservation of New Zealand's threatened plants and animals. Department of Conservation, Wellington, second edition.
- 270 Moore, L. B. 1943. Observations on the growth of *Macrocystis* in New Zealand. With a description of a free-living form. *Transaction and Proceedings of the Royal Society of New Zealand*, 72(4): 333-340.
- 271 Moreno, C. A.; Sutherland, J. P. 1982. Physical and biological processes in a *Macrocystis pyrifera* community near Valdivia, Chile. *Oecologia*, 55(1): 1-6.
- 272 Morrissey, D.J.; Brown, S.; Caine, D. 2009a. Marine farm survey for resource consent, MF 127, Port Gore, Marlborough Sounds: supplementary survey of Gannet Point. NIWA report NEL2009-008 prepared for Sanford Havelock.
- 273 Morrissey, D.J.; Brown, S.; Caine, D. 2009b. Marine farm survey for consent renewal, U010967, Port Gore, Marlborough Sounds. NIWA report NEL2009-010 prepared for PALMS Ltd.
- 274 Morrison, M. A. 1999. Population dynamics of the scallop *Pecten novaehollandiae* in the Hauraki Gulf. Unpublished PhD thesis, The University of Auckland.
- 275 Morrissey, D.J.; Cole, R.G.; Davey, N.K.; Handley, S.J.; Bradley, A.; Brown, S.N.; Madarasz, A.L. 2006. Abundance and diversity of fish on mussel farms in New Zealand. *Aquaculture* 252 (2006) 277– 288.

- 276 Morton J. 2004. Seashore ecology of New Zealand and the Pacific. Auckland, David Bateman Ltd. 504 p.
- 277 Musgrove, R. J.; Geddes, M. C.; Thomas, C. 2005. Causes of tail fan necrosis in the southern rock lobster, *Jasus edwardsii*. *New Zealand Journal of Marine and Freshwater Research*, 39: 293–304.
- 278 Nalin, R.; Nelson, C. S.; Basso, D.; Massari, F. 2008. Rhodolith bearing limestones as transgressive marker beds: fossil and modern examples from North Island, New Zealand. *Sedimentology*, 55: 249–274.
- 279 Naylor, J.R.; Andrew, N.L.; Kim, S.W. 2006. Demographic variation in the New Zealand abalone *Haliotis iris*. *Marine and Freshwater Research*, 57(2): 215–224.
- 280 Naylor, J. R.; McShane, P. E. 2001. Mortality of post-settlement abalone *Haliotis iris* caused by conspecific adults and wave exposure. *New Zealand Journal of Marine and Freshwater Research*, 35: 363-369.
- 281 Neall, V. E. 1970. Notes on the ecology and paleoecology of *Neothyris*, an endemic New Zealand brachiopod. *New Zealand Journal of Marine and Freshwater Research*, 4: 117-25.
- 282 Nelson, A. 1971. King shags in the Marlborough Sounds. *Notornis*, 18(1): 30-37.
- 283 Nelson, W. A. 2009. Calcified macroalgae – critical to coastal ecosystems and vulnerable to change: a review. *Marine and Freshwater Research*, 60: 787–801.
- 284 Nelson, W. A.; Adams, N. M.; Fox, J. M. 1992. Marine algae of the northern South Island. *National Museum of New Zealand Miscellaneous Series No. 26*. National Museum of New Zealand, Wellington. 79 pp.
- 285 Nelson, W. A.; Duffy, C. A. J. 1991. *Chnoospora minima* (Phaeophyta) in Port Underwood, Marlborough - a curious new algal record for New Zealand. *New Zealand Journal of Botany*, 29: 341-344.
- 286 Neumann, D. R., M. B. Orams. 2005. Behaviour and ecology of common dolphins (*Delphinus delphis*) and the impact of tourism in Mercury Bay, North Island, New Zealand. Science for Conservation 254. Department of Conservation, Wellington, New Zealand. 40p.
- 287 Nicholls, P. 2002. Determining impacts on marine ecosystems: the concept of key species. *Water & Atmosphere*, 10(2).
- 288 Nichols, C., G. Stone, A. Hutt, J. Brown and A. Yoshinaga. 2001. Observations of interactions between Hector's dolphins (*Cephalorhynchus hectori*), boats and people at Akaroa Harbour, New Zealand. Science for Conservation 178. Department of Conservation, Wellington, New Zealand. 49 pp.
- 289 Nienhaus, K.; Renzi, F.; Vallone, B.; Wiedenmann, J.; Nienhaus, G. U. 2006. Exploring chromophore–protein interactions in fluorescent protein cmFP512 from *Cerianthus membranaceus*: X-ray structure analysis and optical spectroscopy. *Biochemistry*, 45 (43): 12942–12953.
- 290 Norkko, A.; Hewitt, J. E.; Thrush, S. F.; Funnell, G. A. 2001. Benthic–pelagic coupling and suspension-feeding bivalves: Linking site-specific sediment flux and biodeposition to benthic community structure. *Limnol. Oceanogr.*, 46(8): 2067–2072.
- 291 Norkko, A.; Hewitt, J. E.; Thrush, S. F.; Funnell, G. A. 2006. Conditional outcomes of facilitation by a habitat-modifying subtidal bivalve. *Ecology*, 87(1): 226–234.
- 292 Ottaway, J. R. 1977. Predators of anemones. *Tuatara*, 22: 214-221.
- 293 Pande A.; MacDiarmid, A.B.; Smith P.J.; Davidson, R.J.; Cole R.G.; Freeman D.; Kelly S.; Gardner P.A. 2008. Marine reserves increase the abundance and size of blue cod and rock lobster. *Marine Ecology Progress Series*, Vol. 366. 147-158.
- 294 Patenaude, N. J. 2003. Sightings of southern right whales around 'mainland' New Zealand, DOC Science for Conservation 225. Department of Conservation, Wellington, New Zealand. 43p.
- 295 Paulin, C.; Roberts C. 1992. The rock pool fishes of New Zealand. Museum of Te Papa.
- 296 Paulin, C.; Stewart, S. 1993. Report on field work in Marlborough/Nelson. Internal Museum of New Zealand report. 16 p.
- 297 Paulin, C.; Stewart, A.; Roberts, C.; McMillan, P. 1989. New Zealand fish: a complete guide. *National Museum of New Zealand Miscellaneous Series No. 19*. xiv+279 p.
- 298 Phillips. L. E. 2002. Taxonomy and molecular phylogeny of the red algal genus *Lenormandia* (Rhodomelaceae, Ceramiales). *Journal of Phycology*, 38(1): 184 – 208.
- 299 Phillips. L. E. 2002. Taxonomy of *Adamsiella* L.E. Phillips et W.A. Nelson, gen. nov. and *Epiglossum* Kützing (Rhodomelaceae, Ceramiales). *Journal of Phycology*, 38(1): 209 – 229.
- 300 Phillips, L. E.; Nelson, W. A.; Kraft, G. T. 2000. Taxonomy of the *Lenormandia* - *Lenormandiopsis* complex (Rhodomelaceae, Rhodophyta). *Journal of Phycology*, 36(3): 54-55.

- 301 Pinkerton M. H.; Lundquist C. J.; Duffy C. A. J.; Freeman D. J. 2008. Trophic modelling of a New Zealand rocky reef ecosystem using simultaneous adjustment of diet, biomass and energetic parameters. *Journal of Experimental Marine Biology and Ecology*, 367(2): 189-203.
- 302 Phillips, N.E. and J.S. Shima 2006. Differential effects of suspended sediments on larval survival and settlement of New Zealand urchins (*Evechinus chloroticus*) and abalone (*Haliotis iris*). *Marine Ecology Progress Series* 314:149-158.
- 303 Poore, G.C.B. 1972a. Ecology of New Zealand abalones, *Haliotis* species, (Mollusca: Gastropoda). 1. Feeding. *New Zealand Journal of Marine and Freshwater Research*, 6 (1, 2): 11-22.
- 304 Poore, G.C.B. 1972b. Ecology of New Zealand abalones, *Haliotis* species, (Mollusca: Gastropoda). 2. Seasonal and diurnal movement. *New Zealand Journal of Marine and Freshwater Research*, 6 (3): 246-258.
- 305 Poore, G.C.B. 1972c. Ecology of New Zealand abalones, *Haliotis* species, (Mollusca: Gastropoda). 3. Growth. *New Zealand Journal of Marine and Freshwater Research*, 6 (4): 534-559.
- 306 Powell, A.W.B. 1979. New Zealand Mollusca. William Collins Publishers Ltd, Auckland. ISBN 0-00-216906-1.
- 307 Powlesland, R. 1998. Gull and tern survey. OSNZ News 88: 3-9.
- 308 Powlesland, R.G. and Pickard, C.R. 1992. Seabirds found dead on New Zealand beaches in 1988 and a review of Puffinus species recoveries 1943-1988. *Notornis* 39:27-46.
- 309 Rapson, A. M. 1956. Biology of the blue cod (*Paraperis colias* Foster) of New Zealand. Unpublished D.Sc. Thesis, Victoria University of Wellington. Wellington.
- 310 Rapson, A. M.; Moore, L. B.; Elliott, I. L. 1942. Seaweed as a source of potash in New Zealand. *N.Z. Jour. Sci. & Tech.*, 23: 149B-170B.
- 311 Reijnders, P. J. H., A. Aguilar. 2002. Pollution and marine mammals. In: W. F. Perrin, B. Wursig, J. G. M. Thewissen (Eds). *Encyclopedia of Marine Mammals*. Academic Press. Pp 948-957.
- 312 Richardson, J.R. 1981 (compiler). Recent brachiopods from New Zealand.
- 313 Richter, C.; S. Dawson and E Slooten. 2003. Sperm whale-watching off Kaikoura, New Zealand: effects of current activities on surfacing and vocalisation patterns. *Science for Conservation* 219. Department of Conservation, Wellington, 78p.
- 314 Richter, C.; S. Dawson and E Slooten. 2006. Impacts of commercial whale watching on male sperm whales at Kaikoura, New Zealand. *Marine Mammal Science* 22(1): 46-63.
- 315 Roberts, C. D. 1996: Hapuku and bass: the mystery of the missing juveniles. *Seafood New Zealand* 4(1): 17-21.
- 316 Roberts, R.D.; Kaspar, H.F.; Barker, R.J. 2004. Settlement of abalone (*Haliotis iris*) larvae in response to five species of coralline algae. *Journal of Shellfish Research*, 23: 975-988.
- 317 Robertson, C.J.R.; Hyvonen, P.; Fraser, M.J. and Pickard, C.R. 2007. Atlas of bird distribution in New Zealand 1999-2004. The Ornithological Society of NZ Inc, Wellington.
- 318 Robertson, C.J.R. (ed) 1985. Complete book of New Zealand Birds. Readers Digest, Sydney.
- 319 Robertson, C.J.R. and Bell, B.D. 1984. Seabird status and conservation in the New Zealand region. In: Status and conservation of the world's seabirds. Croxall, J.P., Evans. P.G.H. & Schreiber, R.W. (eds) ICBP Technical Publication No 2.
- 320 Rowden, A.A.; Warwick, R.M.; Gordon, D.P. 2004. Bryozoan biodiversity in the New Zealand region and implications for marine conservation. *Biodiversity and Conservation*, 13 (14): 2695-2721.
- 321 Rowley, R.J. 1990. Newly settled sea urchins in a kelp bed and urchin barren ground: a comparison of growth and mortality. *Marine Ecology Progress Series*, 62: 229-240.
- 322 Russell, B.C. 1983. The food and feeding habits of rocky reef fish of north-eastern New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 17: 121-145.
- 323 Ryan, P.G.; Cooper, J. 2004. The distribution and abundance of aerial seabirds in relation to Antarctic krill in the Prydz Bay region, Antarctica, during late summer. *Polar Biology*. 199-209. <http://www.springerlink.com/content/ulg6398u1141141t/>.
- 324 Saavedra, C.; Pena, J. B. 2004. Phylogenetic relationships of commercial European and Australasian king scallops (*Pecten* spp.) based on partial 16S ribosomal RNA gene sequences. *Aquaculture*, 235(1-4): 153-166.
- 325 Sainsbury, K.J. 1982. Population dynamics and fishery management of the pua, *Haliotis iris*. 1. Population structure, growth, reproduction and mortality. *New Zealand Journal of Marine and Freshwater Research*, 16: 147-161.

- 326 Sainsbury, K.J. 1982b. Population dynamics and fishery management of the paua, *Haliotis iris*. II. Dynamics and management as examined using a size class population model. *New Zealand Journal of Marine and Freshwater Research*, 16: 163-173.
- 327 Santelices, B.; Ojeda, F. P. 1984. Population dynamics of coastal forests *Macrocystis pyrifera* in Puerto Toro, Navarino, Southern Chile. *Marine Ecology Progress Series*, 14: 175-183.
- 328 Saxton, F.L. 1980. Coral loss could deplete fish stocks. *Catch '80*, 7(8): 12-13.
- 329 Scheibling, R. E.; Hennigar, A. W.; Balch, T. 1999. Destructive grazing, epiphytism, and disease: the dynamics of sea urchin - kelp interactions in Nova Scotia. *Can. J. Fish. Aquat. Sci.*, 56(12): 2300-2314.
- 330 Schiel, D R. 2003. Common kelp. In: The Living Reef: The ecology of New Zealand's rocky reefs. Andrew, N L and M P Francis (eds). 64-71pp. Craig Potton Publishing.
- 331 Schiel, D.R. 1993. Experimental evaluation of commercial-scale enhancement of abalone *Haliotis iris* populations in New Zealand. *Marine Ecology Progress Series*, 97: 167-181.
- 332 Schiel, D. R. 1990. Macroalgal assemblages in New Zealand: structure, interactions and demography, *Hydrobiologia*, 192, 59-76.
- 333 Schiel, D. R.; Foster, M. S. 2006. The population biology of large brown seaweeds: ecological consequences of multiphase life histories in dynamic coastal environments. *Annual Review of Ecology, Evolution and Systematics* 37: 343-72.
- 334 Schiel, D. R.; Hickford, M. J. H. 2001. Biological structure of nearshore rocky subtidal habitats in southern New Zealand. *Science for Conservation* 182. 54 pp.
- 335 Schiel, D. R.; Andrew, N. L.; Foster, M. S. 1995. The structure of subtidal algal and invertebrate assemblages at the Chatham Islands, New Zealand. *Marine Biology*, 123, 355-367.
- 336 Schiel, D.R. and Breen, P.A. 1991. Population structure, ageing, and fishing mortality of the New Zealand abalone *Haliotis iris*. *Fishery Bulletin*, 89: 81- 691.
- 337 Schneider, V. 2006. A bioeconomic analysis of marine reserves for paua (abalone) management at Stewart Island, New Zealand. A thesis submitted for the degree of DOCTOR of Philosophy at the University of Otago, Dunedin. Abstract available at: <http://eprints.otago.ac.nz/400/1/SchneiderV.pdf>.
- 338 Schuckard, R. 2005. Marlborough Sounds, an important nesting and wintering area for white-fronted terns (*Sterna striata*). *Notornis* 52:165-167.
- 339 Schuckard, R. 2006a. Population status of the New Zealand king shag (*Leucocarbo carunculatus*). *Notornis* 53: 297-307.
- 340 Schuckard, R. 2006b. Distribution of New Zealand king shags (*Leucocarbo carunculatus*) foraging from the Trio Is and Stewart I colonies, Marlborough Sounds, New Zealand. *Notornis* 53: 291-296.
- 341 Schuckard, R. 2005. Marlborough Sounds, an important nesting and wintering area for white-fronted terns (*Sterna striata*). *Notornis* 52:165-167.
- 342 Scrimgeour, G. S.; Davidson, R. J.; Davidson, J. M. 1988. Recovery of benthic macroinvertebrate and epilithic communities following a large flood, in an unstable, braided New Zealand river. *New Zealand Journal of Marine and Freshwater Research*, 22, 337-344.
- 343 Shaffer, S.A.; Tremblay, Y.; Weimerskirch, H.; Scott, D.; Thompson, D.R.; Sagar, P.M.; Moller, H.; Taylor, G.A.; Foley, D.G.; Block, B.A. & Costa, D.P. 2006. Migratory shearwaters integrate oceanic resources across the Pacific Ocean in an endless summer. *Proceedings of the National Academy of Sciences*. 12799-12802.
- 344 Shears, N.T. and Babcock, R.C. 2007. Quantitative description of mainland New Zealand's shallow subtidal reef communities. Science & Technical Publishing, Department of Conservation.
- 345 Shears, N. T.; Babcock, R. C. 2003. Continuing trophic cascade effects after 25 years of no-take marine reserve protection. *Marine Ecology Progress Series* 246:1-16.
- 346 Shears, N. T.; Babcock R. C. 2002. Marine reserves demonstrate top-down control of community structure on temperate reefs. *Oecologia* 132:131-142.
- 347 Shears, N.T 2007. Quantitative description of mainland New Zealand's shallow subtidal reef communities. Science for Conservation 281. 53 p.
- 348 Shumway, S. E.; Parsons, G. J. eds. 2006. Scallops: Biology, ecology and aquaculture. Second Edition. *Developments in Aquaculture and Fisheries Science Vol. 35. Elsevier, Amsterdam*.
- 349 Slooten, E., S. Dawson, W. Rayment. 2004. Aerial surveys for Hector's dolphins: abundance of Hector's dolphins off the South Island west coast, New Zealand. *Marine Mammal Science* 20(3): 477-490.

- 350 Slooten, D. E., W. Rayment, S. Du Fresne, D. Clement. 2002. The whales and dolphins of the Marlborough region. Report for the Marlborough Regional Council.
- 351 Smith, A. M.; Mcgourty, C. R.; Kregting, L.; Elliot, A. 2005. Subtidal *Galeolaria hystrix* (Polychaeta: Serpulidae) reefs in Paterson Inlet, Stewart Island, New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 2005, Vol. 39: 1297–1304.
- 352 Steller, D. L.; Foster, M. S. 1995. Environmental factors influencing distribution and morphology of rhodoliths in Bahía Concepción, B.C.S., México. *Journal of Experimental Marine Biology and Ecology*, 194(2): 201-212.
- 353 Steller, D. L.; Riosmena-Rodriguez, R.; Foster, M.S.; Roberts, C.A. 2003. Species assemblages associated with Mexican rhodolith beds: the importance of rhodolith structure. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 13: S5-S20.
- 354 Steller, D. L.; Riosmena-Rodriguez, R.; Foster, M.S.; Roberts, C.A. 2003. Rhodolith bed diversity in the Gulf of California: the importance of rhodolith structure and consequences of disturbance. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 13, Issue S1: S5 - S20
- 355 Steller, D.L.; Riosmena-Rodriguez, R.; Raimondi, P.T.; Foster, M.S. 1999. The importance of rhodolith beds as recruitment habitat for the catarina scallop *Argopecten ventricosus* along the coasts of the Baja California peninsula, Mexico. Pp. 11-124. In: Diving for Science. (Eds) J.N. Heine, D. Canestro, G. Wuttken. Proceedings of the American Academy of Underwater Scientists.
- 356 Stephens, S.; Haskew, R.; Lohrer, D.; Oldman, J. 2004. Larval dispersal from the Te Tapuwae O Rongokako Marine Reserve: numerical model simulations. NIWA Client Report: HAM2004-088. Unpublished report to the Department of Conservation. 25 pp. <http://www.DOC.govt.nz/upload/DOCuments/conservation/marine-and-coastal/marine-protected-areas/MCU10.pdf>
- 357 Stevens, P. M. 1987. Response of excised gill tissue from the New Zealand scallop *Pecten novaezelandiae* to suspended silt. *New Zealand Journal of Marine and Freshwater Research*, 21: 605-614.
- 358 Stockin, K. A., D. Lusseau, V. Binedell, N. Wiseman, and M.B. Orams. 2008. Tourism affects the behavioural budget of the common dolphin *Delphinus* sp. in the Hauraki Gulf, New Zealand. *Marine Ecology Progress Series* 355:287-295.
- 359 Stockin, K. A., R. J. Law, P. J. Duignan, G. W. Jones, L. Porter, L. Mirimin, L. Meynier, M. B. Orams. 2007. Trace elements, PCBs and organochlorine pesticides in New Zealand common dolphins (*Delphinus* sp.). *Science of the Total Environment* 387: 333-345.
- 360 Stockin, K. A., G. J. Pierce, V. Binedell, N. Wiseman, M. B. Orams. 2008a. Factors Affecting the Occurrence and Demographics of Common Dolphins (*Delphinus* sp.) in the Hauraki Gulf, New Zealand. *Aquatic Mammals* 34(2): 200-211.
- 361 Stone, G. S., A. Yoshinaga. 2000. Hector's dolphin *Cephalorhynchus hectori* calf mortalities may indicate new risks from boat traffic and habituation. *Pacific Conservation Biology* 6: 162- 170.
- 362 Suisted, R.; Neale, D. 2004. Department of Conservation marine mammal action plan for 2005-2010. Department of Conservation, Wellington.
- 363 Suzuki, T.; Mackenzie, L.; Stirling, D.; Adamson, J. 2001. Conversion of pectenotoxin-2 to pectenotoxin-2 seco acid in the New Zealand scallop, *Pecten novaezelandiae*. *Fisheries Science*, 67(3): 506-510.
- 364 Talman, S. G.; Norkko, A.; Thrush, S. F.; Hewitt J. E. 2004. Habitat structure and the survival of juvenile scallops *Pecten novaezelandiae*: comparing predation in habitats with varying complexity. *Marine Ecology Progress Series* 269: 197–207.
- 365 Taylor, G.A. 2000. Action plan for seabird conservation in New Zealand. Threatened Species Occasional Publication No. 16, Department of Conservation, Wellington.
- 366 Taylor, R. H., K. J. Barton, P. R. Wilson, B. W. Thomas, B. J. Karl. 1995. Population status and breeding of New Zealand fur seals (*Arctocephalus forsteri*) in the Nelson-northern Marlborough region, 1991-94. *New Zealand Journal of Marine and Freshwater Research* 29: 223-234.
- 367 Taylor, T.; Wilson, P.; Barton, K.; Karl, B.; Thomas, B. 1993. Population size and breeding status of New Zealand fur seals (*Arctocephalus forsteri*) in the Nelson-northern Marlborough region. Final report for World Wide Fund for Nature New Zealand. Landcare Research N.Z. Ltd., Nelson. 25 pp.
- 368 Tegner, M. J.; Dayton, P. K.; Edwards, P. B.; Riser, K. L. 1995. Sea urchin cavitation of giant kelp (*Macrocystis pyrifera* C. Agardh) holdfasts and its effects on kelp mortality across a large California forest. *Journal of Experimental Marine Biology and Ecology*, 191(1): 83-99.
- 369 Thomson, J. A. 1914. Additions to the knowledge of the recent brachiopoda of New Zealand. *Transactions and Proceedings of the Royal Society of New Zealand*, 47: 404-409.

- 370 Thoresen, A.C. 1969. Observations on the breeding behaviour of the diving petrel *Pelecanoides u. urinatrix* (Gmelin). *Notornis*, 39: 55-57.
- 371 Thrush, S. F.; Gray, J. S.; Hewitt, J. E.; Ugland, K. I. 2006. Predicting the effects of habitat homogenization on marine biodiversity. *Ecological Applications*, 16(5):1636-42.
- 372 Thrush, S.F.; Schultz, D.; Hewitt, J.E.; Talley, D. 2002. Habitat structure in soft-sediment environments and abundance of juvenile snapper *Pagrus auratus*. *Marine Ecology Progress Series*, 245: 273-280.
- 373 Vaughn, R., B. Würsig. 2006. Dusky dolphin distribution, behavior, and predator associations in Spring 2005, Admiralty Bay, New Zealand. Report to Marlborough District Council & Department of Conservation. 22pp.
- 374 Vaughn, R. L., D. E. Shelton, L. L. Timm, L. A. Watson, B. Wursig. 2007. Dusky dolphin (*Lagenorhynchus obscurus*) feeding tactics and multi-species associations. *New Zealand Journal of Marine and Freshwater Research* 41: 391-400.
- 375 Vaughn, R. L., B. Wursig, D. S. Shelton, L. L. Timm, L. A. Watson. 2008. Dusky dolphins influence prey accessibility for seabirds in Admiralty Bay, New Zealand. *Journal of Mammalogy* 89(4): 1051-1058.
- 376 Visser, I. N. 1999. Propeller scars and known home range of two orca (*Orcinus orca*) in New Zealand waters. *New Zealand Journal of Marine and Freshwater Research* 33(4): 635- 642.
- 377 Visser, I. N. 1999a. Benthic foraging on stingrays by killer whales (*Orcinus orca*) in New Zealand waters. *Marine Mammal Science* 15(1): 220-227.
- 378 Visser, I. N. 2000. Orca (*Orcinus orca*) in New Zealand waters. Unpub. PhD thesis University of Auckland, Auckland, New Zealand. 193p.
- 379 Vincent, W. F.; Howard-Williams, C.; Downes, M. T.; Dryden, S. J. 1989. Underwater light and photosynthesis at three sites in Pelorus Sound, New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 23: 79-91.
- 380 Vogt, A.; D'Angelo, C.; Oswald, F.; Denzel, A.; Mazel, C. H.; Matz, M. V.; Ivanchenko, S.; Nienhaus, G. U.; Wiedenmann, J. A. 2008. A green fluorescent protein with photoswitchable emission from the deep sea. *PLoS ONE* 3(11): e3766. doi:10.1371/journal.pone.0003766.
- 381 Vooren, C.M. 1975. Nursery grounds of tarakihi (Teleostei: Cheilodactylidae) around New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 9: 121-158.
- 382 Walls, G. Y. 1978. The influence of the tuatara on fairy prion breeding on Stephens Island, Cook Strait. *New Zealand Journal of Ecology* 1: 91-98.
- 383 Walls, G.Y.; Laffan, M. D. 1985. Native vegetation and soil patterns in the Marlborough Sounds, South Island, New Zealand. *New Zealand Journal of Botany*, Vol. 24, 293-313.
- 384 Watanabe, J. M.; Harold, C. 1991. Destructive grazing by sea urchins *Strongylocentrotus* spp. in a central California kelp forest: potential roles of recruitment, depth and predation. *Marine Ecology Progress Series*, 71: 125-141.
- 385 Willan, R. C. 1981. Soft-bottom assemblages of Paterson Inlet, Stewart Island. *New Zealand Journal of Zoology*, 8: 229-248.
- 386 Williams, J. R.; Babcock, R. C. 2005. Assessment of size at maturity and gonad index methods for the scallop *Pecten novaezelandiae*. *New Zealand Marine and Freshwater Research*, 39:851-864.
- 387 Williams, J. R.; Babcock, R. C. 2004. Comparison of multiple techniques to evaluate reproductive variability in a marine bivalve: application to the scallop *Pecten novaezelandiae*. *Marine and Freshwater Research*, 55(5): 457-468.
- 388 Willis, T. J., F. Triossi, L. Meynier. 2008. Diet of fur seals *Arctocephalus forsteri* at Tonga Island, Abel Tasman National Park. Prepared for Department of Conservation, Nelson. NIWA Client report NEL2008-011. National Water of Atmospheric Research Ltd, Nelson, New Zealand. 12p.
- 389 Wodzicki, K., Robertson, C.J.R., Thompson, H.R. and Alderton, C.J.T. 1984. The distribution and numbers of gannets (*Sula serrator*) in New Zealand. *Notornis*, 31: 232-261.
- 390 Würsig, B., N. Duprey, and J. Weir. 2007. Dusky dolphins (*Lagenorhynchus obscurus*) off Kaikoura: Historical perspective and goals of research. Report to the New Zealand Department of Conservation. 29 pp.
- 391 Yin, S. 1999. Movement patterns, behaviors, and whistling sounds of dolphin groups off Kaikoura, New Zealand. Thesis. Texas A&M University, Galveston, USA. 107 pp.

ADDITIONAL REFERENCES

- 392 de Lange, P.J., Norton, D.A., Courtney, S.P., Heenan, P.B., Barkla, J.W., Cameron, E.K., Hitchmayh, R., Townsend, D.J., 2009. Threatened and uncommon plants of New Zealand (2008 revision). *New Zealand Journal of Botany, Vol 47: 61- 96*.
- 393 Du Fresne, S. and Mattlin, R., 2009. Distribution and abundance of Hector's dolphins (*Cephalorhynchus hectori*) in Clifford and Cloudy Bays, Final Report for NIWA Project No CBF07401. Marine Wildlife Research Ltd. 28p.
- 394 Geary, A.F., 2010. Harvest and conservation of sooty shearwaters (*Puffinus griseus*) in the Marlborough Sounds, New Zealand. Unpublished thesis, MSc in Conservation Biology, Victoria University.
- 395 Johnson, P., and Brooke, P., 1989. "*Wetland Plants in New Zealand*". DSIR Publishing, Wellington.
- 396 Miskelly, C.M., Dowding, J.E., Elliot, G.P., Hitchmough, R.A., Powlesland, R.G., Robertson, H.A., Sagar, P.M., Scofield, R.P., Taylor, G.A., 2008. Conservation status of New Zealand birds. *Notornis 55(3): 117-135*.
- 397 Paul, L. J. 2002. Size structure of hapuku (*Polypion oxygeneios*) and bass (*P. americanus*) populations in New Zealand. New Zealand Fisheries Assessment Report 2002/16. 17 pp.
- 398 Baker, C.S., Chilvers, B.L., Constantine, R., Du Fresne, S., Mattlin, R.H., van Helden, A., Hitchmough, R. (2010). Conservation status of New Zealand marine mammals (suborders Cetacea and Pinnipedia), 2009. *New Zealand Journal of Freshwater and Marine Research 44(2): 101 – 115*.
- 399 Carroll, E.; N. Patenaude; A. Alexander; D. Steele; R. Harcourt; S. Childerhouse; S. Smith; J. Bannister; R. Constantine; C. Scott Baker (2011). Population structure and individual movement of southern right whales around New Zealand and Australia. *Marine Ecology Progress Series 432: 257-268*.
- 400 Meynier, L.; K. A. Stockin; M. K. H. Bando; P. J. Duignan (2008). Stomach contents of common dolphin (*Delphinus sp.*) from New Zealand waters, 42: 257-268



■ APPENDIX 1 - ECOLOGICAL ASSESSMENT CRITERIA

The following provides explanations for the criteria used in the present study to evaluate the ecological significance of sites. Each significant site can be a composite of biological attributes (i.e. habitat, species, community features).

Rankings for each criterion are: H = high, M = medium and L = low. They collectively contribute to the overall ranking, indicating the degree of significance. Any site for which all criteria rank L is not ecologically significant however, if any criteria rank M or H, the site is significant. Sites with an L ranking have not been discussed or included in the present report.

REPRESENTATIVENESS

The site is significant if it contains biological features (habitat, species, community) that represent a good example within the biogeographic area.

- H: The site contains one of the best examples of its type known from the biogeographic area.
- M: The site contains one of the better examples, but not the best, of its type known from the biogeographic area.
- L: The site contains an example, but not one of the better or best, of its type known from the biogeographic area.

RARITY

The site is significant if it contains flora and fauna listed as nationally threatened nationally endangered, nationally vulnerable, or in serious decline. The site is also considered significant if it supports flora and fauna that are sparse, locally endemic, or at an extreme in their national distribution. The site is also significant if it supports a habitat or habitats or community assemblages that are rare nationally, regionally or within the biogeographic area.

- H: The site contains a nationally important species, habitat or community; or the site contains several species, habitats, communities that are threatened within the biogeographic area.
- M: The site contains one or a few species, habitats or communities that are threatened but not nationally, or contains rare or uncommon species, habitats or communities within the biogeographic area.
- L: The site is not known to contain flora, fauna or communities that are threatened, rare or uncommon in the biogeographic area, region or nationally.

DIVERSITY AND PATTERN

The site is significant if it contains a range of species and habitat types notable for their complexity (i.e. diversity of species, habitat, community).

- H: The site contains a high diversity of species, habitats or communities.
- M: The site contains a moderate diversity of species, habitats or communities.
- L: The site contains a low diversity of species, habitats or communities.

DISTINCTIVENESS/SPECIAL ECOLOGICAL CHARACTERISTICS

The site is significant if it contains ecological features (e.g. species, habitats, communities) that are outstanding or unique nationally, in the region, or in the biogeographic area.

- H: The site contains any ecological feature that is unique nationally, in the region, or in the



biogeographic area, or it contains several features that are outstanding regionally or in the biogeographic area.

M: The site contains any ecological feature that is notable or unusual but not outstanding or unique nationally, in the region or in the biogeographic area.

L: The site contains no known ecological features that are outstanding or unique nationally, in the region or in the biogeographic area (i.e. ecological features are typical rather than distinctive).

SIZE

The site is significant if it is moderate to large in size relative to other habitats or communities of its type in the study area.

H: The site is large in size.

M: The site is moderate in size.

L: The site is small in size.

CONNECTIVITY

The site is significant if it is adjacent to, or close to other significant marine, freshwater or terrestrial areas.

H: The site is close to or well connected to a large significant area or several other significant areas.

M: The site is in the vicinity of other significant areas, but only partially connected to them or at an appreciable distance.

L: The site is isolated from other significant areas.

ADJACENT CATCHMENT MODIFICATION

Catchments that drain large tracts of land can lead to high sediment loading into adjacent marine areas. A site is significant if the adjacent catchment is >400 ha and clad in relatively mature native vegetative cover resulting in a long term stable environment with markedly reduced sediment and contaminant run-off compared to developed or modified catchments.

H: The site is dominated by a stable and relatively mature native vegetated catchment (>400 ha) that is legally protected.

M: The site is dominated by a stable and relatively mature native vegetated catchment (>400 ha) with partial or no legal protection.

L: The site is surrounded by a catchment (>400 ha) that is farmed, highly modified or has limited relatively mature vegetative cover.

Nikau Bay
(Rob Davidson)





■ APPENDIX 2 - MARINE ZONES AND THEIR HABITAT TYPES

The following section describes the broad marine zones and the range of habitat types found in these zones in Marlborough.

Habitats are described within the following marine zones: (A) terrestrial, (B) intertidal, (C) sublittoral zone, and (D) pelagic zone. For each zone the physical and biogenic formed habitats have been listed and described. Physical habitats are formed by abiotic features such as substratum (e.g. bedrock), by physical processes (e.g. light penetration, salinity) or are human related (e.g. mussel floats). Biogenic habitats have been formed by biotic processes and are most often a result of one plant or animal becoming so common that it creates habitat for other plants or animals (e.g. bryozoan “coral” reefs).

A. TERRESTRIAL (INCLUDES SPLASH ZONE)

Terrestrial areas included in the report include habitats that are used by marine species at some stage of their life cycle. Terrestrial areas are located above extreme high water and are not subjected to tidal inundation but may receive salt water spray. All marine birds breed and/or roost in terrestrial areas. The splash zone is located above the high water spring tidal level, but is strongly influenced by salt water spray and often supports marine vascular plants such as salt marsh and herb field species.

In this report terrestrial areas also include man-made structures that float on the surface, such as marine farm structures, and are utilised by sea birds. Jetties, wharfs and buildings are also included as terrestrial areas.

B. INTERTIDAL (LITTORAL ZONE)

The intertidal area is the area that is partially exposed and influenced by the tidal cycle. This is a very diverse zone where the substrate ranges from bedrock cliffs to mud estuaries. The intertidal areas included pools that are located in intertidal areas but are permanently covered by water.

Physical habitats

Bedrock: Intertidal bedrock formed as flat, sloping or vertical aspects. Common in areas exposed to the open ocean and headlands in sheltered areas.

Boulders and cobbles: Boulder and/or cobble dominated substratum formed as rocky beaches or intertidal boulder-banks.

Pebbles: Small substratum usually formed in a distinct zone due to sorting by wave action.

Broken shell and whole dead shell: Area dominated by dead broken and whole dead shell usually mixed with other substratum such as sand and pebbles.

Sand: Sand dominated substratum usually located in areas impacted by wave or strong tidal current action.

Silt and clay (mud): Dominated by fine substratum and located in very sheltered areas such as embayments and estuaries.

Pools: These are located in intertidal areas but are permanently covered by water. They may vary in depth from a few centimetres to 1 metre depth but are usually relatively small. They can occur in estuaries or on open rocky coasts.

Biogenic modifiers

Turfing algae: Substratum predominantly covered by turfing algae (e.g., articulated corallines and other red turfing algae).

Crustose coralline: Substratum dominated by crustose coralline algae. Usually found on rock substratum near low tidal levels.



Barnacle zone: Rocky areas with a high percentage cover of barnacles. Usually located on bedrock on exposed coastlines.

Eelgrass: High percentage cover formed by *Zostera* sp. Always growing on soft substratum and usually in sheltered estuarine locations or small embayments.

Herb field: High percentage cover of herb field. Usually located in high tidal areas in estuaries.

Salt marsh (rushes, sedges): High percentage cover of or sedges most often located in estuaries or sheltered embayments.

Tube worms mounds: Mound forming intertidal tube worm colonies usually located in estuaries or sheltered locations.

Pacific oyster beds: Dense beds of the introduced Asian oyster *Crassostrea gigas*. Usually found in estuarine areas or embayments where freshwater entered. Grow on dead shell or cobble substratum.

Shellfish beds: Dense beds of shellfish (e.g. cockle, pipi) usually located in estuaries where moderate to strong tidal flows occur.

Macroalgae bed: High percentage cover of macroalgal species usually found in sheltered embayments, estuaries, river mouths and freshwater seepages.

C. SUBLITTORAL ZONE

The sublittoral zone extends from low water spring to the edge of the continental shelf, well beyond the MDC territorial area. Only habitats within the MDC territorial area will, however, be presented in this report. This region includes benthic habitats and species that live in close association with them (e.g. invertebrates, reef fish).

Physical habitats

Bedrock: Bedrock formed as flat, sloping or vertical aspects. Can include caves and crevices. Common in areas exposed to the open ocean and headlands in sheltered areas.

Boulders and cobbles: Boulder and/or cobble dominated substratum formed as subtidal slopes and subtidal extensions of boulder-banks.

Pebbles: Small substratum usually formed in a distinct zone or depth. Often a subtidal extension of intertidal pebble beaches.

Broken shell and whole dead shell: Comprising dead broken and whole dead shell. Often found immediately below the cobble zone in the Marlborough Sounds.

Sand: Sand dominated substratum usually located in shallow areas and areas impacted by wave or strong tidal current action. Can form large subtidal banks in the outer Marlborough Sounds.

Silt and clay (mud): Dominated by fine sediments located in deep or very sheltered shallow areas. Represents the most widespread subtidal habitat in the sheltered Marlborough Sounds.

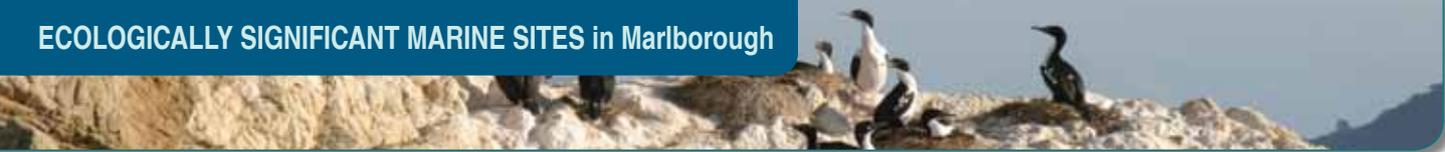
Channels: Channels represent areas where tidal flows are constricted by land masses.

Biogenic modifiers

***Carpophyllum maschalocarpum* forest:** Located at or near low water. High abundance (≥ 20 adult plants m^2). Often other brown algae species are present. Grazers including occur in low numbers.

***Ecklonia* forest:** Stands of mature *Ecklonia* that often form a canopy, occasional *C. flexuosum* plants may be present. Urchins at low numbers. Absent from sheltered areas.

***Carpophyllum flexuosum* forest:** High percentage cover of *C. flexuosum*. Mostly found in sheltered reef areas. Plants are large and usually associated with high levels of sediment.



Giant kelp forest (*Macrocystis pyrifera*): Giant kelp forests usually attach to bedrock, bounders or horse mussels. Usually anchored at depth >2 m, but lone plants have been observed at low water.

Mixed algal forest (high energy): Large brown algae associated with high energy shores. *Duvillaea* spp. often present at low water with combinations of *Lessonia variegata* (0-10m) and *Marginariella boryana* (0 and 20 m).

Mixed algae (moderate energy): Mixture of large brown algal species. No clear dominant species.

Red foliose algae: Substratum predominantly covered (>40%) by red foliose algae such as *Adamsiella chauvinii*. Some red foliose species of algae can also grow on also rock.

Turfing algae: Substratum predominantly covered by turfing algae (e.g., articulated corallines and other red turfing algae, >30% cover). Low numbers of large brown algae and urchins may be present.

***Caulerpa* mat:** Dense mats of the green algae, usually *Caulerpa browni*, *hypnoides* and *articulata*. Urchins and large brown algae are rare.

Crustose coralline algae dominated urchin barren: Very low numbers of large brown algae present, substratum typically dominated by crustose coralline algae (paint). Usually associated with grazing activity of kina (>2 exposed urchins m²), which leaves the substratum relatively devoid of macroalgae.

Encrusting invertebrates: Usually vertical walls or overhangs. Substratum predominantly covered by community of encrusting ascidians, tubeworms, sponges, hydroids, and bryozoans. Large brown algae rare.

Sponge gardens: (>10m depth): Sponges are visually dominant, high cover of sediment. Usually occurs near the reef-sand interface or in the heads of particular bays in the Marlborough Sounds.

Horse mussel bed: Areas with high densities of horse mussels forming a bed or zone (>4 m²).

Bryozoan garden: Areas with high current flow with high percentage cover of bryozoan colonies.

Tubeworm bed: Areas dominated by soft sediment building tubeworms or areas colonised mounds of calcified tubeworms.

Rhodoliths: Free living (unattached) growths of calcareous algae forming a distinct zone or bed on soft sediments.

Hydroid beds: Rocky substrata colonised by high numbers of hydroid trees.

D. PELAGIC (OCEANIC ZONES)

The pelagic zone is the area of ocean that is not close to the bottom or near the shore.

Physical habitats

Photic area: Water column where light is sufficiently strong to support photosynthesis (<200 m). Primary production by phytoplankton.

High current: Area where strong tidal currents regularly occur.

Upwelling: Area where deep water is brought closer to the surface.

Biogenic modifiers

Drift macroalgae: Floating macroalgae originating from rocky coasts provides habitat for a variety of small fish. Larger fish such as kingfish are attracted to these floating rafts. Juvenile grouper are thought to associate with these drifting masses of macroalgae.

GLOSSARY - COMMON TO SCIENTIFIC

COMMON NAME	SCIENTIFIC NAME	REFERENCES
Agar weed	<i>Pterocladia lucida</i>	1
Ambush star	<i>Stegnaster inflatus</i>	
Anchovy	<i>Engraulis australis</i>	140, 297
Arabic volute	<i>Alcithoe arabica</i>	306
Arc shell	<i>Barbatia novaezealandiae</i>	306
Banded dotterel	<i>Charadrius bicinctus</i>	182
Banded rail	<i>Gallirallus philippensis</i>	125
Banded wrasse	<i>Notolabrus fucicola</i>	140, 297
Barnacles	<i>Megabalanus</i> sp	
Barracouta	<i>Thyrsites atun</i>	140, 297
Basking shark	<i>Cetorhinus maximus</i>	140, 143
Batchelor's button	<i>Cotula coronopifolia</i>	
Bivalve	<i>Cuspidaria wellmani</i>	306
Blackfoot Paua	<i>Haliotis iris</i>	191, 261, 262, 263, 279, 280, 303, 304, 305, 306, 316, 326, 331, 337
Black goby	<i>Gobiopsis atrata</i>	297
Black lamp shell	<i>Notosaria nigricans</i>	104, 227, 230
Black sea slug	<i>Scutus breviculus</i>	
Black stilt	<i>Himantopus novaezealandiae</i>	182
Black swan	<i>Cygnus atratus</i>	182
Black-backed gull	<i>Larus dominicanus</i>	182
Black-fronted tern	<i>Chlidonias albostrata</i>	182
Blister worm	<i>Polydora armata</i>	
Blue cod	<i>Parapercis colias</i>	49, 50, 51, 64, 72, 80, 197, 240, 309
Blue dot triplefin	<i>Notoclinops caerulepunctus</i>	140, 297
Blue mackerel	<i>Scomber australasicus</i>	297
Blue maomao	<i>Scorpius aequipinnis</i>	140, 297
Blue moki	<i>Latridopsis ciliaris</i>	140, 297
Blue mussel	<i>Mytilus galloprovincialis</i>	
Blue shark	<i>Prionace glauca</i>	297
Blue-eyed triplefin	<i>Notoclinops segmentatus</i>	140, 297
Bluenose	<i>Hyperoglyphe antarctica</i>	140, 297
Bottlenose dolphin	<i>Tursiops truncatus</i>	68, 233, 234, 236, 237, 264, 265
Brill	<i>Colistium guntheri</i>	
Broadnose sevengill shark	<i>Notorhynchus cepedianus</i>	297
Broccoli weed	<i>Xiphophora chondrophylla</i>	1
Bronze whaler	<i>Carcharhinus brachyurus</i>	140
Brown halo weed	<i>Halopteris</i> sp.	1
Brown tongue weed	<i>Glossophora. kunthii</i>	1
Buck's horn plantain	<i>Plantago coronopus</i>	
Bull kelp	<i>Durvillea antarctica</i>	1
Burrowing anemone	<i>Cerianthus</i> sp	53, 124, 195
Butterfish	<i>Odax pullus</i>	140, 297
Butterfly chiton	<i>Cryptoconchus porosus</i>	306
Butterfly perch	<i>Caesioperca lepidoptera</i>	140, 297

COMMON NAME	SCIENTIFIC NAME	REFERENCES
Carpet shark	<i>Cephaloscyllium isabella</i>	140
Caspian tern	<i>Hydroprgne caspia</i>	
Catseye	<i>Turbo smaragdus</i>	306
Circular saw shell	<i>Astrea heliotropium</i>	306
Club tunicate	<i>Styela clava</i>	
Cockle	<i>Austrovenus stutchburyi</i>	306
Colonial cup coral	<i>Culicia rubeola</i>	
Common anemone	<i>Actinothoe albocincta</i>	
Common dolphin	<i>Delphinus delphis</i>	286, 358, 359, 360
Common hermit crab	<i>Pagurus novizelandiae</i>	
Common jellyfish	<i>Aurelia aurita</i>	
Common roughy	<i>Paratrachichthys trailli</i>	140, 297
Common sole	<i>Peltorhamphus</i>	297
Common triplefin	<i>Forsterygion. lapillum</i>	140, 297
Common warehou	<i>Seriolella brama</i>	297
Conger eel	<i>Conger verreauxi</i>	140, 297
Cook's turban	<i>Cookia sulcata</i>	306
Coralline algae	<i>Arthrocardia corymbosa</i>	
Coralline algae	<i>Corallina officinalis</i>	1, 20, 133, 283
Cord grass	<i>Spartina anglica</i>	
Crested flounder	<i>Lophonectes gallus</i>	297
Cushion star	<i>Patiriella regularis</i>	
Dark brown sponge	<i>Polymastia fusca</i>	
Dark ghost shark	<i>Hydrolagus novaezelandiae</i>	140, 297
Deepwater tuatua	<i>Pahpies donacina</i>	306
Dividing star	<i>Allostichaster insignis</i>	
Dog cockle	<i>Tucetona laticostata</i>	306
Dredge oyster	<i>Ostrea chilensis</i>	
Duck	<i>Anas sp</i>	182
Dusky dolphin	<i>Lagenorhynchus obscurus</i>	24, 25, 57, 249, 250, 251, 373, 374, 375, 390, 391
Dwarf scorpion fish	<i>Scorpaena papillosus</i>	297
Eagle ray	<i>Myliobatis tenuicaudatus</i>	140, 297
Eastern bar-tailed godwit	<i>Limosa lapponica baueri</i>	
Electric ray	<i>Torpedo fairchildi</i>	297
Elephant fish	<i>Callorhinchus milii</i>	142
Eleven-armed star	<i>Coscinasterias muricata</i>	
Elongated mactra	<i>Longimactra elongata</i>	306
Fairy prion	<i>Pachyptila turtur</i>	267, 382
False oyster	<i>Cleidothaerus albidus</i>	306
Fan shell	<i>Chlamys dieffenbachi</i>	306
Fan worm	<i>Branchiomma</i>	
Fern bird	<i>Bowdleria punctatus</i>	182
Filter feeding hermit crab	<i>Paguristes setosus</i>	
Fine <i>Dosinia</i>	<i>Dosinia subrosea</i>	306
Finger sponge	<i>Callyspongia spp.</i>	
Flesh-footed shearwater	<i>Puffinus carneipes</i>	182
Flexible flapjack	<i>Carpophyllum flexuosum</i>	1
Fluttering shearwater	<i>Puffinus gavia</i>	30, 182
Friiled venus shell	<i>Bassina yatei</i>	306

COMMON NAME	SCIENTIFIC NAME	REFERENCES
Frost fish	<i>Lepidopus caudatus</i>	297
Gannet	<i>Morus serrator</i>	42, 389
Garfish	<i>Hyporhamphus ihi</i>	140, 297
Gemfish	<i>Rexea solandri</i>	297
Giant kelp	<i>Macrocystis pyrifera</i>	1, 43, 138, 148, 163, 176, 270, 271, 327, 368
Giant lampshell	<i>Neothyrsus lenticularis</i>	104, 228, 229, 230, 281
Giant sponge chiton	<i>Notoplax latilamina</i>	
Giant stargazer	<i>Kathetosoma giganteum</i>	140, 297
Girdled wrasse	<i>Notolabus cinctus</i>	140, 297
Glasswort	<i>Sarcocornia quinqueflora</i>	
Goatfish	<i>Upeneichthys lineatus</i>	140, 297
Goose barnacle	<i>Lepsa</i> sp	
Great white shark	<i>Carcharodon carcharias</i>	140
Green sea lettuce	<i>Ulva</i> spp	1
Green topshell	<i>Trochus viridus</i>	306
Greenback flounder	<i>Rhombosolea tapirina</i>	297
Green-lipped mussel	<i>Perna canaliculus</i>	153
Groper	<i>Polyprion oxygenios</i>	198, 315
Gummy weed	<i>Splachnidium rugosum</i>	1
Hagfish	<i>Eptatretus cirrhatu</i>	140, 297
Hake	<i>Merluccius australis</i>	297
Half crab	<i>Petrolisthes novaezelandiae</i>	
Hapuku	<i>Polyprion oxygenios</i>	198, 315
Heart urchin	<i>Echinocardium cordatum</i>	
Hector's dolphin	<i>Cephalorhynchus hectori</i>	29, 106, 256, 288, 349, 361
Hermit crab	<i>Pagurus traversi</i>	
Hoki	<i>Macruronus novaezelandiae</i>	297
Holothurian	<i>Pentadactyla longidentis</i>	
Horse mussel	<i>Atrina zelandica</i>	4, 15, 75, 126, 166, 184, 192
Humpback whale	<i>Megaptera novaeangliae</i>	60, 150, 158
Hydroids	<i>Obelia</i> sp	
Jack mackerel	<i>Trachurus</i> spp	297
Japanese kelp	<i>Undaria pinnatifida</i>	1
Jewel anemone	<i>Corynactis haddoni</i>	
Jewel star	<i>Pentagonaster pulchellus</i>	
John dory	<i>Zeus japonicus</i>	140, 297
Jointed wire rush	<i>Apodasmia similis</i>	
Kahawai	<i>Arripis trutta</i>	140
Kina	<i>Evechinus chloroticus</i>	302, 321, 329
King shag	<i>Leucocarbo carunculatus</i>	219, 282, 339, 340
Kingfish	<i>Seriola lalandi</i>	140, 297
Knobbed whelk	<i>Penion sulcatus</i>	
Krill	<i>Munida gregaria</i>	
Lace coral	<i>Galeopsis porcellanicus</i>	
Lampshell	<i>Terebratella haurakiensis</i>	140, 228, 229, 230
Lampshell	<i>Terebratella sanguinea</i>	140, 228, 229, 230
Large barnacle	<i>Epopella plicata</i>	
Large trough shell	<i>Mactra murchisoni</i>	306
Leatherjacket	<i>Parika scaber</i>	140, 297

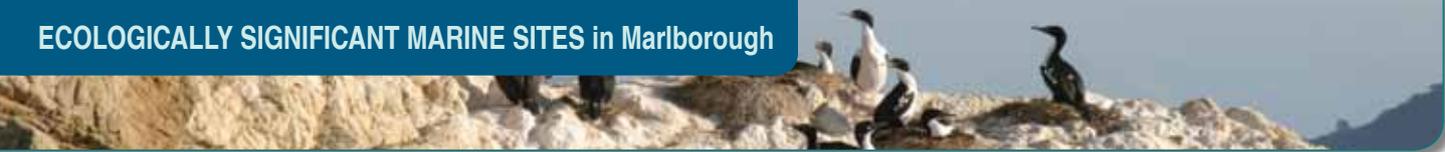
COMMON NAME	SCIENTIFIC NAME	REFERENCES
Lemon sole	<i>Pelotretis flavilatus</i>	297
Ling	<i>Genypterus blacodes</i>	140, 297
Little penguin	<i>Eudyptula minor</i>	76, 254
Longfinned triplefin	<i>Ruanocho decemdigitatus</i>	140, 297
Mako shark	<i>Isurus oxyrinchus</i>	297
Marblefish	<i>Aplodactylus arctidens</i>	140
Marsh crake	<i>Porzana pusilla</i>	125, 182
Marsh ribbonwood	<i>Plagianthus divaricatus</i>	
Morning star shell	<i>Tawera spissa</i>	306
Mottled brotula	<i>Bidenichthys consobrinus</i>	
Mottled triplefin	<i>Forsterygion malcolmi</i>	140, 297
Mud worm	<i>Polydora websteri</i>	
Narrow Flapjack	<i>Carpophyllum maschalocarpum</i>	1
Native musk	<i>Mimulus repens</i>	33
Neptune's necklace	<i>Hormosira banksii</i>	1
Nesting mussel	<i>Modiolarca impacta</i>	
New Zealand dotterel	<i>Charadrius obscurus</i>	182
New Zealand fur seal	<i>Arctocephalus forsteri</i>	16, 218, 255, 366, 367, 388
New Zealand lancelet	<i>Epigonichthys hectori</i>	297
Noble chiton	<i>Eudoxochiton nobilis</i>	306
North Pacific sea star	<i>Asterias amurensis</i>	
Northern diving petrel	<i>Pelecanoides urinatrix urinatrix</i>	370
Northern spiny dogfish	<i>Squalus sp.</i>	297
Nudibranch	<i>Jason mirabilis</i>	
Nut shell	<i>Nucula hartvigiana</i>	
Oak leaf seaweed	<i>Landsburgia quercifolia</i>	1
Oblique swimming triplefin	<i>Obliquichthys maryannae</i>	140, 297
Octopus	<i>Pinnoctopus cordiformis</i>	
Olive shell	<i>Amalda mucronata</i>	306
Opal fish	<i>Hemerocoetes</i>	140
Opal topshell	<i>Cantharidus opalus</i>	
Orange broach star	<i>Asterodon dilatatus</i>	306
Orange cup sponge	<i>Stellatta crater</i>	
Orange finger sponge	<i>Raspalia sp</i>	
Orange hermit crab	<i>Diacanthurus spinulimanus</i>	
Orca, killer whale	<i>Orcinus orca</i>	134, 376, 277, 378
Pacific oyster	<i>Crassostrea gigas</i>	170
Packhorse rock lobster	<i>Sagmariasus verreauxi</i>	
Paddle weed	<i>Ecklonia radiata</i>	1
Parchment worm	<i>Chaetopterus sp</i>	
Pied stilt	<i>Himantopus himantopus</i>	182
Pilchard	<i>Sardinops neopilchardus</i>	20, 297
Pin-cushion star	<i>Eurygonias hyalacanthus</i>	
Pink golfball sponge	<i>Tethya ingalli</i>	
Pink sunset shell	<i>Gari lineolata</i>	306
Pink urchin	<i>Pseudechinus albocinctus</i>	
Pipi	<i>Paphies australis</i>	306
Plankton hermit crab	<i>Paguristes setosus</i>	
Porbeagle shark	<i>Lamna nasus</i>	
Porcupine fish	<i>Allomycterus jaculiferus</i>	

COMMON NAME	SCIENTIFIC NAME	REFERENCES
Purple cockle	<i>Venericardia purpurata</i>	306
Purple sunset shell	<i>Gari stangeri</i>	
Rat tail	<i>Coelorhynchus</i> sp.	297
Red algae	<i>Adamsiella chauvinii</i>	1, 214, 300
Red algae	<i>Rhodymenia linearis</i>	1
Red cod	<i>Pseudophycis bacchus</i>	140, 297
Red encrusting bryosoan	<i>Watersipora subtorquata</i>	
Red gurnard	<i>Chelidonichthys kum</i>	140
Red moki	<i>Cheilodactylus spectabilis</i>	140
Red rock crab	<i>Plagusia chabrus</i>	
Red-banded perch	<i>Hypoplectrodes huntii</i>	140, 297
Red-billed gull	<i>Larus novaehollandiae scopulinus</i>	169, 266
Red-necked phalarope	<i>Phalaropus lobatus</i>	
Red-necked stint	<i>Calidris ruficollis</i>	182
Reef heron	<i>Egretta sacra sacra</i>	123, 182
Remuremu	<i>Selliera radicans</i>	
Ribaldo	<i>Mora moro</i>	297
Ribbed mussel	<i>Aulacomya ater maoriana</i>	306
Rig	<i>Mustelus lenticulatus</i>	297
Ringed <i>Dosinia</i>	<i>Dosinia anus</i>	306
Robust triplefin	<i>Grahamina gymnota</i>	297
Rock cod	<i>Lotella rhacinus</i>	140, 297
Rock lobster	<i>Jasus edwardsii</i>	6, 7, 8, 9, 10, 11, 12, 13, 14, 34,35,36, 37, 39, 59, 145, 146, 208
Rock oyster	<i>Saccostrea cucclata</i>	
Rough skate	<i>Zearaja nasutus</i>	141, 144
Royal spoonbill	<i>Platalea regia</i>	182
Sabellid polychaete	<i>Bispira bispira</i>	
Saddle seasquirt	<i>CnemidOCarpa bicornuata</i>	
Salmon	<i>Oncorhynchus tshawytscha</i>	
Sand dahlia	<i>Isocradactis magna</i>	
Sand divers	<i>Limnichthys</i> sp	
Sand dollar	<i>Fellaster zelandiae</i>	
Sand flounder	<i>Rhombosolea plebia</i>	140, 297
Sand hopper	<i>Corophium acutum</i>	
Sand-eel	<i>Gonorhynchus gonorhynchus</i>	297
Scallop	<i>Pecten novaezelandiae</i>	58, 188, 189, 206, 274, 348, 357, 363, 364, 386, 387
Scaly gurnard	<i>Lepidotriglia brachyoptera</i>	140, 297
Scaly headed triplefin	<i>Karalepis stewarti</i>	297
Scarlet wrasse	<i>Pseudolabrus miles</i>	140, 297
School shark	<i>Galeorhinus galeus</i>	140
Scimitar mactra	<i>Zenatia acinaces</i>	306
Scrambling pohuehue	<i>Muehlenbeckia complexa</i>	
Sea cucumber	<i>Stichopus mollis</i>	
Sea grape	<i>Caulerpa geminata</i>	1
Sea grass, eel grass	<i>Zostera muelleri</i>	
Sea pen	<i>Virgularia gracillima</i>	
Sea perch	<i>Helicolenus percoides</i>	140

COMMON NAME	SCIENTIFIC NAME	REFERENCES
Sea primrose	<i>Samolus repens</i>	
Sea rimu	<i>Caulerpa brownii</i>	1
Sea rush	<i>Juncus kraussii</i> var. <i>australiensis</i>	
Sea sedge	<i>Carex litorosa</i>	
Sea star	<i>Stichaster australis</i>	
Sea tulip	<i>Pyura pachydermatina</i>	
Seahorse	<i>Hippocampus abdominalis</i>	140, 297
Separation Point coral	<i>Celleporaria agglutinans</i>	
Seven-armed star	<i>Astrostele scabra</i>	
Shell boring worm	<i>Polydora hoplura</i>	
Ship rat	<i>Rattus rattus</i>	
Ship worm	<i>Lyrodus pedicellatus</i>	
Short-jaw kokopu	<i>Galaxias postvectis</i>	
Short-tailed stingray	<i>Dasyatis brevicaudata</i>	140
Silky <i>Dosinia</i>	<i>Dosinia lambata</i>	306
Silver warehou	<i>Seriolella punctata</i>	297
Slaty sponge	<i>Ancorina alata</i>	
Slender clubrush	<i>Isolepis cernua</i>	
Slender roughy	<i>Optivus elongatus</i>	140, 297
Slender sea lettuce	<i>Ulva laetevirens</i>	1
Slender zigzag weed	<i>Cystophora retroflexa</i>	1
Small dog cockle	<i>Glycymeris modestus</i>	306
Smelt	<i>Retropinna retropinna</i>	
Smooth pipefish	<i>Stigmatopora macropterygia</i>	297
Smooth skate	<i>Dipturus innominata</i>	140, 141, 144
Snake star	<i>Ophiopsammus maculata</i>	
Snake star	<i>Amphiura correcta</i>	
Snake star	<i>Amphiura rosea</i>	
Snapper	<i>Pagrus auratus</i>	140, 299, 372
Sooty shearwater	<i>Puffinus griseus</i>	73, 152, 239
South Island pied oystercatcher	<i>Haematopus finschi</i>	182
Southern bastard red cod	<i>Pseudophycis barbatus</i>	140, 297
Southern pigfish	<i>Congiopodus leucopaecilus</i>	140, 297
Southern right whale	<i>Eubalaena australis</i>	294
Spartina	<i>Spartina anglica</i>	
Speckled anemone	<i>Oulactis muscosa</i>	
Speckled sole	<i>Peltorhamphus latus</i>	297
Speckled whelk	<i>Cominella maculosa</i>	
Spectacled triplefin	<i>Ruanoho whero</i>	140, 297
Sperm whale	<i>Physeter macrocephalus</i>	16, 162, 313, 314
Spinifex	<i>Spinifex sericeus</i>	
Sponge	<i>Aaptos aaptos</i>	
Sponge Crab	<i>Dromia wilsoni</i>	
Spoon worm	<i>Urechis novaezelandiae</i>	
Spotted shag	<i>Strictocarbo punctatus punctatus</i>	117
Spotted spiny dogfish	<i>Squalus acanthias</i>	297
Spotted stargazer	<i>Genyagnus monopterygius</i>	297
Spotted topshell	<i>Calliostoma punctulata</i>	306
Spotty	<i>Notolabrus celidotus</i>	52, 140, 297
Sprat	<i>Sprattus</i> spp	21



COMMON NAME	SCIENTIFIC NAME	REFERENCES
Squat lobster	<i>Galatheidae</i>	
Starry limpet	<i>Cellana stellifera</i>	306
Strap kelp	<i>Lessonia variegata</i>	1
Strawberry cockle	<i>Nemocardium pulchellum</i>	
Sulphur sponge	<i>Aplysilla sulphurea</i>	
Swamp maire	<i>Syzygium maire</i>	
Sweep	<i>Scorpius lineolatu</i>	140, 297
Tarakihi	<i>Nemadactylus macropterus</i>	140, 381
Telescope fish	<i>Mendosoma lineatum</i>	297
Thornfish	<i>Bovichtus variegatus</i>	140
Thresher shark	<i>Alopias vulpinus</i>	140
Tiger topshell	<i>Calliostoma tigris</i>	306
Tiny lampshell	<i>Waltonia inconspicua</i>	104
Top shell	<i>Trochus</i> sp	306
Trevally	<i>Pseudocaranx denetx</i>	140, 297
Triangle shell	<i>Spisula aequilater</i>	
Trough Shell	<i>Mactra discors</i>	306
Trumpeter	<i>Latris lineata</i>	140, 297
Tuatua	<i>Paphies subtriangulata</i>	306
Tubeworm	<i>Galeolaria hystrix</i>	351
Tuneworm	<i>Owenia petersenae</i>	272, 273
Turret shell	<i>Maoricolpus roseus</i>	306
Two-saddle rattail	<i>Coelorhynchus biclinozonalis</i>	297
Urchin	<i>Apatopygus recens</i>	
Variable oystercatcher	<i>Haematopus unicolor</i>	182
Variable triplefin	<i>Forsterygion varium</i>	140, 297
Virgin paua	<i>Haliotis virginea</i>	306
Wandering anemone	<i>Phlyctenactis tuberculata</i>	
Warty nudibranch	<i>Archidoris wellingtonensis</i>	
Waxy seasquirt	<i>Asterocarpa cerea</i>	
Wedge shell	<i>Tellina liliانا</i>	306
Weka	<i>Gallirallus australis</i>	
White cats eye	<i>Turbo granosus</i>	306
White heron	<i>Egretta alba</i>	182
White-fronted tern	<i>Sterna striata</i>	338, 341
Window oyster	<i>Monia zelandica</i>	
Witch	<i>Arnoglossus scapha</i>	297
Wrybill	<i>Anarhynchus frontalis</i>	182
Yaldwin's triplefin	<i>Notoclinops yaldwini</i>	140, 297
Yellow boring sponge	<i>Clione cellata</i>	
Yellowbelly flounder	<i>Rhombosolea leporina</i>	32
Yellow-black triplefin	<i>Forsterygion flavonigrum</i>	140, 297
Yellow-eyed mullet	<i>Aldrichetta forsteri</i>	140, 297
Yellow-foot paua	<i>Haliotis australis</i>	306
Zigzag sausage weed	<i>Cystophora torulosa</i>	1
Zoanthids	<i>Parazoanthus</i> sp	



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SCIENTIFIC NAME	COMMON NAME	REFERENCES
<i>Aaptos aaptos</i>	Sponge	
<i>Actinothoe albocincta</i>	Common anemone	
<i>Adamsiella chauvinii</i>	Red algae	1, 214, 300
<i>Aeodes nitidissima</i>		
<i>Alcithoe arabica</i>	Arabic volute	306
<i>Aldrichetta forsteri</i>	Yellow-eyed mullet	140
<i>Alexandrinum minutum</i>		
<i>Allomycterus jaculiferus</i>	Porcupine fish	
<i>Allostichaster insignis</i>	Dividing star	
<i>Alopias vulpinus</i>	Thresher shark	140
<i>Amalda mucronata</i>	Olive shell	306
<i>Amphiura correcta</i>	Snakestar	
<i>Amphiura rosea</i>	Snakestar	
<i>Anarhynchus frontalis</i>	Wrybill	182
<i>Anas</i> sp.	Duck	182
<i>Ancorina alata</i>	Slaty sponge	
<i>Anguinella palmate</i>		
<i>Apatopygus recens</i>	Urchin	
<i>Apium prostratum</i>		
<i>Aplidium phortax</i>		
<i>Aplodactylus arctidens</i>	Marblefish	140
<i>Aplysilla sulphurea</i>	Sulphur sponge	
<i>Apodasma similis</i>	Jointed wire rush	
<i>Archidoris wellingtonensis</i>	Warty nudibranch	
<i>Arctocephalus forsteri</i>	New Zealand fur seal	16, 218, 255, 366, 367, 388
<i>Arnoglossus scapha</i>	Witch	297
<i>Arripis trutta</i>	Kahawai	140
<i>Arthrocardia corymbosa</i>	Coralline algae	
<i>Asparagopsis armata</i>		1
<i>Asperococcus bullosus</i>		
<i>Asterias amurensis</i>	North Pacific sea star	
<i>Asterocarpa cerea</i>	Waxy seasquirt	
<i>Asterodon dilatatus</i>	Orange broach star	306
<i>Astrea heliotropium</i>	Circular saw shell	306
<i>Astrostole scabra</i>	Seven-armed star	
<i>Atrina zelandica</i>	Horse mussel	4, 15, 75, 126, 166, 184, 192
<i>Aulacomya ater maoriana</i>	Ribbed mussel	306
<i>Aurelia aurita</i>	Common jellyfish	
<i>Austrovenus stutchburyi</i>	Cockle	306
<i>Bagula cuspidata</i>		
<i>Barbatia novaezealandiae</i>	Arc shell	306
<i>Bassina yatei</i>	Friiled venus shell	306
<i>Bidenichthys consobrinus</i>	Mottled brotula	
<i>Bispira bispira</i>	Sabellid polychaete	
<i>Botryllus schlosseri</i>		
<i>Bovichtus variegatus</i>	Thornfish	140
<i>Bowdleria punctatus</i>	Fern bird	182



SCIENTIFIC NAME	COMMON NAME	REFERENCES
<i>Bowerbankia imbricata</i>		
<i>Branchiomma</i>	Fan worm	
<i>Bugula flabellata</i>		
<i>Bugula neritina</i>		
<i>Bugula</i> sp.	Arborescent bryozoan	
<i>Bugula stolonifera</i>		
<i>Caesioperca lepidoptera</i>	Butterfly perch	140, 297
<i>Calidris ruficollis</i>	Red-necked stint	182
<i>Calliostoma punctulata</i>	Spotted topshell	306
<i>Calliostoma tigris</i>	Tiger topshell	306
<i>Callorhinchus milii</i>	Elephant fish	115, 142
<i>Callothamnion consanguineum</i>		
<i>Callyspongia</i> spp.	Finger sponge	
<i>Cantharidus opalus</i>	Opal topshell	306
<i>Carcharhinus brachyurus</i>	Bronze whaler	140
<i>Carcharodon carcharias</i>	Great white shark	140
<i>Carex litorosa</i>	Sea sedge	
<i>Carpomitra costata</i>		
<i>Carpophyllum flexuosum</i>	Flexible flapjack	1
<i>Carpophyllum maschalocarpum</i>	Narrow flapjack	1
<i>Caulerpa articulata</i>		
<i>Caulerpa brownii</i>	Sea rimu	1
<i>Caulerpa flexilis</i>		1
<i>Caulerpa geminata</i>	Sea grape	
<i>Cellana stellifera</i>	Starry limpet	306
<i>Celleporaria agglutinans</i>	Separation Point coral	
<i>Cephalorhynchus hectori</i>	Hector's dolphin	29, 106, 256, 288, 349, 361
<i>Cephaloscyllium isabella</i>	Carpet shark	140
<i>Cerianthus</i> sp.	Burrowing anemone	53, 124, 195
<i>Cetorhinus maximus</i>	Basking shark	143
<i>Chaetomorpha darwini</i>		
<i>Chaetopterus</i> sp	Parchment worm	
<i>Champia novaezelandiae</i>		1
<i>Charadrius bicinctus</i>	Banded dotterel	182
<i>Charadrius obscurus</i>	New Zealand dotterel	182
<i>Cheilodactylus spectabilis</i>	Red moki	140
<i>Chelidonichthys kum</i>	Red gurnard	140
<i>Chladhymenia oblongifolia</i>		1
<i>Chlamys dieffenbachi</i>	Fan shell	306
<i>Chlidonias albobristata</i>	Black-fronted tern	182
<i>Chnoospora minima</i>		1, 285
<i>Cladophoropsis herpestica</i>		
<i>Cleidothaerus albidus</i>	False oyster	306
<i>Clione cellata</i>	Yellow boring sponge	
<i>Cnemidocarpa bicornuata</i>	Saddle seasquirt	
<i>Codium adherens</i>		1
<i>Codium fragile</i>		1
<i>Coelorhynchus biclinozonalis</i>	Two-saddle rattail	297
<i>Coelorhynchus</i> sp.	Rat tail	297
<i>Colistium guntheri</i>	Brill	

SCIENTIFIC NAME	COMMON NAME	REFERENCES
<i>Colpomenia</i> sp.		
<i>Cominella maculosa</i>	Speckled whelk	
<i>Conger verreauxi</i>	Conger eel	140, 297
<i>Congiopodus leucopaecilus</i>	Southern pigfish	140, 297
<i>Conopeum seurati</i>		
<i>Cookia sulcata</i>	Cook's turban	306
<i>Corallina officinalis</i>	Coralline algae	1, 20, 133, 283
<i>Corbula zelandica</i>		
<i>Corella eumyota</i>		
<i>Corophium acutum</i>	Sand hopper	
<i>Corynactis haddoni</i>	Jewel anemone	
<i>Coscinasterias muricata</i>	Eleven-armed star	
<i>Cotula coronopifolia</i>	Batchelor's button	
<i>Crassostrea gigas</i>	Pacific oyster	170
<i>Crella incrustans</i>		
<i>Cryptoconchus porosus</i>	Butterfly chiton	306
<i>Cryptosula pallasiana</i>		
<i>Culicia rubeola</i>	Colonial cup coral	
<i>Cuspidaria wellmani</i>	Bivalve	306
<i>Cutleria multifida</i>		
<i>Cygnus atratus</i>	Black swan	182
<i>Cystophora retroflexa</i>	Slender zigzag weed	1
<i>Cystophora scalaris</i>		1
<i>Cystophora</i> spp.		1
<i>Cystophora torulosa</i>	Zigzag sausage weed	1
<i>Dasyatis brevicaudata</i>	Short-tailed stingray	140
<i>Delphinus delphis</i>	Common dolphin	286, 358, 359, 360
<i>Diacanthurus spinulimanus</i>	Orange hermit crab	
<i>Didemnum candidum</i>		
<i>Didemnum vexillum</i>		
<i>Dinophysis acuminata</i>		
<i>Dinophysis acuminata</i>		
<i>Dinophysis acuta</i>		
<i>Dipturus innominata</i>	Smooth skate	140, 141, 144
<i>Dosina zelandica</i>		
<i>Dosinia anus</i>	Ringed Dosinia	306
<i>Dosinia lambata</i>	Silky Dosinia	306
<i>Dosinia subrosea</i>	Fine Dosinia	306
<i>Dromia wilsoni</i>	Sponge crab	
<i>Durvillea antarctica</i>	Bull kelp	1
<i>Echinocardium cordatum</i>	Heart urchin	
<i>Ecklonia radiata</i>	Paddle weed	1
<i>Egretta alba</i>	White heron	182
<i>Egretta sacra sacra</i>	Reef heron	123, 182
<i>Elphidium vellai</i>		
<i>Engraulis australis</i>	Anchovy	140, 297
<i>Ennucula strangei</i>		
<i>Enteromorpha</i> sp.		1
<i>Epiactus</i> sp.		
<i>Epigonichthys hectori</i>	New Zealand lancelet	297

SCIENTIFIC NAME	COMMON NAME	REFERENCES
<i>Epopella plicata</i>	Large barnacle	
<i>Eptatretus cirrhatu</i>	Hagfish	140, 297
<i>Eubalaena australis</i>	Southern right whale	294
<i>Eudoxochiton nobilis</i>	Noble chiton	306
<i>Eudyptula minor</i>	Little penguin	76, 254
<i>Euptilota formosissima</i>		
<i>Eurygonias hyalacanthus</i>	Pin-cushion star	
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*Back Inside Cover:
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