



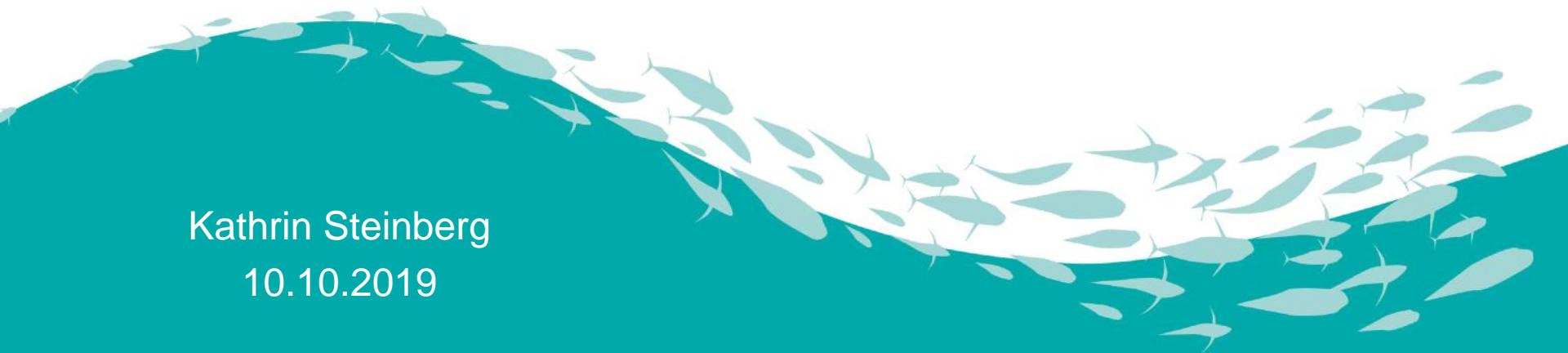
Aquaculture  
Stewardship  
Council



# DIVERSIFICATION OF GLOBAL SHRIMP FARMING THROUGH TRANSPARENCY

—

## THE NEW ASC METRICS METHODOLOGY



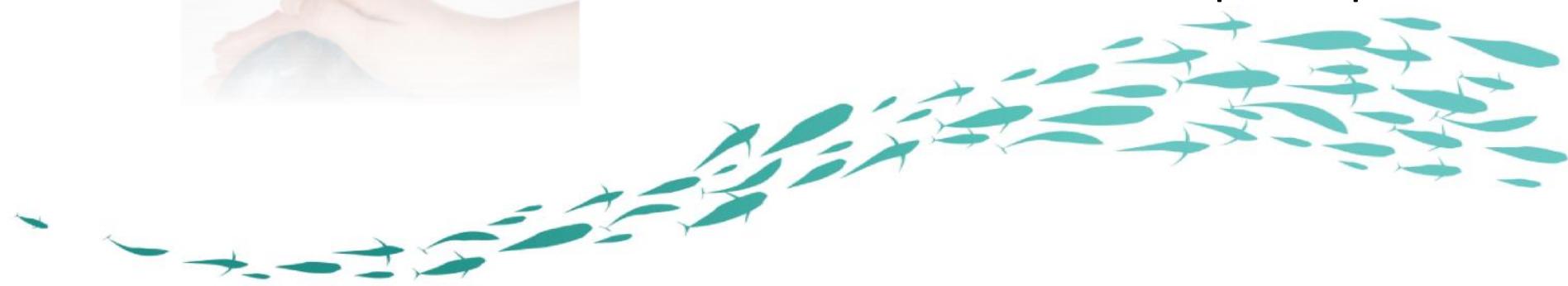
Kathrin Steinberg

10.10.2019

# Aquaculture Stewardship Council



- Independent, not-for-profit certification & labelling program
- Established in 2010: WWF & IDH
- Global, market-based & voluntary
- Based on science & transparency
- Work with industry, NGOs and all others who want to participate



**Our vision** - A world where aquaculture plays a major role in supplying food and social benefits for mankind whilst minimising negative impacts on the environment



# The ASC Standards



Tilapia



Pangasius



Salmon



Bivalves



Trout



Shrimp



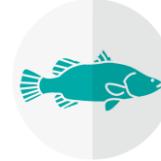
Seriola & Cobia



Abalone



Seabass,  
Seabream & Meagre



Tropical  
marine  
Finfish  
(26.12.2019)

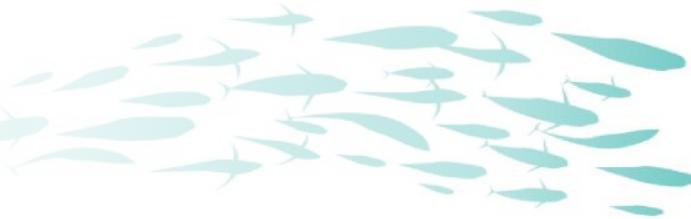


Flatfish  
(26.12.2019)

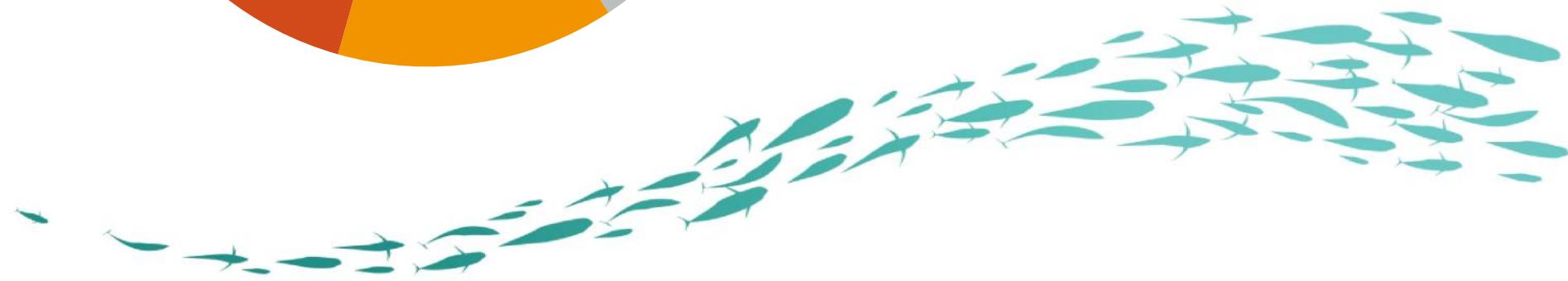
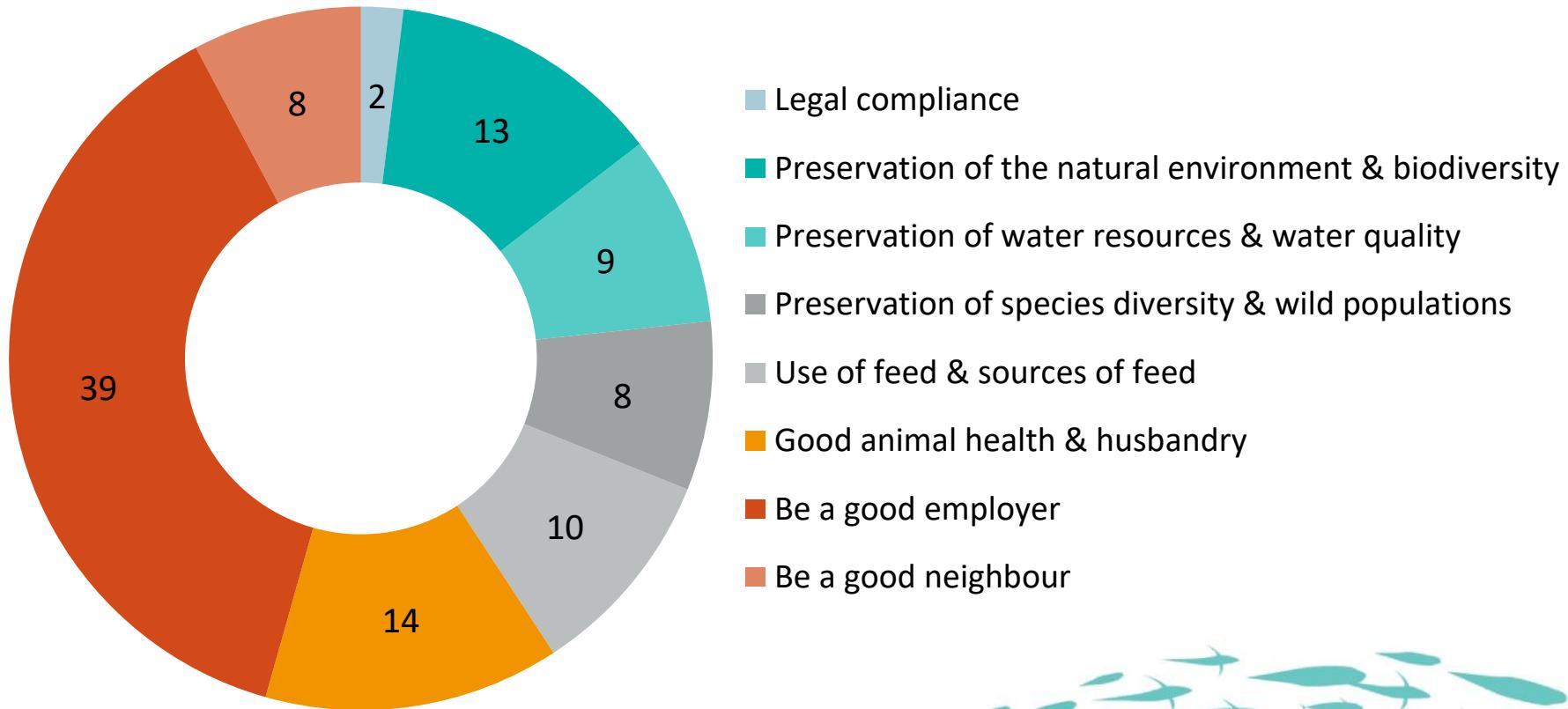


Seaweed  
ASC &  
MSC

- 7 Principles per Standard (Environment, Social & Community)
- Aquaculture Dialogues
- Performance indicators setting 'thresholds'
- Disclosure of monitoring data
- Continuous improvement (3 – 5 years)



# An example: The ASC Shrimp Standard



# The ASC Standards



Tilapia



Pangasius



Salmon



Bivalves



Trout



Shrimp



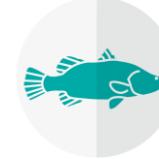
Seriola & Cobia



Abalone



Seabass,  
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& Meagre



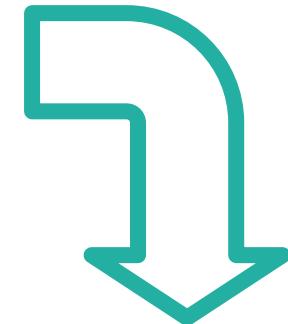
Tropical  
marine  
Finfish  
(26.12.2019)



Flatfish  
(26.12.2019)

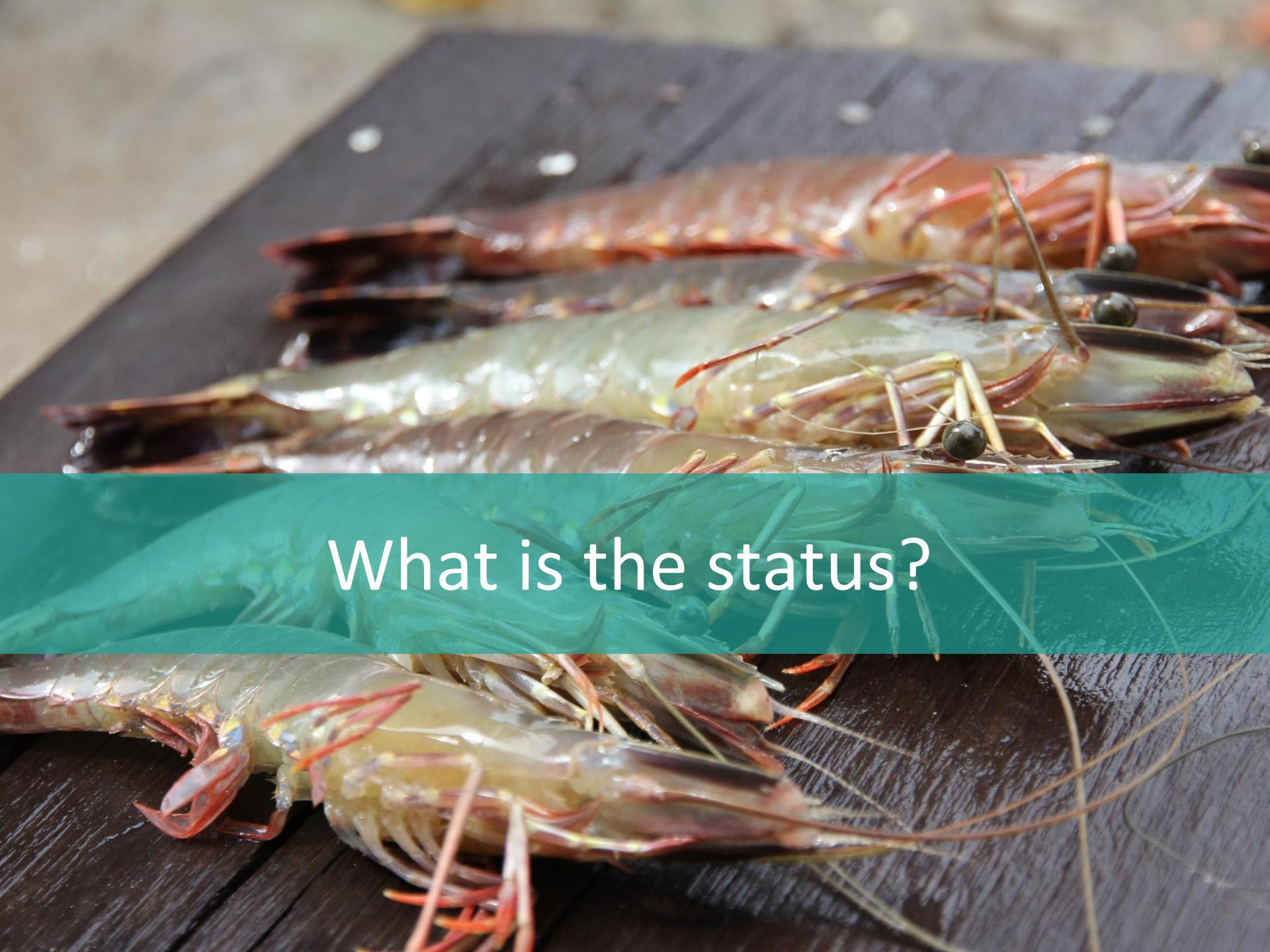


Seaweed  
ASC &  
MSC



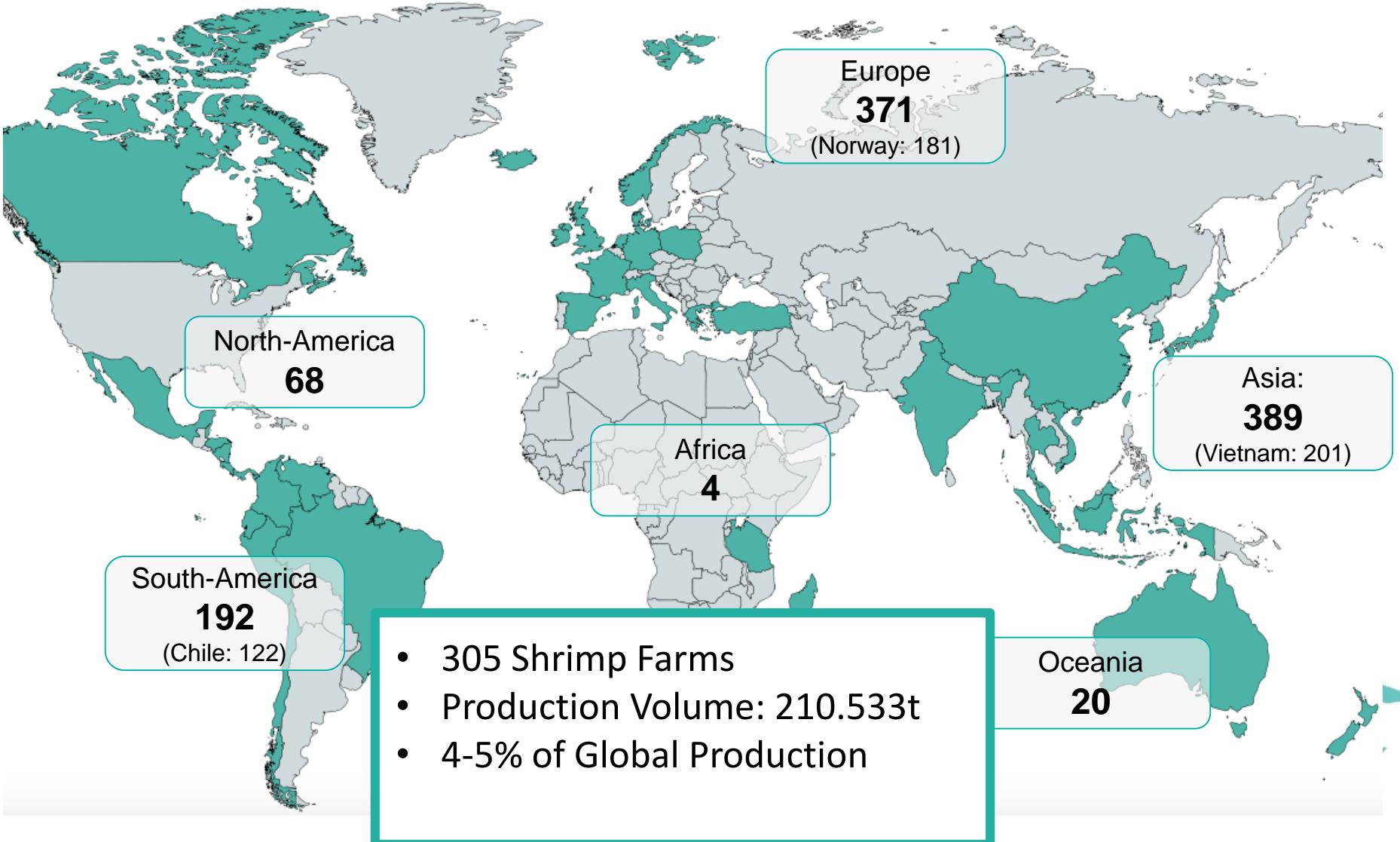
- 7 Principles per Standard (Environment, Social & Community)
- Aquaculture Dialogues
- Performance indicators setting 'thresholds'
- Disclosure of monitoring data
- Continuous improvement (3 – 5 years)





What is the status?

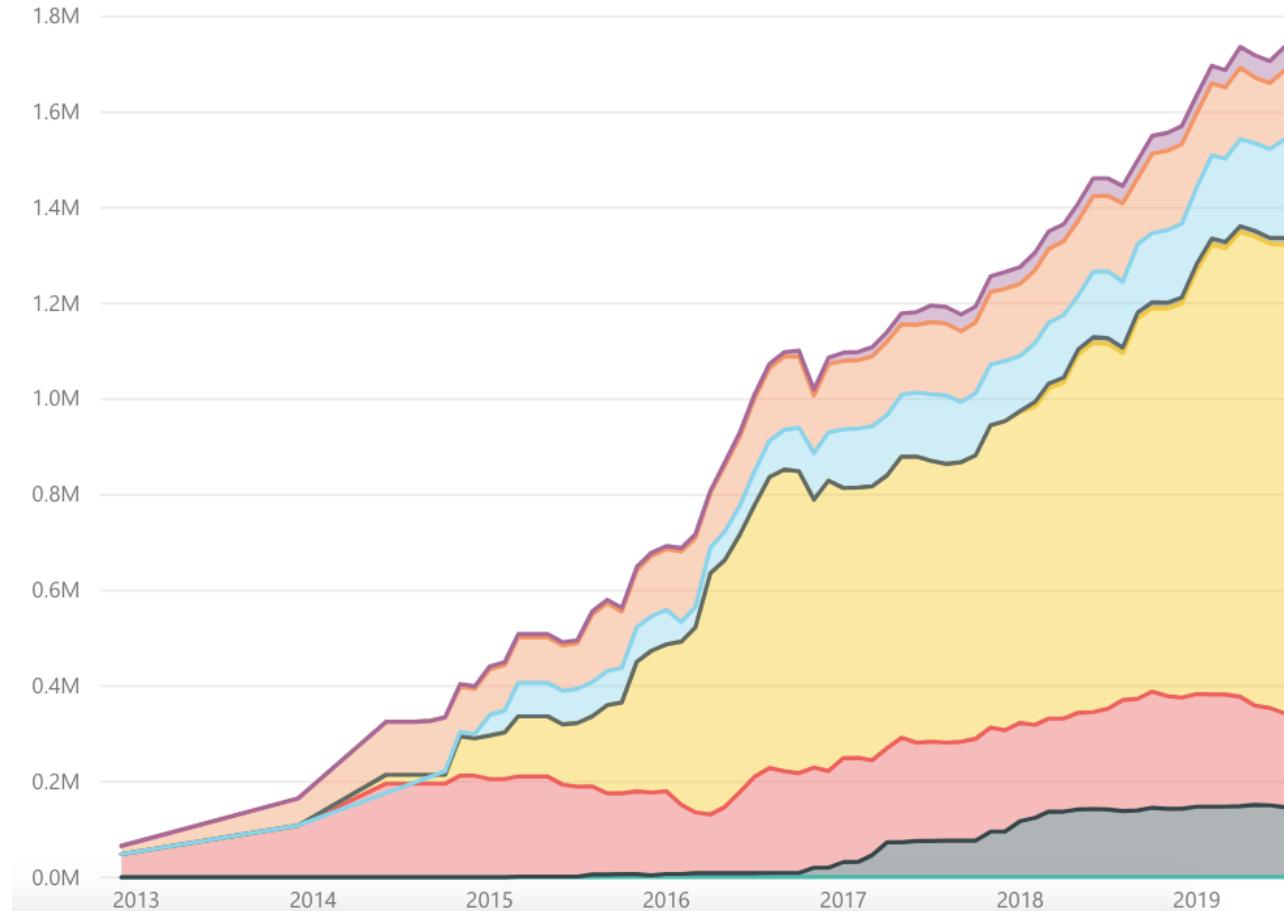
# Certified farm-sites (8/2019)



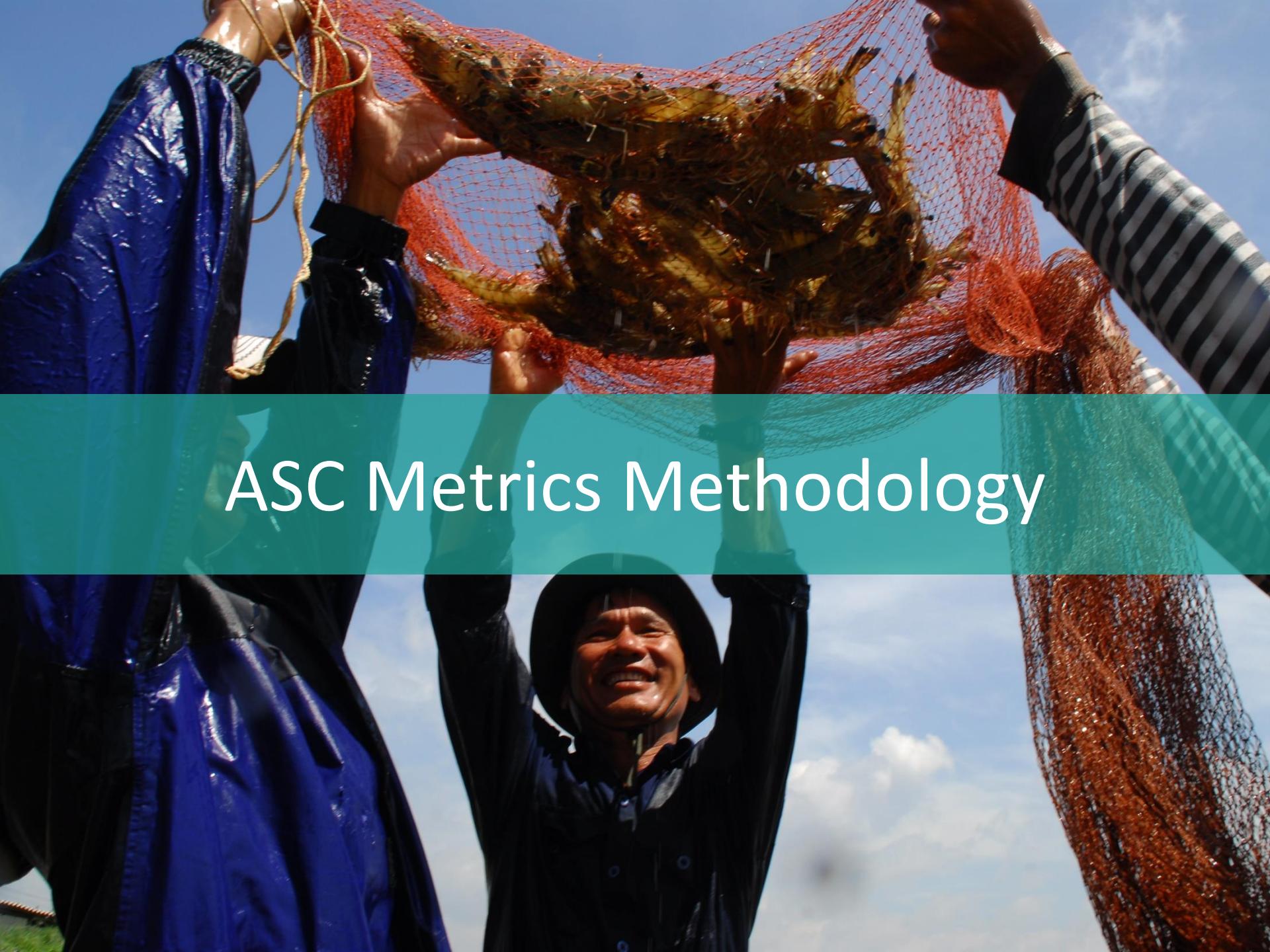
# Certified Volume (8/2019)



● Abalone ● Bivalve ● Pangasius ● Salmon ● Cobia/Seriola ● Shrimp ● Tilapia ● Trout



1718849 tonnes

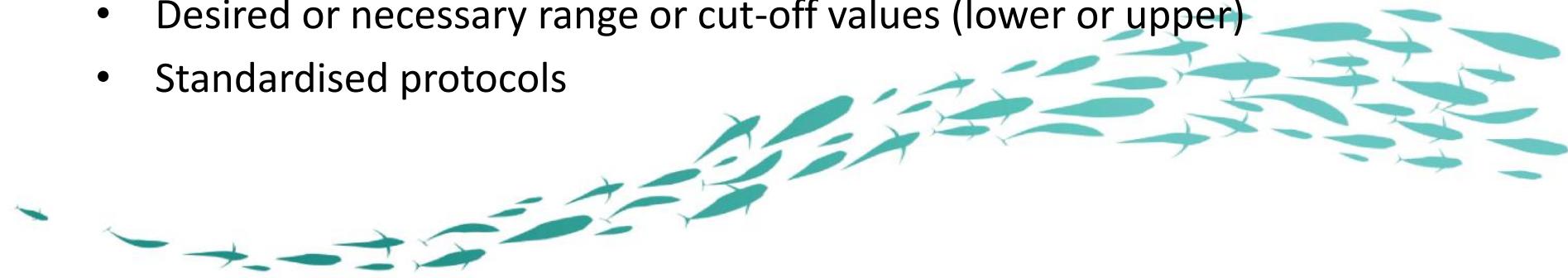
A photograph of a fisherman holding a large orange fishing net filled with shrimp. He is wearing a blue waterproof apron and a striped shirt. The background is a clear blue sky.

# ASC Metrics Methodology

# Metrics within ASC Standards



- Metrics: numbers that provide information about efficiency, performance, progress or quality
- In ASC: description on system and production efficiencies, evaluation of performance levels
  - Phosphorus discharge/effluent load
  - Feed use (FFDR)
  - Energy use
  - Survival rate
  - Dissolved oxygen
  - ...
- Desired or necessary range or cut-off values (lower or upper)
- Standardised protocols



# Relevant Types of Data



- Farm Data
  - Certified
    - Audit reports
    - Data submission (Salmon appendix VI, Trout Appendix II)
  - Non-certified
    - Pre-certification audits
    - Field visits
    - Database (e.g. GSI)
- Scientific Data
  - Research data (laboratory)
  - Field study

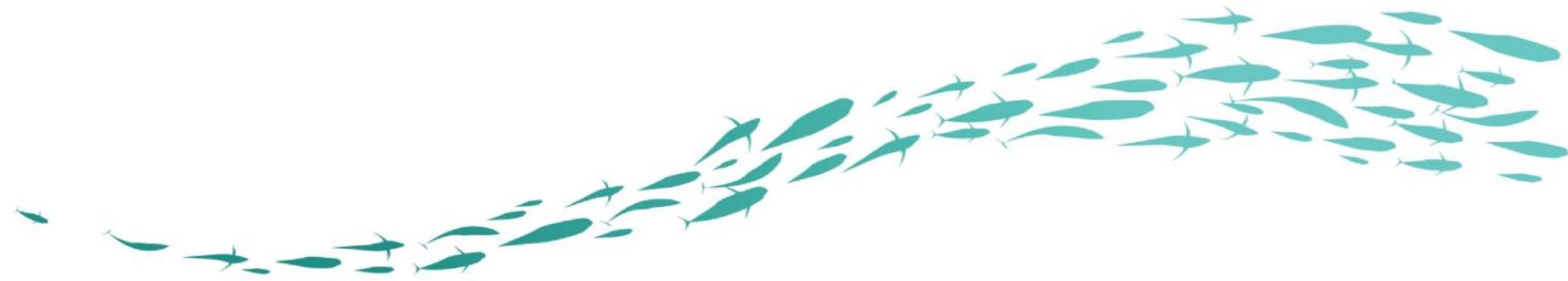
Reflect global performance  
as good as possible



# The ASC Shrimp Standard



- ASC Shrimp Standard v.1.0 currently under revision
- Covers species under the genus *Penaeus* (and *Litopenaeus*)
  - Oriented towards *P. monodon* and *P. vannamei*
- Inclusion of potential new candidates
  - *P. stylirostris* (Blue shrimp)
  - *P. merguiensis* (Banana prawn)
  - *P. japonicus* (Kuruma prawn)
  - *P. ensis* (Greasyback shrimp)

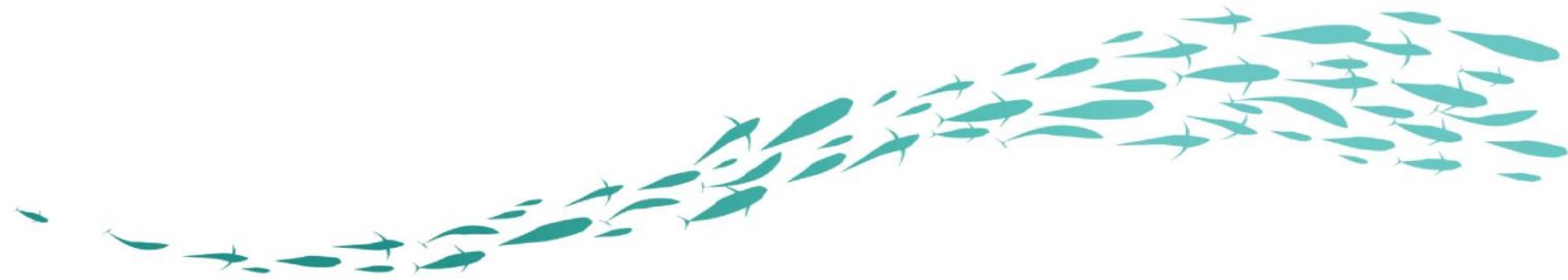


# The ASC Shrimp Standard



## QUESTION

Is it necessary to include species specific metrics for other shrimp species and if yes, what would be the appropriate value?



# Species Specific Indicators



Indicator	Requirement	Metric
5.1.3	Annual average farm survival rate (SR) 1) unfed and non-permanently aerated pond 2) fed but non-permanently aerated pond 3) fed and permanently aerated pond	1)>25% 2)>45% 3)>60%
5.1.4	Stocked larvae that are SPF or SPR for all important pathogens	100% (if commercially available)
6.2.2	percent of total post larvae from closed loop hatchery	100%
7.4.1	Feed Fish Equivalence Ratio (FFER)	1.35:1 <i>L. vannamei</i> 1.9:1 <i>P. monodon</i>
7.4.2 a	economic feed conversion ratio (eFCR)	records available
7.4.2 b	protein retention efficiency (PRE)	records available
7.5.1	nitrogen effluent per ton of shrimp produced over a 12 month period	<25.2 kg/T <i>L. vannamei</i> <32.4 kg/T <i>P. monodon</i>
7.5.2	phosphorous effluent per ton of shrimp produced over a 12 month period	<3.9 kg/T <i>L. vannamei</i> <5.4 kg/T <i>P. monodon</i>
7.5.4	concentration of settleable solids	<3.3 mL/L + treatment evidence
7.5.5	Percentage change in diurnal DO relative to DO at saturation in receiving water body for the waters specific salinity and temperature	<65%

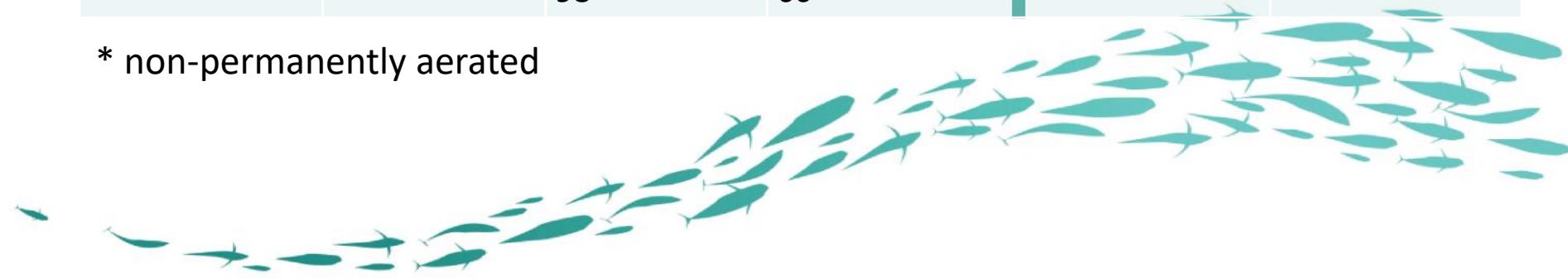
# Species Specific Indicators

## Literature Data



<i>Penaeus</i>	<i>stylirostris</i>	<i>merguiensis</i>	<i>japonicus</i>	<i>vannamei</i>	<i>monodon</i>
Protein	30 – 35 <sup>1</sup>	50 <sup>1</sup>	>52 <sup>14</sup>	30 <sup>1, 15</sup>	36 – 42 <sup>2</sup>
Requirement	36 – 42 <sup>2</sup>		42 <sup>1</sup>	20 – 35 <sup>2</sup>	40 <sup>1</sup>
[%]			55 <sup>15</sup>		
FCR	2.82 ± 0.22 <sup>3</sup> 1.6 <sup>2</sup>	1.47 – 1.65 <sup>6</sup> 1.11 – 1.82 <sup>7</sup> 1.53 <sup>8</sup>	4.12 <sup>13</sup> 3.50 (0.47 – 7.04) <sup>11</sup>	1.2 <sup>2</sup>	1.6 <sup>2</sup>
Survival [%]	64 – 75 <sup>4</sup> 50 – 60 <sup>2</sup>	82 – 90 <sup>6</sup> 83 <sup>9</sup> 98 <sup>8</sup>	62* <sup>11</sup> >75 <sup>12</sup> 60 <sup>13</sup>	65 – 90 <sup>2</sup>	45 – 80 <sup>2</sup>

\* non-permanently aerated



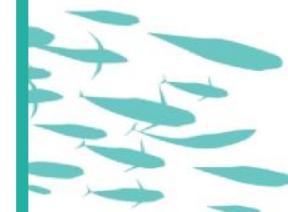
# Species Specific Indicators ASC Farm Data



<i>Penaeus</i>	<i>stylirostris</i>	<i>merguiensis</i>	<i>japonicus</i>	<i>vannamei</i>	<i>monodon</i>
FCR	2.25 <sup>5</sup>	No stocking of larvae thus not applicable <sup>10</sup>	No certified farms	$1.44 \pm 0.34$ (n=76)	$1.35 \pm 0.15$ (n=15)
	2.28 <sup>5</sup>				
Survival [%]	67 <sup>5</sup>	not applicable <sup>10</sup>		$79.2 \pm 9.9$ (n=59)	-
				$61.2 \pm 13.1^*$ (n=28)	$76.2 \pm 11.7^*$ (n=19)
				$70.6 \pm 22.4^*$ (unfed) (n=3)	$36.6 \pm 16.1^*$ (unfed) (n=11)

\* non-permanently aerated

**NEED**  
Data from non-certified  
farms!



# Suggestions



- *P. ensis* very limited data, not recommended to specifically add the species to the ASC Shrimp Standard
- *P. merguiensis* and *P. japonicus* similar to *P. monodon* with slightly higher protein requirements
- *P. stylirostris* similar to *P. vannamei* (survival) and *P. monodon* (protein requirement)
  - Currently certified under *P. monodon* requirements

Recommendation: Do not differentiate between  
*P. merguiensis*, *P. japonicus*, *P. stylirostris* and  
*P. monodon*  
(same metric requirements, review in progress)



A collage of images depicting a busy fish market scene. In the background, several people wearing traditional conical hats are working at a stall, surrounded by various items. In the foreground, there are three large red plastic baskets filled with shrimp, resting on a blue and white striped cloth. A person's hand is visible pouring more shrimp into one of the baskets.

What can you do?

# Stakeholder Involvement



- Participate in public consultations
- Provide data to the ASC
- Make suggestions
  - Species
  - Issues
  - ...
- Talk to us at Booth #86





# Thank you!

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[www.asc-aqua.org](http://www.asc-aqua.org)



Aquaculture Stewardship Council



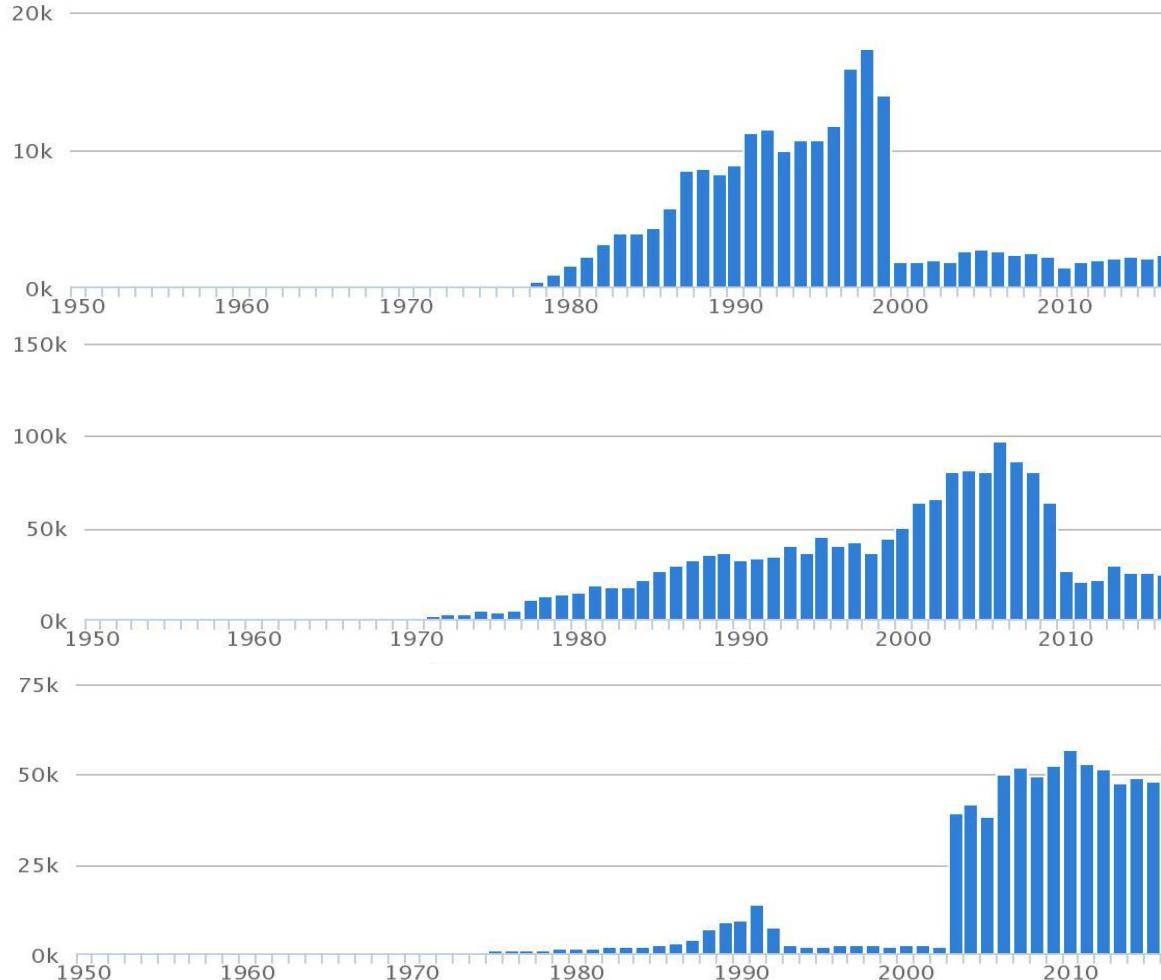
@ASC\_aqua



# References

- <sup>1</sup>Guillaume, J., Kaushik, S., Bergot, P., Métailler, R., 2001. Nutrition and feeding of fish and crustaceans. Springer.
- <sup>2</sup>Briggs, M., Funge-Smith, S., Subasinghe, R., Phillips, M., 2004. Introductions and movement of *Penaeus vannamei* and *Penaeus stylirostris* in Asia and the Pacific. FAO RAP Publ. 75, 1–12.
- <sup>3</sup>Hernandez-Llamas, A., Gonzalez-Becerril, A., Hernandez-Vazquez, S., Escutia-Zuñiga, S., 2004. Bioeconomic analysis of intensive production of the blue shrimp *Litopenaeus stylirostris* (Stimpson). Aquac. Res. 35, 103–111.
- <sup>4</sup>Goyard, E., Patrois, J., Peignon, J.M., Vanaa, V., Dufour, R., Viallon, J., Bédier, E., 2002. Selection for better growth of *Penaeus stylirostris* in Tahiti and New Caledonia. Aquaculture 204, 461–468.
- <sup>5</sup>SOPAC SA, New Caledonia (ASC certified Farm)
- <sup>6</sup>Hoang, T., Barchiesis, M., Lee, S.Y., Keenan, C.P., Marsden, G.E., 2003. Influences of light intensity and photoperiod on moulting and growth of *Penaeus merguiensis* cultured under laboratory conditions. Aquaculture 216, 343–354.
- <sup>7</sup>Sedgwick, R.W., 1979. Effect of ration size and feeding frequency on the growth and food conversion of juvenile *Penaeus merguiensis* De Man. Aquaculture 16, 279–298.
- <sup>8</sup>Ruenreungdee, K., Sornprasom, W., 2008. Monoculture of banana shrimp (*Penaeus merguiensis*, de Man) by close recycled system.
- <sup>9</sup>Staples, D.J., Heales, D.S., 1991. Temperature and salinity optima for growth and survival of juvenile banana prawns *Penaeus merguiensis*. J. Exp. Mar. Bio. Ecol. 154, 251–274.
- <sup>10</sup>Cammimex, Than Doan and Namcan, Vietnam;
- <sup>11</sup>Türkmen, G., 2007. Pond Culture of *Penaeus semisulcatus* and *Marsupenaeus japonicus* (Decapoda, Penaeidae) on the West coast of Turkey. Turkish J. Fish. Aquat. Sci. 7, 07–11.
- <sup>12</sup>Hewitt, D.R., Duncan, P.F., 2001. Effect of high water temperature on the survival, moulting and food consumption of *Penaeus (Marsupenaeus) japonicus* (Bate, 1888). Aquac. Res. 32, 305–313
- <sup>13</sup>Türkmen, G., 2005. The first test shrimp culture results from Izmir-Turkey, in: Conference on International Agricultural Research for Development. <sup>14</sup>Guillaume, J., 1989. The nutritional requirements of the Japanese shrimp *Penaeus japonicus*. Adv. Trop. Aquac. 9, 381–391.
- <sup>15</sup>Laubier, A., Laubier, L., 1993. Marine crustacean farming: present status and perspectives. Aquat. Living Resour. 6, 319–329.

# New Shrimp Species



• *P. stylirostris*

(Blue shrimp)

• *P. merguiensis*

(Banana prawn)

• *P. japonicus*

(Kuruma prawn)