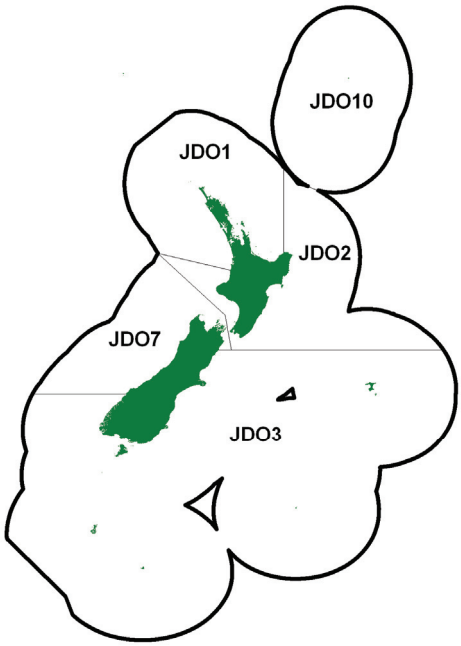
JOHN DORY (JDO)

(*Zeus faber*)
Kuparu



1. FISHERY SUMMARY

1.1 Commercial fisheries

John dory are taken mainly as a bycatch of the trawl and Danish seine fisheries. In recent years, around 50-65% of the total reported catch has been taken in JDO 1, and around 20% taken in JDO 2. Recent reported landings by Fishstock are shown in Table 1, while the historical landings and TACC values for the three main JDO stocks are depicted in Figure 1.

The increase in JDO 1 landings since 1986–87 is largely attributed to increased targeting of John dory by trawl and Danish seine. The TACC in JDO 1 was exceeded (slightly) in 1994–95, but in the following years landings steadily decreased, reaching a low of 440 t in 2002–03. Landings have increased in recent years, with 482 t being caught in 2007–08. It is estimated that during the 1990s about 10–20% of the annual JDO 1 landings were taken in QMA 9, mainly as bycatch in fisheries targeting snapper and trevally. Landings from the eastern part of JDO 1 (QMA 1) are taken primarily in target fisheries for John dory and snapper. However, since 1990 there has been a steady trend of increased target fishing directed at John dory and decreased landings of this species from the snapper fishery.

Annual landings in JDO 2 have never exceeded the TACC and in the mid 90's, were around 50% of the TACC in each year (Figure 1). From 1999–00 to 2002–03 landings were above 200 t, but in recent years landings have decreased. Landings from JDO 2 are considered to be approximately equally split between QMAs 2 and 8. Substantial proportions of John dory landings are taken as bycatch in target trawl fisheries for jack mackerels in QMA 8, and as tarakihi and red gurnard bycatch in QMA 2.

The JDO 7 catch has exceeded the TACC during eight of the last nine fishing years. Substantial increases in landings from this Fishstock since 1999 are attributed to increased abundance in response to environmental influences on recruitment and stock displacement. JDO 7 is taken largely as a bycatch by FMA 7 trawl fisheries. The JDO 7 TACC was increased to 114 t under the Low Knowledge Bycatch Framework in October 2004. The overall TAC of 120 t includes 1 t for customary interests, 2 t for recreational interests and 3 t for other sources of fishing-related mortality. For the 2009-10 fishing season, the TACC was increased from 114 t to 125 t.

Table 1: Reported landings (t) of John dory by Fishstock from 1983–84 to 2008–09 and actual TACCs (t) for 1986–87 to 2008–09. QMS data from 1986–present.

Fishstock	JDO 1		JDO 2		JDO 3		JDO 7	
QMA (s)	1 & 9		2 & 8		3, 4, 5 & 6		7	
	Landings	TACC	Landings	TAC	Landings	TACC	Landings	TACC
1983–84*	659	–	131	–	1	–	35	–
1984–85*	620	–	110	–	0	–	36	–
1985–86*	531	–	158	–	1	–	45	–
1986–87	409	510	168	240	3	30	57	70
1987–88	476	633	192	246	1	30	89	75
1988–89	480	662	151	253	6	30	47	82
1989–90	494	704	152	262	1	30	54	88
1990–91	505	704	171	269	1	31	53	88
1991–92	562	704	214	269	1	31	60	88
1992–93	578	704	217	269	8	31	50	91
1993–94	640	704	186	269	2	32	37	91
1994–95	721	704	140	270	3	32	30	91
1995–96	696	704	139	270	< 1	32	42	91
1996–97	689	704	140	270	< 1	32	35	91
1997–98	651	704	134	270	< 1	32	26	91
1998–99	672	704	182	270	< 1	32	34	91
1999–00	519	704	235	270	< 1	32	71	91
2000–01	497	704	217	270	1	32	104	91
2001–02	453	704	240	270	4	32	124	91
2002–03	440	704	239	270	2	32	114	91
2003–04	492	704	184	270	< 1	32	155	91
2004–05	561	704	182	270	1	32	133	114
2005–06	549	704	159	270	1	32	124	114
2006–07	544	704	143	270	1	32	127	114
2007–08	482	704	133	270	< 1	32	110	114
2008–09	411	704	136	270	< 1	32	116	114

Fishstock	JDO 10			
QMA (s)	10		Total	
	Landings	TACC	Landings	TACC
1983–84*	0	–	826	–
1984–85*	0	–	766	–
1985–86*	0	–	735	–
1986–87	<1	10	638	860
1987–88	0	10	758	994
1988–89	0	10	684	1 037
1989–90	0	10	701	1 094
1990–91	0	10	730	1 102
1991–92	0	10	837	1 102
1992–93	0	10	853	1 105
1993–94	0	10	865	1 106
1994–95	0	10	894	1 107
1995–96	0	10	877	1 107
1996–97	0	10	864	1 107
1997–98	0	10	811	1 107
1998–99	0	10	889	1 107
1999–00	0	10	826	1 107
2000–01	0	10	819	1 107
2001–02	0	10	819	1 107
2002–03	0	10	795	1 107
2003–04	0	10	832	1 107
2004–05	0	10	877	1 129
2005–06	0	10	833	1 129
2006–07	0	10	815	1 129
2007–08	0	10	725	1 129
2008–09	0	10	663	1 129

* FSU data.

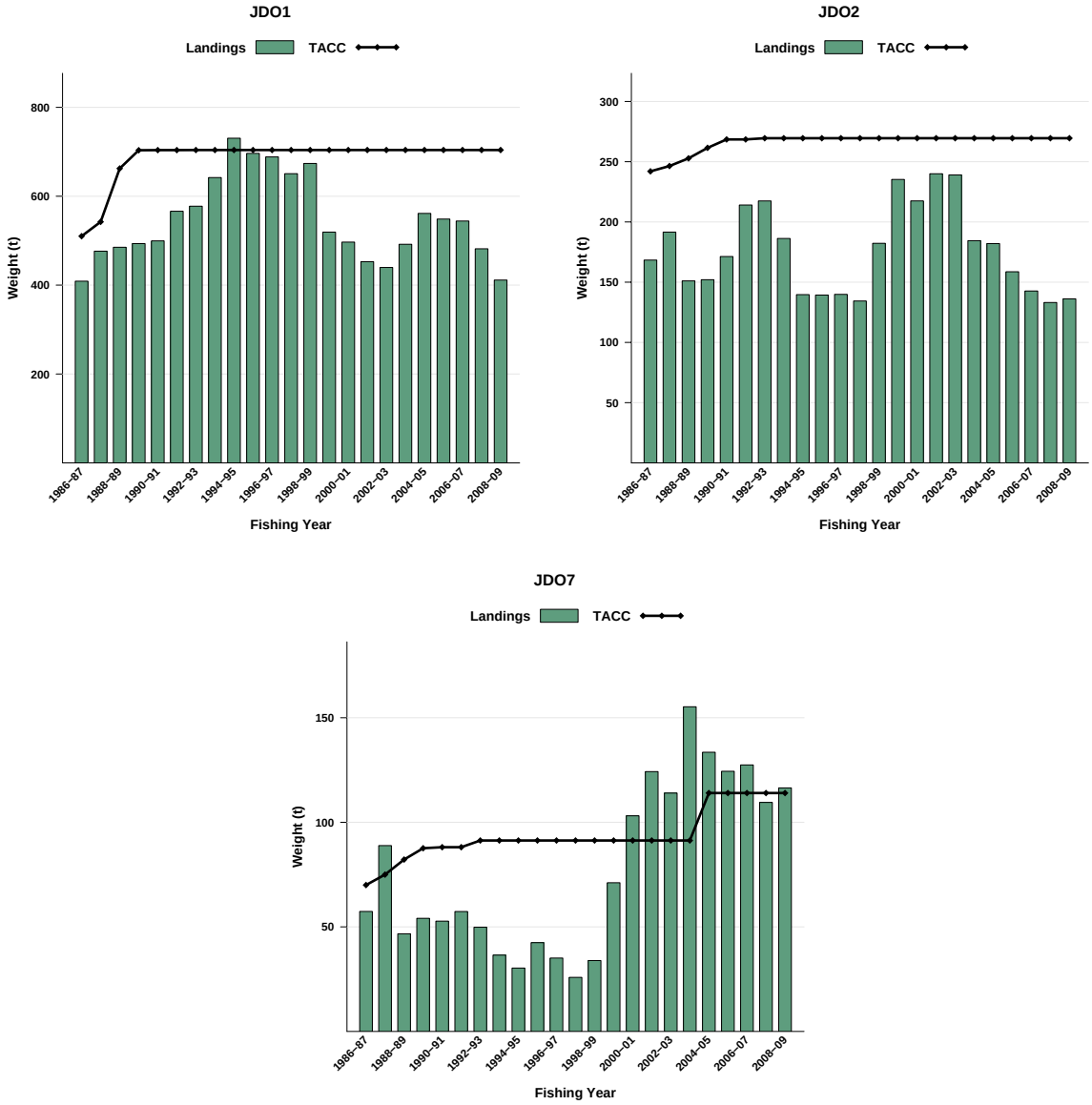


Figure 1: Historical landings and TACC for the three main JDO stocks. From top left: JDO1 (Auckland East), JDO2 (Central East), and JDO7 (Challenger). Note that these figures do not show data prior to entry into the QMS.

1.2 Recreational fisheries

John dory is an important recreational species in the north of New Zealand. Annual recreational take estimated from diary surveys conducted during the 1990s are given in Table 2. The most recent nationwide recreational survey was undertaken in 2001, but the results are still under review and are not currently available. The Recreational Technical Working Group concluded that the harvest estimates from the diary surveys should be used only with the following qualifications: a) they may be very inaccurate; b) the 1996 and earlier surveys contain a methodological error; and, c) the 2000 and 2001 estimates are implausibly high for many important fisheries.

Table 2: Estimated number and weight of John dory harvested by recreational fishers by Fishstock and survey. Surveys were carried out in different years in the Ministry of Fisheries regions: South in 1991–92, Central in 1992–93, North in 1993–94 (Teirney *et al.* 1997) and National in 1996 (Bradford 1998) and Dec 1999–Nov 2000 (Boyd & Reilly 2002).

		Total			
Fishstock	Survey	Number	CV (%)	Estimated harvest range (t)	Point estimate (t)
1992–94					
JDO 1	North	49 000	12	75–95	–
JDO 1	Central	2000	–	0–5	–
1996					
JDO 1	National	46 000	9	80–100	87
1999/2000	National				
JDO 1		129 000	23	174-280	227
JDO 2		9000	41	10-23	16

1.3 Customary non-commercial fisheries

No quantitative information is available on the current level of Maori customary non-commercial catch.

1.4 Illegal catch

No quantitative information is available.

1.5 Other sources of mortality

No quantitative information is available.

2. BIOLOGY

John dory are widespread, being found in the eastern Atlantic Ocean, the Mediterranean Sea and around New Zealand, Australia and Japan. They are common in the inshore coastal waters of northern New Zealand and to a lesser extent in Tasman Bay, to depths of 50 m. In the Hauraki Gulf, adults move to deeper waters during summer, and occasional feeding aggregations occur during winter.

John dory are serial spawners (spawning more than once in a season). There appears to be substantial variation in the time of spawning throughout New Zealand, with spawning occurring between December and April on the northeast coast. The eggs are large and pelagic, taking 12–14 days to hatch. Initially John dory grow rapidly with both males and females reaching 12 to 18 cm standard length (SL) after the first year. From the second year onwards females grow faster than males and reach a greater maximum length. Females mature at a size of 29 to 35 cm SL and in general, larger females mature earlier in the season and are more fecund. Males mature at 23 to 29 cm SL.

M was estimated using the equation $M = \log_e 100/\text{maximum age}$, where maximum age is the age to which 1% of the population survives in an unexploited stock. Using a maximum observed age of 12 years, M was estimated to equal 0.38.

Biological parameters relevant to the stock assessment are shown in Table 3.

Table 3: Estimates of biological parameters of John dory.

Fishstock	Estimate						Source
Weight = a (length)^b (Weight in g, length in cm total length)							
Combined sexes	a	b					
JDO 1	0.048	2.7					from *Ikatere* 2003
2. von Bertalanffy growth parameters							
	Females			Males			
	K	t_0	L_∞	K	t_0	L_∞	
JDO 1	0.425	-0.223	41.13	0.48	-0.251	36.4	Hore (1982)

3. STOCKS AND AREAS

No information is available to assess the separation of stocks of John dory within New Zealand waters. Current fishstocks are based on an administrative division by FMA. There are no new data which would alter the stock boundaries given in previous assessment documents.

4. STOCK ASSESSMENT

The yield estimates are based on commercial landings data only and have not changed since the 1992 Plenary Report.

4.1 Estimates of fishery parameters and abundance

JDO 1

Relative abundance indices have been obtained from trawl surveys of the Bay of Plenty, west coast North Island and Hauraki Gulf within the JDO 1 Fishstock (Table 4). However, there was a change in the configuration of the trawl gear following the 1988 trawl survey. Modifications to the trawl gear may have resulted in a change in the catchability of John dory part way through the time series. Therefore, surveys conducted between 1982 and 1988 and from 1989 onwards should be considered separately for comparisons of biomass indices to be valid. For the west coast North Island (QMA 9), Bay of Plenty and Hauraki Gulf (both JDO 1), there appears to be no trend in the abundance indices since 1988.

CPUE indices were investigated in 2010 (Kendrick & Bentley in prep.). Series based on lognormal models of catch in the mixed species bottom trawl fisheries for each of the three sub regions were accepted by the WG (Figure 2, 3, and 4). The analyses were based on landed catch allocated to trip-stratum and combined data from the main form types. Danish seine and single species JDO target bottom trawl series were also examined but rejected.

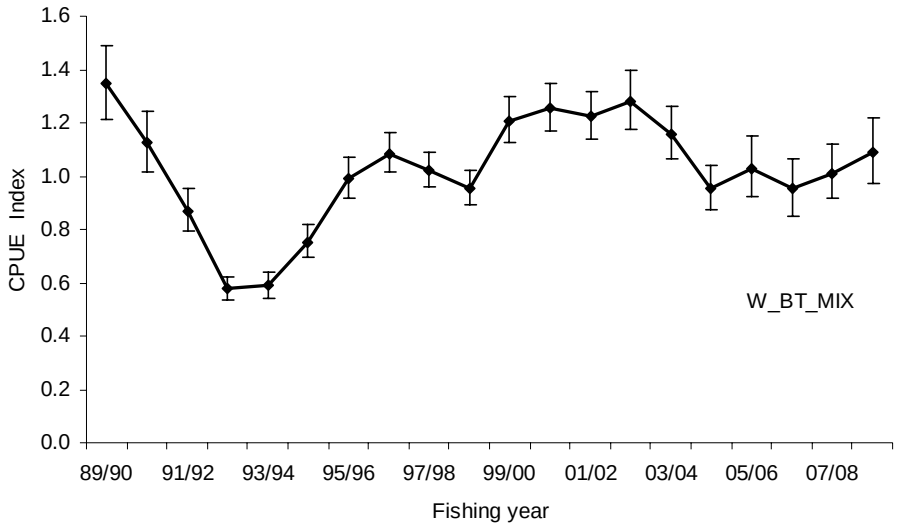


Figure 2: CPUE indices of abundance for JDO 1 West from a lognormal model of positive catches in mixed species bottom trawl tows (Kendrick & Bentley, 2010 in prep).

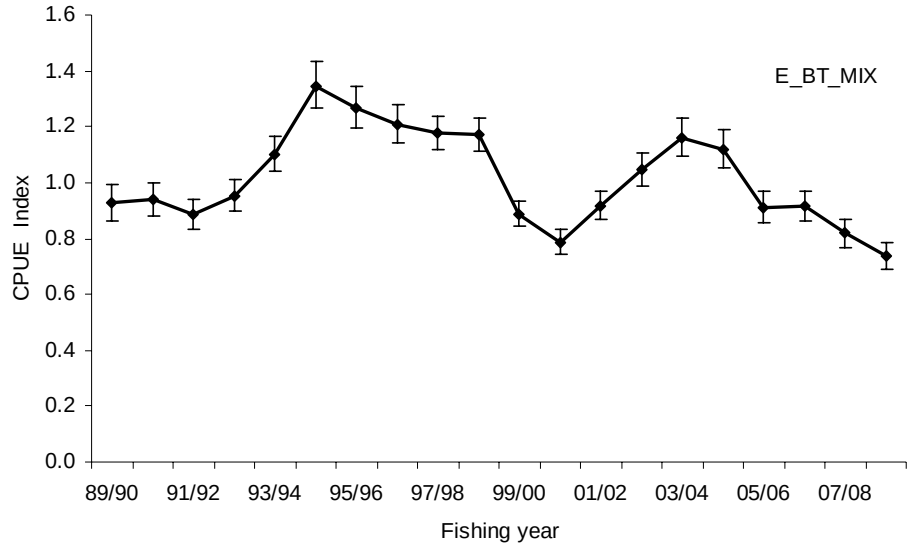


Figure 3: CPUE indices of abundance for JDO 1 East from a lognormal model of positive catches in mixed species bottom trawl tows (Kendrick & Bentley, 2010 in prep).

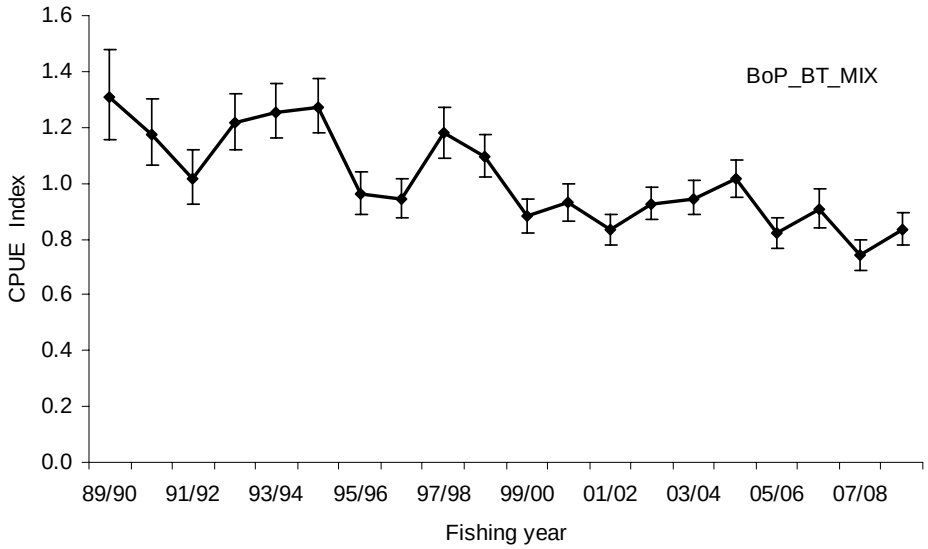


Figure 4: CPUE indices of abundance for JDO 1 Bay of Plenty from a lognormal model of positive catches in mixed species bottom trawl tows (Kendrick & Bentley, 2010 in prep).

In JDO 1 W, the lowest point for the series was reached in 1992–93. This was followed by a recovery to almost original levels over the following seven years, followed by a three year plateau. The series subsequently dropped to the mean by 2004–05 and has been relatively stable since then. JDO 1 E shows a more pronounced cyclical pattern with lows in the early 1990s and early 2000s and peaks in the middle of each decade. The index is currently at a low point. The series for JDO 1 in the Bay of Plenty shows more stability and an overall decrease to just below the mean.

JDO 2

Relative abundance indices have also been derived for JDO 2 from trawl surveys of the North Island east coast (QMA 2) and North Island west coast (QMA 8) (Table 4, Figure 5). Similarly, the indices from both of these time series show no trend.

Table 4: Estimates of John dory biomass (t) from *Kaharoa* trawl surveys.

Year	Trip Code	Biomass	CV (%)
Bay of Plenty			
1983	KAH8303	113	24
1985	KAH8506	128	12
1987	KAH8711	155	38
1990	KAH9004	157	16
1992	KAH9202	236	12
1996	KAH9601	193	44
1999	KAH9902	176	14
North Island west coast (QMA 8)			
1989	KAH8918	68	25
1991	KAH9111	142	62
1994	KAH9410	33	47
1996	KAH9615	19	38
North Island west coast (QMA 9)			
1986	KAH8612	155	35
1987	KAH8715	160	16
1989	KAH8918	148	16
1991	KAH9111	216	37
1994	KAH9410	102	47
1996	KAH9615	147	15
1999	KAH9915 (QMAs 8 & 9 combined)	374	9
Hauraki Gulf			
1984	KAH8421	292	22
1985	KAH8517	245	20
1986	KAH8613	211	25
1987	KAH8716	181	12
1988	KAH8810	477	32
1989	KAH8917	250	22
1990	KAH9016	322	13
1992	KAH9212	227	35
1993	KAH9311	374	24
1994	KAH9411	288	17
1997	KAH9720	387	18
2000	KAH0012	260	26
North Island east coast			
1993	KAH9304	265	17
1994	KAH9402	268	31
1995	KAH9502	170	18
1996	KAH9605	172	48
West Coast South Island			
1992	KAH9204	102	29
1994	KAH9404	59	26
1995	KAH9504	27	36
1997	KAH9701	17	31
2000	KAH0004	141	16
2003	KAH0304	288	19
2005	KAH0503	222	14
2007	KAH0704	174	26
2009	KAH0904	269	23

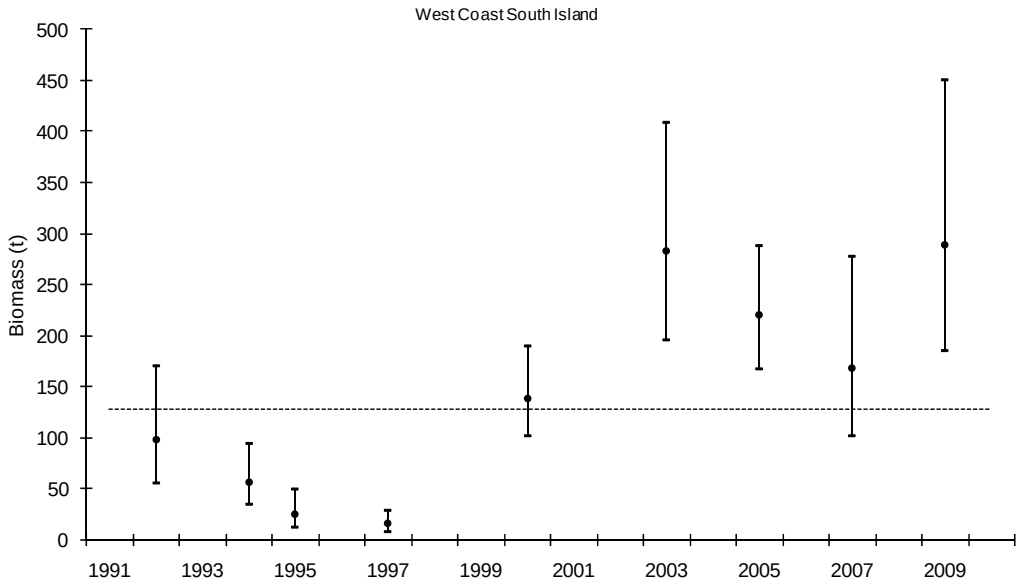


Figure 5: Biomass trends ±95% CI (estimated from survey CV's assuming a lognormal distribution) and the time series mean (dotted line) from the West Coast South Island trawl surveys.

The Southern Inshore Working Group noted that the West Coast South Island trawl survey series appears to be monitoring trends in abundance for the recruits of this population. Length frequency trends for the West Coast South Island John dory catch are presented in Figure 6. These data show that in the early 1990's low numbers were caught by the survey series and there was no evidence of significant numbers of recruits. In 2000 a large number of recruits appeared and these fish seemed to remain in the population through to 2007. There is evidence that a new cohort of recruits has appeared in 2009.

4.2 Biomass estimates

Estimates of absolute reference and current biomass are not available.

4.3 Estimation of Maximum Constant Yield (MCY)

MCY was estimated using the equation, MCY = cY_{AV} (method 4). Y_{AV} is the average annual catch for the period 1983–84 to 1985–86. The value of c was set equal to 0.6 based on the estimate of M = 0.38. Estimates of MCY are shown in Table 5. The estimates of MCY are probably conservative because John dory has probably not been fully exploited in the past, as they are predominantly a bycatch species that is not specifically targeted.

Table 5: Estimates of MCY (t) rounded to the nearest 5 t.

Fishstock	QMA		Y_{AV}	MCY
JDO 1	Auckland (East) (West)	1 & 9	600	360
JDO 2	Central (East) (West)	2 & 8	130	80
JDO 3	South-East (Coast) (Chatham), Southland, Sub-Antarctic	3, 4, 5 & 6	1	5
JDO 7	Challenger	7	40	25
JDO 10	Kermadec	10	–	–
Total			771	470

The level of risk to the stock by harvesting the population at the estimated MCY value cannot be determined.

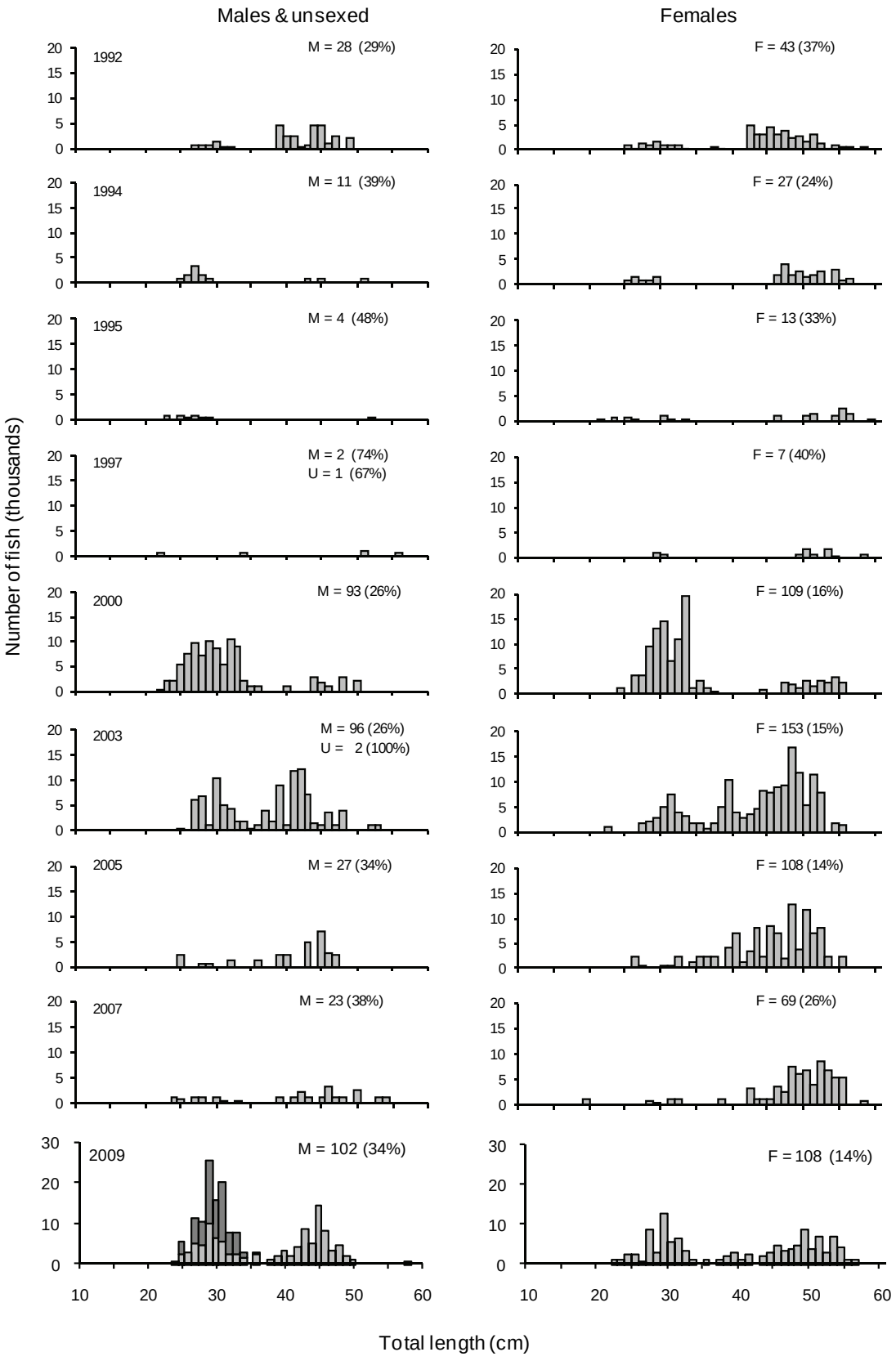


Figure 6: Scaled length frequency distributions for John dory in 30–400 m, for WCSI surveys. M, males; F, females; (CV%) (Stevenson 2009).

4.4 Estimation of Current Annual Yield (CAY)

No estimates of current biomass are available which would permit the estimation of CAY.

4.5 Other yield estimates and stock assessment results

Current estimates of yield are based upon commercial landings only and are assumed to be independent of the non-commercial catch. There was no indication that John dory were overfished at the time of the introduction of the QMS. There has been no apparent change in the fishing patterns for JDO over the last decade.

5. STATUS OF THE STOCKS

Estimates of absolute current and reference biomass are not available.

John dory is principally a bycatch species and, as such, estimates of MCY based on catch statistics are uncertain. Under such conditions it is difficult to determine whether changes in the reported catches indicate actual changes in the stocks or simply changes in the catches of the target species.

In 1994–95, the TACC for JDO 1 was slightly overcaught for the first time since the start of the QMS. The 1994–95 landings followed a consistent trend of increasing catches, probably due to increased targeting for John dory. However, other factors, such as increased abundance or changing fishing practices, may also have contributed to JDO 1 catch increases but trawl surveys in sub-areas of JDO 1 reveal no apparent trend in John dory biomass. Since 1994–95, the TACC for JDO 1 has been undercaught.

For JDO 1 recent catch levels and the current TACC are likely to be sustainable at least in the short-term. It is not known if recent catch levels and the current TACC are sustainable in the long-term. For all other JDO stocks it is not known if the recent catch levels and current TACCs are sustainable. For all Fishstocks it is unknown if recent catches or the current TACCs are at levels that will allow the stocks to move towards a size that will support the MSY.

JDO 1

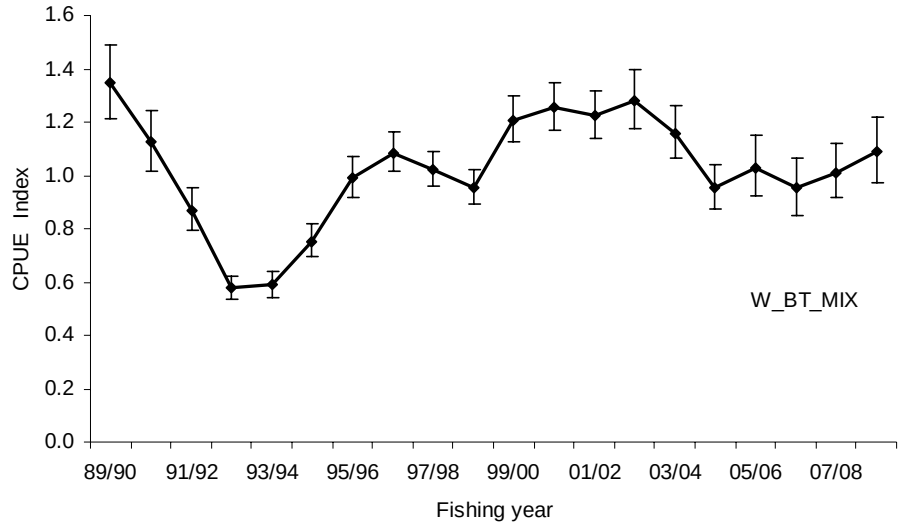
Stock Structure Assumptions

For the purpose of this summary JDO 1 is considered to be a single stock with three sub-stocks.

JDO 1W

Stock Status	
Year of Most Recent Assessment	2010
Assessment Runs Presented	
Reference Points	Target(s): Not established but B_{MSY} assumed Soft Limit: $20\%B_0$ Hard Limit: $10\%B_0$
Status in relation to Target	Unknown
Status in relation to Limits	Soft Limit: Unknown Hard Limit: Unlikely (< 40%) to be below

Historical Stock Status Trajectory and Current Status



Standardised CPUE indices for John dory in JDO 1W from lognormal models of catch rate in successful bottom trawl trips in a mixed target fishery (Kendrick & Bentley in prep).

Fishery and Stock Trends	
Recent Trend in Biomass or Proxy	The lognormal CPUE series has fluctuated at or above the long-term mean since 1995/96. The 2008/09 data point is slightly above the long-term mean.
Recent Trend in Fishing Mortality or Proxy	
Other Abundance Indices	
Trends in Other Relevant Indicators or Variables	

Projections and Prognosis	
Stock Projections or Prognosis	Without corroborating information on recruitment from a trawl survey, it is not possible to predict how the stock will respond in the next few years.
Probability of Current Catch or TACC causing decline below Limits	Soft Limit: Unknown Hard Limit: Unlikely (< 40% probability) (for the current catch)

Assessment Methodology		
Assessment Type	Level 2 – Partial Quantitative stock assessment	
Assessment Method	Standardized CPUE based on lognormal error distribution and positive catches.	
Main data inputs	Catch and effort data	
Period of Assessment	Latest assessment: 2010	Next assessment: 2014
Changes to Model Structure and Assumptions	Inclusion of a wider range of target species appears to have improved the utility of the bottom trawl indices.	
Major Sources of Uncertainty	Uncertainty in the stock structure Relationship between CPUE and biomass.	

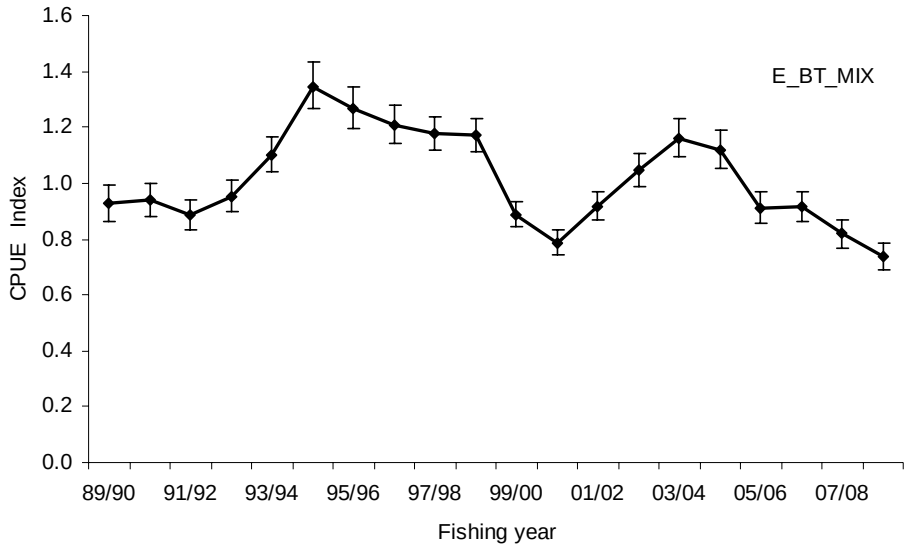
Qualifying Comments
As the John dory fishery in FMAs 1 and 9 has a long history, it is not possible to infer stock status from abundance trends from only the last 20 years. This sub-stock appears to be cyclical, probably in response to recruitment variation. This makes it difficult to predict future trends without recruitment information.

Fishery Interactions
John dory is taken on the west coast by bottom trawl targeted at snapper trevally, gurnard and tarakihi

JDO 1E

Stock Status	
Year of Most Recent Assessment	2010
Assessment Runs Presented	
Reference Points	Target(s): Not established but B_{MSY} assumed Soft Limit: 20% B_0 Hard Limit: 10% B_0
Status in relation to Target	Unknown
Status in relation to Limits	Soft Limit: Unknown Hard Limit: Unknown

Historical Stock Status Trajectory and Current Status



Standardised CPUE indices for John dory in JDO 1E from lognormal models of catch rate in successful bottom trawl trips in a mixed target fishery (Kendrick & Bentley in prep).

Fishery and Stock Trends	
Recent Trend in Biomass or Proxy	The lognormal CPUE series is cyclical with an overall downward trend since 1994/95. The 2008/09 data point is the lowest point in the series at about 25% below the long-term mean.
Recent Trend in Fishing Mortality or Proxy	
Other Abundance Indices	
Trends in Other Relevant Indicators or Variables	

Projections and Prognosis	
Stock Projections or Prognosis	Without corroborating information on recruitment from a trawl survey, it is not possible to predict how the stock will respond in the next few years.
Probability of Current Catch or TACC causing decline below Limits	Soft Limit: Unknown Hard Limit: Unknown

Assessment Methodology		
Assessment Type	Level 2 – Partial Quantitative stock assessment	
Assessment Method	Standardized CPUE based on lognormal error distribution and positive catches.	
Main data inputs	Catch and effort data	
Period of Assessment	Latest assessment: 2010	Next assessment: 2014
Changes to Model Structure and Assumptions	Inclusion of a wider range of target species appears to have improved the utility of the bottom trawl indices.	
Major Sources of Uncertainty	Uncertainty in the stock structure Relationship between CPUE and biomass.	

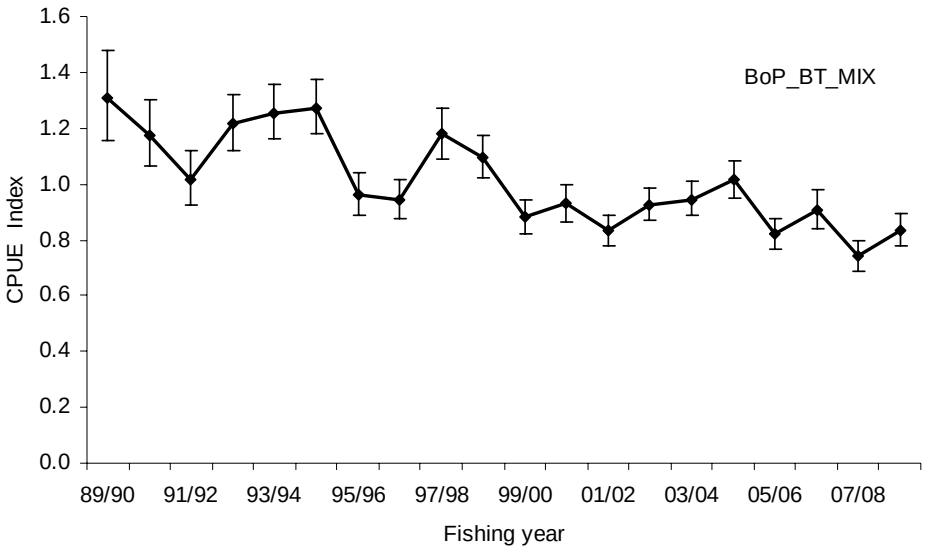
Qualifying Comments
As the John dory fishery in FMAs 1 and 9 has a long history, it is not possible to infer stock status from abundance trends from only the last 20 years. This sub-stock appears to be cyclical, probably in response to recruitment variation, and the current trend is downward. This makes it difficult to predict future trends without recruitment information. Almost 2/3 of the John dory bottom trawl catch in JDO 1E is target JDO. The declining catch JDO 1 is mainly driven by declining catch in JDO 1E. Declining CPUE and catch in recent years suggests that biomass is presently (2010) declining in this sub-area.

Fishery Interactions
John dory is taken on the east coast by bottom trawl and Danish seine targeted at John dory and snapper.

JDO 1BoP

Stock Status	
Year of Most Recent Assessment	2010
Assessment Runs Presented	
Reference Points	Target(s): Not established but B_{MSY} assumed Soft Limit: $20\%B_0$ Hard Limit: $10\%B_0$
Status in relation to Target	Unknown
Status in relation to Limits	Soft Limit: Unknown Hard Limit: Unknown

Historical Stock Status Trajectory and Current Status



Standardised CPUE indices for John dory in JDO 1BP from lognormal models of catch rate in successful bottom trawl trips in a mixed target fishery (Kendrick & Bentley in prep).

Fishery and Stock Trends	
Recent Trend in Biomass or Proxy	The lognormal CPUE series has declined steadily by 30% between 1989/90 to 2008/09.
Recent Trend in Fishing Mortality or Proxy	
Other Abundance Indices	
Trends in Other Relevant Indicators or Variables	

Projections and Prognosis	
Stock Projections or Prognosis	The stock is Likely (> 60%) to continue to decline.
Probability of Current Catch or TACC causing decline below Limits	Soft Limit: Unknown Hard Limit: Unknown

Assessment Methodology		
Assessment Type	Level 2 – Partial Quantitative stock assessment	
Assessment Method	Standardized CPUE based on lognormal error distribution and positive catches.	
Main data inputs	Catch and effort data	
Period of Assessment	Latest assessment: 2010	Next assessment: 2014
Changes to Model Structure and Assumptions	Inclusion of a wider range of target species appears to have improved the utility of the bottom trawl indices.	
Major Sources of Uncertainty	Uncertainty in the stock structure Relationship between CPUE and biomass.	

Qualifying Comments

Fishery Interactions
John dory is taken in the Bay of Plenty by bottom trawl targeted at John dory, snapper, trevally, tarakihi and gurnard; and by Danish seine targeted at snapper and gurnard.

JDO 1 summary

The declining catch in JDO 1 is being driven by declines in JDO 1 E. Declining CPUE trends are seen in JDO 1E (25% below the mean) and BoP (30% below the start). If the CPUE trends in sub-stocks continue to differ, it may be inappropriate to manage JDO 1 as a single stock.

JDO 7

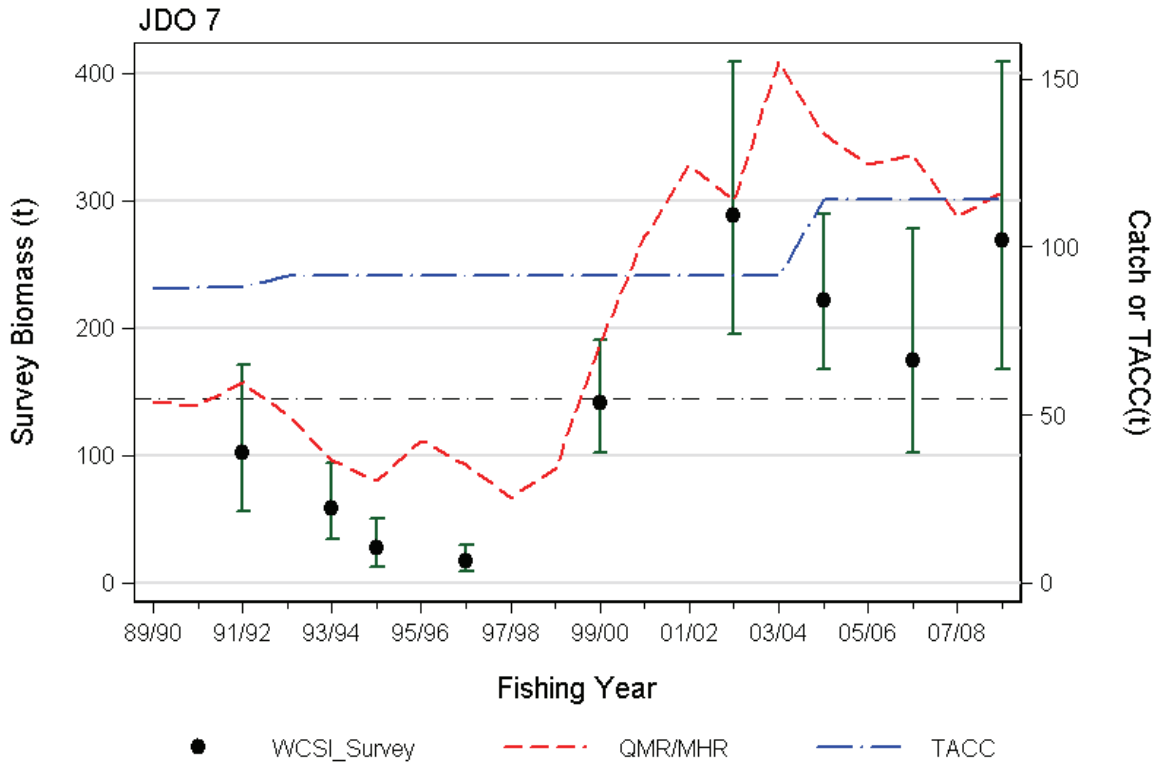
Stock Structure Assumptions

Stock boundaries are unknown, but for the purpose of this summary, JDO 7 is treated as a single management unit.

Stock Status	
Year of Most Recent Assessment	2009 (West Coast South Island Trawl survey)
Reference Points	Target: Not established but B_{MSY} assumed Soft Limit: 20% B_0 Hard Limit: 10%B_0
Status in relation to Target	Unknown
Status in relation to Limits	Unknown

Fishery and Stock Trends	
Trend in Biomass or Proxy	Abundance of John dory fluctuates widely with year class strength. Biomass has been high since 2003 and there has been good recruitment in 2009.
Trend in Fishing Mortality or Proxy	The commercial catch trends have largely mirrored those of the trawl survey biomass estimates, declining through the 1990s then increasing from a low of 26 t in 1997–98 to a high of 155 t in 2003–04. The average catch from 2002/03 to 2008/09 was 126t.

Historical survey biomass, Catch and TACC Trajectories



West Coast South Island survey biomass (points) commercial catch (red dashed line) and TACC (blue dashed line) for the period 1990 to 2007. Horizontal dashed line is the mean biomass index, 1992–2009.

Other Abundance Indices	-
Trends in Other Relevant Indicator or Variables	Length frequency analysis from the West Coast South Island trawl survey showed very good recruitment in 2009.

Projections and Prognosis	
Stock Projections or Prognosis	No quantitative stock assessment has been undertaken for this Stock. The -2009 size data as well as the biomass trends suggest that the stock biomass is Likely to increase at recent catch levels.
Probability of Current Catch / TACC causing decline below Limits	Soft Limit: Unknown Hard Limit: Unknown

Assessment Methodology		
Assessment Type	Level 2: Semi-quantitative Stock Assessment - Agreed abundance index	
Assessment Method	Evaluation of survey biomass trends and length frequencies.	
Main data inputs	- West Coast South Island trawl survey - Survey length frequency.	
Period of Assessment	Latest assessment: 2009	Next assessment: 2011
Changes to Model Structure and Assumptions	N/A	
Major Sources of Uncertainty	This stock is assessed using trends in trawl survey relative biomass. No current formal quantitative stock assessment is available for this stock. Therefore, the stock status of JDO 7 is Unknown and quantitative projections are not available.	

Qualifying Comments

Fishery Interactions
John Dory are primarily taken in conjunction with the following QMS species: barracouta, red cod, stargazer, red gurnard and tarakihi in the West Coast South Island bottom trawl fishery.

Yield estimates, TACCs and reported landings are summarised in Table 6.

Table 6: Summary of yields (t), TACCs (t) and reported landings (t) of John dory for the most recent fishing year.

Fishstock	QMA		MCY	2008–09 Actual TACC	2008–09 Reported landings
JDO 1	Auckland (East) (West)	1 & 9	360	704	411
JDO 2	Central (East) (West)	2 & 8	80	270	136
JDO 3	South-East (Coast) (Chatham),	3 & 4			
	Southland, Sub-Antarctic	5 & 6	5	32	< 1
JDO 7	Challenger	7	25	114	116
JDO 10	Kermadec	10	–	10	0
Total			470	1130	663

6. FOR FURTHER INFORMATION

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