Supplementary Information

Assessment of the likely sensitivity to climate change for the key marine species in the southern Benguela system

Ortega-Cisneros, S Yokwana, W Sauer, K Cochrane, A Cockcroft, NC James, WM Potts, L Singh, M Smale, A Wood and G Pecl

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Table S1: Abalone

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	A female of 115 mm SW produced 4.5 million eggs per spawning, and a female of 160 mm produced more than 15 million eggs per spawning (Newman 1967)	>20 000 eggs per year	1	Newman (1967)	3	
	Recruitment period (to fishery)	Consistent	Consistent	1	Wood and Buxton (1996)	3	
	Average age at maturity	Males attained 50% sexual maturity at 18 months (i.e. 25 mm shell width), females attained 50% sexual maturity at 24 months (30 mm shell width). However, 50% sexual maturity was reported at a shell width of 35 mm (i.e. 30 months of age). Eastern Cape 2–3 years, Western Cape 3–6 years	2–10 years	2	Wood and Buxton (1996), Visser-Roux (2011)	3	
	Stock status	Heavily depleted	Threatened	3	DAFF (2016)	3	Catch being maintained even though high and illegal
	Additional stressors	Illegal fishing and over-exploitation, also habitat change in an area that was a key fishing ground	Stock is experiencing moderate stress other than fishing. Stock is experiencing no more than three known stressors	2	DAFF (2016), Blamey and Branch (2012)	3	
	Generalist vs specialist	*H. midae* recruits occurred exclusively on encrusting coralline algae and prefer strongly textured corallines. Adults mainly feed on drift kelp, but also on some other attached algae	Reliance on either habitat or prey	2	Tarr (1995), Day and Branch (2000), Zeeman et al. (2012)	2	
	Average			1.83		0	

Distribution	Capacity for larval dispersal	Settlement occurs a week to a month after the veliger stage, depending on the species and ambient conditions	<2 weeks	3	Visser-Roux (2011)	3	
	Capacity for adult/juvenile movement	Movement of a small population of adult *H. midae* was studied over a three-year period, after which 47% of the original abalone were still present on the study site. Of these, 81.5% still occupied exactly the same position on the rocks. This indicates that *H. midae* that have located an optimum habitat, and that are not disturbed, tend not to move	<10 km	3	Tarr (1995), Newman (1966)	3	
	Physiological tolerance	Distribution from St Helena Bay to Port St Johns, South Africa	<10º latitude	3	Lindberg (1992), DAFF (2016)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	Already occupying its potential distribution in South Africa	Limited unoccupied habitat	3		3	Assumed that the distribution of the species is already occupying its potential extent
	Average			3.0		0	
Phenology	Environmental variable as a phenological cue for spawning or breeding	Natural spawning can be triggered by various environmental factors and is mostly dependent on season. Can spawn any time of year but an environmental shock can trigger spawning	Weak correlation of spawning to environmental variable	2	Visser-Roux (2011), Wood and Buxton (1996), Newman (1967)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis	Prevailing inshore currents and water temperature will be important factors in determining the possible areas for settlement	Strong correlation to environmental variable	3	Day and Branch (2000)	1	Based on an aquaculture study
	Temporal mismatches of life cycle events	Roughly two peaks of spawning but can also be quite localised. Spawning lasts up to 2 months (Sep–Oct), spawning also occurs during Apr	Wide duration	2	Visser-Roux (2011), Newman (1967)	3	
	Migration (seasonal and spawning)	*H. midae* that have located an optimum habitat, and that are not disturbed, tend not to move	No migration	1	Tarr (1995)	3	
	Average			2.0			
	Total			6.83			

Table S2: Albacore

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Absolute fecundity from 2 to 3 million in the Southern Hemisphere (between 5°S and 25°S)	>20 000 eggs per year	1	http://www.fishbase.se/Reproduction/FecundityList.php?ID=142&GenusName=Thunnus&SpeciesName=alalunga&fc=416&StockCode=156	2	
	Recruitment period (to fishery)	Variable	Occasional and variable recruitment period	2		1	Due to its Near Threatened status
	Average age at maturity	50% maturity is 5 years for combined sexes; South Atlantic	2–10 years	2	Bard 1981 in West and Marsac (2013)	3	
	Stock status	Near Threatened	Threatened	3	Collette et al. (2011); http://www.iucnredlist.org/details/21856/0	2	
	Additional stressors	No other known stressors	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1	Collette et al. (2011); http://www.iucnredlist.org/details/21856/0	2	
	Generalist vs specialist	Epipelagic and mesopelagic, opportunistic top predators	Reliance on neither habitat nor prey	1	ICCAT (2004)	3	
	Average			1.67		0	
Distribution	Capacity for larval dispersal	Larval duration of 2–8 weeks for many tuna species	2–8 weeks	2		2	Example: yellowfin tuna; http://www.nmfs.noaa.gov/fishwatch/species/pac_yellowfin_tuna.htm
	Capacity for adult/juvenile movement	Migratory, South Atlantic and the SW Indian Ocean remain uncertain	>1 000 km	1	ICCAT (2004)	3	
	Physiological tolerance	In South African waters, schools of South Atlantic albacore occur in larger quantities along the temperate west coast compared to schools of Indian Ocean albacore which occur along the warmer southeast coast	>20º latitude	1	Penney (1994) in West and Marsac (2013)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3		3	
	Average			1.75		0	

Phenology	Environmental variable as a phenological cue for spawning or breeding	Spawning season for the South Atlantic is spring/summer, Sep–Mar	Weak correlation of spawning with environmental variable	2	ICCAT (2004)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis		Weak correlation with environmental variable	2		2	Highly uncertain
	Temporal mismatches of life cycle events	Spawning season for the South Atlantic is spring/summer, Sep–Mar	Wide duration	2		3	
	Migration (seasonal and spawning)	Highly migratory species with a wide geographical distribution	Migration is common for the whole population	3	ICCAT (2004)	3	
	Average			2.25			
	Total			5.67			

Table S3: Anchovy

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	For the Bay of Biscay: annual realised fecundity would range between 110 000 eggs (10 g female) and 350 000 eggs (40 g female)	>20 000 eggs per year	1	Motos (1996)	2	
	Recruitment period (to fishery)	Consistent	Consistent recruitment events every 1–2 years	1		1	Based on observations
	Average age at maturity		2–10 years	2		3	
	Stock status	Robust	Robust	1	DAFF (2016)	3	
	Additional stressors	No other known stressors	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1	DAFF (2016)	3	
	Generalist vs specialist	Mesozooplankton, large zooplankton	Reliance on neither habitat nor prey	1	van der Lingen et al. (2006)	3	
	Average			1.17		0	
Distribution	Capacity for larval dispersal	37 days	2–8 weeks	2	Houde and Zastrow (1993)	2	
	Capacity for adult/juvenile movement	Migration from the west to the south coast of South Africa	>1 000 km	1	Hampton et al. (1990), Barange et al. (1999)	3	
	Physiological tolerance	From Bergen, Norway, to East London, South Africa	>20º latitude	1	Whitehead (1990)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3		3	
	Average			1.75		0	
Phenology	Environmental variable as a phenological cue for spawning or breeding	Anchovy spawns in warmer waters (17.0–23.0 °C)	Weak correlation of spawning with environmental variable	2	Mhlongo et al. (2015)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis			0			
	Temporal mismatches of life cycle events	Oct–Mar spawning	Wide duration	2	Hutchings et al. (1998)	3	
	Migration (seasonal and spawning)	Migration for spawning	Migration is common for the whole population	3	Hampton et al. (1990), Barange et al. (1999)	3	
	Average			2.33			

	Total			5.25			

Table S4: Black musselcracker

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Unknown	>20 000 per year	1		1	
	Recruitment period (to fishery)	Variable	Occasional and variable recruitment period	2		1	Assumption, based on its depleted stock status
	Average age at maturity		>10 years	3	Buxton and Clarke (1989)	3	Average age is 10 years, but more suited to the >10 year category
	Stock status	Unknown	Vulnerable	3	Mann et al. (2014)	2	
	Additional stressors	No other known stressors	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1	Mann et al. (2014)	3	
	Generalist vs specialist	Unspecialised diet, juveniles associated with shallow reefs and adults with inshore and offshore reefs	Reliance on neither habitat nor prey	1	Buxton and Clarke (1989)	3	
	Average			1.83		0	
Distribution	Capacity for larval dispersal	Unknown	2–8 weeks	2	Expert opinion	1	
	Capacity for adult/juvenile movement	Limited movement, resident species	10–1 000 km	2	Murray (2012)	3	
	Physiological tolerance	Endemic to South Africa, from Cape Agulhas, Western Cape, to St Lucia, KwaZulu-Natal	<10º latitude	3	Smith and Heemstra (1991)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	Already occupying its potential distribution in South Africa	No unoccupied habitat; 0–2º latitude or longitude	3	Smith and Heemstra (1991)	3	
	Average			2.5		0	
Phenology	Environmental variable as a phenological cue for spawning or breeding	Spawning takes place between May–Oct in Transkei waters	Weak correlation of spawning with environmental variable	2	Buxton and Clarke (1989)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis						
	Temporal mismatches of life cycle events	Spawning takes place between May–Oct in Transkei waters	Continuous duration	1	Buxton and Clarke (1989)	3	

	Migration (seasonal and spawning)	Possibility of undertaking a spawning migration to Transkei waters, however, this more likely involves a uni-directional movement up to the coastline into Transkei and KwaZulu-Natal waters where large adults live for the remainder of their lives. It is possible that only a proportion of the fish move up to the Transkei and KwaZulu-Natal waters as large individuals are still found on deep water reefs along the distribution	Migration is common for some of the population. A migration is not the correct term, but the movements are probably not undertaken by all individuals	2	Buxton and Clarke (1989), Murray (2012)	3	
	Average			1.67			
	Total			6.0			

Table S5: Brown mussels

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	0.7 g for *Perna perna* event (average in 1987–88). Approximate numbers of gametes involved may be gauged from values given by Thompson (1979), who estimated that for *Mytilus edulis* 1 *g* dry gametes was equivalent to some 20×10^6 eggs or 20×10^{10} sperm. Since packing densities of mussel beds can exceed 1 000 ind. m^{-2} at a length of 65 mm (Griffiths and Hockey 1987), the total number of gametes released by mussel beds is on the order of 10^9 eggs or 10^{13} sperm m^{-2} y^{-1}	>20 000 eggs per year	1	van Erkom Schurink and Griffiths (1991)	3	
	Recruitment period (to fishery)	Consistent	Consistent recruitment events every 1–2 years	1		1	Assumed to be consistent
	Average age at maturity	For *P. viridis*: onset of sexual maturity is rapid, occurring at 2–3 months of age in parts of the animal's native range and in as little as 1–2 months in parts of its non-native range, e.g. Tampa Bay, Florida	≤2 years	1	Power et al. (2004)	2	
	Stock status	Overexploited on the southeast coast of South Africa	Threatened	3	Macala and McQuaid (2017)	3	
	Additional stressors					0	
	Generalist vs specialist	Survival of the larvae depends mainly upon the settling on a stable, hard substrate, usually a rock	Reliance on either habitat or prey	2	http://www.issg.org/database/species/ecology.asp?si=742& [accessed 26 Jan 2016]	2	
	Average			1.6			
Distribution	Capacity for larval dispersal	Pelagic larval duration of about 15 days	2–8 weeks	2	Pelc et al. (2009)	3	
	Capacity for adult/juvenile movement	No post-larval movement	<10 km	3	Pelc et al. (2009)	3	
	Physiological tolerance	Distributed in the Atlantic Ocean: Africa, Europe and South America	>20º latitude	1	Wood et al. (2007)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3	Wood et al. (2007)	3	

	Average			2.25		0	
Phenology	Environmental variable as a phenological cue for spawning or breeding	For *P. viridis* in India: the mussels exhibit two spawning periods and temperature appears to regulate the onset of reproductive events	Weak correlation of spawning to environmental variable	2	Rajagopal et al. (1998)	2	
	Environmental variable as a phenological cue for settlement or metamorphosis	Survival of the larvae depends mainly upon the settling on a stable, hard substrate, usually a rock, at the initial phase of metamorphosis in optimal temperatures between 10-30°C and salinities between 30.9-32.1 ppt. Optimum temperature and salinities delay the completion of this initial stage allowing a greater amount of time for the larvae to settle on a substrate	Strong correlation with environmental variable	3	http://www.issg.org/database/species/ecology.asp?si=742& [accessed 26 Jan 2016]	2	
	Temporal mismatches of life cycle events	*P. perna* from KwaZulu-Natal spawned over an extended period, May/Jun to Dec, while those from the Cape and Transkei regions had a well-marked winter spawning, accompanied by either 1 extended, or 2 discrete, spring or summer events	Continuous duration	1	van Erkom Schurink and Griffiths (1991)	3	
	Migration (seasonal and spawning)	No migration	No migration	1		3	
	Average			1.75			
	Total			5.6			

Table S6: Cape horse mackerel

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	For the North Sea: total fecundity (number of oocytes) from 11.5 to 23.8 $\times$ 10^4	>20 000 eggs per year	1	van Damme et al. (2013)	2	
	Recruitment period (to fishery)	Consistent	Consistent recruitment events every 1–2 years	1		1	Based on optimal stock status
	Average age at maturity	Maturity at 1–2 years	≤2 years	1	Hecht (1990)	3	
	Stock status	A decreasing CPUE over the last few years suggests that there is either an availability or catchability issue. Although the TAC has been decreased according to the control rule of the assessment a TAE has been further implemented to control effort and this is now the controlling factor in the fishery	Uncertain/vulnerable	1	Singh and Fairweather (2017), Johnston and Butterworth (2017)	3	
	Additional stressors	No other known stressor	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1	DAFF (2016)	3	
	Generalist vs specialist	Feed on crustaceans, copepods, amphipods, euphausiids, decapods and fish. Juveniles are pelagic and at 1–2 years old, they become demersal and move offshore to settle over the shelf break	Reliance on neither habitat nor prey	1	Pillar and Barange (1998), Barange et al. (1998)	3	
	Average			1.00		0	
Distribution	Capacity for larval dispersal						
	Capacity for adult/juvenile movement	Movement from the west coast (north of Cape Columbine) to south coast (Port Elizabeth) of South Africa	>1 000 km	1	Barange et al. (1998)	3	
	Physiological tolerance	From southern Angola to South Africa	10–20º latitude	2	BBC Status of Stocks (2012)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3		3	
	Average			2.00		0	

Phenology	Environmental variable as a phenological cue for spawning or breeding	In the northern Benguela, horse mackerel were found to spawn over a wide range of environmental variables, indicating that they are robust to environmental changes	No apparent correlation of spawning with environmental variable	1	Kreiner et al. (2015)	2	
	Environmental variable as a phenological cue for settlement or metamorphosis	Sea Surface Temperature (SST) satellite image (NOAA 14) of the monthly mean in Feb 2000 showing warm surface temperatures over much of the northern and central Benguela Current upwelling system, indicating suppressed upwelling, and late Aug 1999 showing strong upwelling along the entire Namibian shelf. The variability affects the migratory patterns of horse mackerel, in particular recruitment to the commercial fisheries. The environmental variability can therefore profoundly affect not only the potential for successful recruitment to the commercial fisheries, but also movements of the stocks	Strong correlation with environmental variable	3	http://oceana.co.za/wp-content/uploads/2016/09/South_African_Namibian_Horse_mackerel_2013.pdf	2	
	Temporal mismatches of life cycle events	All year round, there are temporal differences in peak spawning times between the eastern and western Agulhas Bank	Continuous duration	1	Hetch (1990), Naish (1990), Kerstan and Leslie (1994)	3	
	Migration (seasonal and spawning)	Adults move to the south coast from the west coast to spawn	Migration is common for some of the population	2	Hetch (1990), Barange et al. (1998)	3	
	Average			1.75			
	Total			4.75			

Table S7: Cape stumpnose

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Batch spawner with very small eggs	>20 000 eggs per year	1	Based on expert opinion	1	
	Recruitment period (to fishery)	Consistent	Consistent recruitment events every 1–2 years	1		1	Assumed to be consistent
	Average age at maturity	2 years	2–10 years	2	Farthing et al. (2016)	3	
	Stock status	Robust	Robust	1		1	No stock assessment to verify it
	Additional stressors	Juveniles dependent on estuaries as nursery areas, where they remain until just prior to reaching sexual maturity. Habitat loss, lower freshwater input into estuaries	Stock is experiencing moderate stress other than fishing. Stock is experiencing no more than three known stressors	2	Whitfield (1998)	3	Species that use estuaries as nursery areas are assumed to have additional pressure from pollution, habitat degradation
	Generalist vs specialist	Feeds on variety of organisms but juveniles depend on estuaries as nursery areas	Reliance on either habitat or prey	2	Whitfield (1998)	3	
	Average			1.50			
Distribution	Capacity for larval dispersal	2–8 weeks, 5–30 days	2–8 weeks	2		2	Connell (2012) for *R. sarba*
	Capacity for adult/juvenile movement		<10 km	1	Expert opinion	1	
	Physiological tolerance	Endemic, found from Maputo, Mozambique, to Cape Point, South Africa	<10º latitude	3	Griffiths and Heemstra (1995)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3	Griffiths and Heemstra (1995)	3	
	Average			2.25		0	
Phenology	Environmental variable as a phenological cue for spawning or breeding	Oct–Jan in the Eastern Cape and Western Cape, Aug–Nov in KwaZulu-Natal. Connell (2012) recorded the occurrence of *R. holubi* larvae on the south coast of KwaZulu-Natal throughout the year, with peaks in abundance during April–May and August–December	Weak correlation of spawning with environmental variable	2	Griffith (1996b), Connell (2012)	3	
	Environmental variable as a phenological cue for	Olfactory cues		3	James et al. (2008)	3	

	settlement or metamorphosis						
	Temporal mismatches of life cycle events	Oct–Jan in the Eastern Cape and Western Cape, Aug–Nov in KwaZulu-Natal	Continuous duration	1	Connell (2012)	3	
	Migration (seasonal and spawning)	No migration for the population	No migration	1		3	
	Average			1.75			
	Total			5.5			

Table S8: Carpenter

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	143 000–11 808 000 eggs annually	>20 000 eggs per year	1.00	Brouwer and Griffiths (2005)	3	
	Recruitment period (to fishery)	Consistent	Consistent recruitment events every 1–2 years	1.00	Based on expert opinion	1	It was assumed that this species has a consistent recruitment since no available information was found
	Average age at maturity	Combined sexes: 2 years (East Coast), 3 years (Agulhas Bank), 5 years (Tsitsikamma)	2–10 years	2.00	Brouwer and Griffiths (2005)	3	
	Stock status	Near Threatened	Uncertain/vulnerable	2.00	Mann et al. (2014)	2	
	Additional stressors	Based on expert opinion	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1.00		1	No other known threat apart from fishing is reported for this species
	Generalist vs specialist	Feed primarily on squid, anchovy and sardine. Juveniles: shallow (10–40 m), inshore reefs. Adults: bentho-pelagic associated with high-profile reef, from 50–200 m	Reliance on either habitat or prey	2.00	Brouwer and Griffith (2005), Heemstra and Heemstra (2004)	3	
	Average			1.50			
Distribution	Capacity for larval dispersal	Unknown	2–8 weeks	2		1	
	Capacity for adult/juvenile movement	Resident with a small percentage of fish dispersing	10–1 000 km	2.00	Brouwer et al. (2003)	3	
	Physiological tolerance	Endemic to South Africa, warm-temperate waters	<10º latitude	3.00	Heemstra and Heemstra (2004)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	Endemic to South Africa, warm waters	No unoccupied habitat; 0–2º latitude or longitude	3.00	Heemstra and Heemstra (2004)	3	
	Average			2.5		0	
Phenology	Environmental variable as a phenological cue for spawning or breeding	Summer and autumn spawning	Strong correlation of spawning with environmental variable	3.00	Brouwer and Griffiths (2005)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis	NA					

	Temporal mismatches of life cycle events	Summer and autumn spawning	Continuous duration	1.00	Brouwer and Griffiths (2005)	3	
	Migration (seasonal and spawning)	No migration	No migration	1.00	Brouwer et al. (2003)	3	
	Average			1.67			
	Total			5.67			

Table S9: Chub mackerel

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	From ~86 000 to 1 859 173 eggs for *Scomber japonicus* from Chile and Japan	>20 000 eggs per year	1	Castro Hernández and Santana Ortega (2000)	2	
	Recruitment period (to fishery)	Consistent	Consistent recruitment events every 1–2 years	1		1	Based on stock status
	Average age at maturity	Combined sexes 3 years, west coast of South Africa	2–10 years	2	Baird (1977)	3	
	Stock status	Least Concern	Robust	1	Colette et al. (2011)	2	For the species in its whole distribution
	Additional stressors	No other known stressors	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1	Colette et al. (2011)	2	For the species in its whole distribution
	Generalist vs specialist	Pelagic species. Adults: zooplankton, small fish and squid. Juveniles feed mainly on zooplankton	Reliance on neither habitat nor prey	1	Ozawa et al. (1991), Castro (1995)	2	
	Average			1.17		0	
Distribution	Capacity for larval dispersal	17 days in upwelling systems	2–8 weeks	2	Houde and Zastrow (1993)	2	
	Capacity for adult/juvenile movement	Migratory species, seasonal migrations thought to be related to breeding cycle, congregating in northern Benguela region in summer, migrating southwards during winter	>1 000 km	1	Crawford and de Villiers (1984)	3	
	Physiological tolerance	Indo-Pacific: anti-tropical, absent from the Indian Ocean except for South Africa: KwaZulu-Natal to Western Cape	>20º latitude	1	Heemstra and Heemstra (2004)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3	Heemstra and Heemstra (2004)	3	
	Average			1.75		0	
Phenology	Environmental variable as a phenological cue for spawning or breeding	Spawning most often occurs at water temperatures of 15° to 20 °C	Weak correlation of spawning with environmental variable	2		2	
	Environmental variable as a phenological cue for settlement or metamorphosis						

	Temporal mismatches of life cycle events	Jun–Sep Eastern Cape and Western Cape coasts; Jul–Dec off KwaZulu-Natal	Wide duration	2	Baird (1977), Connell (2012)	3	
	Migration (seasonal and spawning)	Migratory species, seasonal migrations thought to be related to breeding cycle, congregating in northern Benguela region in summer, migrating southwards during winter	Migration is common for the whole population	3	Crawford and de Villiers (1984)	3	
	Average			2.33			
	Total			5.25			

Table S10: Deep-water hake

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	374 375 ± 45 562 eggs female^{-1} (range = 121 731–710 901)	>20 000 eggs per year	1	Osborne et al. (1999)	3	
	Recruitment period (to fishery)	Assumed to be consistent	Consistent recruitment events every 1–2 years	1		1	Assumed to be consistent
	Average age at maturity	Females approximately 3 years (41 cm); males 2.5 years (38 cm)	2–10 years	2	Botha (1986), Durholtz et al. (2016)	3	
	Stock status	Optimal	Robust	1	DAFF (2016)	3	
	Additional stressors	Cannibalism: large *M. paradoxus* eat small *M. paradoxus.* Predation by *M. capensis*	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1	Durholtz et al. (2016)	3	
	Generalist vs specialist	Opportunistic feeding with ontogenetic shift. Dominated by mesopelagics, cephalopods and cannibalism	Reliance on neither habitat nor prey	1	Durholtz et al. (2016)	3	
	Average			1.17			
Distribution	Capacity for larval dispersal	Life cycle includes approximately a three-month spawning period from Jul–Sep with egg and larval drift towards the nursery grounds where they remain, as ‘fingerlings’ for approximately 9 months. This first year of growth (0+ years) has been referred to as the pelagic phase (<16 cm). Thereafter they become ‘juveniles’ and migrate downwards (demersal phase) in their second year of growth (1+ years) and systematically move offshore into deeper water as they age	>2 months	1	Smith and Japp (2009)	3	
	Capacity for adult/juvenile movement	Move from the African southwest coast to initiate their migration in their second year. The resident hakes stay or move up to 3–400 km south or north, only to return in their third or fourth year. Hakes migrate up to 1 200 km either north or southeast and return at the age of 6+ years	>1 000 km	1	Jansen et al. (2013)	3	
	Physiological tolerance	From Cape Frio, Namibia, to Agulhas Bank, and eastwards to East London, South Africa	10–20º latitude	2		3	
	Spatial availability of unoccupied habitat in	Already occupying possible distribution in South Africa	No unoccupied habitat; 0–2º latitude or longitude	3		3	

	the region for critical life stage						
	Average			1.75		0	
Phenology	Environmental variable as a phenological cue for spawning or breeding	Suggested that *M. paradoxus* spawn throughout the year off the South African coast, with increased intensity around Mar and Aug–Oct	Weak correlation of spawning with environmental variable	2	Jansen et al. (2015)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis	It has been suggested that thermal preference influences the distribution of recently hatched larvae and that fluctuation in the hydrological conditions within spawning grounds from year to year may have an important effect on the success of larval survival and recruitment. The abundance of eggs and larvae is reported to be low during periods of minimal and maximal upwelling, suggesting that hake have adapted to cope with highly variable and extreme environments by avoiding spawning during periods when offshore loss, due to advection, is at its maximum. Spawning in the winter months (Jul–Sep) may relate to the weakening of upwelling events and/or a rise in sea temperature. Furthermore it is generally believed that the switching on of the southeasterly winds in Sep signals the end of the peak spawning period and the beginning of the upwelling season (spring/early summer). In general juvenile hake are thought to be able to handle oxygen-depleted (mostly shallower) water better than the adults in deeper waters (where they benefit from lower metabolic costs and greater longevity). *M. paradoxus* prefers colder, deeper and therefore highly pressurised water compared to *M. capensis*. Juvenile *M. paradoxus* are found in bottom temperatures of 4–10 °C and oxygen concentrations from 0.97 to 5.6 ml l^{-1}	Weak correlation with environmental variable	2	Smith and Japp (2009)	3	
	Temporal mismatches of life cycle events	While off the South African south coast, the main spawning season is suggested to be in summer (around Jan). On the western Agulhas Bank in the southern Benguela, spawning peaks were observed in both summer and winter. These peaks largely	Wide duration	2	Jansen et al. (2015)	3	

		coincided with peaks in phytoplankton production that are linked to upwelling conditions in the region					
	Migration (seasonal and spawning)	The migratory hakes migrate up to 1 200 km either north or southeast and return at the age of 6+ years. The alongshore migrations are combined with migrations towards deeper waters	Migration is common for some of the population	2	Jansen et al. (2013)	3	
	Average			2			
	Total			4.92			

Table S11: Galjoen

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	~1.3 million eggs per spawn	>20 000 eggs per year	1	Bennett and Griffiths (1986)	3	
	Recruitment period (to fishery)	Episodic	Highly episodic recruitment events	3		1	Unpublished data from the Tsitsikamma and De Hoop MPA monitoring projects shows a roughly 7-year cycle of recruitment, with very low recruitment between
	Average age at maturity	Males: 4.9 years; females: 5.2 years (Western Cape, 1985)	2–10 years	2	Bennett and Griffiths (1986)	3	
	Stock status	Collapsed	Threatened	3	Attwood (2003)	3	
	Additional stressors	No other known stressor	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1		1	
	Generalist vs specialist	Epilithic feeders, principally molluscivores with brown mussels dominating the diet. Broken surf in areas of mixed water and sand is favoured. Also found in the surf-zone along sandy beaches and in kelp beds	Reliance on neither habitat nor prey	1	Bennett and Griffiths (1986), Attwood and Farquhar (1999)	3	
	Average			1.83			
Distribution	Capacity for larval dispersal	Unknown	2–8 weeks	2		1	
	Capacity for adult/juvenile movement	95% of tagged remained home, 5% moved throughout South African range of galjoen; farthest distance was 1 300 km	10–1 000 km	2	Attwood and Cowley (2005)	3	
	Physiological tolerance	Endemic to southern Africa, from southern Angola to Durban, South Africa	10–20º latitude	2	Smith and Heemstra (1991)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3	Smith and Heemstra (1991)	3	
	Average			2.25			

Phenology	Environmental variable as a phenological cue for spawning or breeding	Spring summer spawning. Eggs deformed below 16 °C	Weak correlation of spawning with environmental variable	2	van der Lingen (1994)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis						
	Temporal mismatches of life cycle events	Sep–Feb	Wide duration	2	Bennett and Griffiths (1986)	3	
	Migration (seasonal and spawning)	90% resident, only a small percentage is nomadic	Migration is common for some of the population	2	Attwood and Cowley (2005)	3	
	Average			2			
	Total			6.08			

Table S12: Geelbek

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Unknown	>20 000	1		1	
	Recruitment period (to fishery)		Occasional and variable recruitment period	3		1	Based on observations of skiboat catches
	Average age at maturity	Combined sexes: 5 years	2–10 years	2	Griffiths and Hecht (1995b)	3	
	Stock status	Collapsed	Threatened	3	Winker et al. (2012), Fennessy and Larson (2015)	3	
	Additional stressors	No other known stressor	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1		1	
	Generalist vs specialist	Over sandy and rocky substrata to depths of 100 m (juveniles) and 150 m (adults). Juveniles feed on mysids and later anchovies, adults feed on sardine, mackerel and maasbanker	Reliance on neither habitat nor prey	1	Griffiths and Hecht (1995b), Griffiths (1988)	3	
	Average			1.83			
Distribution	Capacity for larval dispersal	Unknown	2–8 weeks	2		1	
	Capacity for adult/juvenile movement	Adults undertake a seasonal migration from the Western Cape to KwaZulu-Natal where they spawn in spring	>1 000 km	1	Griffiths and Hecht (1995b)	3	
	Physiological tolerance	False Bay, South Africa, to southern Mozambique	<10º latitude	1	Heemstra and Heemstra (2004), Griffiths and Hecht (1995b)	3	Angola and west coast population separate species – just described. Australia and Oman also separate species. Northwest African population unknown, but likely to be a different species
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0 – 2º latitude or longitude	3	Heemstra and Heemstra (2004), Griffiths and Hecht (1995b)	3	
	Average			1.75			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Aug–Nov, with peak in Sep-Oct	Weak correlation of spawning with environmental variable	2	Griffiths and Hecht (1995b), Connell (2012)	3	

	Environmental variable as a phenological cue for settlement or metamorphosis						
	Temporal mismatches of life cycle events	Aug–Nov, with peak in Sep–Oct	Wide duration	2	Griffiths and Hecht (1995b), Connell (2012)	3	
	Migration (seasonal and spawning)	Adults undertake a seasonal migration from Western Cape to KwaZulu-Natal where they spawn in spring	Migration is common for some of the population	2	Griffiths and Hecht (1995b)	3	
	Average			2			
	Total			5.58			

Table S13: Gurnard

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Fecundity estimates were high in the region 98 000–1 042 000 for *C. capensis*	>20 000 eggs per year	1	Trunov and Malevanyy (1974) in McPhail (1998)	2	
	Recruitment period (to fishery)		Consistent recruitment events every 1–2 years	1		1	Assumed to be consistent
	Average age at maturity	Male fishes are sexually mature at a total length of 37 cm at the end of the fifth year. The female fishes are all sexually mature at a total length of 35 cm at the age of four years	2–10 years	2	Hecht (1977)	3	
	Stock status	Stock status is believed to be under exploited	Robust	1	http://wwfsassi.co.za/fish-species/gurnard-inshore-demersal-trawl/ [accessed 18 Jan 2016]	1	
	Additional stressors	No other known stressors than fishing, bycatch species of the inshore and offshore trawl fishery for hake and sole	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1	http://wwfsassi.co.za/fish-species/gurnard-inshore-demersal-trawl/ [accessed 18 Jan 2016]	3	
	Generalist vs specialist	Opportunistic feeder. A total of 34 different species were positively identified in the diet of *C. capensis*. Found from 28 to 424 m depth but most abundant from 51 to 200 m depth	Reliance on neither habitat nor prey	1	McPhail (1998); Smale and Badenhorst (1991)	3	
	Average			1.17			
Distribution	Capacity for larval dispersal	For tub gurnard *Trigla lucerna*: newly-hatched larvae were 3.09 ± 0.014 mm in total length. Absorption of the yolk sac was complete after the sixth day, when larvae reached 4.85 ± 0.015 mm in total length (under laboratory conditions at 13.5 °C)	<2 weeks	3	Dulcic et al. (2001)	2	
	Capacity for adult/juvenile movement	Based on seasonal catch data, Hecht (1976) reported high mean monthly landings from Oct–Mar along the South African east coast from 1967 to 1975, then declined to a minimum in Sep. In addition, van den Heever (1995) also suggested seasonal catches for *C. capensis* along the west coast	>1 000 km	1	Hecht (1976), van den Heever (1995)	3	
	Physiological tolerance	From Namibia to Mozambique; in South Africa found from the Orange River to the Umfolozi River	10–20º latitude	2	Smith and Heemstra (1986), van der Elst (1988)	3	

	Spatial availability of unoccupied habitat in the region for critical life stage	In South Africa found from the Orange River to the Umfolozi River	No unoccupied habitat; 0–2º latitude or longitude	3	Smith and Heemstra, 1986, van der Elst (1988)	3	
	Average			2.25			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Spawning during spring/summer would increase the chances of survival of Cape gurnard larvae as upwelling driven by easterly winds during the summer brings the colder, nutrient-rich waters to the surface providing favourable environmental conditions	Weak correlation of spawning with environmental variable	2	Hutchings (1994) in McPhail (1998)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis						
	Temporal mismatches of life cycle events	Spawning twice during the relatively long reproductively active period, from Nov to Jan and again during the period Mar to Apr. Extended spawning period with peaks in reproductive activity during Sep, Jan and Apr	Wide duration	2	Hecht (1977), McPhail (1998)	3	
	Migration (seasonal and spawning)	Little evidence from historical landing data of inshore/offshore seasonal migration that may be related to spawning. However, seasonal catches have been reported between the west and south coasts, suggesting seasonal migration	Migration is common for some of the population	2	Hecht (1976), van den Heever (1995)	3	
	Average			2			
	Total			5.42			

Table S14: Harder

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	The number of eggs per female was found to range between 163 000 and 369 000, based on its size		1	De Villiers (1987)	3	
	Recruitment period (to fishery)	Consistent	Consistent recruitment	1		1	
	Average age at maturity	Combined sexes 2 years, west, south and east coast (2010), but these estimates need to be validated. Other study estimated age at maturity at 3 years for *L. richardsonii* in the Berg Estuary, Western Cape	2–10 years	2	Lamberth and Hutchings (2011), De Villiers (198)	2	
	Stock status	Locally depleted on the west coast	Uncertain/vulnerable	2	DAFF (201)	3	
	Additional stressors	Juveniles and adults use estuaries; therefore, they can experience stress from freshwater abstraction, pollution in estuaries	Stock is experiencing moderate stress other than fishing. Stock is experiencing no more than three known stressors.	2	Whitfield (1998)	3	
	Generalist vs specialist	Estuarine-associated species	Reliance on either habitat or prey	1	Whitfield (1998)	3	
	Average			1.50			
Distribution	Capacity for larval dispersal						
	Capacity for adult/juvenile movement	Recorded more than 100 km from the sea. Disperse to feed on other food sources during winter	10–1 000 km	2	Lamberth et al. (1995, 2008)	3	
	Physiological tolerance	From Lobito, Angola, to subtropical transition zone of east coast of South Africa	>20º latitude	1	Lamberth and Whitfield (2013)	3	Not a warm-water species; found in Angola during winter, egg and larval stage cannot tolerate higher temperatures
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3	Lamberth and Whitfield (2013)	3	
	Average			2.00			

Phenology	Environmental variable as a phenological cue for spawning or breeding	Spring and summer with early and late summer peaks. Late summer peaks often intensify following atypical high summer rainfall in the winter and bimodal rainfall zones, the opening of TOCEs and the escape of adults to the sea	Weak correlation of spawning with environmental variable	2	Lamberth et al. (2008)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis	Olfactory cues	Weak correlation	2	James et al. (2008)	3	
	Temporal mismatches of life cycle events	Spring and summer spawning with early and late summer peaks	Wide duration	2	Lamberth et al. (2008)	3	
	Migration (seasonal and spawning)	Nomadic, disperse to feed on other food source in winter. Opportunistic species	No migration	1		1	
	Average			1.75			
	Total			5.25			

Table S15: Kingklip

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	For *Genypterus blacodes* in Chile: mean batch fecundity was 333 330 oocytes per individual for fish sized 85–120 cm TL	>20 000 eggs per year	1	Paredes and Bravo (2005)	2	
	Recruitment period (to fishery)		Consistent recruitment events every 1–2 years	1		1	Assumed to be constant
	Average age at maturity	Males also appear to mature later on the west coast than on the south coast. Length at 50% maturity for male fish on the west coast is approximately 65.5cm (~5 years) and on the south coast it is 62 cm (~4 years). The length at 50% maturity for females is 81 cm and 72.5 cm on the west and south coasts, respectively. These equate to 6.5 years on the west coast and 5.6 years on the south coast	2–10 years	2	DAFF (2016)	3	
	Stock status	Bayesian 'replacement yield' model applied to the total annual catches and the survey abundance estimates for the South African kingklip resource off the South coast results in both a mean and median current (2012) depletion of about 40%. This suggests current status close to BMSY, which taken together with the recent increasing trend in survey abundance estimates suggests a current fishing mortality less than FMSY	Robust	2	Brandão and Butterworth (2014)	3	
	Additional stressors	No other known stressor	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1		1	
	Generalist vs specialist	Bottom-dwelling fish inhabiting rocky areas of the continental shelf and upper slope from depths of 50–500 m. Juveniles feed on benthic fish, crustaceans and squid, whereas the diet of the adults comprises almost entirely demersal fish	Reliance on either habitat or prey	2	BCC (2012), DAFF (2016)	3	
	Average			1.50			
Distribution	Capacity for larval dispersal	Larvae of *G. blacodes,* off Australia appear to spend several months drifting before settling on the bottom	<2 weeks	3	Ward et al. (2001) in Grant and Leslie (2005)	2	

	Capacity for adult/juvenile movement	Movement to spawning grounds and back to the west coast. Move farther offshore (and deeper) as they get older, with juveniles largely restricted to depths shallower than 200 m. Genetic research currently shows that there are separate stocks of kingklip on the west and south coasts of South Africa. Results suggest the presence of population sub-structuring, with at least two genetic units detected: west coast and south coasts of South Africa. The observed low levels of genetic differentiation point to significant gene flow between populations. The absence of temporal stability may result from reproductive sweepstakes, with differential reproductive success between cohorts. These findings suggest that management of South African kingklip should consider two independent stocks	>1 000 km	1	BCC (2012), Henriques et al. (2017)	3	
	Physiological tolerance	From north of Walvis Bay, Namibia, to east of Port Elizabeth, South Africa	10–20º latitude	2	Smith and Heemstra (1986)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	Already occupying all its potential distribution in South Africa	No unoccupied habitat; 0–2º latitude or longitude	3	Smith and Heemstra (1986)	3	
	Average			2.25			
Phenology	Environmental variable as a phenological cue for spawning or breeding	With a decrease in temperature, spawning intensity increases and reaches a maximum when temperatures are lowest. The end of the spawning period on the southwestern Agulhas Bank is apparently in Nov– Dec, when sea surface temperature increases	Strong correlation of spawning with environmental variable	3	Olivar and Sabatés (1989)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis						
	Temporal mismatches of life cycle events	Spawning from Aug–Oct and occurs mainly in the south	Wide duration	2	Japp (1989), Punt and Japp (1994)	3	
	Migration (seasonal and spawning)	Migration from spawning ground back to the west coast	Migration is common for some of the population	2	BCC (2012)	2	

	Average			2.33			
	Total			6.08			

Table S16: Dusky kob

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	For New South Wales, Australia: 900 000–1 042 000 eggs	>20 000 eggs per year	1	Battaglene and Talbot (1994)	2	
	Recruitment period (to fishery)	Not variable	Consistent recruitment	1		1	Based on observations in estuaries throughout the distribution
	Average age at maturity	Males: 5 years; females: 6 years (South Africa, 1993–1995)	2–10 years	2	Griffiths (1996b)	3	
	Stock status	Collapsed	Threatened	2	Griffiths (1997)	3	
	Additional stressors	A high proportion of the juveniles are estuarine-dependent	Stock is experiencing moderate stress other than fishing. Stock is experiencing no more than three known stressors	2	Wallace and van der Elst (1975)	3	
	Generalist vs specialist	Juveniles are estuarine dependent	Reliance on either habitat or prey	2	Wallace and van der Elst (1975)	3	
	Average			1.67			
Distribution	Capacity for larval dispersal	22 days to settlement	2–8 weeks	2	Edworthy (2016)	3	
	Capacity for adult/juvenile movement	Some *A. japonicus* are resident in specific estuaries and adjacent surf-zones and exhibit low levels of dispersal. However, a proportion of the adult population from the Eastern Cape and Western Cape migrate to KwaZulu-Natal to spawn in winter/spring	10–1 000 km	2	Childs (2013)	3	
	Physiological tolerance	In South Africa, found along the southeast coast, from Cape Point, to southern Mozambique. Most abundant from Cape Agulhas to northern KwaZulu-Natal	<10º latitude	3	Griffiths and Heemstra (1995), and references therein for global distribution	3	Recent genetic evidence (e.g. Farmer 2008) shows that the Australian and South African populations are most likely separate species. Given that the Angolan and South African dusky kob have been categorised as separate species it is most likely that all of these populations are distinct

	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3	Griffiths and Heemstra (1995), and references therein for global distribution	3	
	Average			2.50			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Oct–Jan in the Eastern Cape and Western Cape and Aug-Nov in KwaZulu-Natal. However, the presence of kob eggs has been documented in the coastal waters of KwaZulu-Natal as early as Jul and as late as Feb	Weak correlation of spawning with environmental variable	2	Griffiths (1996b), Connell (2012)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis						
	Temporal mismatches of life cycle events	Oct–Jan in the Eastern Cape and Western Cape, Aug–Nov in KwaZulu-Natal	Wide duration	2	Griffiths (1996b), Connell (2012)	3	
	Migration (seasonal and spawning)	A proportion of the adult population from the Eastern Cape and Western Cape migrate to KwaZulu-Natal to spawn in winter/spring	Migration is common for some of the population	2	Griffiths (1996b)	3	
	Average			2			
	Total			6.17			

Table S17: Monkfish

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	For *L. americanus*: predicted fecundity ranged from 150 000–550 000 oocytes for a 60-cm female, and 1.3– 2.1 million oocytes for a 100-cm female	>20 000 eggs per year	1	Johnson and Lindsay (2014)	2	
	Recruitment period (to fishery)	Consistent	Consistent recruitment events every 1–2 years	1	Expert opinion	1	Assumed to be consistent
	Average age at maturity	Length-at-maturity ogives indicate that L50 for males and females was 376 mm TL (total length) and 369 mm TL respectively, corresponding to ages of approximately six years for each	2–10 years	2	Walmsley et al. (2005)	3	
	Stock status	For Namibian monkfish, 2012 assessment concluded the stock to be slightly above the MSY level, estimated at approximately 11 000 t Overall it appears that a replacement yield of 7 652 t on the west coast and 402 t on the south coast will maintain biomass at current levels on each coast, respectively. The base case model indicated that while the resource is increasing on the west coast, the increase is not as apparent as in previous years. The south coast component of the resource remains relatively stable	Robust	1	BCC (2012), Glazer et al. (2017a)	2	
	Additional stressors	No other known stressor	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1		1	
	Generalist vs specialist	Generally over sandy substrata from approximately 50 m to at least 500 m depth. Their diet comprises primarily other demersal fish species and crustaceans	Reliance on either habitat or prey	2	MCM (DAFF) unpublished data in Walmsley et al. (2005)	3	
	Average			1.33			
Distribution	Capacity for larval dispersal	For *L. piscatorius* in northern British waters, endogenous feeding was about 20 days. Other studies suggested 8 and 15 days; however,	2–8 weeks	2	Hislop et al. (2001)	2	

		they were conducted in waters ~18 degrees					
	Capacity for adult/juvenile movement	*L. vomerinus* move into deeper water as they grow, and on the south coast, this offshore movement is accompanied by eastward migration	10–1 000 km	2	Walmsley et al. (2005)	3	
	Physiological tolerance	Extends from northern Namibia (21° S) to Durban, South Africa (30° S, 31° E)	10–20º latitude	2	Leslie and Grant (1990)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	Fully occupying its potential distribution in South Africa	No unoccupied habitat; 0–2º latitude or longitude	3	Leslie and Grant (1990)	3	
	Average			2.25			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Highest spawning in Sep. It would be advantageous for *L. vomerinus* to spawn during spring in order for the larvae to benefit from the spring bloom of phytoplankton and zooplankton	Weak correlation of spawning with environmental variable	2	Walmsley et al. (2005)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis	For *L. americanus*: water temperatures in the Mid-Atlantic Bight are colder on the mid- and outer continental shelf than over the slope during the early part of the year (Houghton et al. 1982), so the distribution of larvae may reflect the seasonal availability of suitable thermal habitat	Strong correlation with environmental variable	3	Richards et al. (2008)	2	
	Temporal mismatches of life cycle events	*L. vomerinus* spawn throughout the year, with female fish exhibiting a slight increase in spawning intensity between autumn and spring	Wide duration	2	Maartens and Booth (2005)	3	
	Migration (seasonal and spawning)	Distribution data indicate that *L. vomerinus* move into deeper water as they grow, and that on the south coast, this offshore movement is accompanied by eastward migration	Migration is common for some of the population	2	Walmsley et al. (2005)	3	
	Average			2.25			
	Total			5.83			

Table S18: Panga

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Unknown	>20 000	1		1	
	Recruitment period (to fishery)	Consistent	Consistent recruitment events every 1–2 years	1		1	Assumed to be consistent
	Average age at maturity	Relatively resilient and reaches sexual maturity at 4–5 years	2–10 years	2	Booth and Buxton (1997a), Booth and Hecht (1997); SASSI offshore trawl assessment South Africa (2014)	3	
	Stock status	The current replacement-yield model suggests catch should be 688 t (fixed catchability) or 881 t (estimated catchability). The average catch between 2011 and 2015 has been above this level at 888 t. Biomass estimates also shows a decline over time	Uncertain/vulnerable	2	Glazer et al. (2017b)	3	
	Additional stressors	No other known stressors but fishing	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1		1	
	Generalist vs specialist	Predominantly crabs, with polychaetes, ophiuroids and fishes also present in the diet. Predominantly on deep, low and high-profile reef and to a lesser extent on mud and sand down to 120 m	Reliance on either habitat or prey	2	Hecht (1976); Booth and Buxton (1997a)	3	
	Average			1.5			
Distribution	Capacity for larval dispersal						
	Capacity for adult/juvenile movement	Juveniles and subadults found in a nursery area on the central Agulhas Bank. After maturation adults disperse throughout range	10–1 000 km	2	Booth (1998)	3	
	Physiological tolerance	South African endemic: Yyzerfontein (90 km north of Cape Town, west coast) to Transkei (east coast)	<10º latitude	3	Smith and Heemstra (1991)	3	

	Spatial availability of unoccupied habitat in the region for critical life stage	Already occupying its potential distribution in South Africa	No unoccupied habitat; 0–2º latitude or longitude	3		3	
	Average			2.67			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Throughout the year, with a peak from Sep–May	Weak correlation of spawning with environmental variable	2	Booth and Buxton (1997a), Booth and Hecht (1997)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis						
	Temporal mismatches of life cycle events	Throughout the year, with a peak from Sep–May	Continuous duration	1	Booth and Buxton (1997a), Booth and Hecht (1997)	3	
	Migration (seasonal and spawning)	After maturation adults disperse throughout range	No migration , just movements from nursery to adult habitats population	1	Booth (1998)	3	
	Average			1.33			
	Total			5.5			

Table S19: Red roman

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Unknown	>20 000	3	Expert judgement	1	
	Recruitment period (to fishery)	Variable	Consistent recruitment events every 1–2 years	1		1	Based on patterns of recruitment observed in the Tsitsikamma National Park monitoring programme
	Average age at maturity	Females: 2.5 years (Eastern Cape, 1986), 3.5 years (Goukamma area, Western Cape)	2–10 years	2	Buxton (1993a), Gotz (2005)	3	
	Stock status	Near Threatened	Uncertain or vulnerable	2	Mann et al. (2014)	3	
	Additional stressors	No other known stressors	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1	Mann et al. (2014)	3	
	Generalist vs specialist	Deeper high and low profile inshore and offshore reefs to 100 m. Mainly echinoderms and cephalopods with some crustaceans and polychaetes	Reliance on either habitat or prey	2	Buxton and Smale (1984), Gotz (2005), Buxton (1984)	3	
	Average			1.83			
Distribution	Capacity for larval dispersal	Unknown	2–8 weeks	2		1	
	Capacity for adult/juvenile movement	Resident, small home range (<100 m linear extent) and high residency (>91 %).	<10 km	3	Buxton and Smale (1989), Kerwarth (2005)	3	
	Physiological tolerance	Endemic, from Namibia to Port St Johns, South Africa, but very rare on the west coast. Distribution of stock primarily from Cape Point to Port St Johns	<10º latitude	3	Heemstra and Heemstra (2004), Buxton (1987)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3	Heemstra and Heemstra (2004), Buxton (1987)	3	
	Average			2.75			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Oct–Jan (Eastern Cape); spawning behaviour observed during diving surveys between Nov–Feb	Weak correlation of spawning with environmental variable	2	Buxton (1990), Gotz (2005)	3	

		in the Goukamma area, Western Cape					
	Environmental variable as a phenological cue for settlement or metamorphosis						
	Temporal mismatches of life cycle events	Oct–Jan (Eastern Cape); spawning behaviour observed during diving surveys between Nov–Feb in the Goukamma area, Western Cape	Wide duration	2	Buxton (1990), Gotz (2005)	3	
	Migration (seasonal and spawning)	Resident, small home range (<100 m linear extent) and high residency (>91 %)	No migration	1	Buxton and Smale (1989), Kerwarth (2005)	3	
	Average			1.67			
	Total			6.25			

Table S20: Red stumpnose

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Female of 363 mm FL would produce an estimated batch of 32 985 eggs; female of 307 mm FL would produce an estimated batch of 65 526 eggs	>20 000 eggs per year	1	van Zyl (2013)	3	
	Recruitment period (to fishery)	Variable	Occasional and variable recruitment period	2		1	Due to its vulnerable state
	Average age at maturity	Age at 50% maturity: 2.2 years for males, 3.9 years for females (Western Cape, 2012)	2–10 years	2	ME van Zyl (University of Cape Town), unpublished data	3	
	Stock status	Collapsed	Threatened	3	Griffiths and Lamberth (2002), Mann et al. (2014)	3	Griffiths and Lamberth, 2002, not an official stock assessment, but based on changes in catch rates over time
	Additional stressors	No other known stressors	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1	Mann et al. (2014)	3	
	Generalist vs specialist	Juveniles and adults associated with shallow and offshore reefs. Diet dominated by ophiuroids, gastropods and polychaete worms. Also feed on sea urchins, octopus and crabs	Reliance on neither habitat nor prey	1	Buxton and Smale (1984), van Zyl (2013), Heemstra and Heemstra (2004)	3	
	Average			1.67			
Distribution	Capacity for larval dispersal	Unknown	2–8 weeks	2		1	
	Capacity for adult/juvenile movement	Tagging studies have shown this species to be extremely resident	10–1 000 km	2	Wilke and Griffiths (1999)	3	
	Physiological tolerance	Cape Point to East London, South Africa	<10º latitude	3	Smith and Heemstra (1986)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	Already occupying its potential distribution	No unoccupied habitat; 0–2º latitude or longitude	3	Smith and Heemstra (1986)	3	
	Average			2.5			

Phenology	Environmental variable as a phenological cue for spawning or breeding	Oct-Jan mid-summer spawners, with peak in Dec	Weak correlation of spawning with environmental variable	2		3	
	Environmental variable as a phenological cue for settlement or metamorphosis	Unknown					
	Temporal mismatches of life cycle events	Oct-Jan both in the SE Cape and on the central Agulhas Bank, peaking in Dec	Wide duration	2	van Zyl (2013)	3	
	Migration (seasonal and spawning)	Tagging studies have shown this species to be extremely resident	No migration	1	Wilke and Griffiths (1999)	3	
	Average			1.67			
	Total			5.83			

Table S21: Sardine

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Relative fecundity of around 260 eggs per g per spawning event	>20 000 eggs per year	1	van der Lingen and Durholtz (2005)	3	
	Recruitment period (to fishery)	Consistent	Consistent recruitment events every 1–2 years	1		1	
	Average age at maturity	Sardine reach maturity at 2 or 3 years	2–10 years	2	van der Lingen and Durholtz (2005)	3	
	Stock status	Optimal	Robust	1	DAFF (2016)	3	
	Additional stressors	No other known stressors	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1	DAFF (2016)	3	
	Generalist vs specialist	Sardine are primarily filter-feeders	Reliance on neither habitat nor prey	1	van der Lingen (1994)	3	
	Average			1.17			
Distribution	Capacity for larval dispersal	42 days (for upwelling systems)	2–8 weeks	2	Houde and Zastrow (1993)	2	
	Capacity for adult/juvenile movement	Annual sardine run	>1 000 km	1	O'Donoghue et al. (2010)	3	
	Physiological tolerance	Indo-Pacific: southern Africa to eastern Pacific	>20º latitude	1	Parrish et al. (1989)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3		3	
	Average			1.75			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Spawn year-round, not only over the Agulhas Bank but also occasionally off the west coast, with peaks in Sep/Oct and Feb/Mar	No apparent correlation of spawning with environmental variable	1	van der Lingen et al. (2001), van der Lingen and Huggett (2003)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis						
	Temporal mismatches of life cycle events	Spawn year-round, with peaks in Sep/Oct and Feb/Mar	Continuous duration	1	van der Lingen et al. (2001), van der Lingen and Huggett (2003)	3	

	Migration (seasonal and spawning)	Sardine run: each winter, part of the population leaves the Agulhas Bank and moves northwards along the Transkei shelf to reach the coastal waters of the KwaZulu-Natal south coast in Jun–Jul. Migrates south for spawning	Migration is common for the whole population	3	O'Donoghue et al. (2010)	3	
	Average			1.67			
	Total			4.58			

Table S22: Seaweeds

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Zoospore release has been measured seasonally *in situ* and used to calculate an annual figure of $3{\cdot}07 \times 10^{10}$ spores per year from an *Ecklonia maxima* sporophyte	>20 000 eggs per year	1	Joska and Bolton (1987)	3	
	Recruitment period (to fishery)	Consistent	Consistent recruitment events every 1–2 years	1		1	Assumed based on their stock status
	Average age at maturity	It takes about 2 years for a kelp plant to grow from an embryo to 2–3 metres in length, and plants are estimated to live for 5–7 years	≤2 years	1	http://www.dict.org.za/kelp.php [accessed 25 Jan 2016]	1	
	Stock status	Optimal stock status for kelp and abundant for non-kelp species	Robust	1	DAFF (2016)	3	
	Additional stressors	No other known stressors		1	Bolton et al. (2012)	3	Eastward shift in distribution related to a cooling trend along the South African south coast. Heavy harvesting in some areas, by removing the whole plant.
	Generalist vs specialist	Benthic species	Reliance on either habitat or prey	2		3	
	Average			1.17			
Distribution	Capacity for larval dispersal	*Ecklonia radiata* thalli released zoospores between 24 Jan (sample period 1) and 20 Apr (sample period 7), 2011. Settlement: initial gametophyte densities peaked twice over the sample period with densities reaching a maximum on the second (9 Feb) sample period, while the minimum density was recorded mid-season	2–8 weeks	2	Mohring et al. (2013)	2	
	Capacity for adult/juvenile movement	Sessile sp.	<10 km	3		3	
	Physiological tolerance	*Ecklonia maxima* is endemic to southern Africa, from Namibia to the vicinity of Cape Agulhas, South Africa	10–20º latitude	2	Bolton and Levitt (1985)	3	

	Spatial availability of unoccupied habitat in the region for critical life stage	Already occupying its potential distribution in South Africa	No unoccupied habitat; 0–2º latitude or longitude	3		3	
	Average			2.50			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Vegetative growth of female gametophytes of *Ecklonia maxima* show the fastest growth at 20 °C but very poor growth at 22.5 °C. Maximum monthly of 19 °C. In the range 12.5–17.5 °C this species produced eggs most rapidly, resulting in 2.5–3 eggs per female	Strong correlation of spawning with environmental variable	3	Bolton and Anderson (1987)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis						
	Temporal mismatches of life cycle events	Spore production in *E. maxima* has seasonal peaks, but it occurs throughout the year. Spore release per unit fertile area also varied seasonally, and most spores released in spring/early summer	Continuous duration	1	Joska and Bolton (1987)	3	
	Migration (seasonal and spawning)	Benthic species	No migration	1		3	
	Average			1.67			
	Total			5.33			

Table S23: Shallow-water hake

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Mean batch fecundity was 417 205 ± 64 568 (SE) eggs female^{-1} (range = 147 600–723 658)	>20 000 eggs per year	1	Osborne et al. (1999)	3	
	Recruitment period (to fishery)	Consistent	Consistent recruitment events every 1–2 years	1		1	Assumed to be consistent
	Average age at maturity	Males: 2 years (360 cm); females: 4.5 years (53.8 cm)	2–10 years	2	Botha (1986), Durholtz et al. (2016)	3	
	Stock status	Optimal	Robust	1	DAFF (2016)	3	
	Additional stressors	Cannibalism of small fish by large fish	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1	Durholtz et al. (2016)	3	
	Generalist vs specialist	Dominated by pelagic fish and hake. Coastal differences in diet	Reliance on neither habitat nor prey	1	Durholtz et al. (2016)	3	
	Average			1.17			
Distribution	Capacity for larval dispersal	Life cycle includes approximately a three-month spawning period from Jul–Sep with egg and larval drift towards the nursery grounds where they remain, as 'fingerlings', for approximately 9 months. This first year of growth (0+ years) has been referred to as the pelagic phase (<16 cm). Thereafter they become 'juveniles' and migrate downwards (demersal phase) in their second year of growth (1+ years) and systematically move offshore into deeper water as they age	>2 months	1	Smith and Japp (2009)	3	
	Capacity for adult/juvenile movement	Migrations for spawning recorded in the northern Benguela	>1 000 km	1	Wilhelm et al. (2015)	3	
	Physiological tolerance	From southern Angola to KwaZulu-Natal on the east coast of South Africa	>20º latitude	1	Smith and Heemstra (1991)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	Already occupying its potential distribution in South Africa	No unoccupied habitat; 0–2º latitude or longitude	3		3	
	Average			1.50			

Phenology	Environmental variable as a phenological cue for spawning or breeding	While off the South African south coast, the main spawning season is suggested to be in summer (around Jan). On the western Agulhas Bank, spawning peaks were observed in both summer and winter	Weak correlation of spawning with environmental variable	2	Jansen et al. (2015)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis	It has been suggested that thermal preference influences the distribution of recently hatched larvae and that fluctuation in the hydrological conditions within spawning grounds from year to year may have an important effect on the success of larval survival and recruitment. The abundance of eggs and larvae is reported to be low during periods of minimal and maximal upwelling, suggesting that hake have adapted to cope with highly variable and extreme environments by avoiding spawning during periods when offshore loss, due to advection, is at its maximum. Spawning in the winter months (Jul–Sep) may relate to the weakening of upwelling events and/or a rise in sea temperature. Furthermore it is generally believed that the switching on of the southeasterly winds in Sep signals the end of the peak spawning period and the beginning of the upwelling season (spring/early summer). In general juvenile hake are thought to be able to handle oxygen-depleted (mostly shallower) water better than the adults in deeper waters (where they benefit from lower metabolic costs and greater longevity). *M. capensis* is thought to have developed a physiological tolerance of oxygen-depleted water that is not present *in M. paradoxus*. *M. capensis* juveniles are found at temperatures between 8 and 11 °C and in oxygen levels from 0.2 to 9.6 ml^{-1}	Weak correlation with environmental variable	2	Smith and Japp (2009)	3	

	Temporal mismatches of life cycle events	While off the South African south coast, the main spawning season is suggested to be in summer (around Jan). On the western Agulhas bank in the southern Benguela, spawning peaks were observed in both summer and winter	Wide duration	2	Jansen et al. (2015)	3	
	Migration (seasonal and spawning)	Migratory hakes migrate up to 1 200 km either north or to the southeast coast of South Africa, and return at the age of 6+ years	Migration is common for some of the population	2	Jansen et al. (2013)	3	
	Average			2			
	Total			4.67			

Table S24: Silver kob

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Unknown	>20 000	1		1	
	Recruitment period (to fishery)		Consistent recruitment events every one to two years	1		1	Based on skiboat catches
	Average age at maturity	Females: 1.3 years (southeastern Cape), 2.4 years (southern Cape)	2–10 years	2	Griffiths (1996a), Kirchner (2001)	3	
	Stock status	Depleted to heavily depleted	Threatened	3	DAFF (2016)	3	
	Additional stressors	No other known stressor	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1		1	
	Generalist vs specialist	Feed on pelagic fish, shrimp and squid. Adults, mostly moderate/low profile reef in 20–120 m depth in the southeastern Cape and southern Cape and 2–120 m in the southwestern Cape. Found in estuaries of the west coast	Reliance on neither habitat nor prey	1	Heemstra and Heemstra (2004), Griffiths (1997a)	3	Use estuaries for thermal refuge to upwelling events on the west coast
	Average			1.5			
Distribution	Capacity for larval dispersal	Unknown	2–8 weeks	2		1	
	Capacity for adult/juvenile movement	Migratory; inshore (<60 m) in summer dispersing further offshore in winter in response to oceanographic patterns	10–1 000 km	2	Griffiths (1997a), Kirchner (1998)	3	
	Physiological tolerance	Endemic to southern Africa from northern Namibia to southern Transkei	10–20º latitude	2	Kirchner (1998)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3		3	
	Average			2.25			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Although breeding and spawning activity occurs continuously throughout the year, the main spawning season is from Aug–Dec with a peak between Sep–Nov	Weak correlation of spawning with environmental variable	2	Griffiths (1997a)	3	
	Environmental variable as a phenological cue for						

	settlement or metamorphosis						
	Temporal mismatches of life cycle events	Although breeding and spawning activity occurs continuously throughout the year, peak between Sep–Nov	Continuous duration	1	Griffiths (1997a)	3	
	Migration (seasonal and spawning)	Inshore/offshore movement. Inshore (<60 m) in summer dispersing further offshore in winter in response to oceanographic patterns	Inshore/offshore movement is common for some of the population	2	Griffiths (1997a), Kirchner (1998)	3	
	Average			1.67			
	Total			5.42			

Table S25: Smoothhound shark

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Viviparous, with a yolk-sac placenta; 4–17 pups for *M. mustelus* in the Mediterranean Sea	<100 eggs per year	3	De Maddalena et al. (2001)	2	
	Recruitment period (to fishery)	Consistent	Consistent recruitment events every 1–2 years	1		1	Assumed to be consistent
	Average age at maturity	7–9 years for males, and 10–12 years for females; combined sexes: 9 years; Eastern Cape and Western Cape (1990s and 2000s)	2–10 years	2	Goosen and Smale (1997), da Silva (2007)	3	
	Stock status	40–50% optimally exploited	Robust	1	da Silva (2007)	3	
	Additional stressors	No other known stressor but fishing	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1		1	
	Generalist vs specialist	Feed on invertebrates and larger prey such as octopus and spiny lobster. Usually found in shallow, inshore waters over sand and rocky reefs but may also be found offshore to depths >100 m	Reliance on neither habitat nor prey	1	Smale and Compagno (1997)	3	
	Average			1.50			
Distribution	Capacity for larval dispersal						
	Capacity for adult/juvenile movement	Adults migrate inshore to sheltered bays such as Saldanha and Algoa Bay, South Africa, where pupping occurs. Adults are philopatric with some large-scale seasonal movements	>1 000 km	1	Smale and Compagno (1997)	3	
	Physiological tolerance	Mediterranean Sea, eastern Atlantic and southwest Indian Ocean. Found along the entire South African coast south of Durban, to Namibia	>20º latitude	1	Compagno et al. (2005), Heemstra and Heemstra (2004)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3	Compagno et al. (2005), Heemstra and Heemstra (2004)	3	
	Average			1.67			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Austral spring and summer: Oct–Jan	Strong correlation of spawning with environmental variable	3	Smale and Compagno (1997)	3	

	Environmental variable as a phenological cue for settlement or metamorphosis						
	Temporal mismatches of life cycle events	Austral spring and summer: Oct–Jan	Wide duration	2	Smale and Compagno (1997)	3	
	Migration (seasonal and spawning)	Adults migrate inshore to sheltered bays, such as Saldanha Bay and Algoa Bay, where pupping occurs. Adults are philopatric with some large-scale seasonal movements	Migration is common for some of the population	2	da Silva et al. (2013), Smale and Compagno (1997)	3	
	Average			2.33			
	Total			5.50			

Table S26: Snoek

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity						
	Recruitment period (to fishery)	Consistent	Consistent recruitment events every 1–2 years	1		1	Based on its optimal stock status
	Average age at maturity	Combined sexes: 3 years (South Africa)	2–10 years	2	Griffiths (2002)	3	
	Stock status	Optimal fishing pressure and stock status	Robust	1	DAFF (2016)	3	
	Additional stressors	No other known stressors	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1		1	
	Generalist vs specialist	Feeds on wide variety of pelagic and demersal organisms. Mesopelagic along the shelf and near islands and seamounts, juveniles are epipelagic	Reliance on neither habitat nor prey	1	Griffiths (2002), Heemstra and Heemstra (2004)	3	
	Average			1.20			
Distribution	Capacity for larval dispersal						
	Capacity for adult/juvenile movement	Nomadic, adults move offshore (between 150–450 m isobaths) in winter/spring to spawn. Longshore movement is generally random	>1 000 km	1	Griffiths (2002)	3	
	Physiological tolerance	Temperate waters of the southern hemisphere: Angola to Algoa Bay, South Africa	10–20º latitude	2	Heemstra and Heemstra (2004)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3		3	
	Average			2.00			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Winter and spring spawning (Jun–Nov)	Weak correlation of spawning with environmental variable	2	Griffiths (2002)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis						
	Temporal mismatches of life cycle events	Jun–Nov	Wide duration	2	Griffiths (2002)	3	
	Migration (seasonal and spawning)	Nomadic species move offshore in winter/spring to spawn	Migration is common for some of the population	2	Griffiths (2002)	3	

	Average			2			
	Total			5.20			

Table S27: Sole

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	For *Synaptura marginata*: ~30 000 eggs for a fish of ~400 mm TL	>20 000 eggs per year	1	Thompson (2004)	2	
	Recruitment period (to fishery)	Consistent	Consistent recruitment events every 1–2 years	1		1	Assumed to be consistent
	Average age at maturity	For *Cynoglossus zanzibarensis*: sexual maturation in female fish was initiated at approximately 1.3 years of age (240 mm TL), with all fish being fully mature after 4 years of age (>320 mm TL). Age- and length-at-maturity were determined from the fitted logistic ogive at 2.2 years of age and 275 mm TL, respectively	2–10 years	2	Booth and Walmsley-Hart (2000)	2	
	Stock status	Unknown	Uncertain or vulnerable	2	DAFF (2016)	3	
	Additional stressors	No stressors other than fishing	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1		1	
	Generalist vs specialist	Geometric mean number of juveniles per standard trawl was higher on the mud patches than on the sandy substratum	Reliance on either habitat or prey	2	Le Clus et al. (1994)	3	
	Average			1.50			
Distribution	Capacity for larval dispersal	4 days for *Dagetichthys marginatus*	<2 weeks	3	Thompson et al. (2007)	2	
	Capacity for adult/juvenile movement	Migration off shore of juveniles and adults from ~5 km offshore to ~35 or more km	10–1 000 km	2	Le Clus et al. (1994)	3	
	Physiological tolerance	Endemic to the shelf water of the Cape south coast, between Cape Agulhas (20° E) and East London	<10º latitude	3	Zoutendyk (1973)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	Already occupying its potential distribution in South Africa	No unoccupied habitat; 0–2º latitude or longitude	3		3	
	Average			2.75			

Phenology	Environmental variable as a phenological cue for spawning or breeding	Spawning products are dispersed by current eastwards and inshore (west of 23°E) and eastwards (east 23° E). Spawning seems to take place in areas where eggs will be dispersed towards the shore, or where the current is too weak to show direction	Weak correlation of spawning with environmental variable	2	Le Clus et al. (1994)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis						
	Temporal mismatches of life cycle events	In captivity, Agulhas sole spawning has been recorded throughout the year, supporting field observations	Continuous duration	1	Marchand (1933), Zoutendyk (1974), Hecht (1976) in Le Clus et al. (1994)	2	
	Migration (seasonal and spawning)	Migration off shore of juveniles and adults from ~5 km offshore to ~35 or more km.	Migration is common for some of the population	2	Le Clus et al. (1994)	2	
	Average			1.67			
	Total			5.92			

Table S28: Soupfin shark

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	6 to 52 in a litter for African and European waters, eastern and western North Pacific, and southern Australia		3	Cox and Francis (1997)	3	
	Recruitment period (to fishery)	Highly episodic	Highly episodic recruitment event	3		1	Assumed to be highly episodic due to its depleted status
	Average age at maturity	Combined sexes: 6.04 years (South Africa)	2–10 years	2	McCord (2005)	3	
	Stock status	Depleted	Threatened	3	DAFF (2016)	3	
	Additional stressors	No other known stressor	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1		1	
	Generalist vs specialist	Benthic species, most abundant in cold to warm temperate continental seas, have been found in depths ranging from 2–470 m. Piscivorous, also feeds on crustaceans, cephalopods, worms and echinoderms	Reliance on neither habitat nor prey	1	Compagno et al. (2005), Compagno (1984)	3	
	Average			2.17			
Distribution	Capacity for larval dispersal						
	Capacity for adult/juvenile movement	Tagging studies indicates up to 2 500 km movement	>1 000 km	1	Heemstra and Heemstra (2004)	3	
	Physiological tolerance	Globally distributed in temperate waters. In South Africa, temperate waters occur from East London, South Africa, to at least northern Namibia	>20º latitude	1	Compagno et al. (2005), Heemstra and Heemstra (2004)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3	Compagno et al. (2005), Heemstra and Heemstra (2004)	3	
	Average			1.67			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Pupping season in austral spring	Strong correlation of spawning with environmental variable	3	Kroese and Sauer (2002)	3	
	Environmental variable as a phenological cue for						

	settlement or metamorphosis						
	Temporal mismatches of life cycle events	Pupping season in austral spring	Wide duration	2	Kroese and Sauer (2002)	3	
	Migration (seasonal and spawning)	Migratory. Tagging studies indicate up to 2 500 km movement.	Migration is common for the whole population	3	Heemstra and Heemstra (2004)	3	
	Average			2.67			
	Total			6.50			

Table S29: South coast rock lobster

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Large females produce >200 000 eggs/female of 120 mm CL	>20 000 eggs per year	1	Groeneveld (2005)	3	
	Recruitment period (to fishery)	Variable	Occasional and variable recruitment period	2		1	Assumed to be variable due to the status of the population
	Average age at maturity	Reach sexual maturity at around 63–71 mm CL or between 32.6 and 57 months based on growth models	2–10 years	2	Groeneveld (2005)	3	
	Stock status	Optimal to depleted	Uncertain/vulnerable	2		3	
	Additional stressors	No other known stressor but fishing	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1		1	
	Generalist vs specialist	Benthic species are dependent on habitat. They feed on a wide range of animal and plant material	Reliance on either habitat or prey	2	Joll and Phillips (1984)	2	
	Average			1.67			
Distribution	Capacity for larval dispersal	For *P. elephas*: the duration of planktonic life of the spiny lobster phyllosomae in the western Mediterranean is confirmed as being approximately five months	>2 months	1	Díaz et al. (2001)	2	
	Capacity for adult/juvenile movement	547 (25.8%) tagged lobsters of both sexes moved >20 km within or between sites	10–1 000 km	2	Groeneveld and Branch (2002)	3	
	Physiological tolerance	Endemic to South African continental shelf: from Cape Point, along the edge of the Agulhas Bank up to 200 km offshore, and closer inshore up to the Eastern Cape	<10º latitude	3	Groeneveld and Branch (2002)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	Already occupying its potential distribution in South Africa, endemic to the south coast	No unoccupied habitat; 0–2º latitude or longitude	3		3	
	Average			2.25			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Winter spawning in *P. gilchristi*, and external egg development thereafter, would coincide with a slightly warmer temperature regime	Weak correlation of spawning with environmental variable	2	Groeneveld and Rossouw (1995)	3	

	Environmental variable as a phenological cue for settlement or metamorphosis	Settlement in *P. elephas* takes place within a limited temperature window centred in the warmest months. Settlement started when sea surface temperatures began to increase in mid-May, peaked in Jun-Jul, when temperatures in the study area had not yet reached the annual maximum (which takes place in Aug–Sep) and ended in Aug. *P. gilchristi* females are in berry virtually throughout the year means that recruitment is more likely to be occurring throughout the year with no well-defined recruitment period. The same would hold for moulting (no clearly defined moulting period). There are some indications of periodicity in both recruitment and moulting but these are not well defined in this case	Strong correlation with environmental variable	2	Díaz et al. (2001), Groeneveld and Rossouw (1995), Cockcroft unpublished data	2	
	Temporal mismatches of life cycle events	Spawning takes place during Jul–Aug. Large proportion of egg-bearing female observed in Mar with a high percent of spent ovaries in that period	Wide duration	2	Groeneveld and Rossouw (1995)	3	
	Migration (seasonal and spawning)	Cape Agulhas is an important settlement area for post-larvae originating between Port Elizabeth and western Agulhas Bank; juveniles migrate eastwards to redress the downstream displacement	Migration is common for some of the population	2	Groeneveld and Branch (2005)	3	
	Average			2.00			
	Total			5.92			

Table S30: Spotted grunter

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Unknown	>20 000 eggs	1		1	
	Recruitment period (to fishery)		Consistent recruitment events every 1–2 years	1		1	Based on estuarine catch data
	Average age at maturity	Males mature at 3 years in the Eastern Cape, 3.2 years for combined sexes (determined using logistic growth)	2–10 years	2	Webb (2002), Fennessy (2000)	3	
	Stock status	Overexploited	Threatened	3	Fennessy (2000)	3	
	Additional stressors	Inhabits estuaries, harbours, coastal embayments and shallow coastal waters. Vulnerable to additional stressors such as pollution, freshwater abstraction in estuaries	Stock is experiencing moderate stress other than fishing. Stock is experiencing no more than three known stressors	2	Whitfield (1998)	3	
	Generalist vs specialist	Estuaries and coastal waters over soft sediments. Diet of estuarine fish consists of crustaceans and molluscs and the relative importance of the dominant prey varies between estuaries	Reliance on either habitat or prey	2	Whitfield (1998), Webb (2002)	3	
	Average			1.83			
Distribution	Capacity for larval dispersal		2–8 weeks	2	Connell (2012)	2	For similar species
	Capacity for adult/juvenile movement	Resident. Despite making seaward migrations to spawn, spotted grunter are largely resident to one estuary. ORI tagging data revealed that 95% of recaptures were made within 3.5 km of the release site and only 2% moved more than 100 km	<10 km	3	Cowley et al. (2012)	3	
	Physiological tolerance	From Maputo, Mozambique, to False Bay in Western Cape, and entire east coast of South Africa	10–20º latitude	2	Heemstra and Heemstra (2004)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3		3	
	Average			2.5			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Aug–Dec in KwaZulu-Natal	Weak correlation of spawning with environmental variable	2	Wallace (1975b)	3	

	Environmental variable as a phenological cue for settlement or metamorphosis						
	Temporal mismatches of life cycle events	Spring–summer spawning (Aug–Dec in KwaZulu-Natal)	Wide duration	2	Wallace (1975b)	3	
	Migration (seasonal and spawning)	Resident; a small proportion of the population (~2%) make seaward migrations to spawn	Migration is common for some of the population	2	Cowley et al. (2012)	3	
	Average			2			
	Total			6.33			

Table S31: Spotted gully shark

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	5–15 pups	<100 eggs per year	3	Smale and Goosen (1999), Soekoe (2016)	3	
	Recruitment period (to fishery)		Occasional and variable recruitment	2		1	Based on observed shore-based catches in the Eastern Cape
	Average age at maturity	Males: 10.9 years; females: 15.3 years, southeastern Cape (1981–2004)	>10 years	3	Booth et al. (2011), Soekoe (2016)	3	
	Stock status	Near Threatened	Threatened	3	Compagno (2009)	3	
	Additional stressors	No other known stressor but fishing	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1		1	
	Generalist vs specialist	Prefer inshore rocky reefs <30 m, may penetrate estuaries that are effectively marine inlets. Feed on crustaceans, cephalopods and reef fish, juveniles prefer rock crabs	Reliance on neither habitat nor prey	1	Goosen (1997), Smale and Goosen (1999)	3	
	Average			2.17			
Distribution	Capacity for larval dispersal	No larval stage					
	Capacity for adult/juvenile movement	Resident, although a few records of movements of over 200 km have been recorded	10–1 000 km	2	Booth et al. (2011), Smale unpub data, ORI unpubl data	3	
	Physiological tolerance	Endemic to southern Africa, from central Transkei region of South Africa to southern Angola, but excluding west coast of South Africa	10–20º latitude	2	Compagno et al. (2005), Soekoe (2016)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	West coast of South Africa	Substantial unoccupied habitat		Soekoe (2016)	3	
	Average			2.33			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Mating and fertilisation from Oct to early Dec	Weak correlation of spawning with environmental variable	2	Smale and Goosen (1999)	3	

	Environmental variable as a phenological cue for settlement or metamorphosis						
	Temporal mismatches of life cycle events	Mating and fertilisation from Oct to early Dec	Wide duration	2	Smale and Goosen (1999)	3	
	Migration (seasonal and spawning)	Resident, although a few records of movements of over 200 km have been recorded	No migration	1	Booth et al. (2011), Smale unpublished data, ORI unpublished data	3	
	Average			1.67			
	Total			6.17			

Table S32: Squid

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Potential fecundity of 17 809 eggs (mean value of the number of discernible oocytes in the ovary of squid jigged on the spawning grounds added to the number of eggs in the oviducts of partially spent squid)	100–20 000 eggs per year	2	Sauer et al. (1999)	3	
	Recruitment period (to fishery)	Consistent	Consistent recruitment events every 1–2 years	1	Annual species with commercial catches every year; therefore recruitment to the fishery occurs every year	1	
	Average age at maturity	Fast-growing, reaching reproductive size in approximately one year or less and total life-span is less than two years	≤2 years	1	DAFF (2016)	3	
	Stock status	Optimal	Robust	1	DAFF (2016)	3	
	Additional stressors	No other known stressors	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1		1	
	Generalist vs specialist	Wide variety of prey items such as teleosts, polychaetes, crustaceans and cephalopods	Reliance on neither habitat nor prey	1	Sauer and Lipiński (1991)	3	
	Average			1.17			
Distribution	Capacity for larval dispersal	The residual alimentary yolk lasts 4 days after hatching	<2 weeks	3	CJ Augustyn (pers. obs.) in Augustyn et al. (1992)	3	
	Capacity for adult/juvenile movement	Within one year it is possible that a squid may remain within a relatively small area or travel more than 2 000 km	>1 000 km	1	Olyott et al. (2006)	3	
	Physiological tolerance	Southern Angola to the east coast of South Africa (beyond Port Alfred)	10–20º latitude	2	Sauer et al. (2013)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3	Olyott et al. (2007)	3	
	Average			2.25			

Phenology	Environmental variable as a phenological cue for spawning or breeding	Catches are correlated statistically with surface-water temperature and wind direction on the spawning grounds during summer. Negative linear correlations between maximum summer SST (monthly average) and squid biomass the following autumn, and annual catch, support the link between the “cold-ridge copepod maximum” and the early life cycle of chokka squid, and holds promise for prediction	Strong correlation of spawning with environmental variable	3	Sauer et al. (1991), Roberts (2005)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis	Because of the restricted distribution area of squid, it can be inferred that settlement is susceptible to environmental conditions	Strong correlation with environmental variable	3	W Sauer unpublished data	1	
	Temporal mismatches of life cycle events	*Loligo vulgaris reynaudii* spawn throughout the year, with a peak in spring/early summer	Continuous duration	1	Sauer et al. (1991)	3	
	Migration (seasonal and spawning)	Juveniles migrate to the west coast and subsequently return as subadults, this is an integral but non-essential and variable part of the chokka life history	Migration is common for some of the population	2	Augustyn et al. (1992, 1994)	3	
	Average			2.25			
	Total			5.67			

Table S33: St Joseph

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Oviparous, up to a maximum of 22 eggs	<100 eggs per year	3	da Silva and Lamberth (2013)	3	
	Recruitment period (to fishery)	Variable	Occasional and variable recruitment period	2		1	Assumed to be variable due to Near Threatened status
	Average age at maturity	Males: 3.3 years; females: 4.2 years (St Helena Bay, 1993)	2–10 years	2	Freer and Griffiths (1993b)	3	
	Stock status	Unknown	Uncertain/vulnerable	2	DAFF (2016)	3	
	Additional stressors	No other known stressor but fishing	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1		1	
	Generalist vs specialist	Benthic invertebrates including bivalves, gastropods, polychaetes, crustaceans and fish, Demersal marine species primarily living over soft substrata, depth range 10–374 m	Reliance on either habitat or prey	2	Freer and Griffiths (1993a)	3	
	Average			2.00			
Distribution	Capacity for larval dispersal						
	Capacity for adult/juvenile movement	Nomadic, mature fish have an annual onshore/offshore migration for reproductive purposes	10–1 000 km	2	Freer and Griffiths (1993a)	3	
	Physiological tolerance	Endemic from Namibia to KwaZulu-Natal, South Africa	<10º latitude	3	Compagno (1986), Compagno et al. (1989)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat in South Africa	No unoccupied habitat; 0–2º latitude or longitude	3	Compagno (1986), Compagno et al. (1989)	3	
	Average			2.67			
Phenology	Environmental variable as a phenological cue for spawning or breeding	In summer, mature individuals usually migrate inshore to mate and lay eggs in shallow, sheltered bays	Strong correlation of spawning with environmental variable	3	Freer and Griffiths (1993a)	3	
	Environmental variable as a phenological cue for						

	settlement or metamorphosis						
	Temporal mismatches of life cycle events	Summer season	Wide duration	2	Freer and Griffiths (1993a)	3	
	Migration (seasonal and spawning)	In summer, mature individuals usually migrate inshore to mate and lay eggs in shallow, sheltered bays	Migration is common for some of the population	2	Freer and Griffiths (1993a)	3	
	Average			2.33			
	Total			7.00			

Table S34: West coast rock lobster

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	56 000–88 000 mean number of eggs for a carapace length of 60–64 mm	>20 000 eggs per year	1	Beyers and Goosen (1987)	3	
	Recruitment period (to fishery)	There is a strong seasonal pattern of puerulus settlement in early to mid-summer. Close association between wind conditions, upwelling and settlement	Consistent recruitment event	1	Groeneveld et al. (2010), Keulder (2005)	3	
	Average age at maturity	Female age at maturity is estimated at five years	2–10 years	2	Pollock (1986)	3	
	Stock status	Depleted to heavily depleted	Threatened	3	DAFF (2016)	3	
	Additional stressors	The eastward change in its distribution has been attributed to climate change. Illegal harvesting. Non-adherence to sustainable fishing levels is also a threat. The most important 'additional stressor' not mentioned are the lobster walkouts or mass strandings. These are environmentally driven and are linked to low oxygen and red tide events	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	2	Mead et al. (2013) Cockcroft (2001)	3	All these stressors have also impacted growth rates since 1980s, which impacts the fishery
	Generalist vs specialist	Benthic species dependent on habitat, wide variety of prey (sea urchin, barnacles, mussels, polychaetes, corallines and fish)	Reliance on either habitat or prey	2	Mayfield et al. (2000)	3	
	Average			1.83			
Distribution	Capacity for larval dispersal	For *J. edwardsii*: some phyllosomas reached final stage about 12 months after the spring hatching, but often metamorphosis to the puerulus stage and settlement did not take place until the following summer to spring; this gives an oceanic development period of 12–24 months	>2 months	1	Booth (1994)	2	
	Capacity for adult/juvenile movement	A tag-recapture study found that the average distance moved was 49 km and the average time spent at large was 350 days. Eastward movement of adult lobsters (False Bay into the east of the Cape Hangklip–Hermanus region)	10–1 000 km	2	Atkinson and Branch (2003), Cockcroft et al. (2008)	3	
	Physiological tolerance	From East London to north of Walvis Bay (23° S)	10–20º latitude	2	BCC (2012)	3	

	Spatial availability of unoccupied habitat in the region for critical life stage	Already occupying its potential distribution in South Africa	No unoccupied habitat; 0–2º latitude or longitude	3	BCC (2012)	3	
	Average			2.00			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Spawning occurs from Oct to Nov (spring)	Strong correlation of spawning with environmental variable	3	BCC (2012)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis	The general trend was a decrease in growth and ingestion and an increased intermoult period, with decreasing levels of oxygen saturation	Strong correlation with environmental variable	3	Beyers et al. (1994)	3	
	Temporal mismatches of life cycle events	Spawning occurs from Oct to Nov	Wide duration	2	BCC (2012)	3	
	Migration (seasonal and spawning)	Evidence of seasonal movement in South Africa. There is an inshore/offshore movement of lobsters linked to the spawning cycle, but Atkinson and Branch (2003) showed that adult lobsters do not migrate along the coast. The eastward shift of lobster was not a seasonal or annual migration. Lobsters in Namibia move inshore as a result of avoiding low oxygen water	Movement (not migration) is common for some of the population	2	BCC (2012), Cockcroft et al. (2008)	3	
	Average			2.5			
	Total			6.33			

Table S35: West coast steenbras

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Unknown	>20 000	1		1	
	Recruitment period (to fishery)	Highly episodic	Highly episodic recruitment event	3		1	Due to its Near Threatened status
	Average age at maturity	Males: 4.8 years (northern population); 6 years (southern pop.); females: 7.2 years (northern pop.); 9.7 years (southern pop.) (1995–1999)	2–10 years	2	Holtzhausen (2000)	3	
	Stock status	Near Threatened	Threatened	3	Mann et al. (2014)	3	
	Additional stressors	No other known stressors	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1	Mann et al. (2014)	3	
	Generalist vs specialist	Adults occur inshore over sandy substrata to a depth of ~10 m. Feeds mainly on benthic invertebrates	Reliance on either habitat or prey	2	Holtzhausen (2000), van der Elst (1993)	3	
	Average			2.0			
Distribution	Capacity for larval dispersal						
	Capacity for adult/juvenile movement	Mark-recapture results provided no clear evidence of spawning migrations in the central and northern regions. However, indications are that mature males in the northern population move considerable distances to find gravid females for reproduction	10–1 000 km	2	Holtzhausen (2000)	3	
	Physiological tolerance	Endemic, southern Angola to Cape Town but rarely found outside Namibia's territorial marine waters. Very seldom captured anywhere in Namibia	<10 latitude	1	Hotzhausen 2000, Heemstra and Heemstra 2004	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	Can begin occupying its potential distribution in South Africa	Wide potential habitat available	3		3	Despite the wide potential habitat available, the score is 3 as it was assumed that all species are currently occupying their potential distribution in South Africa
	Average			2.0			

Phenology	Environmental variable as a phenological cue for spawning or breeding	Summer, Oct–Feb with peak spawning from Dec–Feb	Weak correlation of spawning with environmental variable	2	Holtzhausen (2000)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis			0			
	Temporal mismatches of life cycle events	Summer, Oct–Feb with peak spawning from Dec–Feb	Wide duration	2	Holtzhausen (2000)	3	
	Migration (seasonal and spawning)	Indications are that mature males in the northern population move considerable distances to find gravid females for reproduction	Migration is common for some of the population	2	Holtzhausen (2000)	3	
	Average			2			
	Total			6.0			

Table S36: White musselcracker

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Unknown	>20 000	1		1	Expert opinion
	Recruitment period (to fishery)	Unknown	Occasional and variable recruitment	2		1	Based on personal observation (diving)
	Average age at maturity	Combined sexes: 5.4 years (southeastern Cape)	2–10 years	2	Buxton and Clarke (1991)	3	
	Stock status	Near Threatened	Threatened	3	Mann et al. (2014)	3	
	Additional stressors	No other known stressors	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1	Mann et al. (2014)	3	
	Generalist vs specialist	Invertebrates. High profile, inshore reefs down to 20 m	Reliance on neither habitat nor prey	1	Buxton and Clarke (1991)	3	
	Average			1.67			
Distribution	Capacity for larval dispersal	Unknown	2–8 weeks	2		1	
	Capacity for adult/juvenile movement	Migratory (adults only). Early juveniles <150 mm resident in the intertidal and shallow inshore zone, juveniles and sub-adults (150–550 mm FL) resident in the inshore zone, while a proportion of the adult population >600 mm FL are thought to undertake a seasonal eastward spawning migration to Transkei and southern KwaZulu-Natal	10–1 000 km	2	Watt-Pringle (2009)	3	
	Physiological tolerance	Endemic to South Africa, Cape Point in Western Cape to Thukela River in KwaZulu-Natal	<10º latitude	3	Smith and Heemstra (1991)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3	Smith and Heemstra (1991)	3	
	Average			2.5			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Spring/summer spawning, Aug–Jan; southeastern Cape	Weak correlation of spawning with environmental variable	2	Buxton and Clarke (1991)	3	
	Environmental variable as a phenological cue for						

	settlement or metamorphosis						
	Temporal mismatches of life cycle events	Spring/summer spawning, Aug–Jan; southeastern Cape	Wide duration	2	Buxton and Clarke (1991)	3	
	Migration (seasonal and spawning)	A proportion of the adult population > 600 mm FL are thought to undertake a seasonal eastward spawning migration to Transkei region and southern KwaZulu-Natal	Migration is common for some of the population	2	Watt-Pringle (2009)	3	
	Average			2			
	Total			6.17			

Table S37: White steenbras

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Unknown	>20 000	1		1	
	Recruitment period (to fishery)	Episodic	Highly episodic recruitment event	3		1	
	Average age at maturity	Combined sexes, 6 years; Western Cape and Eastern Cape	2–10 years	2	Bennett (1993b)	3	
	Stock status	Heavily depleted	Threatened	3	DAFF (2016)	3	
	Additional stressors	Some early juveniles obligatory estuarine-dependent nursery phase, up to 3 years	Stock is experiencing moderate stress other than fishing. Stock is experiencing no more than three known stressors.	2	Wallace et al. (1984), Bennett (2012)	3	
	Generalist vs specialist	Feed mainly on benthic invertebrates. Juveniles obligatory estuarine-dependent nursery phase	Reliance on either habitat or prey	2	Bennet (1993b), Wallace et al. (1984)	3	
	Average			2.17			
Distribution	Capacity for larval dispersal						
	Capacity for adult/juvenile movement	Late juveniles/subadults show some nomadic movements up to 400 km. Subadults undertake large-scale migrations, although a large proportion remain resident	10–1 000 km	2	Bennett (1993b), Bennett (2012)	3	
	Physiological tolerance	Endemic, from Orange River Mouth to KwaZulu-Natal	<10º latitude	3	Smith and Smith (1986)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	Already occupying its potential distribution in South Africa	No unoccupied habitat; 0–2º latitude or longitude	3	Smith and Smith (1986)	3	
	Average			2.67			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Spawning during late winter, Jul–Aug. Single spawning period theory	Strong correlation of spawning with environmental variable	3	Bennett (1993b), Whitfield and Kok (1992)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis						

	Temporal mismatches of life cycle events	Spawning during late winter, Jul-Aug	Brief duration	3	Bennett (1993b)	3	
	Migration (seasonal and spawning)	Evidence for adult migrations eastwards in winter to eastern parts of Eastern Cape, although not empirically confirmed and not all mature individuals migrate	Migration is common for some of the population	2	Bennett (1993b), Bennett (2012)	3	
	Average			2.67			
	Total			7.5			

Table S38: White stumpnose

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	Unknown	>20 000	1		1	
	Recruitment period (to fishery)	Episodic	Highly episodic recruitment event	3		1	Due to its collapsed status
	Average age at maturity	Males: 1.5–2.3 years; Eastern Cape and Western Cape, slower in cooler waters of the Eastern Cape. Females: 2+ years; Saldanha Bay; 2005	2–10 years	2	Griffiths et al. (2002), Attwood et al. (2010)	3	
	Stock status	Collapsed	Threatened	3	Attwood and Kerwath (2013)	3	
	Additional stressors	Juveniles in seagrass beds, coastal lagoons and estuaries	Stock is experiencing moderate stress other than fishing. Stock is experiencing no more than three known stressors	2	Wallace et al. (1984)	3	
	Generalist vs specialist	Crustaceans and molluscs dominate the diet. Shallow reefs along the south and east Cape coasts, down to 50 m depth in summer. Found on reef and unconsolidated sediments down to 120 m depth on the Agulhas Bank in winter	Reliance on either habitat or prey	2	Griffiths et al. (2002)	3	
	Average			2.17			
Distribution	Capacity for larval dispersal	Pelagic eggs, hatch after 36 hours at 20° C. First feeding commences 4 days after hatching. Settlement probably occurs between 2 and 8 weeks	2–8 weeks	2	Russell (2013), expert opinion	2	
	Capacity for adult/juvenile movement	Movements have been studied in Saldanha Bay. Fish migrate across the bay, spending Jun–Aug in Saldanha Bay, and the remainder in Langebaan Lagoon. On the Cape south coast the fish migrate to deeper water offshore in winter	10–1 000 km	2	Attwood et al. (2007), Griffiths et al. (2002)	3	
	Physiological tolerance	Endemic to southern Africa, from southern Angola to Kei River, South Africa	10–20º latitude	2	Whitfield (1998)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	Already occupying its potential distribution in South Africa	No unoccupied habitat; 0–2º latitude or longitude	3		3	

	Average			2.25		0	
Phenology	Environmental variable as a phenological cue for spawning or breeding	Spring/summer, Sep–Mar	Weak correlation of spawning with environmental variable	2	Griffiths et al. (2002)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis						
	Temporal mismatches of life cycle events	Spring/summer, Sep–Mar	Wide duration	2	Griffiths et al. (2002)	3	
	Migration (seasonal and spawning)	Fish move across Saldanha Bay, spending Jun–Aug in Saldanha Bay, and the remainder in Langebaan Lagoon. On the Cape south coast the fish move to deeper water offshore in winter	Movement common for some of the population	2	Attwood et al. (2007), Griffiths et al. (2002)	3	
	Average			2.0			
	Total			6.42			

Table S39: Yellowtail

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	In captivity, a female of ~20 kg equalled a total annual population fecundity of ~226 000 eggs per kg per female per year	>20 000 eggs per year	1	Stuart and Drawbridge (2013)	2	
	Recruitment period (to fishery)	Consistent	Consistent recruitment events every 1–2 years	1		1	Based on its optimal status
	Average age at maturity	Combined sexes 2–3 years (Western Cape)	2–10 years	2	Kerwath and Wilke (2013)	3	
	Stock status	Optimal	Robust	1	DAFF (2016)	3	
	Additional stressors	No other known stressor	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1		1	
	Generalist vs specialist	Epipelagic, prey on pelagic baitfish species	Reliance on neither habitat nor prey	1	Kerwath and Wilke (2013)	3	
	Average			1.17			
Distribution	Capacity for larval dispersal	Larval stage I (0–2 days post hatch, [dph]) with endogenous feeding, larval stage II (2–15 dph) characterised by mouth opening, complete pigmentation of eyes and the beginning of the exogenous feeding	<2 weeks	3	Martinez-Montano et al. (2014)	2	
	Capacity for adult/juvenile movement	Fish move between offshore reefs in the Agulhas region. Adults move up the east coast to KwaZulu-Natal during winter following the sardine run	>1 000 km	1	Penney (1990), Heemstra and Heemstra (2004)	3	
	Physiological tolerance	Circumglobal; southern African population occurs from southern Angola to northern KwaZulu-Natal, South Africa, but is mostly concentrated in shelf waters of the Western Cape	>20º latitude	1	Heemstra and Heemstra (2004), Kerwath and Wilke (2013), Pottspers. pers. obs. in Angola	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3		3	
	Average			2.00			

Phenology	Environmental variable as a phenological cue for spawning or breeding	Spawning from late spring to summer	Weak correlation of spawning with environmental variable	2	Kerwath and Wilke (2013)	3	
	Environmental variable as a phenological cue for settlement or metamorphosis						
	Temporal mismatches of life cycle events	From Nov–Feb	Wide duration	2	Kerwath and Wilke (2013)	3	
	Migration (seasonal and spawning)	Adults move up the east coast to KwaZulu-Natal during winter following the sardine run	Migration is common for some of the population	2	Heemstra and Heemstra (2004)	3	Caught throughout the year in the Western Cape
	Average			2.0			
	Total			5.17			

Table S40: Yellowfin tuna

Attribute	Criteria	Actual value for species	Category	Score	Ref to data source/pub	Data quality	Comments
Abundance	Fecundity	One female can lay between 5 and 60 million eggs per year	>20 000 eggs per year	1	Cayre et al. (1988) in West and Marsac (2013)	2	
	Recruitment period (to fishery)	Consistent	Consistent recruitment events every 1–2 years	1		1	
	Average age at maturity	3 years female, western Indian Ocean	2–10 years	2	Marsac et al. (2006)	2	
	Stock status	40-50 % optimally exploited in both Atlantic and Indian Ocean	Uncertain or vulnerable	2	ICCAT (2011a) in West and Marsac (2013)	3	
	Additional stressors	No other known stressor	Stock is experiencing no known stress other than fishing, or only one other known minor stressor	1		3	
	Generalist vs specialist	Opportunistic top predators with a broad prey spectrum. Adults are generally distributed in the first 350 m of the ocean	Reliance on neither habitat nor prey	1	Potier et al. (2007)	2	
	Average			1.33			
Distribution	Capacity for larval dispersal	25 days	2–8 weeks	2	Houde and Zastrow (1993)	2	
	Capacity for adult/juvenile movement	Migratory, annual movement in the eastern Atlantic of mature fish to the spawning area off West Africa	>1 000 km	1	Collette and Nauen (1983)	3	
	Physiological tolerance	Cosmopolitan species distributed in tropical and subtropical open waters of the Indian, Atlantic and Pacific oceans	>20º latitude	1	Collette and Nauen (1983)	3	
	Spatial availability of unoccupied habitat in the region for critical life stage	No unoccupied habitat	No unoccupied habitat; 0–2º latitude or longitude	3		3	
	Average			1.75			
Phenology	Environmental variable as a phenological cue for spawning or breeding	Spring/summer spawning, Oct–Mar, eastern Atlantic; Dec–Mar in the western Indian Ocean	Weak correlation of spawning with environmental variable	2	Stequert and Marsac (1989), Bard et al. (1991) in West and Marsac (2013)	2	

	Environmental variable as a phenological cue for settlement or metamorphosis		Weak correlation with environmental variable	2		2	Highly uncertain, but for SBT aquaculture trials in South Australia now show this as rate is faster
	Temporal mismatches of life cycle events	Oct–Mar, eastern Atlantic; Dec–Mar, western Indian Ocean	Wide duration	2	Stequert and Marsac 1989, Bard et al. (1991) in West and Marsac (2013)	2	
	Migration (seasonal and spawning)	Migratory, annual movement in the eastern Atlantic of mature fish to the spawning area off West Africa	Migration is common for the whole population	3	Collette and Nauen (1983)	3	
	Average			2.25			
	Total			5.33			

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