MAINE AQUACULTURE

LOCALLY GROWN
SUSTAINABLE
HEALTHY SEAFOOD
OPPORTUNITIES FOR A NATIONAL WORKING WATERFRONTS POLICY

NATIONAL WORKING WATERFRONTS AND WATERWAYS SYMPOSIUM
TACOMA 2013

MAINE AQUACULTURE ASSOCIATION

S. BELLE
RESOURCE USE PATTERNS ARE CHANGING
EVOLUTION OF RESOURCE UTILIZATION PATTERNS

- VIRGIN RESOURCE DISCOVERY AND EXTRACTION
- INCREASING UTILIZATION
- EMERGENCE OF RESOURCE LIMITS
- INCREASING COMPETITION FOR RESOURCE
- RE-EMERGENCE OF RESOURCE LIMITS
- INCREASE YIELDS
- INCREASE RESOURCE ITSELF
- SEARCH FOR SUBSTITUTES
- CONTINUATION OF CYCLE
- DEVELOPMENT OF USE LIMITS
- DEVELOPMENT OF SUSTAINABLE UTILIZATION PATTERNS
HUMANS ADAPT AND USE TOOLS
Alaska Commercial Salmon Harvest, 1880-2009
> 8.4 BILLION JUVENILE SALMONIDS ANNUALLY
FOOD MARKETS AND DISTRIBUTION CHANNELS ARE CHANGING
By 2030 average standard of living in China and India = US
“The world is in transition from an era of food abundance to one of scarcity, rising food prices and spreading hunger. Population growth, rising affluence, and the conversion of food into fuels are combining to raise consumption by record amounts. Extreme soil erosion, growing water shortages, and the earth’s rising temperature are making it more difficult to expand production. Unless we can reverse such trends, food prices will continue to rise and hunger will continue to spread, eventually bringing down our social system.” Lester Brown 2012

COST AND AVAILABILITY OF FOOD, ENERGY AND WATER WILL BE THE SOCIAL DRIVERS IN NEXT CENTURIES
## SEAFOOD SUPPLY-DEMAND GAP
### 2030 MMT FOOD FISH ONLY

<table>
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<tr>
<th>Region</th>
<th>Supply 2030</th>
<th>Demand 2030</th>
<th>S/D Gap 2030</th>
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<tbody>
<tr>
<td>AFRICA</td>
<td>11.7</td>
<td>18.7</td>
<td>-7.0</td>
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<tr>
<td>ASIA</td>
<td>156.5</td>
<td>186.3</td>
<td>-29.8</td>
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<td>EUROPE</td>
<td>18.6</td>
<td>23.4</td>
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<tr>
<td>LA &amp; CA</td>
<td>16.2</td>
<td>18.3</td>
<td>-2.1</td>
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<tr>
<td>NORTH A.</td>
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<td>12.9</td>
<td>-6.6</td>
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<tr>
<td>OCEANIA</td>
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<td>1.8</td>
<td>-0.3</td>
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<tr>
<td>WORLD</td>
<td>210.7</td>
<td>261.2</td>
<td>-50.6</td>
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**Assumptions:**
- Per capita consumption at 2010 level
- GDP based on IMF 2010 projection
- World population based on 2010 UN projection
- No significant shift in preferences

**Source:** FAO, 2012
NATIONAL STATUS AND TRENDS

• >90% OF SEAFOOD IMPORTED

• <2% OF IMPORTS INSPECTED (CONTAMINANTS, RESIDUES)

• ~59% OF ALL SEAFOOD CONSUMED IN US IS FARMED

• SIGNIFICANT CONTRIBUTION TO U.S. TRADE DEFICIT >$10.2 BILLION (DOC 2009)

• US AQUACULTURE >$1.5 BILLION (FARM GATE)

• ~4200 FARMS (MOST FRESHWATER)

SHARE OF CONSUMPTION SUPPLIED BY DOMESTIC PRODUCTION

% Domestically Sourced

Source: USDA2010, USDOC2012
EXPECTATIONS AND DELIVERY HAVE CHANGED

• 50% ALL FOOD DOLLARS AWAY FROM HOME
  • 51% OF THAT IS CARRY OUT
    • PORTABILITY
    • REHEATABILITY

• > 75% SEAFOOD CONSUMED AWAY FROM HOME

• 78% OF BUYING DECISIONS KID INFLUENCED

• DECISION TIME 90 SECONDS MAX

• US SECOND LARGEST SPANISH SPEAKING COUNTRY

• AVERAGE MEAL 1 PAN 15 MINUTES
COASTAL COMMUNITIES ARE CHANGING
COASTAL COMMUNITY TRENDS

TRADITIONAL NATURAL RESOURCE BASES DEPLETED

DRAMATIC INCREASES IN PROPERTY VALUES AND TAXES

SIGNIFICANT DEMOGRAPHIC SHIFTS
   INCREASING % SENIORS
   INCREASING % “FROM AWAY”

NON EXTRACTION RESOURCE USE BECOMES DOMINANT (LIFESTYLE/TOURISM)

NON-EXTRACTION RESOURCE USE SHIFTING FROM SUMMER ACTIVITY TO YEAR ROUND

REDUCTION AND DISPLACEMENT OF TRADITIONAL SOCIO-ECONOMIC GROUPS BASED ON
EXTRACTIVE NATURAL RESOURCE EXPLOITATION

POLITICAL AND ECONOMIC DEVELOPMENT DRIVEN BY TOURISM, RESIDENTIAL DEVELOPMENT,
AND RETIREES
OTHER OPTIONS?
MAINE LOBSTER FISHERY

*BASED ON CURRENT (2012) LOBSTER ZONE COUNCIL ENTRY/EXIT RATIOS
WHERE DOES AQUACULTURE FIT?
MAINE AS AN EXAMPLE

• FIRST LEASE 1974
• >20 DIFFERENT SPECIES OF PLANTS AND ANIMALS
• NUMBER OF LEASE SITES
  – 93 STANDARD
  – 13 EXPERIMENTAL
  – 96 LIMITED PURPOSE LICENSES
• 1328 ACRES LEASED
• EMPLOYMENT
  – DIRECT 653
  – INDIRECT 321
• $100 MILLION FARM GATE SALES
• $198 TOTAL ECONOMIC ACTIVITY
• AVERAGE AGE 35
AQUACULTURES ROLE

- WELL ESTABLISHED
- ONE OF MANY TOOLS
- POWERFUL
- POSITIVE/NEGATIVE
- NUMEROUS VARIATIONS
NATIONAL WORKING WATERFRONTS POLICY
KEY COMPONENTS

• OVERTLY STATE:
  – ECONOMICALLY VIABLE AND RESILIENT WORKING WATERFRONTS SERVE A VITAL NATIONAL INTEREST
  – AS SUCH THEIR PRESERVATION AND DEVELOPMENT SHOULD BE PRIORITIZED

• RECOGNIZE:
  – WORKING WATERFRONTS ARE DEPENDENT ON ACCESS TO THE NATURAL RESOURCES
  – SUSTAINABLE MANAGEMENT OF SAID RESOURCES IS NECESSARY FOR VIABLE WWF

• SEEK TO:
  – PRESERVE EXISTING WORKING WATERFRONTS
  – POSITION THE NATION FOR NEW WORKING WATERFRONT ACTIVITIES

• INCLUDE:
  • A CLEAR DEFINITION OF “WORKING WATERFRONT”
  • A SUITE OF ECONOMIC DEVELOPMENT AND HISTORIC PRESERVATION TOOLS
    – ECONOMIC DEVELOPMENT ZONES
    – TAX INCENTIVE PROGRAMS
    – MODEL COMPREHENSIVE PLANS THAT PRIORITIZE WORKING WATERFRONT DEVELOPMENT AND PRESERVATION
    – INVESTMENT INCENTIVE PROGRAMS
    – COMMUNITY BLOCK GRANTS
WHAT SHOULD NOAA DO?

- ADEQUATELY FUND A NATIONAL AQUACULTURE DEVELOPMENT PROGRAM
- CONDUCT CAREFULLY DESIGNED MARINE STOCK ENHANCEMENT PROGRAMS
- DEVELOP A NATIONAL EXEMPTION TO FMP FOR AQUACULTURE
- REMOVE AQUACULTURE MANAGEMENT FROM FM COUNCILS
- REMOVE AQUACULTURE FROM M/S ACT
MAINE AQUACULTURE
KEEPING WORKING WATERFRONTS WORKING
GROWING MAINE'S FUTURE

GOOD JOBS - RESPONSIBLE STEWARDSHIP - HEALTHY FOOD
EXPLOITABLE STOCK BIOMASS

- ENVIRONMENTAL VARIABLES
  - RECRUITS
    - REPRODUCTION
    - EGG SURVIVAL
    - FRY SURVIVAL
    - AND GROWTH
    - PRE-RECRUIT SURVIVAL
    - AND GROWTH
    - ENVIRONMENTAL FACTORS
    - DISEASE
    - SENESCENCE

- GROWTH RATE

- COMPETITION FOR FOOD

- RECRUITMENT RATE

- FISHING MORTALITY RATE

- MANAGEMENT

- YIELD TO MAN

- NATURAL MORTALITY RATE

- PRE-RECRUIT SURVIVAL

- AND GROWTH

- ENVIRONMENTAL FACTORS

- DISEASE

- SENESCENCE

- PREDATION
EXPLOITABLE STOCK BIOMASS

GROWTH RATE

RECRUITMENT RATE

MORTALITY RATE

YIELD TO MAN
MAA Guiding Principles for Responsible Aquaculture in Maine

- SET OF 14 OVERARCHING PRINCIPLES BASED ON THE FAO CODE OF RESPONSIBLE FISHERIES. HARMONIZED WITH UN GUIDING PRINCIPLES.

- FOCUSED ON THE RESPONSIBILITY OF THE AQUACULTURIST TO THE ENVIRONMENT, THE FISH, SHELLFISH AND SEA VEGETABLES GROWN, CONSUMERS AND THE COMMUNITIES IN WHICH WE OPERATE.

- OVERTLY STATE THAT MAA MEMBER GOALS ARE TO ACHIEVE ENVIRONMENTAL, ECONOMIC AND SOCIAL SUSTAINABILITY.

- RECOGNIZE THE NEED FOR BOTH INDIVIDUAL AND COLLECTIVE ACTION.

- SPECIFICALLY ADDRESS THE IMPORTANCE OF REGULATORY COMPLIANCE, WATER RESOURCES, ANIMAL WELFARE, WASTES MANAGEMENT AND DISEASE CONTROL, THERAPEUTIC USE, INTRODUCTIONS AND TRANSFERS, LOCAL COMMUNITIES, ECONOMIC DIVERSIFICATION.

- STRESS THE NEED FOR CONTINUAL TECHNICAL AND MANAGERIAL INNOVATION.
FISHERIES LANDINGS IN MAINE

Year

MT


- cod
- haddock
- urchins
- scallops