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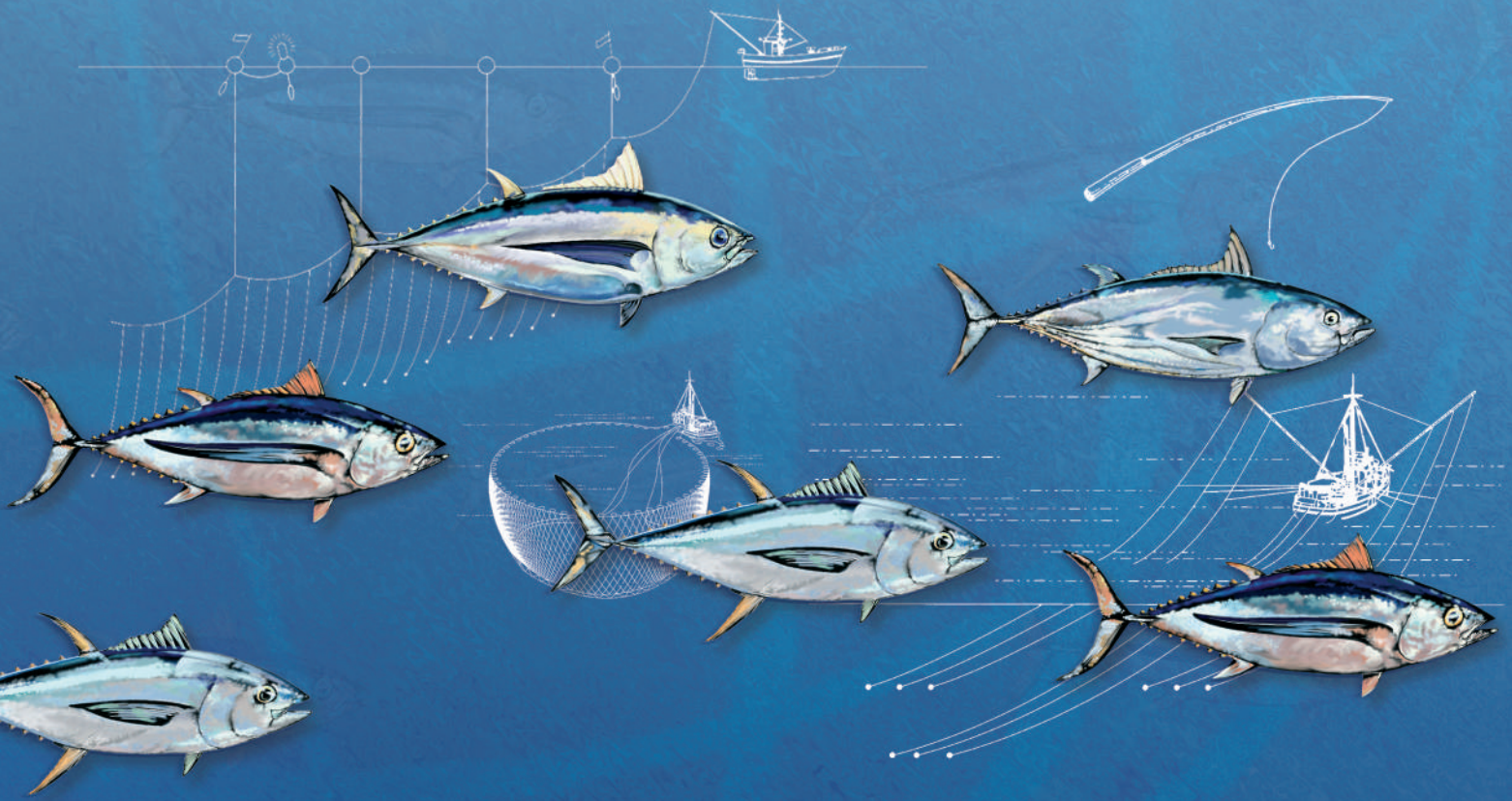
Division of Fisheries, Aquaculture and Marine Ecosystems

THE WESTERN AND CENTRAL PACIFIC TUNA FISHERY:

2013 OVERVIEW AND STATUS OF STOCKS

Shelton Harley, Peter Williams, Simon Nicol, and John Hampton



Oceanic Fisheries Programme

Tuna Fisheries Assessment Report N° 14

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Contents

Preface

Tuna fisheries assessment reports provide current information on the tuna fisheries of the western and central Pacific Ocean and the fish stocks (mainly tuna) that are impacted by them. The information provided in this report is summary in nature, but a list of references (mostly accessible via the Internet) is included for those seeking further details.

This report focuses on the main tuna stocks targeted by the fishery — skipjack tuna (*Katsuwonus pelamis*), yellowfin tuna (*Thunnus albacares*), bigeye tuna (*T. obesus*), and South Pacific albacore tuna (*T. alalunga*).

The report is in three main parts: the first section provides an overview of the fishery, with emphasis on developments over the past few years; the second summarises the most recent information on the status of the stocks; and the third summarises information concerning the interaction between the tuna fisheries and other associated and dependent species. The data used in compiling the report are those which were available to the Oceanic Fisheries Programme (OFP) at the time of publication, and are subject to change as improvements continue to be made to recent and historical catch statistics from the region. The fisheries statistics presented will usually be complete to the end of the year prior to publication. However, some minor revisions to statistics may be made for recent years from time to time. The stock assessment information presented is the most recent available at the time of publication.

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1 The western and central Pacific tuna fishery

The tuna fishery in the western and central Pacific Ocean (WCPO), encompassed by the Convention Area of the Western and Central Pacific Fisheries Commission (WCP–CA) (Figure 1), is a diverse fishery, ranging from small-scale, artisanal operations in the coastal waters of Pacific states, to large-scale, industrial purse-seine, pole-and-line and longline operations in the exclusive economic zones (EEZs) of Pacific states and in international waters (high seas). The main species targeted by these fisheries are skipjack tuna (*Katsuwonus pelamis*), yellowfin tuna (*Thunnus albacares*), bigeye tuna (*T. obesus*) and albacore tuna (*T. alalunga*).

The current fishery characterisation includes updates to historical data, which are greatest for 2012, particularly the gear-specific breakdown of catches from Indonesia. We expect revisions to the 2013 catch estimates for these fleets in next year's report, particularly catch estimates relating to the troll gear which were very high for the tropical tunas.

Annual total catches of the four main tuna species (skipjack, yellowfin, bigeye and albacore) in the WCP–CA increased steadily during the 1980s as the purse-seine fleet expanded, and remained relatively stable during most of the 1990s until the sharp increase in catch in 1998. Over the past seven years there has been an upward trend in total tuna catch, primarily due to increases in purse-seine fishery catches (Figure 2 and Table 2). The provisional total WCP–CA tuna catch for 2013 was estimated at 2,627,696 tonnes (t) — a small drop from the record high of 2,662,538 t experienced in 2012, and the second-highest catch on record. In 2013 the purse-seine fishery accounted for an estimated 1,899,015 t (72% of the total catch, and the highest-ever catch for this fishery, eclipsing the previous record catch in 2012), with pole-and-line taking an estimated 221,715 t (8% — the lowest catch in over 40 years). The longline fishery in 2013 accounted for an estimated 230,137 t (9% — the lowest catch this century), and the remainder (10%) was taken by troll gear and a variety of artisanal gear, mostly in eastern Indonesia, the Philippines, and Vietnam. The WCP–CA tuna catch for 2013 represented 82% of the total Pacific Ocean catch and 58% of the global tuna catch (the provisional estimate for 2013 is 4,517,435 t).

The 2013 WCP–CA catch of skipjack (1,810,166 t — 69% of the total catch) was the highest recorded catch, eclipsing the previous record from 2009, and a 2% increase over the 2012 catch (Table 2). The WCP–CA yellowfin catch for 2013 (524,022 t — 20%) was slightly below the average of the past 10 years. The 'highest on record' estimate for 2012, of 646,165 t, provided in last year's report, was revised down to 587,192 t after further consideration of catch estimates from Indonesia. The WCP–CA bigeye catch for 2013 (150,281 t — 6%) is around the average of the proceeding nine years, and is a 7% decrease from the 2012 catch, driven by a reduction in longline catches to the lowest level since 1996. The 2013 WCP–CA albacore catch (143,227 t — 5%) was the second-highest on record, with small longline catches from the South Pacific stock offset by increases in catches in the North Pacific.

The 2012 purse-seine catch of 1,899,015 t was the second-successive record catch for this fishery (Figure 3 and Table 1). The 2013 purse-seine skipjack catch (1,476,855 t — 82% of the total skipjack catch) was a 5% increase from the 2012 catch and the highest on record. The 2013 purse-seine catch of yellowfin tuna (344,141 t) was a 5% decrease from 2012. The purse-seine catch estimate for bigeye tuna for 2013 (73,826 t) was the highest on record, and 15% higher than 2012, and represented 49% of the total 2013 bigeye catch. This would represent the first year in which the purse-seine catch of bigeye tuna exceeded the longline catch. However, it is important to note that the purse-seine species composition for 2013 will be revised once all observer data for 2013 have been received and processed, and the current estimate should therefore be viewed as preliminary.

The 2013 longline catch of 230,137 t was the lowest since 1999, and a 13% decrease from 2012 (Figure 4 and Table 1). The reason for this is not yet clear, and longline catch estimates are often uncertain and subject to revision. Nevertheless, the bigeye (62,587 t) and yellowfin (65,492 t) catches for 2013 were both the lowest in over 20 years.

The 2013 pole-and-line catch of 221,715 t was the lowest catch in over 40 years, and represented a 9% decrease on the 2012 catch (Figure 5 and Table 1). Skipjack tends to account for the majority of the catch (approximately 70–80% in recent years, but typically more than 85% of the total catch in tropical areas), and albacore (8–20% in recent years) is taken by the Japanese coastal and offshore fleets in the temperate waters of the northern Pacific Ocean. Yellowfin tuna (5–10%), and a small component of bigeye tuna (1–6%), made up the remainder of the catch. The Japanese distant-water and offshore fleet, and the Indonesian fleet, account for most of the WCP–CA pole-and-line catch.

The 2013 troll albacore catch in the South Pacific of 3,226 t was 8% higher than the 2012 catch, and the highest since 2006. Since 2008 only New Zealand (averaging 2,500 t per year) and the United States (averaging 260 t per year) have had vessels operating in the troll fishery.

2 Status of tuna stocks

The sections below provide a summary of the recent developments in fisheries for each species, and the results from the most recent stock assessments. A summary of the important biological reference points for the four stocks is provided in Table 3. The three tropical tunas were assessed in 2014, while South Pacific albacore was last assessed in 2012. Due to uncertainty in the data for 2013, the three tropical tuna assessments only used fisheries data through to 2012. Information on the status of other oceanic fisheries resources (e.g., billfishes and sharks) is provided in the section on Ecosystem considerations.

2.1 Skipjack tuna

The 2013 WCP–CA skipjack catch of 1,810,166 t was the highest on record, although it was only 2% higher than the 2012 catch (Figure 6 and Table 4). As has been the case in recent years, the main contributor to the overall catch of skipjack was catch taken in the purse-seine fishery (1,476,855 t in 2013 — 82% of total skipjack catch). The next-highest proportion of the catch was pole-and-line gear (161,220 t — 9%). The longline fishery accounted for less than 1% of the total catch.

The vast majority of the skipjack catch is taken in equatorial areas, and most of the remainder is taken in the seasonal home-water fishery of Japan (Figure 6).

The dominant mode of the WCP–CA skipjack catch (by weight) typically falls in the size range between 40 cm and 60 cm, corresponding to 1–2+ year-old fish (Figure 6). For pole-and-line the fish typically range between 40 cm and 55 cm, while for the domestic fisheries of Indonesia and the Philippines they are much smaller (20–40 cm). It is typically found that skipjack taken in unassociated (free-swimming) schools are larger than those taken in associated schools.

2.1.1 Stock assessment

The most recent assessment of skipjack in the WCPO was conducted in 2014, and included data from 1972 to 2012.

While estimates of fishing mortality for skipjack have increased over time, current fishing mortality rates for skipjack tuna are estimated to be about 0.62 times the level of fishing mortality associated with maximum sustainable yield (F_{MSY}). Therefore, overfishing is not occurring (i.e. $F_{CURRENT} < F_{MSY}$) (Figure 7). Estimated recruitment shows an upward trend over time, but estimated biomass is declining over time, to about 52% of the level predicted in the absence of fishing. Nevertheless, recent spawning biomass levels are estimated to be well above the SB_{MSY} level and the recently adopted limit reference point of 20% of the level predicted in the absence of fishing.

The conclusions of the Western and Central Pacific Fisheries Commission (WCPFC) Scientific Committee at its 10th Regular Session (SC10), which were presented as recommendations to the Commission, are reproduced below (emphasis added):

- Recent catches are slightly above the estimated MSY of 1,532,000 mt. The assessment continues to show that the stock is currently only moderately exploited ($F_{current}/F_{MSY} = 0.62$) and fishing mortality levels are sustainable. However, the continuing increase in fishing mortality and decline in stock size are recognized.

- *SC10 advised the WCPFC that there is concern that high catches in the equatorial region could result in range contractions of the stocks, thus reducing skipjack availability to high latitude fisheries.*

- Fishing is having a significant impact on stock size, especially in the western equatorial region and can be expected to affect catch rates. The stock distribution is also influenced by changes in oceanographic conditions associated with El Niño and La Niña events, which impact on catch rates and stock size. Additional purse-seine effort will yield only modest gains in long-term skipjack catches and may result in a corresponding increase in fishing mortality for bigeye and yellowfin tunas. The management of total effort in the WCPO should recognize this.

- The spawning biomass is now around the mid-point of the range of candidate TRPs of 40%, 50%, and 60% of unfished spawning stock biomass that WCPFC10 has asked the SC10 to consider for skipjack. *SC10 recommends the commission take action to avoid further increases in fishing mortality and keep the skipjack stock around the current levels, with tighter purse-seine control rules and advocates for the adoption of TRP and harvest control rules.*

2.2 Yellowfin tuna

The WCPC-CA yellowfin catch in 2013, of 524,022 t, was an 11% decrease from the 2012 catch (Figure 8 and Table 5). Purse-seine catches (344,141 t) declined by 5%, and longline catches (65,492 t) declined by 18%, from 2012 levels, and the longline catch was the lowest in over 20 years. The remainder of the yellowfin tuna catch comes from pole-and-line and troll, and the domestic fisheries in Indonesia, Vietnam and the Philippines. The purse-seine catch of yellowfin tuna is typically around four times the size of the longline catch.

As with skipjack, the great majority of the yellowfin catch is taken in equatorial areas by large purse-seine vessels, and a variety of gear in the Indonesian and Philippine fisheries. The domestic surface fisheries of

the Philippines and Indonesia take large numbers of small yellowfin in the range 20–50 cm. In the purse-seine fishery, greater numbers of smaller yellowfin are caught in log and fish aggregation device (FAD) sets than in unassociated sets. A major proportion (by weight) of the purse-seine catch is adult (> 100 cm) yellowfin tuna; the purse-seine catch (by weight) of adult yellowfin tuna is usually higher than the longline catch, which was the case in 2008, where exceptional catches of large yellowfin in the size range 120–130 cm were experienced in the purse-seine fishery.

2.2.1 Stock assessment

The most recent assessment of yellowfin tuna in the WCPO was conducted in 2014 and included data from 1952 to 2012.

Fishing mortality has increased in recent years. Current fishing mortality rates for yellowfin tuna are estimated to be about 0.72 times the level of fishing mortality associated with maximum sustainable yield (F_{MSY}), which indicates that overfishing is not occurring (Figure 9). However, recent catches are close to or exceed the MSY by up to 13%. Both biomass and recruitment have declined gradually over the duration of the fishery, with current spawning biomass estimated to be about 38% of the level predicted in the absence of fishing. Nevertheless, recent spawning biomass levels are estimated to be well above the SB_{MSY} level and the recently adopted limit reference point of 20% of the level predicted in the absence of fishing.

The conclusions of the WCPFC Scientific Committee at its 10th Regular Session (SC10), which were presented as recommendations to the Commission, are reproduced below (emphasis added):

- The WCPO yellowfin spawning biomass is above the biomass-based LRP WCPFC adopted, 0.2SBF=0, and overall fishing mortality appears to be below F_{MSY}. It is highly likely that stock is not experiencing overfishing and is not in an overfished state.
- Latest (2012) catches (612,797mt (SC10-GW-WP-01)) of WCPO yellowfin tuna marginally exceed the MSY (586,400mt).
- The SC also noted that levels of fishing mortality and depletion differ between regions, and that fishery impact was highest in the tropical region (regions 3, 4, 7, 8 in the stock assessment model). *The WCPFC could consider measures to reduce fishing mortality from fisheries that take juveniles, with the goal to increase to maximum fishery yields and reduce any further impacts on the spawning potential for this stock in the tropical regions.*
- WCPFC could consider a spatial management approach in reducing fishing mortality for yellowfin.
- *The SC recommend that the catch of WCPO yellowfin should not be increased from 2012 levels which exceeded MSY and measures should be implemented to maintain current spawning biomass levels until the Commission can agree an appropriate TRP.*

2.3 Bigeye tuna

The 2013 WCP–CA bigeye tuna catch was 150,281 t, which was 7% lower than the 2012 catch, although a large (22%) decrease in longline catches was partially offset by a record purse-seine catch of 73,826 t, which was 15% higher than the 2012 catch (Figure 10 and Table 6). Purse-seine catches comprised 49% of the total catch, longline was 41% of the catch, and the remainder was distributed across troll, pole and line, and other gears. This would represent the first year in which the purse-seine catch of bigeye tuna exceeded the longline catch, but it is important to note that the purse-seine species composition for 2013 will be revised once all observer data for 2013 have been received and processed, and the current estimate should therefore be viewed as preliminary.

The majority of the WCP–CA catch is taken in equatorial areas, by both purse-seine and longline, but with some longline catch in sub-tropical areas (e.g. east of Japan and off the east coast of Australia). In the equatorial areas much of the longline catch is taken in the central Pacific, contiguous with the important traditional bigeye longline area in the eastern Pacific.

As with skipjack and yellowfin tuna, the domestic surface fisheries of the Philippines and Indonesia take large numbers of small bigeye in the range 20–50 cm. The longline fishery clearly accounts for most of the catch (by weight) of large bigeye in the WCP–CA. This contrasts with large yellowfin tuna, which (in addition to the longline gear) are also taken in significant amounts from unassociated schools in the purse-seine fishery and in the Philippines handline fishery. Large bigeye are very rarely taken in the WCPO purse-seine fishery, and only a relatively small amount comes from the handline fishery in the Philippines. Bigeye sampled in the longline fishery are predominantly adult fish with a mean size of approximately 130 cm (range 80–160 cm).

2.3.1 Stock assessment

The most recent assessment of bigeye tuna in the WCPO was conducted in 2014, and this included data from 1952 to 2012.

Fishing mortality is estimated to have increased over time, particularly in recent years, and current levels are 1.57 times the F_{MSY} level ($F_{CURRENT} > F_{MSY}$). Therefore, overfishing is occurring (Figure 11). The biomass of spawners is estimated to have declined over the duration of the fishery, with current spawning biomass estimated to be about 16% of the level predicted in the absence of fishing. Recent spawning biomass levels are estimated to be below both the SB_{MSY} level and the recently adopted limit reference point of 20% of the level predicted in the absence of fishing.

The conclusions of the WCPFC Scientific Committee at its 10th Regular Session (SC10), which were presented as recommendations to the Commission, are reproduced below (emphasis added):

- SC10 noted that the spawning biomass of WCPO bigeye tuna breached the biomass LRP in 2012 and that the stock was overfished. *Rebuilding spawning biomass to be above the biomass LRP will require a reduction in fishing mortality.*

- *SC10 recommended that fishing mortality on WCPO bigeye tuna be reduced.* A 36% reduction in fishing mortality from the average levels for 2008–2011 would be expected to return the fishing mortality rate to FMSY. This reduction of at least 36% should also allow the stock to rebuild above

the LRP over a period of time. This recommended level of reduction in fishing mortality could also be stated as a minimum 33% reduction from the 2004 level of fishing mortality, or a minimum 26% reduction from the average 2001-2004 level of fishing mortality.

- Overfishing and the increase in juvenile bigeye catches have resulted in a considerable reduction in the potential yield of the WCPO bigeye stock. The loss in yield per recruit due to excess harvest of juvenile fish is substantial. SC10 concluded that MSY levels would increase if the mortality of juvenile bigeye was reduced.

- Fishing mortality varies spatially within the Convention Area with high mortality in the tropical Pacific Ocean. WCPFC could consider a spatial management approach in reducing fishing mortality for bigeye tuna.

2.4 South Pacific albacore tuna

The South Pacific albacore catch in 2013 (84,835 t) represented a slight decrease (3%) from 2012, despite the increasing numbers of vessels in the fishery (Figure 12 and Table 7). Longline fishing has accounted for most of the catch of this stock (> 75% in the 1990s, but > 90% in recent years). The troll catch, covering a season spanning November to April, has generally been in the range of 3,000–8,000 t, however it has averaged around 2,700 t over the past five years.

The longline catch is widely distributed in the South Pacific, but with catches concentrated in the western part of the Pacific. Much of the increase in catches is attributed to catches taken by Chinese-Taipei and Chinese vessels fishing north of latitude 20°S. The Pacific Island domestic longline fleet catch is restricted to latitudes 10°–25°S. Troll catches are distributed in New Zealand's coastal waters, mainly off the South Island, and along the sub-tropical convergence zone (STCZ). Usually, less than 20% of the overall South Pacific albacore catch is taken east of 150°W.

The longline fishery takes adult albacore, mostly in the narrow size range of 90–105 cm, and the troll fishery takes juvenile fish in the range 45–80 cm. Juvenile albacore also occasionally appear in the longline catch.

2.4.1 Stock assessment

The most recent stock assessment for South Pacific albacore tuna was undertaken in 2012, and was based on data from 1960 to 2011. For this assessment a single model run (a reference case) was chosen to show trends in stock size, but the WCPFC Scientific Committee reached conclusions regarding stock status, sustainable yields and subsequent management advice based on the median outcomes from a large number of model runs.

The assessment indicates that fishing mortality on adult fish has increased considerably over the past decade, but that overall estimates of fishing mortality are well below F_{MSY}. This indicates that overfishing is not occurring (Figure 13). Spawning biomass levels remain well above SB_{MSY}, so the stock is not in an overfished state. Nevertheless, it is estimated that the current level of longline catch is having a considerably higher impact on the stock that is vulnerable to the longline fishery. The assessment indicates that the current level of impact is about 70% of that for fish of the size ranges taken in the northern longline fisheries, and this has increased sharply in recent years.

Given the recent expansion of the fishery and recent declines in exploitable biomass available to longline fisheries, and given the importance of maintaining catch rates, the WCPFC Scientific Committee recommended that longline fishing mortality be reduced if the Commission wishes to maintain economically viable catch rates.

3 Ecosystem considerations

The Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean identified ecosystem issues as an important element in the principles for conservation and management of the tuna resource in the WCP–CA. This section of the report provides a brief summary of the information available from the WCP–CA tuna fishery concerning associated and dependent species, including information about the species composition of the catch from the tuna fisheries and an assessment of the impact of the fishery on these species. It is important to note that most of these species have received limited attention to date and, consequently, it is only possible to provide an assessment of the impact of the fishery for a limited range of species. This section also includes a summary review of recent research and research that is currently being undertaken to learn more about the relationship between the main tuna species and the pelagic ecosystem.

3.1 Catch composition

The tuna fisheries of the WCPO principally target four main tuna species: skipjack, yellowfin, bigeye and albacore tuna. However, the fisheries also catch a range of other species in association with these. Some of the associated species are of commercial value (by-products), while many others are discarded. There are also incidents of the capture of species of ecological and/or social significance ('protected species'), including marine mammals, sea turtles and some species of shark (e.g. whale sharks).

The information concerning the catch composition of the main tuna fisheries in the WCPO comes largely from the various observer programmes operating in the region. Overall, catch (in weight) from unassociated and associated purse-seine sets are dominated by tuna species (99.6% and 98.5%, respectively), with anchored FAD sets having the lowest tuna catch weight (99%). There is limited interaction with protected species, such as whale sharks and manta rays (Figure 14). Historically, some vessels deliberately set around whale sharks associated with tuna schools, but this practice has been banned. In a very small percentage of cases of free schools sets a whale shark is encountered despite not being observed before the set was made.

Species composition of the catch has also been estimated for three main longline fisheries operating in the WCPO: the western tropical Pacific (WTP) shallow-setting longline fishery, the WTP deep-setting longline fishery, and the western South Pacific (WSP) albacore fishery. While estimates are uncertain due to the low level of observer coverage, some general conclusions are possible. The main tuna species account for 46%, 74% and 71% of the total catch (by weight) of the three fisheries, respectively (Figure 14). The WTP shallow fishery has a higher proportion of non-tuna species in the catch, principally shark and billfish species, while mahi mahi and opah (moonfish) represent a significant component of the WSP albacore longline catch. There are also considerable differences in the species composition of the billfish catch in the three fisheries, while, overall, the WTP shallow and WSP albacore fisheries catch a higher proportion of surface-orientated species than does the WTP deep-setting fishery.

Interactions with seabirds and marine mammals were very low in all three longline fisheries. Catches of five species of marine turtles were observed in the equatorial longline fishery, although the observed encounter rate was very low, and most of the turtles caught were alive at the time of release. The recent WCPFC ban on the use of 'shark lines' should reduce the catch of silky and oceanic whitetip sharks; the status of these two species is of current concern.

3.2 Impact of catches

In addition to the main tuna species, annual catch estimates for the WCPO in 2013 are available for the main species of billfish (swordfish [20,043 t], blue marlin [19,524 t], striped marlin [3,678 t] and black marlin [2,340 t]). For all of these species other than striped marlin, current catches are around the average for the past decade. However, for striped marlin, the 2013 catch estimate represents the lowest since records began. Catches of other associated species cannot be accurately quantified using logsheet data, but estimates should be possible as longline observer coverage increases. Purse-seine observer coverage is already sufficiently high to estimate catches of associated species.

Over the past several years stock assessments have been made for several billfish and shark species in addition to the main tuna species. Table 8, summarises the recommendations from the WCPFC Scientific Committee to the Commission.

3.3 Tuna tagging

Large-scale tagging experiments are required to provide the level of information (fishery exploitation rates and population size) that is necessary to enable tuna stock assessments of tropical tunas in the western and central Pacific Ocean. Tagging data have the potential to provide significant information of relevance to stock assessment, either by way of stand-alone analyses or, preferably, through their integration with other data directly in the stock assessment model. Tuna tagging has been a core activity of the Oceanic Fisheries Programme over the last 30 years, with tagging campaigns occurring in the 1970s, 1990s and, most recently, since 2006. This most recent campaign has now tagged and released over 400,000 tuna in the equatorial western and central Pacific Ocean, with over 70,000 reported recaptures (Figure 15 and Table 9).

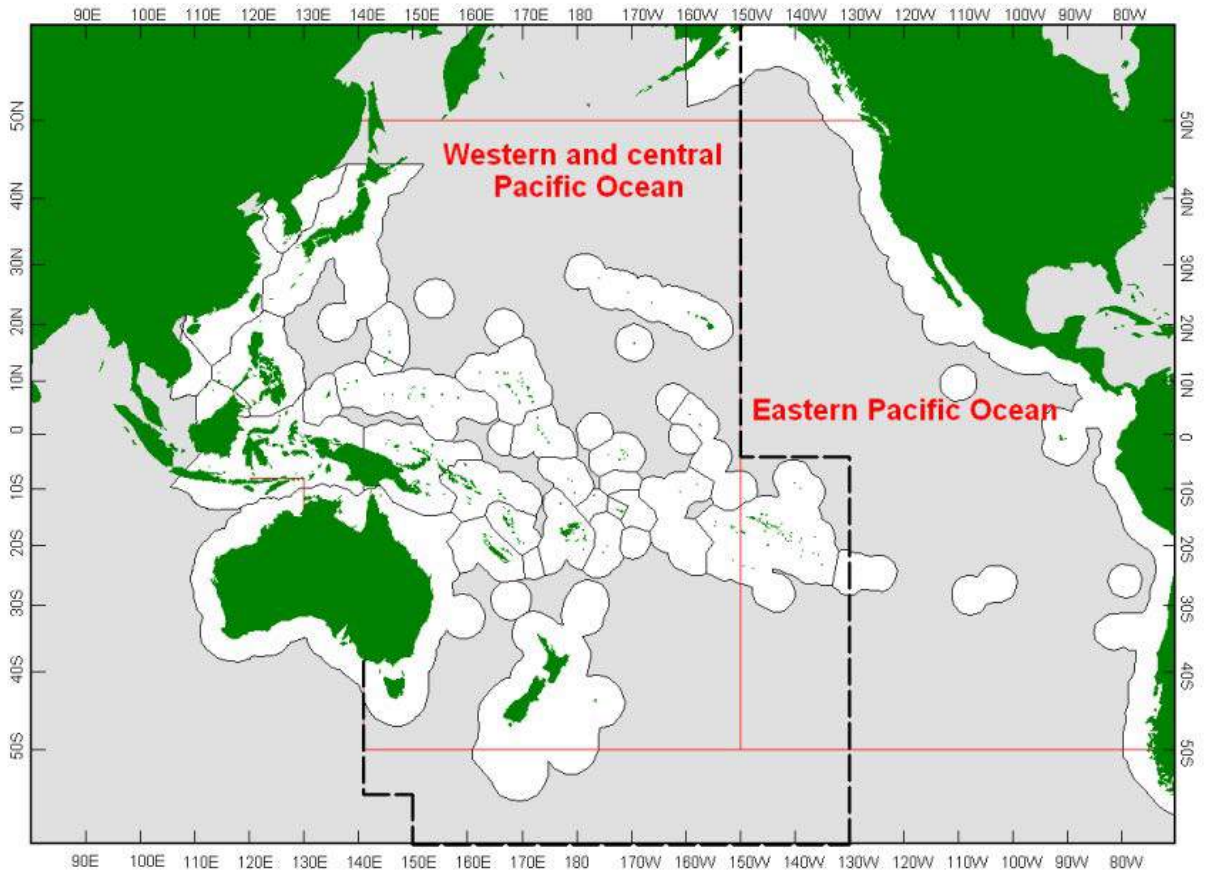
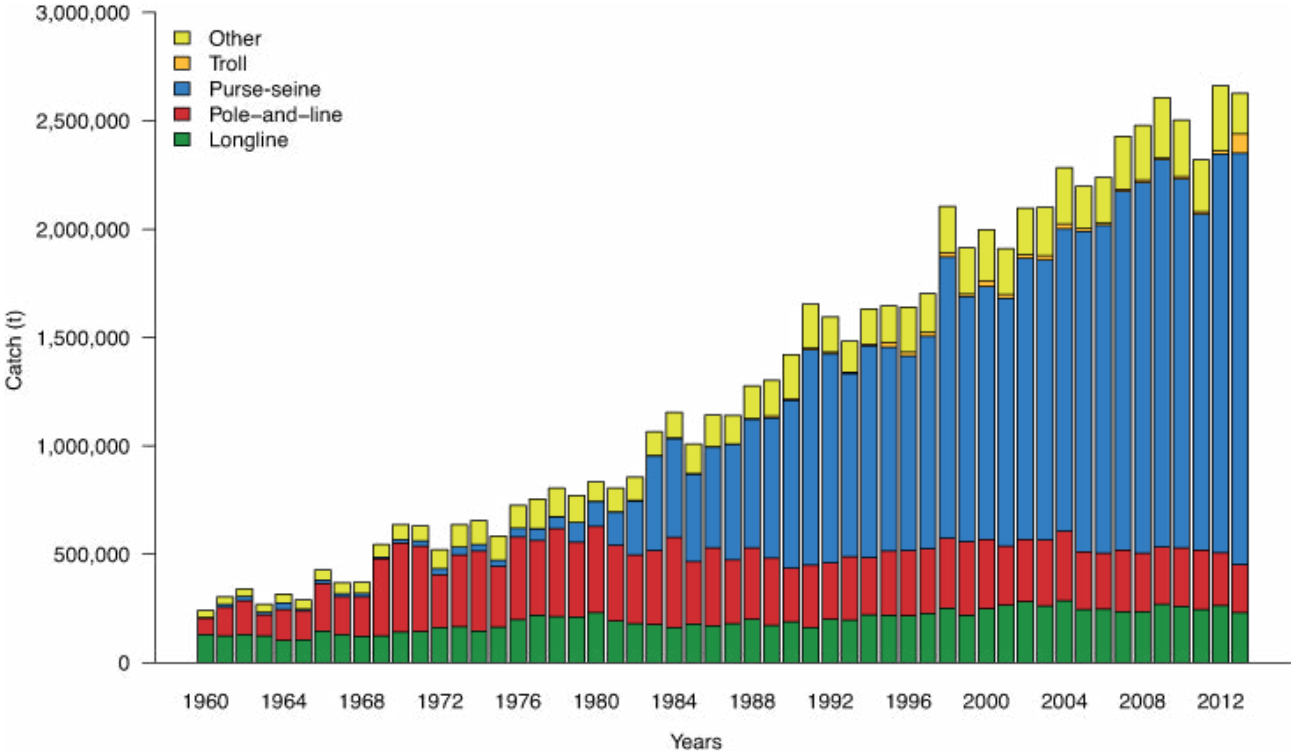


Figure 1: The western and central Pacific Ocean (WCPO), the eastern Pacific Ocean (EPO) and the WCPFC Convention Area boundary. Note: WCP–CA in dashed lines.



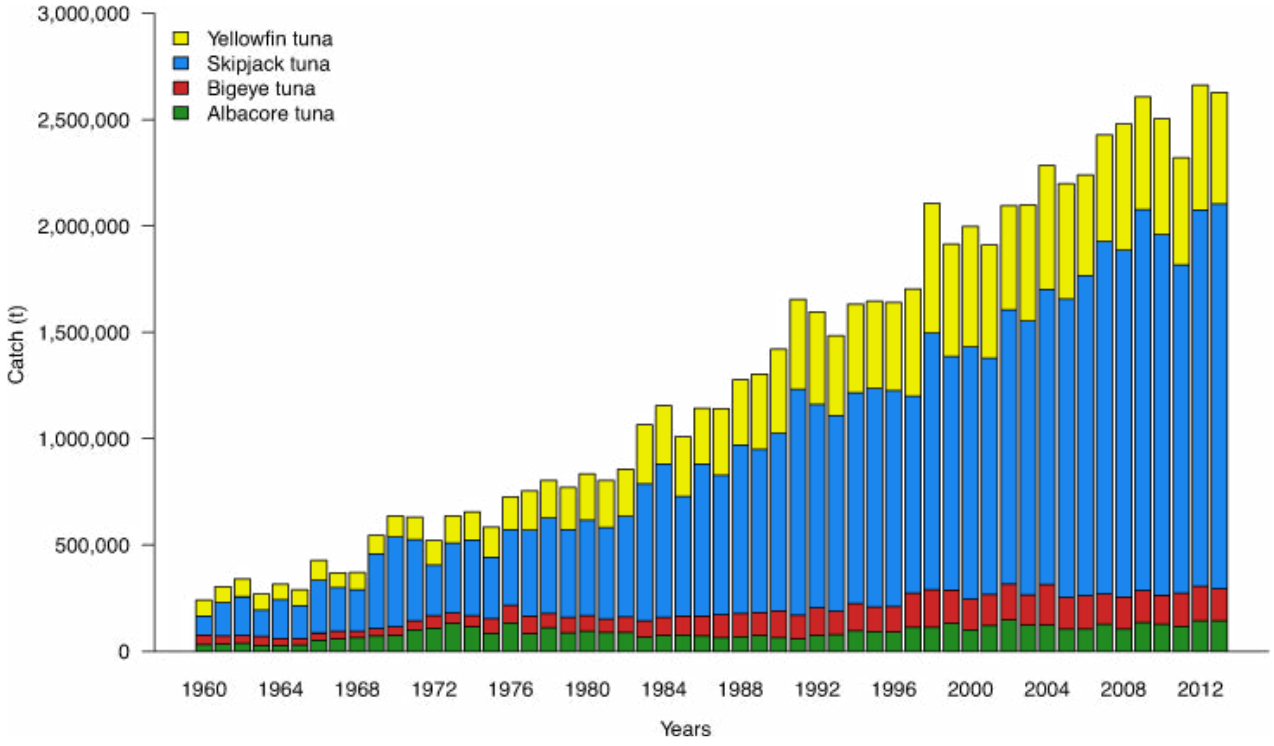


Figure 2: Catch (metric tonnes) by gear (top) and species (bottom) for the western and central Pacific region, 1960–2013. Note: data for 2013 are preliminary.

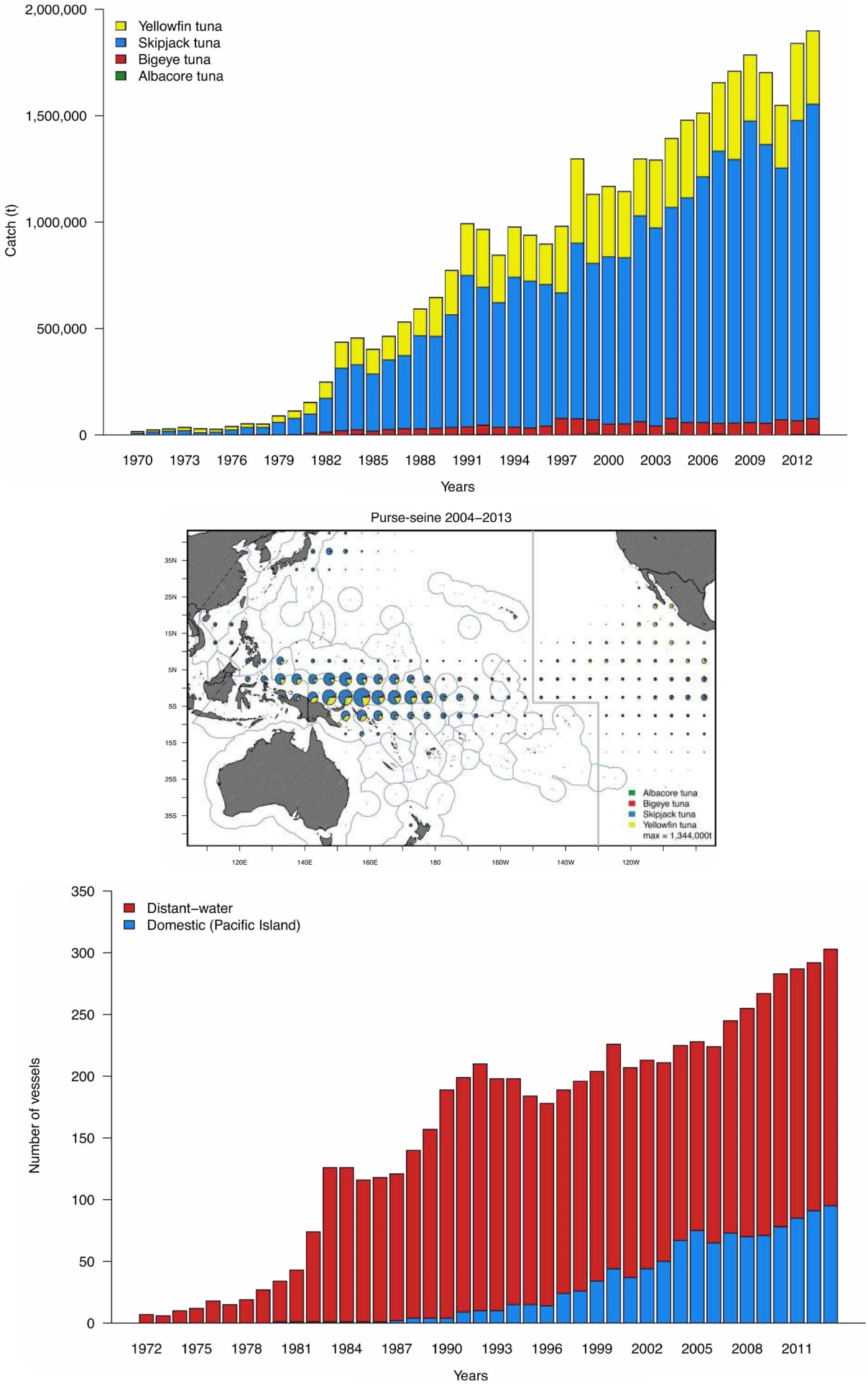


Figure 3: Time series of catch (t) (top), recent spatial distribution of catches (middle), and fleet sizes (bottom) for the purse-seine fishery in the western and central Pacific Ocean (WCPO).

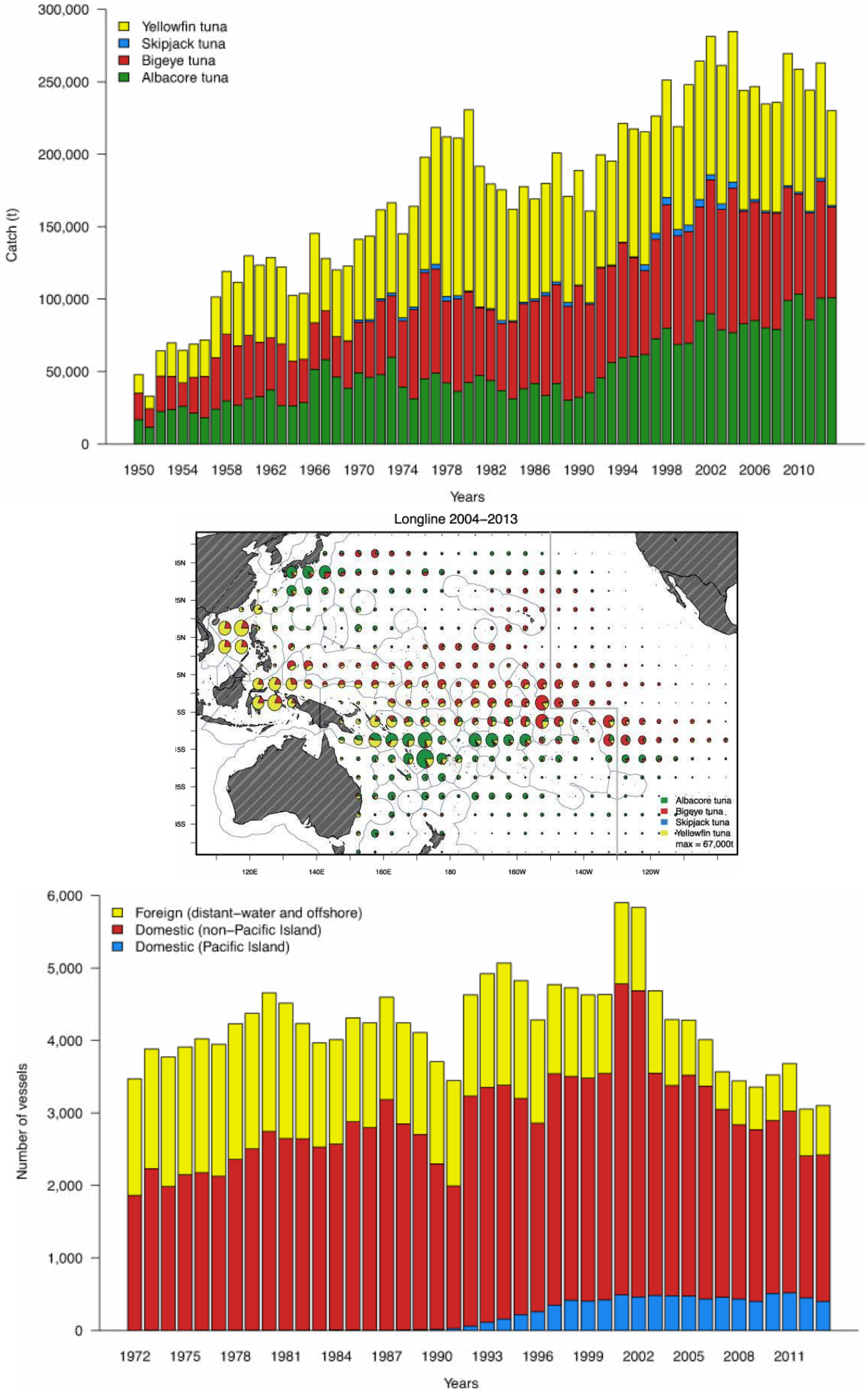


Figure 4: Time series of catch (t) (top), recent spatial distribution of catches (middle), and fleet sizes (bottom), for the longline fishery in the western and central Pacific Ocean (WCPO).

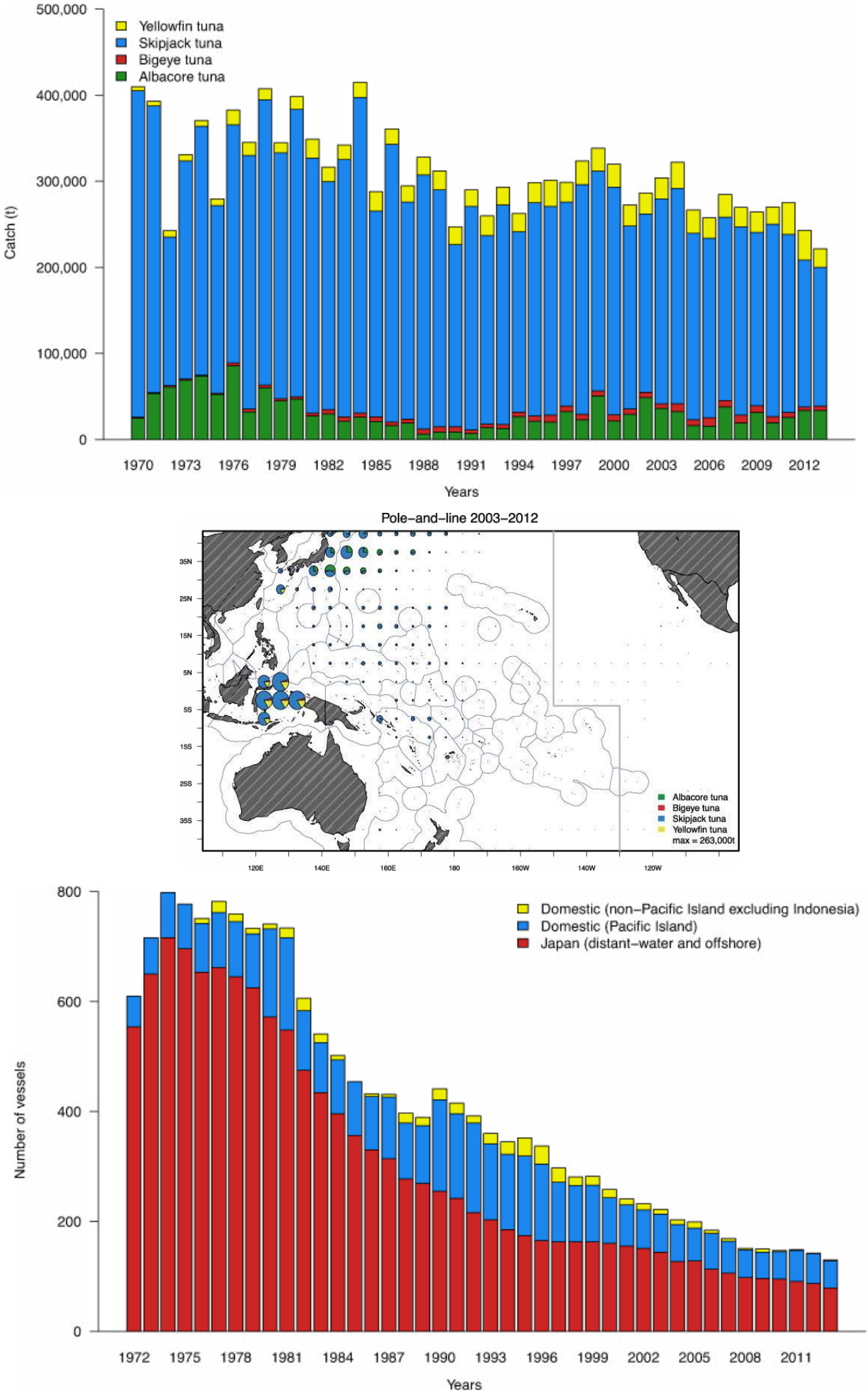


Figure 5: Time series of catch (t) (top), recent spatial distribution of catches (middle), and fleet sizes (bottom), for the pole-and-line fishery in the western and central Pacific Ocean (WCPO).

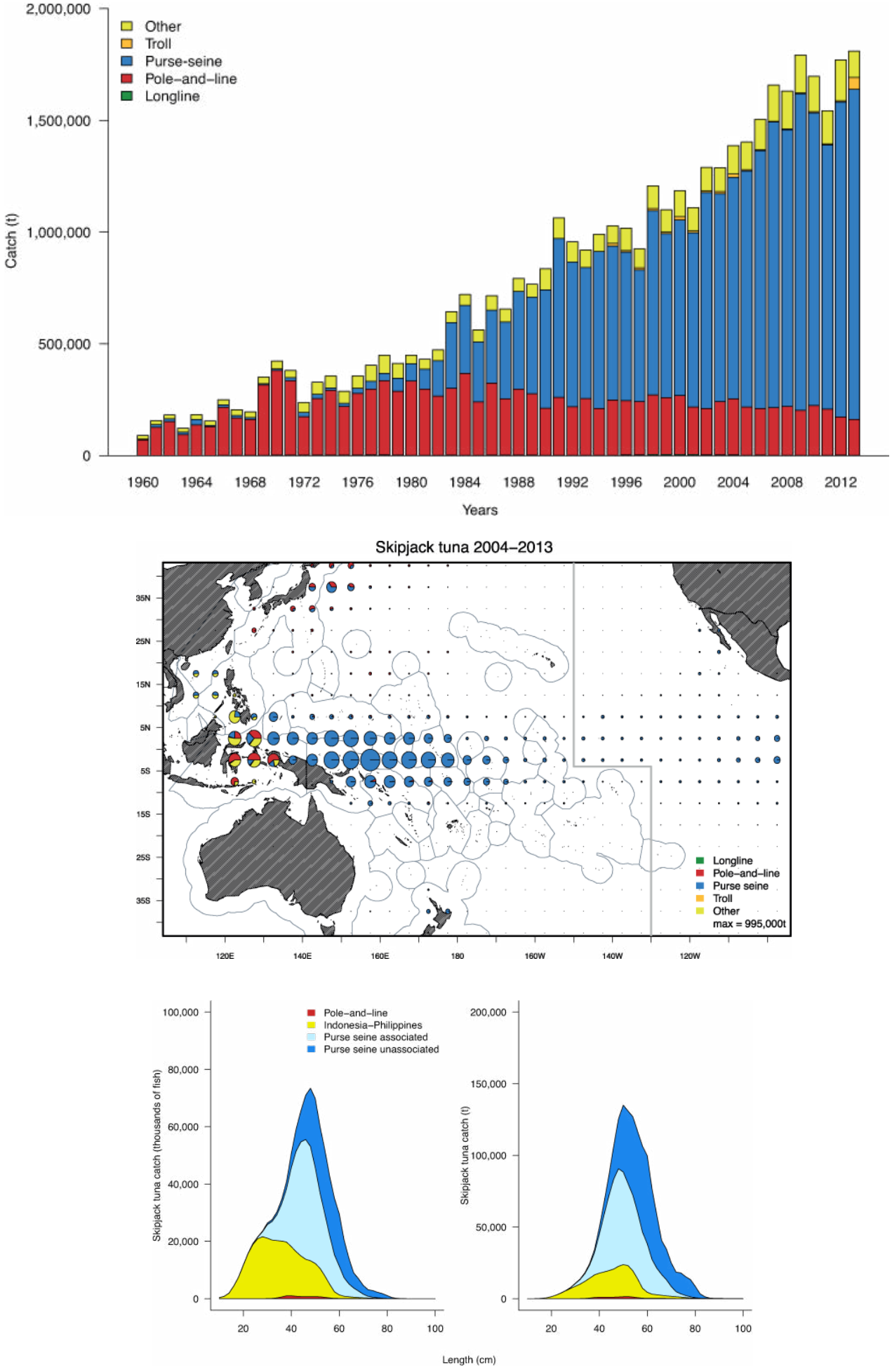


Figure 6: Time series (top), recent spatial distribution (middle), and size composition (average for last five years; bottom) of skipjack tuna catches (t) by gear for the western and central Pacific Ocean (WCPO).

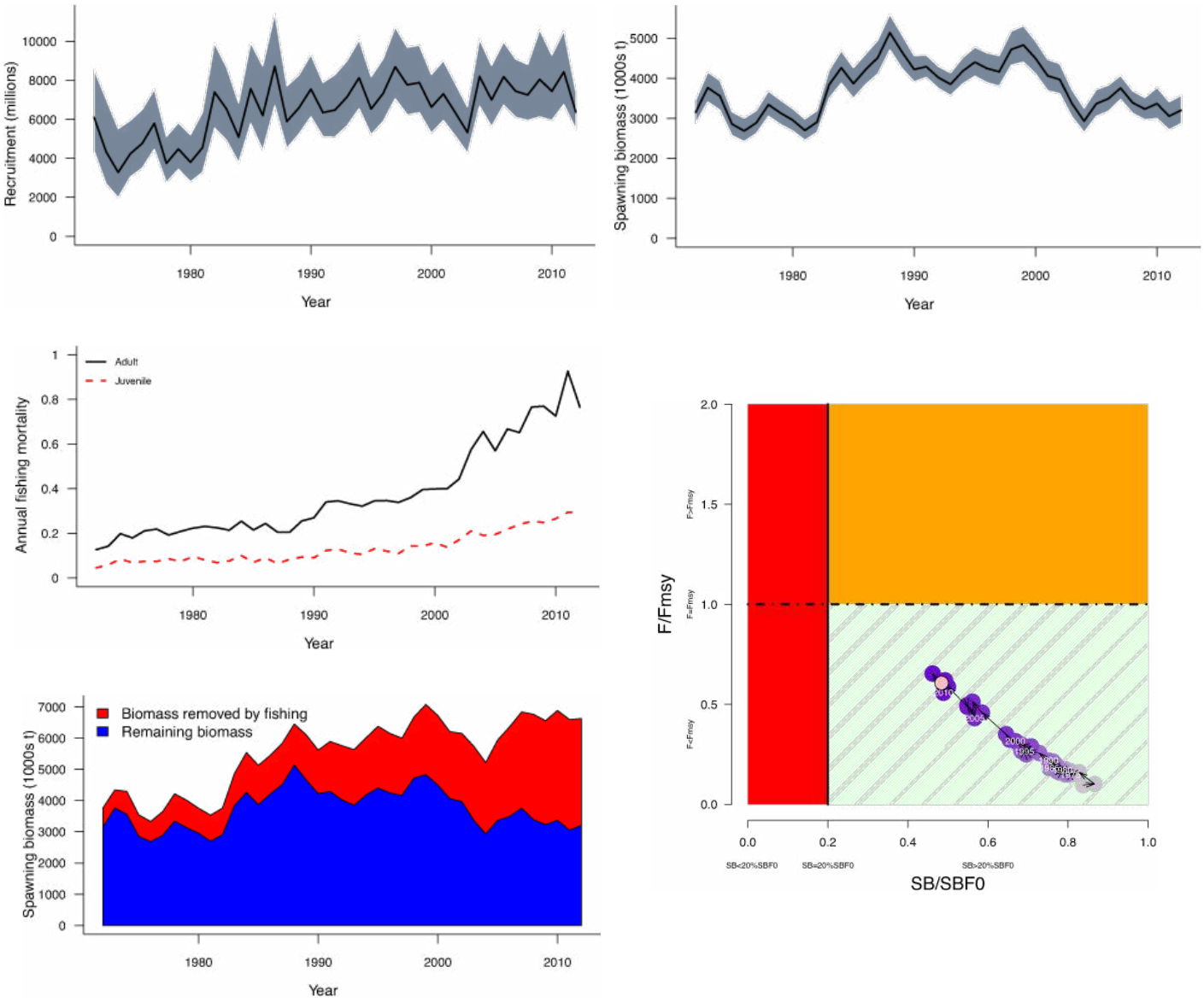


Figure 7: Estimated recruitment (top left), spawning biomass (top right), fishing mortality (middle left), stock status (middle right) and estimated spawning biomass with [blue] and without [red] fishing (bottom left) from the 2014 skipjack tuna stock assessment.

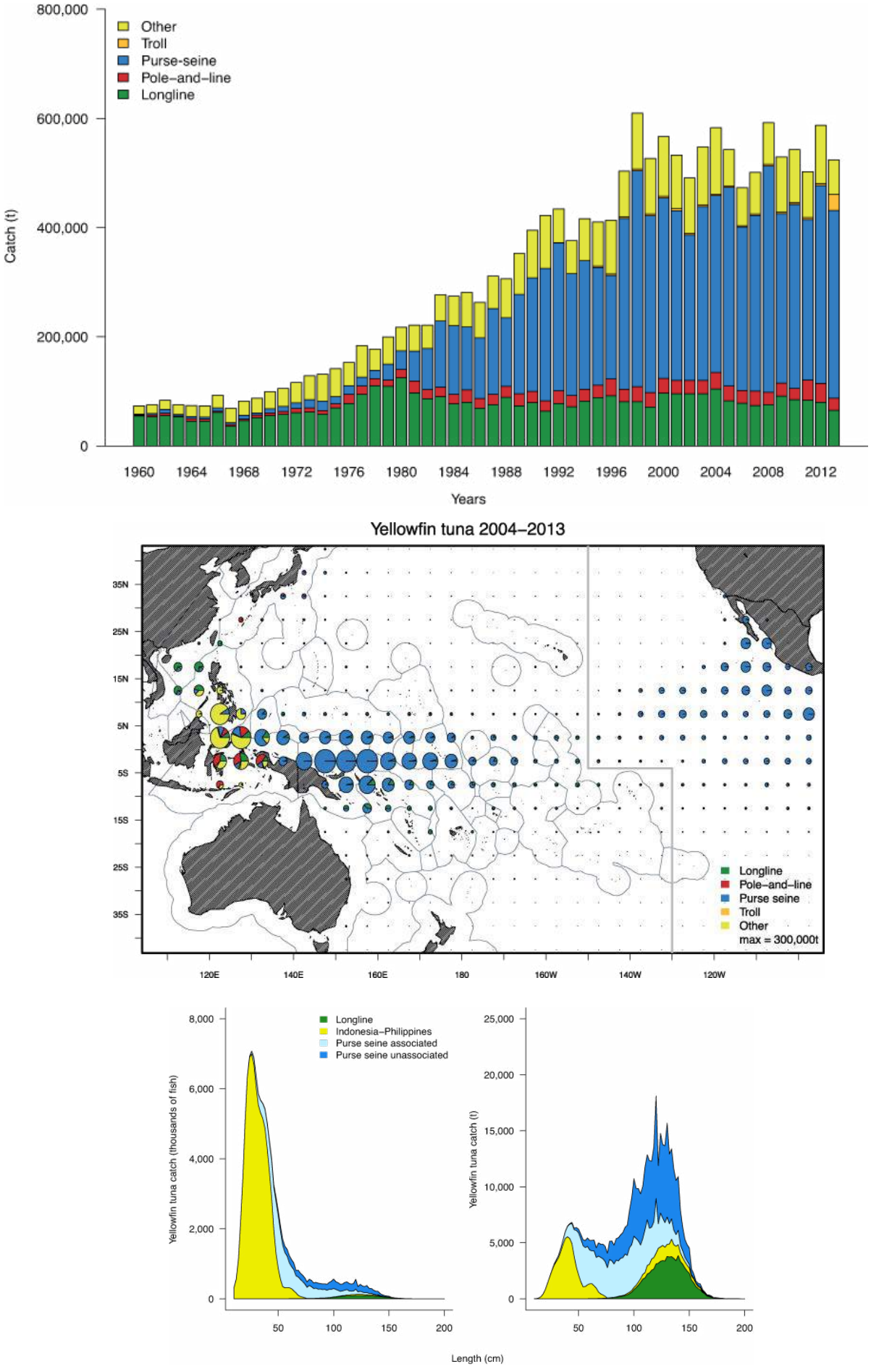


Figure 8: Time series (top), recent spatial distribution (middle), and size composition (average for last five years, bottom) of yellowfin tuna catches (t) by gear for the western and central Pacific Ocean (WCPO).

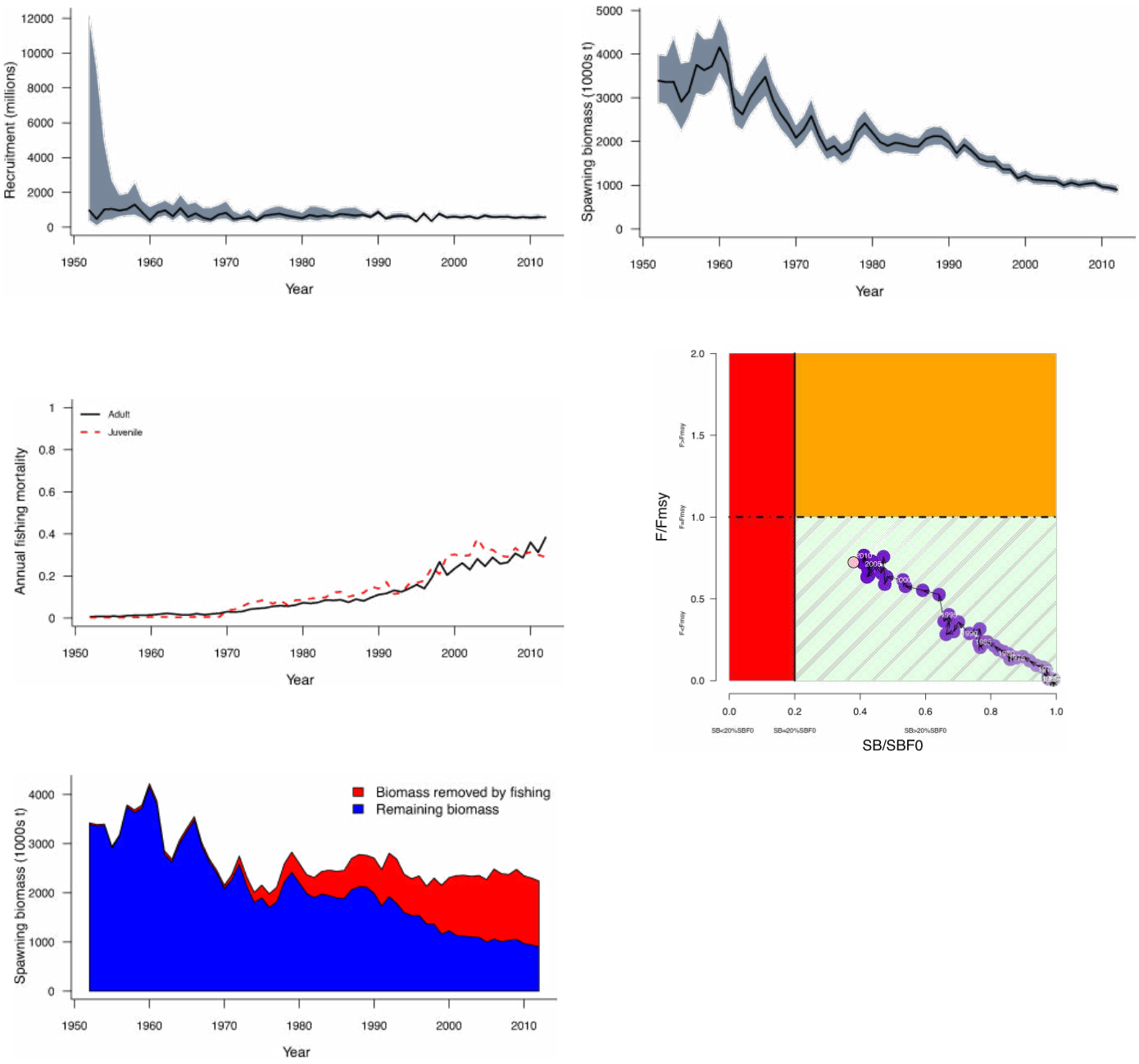


Figure 9: Estimated recruitment (top left), spawning biomass (top right), fishing mortality (middle left), stock status (middle right), estimated spawning biomass with [blue] and without [red] fishing (bottom left), and spawning biomass for the western equatorial region (bottom right) from the 2014 yellowfin tuna stock assessment.

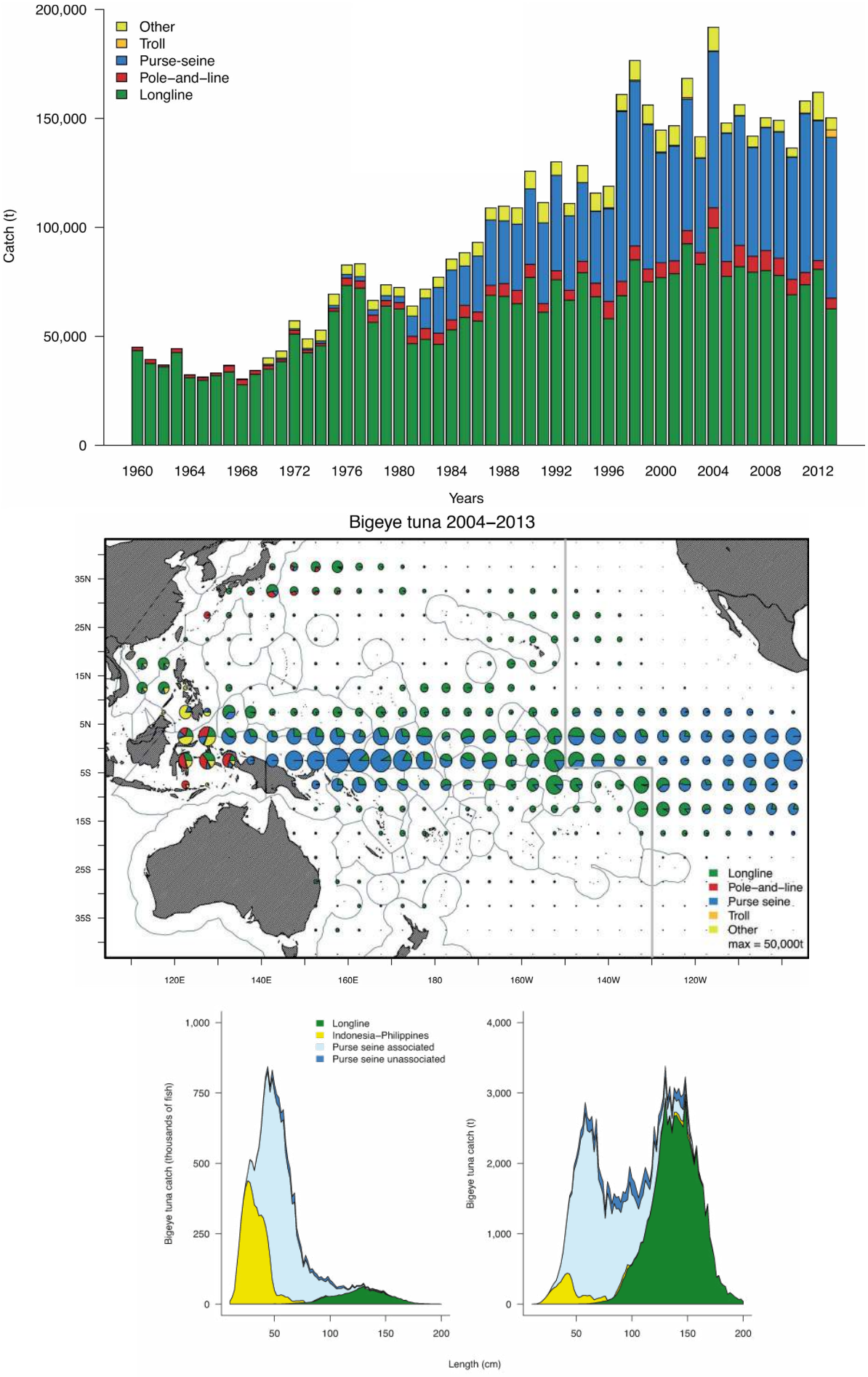


Figure 10: Time series (top), recent spatial distribution (middle), and size composition (average for last five years; bottom) of bigeye tuna catches (t) by gear for the western and central Pacific Ocean (WCPO).

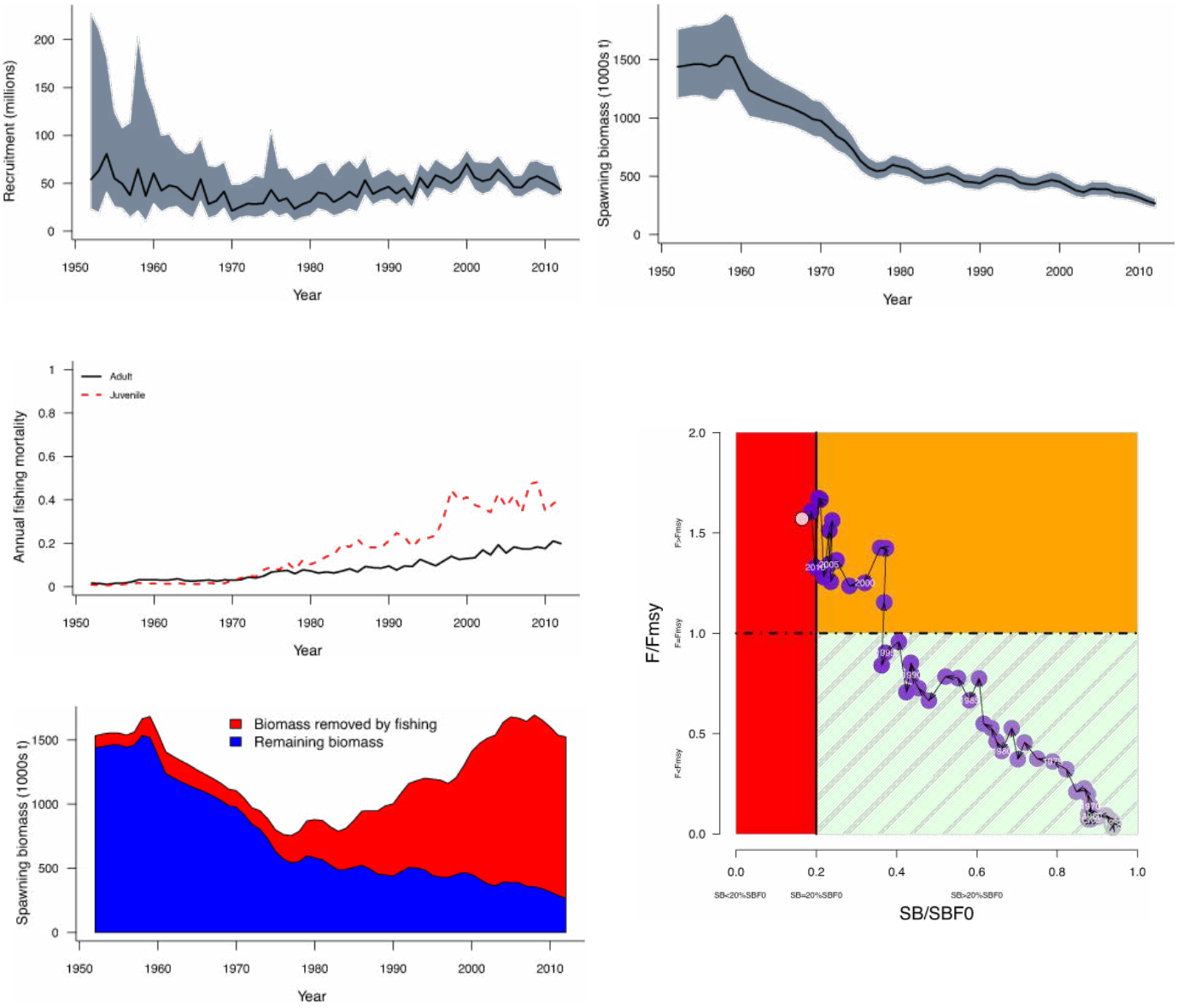


Figure 11: Estimated recruitment (top left), spawning biomass (top right), fishing mortality (middle left), stock status (middle right), and estimated spawning biomass with [blue] and without [red] fishing (bottom left) from the 2014 bigeye tuna stock assessment.

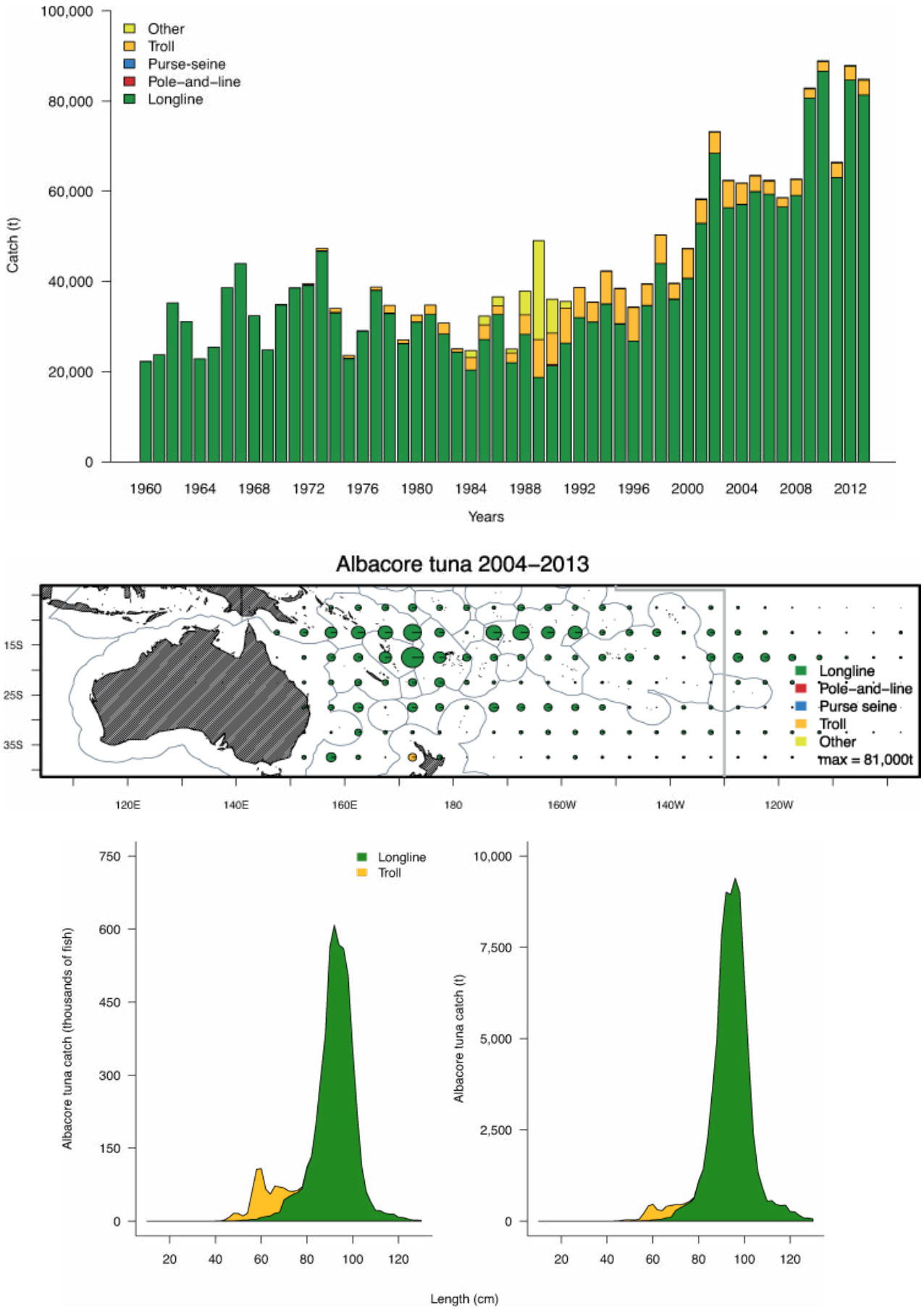


Figure 12: Time series (top), recent spatial distribution (middle), and size composition (average for last five years, bottom) of South Pacific albacore tuna catches (t) by gear for the western and central Pacific Ocean (WCPO).

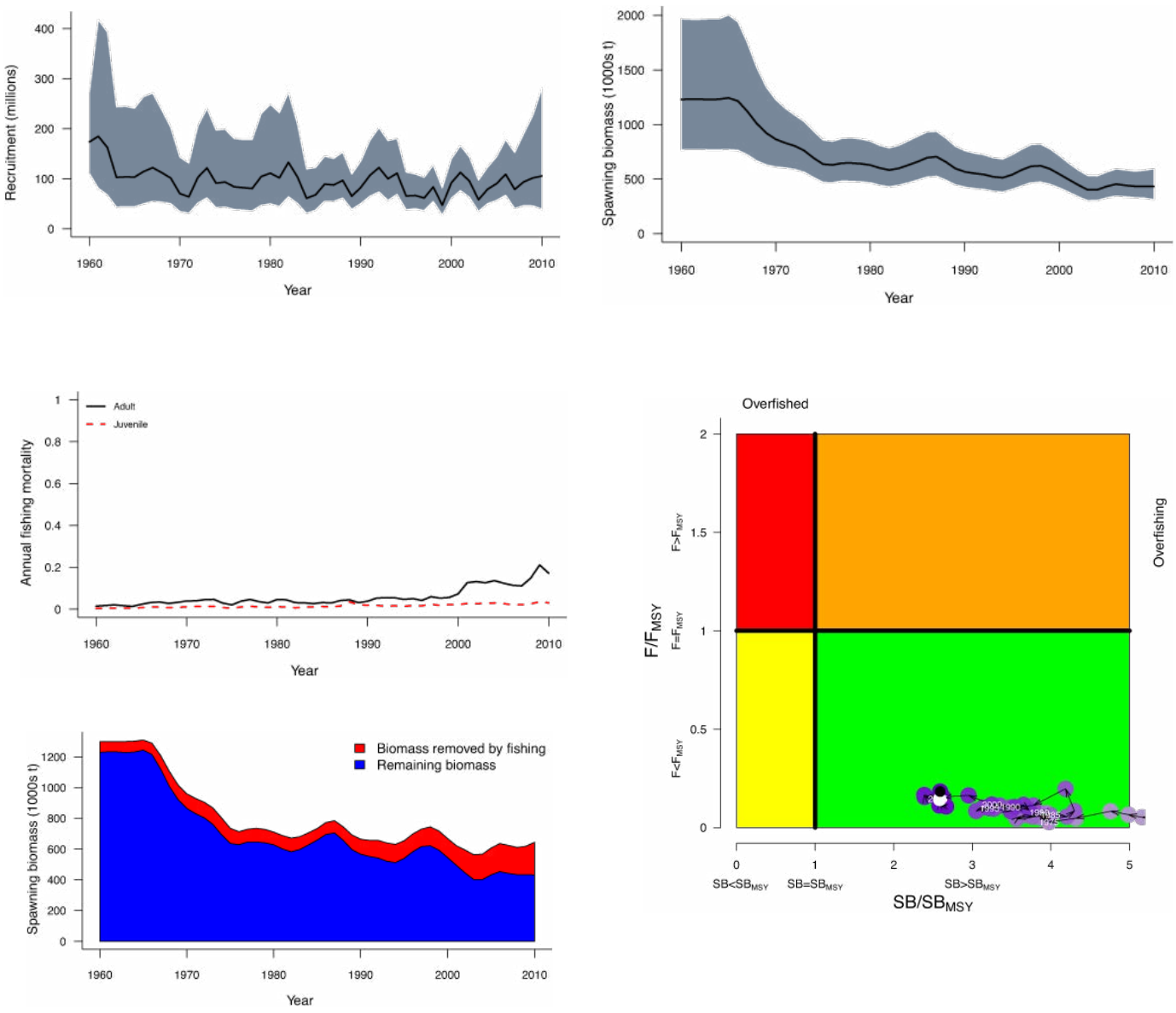


Figure 13: Estimated recruitment (top left), spawning biomass (top right), fishing mortality (middle left), stock status (middle right), and estimated spawning biomass with [blue] and without [red] fishing (bottom left) from the 2012 South Pacific albacore tuna stock assessment.

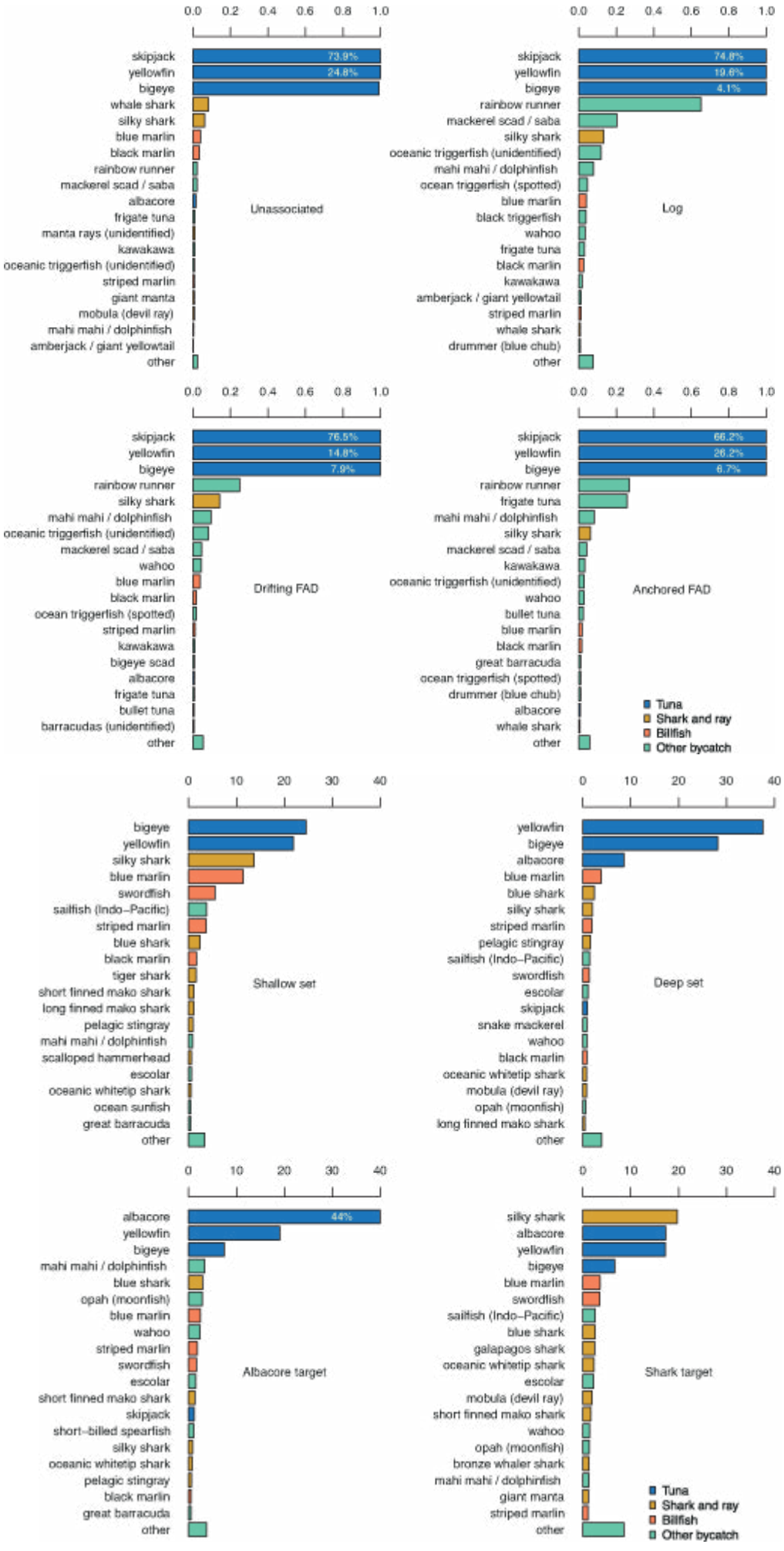


Figure 14: Catch composition of the various categories of purse-seine (top) and longline (bottom) fisheries operating in the WCPO based on observer data based on the last 10 years' data.

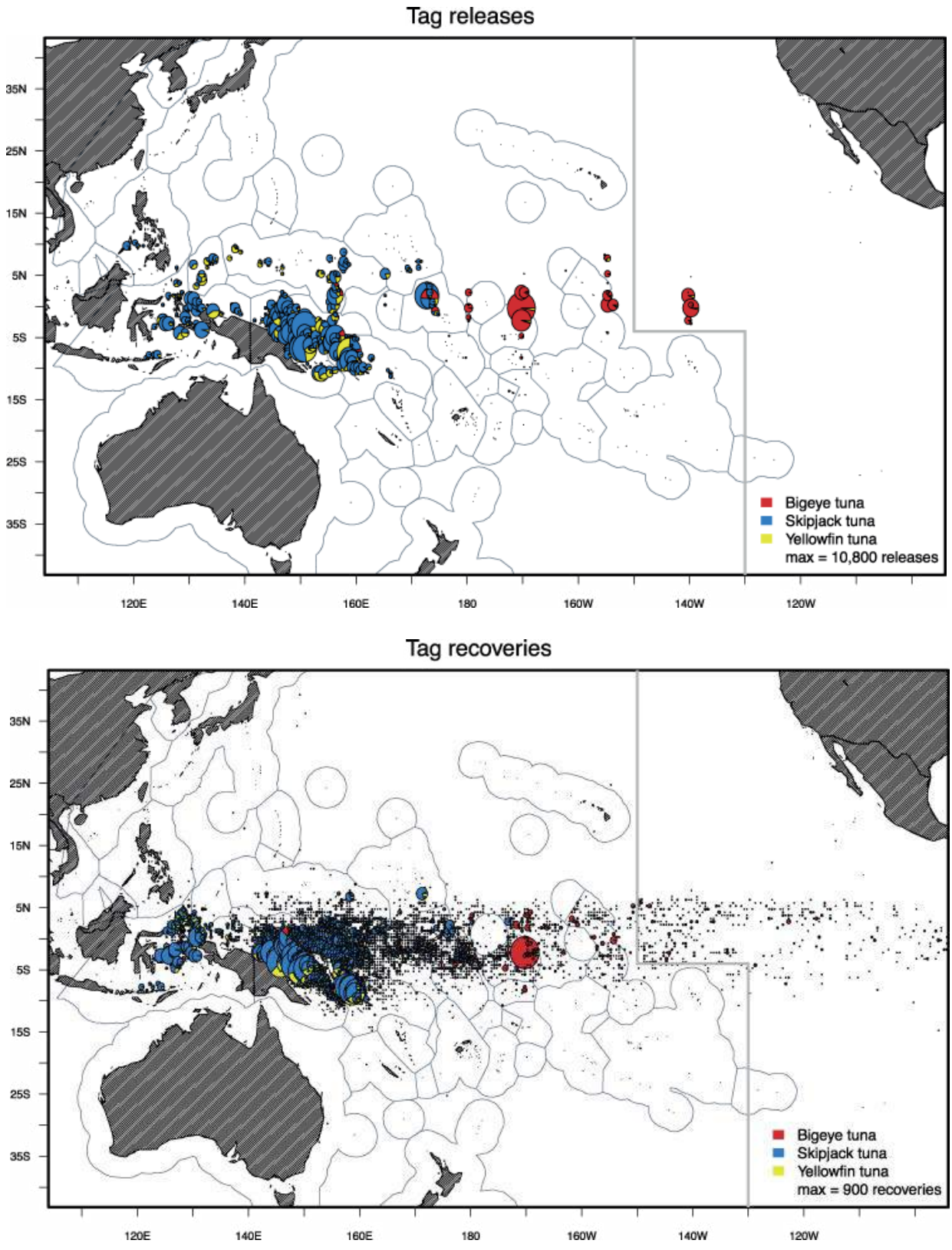


Figure 15: Tag releases (top) and recaptures (bottom) by species from the recent Pacific Tuna Tagging Programme (PTTP).

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1 All WCPFC documents can be obtained by visiting the WCPFC website (www.wcpfc.int) and navigating to the meeting where the document was presented, e.g. WCPFC-SC6-GN-WP-1 can be found on the webpage of documents presented to the 6th session of the Scientific Committee. (http://www.wcpfc.int/meetings/2010/6th-regular-session-scientific-committee)

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Table 1: Catch (metric tonnes) by gear for the western and central Pacific region, 1960–2013.

Year	Longline	Pole-and-line	Purse seine	Troll	Other	Total
1960	129,874	73,800	5,224	0	31,195	240,093
1961	123,330	132,070	14,540	0	34,536	304,476
1962	128,804	157,412	18,875	0	34,947	340,038
1963	122,263	98,628	11,934	0	36,795	269,620
1964	102,481	143,323	29,012	0	41,334	316,150
1965	103,955	134,621	8,621	0	41,727	288,924
1966	145,278	218,900	16,913	0	46,993	428,084
1967	128,047	174,774	14,508	5	52,006	369,340
1968	120,136	183,954	15,143	14	52,327	371,574
1969	122,806	354,784	9,483	0	57,703	544,776
1970	141,360	409,754	16,222	50	69,633	637,019
1971	143,625	392,914	24,511	0	68,925	629,975
1972	161,533	242,745	29,030	268	87,209	520,785
1973	166,399	330,841	36,269	484	103,281	637,274
1974	145,192	370,499	29,548	898	109,578	655,715
1975	164,049	279,663	27,685	646	111,669	583,712
1976	198,013	382,627	40,770	25	104,582	726,017
1977	218,413	345,257	53,492	621	136,322	754,105
1978	212,059	407,482	52,040	1,686	131,084	804,351
1979	211,221	344,799	90,102	814	124,684	771,620
1980	230,624	398,498	113,265	1,489	89,969	833,845
1981	191,732	348,917	153,907	2,118	107,884	804,558
1982	179,574	316,457	249,233	2,552	107,990	855,806
1983	175,498	342,287	436,510	949	109,378	1,064,622
1984	162,111	415,016	456,467	3,124	118,478	1,155,196
1985	177,722	287,892	403,252	3,468	136,812	1,009,146
1986	169,129	360,864	464,460	2,284	146,873	1,143,610
1987	179,965	294,879	531,142	2,350	131,849	1,140,185
1988	200,774	327,997	592,610	4,671	151,193	1,277,245
1989	170,876	311,981	646,441	8,687	165,164	1,303,149
1990	188,841	247,104	773,732	7,219	203,508	1,420,404
1991	160,889	290,006	993,151	8,004	203,129	1,655,179
1992	199,688	259,762	966,313	6,844	163,536	1,596,143
1993	195,377	293,014	845,647	4,612	145,262	1,483,912
1994	221,367	262,721	977,648	7,493	162,850	1,632,079
1995	217,417	298,301	939,173	23,585	168,062	1,646,538
1996	215,466	301,279	897,907	17,807	208,032	1,640,491
1997	226,375	298,666	981,355	18,732	178,199	1,703,327
1998	251,197	323,645	1,297,726	19,099	213,779	2,105,446
1999	219,024	338,480	1,131,142	13,476	211,900	1,914,022
2000	247,904	319,854	1,168,428	25,845	235,670	1,997,701
2001	264,291	272,483	1,144,442	17,329	211,934	1,910,479
2002	281,369	286,202	1,297,473	16,129	215,317	2,096,490
2003	261,346	303,905	1,292,287	19,875	223,218	2,100,631
2004	284,783	322,179	1,393,992	23,445	260,314	2,284,713
2005	244,114	266,735	1,479,328	13,293	195,972	2,199,442
2006	246,694	257,594	1,512,945	10,098	212,599	2,239,930
2007	234,804	284,661	1,655,500	9,249	244,044	2,428,258
2008	235,665	269,551	1,709,351	11,740	252,565	2,478,872
2009	269,469	264,350	1,785,825	9,898	277,286	2,606,828
2010	258,711	270,123	1,703,134	11,320	260,010	2,503,298
2011	244,330	275,070	1,549,060	11,973	239,731	2,320,164
2012	263,057	242,958	1,840,529	14,018	301,976	2,662,538
2013	230,137	221,715	1,899,015	88,870	187,959	2,627,696

Note: data for 2013 are preliminary.

Table 2: Catch (metric tonnes) by species for the four main tuna species taken in the western and central Pacific region, 1960–2013.

Year	Albacore tuna	Bigeye tuna	Skipjack tuna	Yellowfin tuna	Total
1960	31,463	45,025	89,938	73,667	240,093
1961	32,922	39,380	156,736	75,438	304,476
1962	37,602	36,868	181,624	83,944	340,038
1963	26,815	44,346	122,703	75,756	269,620
1964	26,687	32,391	182,918	74,154	316,150
1965	28,735	31,333	155,221	73,635	288,924
1966	52,284	33,187	249,514	93,099	428,084
1967	58,822	36,749	204,840	68,929	369,340
1968	64,213	30,426	195,031	81,904	371,574
1969	72,106	34,361	351,031	87,278	544,776
1970	74,350	40,102	423,398	99,169	637,019
1971	100,737	43,233	380,853	105,152	629,975
1972	109,655	57,156	237,764	116,210	520,785
1973	131,149	48,855	328,748	128,522	637,274
1974	115,162	52,808	356,200	131,545	655,715
1975	84,651	69,360	288,310	141,391	583,712
1976	132,947	82,752	357,207	153,111	726,017
1977	83,171	83,315	403,610	184,009	754,105
1978	111,161	66,513	449,032	177,645	804,351
1979	86,007	73,626	412,551	199,436	771,620
1980	95,156	72,389	448,711	217,589	833,845
1981	88,095	63,888	431,152	221,423	804,558
1982	89,496	71,648	473,137	221,525	855,806
1983	65,988	77,148	644,252	277,234	1,064,622
1984	74,540	85,449	720,942	274,265	1,155,196
1985	77,060	88,390	562,273	281,423	1,009,146
1986	71,757	93,145	715,533	263,175	1,143,610
1987	63,645	108,919	656,158	311,463	1,140,185
1988	67,948	109,750	793,233	306,314	1,277,245
1989	73,533	108,932	767,768	352,916	1,303,149
1990	63,872	125,795	835,853	394,884	1,420,404
1991	58,322	111,414	1,063,268	422,175	1,655,179
1992	74,452	130,070	957,326	434,295	1,596,143
1993	77,496	110,993	919,415	376,008	1,483,912
1994	96,461	128,384	990,828	416,406	1,632,079
1995	91,750	115,763	1,028,592	410,433	1,646,538
1996	91,140	118,892	1,016,951	413,508	1,640,491
1997	112,900	161,041	926,051	503,335	1,703,327
1998	112,465	176,581	1,206,730	609,670	2,105,446
1999	131,066	156,189	1,099,992	526,775	1,914,022
2000	101,171	144,594	1,184,857	567,079	1,997,701
2001	121,561	146,661	1,109,535	532,722	1,910,479
2002	147,793	168,394	1,289,544	490,759	2,096,490
2003	122,949	141,598	1,288,292	547,792	2,100,631
2004	122,343	191,860	1,387,583	582,927	2,284,713
2005	105,135	147,908	1,403,304	543,095	2,199,442
2006	104,986	156,309	1,505,533	473,102	2,239,930
2007	126,701	141,920	1,658,289	501,348	2,428,258
2008	104,966	150,333	1,631,456	592,117	2,478,872
2009	135,476	149,163	1,792,587	529,602	2,606,828
2010	126,548	136,404	1,697,495	542,851	2,503,298
2011	116,296	158,014	1,543,481	502,373	2,320,164
2012	142,963	162,017	1,770,366	587,192	2,662,538
2013	143,227	150,281	1,810,166	524,022	2,627,696

Note: data for 2013 are preliminary.

Table 3: Biological reference points from the latest stock assessments for South Pacific albacore, bigeye, skipjack, and yellowfin tunas. Note: All biomasses are in metric tonnes (t). B_0 is the average estimated unfished biomass; B_{CURR} is the average biomass over the last 3-4 years; MSY is the maximum sustainable yield based on recent patterns of fishing; F_{CURR}/F_{MSY} is the ratio of recent fishing mortality to that which will support the MSY; SB_{CURR}/SB_{MSY} is the ratio of recent spawning biomass to that which will support the MSY.

	S. Pacific albacore	Bigeye	Skipjack	Yellowfin
B0	1,131,000	2,228,600	6,281,000	4,319,000
B_{CURR}	1,028,983	742,967	3,615,213	1,994,655
MSY	99,085	108,520	1,532,000	586,400
F_{CURR}/F_{MSY}	0.21	1.57	0.62	0.72
SB_{CURR}/SB_{MSY}	2.56	0.94	1.94	1.47
$SB_{CURR}/SB_{F=0}$	0.58	0.20	0.52	0.42

Table 4: Skipjack tuna catch (metric tonnes) by gear type for the western and central Pacific region, 1960–2013.

Year	Longline	Pole-and-line	Purse seine	Troll	Other	Total
1960	0	70,428	3,728	0	15,782	89,938
1961	0	127,011	11,693	0	18,032	156,736
1962	4	152,387	11,674	0	17,559	181,624
1963	0	94,757	9,592	0	18,354	122,703
1964	5	137,106	25,006	0	20,801	182,918
1965	11	129,933	4,657	0	20,620	155,221
1966	52	215,600	10,949	0	22,913	249,514
1967	124	168,846	10,940	0	24,930	204,840
1968	83	162,379	7,640	0	24,929	195,031
1969	130	315,795	5,036	0	30,070	351,031
1970	1,608	379,074	7,501	0	35,215	423,398
1971	1,475	333,284	13,665	0	32,429	380,853
1972	1,544	172,827	18,025	0	45,368	237,764
1973	1,861	253,217	19,235	0	54,435	328,748
1974	2,124	289,202	10,852	0	54,022	356,200
1975	1,919	218,271	13,101	0	55,019	288,310
1976	2,096	276,582	22,422	0	56,107	357,207
1977	3,127	294,641	34,602	0	71,240	403,610
1978	3,233	331,401	33,169	0	81,229	449,032
1979	2,179	285,859	58,371	0	66,142	412,551
1980	632	333,597	76,186	12	38,284	448,711
1981	756	296,065	90,090	17	44,224	431,152
1982	972	264,726	159,337	64	48,038	473,137
1983	2,144	298,928	293,520	154	49,506	644,252
1984	870	366,811	304,853	284	48,124	720,942
1985	1,108	238,932	268,327	146	53,760	562,273
1986	1,439	322,665	326,464	219	64,746	715,533
1987	2,329	252,142	342,985	168	58,534	656,158
1988	1,937	295,325	437,394	299	58,278	793,233
1989	2,507	275,088	431,492	244	58,437	767,768
1990	363	211,573	529,158	176	94,583	835,853
1991	885	259,778	710,880	148	91,577	1,063,268
1992	432	218,765	647,072	168	90,889	957,326
1993	573	255,152	585,633	175	77,882	919,415
1994	379	209,636	703,621	228	76,964	990,828
1995	598	247,744	689,609	12,298	78,343	1,028,592
1996	3,935	242,486	664,781	6,514	99,235	1,016,951
1997	4,070	236,999	589,504	9,218	86,260	926,051
1998	5,030	266,772	824,926	8,316	101,686	1,206,730
1999	4,208	255,330	734,216	5,660	100,578	1,099,992
2000	4,559	264,407	785,313	15,005	115,573	1,184,857
2001	5,059	212,668	779,857	7,536	104,415	1,109,535
2002	3,450	207,488	966,999	6,796	104,811	1,289,544
2003	3,824	238,179	929,809	9,721	106,759	1,288,292
2004	4,051	249,936	991,114	15,118	127,364	1,387,583
2005	1,084	216,715	1,055,434	6,302	123,769	1,403,304
2006	1,528	208,731	1,153,869	3,987	137,418	1,505,533
2007	1,175	213,010	1,278,316	3,598	162,190	1,658,289
2008	803	218,570	1,237,748	4,572	169,763	1,631,456
2009	1,219	201,323	1,415,731	4,252	170,062	1,792,587
2010	1,191	223,409	1,309,387	4,705	158,803	1,697,495
2011	1,124	206,843	1,181,457	4,214	149,843	1,543,481
2012	2,004	170,538	1,409,507	6,235	182,082	1,770,366
2013	1,267	161,220	1,476,855	52,155	118,669	1,810,166

Note: data for 2013 are preliminary.

Table 5: Yellowfin tuna catch (metric tonnes) by gear type for the western and central Pacific region, 1960–2013.

Year	Longline	Pole-and-line	Purse seine	Troll	Other	Total
1960	55,020	1,872	1,438	0	15,337	73,667
1961	53,166	3,259	2,777	0	16,236	75,438
1962	55,547	4,225	6,975	0	17,197	83,944
1963	53,185	2,071	2,277	0	18,223	75,756
1964	45,247	5,074	3,647	0	20,186	74,154
1965	45,493	3,434	3,752	0	20,956	73,635
1966	61,654	2,192	5,844	0	23,409	93,099
1967	36,083	3,125	3,418	0	26,303	68,929
1968	46,070	2,706	7,043	0	26,085	81,904
1969	51,627	5,166	3,873	0	26,612	87,278
1970	55,806	4,606	7,824	0	30,933	99,169
1971	57,766	5,248	9,244	0	32,894	105,152
1972	61,175	7,465	10,064	0	37,506	116,210
1973	62,291	7,458	14,945	0	43,828	128,522
1974	58,116	6,582	17,406	0	49,441	131,545
1975	69,462	7,801	13,099	0	51,029	141,391
1976	77,570	17,186	15,589	0	42,766	153,111
1977	94,414	15,257	16,268	0	58,070	184,009
1978	110,202	12,767	15,275	0	39,401	177,645
1979	108,910	11,638	29,323	0	49,565	199,436
1980	125,109	15,142	33,903	9	43,426	217,589
1981	97,110	22,044	54,277	16	47,976	221,423
1982	86,144	17,123	75,404	54	42,800	221,525
1983	90,254	17,184	121,589	51	48,156	277,234
1984	76,982	17,633	125,371	67	54,212	274,265
1985	79,967	22,717	115,341	69	63,329	281,423
1986	68,993	17,970	110,783	62	65,367	263,175
1987	75,400	19,044	157,025	48	59,946	311,463
1988	88,847	20,566	125,247	76	71,578	306,314
1989	73,297	22,133	181,999	73	75,414	352,916
1990	79,289	20,769	207,910	68	86,848	394,884
1991	63,502	19,182	242,524	51	96,916	422,175
1992	77,727	23,043	271,301	98	62,126	434,295
1993	72,044	20,486	222,884	141	60,453	376,008
1994	82,172	21,378	235,878	101	76,877	416,406
1995	88,293	23,209	215,400	2,570	80,961	410,433
1996	91,867	30,551	190,023	2,636	98,431	413,508
1997	81,050	22,845	312,847	2,838	83,755	503,335
1998	81,057	27,506	395,688	2,806	102,613	609,670
1999	71,004	26,787	323,762	3,162	102,060	526,775
2000	96,831	26,957	330,283	3,343	109,665	567,079
2001	95,522	24,443	310,983	3,716	98,058	532,722
2002	95,627	24,133	266,872	3,172	100,955	490,759
2003	95,694	24,304	318,423	3,101	106,270	547,792
2004	104,036	30,640	323,899	2,706	121,646	582,927
2005	82,514	27,007	364,199	2,508	66,867	543,095
2006	78,000	23,653	299,234	2,607	69,608	473,102
2007	74,071	26,570	321,554	2,854	76,299	501,348
2008	75,675	22,705	414,409	2,903	76,425	592,117
2009	91,202	23,918	310,081	3,027	101,374	529,602
2010	84,989	20,112	337,429	3,611	96,710	542,851
2011	83,757	36,838	294,247	3,802	83,729	502,373
2012	79,741	34,705	362,565	3,935	106,246	587,192
2013	65,492	21,806	344,141	29,435	63,148	524,022

Note: data for 2013 are preliminary.

Table 6: Bigeye tuna catch (metric tonnes) by gear type for the western and central Pacific region, 1960–2013.

Year	Longline	Pole-and-line	Purse seine	Troll	Other	Total
1960	43,467	1,500	58	0	0	45,025
1961	37,517	1,800	63	0	0	39,380
1962	35,895	800	173	0	0	36,868
1963	42,540	1,800	6	0	0	44,346
1964	30,989	1,143	231	0	28	32,391
1965	29,848	1,254	201	0	30	31,333
1966	31,984	1,108	9	0	86	33,187
1967	33,632	2,803	61	0	253	36,749
1968	27,757	2,272	193	0	204	30,426
1969	32,571	1,675	53	0	62	34,361
1970	34,965	1,589	580	0	2,968	40,102
1971	38,359	931	700	0	3,243	43,233
1972	51,040	1,762	664	0	3,690	57,156
1973	42,412	1,258	736	0	4,449	48,855
1974	45,653	1,039	1,129	0	4,987	52,808
1975	61,488	1,334	1,326	0	5,212	69,360
1976	73,325	3,423	1,650	0	4,354	82,752
1977	72,083	3,325	1,953	0	5,954	83,315
1978	56,364	3,337	2,481	0	4,331	66,513
1979	63,837	2,540	2,283	0	4,966	73,626
1980	62,540	2,916	2,847	0	4,086	72,389
1981	46,594	3,382	9,288	0	4,624	63,888
1982	48,582	4,993	13,931	0	4,142	71,648
1983	46,316	5,077	21,051	0	4,704	77,148
1984	52,982	4,557	22,863	0	5,047	85,449
1985	58,635	5,529	18,051	0	6,175	88,390
1986	56,995	4,133	25,671	0	6,346	93,145
1987	68,838	4,602	29,927	0	5,552	108,919
1988	68,296	5,890	28,761	0	6,803	109,750
1989	64,925	6,131	30,429	0	7,447	108,932
1990	77,019	5,985	34,669	0	8,122	125,795
1991	61,043	3,929	37,095	0	9,347	111,414
1992	75,978	4,055	43,836	0	6,201	130,070
1993	66,577	4,505	34,241	0	5,670	110,993
1994	79,187	5,251	36,123	0	7,823	128,384
1995	68,138	6,228	32,987	145	8,265	115,763
1996	58,074	7,940	42,522	432	9,924	118,892
1997	68,612	6,563	77,936	412	7,518	161,041
1998	85,068	6,405	75,558	507	9,043	176,581
1999	74,978	5,856	66,292	316	8,747	156,189
2000	76,932	6,838	50,424	397	10,003	144,594
2001	78,688	5,905	52,628	408	9,032	146,661
2002	92,398	6,109	60,299	713	8,875	168,394
2003	83,034	5,296	43,428	142	9,698	141,598
2004	99,729	9,238	71,779	232	10,882	191,860
2005	77,447	6,851	58,845	220	4,545	147,908
2006	81,920	9,781	59,478	157	4,973	156,309
2007	79,388	7,296	49,948	187	5,101	141,920
2008	80,148	9,204	56,369	212	4,400	150,333
2009	77,920	7,916	57,936	175	5,216	149,163
2010	69,065	7,027	55,988	275	4,049	136,404
2011	73,632	5,655	72,876	251	5,600	158,014
2012	80,729	3,932	64,264	273	12,819	162,017
2013	62,587	4,906	73,826	3,442	5,520	150,281

Note: data for 2013 are preliminary.

Table 7: Albacore tuna catch (metric tonnes) by gear type for the South Pacific Ocean, 1960–2013.

Year	Longline	Pole-and-line	Purse seine	Troll	Other	Total
1960	22,248	45	0	0	0	22,293
1961	23,742	0	0	0	0	23,742
1962	35,219	0	0	0	0	35,219
1963	31,095	16	0	0	0	31,111
1964	22,824	0	0	0	0	22,824
1965	25,455	0	0	0	0	25,455
1966	38,661	0	0	0	0	38,661
1967	43,952	0	0	5	0	43,957
1968	32,368	0	0	14	0	32,382
1969	24,805	0	0	0	0	24,805
1970	34,775	100	0	50	0	34,925
1971	38,530	100	0	0	0	38,630
1972	39,131	122	0	268	0	39,521
1973	46,705	141	0	484	0	47,330
1974	33,039	112	0	898	0	34,049
1975	22,849	105	0	646	0	23,600
1976	28,957	100	0	25	0	29,082
1977	38,019	100	0	621	0	38,740
1978	32,890	100	0	1,686	0	34,676
1979	26,162	100	0	814	0	27,076
1980	30,972	101	0	1,468	0	32,541
1981	32,694	0	0	2,085	5	34,784
1982	28,347	1	0	2,434	6	30,788
1983	24,309	0	0	744	39	25,092
1984	20,340	2	0	2,773	1,589	24,704
1985	27,138	0	0	3,253	1,937	32,328
1986	32,641	0	0	2,003	1,946	36,590
1987	21,979	9	0	2,134	930	25,052
1988	28,288	0	0	4,296	5,283	37,867
1989	18,738	0	0	8,370	21,968	49,076
1990	21,304	245	0	6,975	7,538	36,062
1991	26,292	14	0	7,805	1,489	35,600
1992	32,014	11	0	6,578	65	38,668
1993	30,998	74	0	4,296	70	35,438
1994	34,998	67	0	7,164	89	42,318
1995	30,508	139	0	7,716	104	38,467
1996	26,763	30	0	7,410	156	34,359
1997	34,657	21	0	4,679	133	39,490
1998	43,970	36	0	6,280	85	50,371
1999	35,955	138	0	3,447	74	39,614
2000	40,642	102	0	6,455	139	47,338
2001	52,855	37	0	5,253	199	58,344
2002	68,411	18	0	4,661	150	73,240
2003	56,351	12	0	5,984	130	62,477
2004	57,024	110	0	4,614	123	61,871
2005	59,897	29	0	3,503	137	63,566
2006	59,343	29	0	2,884	188	62,444
2007	56,500	17	0	2,014	60	58,591
2008	59,066	12	0	3,502	160	62,740
2009	80,638	21	0	2,031	211	82,901
2010	86,599	14	0	2,139	190	88,942
2011	63,024	30	0	3,189	233	66,476
2012	84,644	41	0	2,962	248	87,895
2013	81,335	26	0	3,226	248	84,835

Note: data for 2013 are preliminary.

Table 8: Stock assessments – summary of advice to the WCPF Commission.

Stabilise stock size or catches/ no increase in fishing pressure	Reduce catches and/or rebuild the stock
• Skipjack tuna • Yellowfin tuna • Southwest Pacific swordfish • Pacific-wide blue marlin	• Bigeye tuna • Pacific bluefin tuna • South Pacific albacore tuna • Southwest Pacific striped marlin • Western and central North Pacific striped marlin • Silky shark • Oceanic whitetip shark

Table 9: Total of albacore, bigeye, skipjack, and yellowfin tuna tagged during the three major tropical tuna tagging projects in the western and central Pacific region. Note: Separate EEZ results are provided for any region with more than 10,000 releases in any single programme; SSAP — Skipjack Survey and Assessment Programme (1977-1981); RTTP — Regional Tuna Tagging Programme (1989-1992); PTTP — Pacific Tuna Tagging Programme (2006-present).

	PTTP		RTTP		SSAP	
EEZ	**Releases**	**Recoveries**	**Releases**	**Recoveries**	**Releases**	**Recoveries**
Fiji		8	5,197	528	28,980	2,659
Federated States of Micronesia	24,759	2,656	11,711	1,779	8,791	330
Indonesia	40,416	6,640	13,740	2,653	-	37
Kiribati	38,557	4,588	14,754	851	5,212	449
New Zealand	2,863	9	-	2	15,020	1,000
Papua New Guinea	210,878	30,371	44,502	3,677	9,079	1,077
French Polynesia		1	-	1	29,693	128
Palau	7,304	246	7,495	142	8,663	114
Solomon Islands	56,515	8,442	15,226	2,372	7,870	597
Other	19,994	19,971	39,042	6,925	48,976	1,077
TOTAL	401,286	72,932	151,667	18,930	162,284	7,468