My quest to transform the largest fishery on Earth towards sustainability

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Peru: largest fishery in the world

Source: FAO Fishstat 2011
We almost exclusively fish anchovetas

Peruvian anchovies = *Engraulis ringens*
Just in Peru, between 1955 - 2010, over 270 Million MT of Anchovetas were caught (10% of global marine catches) 98% to produce fishmeal and fishoil
A global concern: reduction fisheries affecting global food security (and marine ecosystems)

Pauly, 2006
It’s a global growth problem

- Human population growth
  - Food demand
    - Aquaculture & Industrial Animal production systems
      - Global demand for fishmeal & fish-oil

- Ecosystemic resilience & productivity
  - Human health
    - Food security
      - Ecological & Social Degradation
        - overfishing
          - pollution
            - Industrial fisheries
Fishmeal and fish oil as part of feed for animal production

Fishmeal

Fish oil

Source: Tveteras 2011 - IFFO
For many reasons,
THIS IS WRONG!
Contribution of fish to global food security

<table>
<thead>
<tr>
<th>Region</th>
<th>Calories (Cal. cap.·day⁻¹)</th>
<th>Animal (%)</th>
<th>Fish (%)</th>
<th>Pelagic Fish (%)</th>
<th>Protein (g cap.·day⁻¹)</th>
<th>Animal (%)</th>
<th>Fish (%)</th>
<th>Pelagic Fish (%)</th>
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<td>8.1</td>
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<tr>
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<td>44</td>
<td>77.9</td>
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<tr>
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<td>114</td>
<td>64</td>
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<td>29</td>
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<td>29</td>
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<td>17</td>
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<tr>
<td>Sub-Saharan Africa</td>
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<td>6.9</td>
<td>8.6</td>
<td>20</td>
<td>55.1</td>
<td>28</td>
<td>18</td>
<td>43</td>
</tr>
</tbody>
</table>

Figure 2. Contribution of fish (includes both fish and shellfish) and pelagic fish to total daily per capita calorie and animal protein intake by major geographical region and country grouping in 2003 according to the latest FAO Food Balance Sheets (18).
Many malnourished children in Peru

Peru 2007 child malnourishment vulnerability

- Low (0.20) < 0.2
- Medium Low (0.2 - 0.39)
- Moderate (0.4 - 0.59)
- Moderate High (0.6 - 0.79)
- High (> 0.79)

Fuentes: Censo de Población y Vivienda 2005 - INEI,
Censo de Tallas Escolar 2005 - MINEDU
Anchovetas

- Key species in Humboldt Upwelling Ecosystem
- Channel productivity to upper trophic levels

Fig. 8. Major interactions in the pelagic ecosystem off Peru.
Fig. 8. Principales interacciones en el ecosistema pelágico frente a Perú.
Massive extraction of anchoveta deprives top predators of main prey and reduces resilience to environmental volatility & climate change

Without fishery

With fishery

Porcentajes corresponden a la proporción de la productividad disponible en un nivel trófico que es consumido por el siguiente nivel trófico en cualquier momento determinado. Jahncke et al. 2004
Anchoveta impacts on the Ecosystem’s uses and services
Why use all anchovetas only to produce fishmeal and fish oil?
Some excuses:

- Important source of income
- No demand…
- They are no good to eat…
This is clearly not true:

- anchovies loved around the world
- recommended as “best choice” by most sustainable seafood programs
- recognized as a most nutritious food (high contents of omega-3 oils and nutrients)
- Important source of UMAMI or “deliciousness”
- Peruvians used to eat them (until the 1950’s when the fishery started…)
Historically, anchovetas were an important source of protein for Peruvians.
5000 Years ago – Caral-Supe

Abundance of anchoveta and other marine resources
= food security = trade
= time to do other things
= development of culture
In global context
We needed to return:

From Fishmeal to Fish meals!
Why?

- Tasty, delicious fish!
- Abundant and cheap
- Most nutritious food (best protein, Omega 3 & 6, etc.)
- Greater added value for fish, allows lower catches without income loss
- Increased global food security
- More sustainable and diverse uses for marine ecosystems
- More jobs
Greater added value for fish

- Increase production for human consumption
- > jobs and nutrition
- > investment, exports and income
- Politically attractive
- > capacity and will for change
Changes we needed:

<table>
<thead>
<tr>
<th>From:</th>
<th>To:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food for animals</td>
<td>Food for people</td>
</tr>
<tr>
<td>Stinky, oily fish</td>
<td>Delicious fish</td>
</tr>
<tr>
<td>Poor man’s food</td>
<td>Gourmet item</td>
</tr>
</tbody>
</table>
The Anchoveta Week Initiative:

30-50 of Lima’s top restaurants & chefs
Over 18,000 tasted anchovetas each time
A creative partnership

A cook

A biologist

A graphics designer
II Semana de la Anchoveta
2 - 9 de diciembre 2007
www.anchoyeta.info
Come anchoveta y ayuda a salvar el mar peruano

Restaurantes donde podemos comer anchoveta:
Astrid y Gaston, Capilina, Costanera, 700, Delfino Mar, Edo, El Anca, El Bar, El Sisal del Rey, Fiesta Gourmet, Huancoshin, La Gloria, La Ete, La Cochinca de Dario, La Mar, La Red, Mi Causa, Mi propiedad, Privada, Alru, Pescados Capitales, Punta Sal, Sushito, Rodriguez, Sanborn de Sulco, San Antonio, Sonia, Tabla, T'anta, Trattoria Del Prati, Ichi Bari, Kapallag, 200 Millas, entre otros...

Restaurante Semana de la Anchoveta

Bravo Restobar, Casa Moreyra, La Baguette, Malabar, Matsuei, Osaka, Toshiron's, La Mar, Caplina, Costanera 700, La Pad,

Mi Causa, Pescados Capitales, Pizza Mavery, Xtravaganza, Huaca Paclana, Tabla,
La Bodega de la Trattoria, La Girasol y Casco, La Ene, La Trattoria de Mambrino, Senorío De Sulco, Canta Rana, La Rosa Nautica, Pastelería Rovegno, T'anta, Pastelería San Antonio.

We appealed to people's stomachs and eyes.
Huge media event
La Aventura de la Anchoveta
Increased availability
“The Government’s idea...”

Active promotion of anchoveta consumption
But mainly, we showed they were GOOD TO EAT!
5 years later:

- Increased consumption by from 35K MT in 2006 to 180K MT in 2011 = 3% of TAC)
- Companies investing hundreds of millions of US$ in processing plants (many different anchoveta products in local markets)
- Half of all canned fish = anchovetas
- Anchovetas available in the highlands
- Peru actively promoting exports of canned and frozen anchovies
Why did we succeed?

Food aid programs (ITP / FAO / CENAN / JICA), Limited by low availability in local markets, Also bad PR: food for the poor & not bothered with taste or presentation
Why did we succeed?

- Elevated anchovetas to something you would aspire to eat
- A source not only of optimal nutrition that is “good for you”, but a delicious, desirable fish.
- A top-down approach
El Equipo Anchoveta - CSA 2009
Next...

The Anchoveta Week goes Global!!
Harnessing market forces to catalyze transformation of the Peruvian industry

- Anchoveta Week in the US (350 top chefs)
- New foodie trend
- Anchoveta sold in large retail chains in the US and other even greater markets (China?)
- Industry has to increase production to supply the new greater demand
Towards a Cultural Change

www.gastronomiasostenible.pe
The Peruvian Gastronomy Boom

El peruano promedio gasta:

- **05%** en diversión.
- **07%** en salud.
- **07%** en cuidado personal.
- **09%** en ropa y educación.
- **06%** en ahorro.
- **03%** en estética.
- **12%** en casa.
- **08%** en transporte.

35% de su presupuesto en alimentación.

320 mil peruanos trabajarían en la actividad de restaurantes al 2009. De ellos 190 mil serían liceños. // 320,000 Peruvians are expected to have worked in the restaurant business in 2009. Of these, 190,000 work in Lima.

95% de los liceños afirma que la gastronomía es uno de los motivos para estar orgullosos de ser peruanos. // 95% of liceños say that gastronomy is one of the reasons to be proud of being a Peruvian.

// The average Peruvian spends 35% of his/her budget on food, 12% on housing, 9% on clothing and education, 8% on transport, 7% on health, 7% on personal care products, 3% on personal care services, 5% on entertainment, and 6% towards savings.
The Peruvian Gastronomy Boom

El 2008, 97,433 personas llegaron al Perú atraidos por su gastronomía. // In 2008, there were 97,433 visitors who arrived in Peru attracted by its gastronomy.

Sólo en EEUU hay restaurantes peruanos. // There are 40 peruvian restaurants in the United States alone.

90% de las franquicias en el exterior pertenecen al rubro gastronómico. // 90% of the franchises abroad are in the gastronomy business.

para más información / for more information: www.mistura.pe
+ Gastronomy =
> pressure on resources

www.gastronomiasostenible.pe
Cultural and biological diversity = Peruvian Gastronomy

... without ingredients, not even the best chefs can do much!
Sustainable Gastronomy =

Looks after its essential resources, assuming the responsibility for the future impacts of what we do TODAY; including impacts on natural resources and ecosystems, as well as future impacts on the values, ideals and wellbeing of society.

www.gastronomiasostenible.pe
Noticia gastronomía sostenible

Estos ácidos grasos fueron descubiertos en 1982 por Ralph Holman quién los encontró factores causales de la baja

Te imaginas...
Un ceviche sin pescado? Una huancaina sin papa? Una parihuela sin mariscos? Una vida sin Aji, Rocoto, Oyuquitos, Quinua, Chocos, Camarones, Lenguados, Cojinova, Bonito? La base esencial de nuestra gastronomía es nuestra excepcional diversidad biológica y cultural. Si no existieran estos maravillosos ingredientes o nuestra diversidad de culturas, ni con los mejores cocineros del mundo la cocina peruana sería lo que es.

¿Por qué Gastronomía sostenible?
Estos ácidos grasos fueron descubiertos en 1982 por Ralph Holman quién los encontró factores causales de la baja

El sello de calidad
Estos ácidos grasos fueron descubiertos en 1982 por Ralph Holman quién los encontró factores causales de la baja incidencia de infartos y enfermedades cardiovasculares de los esquimales.
First sustainability standard

• Respect for fishing seasons and minimal sizes
• The use and promotion of consumption of a wider variety of species (of fish) – “Catch of the Day”
• Recycling and Reuse of materials + Reduction in the use of contaminant materials such as styrofoam
• Work with small-scale producers that can demonstrate sustainable practices
• Education of customers and staff, promoting good practices that will lead to a Sustainable Gastronomy culture
Towards a Seal of Sustainability

• Ratings system that reflects advances in the use of SG practices
• Tourists and customers prefer more sustainable restaurants

www.gastronomiasostenible.pe
A big social media experiment

• Web site will provide information that enables advances towards sustainability

• Users participate recommending or denouncing restaurants that can be demonstrated using good or bad practices

www.gastronomiasostenible.pe
Over 100,000 people engaged
Anchovetas as cultural icon and a source of richness and wellbeing for Peru and the World
A model for improving the use of other similarly misused fish!...

Atlantic Menhaden  *Brevoortia tyrannus*

Mahini??
Thanks!!

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