Title	Estimated fish and invertebrate bycatch in deep-water fisheries by year (1991–2012)
Type	Dataset
Subject	
Source	Ministry for Primary Industries
Description	The unintended catch of marine species other than the target species puts pressure on the populations of marine species by removing individuals or potentially modifying ecosystems.
Rights	Creative Commons Attribution 3.0 New Zealand
Publisher	New Zealand's Environment Reporting Series: The Ministry for the Environment and Statistics New Zealand
Coverage	1991–2012, New Zealand waters
Identifier	https://data.mfe.govt.nz/x/hMgVM3
Language	eng-nz
Issued	21/10/2015
Environmental reporting topic	Extraction of mineral and biological marine resources
Environmental reporting category	Supporting information
Methodology (collection & analyses)	This supporting information is based on coarse and refined estimates of fish and invertebrate bycatch. These estimates relate only to the larger offshore fisheries where observer data allow the estimation of bycatch. Inshore fisheries have lower observer coverage and comprehensive estimates of bycatch have not been made. Refined estimates are sourced from a variety of studies depending on the fishery considered: • Squid (SQU): Anderson (2013); Hoki (HOK): Ballara et al (2010); Jack mackerel (JMA): Anderson et al (2000), Anderson (2004b), and Anderson (2007); Southern blue whiting (SBW): Anderson (2004a) and Anderson (2009); Orange roughy (ORH): Anderson (2011a); Oreo (OEO): Anderson (2011a); Scampi (SCI): Anderson (2011b); Ling longline (LLL): Anderson (2014). • Coarse estimates (Anderson, 2014) re used to provide information where no refined estimates were available (see data limitation section). References: Anderson, OF, Clark, MR, Gilbert, DJ (2000). Bycatch and discards in trawl fisheries for jack mackerel and arrow squid, and in the longline fishery for

	ling, in New Zealand waters. NIWA Technical Report 74. Anderson, OF (2004a). Fish discards and non-target fish catch in the fisheries for southern blue whiting and oreos. New Zealand Fisheries Assessment Report 2004/9. Anderson, OF (2004b). Fish discards and non-target fish catch in the trawl fisheries for arrow squid, jack mackerel, and scampi in New Zealand waters. New Zealand Fisheries Assessment Report 2004/10. Anderson, OF (2007). Fish discards and non-target fish catch in the New Zealand jack mackerel trawl fishery, 2001–02 to 2004–05. New Zealand Aquatic Environment and Biodiversity Report No. 8. Anderson, OF (2009). Fish and invertebrate bycatch and discards in southern blue whiting fisheries, 2002–07. New Zealand Aquatic Environment and Biodiversity Report 43. Anderson, OF (2011a). Fish and invertebrate bycatch and discards in orange roughy and oreo fisheries from 1990–91 until 2008–09. New Zealand Aquatic Environment and Biodiversity Report 67. Anderson, OF (2011b). Fish and invertebrate bycatch in New Zealand scampi fisheries from 1990–91 until 2009–10. New Zealand Aquatic Environment and Biodiversity Report No. 100. Anderson OF (2013a). Fish and invertebrate bycatch and discards in New Zealand arrow squid fisheries from 1990–91 until 2010–11. New Zealand Aquatic Environment and Biodiversity Report No. 112. Anderson, OF (2014). Fish and invertebrate bycatch in New Zealand deepwater fisheries from 1990–91 until 2011–12. New Zealand Aquatic Environment and Biodiversity Report No. 139. Ballara et al (2010). Fish discards and non-target fish catch in the trawl for Hoki Hake and Ling. New Zealand Aquatic Environment and Biodiversity Report No. 48.
Limitations to data & analysis	The accuracy of the data source is of medium quality. • SQU: coarse estimates were used for the 2012 fishing year and averaged to 80 percent of refined estimates (across 21 comparisons, they varied between 56 and 98 percent over one year). • HOK: coarse estimates were used for the 2008 to 2012 fishing years and averaged to 83 percent of refined estimates (across 17 comparisons, they varied between 46 and 126 percent over one year). • JMA: coarse estimates were used for the 2006 to 2012 fishing years and averaged to 116 percent of refined estimates (across 15 comparisons, they varied between 82 and 179 percent over one year) • SBW: coarse estimates were used for the 2008 to 2012 fishing years and averaged to 108 percent of refined estimates (across 15 comparisons,

	they varied between 32 and 286 percent over one year). • ORH: coarse estimates were used for the 2010 to 2012 fishing years and averaged 89 percent of refined estimates (across 19 comparisons, they varied between 63 and 107 percent over one year). • OEO: coarse estimates were used for the 2010 to 2012 fishing years and averaged 90 percent of refined estimates (across 19 comparisons, they varied between 35 and 153 percent over one year).
Changes to time series	