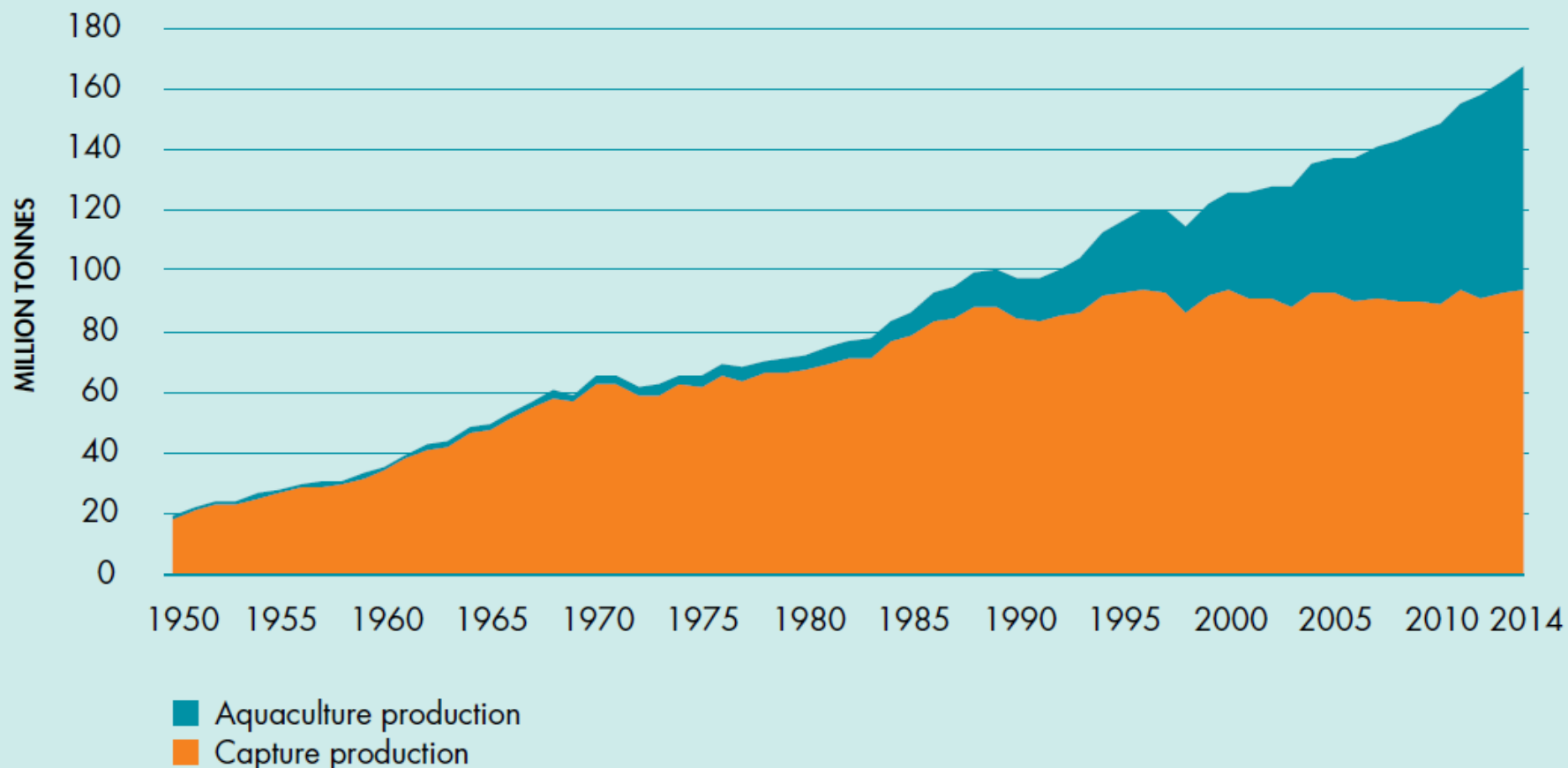


# Aquaculture Biotechnology & Food Security



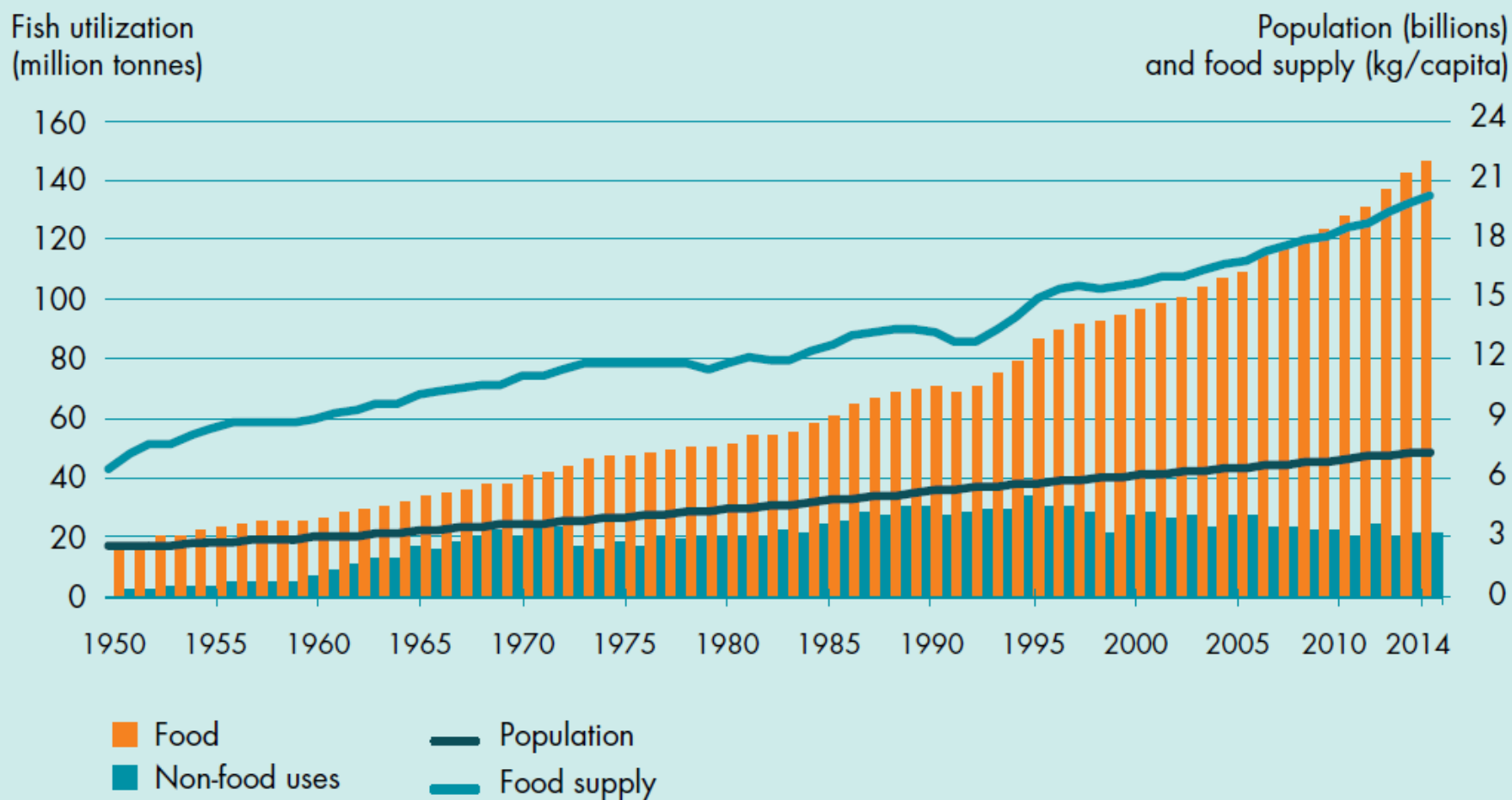
**Dave Conley, MSc**  
***AwF - Aquaculture without Frontiers***  
***[www.aquaculturewithoutfrontiers.org](http://www.aquaculturewithoutfrontiers.org)***

## WORLD CAPTURE FISHERIES AND AQUACULTURE PRODUCTION



**FAO - The State of World Fisheries and Aquaculture 2016**

# WORLD FISH UTILIZATION AND SUPPLY



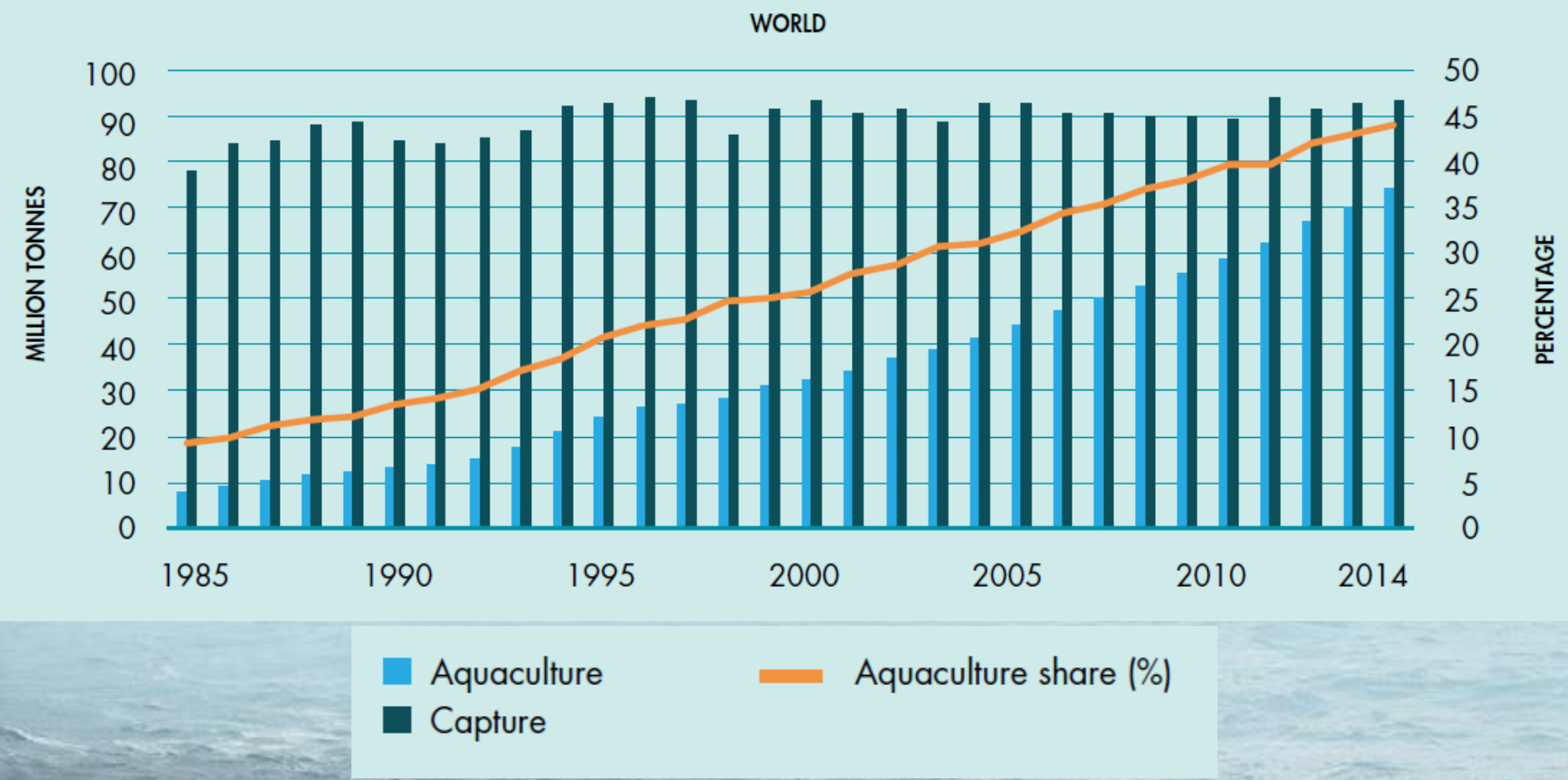
## WORLD FISHERIES AND AQUACULTURE PRODUCTION AND UTILIZATION

	2009	2010	2011	2012	2013	2014
<i>(Million tonnes)</i>						
<b>PRODUCTION</b>						
<b>Capture</b>						
Inland	10.5	11.3	11.1	11.6	11.7	11.9
Marine	79.7	77.9	82.6	79.7	81.0	81.5
<b>Total capture</b>	<b>90.2</b>	<b>89.1</b>	<b>93.7</b>	<b>91.3</b>	<b>92.7</b>	<b>93.4</b>
<b>Aquaculture</b>						
Inland	34.3	36.9	38.6	42.0	44.8	47.1
Marine	21.4	22.1	23.2	24.4	25.5	26.7
<b>Total aquaculture</b>	<b>55.7</b>	<b>59.0</b>	<b>61.8</b>	<b>66.5</b>	<b>70.3</b>	<b>73.8</b>
<b>TOTAL</b>	<b>145.9</b>	<b>148.1</b>	<b>155.5</b>	<b>157.8</b>	<b>162.9</b>	<b>167.2</b>
<b>UTILIZATION<sup>1</sup></b>						
Human consumption	123.8	128.1	130.8	136.9	141.5	146.3
Non-food uses	22.0	20.0	24.7	20.9	21.4	20.9
Population ( <i>billions</i> )	6.8	6.9	7.0	7.1	7.2	7.3
Per capita food fish supply ( <i>kg</i> )	18.1	18.5	18.6	19.3	19.7	20.1

Note: Excluding aquatic plants. Totals may not match due to rounding.

<sup>1</sup> Data in this section for 2014 are provisional estimates.

# SHARE OF AQUACULTURE IN TOTAL PRODUCTION OF AQUATIC ANIMALS





# Main Groups of Species Produced

By 2014 – a total of **580 species** and/or species groups farmed around the world

These species items include:

- 362 finfishes (including hybrids)
- 104 molluscs
- 62 crustaceans
- 6 frogs & reptiles
- 9 aquatic invertebrates
- 37 aquatic plants

# FAO ESTIMATES OF FOOD NEED



Global Agriculture Towards 2050. FAO (2009)

A satellite image of Earth from space, showing the Americas and surrounding oceans. The text is overlaid on the left side of the image.

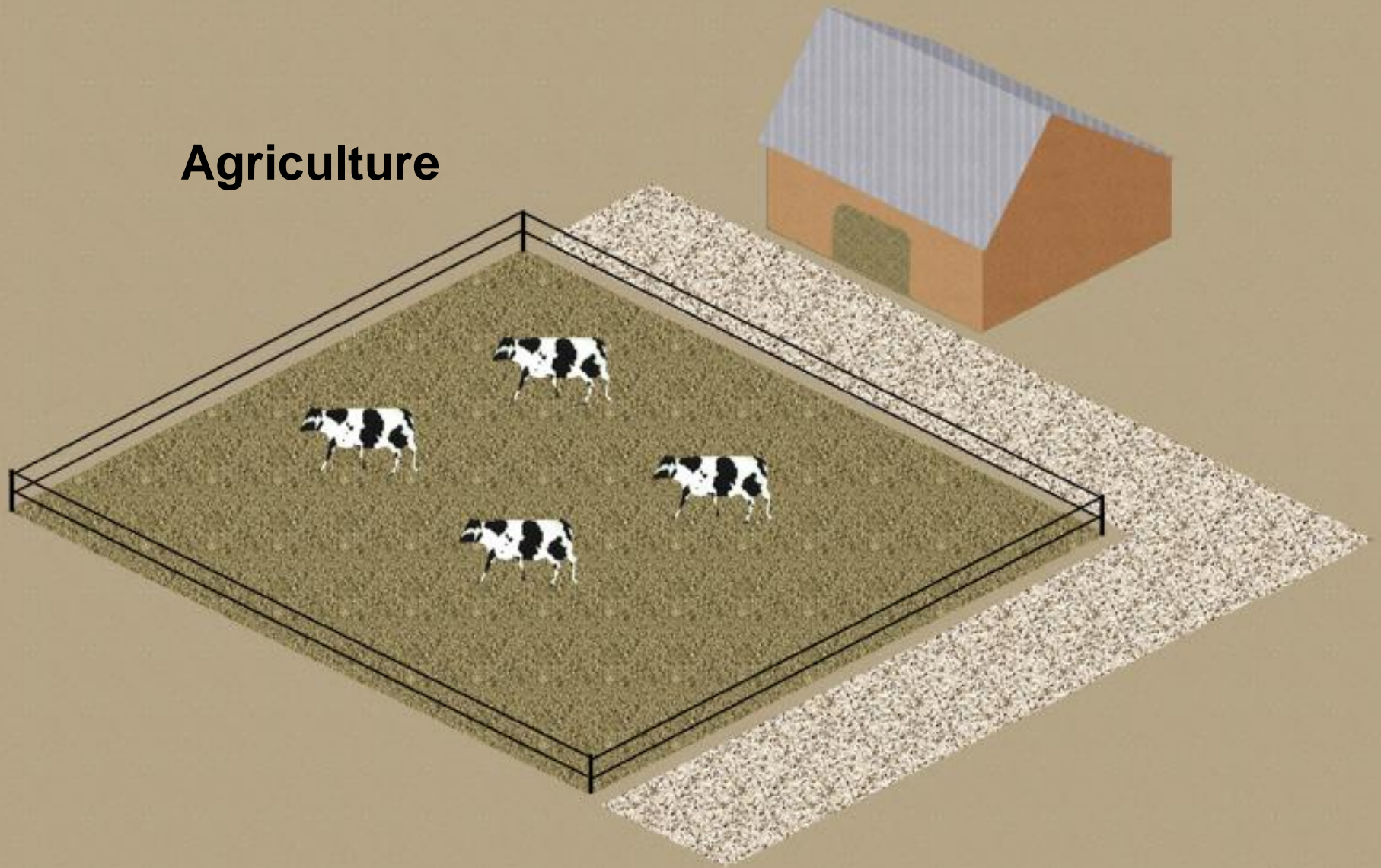
**Only 2% of global food  
production comes from our  
aquatic environment**





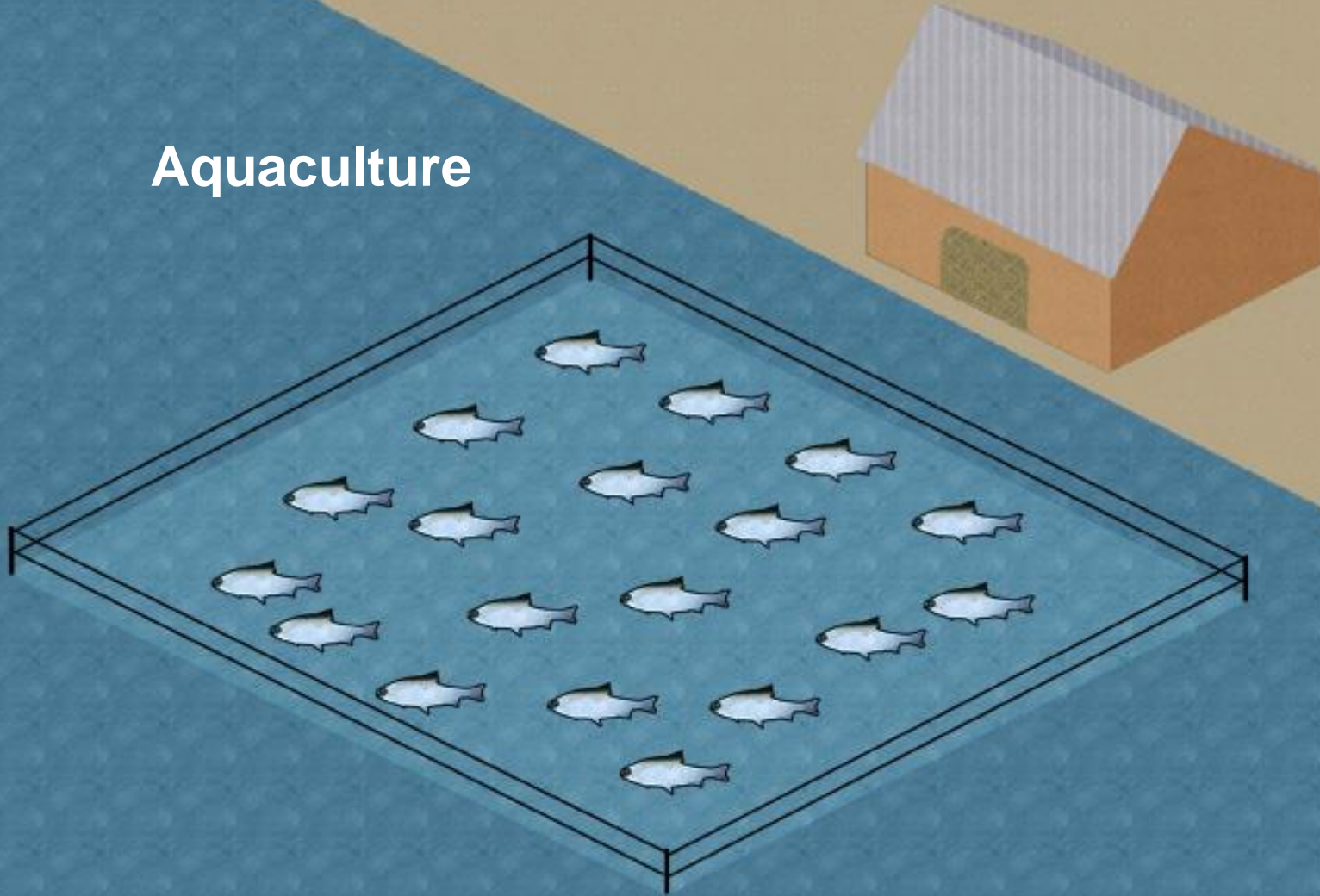
We must plant the sea and herd its animals using the sea as farmers instead of hunters. That is what civilization is all about – farming replacing hunting. *Jacques Yves Cousteau*

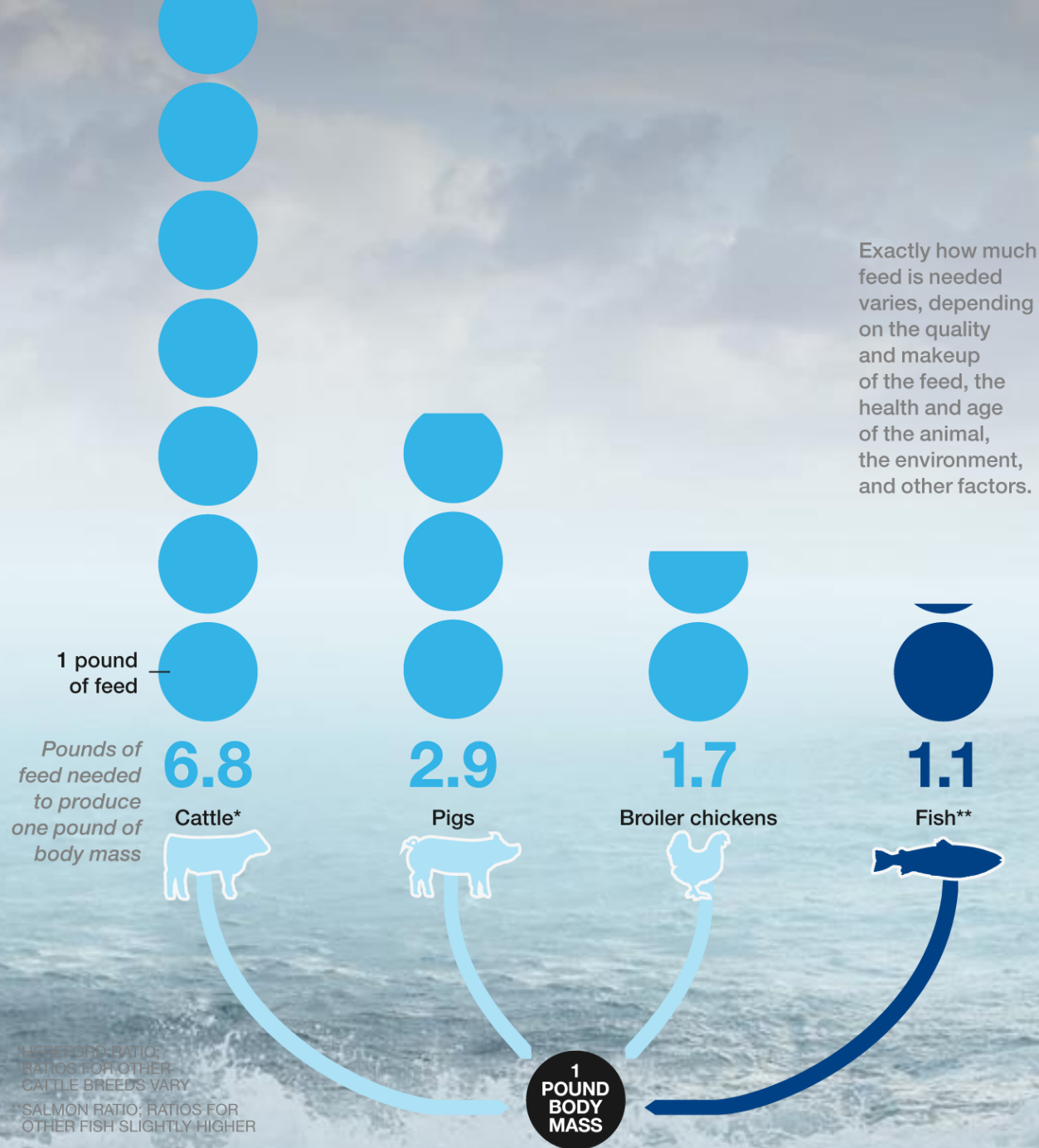
# Agriculture





# Aquaculture







**Founded 2004  
by Michael New, OBE**



**AwF teaches disadvantaged people how to farm fish to  
feed themselves & their families and to lift themselves  
out of poverty**































# **Aquaculture Biotechnology for Poverty Alleviation**

## **Desireables**

- ✓ faster growth rate
- ✓ better feed utilization
- ✓ better disease resistance
- ✓ low oxygen tolerance
- ✓ high temperature tolerance
- ✓ poor water quality tolerance
- ✓ high omega-3 content
- ✓ enhanced vitamin & nutrient profiles
- ✓ slower decomposition - longer shelf life

**The poverty of the world drags us all down.**

- Dr George Church - World Science Festival, June 2016





[www.aquaculturewithoutfrontiers.org](http://www.aquaculturewithoutfrontiers.org)

**Questions?**



