



Blue Swimming Crab Value Chain Summary

INDONESIA

PREPARED BY:
WILDERNESS MARKETS
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Can the Indonesian Blue Swimming Crab Fishery Become Sustainable?

There are many opportunities in Indonesia's blue swimming crab (BSC) fishery to improve the value chain through improved logistics, cold chain infrastructure and market access. However, in the absence of effective management, these measures will likely result in increased rates of over-exploitation.



MONTEREY BAY AQUARIUM RATES THE FISHERY "AVOID" DUE TO POOR MANAGEMENT AND BY-CATCH CONCERNS.

A 2014 Marine Stewardship Council (MSC) pre-assessment in Southeast Sulawesi was not positive.

RELIABLE, HISTORICAL DATA ON STOCK CONDITIONS ARE HARD TO SOURCE.

INDUSTRY CONTINUES TO EXPAND ITS GEOGRAPHIC FOOTPRINT AT A NATIONAL AND INTERNATIONAL LEVEL.

PROCESSING AND DISTRIBUTION BY THE NUMBERS¹

- ARTISANAL HARVESTERS **65,000+** (ESTIMATED)
- MINI PLANTS **400** (ESTIMATED)
- APRI MEMBERS **14**
- NFI CRAB COUNCIL MEMBERS **22**



Blue Swimming Crab Fishery Profile

Indonesia's BSC fishery did not develop until the mid-1990s. Since most Indonesians do not prefer BSC, almost all landings are exported, with most destined for the U.S.

IN 2007, MAJOR CRAB PROCESSORS FORMED THE ASOSIASI PENGELOLAAN RAJUNGAN INDONESIA (APRI) with support from the National Fisheries Institute (NFI) Crab Council members in the U.S. and with guidance from Sustainable Fisheries Partnership (SFP). APRI now leads the **BSC FISHERY IMPROVEMENT PROJECT (FIP) INITIATED IN 2007**,⁴ which SFP previously led.

Financial incentives align with conservation outcomes in this fishery in that larger crab yields larger, more valuable, pieces of crabmeat that costs less to process. Yet this is ignored in practice—both large and undersize crabs are purchased, and at the same price—due to lax fishery management and governance. The fishery suffers from a “race to fish” and reliable data on past and current stock conditions are hard to source.

Mini-plant operators and APRI inclusion in developing solutions is critical: mini-plants are the first legally recognized entity in the value chain; they finance fishing activities; and in the event of the BSC fishery collapse, they have the most to lose and the highest switching costs.

FISHERY MANAGEMENT PROFILE:

STOCK CHARACTERISTICS

MOBILE/SESSILE	LOW
ABILITY TO REBOUND	HIGH
MARKET VALUE	HIGH

MANAGEMENT SYSTEMS

PRESENCE OF RIGHTS	NO
SCIENTIFIC DATA QUALITY	LOW
MANAGEMENT DATA QUALITY	LOW
STRENGTH OF MONITORING AND ENFORCEMENT	NONE

At Sea

RESOURCE, MANAGEMENT, AND LANDINGS

There is no practical governance, management, or enforcement system over the fishery. Culturally appropriate rights based management (RBM) approaches are as yet undefined. We found low levels of understanding in industry with regard to this concept. The fisheries ministry has recently aligned with APRI prohibitions on landing berried females and crabs less than 10 cm wide, yet this is ignored in practice.

Indonesia has many of the factors in place for economic sustainability, but biological sustainability is not a priority.

LANDINGS

BLUE SWIMMING CRAB (RAJUNGAN)⁵

VOLUME (METRIC TONS)



Though almost all BSC is exported and most goes to the U.S., it is possible for U.S. buyers to source crab from non-APRI members. While possibly not a second value chain, this represents a leakage risk if APRI members enforce the 10 cm rule and non-members do not.

MSC CERTIFICATION FIPS

NO
YES INITIATED IN 2007)

SUPPLY CHAIN STRUCTURE

Middlemen as first legal entity	Yes
Middlemen distort market dynamics	Yes
Quality of logistics	High
Processing constraints	No
Value chain priorities: sustainability, quality, or volume	V, Q
Sustainability drivers	Market Access

CATCH VALUE LANDINGS VALUES REPORTED FOR CATCH AVERAGED ABOUT \$70 MILLION USD FROM 2008 TO 2010, AS REPORTED BY KKP.

At Shore

HARVESTERS AND VESSELS

There are two main types of harvesters. **THE PRIMARY HARVESTERS ARE SMALL SCALE FISHERMEN, THE MAJORITY OF WHOM BRING LIVE CATCH TO MINI-PLANTS.** It is unclear how many there are, but possibly in the tens of thousands. Their boats are usually less than 10 m long and they fish with traps, pots, nets and mini-trawls. Interviews in Surabaya and Jakarta indicated most fishers were either directly employed or contracted by miniplant owners. However, there were also strong indications that they act as free agents, responding to better prices. There was also evidence to suggest most are multi-species fishers, targeting BSC when prices are good. The fishers we interview were not banked, despite reporting having physical access to banks.

THERE ARE ALSO HARVESTERS WHO COOK BSC ONBOARD BOATS delivering cooked product to miniplants. The suppliers of cooked BSC require onboard cooking facilities as well as adequate ice and cold storage, which is often lacking, leading to poor quality BSC products.

IUU

Illegal, unregulated, and unreported (IUU) fishing in the Indonesian EEZ does not threaten BSC fisheries like other Indonesian fisheries. **But unregulated and unreported harvests are likely, particularly unregulated harvests, as enforcement of the 10 cm rule seems to be routinely ignored.**

DOCK ACTIVITIES

Most BSC harvesters bring live catch to the mini-plants, while others deliver cooked crab meat. Though they need access to resources for pots, traps, and nets and potentially for bait, **they have few infrastructure needs.** However, the suppliers of cooked BSC **require on-board cooking facilities as well as adequate ice and cold storage**, which is often lacking, thereby leading to poor quality BSC products.

AGGREGATION

From the harvester, crab goes to a mini-plant for steaming, either directly or through an aggregator, AKA, middleman, though some harvesters may steam the crab themselves, as noted above. The number of aggregators and the amounts of crab they purchase are unknown. Middlemen sometimes own the mini-plant they supply.

The estimated **400 geographically distributed mini-plants** are the closest legally recognized component of the logistics value chain to the natural resource. The majority (over 75%, estimated) are independent, locally owned SMEs.

Mini-plant owners appear to be largely unregulated and demonstrate poor implementation of sustainability practices despite having a “front line” role. They seem unaware of sustainability issues—they overwhelmingly view BSC as an extractable raw material—and do not understand the concept of sustainability as a business strategy. APRI efforts to encourage a 10 cm carapace size minimum appear to have minimal impact.

PROCESSING

FOURTEEN APRI MEMBER PROCESSORS work with the U.S. NFI Crab Council. Principally clustered on Java’s eastern coast, they reportedly represent over **90% OF CRAB PRODUCTION** from Indonesia. The majority of them export picked and pasteurized crabmeat to the U.S., of which an estimated 80% goes to Crab Council members.⁶ APRI members are either independently owned by larger Indonesian companies, are subsidiaries of U.S. entities or joint ventures. They have strong access to banking services and are legally and financially liable for product sanitation and quality—there are penalties if shipments fail to pass USDA or FDA inspections.

At Market

DISTRIBUTION

Twenty-two NFI Crab Council member firms work closely with national producers across priority BSC producing countries, which include Vietnam, the Philippines and Indonesia. Indonesia remains one of the largest sources of pasteurized crabmeat for both Crab Council members and non-members.

NEARLY ALL (99%, ESTIMATED) OF U.S. SALES ARE IN THE FORM OF PASTEURIZED, CHILLED, CRABMEAT. Market prices for crabmeat products are at multi-year highs at the U.S. wholesale level. Efforts to differentiate product based on sustainability are challenging due to the nature of the product and its primary market:

- The U.S. has a poor record of differentiating sustainability in seafood, unlike some European markets.
- Crabmeat, while an up-market product, is sold into a commodity market, albeit a high-end one.
- Often crab products are sold in an aggregated form, making it difficult to differentiate individual sources.

▶ **65,000**
ESTIMATED ARTISANAL HARVESTERS

▶ **400**
ESTIMATED MINI-PLANTS

▶ **14**
APRI MEMBER PROCESSORS

▶ **22**
NFI CRAB COUNCIL MEMBER FIRMS

Value Chain Finance

VALUE CHAIN FINANCE

There is a well-established banking and microfinance sector with over 122 commercial banks, 1716 rural banks and 168,421 microfinance institutions. BSC value chain participants have access to local money lenders if not access to banks. However, the further away from the natural resource, the greater the rate of utilization and the greater the access to banking services, credit lines and investment services. Fishers do not appear to utilize banking or credit services as it was too much “trouble.”

Lending rates at financial institutions range from 11 to 13.5%. Value chain participants above fishers did not report difficulty accessing financial products.

AVAILABILITY OF FINANCING (DEBT)

HARVESTER **INFORMAL**

AGGREGATOR **YES**

PROCESSOR **YES**

DISTRIBUTOR **YES**

FINANCING DEMAND FOR IMPROVED SUSTAINABILITY

RETURN SEEKING **NO**

PRESENCE OF FINANCIAL INSTITUTIONS IN HARVESTERS' COMMUNITIES

DEBT **MEDIUM**

EQUITY **LOW**

Challenges

BSC—Impact Investment Constraints

KEY ENABLERS

SECURE TENURE
NOT PRESENT—truly an open access resource

SUSTAINABLE HARVESTS
UNKNOWN—many participants report localized decreased landings numbers and smaller crabs; spatial and temporal data are unavailable

MONITORING & ENFORCEMENT
NOT PRESENT—size requirements and prohibitions on berried females are routinely ignored

KEY DRIVERS

STOCK HEALTH LARGELY UNKNOWN	OPERATIONAL EFFICIENCY NEEDS IMPROVEMENT	MARKET VALUE PRESENT , possible to improve
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KEY REQUIREMENTS

BUSINESS CASE	PRESENT
INVESTABLE ENTITIES (at harvester-level)	NONE
MECHANISM TO CAPTURE RETURN	PRESENT
RISK MANAGEMENT	UNKNOWN

Value Chain

- 01 Resource
- 02 Harvesters
- 03 Shoreside Services
- 04 Processing and Distribution
- 05 Sales Outlet
- 06 End Market

MORE AWARE

While sustainability awareness was high at the importer and U.S. market end of the value chain, it was very low to non-existent at the mini-plant operator level. Implementation of sustainability practices were low throughout the value chain.



9 MONTHS OLD:
10 CM CARAPACE
5% SPR



10 MONTHS OLD:
11 CM CARAPACE
10% SPR



13 MONTHS OLD:
12.9 CM CARAPACE
30% SPR

While APRI has agreed to a 10 cm carapace width in SE Sulawesi, research shows this is the minimum catch size, with only **5% SPR** (spawning potential ratio) and **65 g OF BODY WEIGHT**.

Waiting one extra month to achieve a **11 cm, CARAPACE RESULTS IN A 10% SPR AND 80 g OF BODY WEIGHT**, an increase of 23%.

Waiting three additional months to a carapace of **12.9 cm WOULD RESULT IN A 30% SPR AND 128 g OF BODY WEIGHT**—nearly double the body weight and value of the 10 cm BSC.⁷

Blue Swimming Crab Opportunities and Recommendations

Priority opportunities focus on improving fishery management to ensure BSC size limits are achieved and leakage is addressed in order to achieve higher SPR and carapace sizes.

PRIORITY INTERVENTIONS TO IMPROVE INVESTMENT CONDITIONS

RESOURCE	ENFORCEABLE RBM
VALUE CHAIN	<ul style="list-style-type: none"> MANAGEMENT DATA FOCUS ON INDUSTRY AND MINI-PLANTS MICRO-FINANCE (HARVESTERS)

CONSERVATION IMPACTS OF INTERVENTIONS

VALUE CHAIN INTERVENTIONS	MITIGATE—INDIRECT
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LIVELIHOODS IMPACTS OF INTERVENTIONS

RESOURCE INTERVENTIONS	NONE
VALUE CHAIN INTERVENTIONS	DIRECT
EFFORT	HIGH

At Sea

ADDRESS FISHERY MANAGEMENT, ESPECIALLY ENFORCEMENT AND GOVERNANCE.

- Create culturally appropriate RBM.
- Develop pilot governance and financial projects linked to conservation outcomes and tied to environmental conditionalities.

ADDRESS FISHERS RELIANCE ON BSC, INCLUDING:

- Assess and strengthen fishers ability to reduce effort.
- The BSC fishery is highly integrated in social and cultural norms and should be addressed in this context.

At Shore

ADDRESS OPERATIONAL INEFFICIENCIES AND MARKET ACCESS, INCLUDING:

- Assess and strengthen mini-plant ability to work on sustainability through quality and price incentives while reducing effort at the plant and at the harvester level.
- Assess and strengthen APRI's ability to implement and expand traceability and sustainability initiatives independently. In particular, secure the re-implementation of crabmeat grading by price and enforcement of the sustainability standards associated with the Crab Council logo use.

At Market

ADDRESS PRODUCT DIFFERENTIATION, INCLUDING:

- Implement buyer procurement requirements and traceability with the Crab Council; enforce sustainability logo-use requirements.
- Differentiate U.S. sourced versus imported BSC products.

Sources:

- 1 FIP Directory. Indonesian Blue Swimming Crab (APRI). Last updated January 21, 2015. Retrieved October 27, 2015 from <http://fisheryimprovementprojects.org/fip/indonesian-blue-swimming-crab-fishery-improvement-project/>
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- 3 Fishery Export Statistics. KKP-SIDATIK, 2012. Retrieved September 2014 from http://statistik.kkp.go.id/index.php/arsip/c/67/Statistik-Ekspor-Hasil-Perikanan-Menurut-Komoditi-Provinsi-dan-Pelabuhan-Ekspor-2012?category_id=3
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- 5 Production of Marine Capture Fisheries by Type of Fish. KKP-SIDATIK. Retrieved on May 5, 2015 from http://statistik.kkp.go.id/index.php/statistik/c/5/1/0/0/Statistik-Perikanan-Tangkap-Perairan-Laut/?perairan_id=&subentitas_id=18-0&view_data=1&tahun_start=2007&tahun_to=2014&tahun=2014&filter=See+Data+%C2%BB
- 6 NFI Crab Council. "About" [web page]. Retrieved on October 27, 2015 from <http://www.committedtocrab.org/about/>
- 7 Jeremy Prince. 2015. Indonesia BSC Spawning Ratios. Unpublished data from personal communication.

While Indonesia is currently a significant source of BSC to the U.S., U.S. wholesalers are able to source meat from other geographies, and Indonesian BSC fishers are able to target other species. Mini-plant operators and Indonesian processing and pasteurizing firms who have high switching costs have the most to lose if sustainability issues are not addressed. Sustainability can be a competitive business strategy for all levels, particularly for APRI, mini-plant operators, and fishers.