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OVERFISHING

ILLEGAL FISHING

WASTEFUL FISHING

UNSELECTIVE FISHING

DESTRUCTIVE FISHING

UNFAIR FISHING

FISH DISH

EXPOSING THE UNACCEPTABLE FACE OF SEAFOOD

Exposing the unaccep

Introduction

This briefing provides a snapshot of the destruction and waste behind some European fisheries. We have chosen six seafood dishes eaten in Europe – cod and chips, tuna sushi, plaice fillet, swordfish steak, langoustine linguine, and seafood paella — and exposed the major problems behind them, namely:

Overfishing **(taking more fish than the population can replenish)**

Illegal fishing **(over-quota, unlicensed, unreported, and/or unregulated fishing)**

Wasteful fishing **(discarding huge numbers of unwanted fish, including juvenile fish)**

Unselective fishing **(bycatch of non-target species)**

Destructive fishing **(the use of fishing gear that damages marine habitats)**

Unfair fishing **(in the waters of developing countries).**

Although we have focused on one main problem per dish, the chosen fisheries all have multiple problems.

We have also suggested better choices for each seafood dish to illustrate that consumer-led solutions to the fisheries crisis are available, and to give consumers food for thought when they buy and eat seafood. The Marine Stewardship Council (MSC) label is the simplest way for consumers to make the best environmental choice. More information is available on page 21.

Seafood is a popular and healthy part of the European diet. The average EU citizen consumes around 22kg of seafood per year, with the Portuguese eating over 56kg per person per year – well above the global average of 20kg. Consumption rates are high in Russia, Norway, and Iceland as well: over 90kg per person per year in the case of the latter[1].

Europe's fishing industry is enormous, with a combined catch from all European countries* of around 13.4 million tonnes in 2004 – around 16% of total global catches[2]. The industry is vitally important, providing hundreds of thousands of direct and indirect jobs across the continent, and is an important source of revenue for many countries[3,4]. In the Mediterranean, for example, fisheries provide employment for over 100,000 EU fishers alone, on board some 40,000 vessels. In 2003, the value of fish landed in Spain was over €1.8 billion, while the value of fish

* Albania, Bulgaria, Channel Islands, Croatia, EU, Faeroe Islands, Iceland, Isle of Man, Montenegro, Norway, Romania, Russia, Serbia, Ukraine

table face of seafood

from the country's processing sector was €3.5 billion.

But European fisheries are in crisis. Most fish stocks in European waters are now overfished, from the North Sea to the Northeast Atlantic Ocean to the Mediterranean Sea[5,6,7,8]. For many of Europe's commercial stocks, numbers of adult fish are just 10% of what they were 30 years ago[9]. Stocks are also depleted in the waters of other countries where European fleets fish.

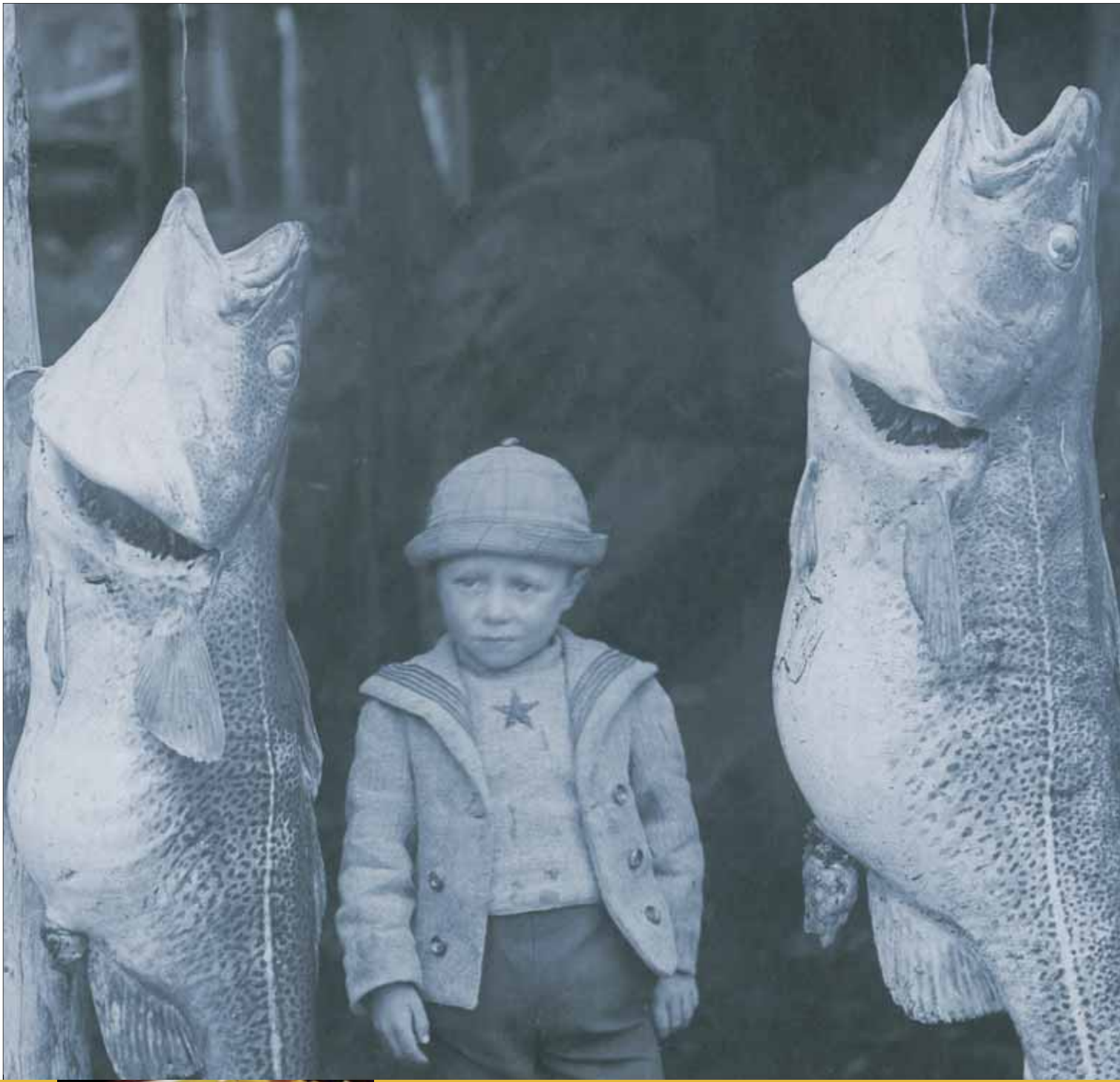
The basic problem is that there are too many fishing boats. The EU fleet, for example, is larger than that which its waters can sustain. This situation is encouraged by EU subsidies to the tune of €500 million each year, which help keep surplus boats afloat. On top of this, current systems for fisheries management often involve more politics than science, with quotas consistently being set much higher than scientifically advised. These factors, together with illegal, unregulated, and unreported (IUU or pirate) fishing, have led to massive overfishing.

Overfishing does more than deplete valuable fish populations and put livelihoods at risk. Fishing gear, particularly bottom trawls, can be extremely damaging to fragile marine habitats. Vast quantities of unwanted juvenile fish and other marine life are hauled up by unselective nets and hooks, only to be thrown away dead or dying. This destruction and waste threatens endangered marine species, hampers the recovery of depleted fish populations, and reverberates throughout entire marine ecosystems. Indeed, fishing and aquaculture have been ranked as the primary threat to most of Europe's marine environment[10].

Despite the widespread and serious problems within Europe's fisheries, WWF believes that a sustainable industry is possible – and indeed is encouraged by progress being made in some European, and other, fisheries. However, WWF believes that much more needs to be done, and quickly. Too often, the European Commission, European governments, and the fishing industry ignore the problems and warning signs of imminent disaster. There is a pressing need to change the way we fish. If action is not taken now, fishing as we know it today could end within a generation.

Every European who buys fish – whether as a consumer, chef, retailer, processor, or restaurateur – has a huge role to play in securing the future of Europe's fish dishes and its fishing industry. By understanding the scale and urgency of the problem, and choosing the fish we buy accordingly, preferably MSC-certified fish, all Europeans can encourage better seafood.

Simon Cripps
Director, WWF Global Marine Programme



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Fish and chips

Once upon a time cod were large and plentiful. Published in Through Newfoundland with the camera / Robert E. Holloway, St. John's: Dicks and Co., Canada. 1905. The plate noted: "The larger fish measured 5 ft. 5 in., and weighed 60 lbs."


© PANL VA 21-18 / HOLLOWAY [CA. 1900]

Overfished and chips

Atlantic cod

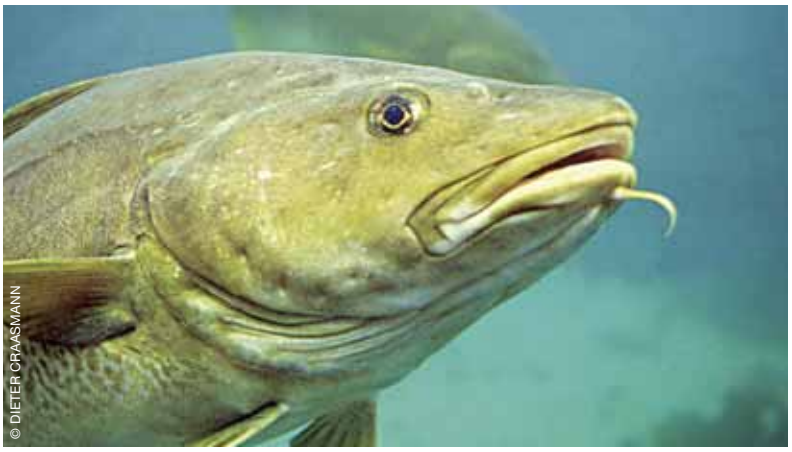
A delicate flavour and easily preserved flesh has made cod a favourite throughout Europe for centuries. But as fishers became ever-more efficient at catching this versatile fish, populations began a slow decline. Today, most stocks are at or near record lows, with several in danger of commercial extinction. If overfishing continues, Atlantic cod could be a dish of the past in less than 15 years.

Populations gone to pot

Despite being heavily fished for centuries, in 1970 cod stocks were still large enough to be sustainable. But over the past 30 years global cod catches have decreased by over 70%, with catches by the current EU countries now just 10% of the 1970 level[15].

Canadian cod stocks in the Grand Banks off the coast of Newfoundland were the first to collapse from overfishing, in 1992. The Canadian government closed the fishery, but even so, the stocks have not yet recovered. Several European stocks could soon follow suit: continued overfishing in the North Sea, Irish Sea, west of Scotland, the Eastern Baltic Sea, and the Skagerrak has seen the number of breeding cod fall far below the levels needed to maintain populations. The largest-remaining populations are in the Barents Sea and around Iceland, accounting for almost 75% of cod on the global market. But these too are to some extent overfished[16], and the Barents Sea stock is threatened by widespread illegal fishing[17].

Atlantic cod can live to 25, with females producing millions of eggs each year[18]. But these days, 72% of two-year-old cod in the North Sea do not live until sexual maturity, mainly as a result of fishing[19]. Vast numbers of juveniles are caught in various fisheries, including those for cod, haddock, whiting, Norway lobster, Northern shrimp, plaice, and sole – and then discarded, often dead[20], back to the ocean. In the North Sea, a whopping 51% of cod caught in such fisheries are discarded as they are undersize[21]. The species is now classified as Vulnerable[22] – and if stocks continue to decline at the current rate, there will be no more Atlantic cod in less than 15 years[23].


© DIETER GRAASMANN

Atlantic cod, *Gadus morhua*

ABOUT THE FISH

Scientific name: *Gadus morhua*

Local names: Atlantic cod, bacalao, cabillaud, Dorsch, kabeljau, kabeljauw, morue, skrei, treska, torsk, turska.

Main markets: Western Europe accounts for 70-80% of the world cod market[11], with the UK being Europe's largest importer and consumer[12]. Cod, together with the similar whitefish pollock and hake, accounts for one-third of all seafood imports into the EU[13].

Main commercial products: Fresh, chilled, or frozen whole fish; fresh, chilled, frozen, salted, dried, or smoked fillets; frozen processed fillets (e.g., fish sticks, ready made dinners); salted cheeks; liver oil; smoked or frozen roe.

Fishing grounds: Throughout the species' range in the North Atlantic Ocean.

European fleets*: *Norway, Iceland, Russia,* Faeroe Islands, Denmark, Spain, UK, Germany, Poland, Sweden, France, Portugal, Latvia, Lithuania, Belgium, Netherlands, Estonia, Ireland, Finland, Isle of Man, Channel Islands[14].

Fishing methods: Primarily bottom otter trawls and midwater trawls; also handlines, cod traps, gillnets, longlines, Danish seines, purse seines, twin beam trawls, shrimp trawls, jiggers, and pound nets.

* in order of landings in 2004, largest to smallest; countries in bold accounted for 77% of the total catch

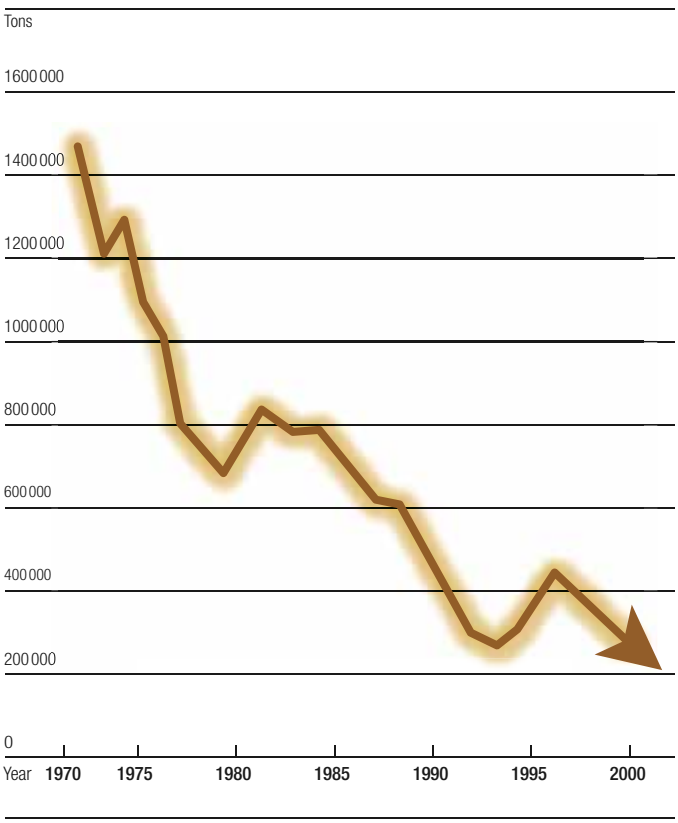
The British eat one-third of the world's total cod catch, mostly in fish and chips[43,44].

Science on the backburner

The first warnings about falling cod numbers in European waters came in the 1990s. In 2000, it was confirmed that cod stocks in the North Sea and to the west of Scotland were on the verge of collapse, and those in the Skagerrak and the eastern English Channel were in bad shape.

The International Council for the Exploration of the Sea (ICES) – the body responsible for providing advice on cod stocks to European governments – stated that fishing mortality for cod had been under-estimated, and stock size over-estimated. It drew an explicit parallel with the situation in Canada prior to the cod collapse there. Accordingly, in 2002 ICES recommended the total closure of several key cod fisheries in Europe (Skagerrak, Kattegat, North Sea, Baltic Sea, Greenland cod) as well as a rebuilding plan to increase stock sizes[24].

Declining cod catches in EU waters



© FAO Fishstats 2002

ICES has continued to recommend no fishing or reduced cod catches each year since then. But EU Fisheries Ministers have consistently ignored this advice and allowed fishing to continue – even on stocks for which ICES has recommended zero catch. Contrary to ICES advice, the EU has also increased quotas for other fisheries with a high bycatch of juvenile cod, such as Norway lobster. A recovery plan was finally introduced for North Sea cod in 2004, but scientists and environmentalists fear it is too little, too late.

Pirates' platter

Overfishing for cod is not just due to quotas being too high – it's also due to illegal, over-quota catches. This is a considerable problem in several European cod fisheries, including the Baltic Sea[25], Barents Sea[26], and Celtic Sea[27]. Unreported catches of the Northeast Arctic cod stock in the Barents Sea, for example, are estimated at 90,000-115,000 tonnes per year, or 20% of total catches[28]. Most of these illegal catches come from Russian trawlers, whose catches are thought to be 50% higher than the legal quota[29]. This illegally caught cod is landed in countries such as UK, the Netherlands, and Germany, and ends up for sale in European markets.

Footing the bill

Declining cod catches due to overfishing represent a huge loss of revenue. The Baltic Sea cod fishery lost €160 million in 2002 alone due to a low quota of 76,000 tonnes, instead of 165,000 tonnes which would have been possible if sustainable quotas had been in force since 1977. Similarly, the North Sea cod fishery lost €243 million in 2002[30]. Illegal cod fishing in the Barents Sea is estimated to cost Russian and Norwegian fishermen at least €250 million each year[31]. And if Canada's cod fishery had not collapsed in 1992 but rather had been fished sustainably, it could be earning in the order of €700 million per year[32].

Collapsed fisheries also bear an enormous cost to society. Some 30,000 people, including 10,000 fishermen, lost their jobs overnight when Canada's cod fishery collapsed. The country's total federal government assistance to fisheries increased 5-fold from the mid-1980s to around €500 million in the mid-1990s, largely due to this collapse[33].

SIDE DISHES

Porpoise and puffin starter

Your fish and chips could come with an unexpected side dish. Gillnet fisheries for cod catch large numbers of harbour porpoises (*Phocoena phocoena*), as well as seabirds such as fulmars (*Fulmarus glacialis*), shearwaters (*Puffinus* spp.), razorbills (*Alca torda*), murres (*Uria aalge*), puffins (*Fratercula arctica*),

loons (*Gavia* spp.), and eiders (*Somateria mollissima*). In some cases these bycatch deaths are thought to be negatively affecting populations[34,35,36,37].

Seafloor fricassee

Alternatively, your fish and chips probably left a lasting impression on the seafloor. Bottom trawls, used to catch the majority of Atlantic cod, are one of the most destructive fishing gears. The heavy gear can plough the sea floor to a depth of 30 cm[38], resulting in changes to flora and fauna in heavily trawled areas[39].

Processed hors d'oeuvres

The majority of cod is processed into fillets and other products. Like all food processing, this has various impacts on the environment, arising from: energy used for filleting, refrigeration, freezing, etc; generation of effluent and waste water; and generation of solid waste, including unwanted cod parts as well as packaging materials such as waxed corrugated boxes, pallets, shrink wrap, strapping ties, drums, and polystyrene[40].

Round-the-world fish sticks

Your fish may have travelled more widely than you. China has recently become an important fish processor, and is now a major supplier of cod fillets to Europe[41]. This means that cod caught in the North Atlantic are being shipped to China via the Suez Canal, filleted there, and then shipped back to Europe – a total distance of 44,000 km[42].

Alternatives

The best choice is similarly flavoured whitefish that is MSC-certified including pollock, hake, hoki, Pacific cod, sablefish, and mackerel icefish. Second choice is similarly flavoured whitefish from European waters including saithe, pollock, and haddock that are more plentiful than Atlantic cod. For Atlantic cod itself the best choice is that caught legally by Iceland, Russia, or Norway, which fish the largest-remaining cod populations. However, it is virtually impossible for consumers to know whether cod has been caught legally or not. Organically farmed Atlantic cod is also available but cannot be viewed as a solution to the unsustainable management of certain wild caught fisheries.

Of the millions of eggs each female cod can spawn in her lifetime, only two need survive to adulthood for the population to remain stable. For the past 30 years, humans have not even allowed this.

Pirate

Atlantic bluefin tuna

Highly prized for sushi and sashimi, bluefin tuna is the most valuable fish on the planet. But increased demand and the high prices paid have seen fishing spiral out of control — particularly for Atlantic bluefin tuna in the Mediterranean Sea, the site of most bluefin catches. Nearly one-third of all catches here come from illegal, unregulated, and unreported (IUU) fishing, most of which is carried out by EU fleets.

Sushi

Tuna slaughter in the Mediterranean

sushi

Illl-gotten gains

Since 2003, the main body responsible for regulating Atlantic bluefin tuna catches, the International Commission for the Conservation of Atlantic Tunas (ICCAT), has set an annual quota of 32,000 tonnes for the eastern stock. This quota is already 23% higher than the maximum level determined to avoid further depletion of the stock[59]. But actual catch estimates are more than 40% higher than the quota – reaching at least 45,547 tonnes in 2005 and possibly being well over 50,000 tonnes[60].

These over-quota catches are illegal under ICCAT regulations as well as EU law[61]. Most can be traced to EU purse seine fleets (mainly French) and Libya – whose fleet includes ten former French vessels recently reflagged in Libya and still effectively under French control[62]. Fishing in Libyan waters also uses illegal tuna-spotting planes during the forbidden period of June, some of which operate from Malta and Italy. Turkey too is responsible for significant unreported catches as it has not been allocated a specific ICCAT fishing quota for bluefin tuna.

Laundering fish through farms

The EU and ICCAT have strict requirements for reporting landed bluefin tuna. However, these requirements are extremely difficult to enforce in the case of live tuna transferred to cages for fattening – meaning that these so-called tuna farms, which supply a lucrative market for cheaper bluefin tuna for sushi and sashimi, are a perfect way to launder over-quota tuna. On top of this, it's extremely difficult to keep track of how many tuna were caught where and by who due to the practice of transferring the catches at sea to tug boats, which then tow the live tuna to the farms.

Today, the majority of the Mediterranean bluefin tuna catch is caught by purse seines and transferred live to tuna farms, which are currently located off the shores of Spain, Italy, Malta, Croatia, Turkey, Cyprus, Tunisia, and Libya[63]. As of July 2006, the farms' total capacity was 55,300 tonnes[64] – much higher than the legal annual quota, and a clear incentive for overfishing. Indeed, the rapid spread of tuna farms throughout the Mediterranean over the past decade is a major factor behind the current high level of IUU catches[65].

Spirited away

Another way that fleets avoid documentation of illegal over-quota catches is by transferring them directly to massive reefer vessels and cold containers without ever landing them at EU ports[66]. These reefers then ship the tuna out of the Mediterranean. The tuna are transferred to the reefers directly from tuna farms or after being slaughtered and processed at sea.

Atlantic bluefin tuna, *Thunnus thynnus*

ABOUT THE FISH

Scientific name: *Thunnus thynnus*

Local names: Atlantic bluefin tuna, atum, atun de aleta azul, giant tuna, horse mackerel, maguro, northern bluefin tuna, orkinos, roter Thun, sinievätonnikala, thon rouge, tonfisk, tonijn, tonno, tónnos, tunny.

Main commercial products: Fresh, chilled, and frozen fish for sashimi, sushi, and steaks.

Main markets: Japan is the largest market; however, markets for both sushi and steaks are growing in Europe and the US[45,46].

Fishing grounds: Throughout its range in the North Atlantic Ocean, with 73% of catches coming from the Mediterranean Sea[47].

European fleets*: ***France, Spain, Italy,*** Croatia, Greece, Malta, Portugal[48].

Fishing methods: Predominantly purse seines (60–80% of the total Mediterranean catch); also longlines, baitboats, and traps[49].

Tuna is one of the two main fisheries that attract intense IUU fishing[86].

Current populations: Two stocks of Atlantic bluefin tuna are recognized, both of which are overfished. The smaller western stock has declined by nearly 90% since the 1970s[50] and is classified as Critically Endangered[51]. The larger eastern stock, which spawns in the Mediterranean Sea, is currently classified as Endangered[52] but in fact is in danger of complete commercial and biological extinction[53]. Fisheries in the North Sea[54] and Black Sea[55] have already disappeared; traditional fishing grounds in the Western Mediterranean are almost entirely exhausted[56]; and current catches rely on the last-remaining spawning groups of tuna in the Southern and Eastern Mediterranean, for example in Libyan waters[57]. In 2004, mortality due to fishing was three times higher than the overfishing threshold for this stock. The mortality on large, mature bluefin almost tripled between 2000 and 2004, pointing to a high risk of population collapse[58].

* in order of reported landings in 2004, largest to smallest; countries in bold accounted for 92% of total reported European landings and 53% of total reported global landings. Note that reported landings are far below actual catches due to significant IUU fishing and tuna farming.

SIDE DISHES

Bait fish starter

Your plate of bluefin tuna was probably once herring, sardines, anchovies, and squid: caged tuna are fattened on a diet that includes these bait fish. But this fattening is not very efficient: 10-25 kg of bait fish are needed to produce just 1kg of tuna[67]. The huge quantities of bait fish required for the farms have exacerbated fishing pressure on some stocks in the Mediterranean, such as anchovies and sardinella[68]. In addition, the massive use of imported bait fish carries the risk of introducing pathogenic species to Mediterranean fish[69]. Such an event is believed to be responsible for the mass mortality of pilchards in Australia in 1995, where an exotic herpes virus was presumably introduced to local fish populations through the use of imported pilchards in the South Australia tuna farming industry.

Nearly one bluefin tuna in every three is caught illegally in the Mediterranean.

Shark and turtle starter

Your tuna dish is likely to come with a side dish of turtle or shark. Many species of tuna, including Atlantic bluefin, are caught using longlines. These fisheries deployed an estimated 1.2 billion hooks in 2000 alone, which captured and killed a wide range of species including seabirds, marine turtles, marine mammals, sharks, and other fish[70].

Baby bluefin

The bluefin tuna on your plate could be a baby. Large numbers of small and undersized Atlantic bluefin tuna are targeted by Spanish, French, and Italian purse seiners in the Gulf of Lyon, Ligurian Sea, and Adriatic Sea[71]. Baby bluefin are also targeted for tuna farms, particularly in Croatia[72]. Other tuna fisheries also catch large numbers of juvenile Atlantic bluefin tuna, such as longline fleets for albacore tuna in the Mediterranean Sea[73] and purse-seine fisheries for yellowfin and skipjack tuna in the Atlantic Ocean. Even bluefin tuna that are caught legally are often juveniles: the minimum landing size is 10 kg in the Mediterranean and 6.4 kg elsewhere, but the tuna don't reach breeding age until they are at least 30 kg[74].

Alternatives

The best Atlantic bluefin tuna choice is that caught legally and over 30 kg in size. However, it is virtually impossible for consumers to know whether tuna has been caught legally or not, or the size of the tuna prior to filleting and processing. Given the precarious state of stocks and the rampant illegal fishing, it may be best to avoid bluefin tuna, at least until an effective and strict recovery plan for the species is implemented. Alternatives are skipjack and yellowfin tuna, whose biology (high fecundity and relatively fast growth rates) makes them better able to withstand high levels of fishing. Tuna caught using pole-and-line methods have little associated bycatch and are the best choice[82,83]. Purse seine fisheries for skipjack and yellowfin tuna in the Atlantic also have low levels of bycatch and low interaction with marine turtles and marine mammals[84,85].

Value subtracted tax

Your tax money has helped fuel the demise of Atlantic bluefin tuna[75]. The French and Spanish purse seine fleets for bluefin tuna in the Mediterranean have been either modernized or completely rebuilt in the past ten years thanks to massive grants from EU public funds. On top of this, tuna farms are eligible for EU subsidies for aquaculture development – even though they are not aquaculture, as the tuna are caught from the wild. The result of these funds has been huge overcapacity of both fleets and farms, which only encourages overfishing.

Species check

Tuna woes are not just limited to Atlantic bluefin. Of the 23 commercially exploited stocks of the main tuna species (skipjack, yellowfin, bigeye, albacore, Atlantic bluefin, Pacific bluefin, and southern bluefin), at least five are fully exploited, five are overexploited, and two are depleted[76]. This includes species used for canning. Other tuna fisheries also suffer from high levels of IUU fishing[77,78] as well as bycatch[79,80,81].

One for yo

European plaice and sole

© JEREMY KEITH

Sorting the catch on the deck of a beam trawler

ABOUT THE FISH

Scientific name: *Pleuronectes platessa* (plaice); *Solea solea* (sole)

Local names: Plaice: carrelet, Northern flounder, palaia anglesa, passera, plie, punakampela, rödspätta, rødspette, rødspætte, schol, Scholle, skarkoli solha, solla, spätta.

Sole: Black sole , Dover sole, glosa, lengua, lenguado, llenguado, linguata, meriantura, palaia, palaí, parkgate sole, river sole, sea partridge, Seezunge, slip, søtunge, Southport sole, tong, tounge, tunga, túppiti, Zunga, sjötunga.

u, one dumped dead in the sea

Plaice fillet

© WWF-CANON / QUENTIN BATES

Fished for centuries for their delicately flavoured white flesh, plaice and sole are the most important flatfish in European fisheries. Unfortunately though, most catches come from Europe's single-most wasteful fishery – where more than half the plaice catch is thrown overboard, dead. A huge amount of other marine life hauled up in the nets is also dumped back in the sea.

A fine kettle of discarded fish

Around half of all plaice caught are discarded overboard, usually dead. The North Sea plaice and sole mixed beam trawl fishery, which accounts for the vast majority of catches, is the most wasteful of all – according to a 2000 report, up to 80% of the plaice catch is discarded in some areas[95].

Why? Because the plaice are either below the minimum landing size (i.e., baby fish) or less valuable than the rest of the catch. The problem stems from the fact that fisheries for these two flatfish are managed separately, despite the fact that they live – and are caught – together.

Mature sole are much smaller than mature plaice. Accordingly, beam trawlers "targeting" sole are permitted to use nets with a smaller mesh size than those "targeting" plaice. But these finer nets also catch plaice from 17cm in length[96] – a full 10cm shorter than the minimum landing size of 27cm. Because it is illegal to land undersize fish, every plaice below 27cm is dumped overboard.

In addition, plaice and sole have separate quotas. Once the plaice quota has been filled, any extra plaice caught while "targeting" sole are also dumped overboard. And since sole are more profitable than plaice, even marketable plaice are discarded in favour of sole – indeed, the better the sole catch, the more plaice is thrown away.

Back to the seafloor

Plaice and sole live on the seafloor, often partially buried in the sediment. The most popular way to catch them is

Around half the plaice catch is discarded overboard, usually dead.

© ASBJØRN HANSEN

Plaice, *Pleuronectes platessa*

Main commercial products: Fresh and frozen whole fish and fillets; frozen processed fillets (e.g., breaded fillets). Plaice is of the most commonly eaten fish in Denmark, where it is popular as an open sandwich topping, and is also often used in the UK for fish and chips[87].

Main markets: Popular throughout Europe; the UK and Denmark are the biggest consumers of plaice, followed by Sweden, France, and Spain[88].

Fishing grounds: Throughout their range in the Northeast Atlantic Ocean and Mediterranean Sea. Most catches come from the North Sea (70% for plaice, 58% for sole)[89] in mixed fisheries for both species[90,91].

European fleets*: ***Netherlands, Denmark, UK, France, Belgium,*** Iceland, Germany, Italy, Norway, Russia, Greece, Ireland, Faeroe Islands, Sweden, Spain, Portugal, Albania, Poland, Channel Islands, Romania, Slovenia, Bulgaria[92].

Fishing methods: Predominantly beam trawls; also otter trawls, purse seines, Danish seines, and gillnets[93,94].

Current populations: Of the eight plaice stocks recognized by ICES, only one is considered to be harvested sustainably while three are overexploited. Data is insufficient to assess the remaining stocks; however, landings for all stocks are at or near historical lows. Of the nine sole stocks, seven are overfished with the status of the remaining two unknown.

* in order of reported landings in 2004, largest to smallest; countries in bold together accounted for 80% of the total combined plaice and sole catch. Overall, plaice landings are 2.2 times higher than sole landings. Note that the proportion of landings differs dramatically between countries, and some only land plaice while others only land sole.

to drag beam trawls across the seabed, with heavy "tickler" chains to startle the fish off the bottom[97,98].

But it's not just these flatfish which are caught. Sea urchins, hermit crabs, brittle stars, razor shells, starfish, shellfish … all are picked up by the trawl net, only to be dumped back into the ocean dead or dying when the net is hauled in[99,100]. A whopping 150,000-180,000 tonnes of such invertebrates are discarded each year in North Sea fisheries[101]. Endangered skates and rays are also caught, as well as large numbers of juvenile fish for which the flat, muddy and sandy inshore habitats of plaice and sole possibly serve as important nursery grounds[102].

As much as 7 kg of marine animals are killed to produce 450 g of marketable sole.

All up, as much as 7kg of marine animals are killed by beam trawlers to produce 450g of marketable sole[103]. The figure is similar for plaice[104].

Globally, flatfish trawl fisheries discard 51.3% of their catches, the highest discard rate of all trawl fisheries, excluding shrimp. In the EU, beam trawlers targeting finfish dump 330,000 tonnes of marine life each year. Most of these discards come from the North Sea plaice and sole fisheries[105].

be trawled three or four times a year[106]. One study estimated that beam trawling in the southern and central North Sea reduces total seafloor biomass by 39%, and seafloor production by 15%, relative to the unfished state[107].

Fuel chaser

Trawl fisheries can use well over 2,000 litres of fuel to land every tonne of flatfish[108]. Using an average fuel consumption of 510 litres/tonne for North Atlantic groundfish fisheries, the reported plaice and sole catch of around 124,000 tonnes in 2004 required some 63 million litres of fuel. Rising fuel prices encourage beam trawlers to fish closer to the coast, which further adds to the discard problem as most juvenile plaice are found along the coast.

Science on ice

Your plate of plaice comes with a large serving of ignored science: EU fisheries ministers have been ignoring advice on plaice stocks for over a decade, and nearly two decades in the case of North Sea plaice. Quotas have consistently been set higher than the ICES recommendations for all three currently overexploited stocks (North Sea, Western Channel, and Irish Sea)[109]. In 2005 for example, the agreed North Sea quota was almost double the ICES recommendation, while that for the Eastern Channel was nearly 10 times the ICES recommendation. With fishing mortality up to 2 times higher than recommended, the current fishing effort on most plaice is too high to be sustainable[110].

SIDE DISHES

Baby cod and sole starter

Your plate of plaice probably comes with a discarded plate of baby Atlantic cod or sole. Juveniles from these species are also caught as bycatch in plaice fisheries, and then discarded dead or dying back into the ocean.

Baby plaice

The plaice on your plate is likely to be a baby, even if it is above the minimum landing size of 27cm set by the EU: female plaice don't spawn until they reach 31cm at 2-4 years of age.

Seafloor fricassee

Your plate of plaice or sole left a lasting impression on the seafloor. A huge area of the North Sea is trawled by beam trawlers, the main boats targeting plaice and sole and one of the most destructive fishing practices. Dutch beam trawlers alone trawl some 171,000km² each year – approximately 40% of the sea's area. All other countries bordering the North Sea also operate beam trawlers, and the most heavily trawled areas may

Alternatives

The best plaice and sole choice is that caught from the Irish Sea, where bycatch of juvenile plaice and cod is lower than in other plaice and sole fisheries. In addition, the Irish Sea plaice fishery is currently the only one considered by ICES to be harvested sustainably. Ideally, choose plaice and sole that are line caught, and that are larger than 27cm and 24cm, respectively. If the origin of the plaice or sole is uncertain, other alternatives are a different species of flatfish such as MSC-certified halibut, or a similarly flavoured whitefish such as MSC-certified pollock, hake, hoki, Pacific cod, sablefish, or mackerel icefish.

© CAT HOLLOWAY

Shark caught by

Buy one, get two sharks free!

Swordfish

Once almost impossible to sell, swordfish is now extremely popular for grilling, barbequing, baking, and more. But with the hearty steak comes a heavy toll of other marine life caught alongside the swordfish – including endangered sharks, dolphins, and marine turtles to name a few.

Hook, line, and sinker

The vast majority of swordfish are caught using longlines – a single strand of fishing line that can be many kilometres long and which is set with thousands of baited hooks. These hooks are generally indiscriminate: any marine animal large enough to bite the bait and hook can be caught. As a result, these fisheries suffer from a high level of incidental catch, or bycatch.

A significant number of swordfish are also caught by illegal driftnet

the fin on a longline hook

Swordfish, *Xiphias gladius*

Some swordfish longliners catch over 3 tonnes of shark for every 1 tonne of swordfish.

ABOUT THE FISH

Scientific name: *Xiphias gladius*

Local names: Agula, emperador, espadon, miekkakala, pesce spada, pez espada, schwertfisch, svaerdfisk, sverdfisk, swardfisk, swordfish, xiphias, zwaardvisch.

Main commercial products: Fresh, frozen, and smoked fillets and steaks.

Main markets: Western Europe, USA, Japan; demand for fresh swordfish is high and growing in most Mediterranean countries[111].

Fishing grounds: Throughout its global range. EU fleets operate in the North Atlantic, Mediterranean Sea, and Black Sea, with Spanish and Portuguese fleets also operating in the South Atlantic Ocean, the Pacific Ocean, and the Indian Ocean. Roughly one-third of Europe's catches come from the Mediterranean Sea and overall, catches from the Mediterranean account for 14% of global catches.

European fleets*: *Spain,* Italy, Portugal, Greece, UK, Malta, France, Albania, Ireland[112].

Current populations: The current exploitation level of Mediterranean swordfish populations is thought to be sustainable in the short-term[113]. North Atlantic populations seem to be recovering from depleted levels in the 1990s[114]; however the population remains classified as Endangered[115]. Little is known about populations in the South Atlantic, Pacific, and Indian Oceans, but they are probably overfished[116].

* in order of landings in 2004, largest to smallest; Spain alone accounted for 66% of Europe's catch and 21% of the global catch; overall, the EU accounted for 32% of global catches in 2004

Over a quarter of a million marine turtles are caught each year on longlines.

fisheries in the Mediterranean. Labelled "walls of death", driftnets are also indiscriminate, catching any animal that crosses their path.

Dead in the water

The species most-affected by swordfish fisheries include:

• **Sharks:** Sharks make up a large percentage of longline catches targeting swordfish – particularly blue shark (*Prionace glauca*) and mako shark (*Isurus oxyrinchus*), both of which are classified as Near Threatened due to overfishing[117]. For example, from 1990-2000, Portuguese swordfish longliners in the North Atlantic caught around 3 tonnes of blue shark for every 1 tonne of swordfish[118]. Similarly, blue shark and mako shark made up 68% of landings by Spanish swordfish longliners in the Atlantic Ocean in 1999, while blue shark made up around 25% of landings by Spanish swordfish longliners in the Mediterranean[119].

In addition, the illegal, large-scale Moroccan driftnet fishery targeting swordfish for the European market is currently catching one shark for every two swordfish, killing an estimated 100,000 sharks per year. Similar illegal fleets are operated by Italy, Turkey, and France[120].

• **Marine turtles:** Over 250,000 Endangered loggerhead turtles (*Caretta caretta*) and Critically Endangered leatherback turtles (*Dermochelys coriacea*) are caught annually by commercial longline fisheries for swordfish and tuna around the world[121]. Due to their location and timing, longlines set for swordfish are more likely to interact with marine turtles than those set for tuna[122]. Around half of all marine turtles caught on traditional longline hooks do not survive[123]. In the Mediterranean, surface longlines and driftnet fleets are the major threats to the survival of loggerhead turtles[124].

• **Seabirds:** Longline fishing, including for swordfish, is a major cause of seabird mortality in the Mediterranean Sea[125] and South Pacific Ocean[126]. As for marine turtles, longlines set for swordfish are more likely to interact with seabirds than those set for tuna[127]. European species caught on longlines include gannets (*Sula bassana*), fulmers (*Fulmarus glacialis*), Manx shearwaters (*Puffinus yelkouan*), shear waters (*Calonectris* spp.), and gulls (*Larus* spp.)[128].

• **Dolphins:** The illegal, large-scale Moroccan driftnet fishery targeting swordfish for the European market has been estimated to kill around 16,600 dolphins per year; similar illegal fleets are operated by Italy, Turkey, and France[129]. Population declines due to bycatch are especially worrying for the short-beaked common dolphin (*Delphinus delphis*), whose last remnant healthy Mediterranean population is located in this sea.

• **Marlin:** 95% or more of all white marlin (*Tetrapturus albidus*) and blue marlin (*Makaira nigricans*) catches are taken as bycatch in longline fisheries targeting swordfish and tuna[130]. Both these species are overfished and face extinction: in the Atlantic, the blue marlin population is currently just 20% of the pre-longlining (1960) level, while the white marlin population is only 6% of its pre-longlining abundance and declining by 3% each year[131].

Around 16,000 dolphins are killed each year in Morocco's illegal driftnets set for swordfish.

SIDE DISHES

Baby swordfish

There's a good chance swordfish on your plate comes from a baby that has never spawned. ICCAT – the principal body for managing tunas and tuna-like species in the Atlantic and adjacent seas – estimates that juveniles make up 25% of the total Atlantic swordfish catch[132]. ICCAT has not established a minimum landing size for swordfish in the Mediterranean, where individuals less than three years old make up a massive 50-70% of total catches[133].

Alternatives

Some longline fisheries in the Mediterranean are trialling different hook designs, such as circle hooks, to minimize bycatch. WWF supports swordfish caught using these modified hooks but at present it is not possible for consumers to identify such swordfish. Be wary of swordfish from Morocco, Italy, and Turkey, which may well have come from an illegal driftnet fishery.

Norway lobster caught in nets, showing bycatch of other species

Langoustine
linguine

Stirring up the seafloor

Norway lobster

Once thrown away as unwanted bycatch, Norway lobster is now a highly valuable catch – particularly in the UK, where it is now the country's most-valuable fishery. But the soft muddy seafloor in which Norway lobster live is particularly sensitive to bottom trawling, one of the most damaging fishing practices.

Scraping the bottom

Norway lobster live in burrows dug into soft, muddy sediments on the seafloor. Although there is much more to learn about these muddy habitats, a diverse group of creatures are known to live here, including other burrowing crustaceans, burrowing worms and fish, seapens, starfish, brittlestars, and shellfish[141].

These muddy habitats form in areas where the seafloor is relatively undisturbed by waves and other external factors. This makes them particularly sensitive to bottom trawling[142,143], the main method used to catch Norway lobster[144].

The heavy otter and beam trawls scrape and plough into the mud, to a depth of 30cm or more. The trawls can leave deep, lasting furrows up to 6m wide; flatten out natural contours; and compact sediments[145,146,147]. In addition to the marine life caught by the net, animals living on the seafloor are crushed or buried as the trawl passes, while those living in the sediment can become exposed[148].

The trawls also resuspend large quantities of mud into the water – around 112kg of particles per second[149]. This sediment can smother filter feeders such as seapens, which are related to corals[150]. It can also reduce the light available for photosynthetic organisms and have negative effects on animals' feeding and metabolic rates[151].

Small wonder that bottom trawling has been described as one of the most destructive fishing practices, comparable to forest clear cutting and agricultural ploughing on land[152]. And the damage occurs over vast areas. The entire area of Irish Sea has been intensively bottom trawled for Norway lobster[153], as well as for other species such as plaice, sole, cod, haddock, whiting, saithe, and monkfish. The North Sea is also intensively bottom trawled for these species, with some areas being trawled three or four times a year[154]. And nowadays fishermen use not one trawl, but four or six per vessel.

Norway lobster, *Nephrops norvegicus*

Bottom trawling has been described as the most destructive of all fishing practices, comparable to forest clear cutting and agricultural ploughing on land.

Changed communities and reduced biomass

The effects of a bottom trawl are immediate. Significant decreases in the number of species, biomass, species richness, and diversity have been documented 24 hours after otter trawling for Norway lobster in the Irish Sea[155].

Long-term effects are more difficult to assess – mainly because there are very few untrawled areas left for comparison in the two areas most studied, the Irish Sea and the North Sea[156]. One study of the Irish Sea, however, concluded that there are significantly fewer individuals and reduced biomass in areas trawled for Norway lobster than in areas around nearby shipwrecks that have not been trawled[157]. Populations of burrowing urchins and mudshrimp have also been shown to be severely impacted by these trawls[158,159]. By disrupting burrowing animals, bottom trawling can also alter the complexity and oxygenation of muddy sediments on the seafloor, leading to further impacts on seafloor communities[160,161,162].

In general, stronger, mobile, and/or fast-growing animals are believed to recover from bottom trawling more quickly than fragile, non-mobile, and/or slow-growing ones[163,164]. There is speculation that bottom trawling also leads to a reduced body size for organisms living in intensely trawled areas[165,166]. In addition, the large numbers of dead and dying animals on the seafloor – due to both the trawl passing as well as the unwanted bycatch discarded overboard – may also alter seafloor communities by, for example, attracting increased populations of "scavenger" species that feed opportunistically on the dead animals[167,168,169].

Overall, seafloor communities may never recover to their original condition while trawling continues[170]. Trawling on muddy habitats is likely to be the most serious threat to these unique, fragile communities – where species are vanishing faster than they are being discovered[171].

SIDE DISHES

Lobster on the side

Your plate of Norway lobster comes with another plate that was discarded.

ABOUT THE FISH

Scientific name: *Nephrops norvegicus*

Local names: Jomfruhummer, Buchstabenkrebs, cigala, Dublin Bay prawn, havskräfta, Kaisergranat, Kaiserhummer, keisarihummeri, karavída, langoustine, Nephrops, Noorse kreeft, Norway lobster, Norway prawn, Norwegischer Hummer, scampi, sjøkreps.

Main commercial products: Live specimens; fresh and frozen whole specimens and tails; canned peeled tails; canned soup (bisque de langoustines).

Main markets: Sold throughout Europe as a highly esteemed food[134], particularly in the UK, Spain, France, and Italy.

Fishing grounds: Throughout almost its entire range, from Iceland to the Mediterranean Sea; most catches come from the North Sea, the waters around the UK and Ireland, and the Bay of Biscay[135].

European fleets*: *UK, Ireland, France, Denmark,* Italy, Iceland, Spain, Netherlands, Sweden, Portugal, Greece, Belgium, Norway, Croatia, Germany, Faeroe Islands, Isle of Man, Serbia and Montenegro, Albania[136].

Fishing methods: Beam trawls, otter trawls, seine nets, baited traps (creels).

Current populations: The status of stocks in most areas is unknown, but many appear to be exploited at a sustainable level and in some cases abundance appears to be increasing, perhaps due to decreased predation by depleted species such as cod and hake[138, 139]. However, stocks are depleted in West Galicia and North Portugal, while sharp reductions in stock biomass have been recorded in North Galicia and the Cantabrian Sea[140].

* in order of reported landings in 2004, largest to smallest. The UK alone accounted for 53% of the total catch; countries in bold together accounted for around 85% of the total catch; Norway lobster is currently the UK's most valuable fishery[137]

Large numbers of Norway lobster are thrown overboard, either because they are smaller than the minimum landing size or because the market prefers larger individuals[172]. In the North Sea, 30% of caught individuals are discarded[173], while in the Bay of Biscay the figure rises to 50-60%[174]. Norway lobster caught by trawls suffer frequent and often severe damage, and the vast majority of discarded individuals do not survive[175,176].

Baby fish on the side

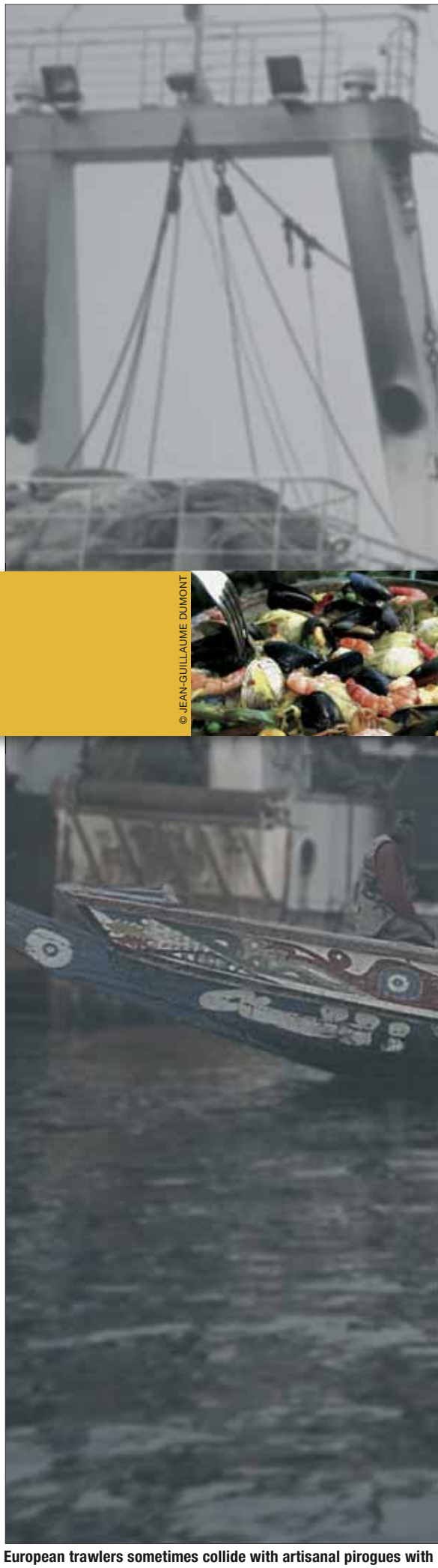
Your plate of Norway lobster also comes with a plate of discarded baby fish – including commercial species such as cod, sole, plaice, haddock, whiting, and hake[177,178]. The small mesh size of Norway lobster trawl fisheries means that considerable numbers of fish are caught as bycatch, up to 70% of which are discarded as the fish are below the minimum landing size[179]. In the Skagerrak, for example, 61% of the total cod catch by Norway lobster trawls was discarded between 1995 and 2000[180]. In some cases, the amount of discarded fish is greater than the Norway lobster catch[181]. A significant proportion of discarded fish do not survive[182]. Even young fish that escape through the net can die from the injuries they sustain[183]. The high level of juvenile fish mortality caused by most Norway lobster fisheries has led to concerns about the potential impact of these fisheries on the recovery of cod populations, as well as the sustainability of whiting and haddock populations.

Starfish and shellfish on the side

The waste doesn't stop with edible seafood: huge amounts of invertebrate species (such as worms, starfish, and shellfish) are also discarded from bottom trawl nets. In North Sea fisheries alone, 150,000-180,000 tonnes of invertebrates are discarded each year[184].

Alternatives

Norway lobster caught using creels (a kind of trap) are currently a good choice, as traditional creel fisheries generally have minimal impact on the marine environment, suffer from much lower rates of bycatch than trawl fisheries, and return unwanted catch back to the sea unharmed. At the moment there is only one such creel fishery with MSC certification, in Scotland, but other creel and trawler fisheries are investigating the potential for certification. The Clyde Fisheries Development Project in Scotland is also looking at ways of improving the sustainability of the Norway lobster fishery off Scotland's west coast. Other Norway lobster fisheries, in Sweden for example, are using nets with sorting grids, larger mesh sizes, or escape panels to allow juvenile fish to escape and reduce bycatch of non-target species.



European trawlers sometimes collide with artisanal pirogues with

Poverty platter

West African shrimp, squid and fish

The Northwest African coast was once a rich source of seafood for local people. But once commercial fishing fleets arrived from Europe and other distant countries, the region's marine resources began to decline. These waters are now as depleted as those of the North Atlantic — leading to real fears of food shortages and social disaster.

Dishing up African fish in Europe

Europe's demand for seafood outstrips supply in its own waters. To meet demand, the EU and Russia in particular have increasingly looked for fishing opportunities in foreign waters.

The Northwest African coast has long been popular, with European fleets fishing in the area since the 1960s[191]. Since 1979, the EU alone has paid millions of Euros to various countries for the right to fish in their waters. Most of these fishing access agreements (now called Fisheries Partnership Agreements) are in Africa, with the largest in the waters of Mauritania, Senegal, and Guinea-Bissau[192]. In 1999, such agreements provided around 25% of all fish consumed in the EU[193] and in 2001, 11% of all EU catches came from the Eastern Central Atlantic Ocean off the coast of West Africa[194].

Paella

© WWF-CANON / JO BENN

disastrous results

ABOUT THE FISH

Main species: Various fish (mainly bigeye, skipjack, and yellowfin tuna, anchovies, sardines, and mackerel), crustaceans (mainly shrimp), and cephalopods (mainly octopus and squid)[185].

Main commercial products: Fresh, chilled, frozen fillets, shrimp, fish, squid, and octopus; canned tuna and other fish.

Fishing grounds: Along the West African coast from Mauritania to North Angola, primarily in the north.

European fleets*: ***Russia, Netherlands, Lithuania, Spain,*** France, Ukraine, Latvia, Ireland, Portugal, Italy, Greece, Germany[186].

European imports: Europe imports a significant amount of seafood from the region.

Fishing methods: Surface, midwater, and bottom trawls; purse seines[187].

Current populations: Detailed scientific data for West African stocks is not available; however, there is evidence of a huge decline in biomass and depleted fish populations in the region, and of current fishing levels being unsustainable[188,189,190].

* in order of reported landings in 2004, largest to smallest; countries in bold together accounted for 73% of the total European catch, and 16% of the global catch, in the Eastern Central Atlantic Ocean (marine fish, crustaceans, and molluscs)

© PAT MORRIS/ARDEA.COM

Common octopus, *octopus vulgaris*

Over the same time period, imports of seafood to the EU have increased. Today the EU is the largest world market for imported seafood[195], with Africa the single-largest supplier[196]. Such exports are extremely valuable for the countries concerned: Senegal's seafood exports make up a third of the country's export earnings, with 60% of these exports ending up in the EU[197].

But a series of studies have shown that both the fishing agreements and the increased trade dependence on Europe have been disastrous – both environmentally and socially[198,199,200].

Overfishing exported

The huge increase in the number of EU, Russian, and to a lesser extent Asian, boats along the Northwest African coast since the 1960s has driven a huge increase in fishing effort[201]. The EU fleet – which numbered nearly 800 boats in 2001 – has essentially been able to take whatever it can catch[202,203].

60% of seafood on EU dinner plates comes from non-EU waters[242], particularly African waters.

Most fishing agreements do not include maximum catch quotas or effort limits, and in any case, the African countries have a limited capacity, and sometimes limited will, to control the activities of foreign fleets. Under- and misreporting of catches is rife. On top of this, EU subsidies have allowed EU vessels continue to fish in the region even after fish stocks became too depleted for fishing to be profitable[204].

A recent example is the 2006 fisheries partnership agreement between the EU and Mauritania. Worth some €108 million each year for six years, it is one of the most significant agreements ever in terms of fishing opportunities for the EU. The agreement allows around 200 EU vessels to fish various species in Mauritanian waters, including squid and octopus – yet there is already some 30% overfishing on these cephalopods.

Local fishers have also contributed to the overfishing, but often as a direct result of Europe's demand: many have switched their attention from supplying the domestic market to supplying the export market[205].

Unsurprisingly, the region's marine biomass has massively decreased, to just 25% of the 1950 level. The fish resources and ecosystems of Northwest Africa are now as depleted as those of the North Atlantic, and the fisheries are not sustainable[206,207,208].

Pirates

Pirate fishing by foreign vessels, primarily for shrimp, is also a problem. Guinea, for example, loses over 34,000 tonnes of seafood every year to pirates – 64% over and above the country's legal, recorded catch. The EU is a major market for the illegal catches, and EU companies are behind many of the pirate operations[209,210,211]. In addition to contributing to overfishing, the pirate's illegal bottom trawling activities often destroy vital fish habitats and nursery grounds[212].

European consumers are buying fish and shrimp stolen from some of the world's poorest people[243].

Throwing away good food

Foreign fleets are only interested in high-value species – and do not hesitate to throw away what they don't want[213]. The amount they throw away is huge. The estimated discard rate for licensed fleets in Guinea, for example, is 25% for midwater fish trawlers, 27% for the octopus fishery, and 33% for the shrimp fishery. The discard rate for pirate trawlers, most of which target shrimp for the European market, is likely to be much higher, since they use illegal nets with smaller mesh sizes, and fish illegally in shallow coastal waters that serve as nurseries for many fish species. As most discarded fish do not survive[214], this is a massive amount of food lost for a country where over a quarter of the population is undernourished[215].

Less fish for the locals

Fish is a vital source of food in West African countries, supplying a major part of the population's animal protein intake – 75% in the case of Senegal[216,217]. Clearly, the collapse of fish stocks here would be a humanitarian disaster[218].

By depleting marine resources, EU and other foreign fleets are already threatening food security in the region. Guinea, for example, already has a problem feeding its people. The country has a specific objective to improve food security by increasing the fish consumption of the population. But the main obstacle preventing this is IUU fishing, primarily shrimp trawling for European markets[219,220].

In Guinea-Bissau, the government requested that instead of throwing away locally consumed species caught as bycatch, EU fleets instead land the fish for local consumption. The EU rejected the request as to do so would take too much time[221].

In Senegal, depleted fish stocks caused by foreign fleets and foreign demand have had a serious impact on local food supplies[222,223]. According to one Senegalese NGO, it now takes local fishermen a month to catch the same amount of fish that could once be caught in just four days[224]. The preference for high-value "noble" fish in European markets has reduced the quality of fish reaching domestic markets[225,226], with the markets furthest from the coast receiving less fish and of poorer quality[227]. Exports have also raised domestic fish prices[228]. The country's national dish of fish and rice, thiebou dienne, has become a luxury for many[229], and is now more often made with sardines than the once almost-universal grouper[230].

Social timebomb

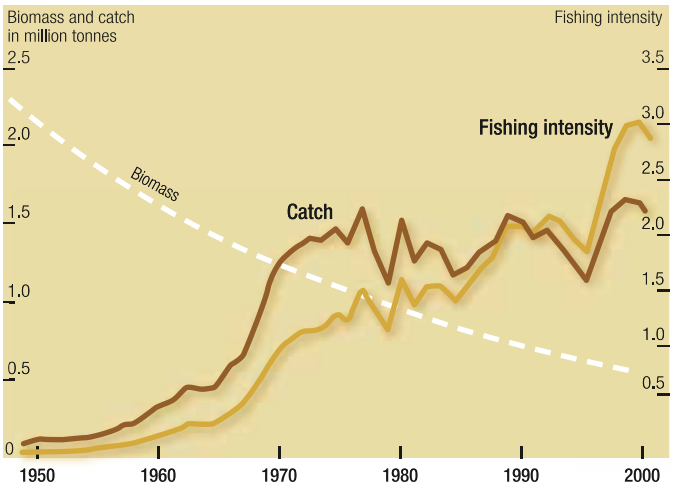
Fishing provides more than just food to West Africans – it also provides livelihoods. In Senegal, for example, the fishing industry directly and indirectly employs over 15% of the working population[231]. The industry is especially important for women, who process and sell fish. If there are no fish, these women cannot make a living and so cannot afford to feed or educate their children[232].

As mentioned above, fishing also provides valuable export earnings to West African countries. On top of this, the fees paid by the EU and other countries fishing access agreements represent considerable revenue. In the case of Mauritania and Guinea-Bissau, these fees account for an estimated 15% and 30%, respectively, of the national budget[233].

Clearly, the collapse of fish stocks in the region would be an economic and social disaster. But already, fishing for foreign markets has a high cost.

For example, the 34,000 tonnes of fish taken by pirates each year in Guinean waters is worth an estimated US $110 million[234] – money the country, one of the world's poorest, can ill afford to lose. On top of this, the fees paid by the EU for fishing access agreements do not reflect the true value of the resources being taken by EU fleets[235].

Declining biomass and increased fishing effort in Northwest Africa



In addition, local people are missing out. Not only do the highly subsidized, technically advanced EU boats represent unfair competition with small-scale, local fishers, but the fishing agreements have in general ignored the interests of coastal communities, provided few jobs, and provided little support for research and development of local fishing sectors[236,237]. And now local jobs are threatened by depleted fish stocks[238].

SIDE DISHES

Death on the side

Your plate of African seafood may come with a nasty shock. There are reports of local West African fishers being injured, or even killed, when their small pirogues have collided with large foreign trawlers[239,240].

Value subtracted tax

Your tax money is contributing to the plight of the West African poor. EU-funds led to fishing overcapacity in the first place, and are now subsidizing EU fleets in West African, and other developing countries', waters. There is also evidence that EU boat owners have received EU funds to transfer their vessels to other countries – with these vessels then undertaking illegal fishing activities in West African waters[241].

Alternatives

Traditional Valencia paella is made with chicken and rabbit, not fish. The best choice for the more modern 'paella de marisco' (seafood paella) – which can contain shrimp, Norway lobster, clams, squid, and different kinds of fish – is that made using seafood caught locally in the Mediterranean. Be aware that cheaper dishes may contain shellfish and fish from West Africa. Fishing agreements generate much needed revenue for developing countries but until agreements are genuinely equitable and sustainable, providing a fair deal for all involved, consuming West African fish could be supporting short-term benefits at long-term cost. There is usually no way for consumers to distinguish where shellfish and fish come from but you could try asking the chef.

Sustainable seafood

choices

The easiest way for consumers to identify the best environmental choice in seafood is through the Marine Stewardship Council (MSC) label. Products with this label have been independently assessed as meeting the rigorous MSC standard – the only internationally recognized set of environmental principles to assess whether a fishery is well-managed and sustainable. The standard is based on the best scientific data and the latest knowledge about the marine environment.

To date, 21 fisheries, both small- and large-scale, have been certified around the world. A further 30-40 fisheries are undergoing assessment, and together these represent over 4% of edible, global wild fisheries production. **Over 100 major seafood buyers have pledged to purchase MSC-certified seafood products, including large supermarket chains in France, Germany, Switzerland, and the UK.** Overall, there are currently around 400 MSC-certified fish products on sale in 26 countries — ranging from fresh, frozen, smoked, and canned fish to fish oil dietary supplements. Consumer access to sustainable seafood products is a reality and the availability of MSC-labelled fish is increasing throughout Europe.

MSC-certified mackerel for sale on the fish counter of a UK supermarket

For information on where to buy MSC-labeled seafood, visit www.msc.org

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ABBREVIATIONS

EU	European Union
ICCAT	International Commission for the Conservation of Atlantic Tunas
ICES	International Council for the Exploration of the Sea
IUU	Illegal, Unregulated and Unreported
MSC	Marine Stewardship Council

ATLANTIC COD

ATLANTIC BLUEFIN TUNA

PLAICE AND SOLE

SWORDFISH

NORWAY LOBSTER

SHRIMP, SQUID AND FISH

Every European has a huge role to play in securing the future of Europe's fish dishes and its fishing industry.

By understanding the scale and urgency of the problem, and choosing the fish we buy accordingly, preferably MSC-certified fish, all Europeans can encourage sustainable seafood.

WWF is one of the world's largest and most experienced independent conservation organizations, with almost 5 million supporters and a global network active in more than 100 countries.

WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by:

- conserving the world's biological diversity
- ensuring that the use of renewable natural resources is sustainable
- promoting the reduction of pollution and wasteful consumption.

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