Sharing Experience for
in Trawl Fisheries

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Lesson Learn From Rebyc-I Indonesia

• Major by-catch issue in Indonesia is endangered species
  – Turtle, sharks & rays.
  – For small fisheries → All by-catch utilized & sold.
  – For industrial scale → by-catch release and discard in the sea (limited space of fish hold)

• Success dissemination BRDs (TED, JTEDs) in Sorong, Ambon, Tual, Marauke, Sibolga, Tarakan
  – Difficulty to install and operate BRDs (TED) in shrimp trawl fisheries.
  – Almost twist if not good install and impact from sea current.

• Install BRDs (TED, JTEDs) decreasing total catch and target species
  – The installation of TEDs decreases the total catch (from 206.87 Kg to 148.31 Kg) and main target/shrimp (28.4 Kg to 24.3 Kg),
  – Composition/ percentage of the main target (shrimp) increases (from 13.75 % to 16.41 %)
  – JTED effective to reduce juvenile.
  – Using JTED not significant for various Catch Composition

<table>
<thead>
<tr>
<th></th>
<th>NORMAL (%)</th>
<th>WITH TED (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>By-catch</td>
<td>86.25</td>
<td>83.59</td>
</tr>
<tr>
<td>Shrimp</td>
<td>13.75</td>
<td>16.41</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Total Catch (Kg)</td>
<td>206.87</td>
<td>148.31</td>
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Lesson Learn From Rebyc-II Indonesia

- RFU CONSULTANTS visit to AMBON (April 2013)
  - Difficult fulfill Log Book for trawl vessels base in Ambon Fishing Port (fulfill in group shrimp and fish)
  - BRDs in particular for TED is a problem (twisting, reduce catch)
  - Effort control by limitation trip such as: 1)shrimp trawl max 1 month, 2) fish trawl max 3 months. Purpose for preventing IUU Fishing & Fuel Consumption.
  - Figure Landing records in Ambon (Jan-April 2013) → increasing shrimp and decreasing fish Catch

- Training Observer in Sorong (17-22 Jun 2013) and observer on Board 1 month (Jul 2013) Collaboration with IMAc Project
  - 5 person (2 Official BPPI, 2 graduate student IPB, 1 student UNDIP)
  - Big 5 species of Shrimp in Arafura Sea with different fishing ground
  - No Significant Catch for Tiger Shrimp in Day Fishing with Night Fishing
  - 8.05% by-catch utilized

<table>
<thead>
<tr>
<th>Shrimp</th>
<th>Volume (Kg)</th>
</tr>
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<tbody>
<tr>
<td>Tiger</td>
<td>2689.5</td>
</tr>
<tr>
<td>Banana</td>
<td>238</td>
</tr>
<tr>
<td>Ende</td>
<td>142</td>
</tr>
<tr>
<td>Kiji</td>
<td>90</td>
</tr>
<tr>
<td>Red</td>
<td>78</td>
</tr>
<tr>
<td>Krosok</td>
<td>66</td>
</tr>
<tr>
<td>Uchiwa</td>
<td>2</td>
</tr>
</tbody>
</table>

**Length Frequency of Tiger Shrimp**
- Range : 15.5-.33.5 cm
- Average: 19.2 cm
- Day Fishing : 19 cm
- Night Fishing : 19.6 cm
Utilized of By-Catch

Persentase utilized of By catch
8.05 %

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</thead>
<tbody>
<tr>
<td>kerapu</td>
<td>kuro</td>
<td>beloso</td>
<td>tigawaja</td>
</tr>
<tr>
<td>layur</td>
<td>bawal hitam</td>
<td>kembung</td>
<td>tetengkek</td>
</tr>
<tr>
<td>kurisi</td>
<td>sotong</td>
<td>cumi</td>
<td>sebelah</td>
</tr>
</tbody>
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Challenges

• How to Managed Trawl Fisheries In Arafura Sea?
  – Avoid Critical Habitat from Trawl Activities, specially to avoid spawning and nursery ground of Target Species and migratory path of ETP Species.
  – Reduction habitat impact and increasing low cost fuel consumption through Gear type selection and innovation
  – Utilized By-Catch and balancing effort for more fair access to fishing ground between artisanal fisheries and industry
  – To ensure seasonal closure for trawl activities through GIS MAP
  – To improve simple logbook for more useful to describe target species and managing prey and predator

• Potentials Progress REBYC-II (Indonesia)
  – Final Guidelines MAPPING for sharing information among Stakeholder In Indonesia (Fishing Industry, Research Agency, Academy, NGO, ect)
  – reducing discrimination of regulation between Fish Trawl and Shrimp Trawl for appropriate fisheries management.

<table>
<thead>
<tr>
<th>Gear</th>
<th>Total</th>
<th>Catch</th>
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<tbody>
<tr>
<td>Fish Trawl</td>
<td>477</td>
<td>Demersal Fin Fish</td>
</tr>
<tr>
<td>Shrimp Trawl</td>
<td>109</td>
<td>Shrimp</td>
</tr>
<tr>
<td>Bottom Longline</td>
<td>225</td>
<td>Snappers</td>
</tr>
</tbody>
</table>
Arafura Sea → 4 major species shrimp with different fishing ground:
1. Tiger shrimp (P. semisulcatus, P. esculentus)
2. Banana shrimp (P. merguiensis)
3. Ende shrimp (M. endeavouri, M. ensis)
4. Kiji shrimp (M. mogiensis)

Mapping:
1) life cycle pattern of:
   → target species
   → Prey & Predator
   → Keystone species

2) To recognize characteristics of stocks (target species):
   - Sedentary ?
   - Straddling ?
   - Highly Migratory Species ?

**PI** (Fish Trawl) & **PU** (Shrimp Trawl)
Specific in Arafura Sea
Catch rate of Fishing Gear & Catch Composition ????
Regulation for utilized By-Catch

Potential Utilization
**By-catch PI & PU**

- Human Consumption (economic value)
- Better Fishing & Handling fresh fish
- Fish Meal For Aquaculture & livestock
- Un-Fresh Fish How to Utilized

APFIC 2005
Thank you!