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2016 AQ Summit: Research Update by Barry Costa-Pierce

Barry Costa-Pierce
The University of New England

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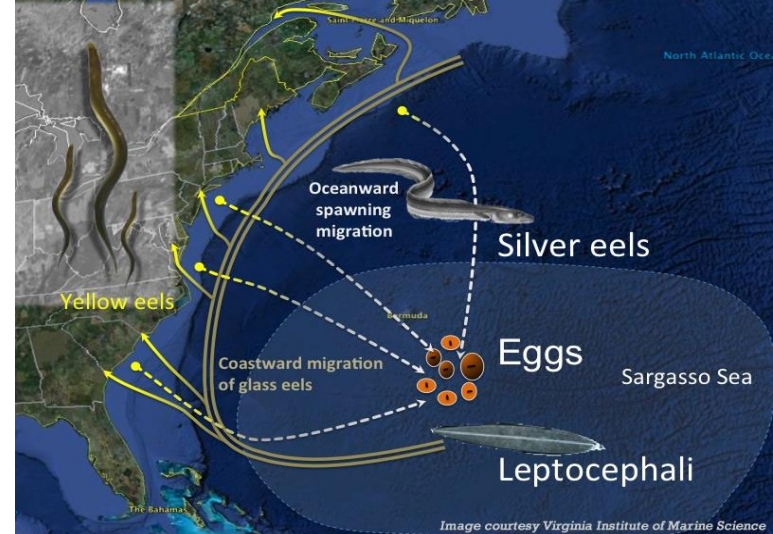
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Eel Update

Investigate the needs to develop an economically viable American eel industry in the Northeast

**Eel Workshop at the University of New England,
October 16-17, 2014**

Funded by the USDA Northeast Regional Aquaculture Center



Cornell University
Biological and Environmental Engineering

<http://ecologicalaquaculture.org>



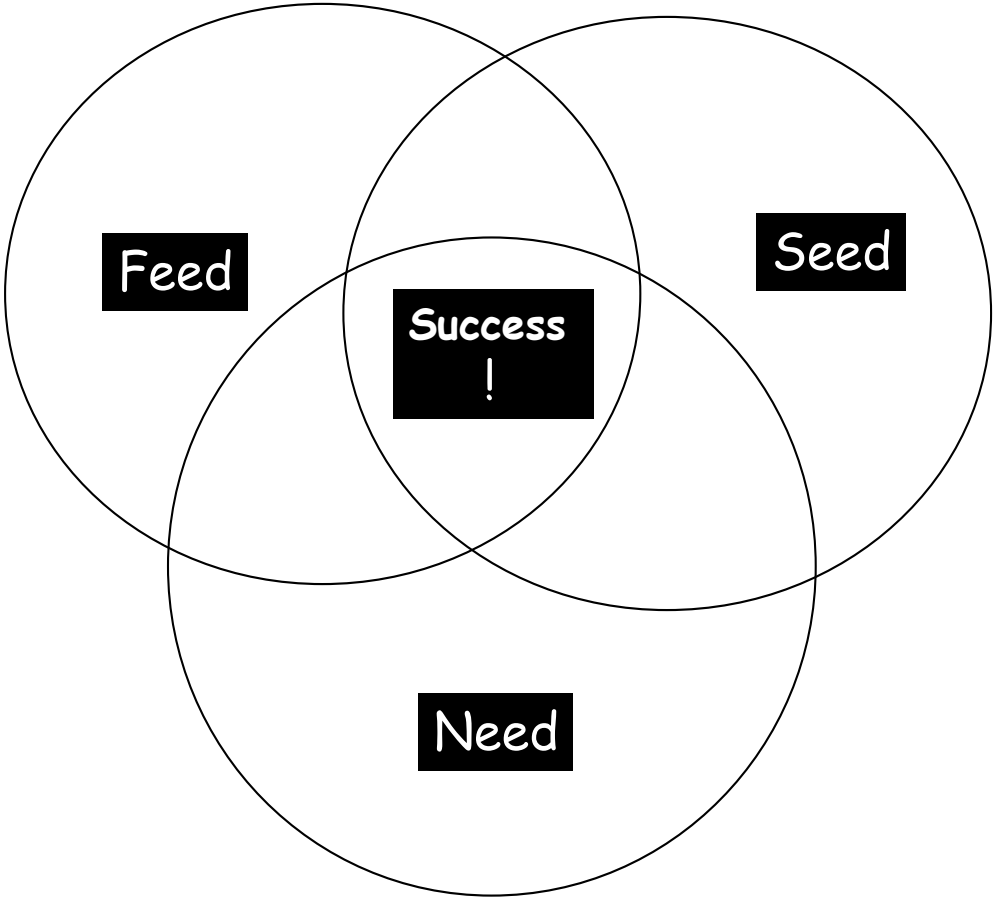
**Eel Workshop at the University of Southern Maine,
October 23-25, 2015**

Funded by the Sargasso Sea Commission



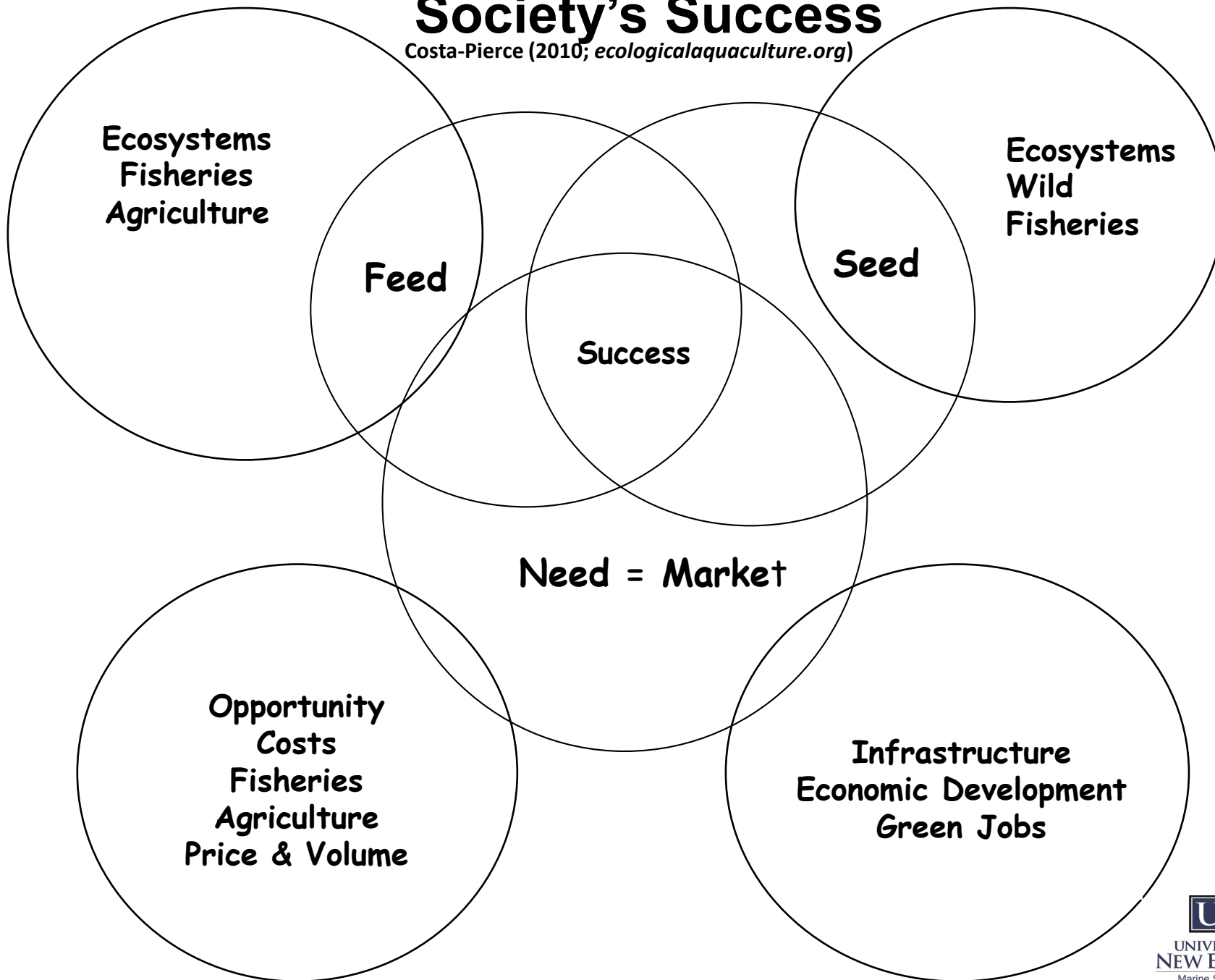
Aquaculture Business Success

Costa-Pierce (2010; *ecologicalaquaculture.org*)



Society's Success

Costa-Pierce (2010; ecologicalaquaculture.org)



Is This Sustainable? Rational? A Set of Preferred Outcomes?

~90% Maine Elvers Go to ***Aquaculture Systems in Asia***
China/Taiwan, Korea (only ~10% to Europe)

90% of freshwater eel Unagi (うなぎ) consumed in USA ***is***
farm-raised in Asia

USA has ***increased its consumption*** of processed eels
[Unagi kabayaki]

~580 tons were imported 2012 from China (~\$58 million)

In 2007, FDA put import controls on farmed eels from China due to
numerous cases of contamination

FAO:
90-95% of current
eel aquaculture
production *is from*
wild-caught elvers



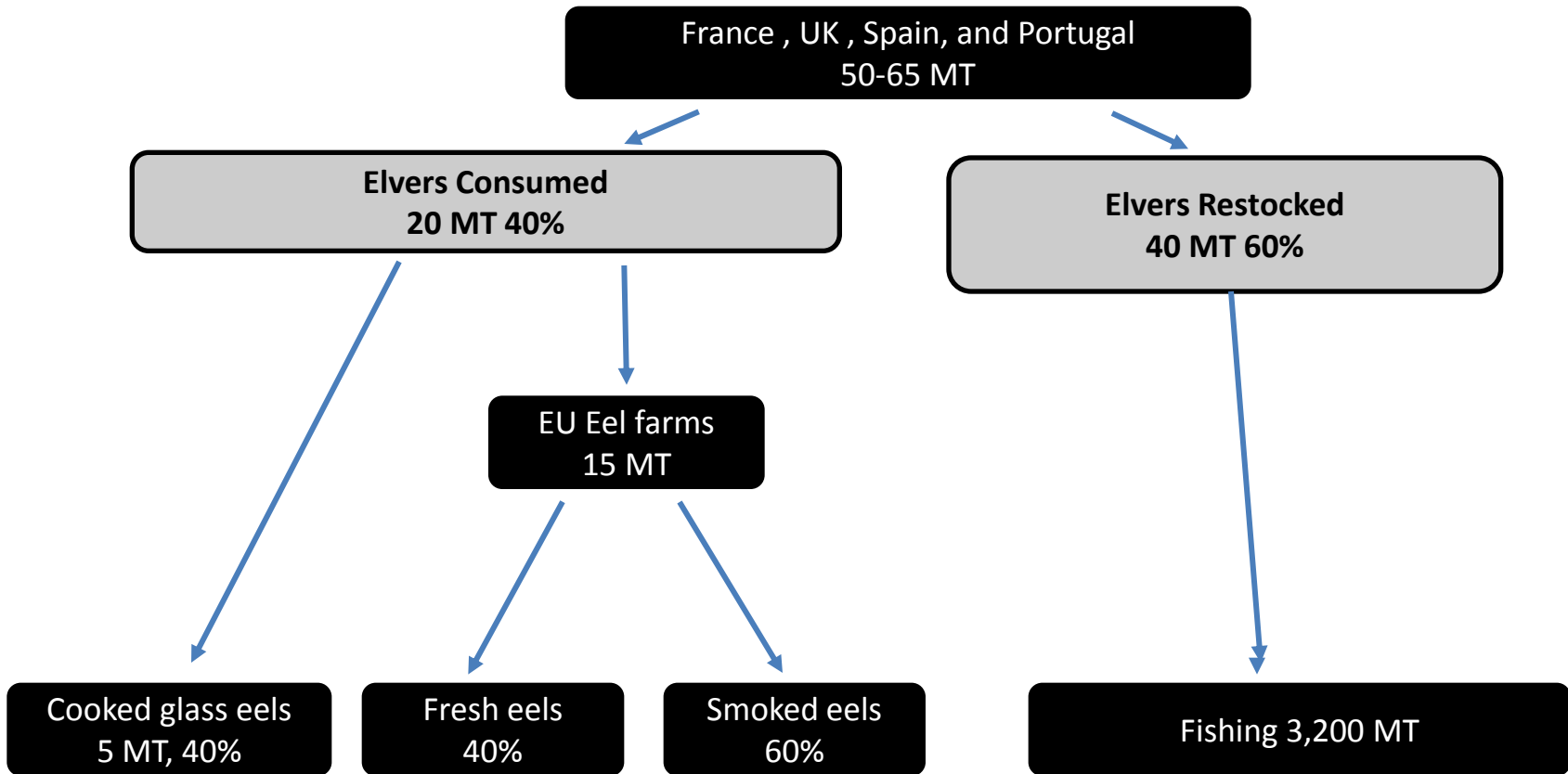
Alessandro Lovatelli
and P F Holthus.
2008.

*Capture-based
aquaculture : global
overview.*

FAO Fisheries Tech.
Paper 508



European Eel Value Chain



Eel Update

TECH TRANSFER

1. Fisheries Research Agency, Japan

Newly hatched eels (leptocephali) into glass eels of 5 cm

2. Paul Smith NovaEel Inc Halifax, NS CANADA

3. Mitch Feigenbaum American Eel Sustainability Association

4. Ep Eding Wageningen University, Netherlands

POLICY NEEDS

- 1. ASMFC Aquaculture Allocation: NO to 200 lb glass eel “farm development quota”**
- 2. INAD for Feminizing Hormones**



“Outside of the live bait market for striped bass fishing, there is virtually NO demand for small eels (170 g and under) in North America.” PAUL SMITH



**UNIVERSITY OF
NEW ENGLAND**
Marine Science Center

Eel Update

Feeds, Nutrition: Adults: well known, Skretting/BioMar

BUT Leptocephali into glass eels of 5 cm NO DIETS with Recommended 23% fat >1 g; 26% >3 g

Diseases: susceptible (vibriosis, eel herpes, aeromonads, pseudomonads, edwardsiellosis, etc.) Immune responses/antibodies/vaccines?

Systems Designs: well known, but opportunities exist



Is a Hatchery Really Needed?

High Capital, Operating Costs

Genetic Issues – Panmixia

Can Insure Genetic Integrity

Aquaculture Can Lead to Fisheries Sustainability?

The Aquaculture Toolbox



Fisheries and aquaculture interact with increasing intensity as fishers shift from fishing to aquaculture and by competing in the same markets with similar products. The need to integrate planning and management of the two sectors seems vital to their future development and sustainability.

FAO. 2012. *The State of World Fisheries and Aquaculture*. FAO, Rome.



How Are We Doing?

ME Sea Grant: NO

National Sea Grant: NO

NMFS S-K: NO

