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Blue Seafood Guide Assessment Report

Japanese amberjack, Japan and Korea stock

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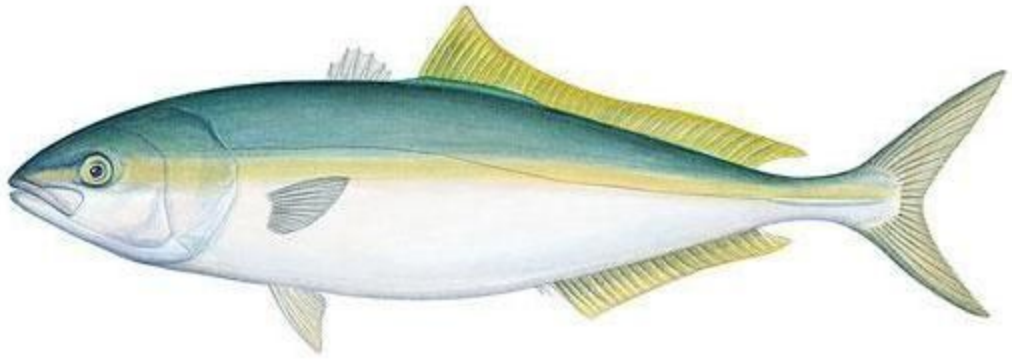

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Introduction to the BSG Assessment Methodology

The Blue Seafood Guide (BSG) methodology is primarily based on the Rapid Assessment tool co-developed by Ocean Outcomes (O2), World Wildlife Fund US, and the Sustainable Fisheries Partnership. The tool uses Marine Stewardship Council (MSC) performance indicators, with incorporation of some concepts from the Monterey Bay Aquarium Seafood Watch (MBA SFW) Fisheries Standard. The methodology has also been adapted to account for general characteristics of the existing Japanese fisheries management system. Specifically, deficiencies in information (e.g. monitoring of other species caught in a fishery) and management components (e.g. harvest control rules) that are systemic will be mentioned in the assessment, but not necessarily considered in the BSG species selection process.

To be included in the BSG, the stock/species must not receive a red score for any of the indicators that are considered.

Executive summary

According to Japan's stock assessment, there is a single Japanese amberjack stock occurring in the waters around Japan and off the southern and eastern coasts of the Korean Peninsula (Kubota et al. 2017). It is unclear whether the stock extends into China and Taiwan's EEZs, because catch data and distribution information around China and Taiwan are lacking.

Catch data used to inform the Japanese stock assessment do not distinguish among three amberjack species (*S. quinqueradiata*, *S. dumerili*, and *S. lalandi*), but the majority of Japan's harvest is of Japanese amberjack (JFA 2013).

Aquaculture activities take place where amberjack seedlings are artificially produced or collected from the wild, and then reared in sea cages until the fish reach market size and are sold. However, this assessment focuses on the wild capture fisheries using purse seines and set nets.

The purse seine and set net fisheries targeting amberjacks are multispecific and harvest significant quantities of several species, including a few stocks of concern (Japanese anchovy, Pacific and Tsushima stocks; Japanese Spanish mackerel, Seto Inland Sea stock). Habitat impacts from purse seines and set nets are likely to be insignificant because there is minimal to no contact with the sea bottom. Trophic relationships involving amberjack are broadly understood, but ecosystem impacts of amberjack fisheries do not appear to have been studied in detail. Fishing levels do not appear to be high enough to disrupt key ecosystem elements. Ecological impacts from enhancement are not explicitly monitored, and more information on artificial production practices would be useful to obtain.

Official governance and entry to the fisheries are largely managed through National Minister and Prefectural Governor permits (大臣許可と知事許可), as well as fishery rights (漁業権). These permits are associated with input and technical controls, but general output controls such as harvest limits are lacking. Individual fisheries cooperatives and prefectures also implement some independent management measures, such as fishery closed seasons and areas.

BSG qualification outcome

Amberjack does not qualify for inclusion in the BSG primarily because the harvest strategy appears insufficient for maintaining stock abundance, particularly if the stock shows sign of decline.

Scoring summary

Principle	Component	PI #	Performance Indicator	Scoring category
1	Outcome	1.1.1	Stock status outcome	
		1.1.2	Stock rebuilding outcome	Not considered
	Management	1.2.1	Harvest Strategy	
		1.2.2	Harvest control rules	Not considered
		1.2.3	Information and monitoring	
		1.2.4	Assessment of stock status	
2	Other species	2.2.3	Other species information	
		2.2.1	Other species outcome	
		2.2.2	Other species management	
	ETP species	2.3.3	ETP species information	
		2.3.1	ETP species outcome	Seine
				Set net
		2.3.2	ETP species management	
	Habitats	2.4.3	Habitats information	
		2.4.1	Habitats outcome	
		2.4.2	Habitats management	
	Ecosystem	2.5.3	Ecosystem information	
		2.5.1	Ecosystem outcome	
		2.5.2	Ecosystem management	
3	Governance & policy	3.1.1	Legal and customary framework	
		3.1.2	Consultation, roles and responsibilities	
		3.1.3	Long term objectives	

	Fishery specific management system	3.2.1	Fishery-specific objectives	
		3.2.2	Decision-making processes	
		3.2.3	Compliance and enforcement	
		3.2.4	Management performance evaluation	

Basic fishery information

Target species scientific name and common name	Japanese amberjack (*Seriola quinqueradiata*), *buri* (ブリ)
Fishery location and season	There is thought to be one stock fished around Japan and the Korean peninsula. Fisheries generally operate year-round, although some prefectures may implement gear-specific seasonal and/or area closures.
Gear type(s)	The main gears are purse seine (巻き網), and set net (定置網).
Catch quantity (weight)	Landings have averaged about 114,000 t per year from 2012 to 2016.
Management authorities	Fishery cooperative associations, prefectural governments, Fisheries Agency of Japan

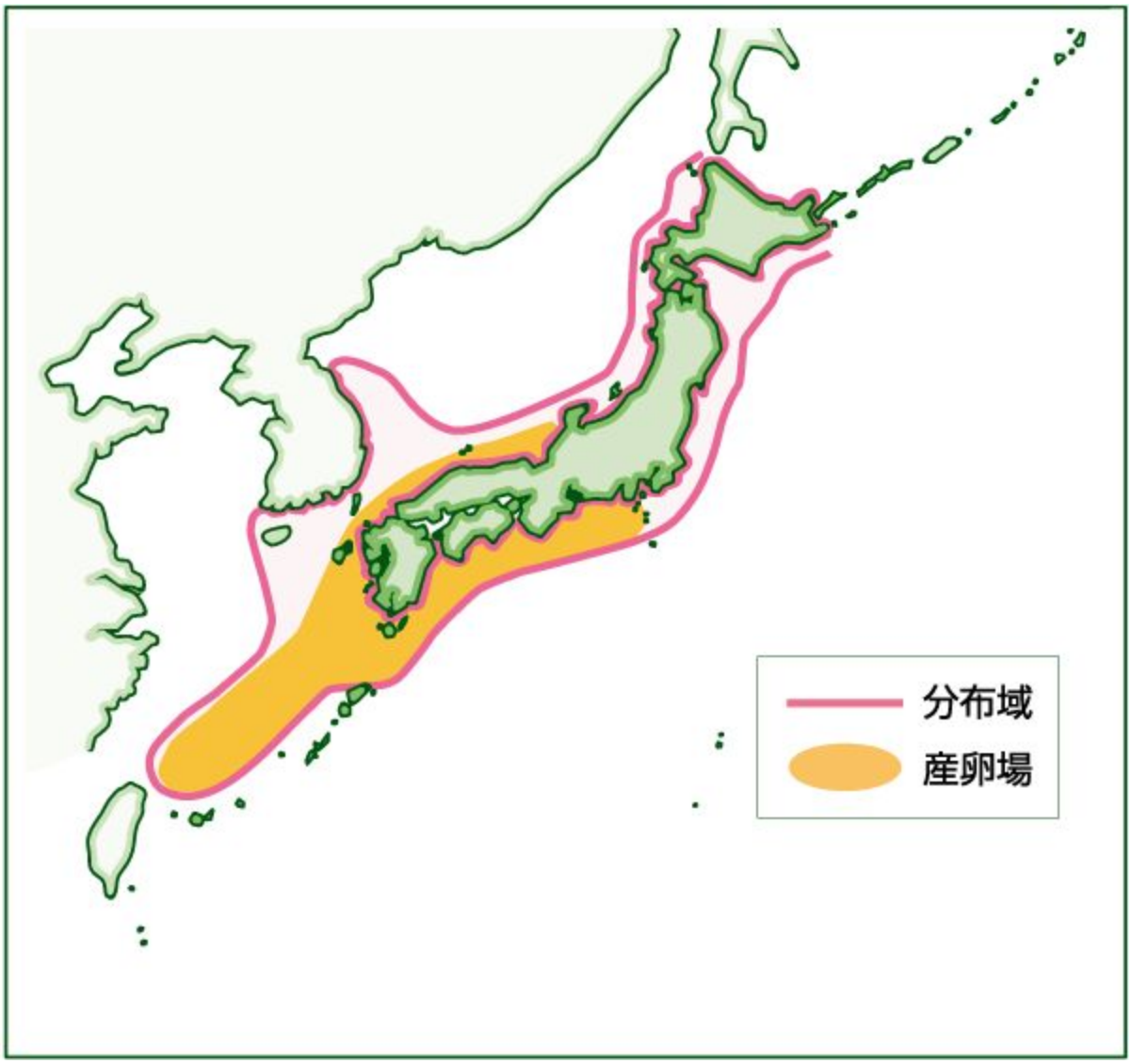

Figure 1. Distribution of the Japanese amberjack stock around Japan. The distribution is outlined in pink, and spawning areas are shown in orange. Image from http://abchan.fra.go.jp/digests2018/html/2018_42.html

Description of the fishery

There is assumed to be one stock of Japanese amberjack occurring around Japan and the Korean peninsula. Stock structure has not been determined empirically. It is unclear whether the stock extends into China and Taiwan's EEZs, because catch data and distribution information around China and Taiwan are lacking. Catch data used to inform the Japanese stock assessment do not distinguish among three amberjack species (*S. quinqueradiata*, *S. dumerili*, and *S. lalandi*), but the majority of Japan's harvest is of Japanese amberjack (JFA 2013). Hereafter, we will refer to the focal species of this assessment as amberjack. There are wild capture fisheries for amberjack of all age classes, including a fishery that targets fry (called

mojako) which are used for aquaculture. The focus of this assessment is the wild capture fishery for adult fish.

Table 1. Japanese wild fisheries landings of amberjack (in t). The 'other' fishing gear category includes handlines, longlines and gillnets. Data available at http://abchan.fra.go.jp/digests2017/index.html

Year	Purse seine	Set net	Other	Total
2007	34,129	26,963	11,378	72,470
2008	35,014	27,362	13,588	75,964
2009	37,942	28,403	11,989	78,334
2010	59,570	35,160	12,160	106,890
2011	53,561	45,118	12,238	110,917
2012	46,304	44,317	11,221	101,842
2013	57,182	49,424	10,569	117,175
2014	66,010	47,671	11,542	125,223
2015	59,624	51,314	12,250	123,188
2016	47,369	46,243	11,168	104,780

Although fishing is technically allowed year round, some regions may set specific fishery openings and closures, e.g. by gear type.

Unit of Assessment(s)

The Unit of Assessment is Japanese amberjack from the Japan-Korea stock caught by purse seine and set net.

Status of target stock(s) - Principle 1

The Fisheries Research and Education Agency of Japan (FRA) evaluates stock status every year. However, the other countries that exploit or potentially exploit this stock (S. Korea, China, and Taiwan) do not, and no cross-boundary stock assessment is conducted. The FRA assessment uses set net landings as the stock status indicator. The total range of past indicator estimates is divided into three parts, and the part that the most recent estimate falls into determines the status. The stock assessment also evaluates biomass and spawning stock

biomass (SSB), although there is some uncertainty, in part because catch data from multiple species are used to estimate abundance. There are no limit or target reference points that trigger management actions for these stocks.

Amberjack is not managed by total allowable catch (TAC). Instead, fishing effort is largely regulated through input controls, for example by limiting the number of fishing licenses or permits issued (Makino 2011). Some prefectures and fishery cooperatives implement fishery openings and closures, as well as gear restrictions such as minimum purse seine mesh sizes.

Stock status outcome (1.1.1)

Scoring category	Yellow

Rationale:
Available stock status indicators and biomass estimates suggest that amberjack are currently abundant. However, there is some uncertainty because the stock assessment uses catch data from three species, with Japanese amberjack being the predominant one.

In the stock assessment model, numbers of fish in each age class are estimated using a cohort analysis based on Pope (1972). Data sources include the MAFF annual report on fisheries and aquaculture production statistics, the JFA national ocean areas large purse seine catch performance report, purse seine landings data at major Japanese ports (with fish separated by market size categories that are specific to each prefecture), and monthly surveys of fish sizes in ten regional markets (Tian and Watari 2015). Catch information is not typically subject to independent verification. Only Japanese catches are used as data input for the stock assessment model; catches from S. Korea, China, and Taiwan are not considered. Another source of uncertainty is that amberjack harvest data include three amberjack species (*S. quinqueradiata, S. dumerili, S. lalandi*), although the majority of harvest is Japanese amberjack (JFA 2013).

Using these data sources and estimated relationships between size and age, numbers of harvested fish are estimated for each age class. Harvested numbers at age, along with an assumed natural mortality rate of 0.3, are key inputs in the stock assessment model. In estimating harvest rates, the model assumes that the entire catch is removed at the midpoint of the fishing season (Pope 1972). In recent years, stock assessment scientists have estimated multiple allowable biological catches (ABCs) using the model, and then selected a single ABC (ABC_{limit}) as the ABC upper limit based on management objectives regarding fishing mortality and spawning stock biomass. The ABC_{target} is the estimated ABC under slightly lower fishing mortality (80% of the fishing mortality assumed for ABC_{limit}), to help account for uncertainty and errors in the model. The assessments are reviewed by internally within the Japanese Fisheries Agency (JFA) and also externally by experts and officials in an assessments review meeting that is open to the public (JFA and FRA 2015).

The most recent (2017) estimates of biomass and spawning stock biomass (SSB) were 300,000 t and 123,000 t, respectively, which are high relative to historical estimates since 1995 (Figs. 2 and 3). Interestingly, FRA does not use estimated biomass or SSB as a stock status indicator; instead, they use set net landings data. The total range of historical landings is divided into three parts, and the part that the most recent abundance estimate falls into determines the status. Estimated set net landings in 2017 exceeded 50,000 t and were sufficiently high to result in a determination of high status (Fig. 4).

Some information on age structure is available from catch data. The proportion of juveniles (age 0 and age 1 fish) in harvests has been high at 89-97%, while the proportion of fully mature 3+ year olds have been only about 2-9% (Figs. 10 and 11; Tables 3 and 4 in Tian and Watari 2015). Amberjack of all ages are retained, so discarding issues are not likely affecting the stock. Although amberjack currently appear abundant, the high fishing mortality on younger age classes is a concern. If exploitation rates on juveniles are reduced, it is thought that population productivity may increase (Tian and Watari 2014).

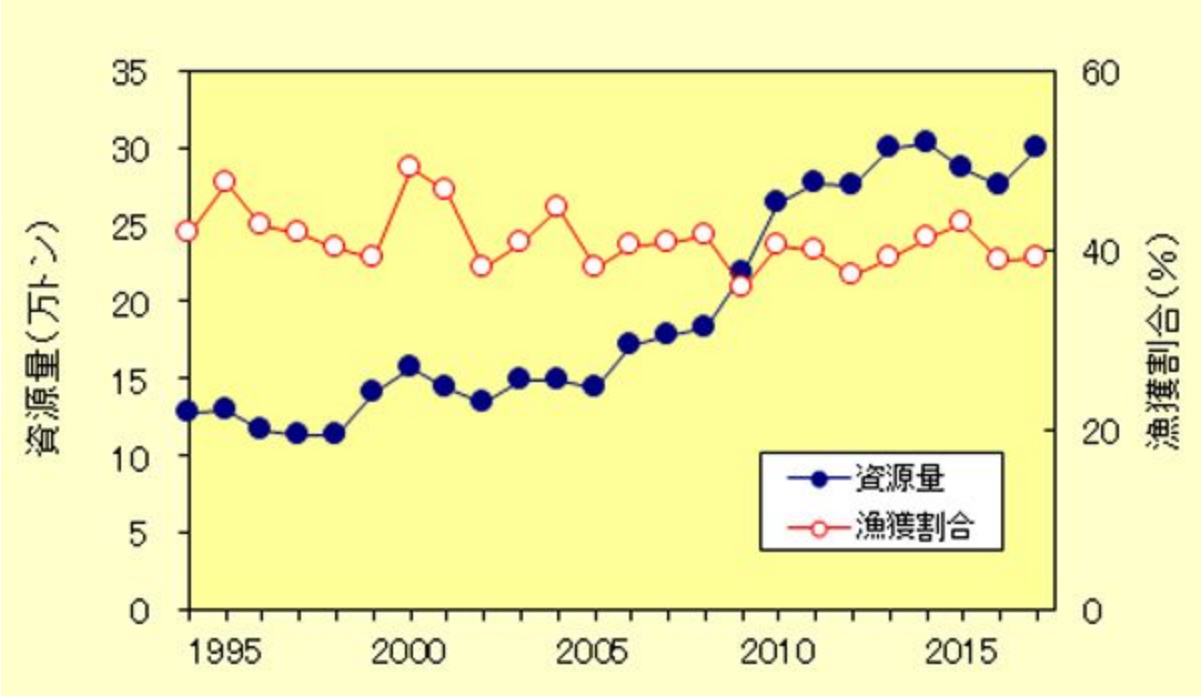

Figure 2. Estimated total biomass (10,000's of t, white dots) and exploitation rate (white circles, catch divided by estimated biomass) for the Japan stock of amberjack. Figure from http://abchan.fra.go.jp/digests2018/html/2018_42.html

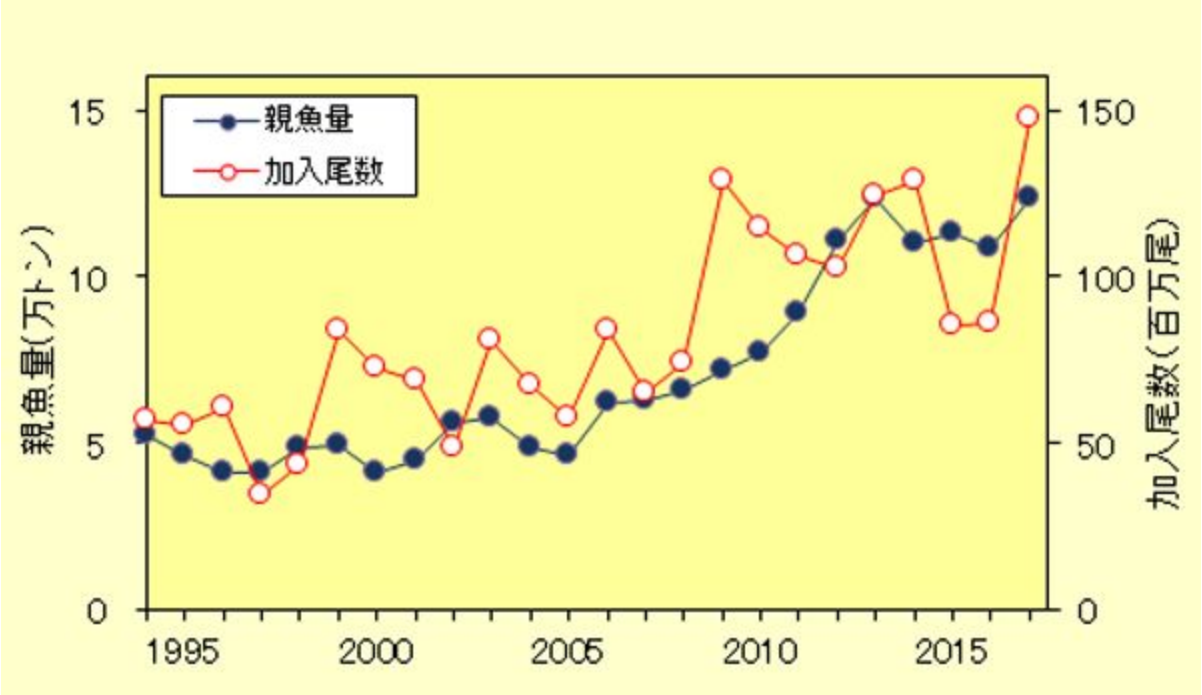

Figure 3. Estimated spawning stock biomass (10,000's of t, blue dots) and recruitment (millions of fish, white dots) over time for the Japan stock of amberjack. Figure from http://abchan.fra.go.jp/digests2018/html/2018_42.html

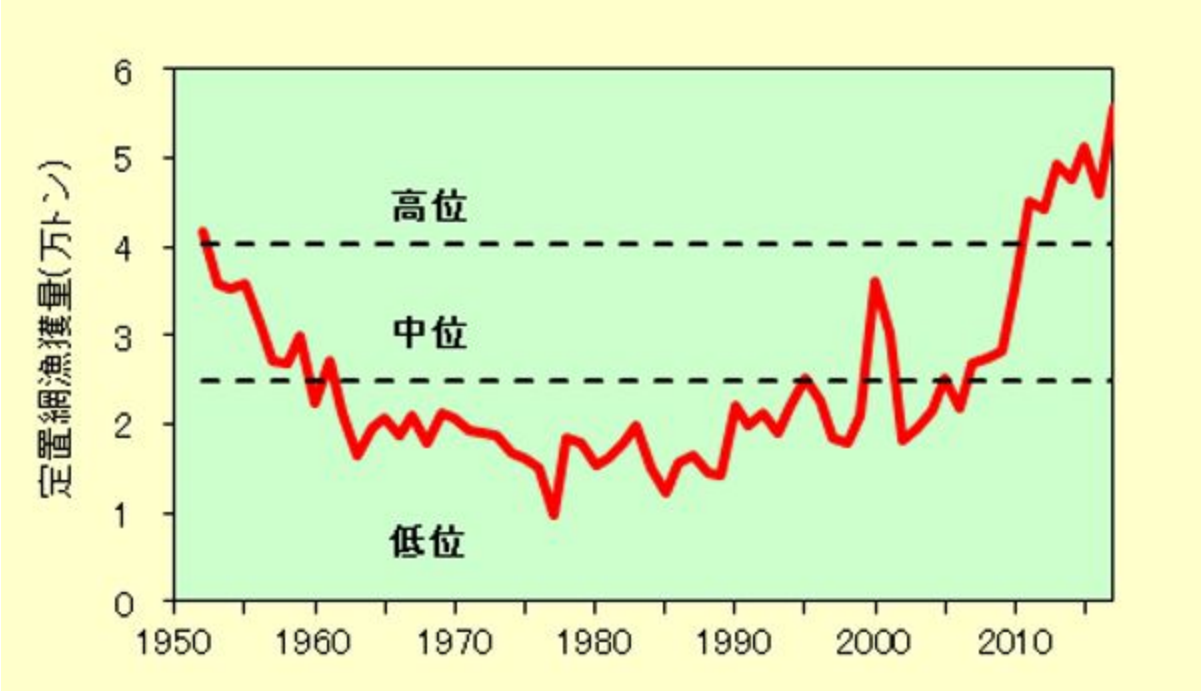

Figure 4. Set net landings of amberjack (10,000's of t) over time. The dashed lines represent thresholds between low and medium status, and between medium and high status. Figure from http://abchan.fra.go.jp/digests2018/html/2018_42.html

Stock rebuilding outcome (1.1.2)

Scoring category	Not considered

Rationale:
This indicator was not considered because in Japan, stock rebuilding plans are rare and generally implemented only on a voluntary basis. They are not automatically developed in response to changes in stock status. There are no rebuilding plans in place for amberjack, in part because a clear need has not been identified by the management system.

Harvest strategy (1.2.1)

Scoring category	Red

Rationale:
Information collected to support the harvest strategy includes purse seine landings data at major Japanese ports (with fish separated by market size categories that are specific to each prefecture), and monthly surveys of fish sizes in ten regional markets and research conducted by the Japan Fisheries Agency and national research institutes (Kubota et al. 2017). FRA scientists assess the stocks every year and estimate an acceptable biological catch (ABC) for each stock. Gear specifications (e.g. minimum mesh size) and fishery closed seasons and areas are used to maintain productivity and manage fishing effort. However, as is typical for Japanese fisheries, there are no harvest control rules (HCRs). All harvest strategy components required by the MSC standard, excluding HCRs, are present.

However, there are no output controls is place for this fishery. Although ABCs are estimated, they are not used to set any sort of catch limit or total allowable catch (TAC). Harvest management as currently implemented would not be expected to maintain stock biomass around a target reference point (TRP).

Harvest control rules (1.2.2)

Scoring category	Not considered

Rationale:
Since harvest control rules are not currently used in Japanese fisheries management, this indicator is not considered. There are no official harvest control rules (HCRs) for the amberjack stock, and it is uncertain whether exploitation will be reduced significantly in response to stock depletion.

Information and monitoring (1.2.3)

Scoring category	Yellow

Rationale:
Landings information has been collected since about 1952 for these stocks, and annual set net landings are estimated and used as abundance indicators. Biomass and spawning stock biomass are also estimated every year. This information is likely sufficient to support a harvest strategy.

Assessment of stock status (1.2.4)

Scoring category	Green

Rationale:
Scientists at the Japan Fisheries Research and Education Agency (FRA) assess the amberjack annually. These assessments use set net landings as the abundance indicator and determine stock status relative to reference points based on historical abundance estimates (Tian and Watari 2015). Landings information is collected for all major gear types. The assessments are reviewed internally and also externally by experts and officials (JFA and FRA 2015). The stock assessment determines an ABC_{target} that is set at 80% of the ABC_{limit} to account for uncertainty in estimation of ABC, but ABC is a recommendation rather than a binding catch limit. The assessment appears appropriate to the species and could be used to develop HCRs.

Ecosystem impacts - Principle 2

Amberjack is primarily caught by purse seine (巻き網) and set net (定置網).

In terms of Japan's total harvest, purse seines catch about 47% of the harvest, and set nets about 43% (http://www.maff.go.jp/j/tokei/kouhyou/kaimen_gyosei/index.html). Purse seines and set nets are used to catch a variety of species, and catch composition is highly dependent on fishing location and practices. However, other species that are known to be caught with the amberjack purse seine fishery include Japanese pilchard (*Sardinops melanostictus*), Japanese anchovy (*Engraulis japonicus*), chub and blue mackerel (*Scomber japonicus and S. australasicus*), Japanese jack mackerel (*Trachurus japonicus*), round herring (*Etrumeus teres*), Japanese Spanish mackerel (*Scomberomorus niphonius*) and bluefin tuna (*Thunnus orientalis*). For set nets, other species caught include Japanese Spanish mackerel, Japanese jack mackerel, Japanese anchovy, chub and blue mackerel, Japanese flying squid (*Todarodes pacificus*), puffer fish, and sea basses (e.g. *Lateolabrax japonicus*). Estimated catch compositions for Ishikawa prefecture, one of the areas with the largest catches, are described in

Tables 2a and 2b below. Species are classified as either main (comprising at least 5% of the catch by weight) or minor (< 5% of the catch by weight).

Table 2a. Other species caught and their classification for purse seine fisheries targeting the western Japan Sea stock of amberjack. Data from FRA 2018.

Species common and scientific names	Proportion of catch (%)	Classification
Japanese jack mackerel (*Trachurus japonicus*)	33	Main
Chub and blue mackerel (*Scomber japonicus and S. australasicus*)	25	Main
Japanese anchovy (*Engraulis japonicus*)	6.8	Main
Japanese pilchard (*Sardinops melanostictus*)	6.4	Main
Round herring (*Etrumeus teres*)	1.4	Minor
Pacific bluefin tuna (*Thunnus orientalis*)	1.0	Minor
Japanese Spanish mackerel (*Scomberomorus niphonius*)	0.2	Minor

Table 2b. Other species caught and their classification for set net fisheries targeting the western Japan Sea stock of amberjack. Data from FRA 2018.

Species common and scientific names	Proportion of catch (%)	Classification
Japanese Spanish mackerel (*Scomberomorus niphonius*)	17	Main
Japanese jack mackerel (*Trachurus japonicus*)	12	Main
Japanese anchovy (*Engraulis japonicus*)	10	Main
Chub and blue mackerel (*Scomber japonicus and S. australasicus*)	7.9	Main
Japanese flying squid (*Todarodes pacificus*)	3.4	Minor
Pufferfish species (e.g. *Takifugu porphyreus*)	1.8	Minor
Sea bass species (e.g. *Lateolabrax japonicus*)	1.4	Minor

Japanese fishers typically record catches of commercially important species but are not required to keep records on discards or bycatch, so there is no information available on discarded species. Bait is not used in purse seine fisheries and does not need to be considered here.

Other species information (2.2.3)

Scoring category	Yellow

Rationale:
Main and minor other species have been identified for purse seine and gillnet fisheries targeting amberjack, and they include a variety of pelagic species such as Japanese anchovy, chub and blue mackerel, and Japanese jack mackerel (Tables 2a and 2b). Information appears sufficient to inform management and determine the fishery's risk to these other species. However, catches of bycatch and discard species are not monitored.

Other species outcome (2.2.1)

Scoring category	Red

Rationale:
A few of the main species caught in these fisheries are considered overfished, notably Japanese anchovy (Pacific and Tsushima stocks) and Japanese Spanish mackerel (Seto Inland Sea stock). Fishing mortality on the other main species does not appear to be at an unacceptable level, but the concern about these stocks results in a red score for this indicator.

Other species management (2.2.2)

Scoring category	Red

Rationale:
There are management measures in place for the main species caught by the UoA. However, it is not clear whether they are expected to maintain or to not hinder rebuilding of these species, particularly Japanese anchovy and Japanese Spanish mackerel.

ETP species information (2.3.3)

Scoring category	Yellow

Rationale:

There is no standardized monitoring of bycatch species in Japanese fisheries (Fukutake et al. 2014), and fishers do not usually record data on encounters with ETP species. Information about ETP species mortality resulting from the assessed fishery is therefore not available. However, FRA has identified ETP species that are at risk from incidental mortality in purse seine fisheries targeting the western Japan Sea stock of amberjack (see FRA 2018), and there was sufficient qualitative information to conduct productivity susceptibility analyses (PSAs) for these species.

ETP species outcome (2.3.1)

Scoring category	Yellow (purse seine)
	Red (set net)

Rationale:
The FRA conducted productivity susceptibility analysis (PSAs) on the ETP species that may interact with the fishery, which include a variety of seabirds and sea turtles (Table 3a and 3b).

Table 3a. PSA results for ETP species that may interact with purse seine fisheries targeting amberjacks. Color corresponds to risk level to the species from the fishery, which can be low (green), medium (yellow), or high (red). Data from FRA 2018.

Common name	Species name	PSA score and risk level
Loggerhead sea turtle, アカウミガメ	*Caretta caretta*	3.06
Green sea turtle, アカウミガメ	*Chelonia mydas*	2.77
Pelagic cormorant, ヒメウ	*Phalacrocorax pelagicus*	2.51
Swinhoe's storm petrel, ヒメクロウミツバメ	*Oceanodroma monorhis*	2.43
Little tern, コアジサシ	*Sternula albifrons*	2.28
Japanese murrelet, カンムリウミスズメ	*Synthliboramphus wumizusume*	2.43

Table 3b. PSA results for ETP species that may interact with set net fisheries targeting amberjacks. Color corresponds to risk level to the species from the fishery, which can be low (green), medium (yellow), or high (red). Data from FRA 2018.

Common name	Species name	PSA score

		and risk level
Loggerhead sea turtle, アカウミガメ	*Caretta caretta*	3.06
Green sea turtle, アカウミガメ	*Chelonia mydas*	3.18
Pelagic cormorant, ヒメウ	*Phalacrocorax pelagicus*	2.65
Swinhoe's storm petrel, ヒメクロウミツバメ	*Oceanodroma monorhis*	2.28
Little tern, コアジサシ	*Sternula albifrons*	2.43
Japanese murrelet, カンムリウミスズメ	*Synthliboramphus wumizusume*	2.28

We also used the SFW Unknown Bycatch Matrices (UBM) to attempt to corroborate the PSA results. Using the UBM, we evaluated likely impacts on turtles, seabirds, and sharks from purse seines in the North Pacific or Northwest Pacific Ocean. Level of concern regarding fishing mortality is marked by the following colors: high concern = red, medium concern = yellow, and low concern = green. Highest impacts receive a score of 1, and lowest impacts receive a score of 5. For benthic invertebrates, finfish, forage fish, and corals, impacts were not determined by region, and SFW did not assign concern categories.

Based on the information in the matrices, impacts on sea turtles, marine mammals, seabirds, and sharks are expected to be low concern (Table 4). Thus the ETP species outcome indicator receives a preliminary green score. If monitoring information or evidence can show that impacts on these potential ETP species are minimal, the score can be better confirmed.

The Unknown Bycatch matrices do not have a category for set nets, which are a type of trap. Fishes caught by set net generally stay alive in good condition and can be released. Impacts from this gear type may be lower if fishers release ETP species alive.

Table 4. Impacts of purse seines based on the Monterey Bay Aquarium SFW Unknown Bycatch Matrices.

Bycatch susceptibility category	Region	Score and level of concern
Sea turtle	North Pacific	4
Marine mammal	Northwest Pacific	3.5
Seabird	Northwest Pacific	4
Shark	Northwest Pacific	3.5

Benthic invertebrates	N/a	5
Finfish	N/a	4
Forage fish	N/a	3
Corals and other biogenic habitats	N/a	5

Based on information from the PSAs and the UBM, risk of fishery impacts on ETP species are generally expected to be low or medium, though green sea turtles may be at high risk of impacts from the set net fishery. Thus the species outcome indicator receives a preliminary yellow score for the purse seine fishery, and a red score for the set net fishery.

ETP species management (2.3.2)

Scoring category	Yellow

Rationale:
Japan has a Red Data Book identifying ETP species found within the country. In terms of national legislation, there is a Law for the Conservation of Endangered Species of Wild Fauna and Flora (Law No. 75) that aims to conserve endangered species and contribute to conservation of the natural environment (Ministry of the Environment 2016a). There is also a Wildlife Protection and Hunting Law (Law No. 32) that protects birds and mammals by establishing wildlife protection areas (Ministry of the Environment 2016b). In addition, Japan accepted the application of CITES and has been implementing its requirements since 1980.

We found no documented information on management measures for minimizing negative impacts for this specific fishery. However, in practice Japanese fishers generally try to minimize incidental entanglement of seabirds and sea turtles, and often attempt to release them. Between the ETP species protection laws and common practices, measures are likely in place and expected to work.

Habitats information (2.4.3)

Scoring category	Yellow

Rationale:
Amberjack species (genus *Seriola*) are generally pelagic and harvested above the ocean bottom. Purse seines are unlikely to contact the sea bottom and directly impact marine habitat (FAO 2001).

Set nets (traps) are typically set over sandy or muddy substrates. According to SFW guidance, set nets can be considered to have low habitat impacts when used over resilient mud/sand habitat. The Japan Coast Guard hosts a map website (CeisNet: http://www1.kaiho.mlit.go.jp/JODC/ceisnet/index.html) that includes maps of benthic habitats and sensitive areas such as coral reefs.

In summary, the types and distribution of commonly encountered habitats and the nature of gear impacts upon those habitats is broadly understood. However, data are not adequate for verifying efficacy of habitat management measures and determining risks to habitat from this specific fishery.

Habitats outcome (2.4.1)

Scoring category	Yellow

Rationale:
Based on the nature of purse seines and their operation in upper water layers to catch amberjack, these fisheries are highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm. They are also highly unlikely to impact VME habitats. Set nets are unlikely to permanently harm commonly encountered bottom habitats or VME habitats, but there is some bottom contact, and evidence that they do not harm the habitats has not been obtained.

Habitats management (2.4.2)

Scoring category	Yellow

Rationale:
The gear type and operations of purse seine fisheries and set nets constitute an operational strategy for managing impacts on encountered habitats, as fishing generally takes above the sea bottom. Knowledge about these gear types provides an objective basis for confidence that the fisheries do not harm encountered habitats (FAO 2001). However, the effectiveness of the strategy has not been tested, and there is no quantitative evidence that the operational strategy is being implemented successfully.

Ecosystem information (2.5.3)

Scoring category	Yellow

Rationale:
Trophic relationships involving amberjack are broadly understood, but ecosystem impacts of amberjack fisheries do not appear to have been studied in detail. There does not appear to be

sufficient monitoring in place to detect increases in ecosystem risk level. Juveniles are attracted to floating kelp and feed on zooplankton. After reaching a total body length of 3 cm they transition to consuming small fishes such as Japanese anchovy, and adults are essentially piscivorous (Anraku and Azeta 1965). Amberjack consume both benthic and pelagic fishes (Mitani 1960). They can also be cannibalistic (Asami et al. 1967).

Ecosystem outcome (2.5.1)

Scoring category	Yellow

Rationale:
Fisheries harvest large quantities of amberjack, but catches have been high in recent years, suggesting that the stock is not currently in a depleted state. Although not the main focus of this assessment, there may be impacts from aquaculture. Juvenile amberjacks are harvested from the wild and reared in ocean net pens. The scale of juvenile harvests does not appear high enough to significantly harm the wild population, but evidence is lacking.

Ecosystem management (2.5.2)

Scoring category	Yellow

Rationale:
The Japanese fisheries management system focuses primarily on target species and currently lacks an ecosystem-based approach, although some policy documents, such as the Fisheries Policy of 2001, state that ecosystems should be conserved (Makino 2011). Halibut harvests are not managed to minimize negative ecosystem impacts, but stock assessments do include estimates of ABC that could potentially be used to manage impacts.

The 2011 Japan Ministry of the Environment document titled ‘Marine life diversity conservation strategy’ (海洋生物多様性保全戦略) suggests a general movement toward policies that protect marine diversity and promote the sustainable use of marine resources (Fukutake et al. 2014). Relevant management measures include implementation of Marine Protected Areas (see Makino 2013). Conservation policy strategies are established by the Marine Diversity Conservation Specialist Investigative Commission (海洋生物多様性保全戦略専門家検討会), which holds meetings and receives public comments.

Management - Principle 3

Japan’s fisheries are managed on multiple levels. The national management body is the Fisheries Agency of Japan (JFA) within the Ministry of Agriculture, Forestry, and Fisheries (MAFF). Prefectural governments administer fishing rights and licenses within their jurisdictions (Makino 2011). At a smaller scale, fisheries are managed by fishery cooperative associations,

whose membership consists of fishermen and small fishing companies. These cooperatives tend to be defined by region, target species, and/or gear type. Management is coordinated among all these levels, generally with the JFA and prefectural governments issuing regulations and the fishery cooperatives implementing those regulations (McIlwain 2013). In Japan there is an emphasis on resource users actively contributing to management of their own fisheries, and fishery cooperatives have considerable influence in determining operational rules (e.g. gear restrictions) and setting fishery openings and closures (Uchida and Watanabe 2008, Makino 2011).

The Japan Sea stock is fished by six prefectures: Shimane, Tottori, Hyogo, Kyoto, Fukui, and Ishikawa (FRA 2018). Official governance and entry to the fisheries are largely managed through National Minister and Prefectural Governor permits (大臣許可と知事許可), as well as fishery rights (漁業権). These permits specify restrictions on gear, fishing method, vessel size, and operating areas and times. There are currently no output controls, such as total allowable catch (TAC), for amberjack fisheries. Individual fisheries cooperatives and/or prefectures may also implement independent management measures, such as set non-fishing days for set nets (FRA 2018).

Legal and/or customary framework (3.1.1)

Scoring category	Green

Rationale:
Fisheries governance in Japan is supported by an effective national legal system with binding procedures governing cooperation with other parties, and the system is capable of delivering management outcomes consistent with 1) management of the stock to a sustainable level and 2) minimising impacts on other species, habitats, and wider ecosystem components. The legal system aims to guarantee justice and transparency in administrative management, and there is a clear decision-making process for determining fishery measures and dealing with disputes as they arise (Fukutake et al. 2014). The system has a mechanism to observe the legal rights of people dependent on fishing for food or livelihood.

The Fisheries Law of 1949 outlines a framework for managing fisheries via fishery rights and licenses that are controlled by the government (Makino 2011).

Consultation, roles, and responsibilities (3.1.2)

Scoring category	Green

Rationale:
Functions, roles, and responsibilities are clearly defined and understood in the national management framework. The Japanese Fisheries Policy Council has a key role in seeking and

accepting relevant information from stakeholders, which may then be incorporated into management measures. The JFA regularly offers opportunities for stakeholders, including fishing industry members, to participate in public consultation processes (Fukutake et al. 2014).

Additionally, the JFA supports economic incentives for sustainable fishing by providing some degree of compensation for income loss resulting from management measures (Makino 2011).

Long term objectives (3.1.3)

Scoring category	Green

Rationale:
The Fisheries Basic Act (2001) describes the overarching framework for fisheries management in Japan. Chapter 1, Article 2 states a requirement to manage fisheries resources to ensure their sustainable use as a component of marine ecosystems, following the recommendations of UN Convention on the Law of the Sea (UNCLOS). The Law of Conservation and Management of Marine Living Resources states the need to protect surrounding ecosystems and habitats. Thus long term objectives consistent with the precautionary approach and appropriate management of target stocks and ecosystem impacts are explicit within management policy.

Fishery-specific objectives (3.2.1)

Scoring category	Yellow

Rationale:
Individual prefectures that fish this stock may have some management objectives and/or measures in place, e.g. as described in the Ibaraki Prefecture Resource Management Guidelines (茨城県資源管理指針) for 2011 to 2016[1] and the Ibaraki Fishery Adjustment Rules (茨城県内水面漁業調整規則).[2] For example, the stated management objective for set net fisheries is to maintain catches at a stable level. The fishery adjustment rules specify closed seasons and areas by gear type. For example, small bottom trawlers (Type 2, including えびこぎ網 which is used to harvest seabream) have closed seasons from 1 March to 30 April and 16 August to 31 October. There are also areas closed to fishing.

Based on these Nagasaki fishery resource management documents, implicit objectives that are consistent with appropriate management of target stocks and ecosystem impacts appear to exist. However, explicit objectives consistent with the precautionary approach are not apparent.

[1] http://www.jfa.maff.go.jp/form/pdf/8ibaraki.pdf
[2] http://www.pref.ibaraki.jp/somu/somu/hosei/cont/reiki_int/reiki_honbun/ao40008391.html

Decision-making processes (3.2.2)

Scoring category	Yellow

Rationale:
Status of the fishery and fish stocks are reviewed at least once per year. These reflect the existence of decision-making processes that result in measures for achieving fishery-specific objectives, and suggest that the processes respond to monitoring and evaluation results. Some information on the fishery's performance is available in materials posted on the FRA and MAFF websites. There is no indication that management authorities or fishers repeatedly violate regulations necessary for sustainability of the fishery. However, it is not apparent that decision-making processes employ a precautionary approach.

Compliance and enforcement (3.2.3)

Scoring category	Yellow

Rationale:
Fishing effort appears to be primarily regulated through permits and limited entry to the fishery. The JFA and Japan Coast Guard engage in some enforcement activities such as checking fishing logbooks and permits, and clear provisions exist for penalizing individuals or parties who violate fishery regulations (Clarke 2007). Thus MCS mechanisms exist and are implemented. These mechanisms are expected to be reasonably effective, and there are no reports of systematic non-compliance. More information on application of sanctions and evidence of compliance would be needed to score this indicator green.

Monitoring and management performance evaluation (3.2.4)

Scoring category	Yellow

Rationale:
Key components of the fishery-specific management system include monitoring and evaluation of stock status, management of ecosystem impacts (e.g. catches of other species and habitat issues), and performance of the compliance and enforcement system. Stock assessments are regularly evaluated and subject to internal review, but it is not clear whether the other components are regularly evaluated and adapted.

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