

**Indiana Academy of Nutrition and
Dietetics Annual Meeting**

Is It OK to Eat Farmed Seafood?

**Steven Hart, Ph.D., Vice President Global
Aquaculture Alliance; Board of Directors
Seafood Nutrition Partnership**

Before We Get Started: Why Seafood?



**SEAFOOD
NUTRITION
PARTNERSHIP®**



SEAFOODNUTRITION.ORG



**Global
Aquaculture
Alliance™**



SNP: What We Do

Mission: SNP is a non-profit inspiring a healthier America by empowering seafood consumption through partnerships and collaborations.

Seafood Nutrition for Human Health

- Encourage Americans to eat more seafood for better health & reduce chronic disease risks

Communications Outreach

- Equip health & nutrition influencers with resources to recommend more seafood

Partnerships

- Build partnerships to amplify the urgent message of the need to eat more seafood for better health

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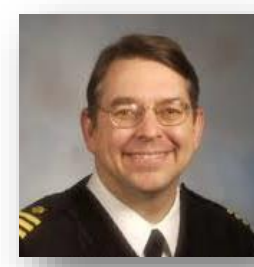


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Michael Tlusty, PhD

Director of Ocean
Sustainability Science,
New England Aquarium



Gretchen Vannice, MS, RDN

Author, Omega-3 Handbook,
Wiley's Fish Oil



Why Seafood?

- Seafood, which includes fish and shellfish, is a delicious package of lean protein that includes a variety of vitamins, minerals, and essential omega-3 fatty acids EPA + DHA
- These marine sourced omega-3s are vital to the building blocks of our brain and important to our heart health.
- As calcium is to the bones, DHA is to the brain.
- The Dietary Guidelines for Americans recommend 2 servings of seafood per week and 2-3 servings for expectant moms.

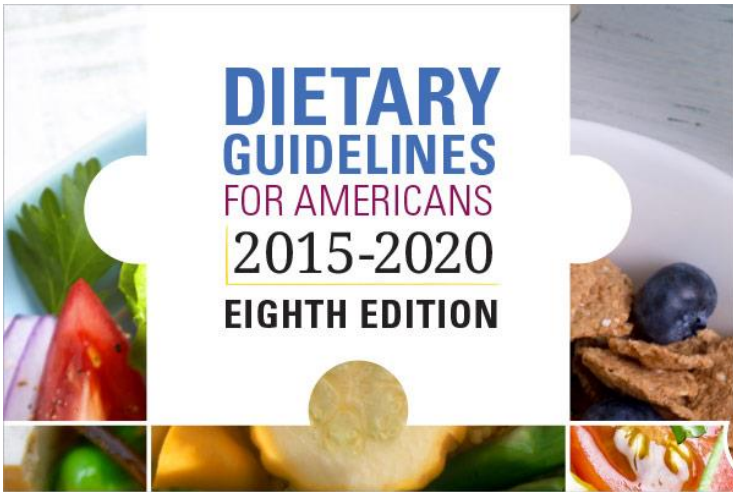




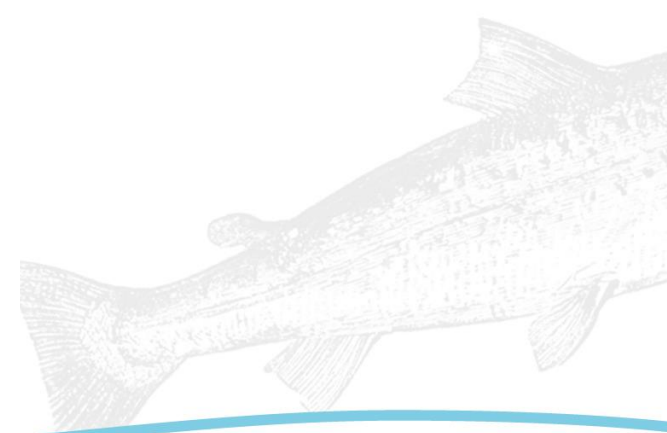
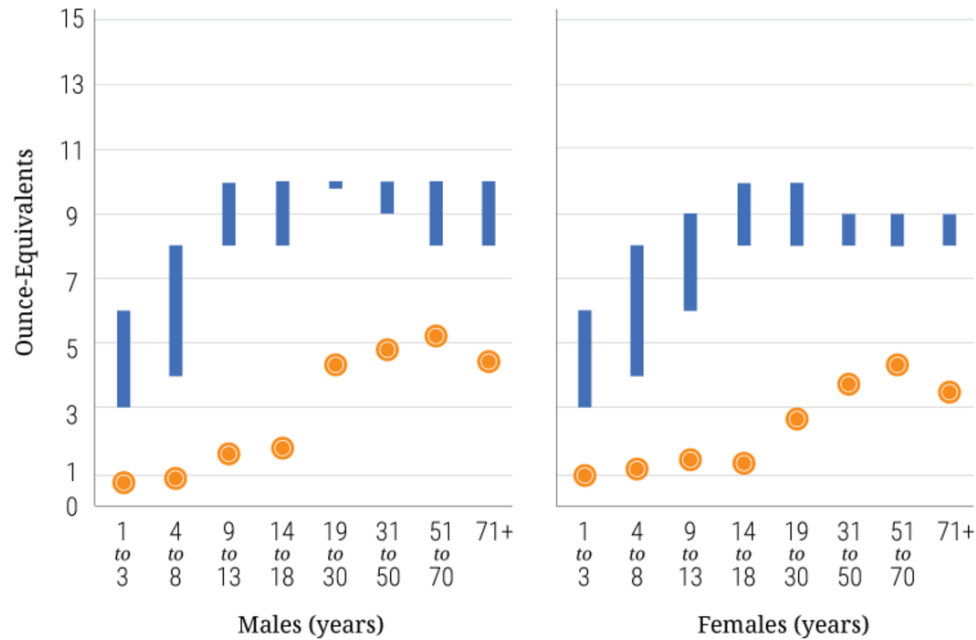
DGA 2015-2020

#Seafood2xWk Consumption Gap

■ Recommended Weekly Intake Ranges | ● Average Weekly Intake



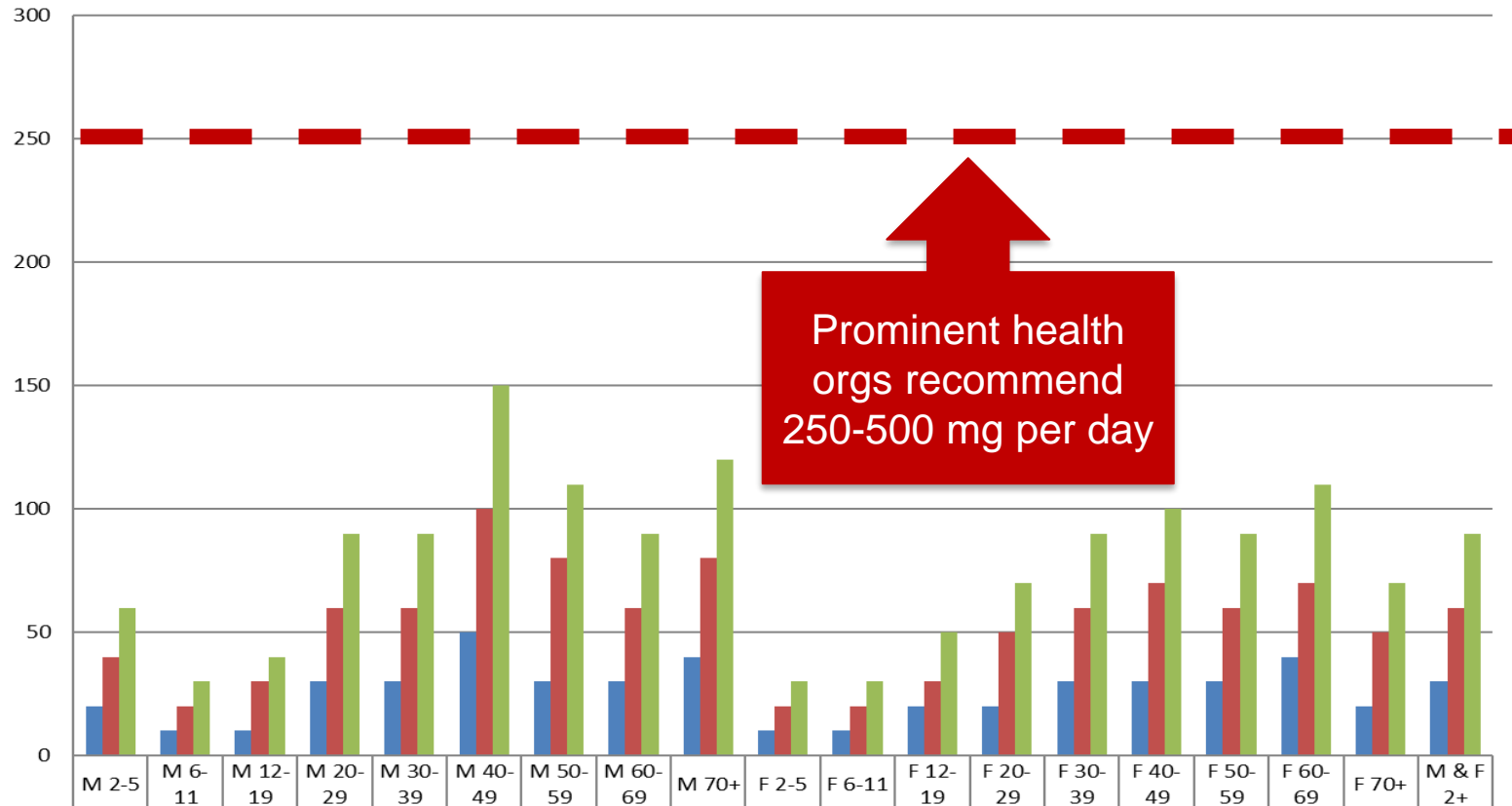

Seafood



Omega-3 Deficiency in US

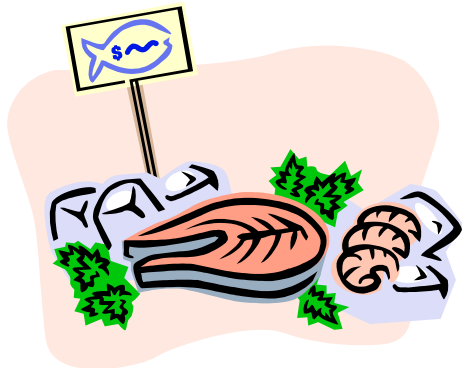
Food EPA+DHA Intake (mg per day)

EPA & DHA Intake from Food Per Day
NHANES 2013-2014

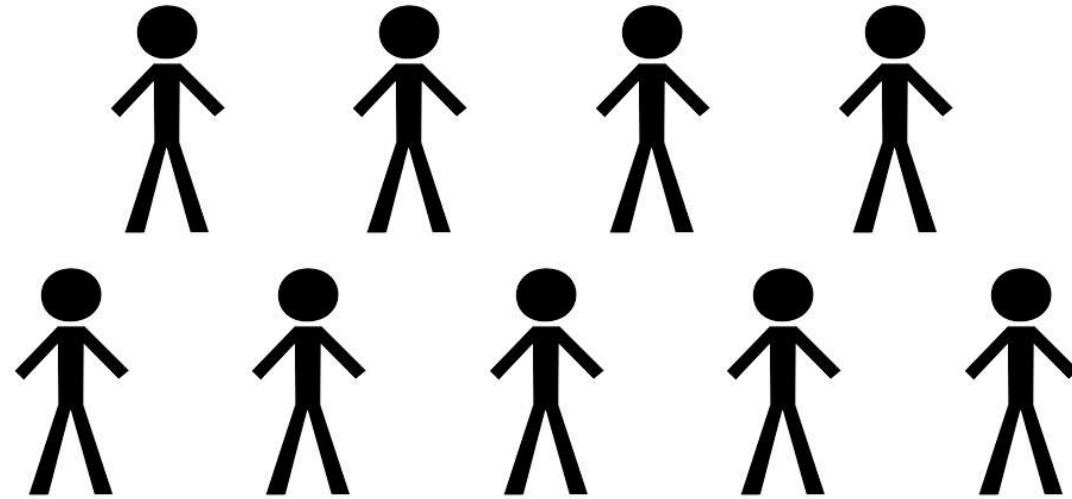


Prominent health orgs recommend 250-500 mg per day

1 in 10 Americans Follow DGA Recommendation to Eat Seafood 2x Week



Source: [USDA](#)



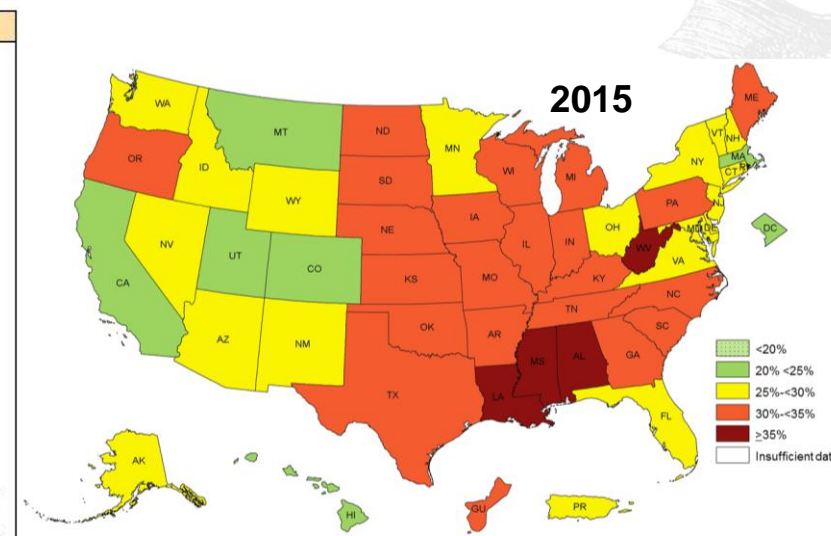
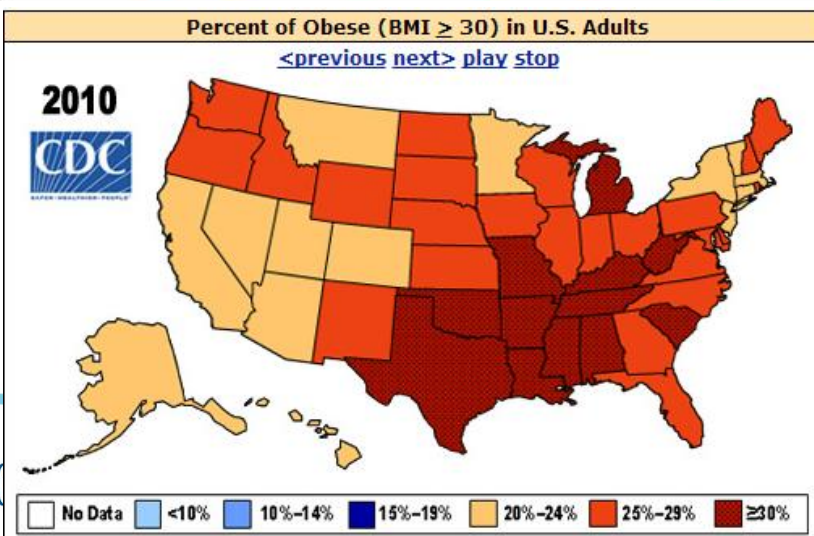
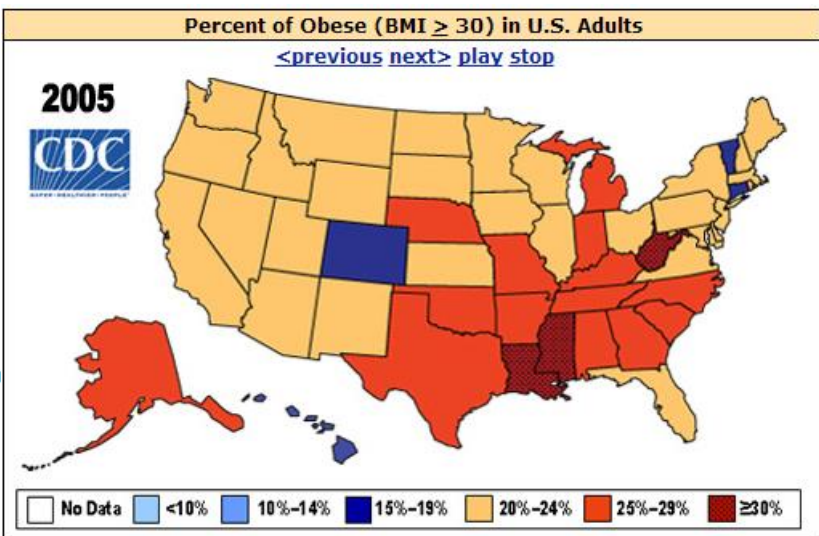
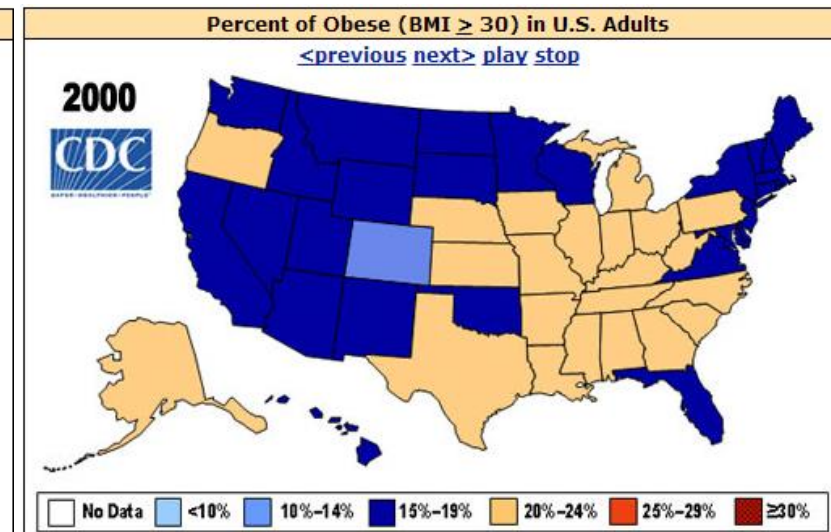
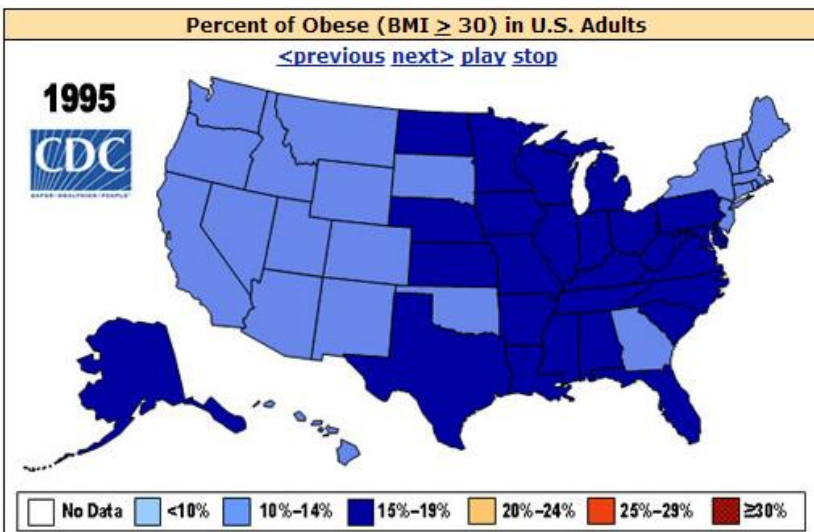
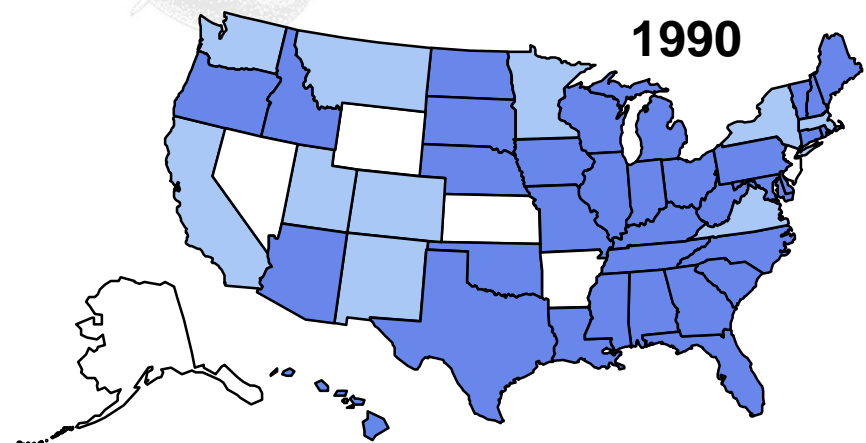
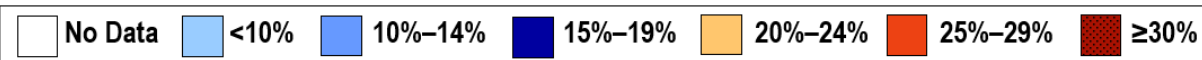
Biggest Barrier to Eating Seafood

Lack of **confidence** in knowing
how to: select, buy, and eat
seafood.

Public Health Crisis

US Adults: 70% Overweight, 38% Obese (BMI > 30)

Percent of Obese Adults By State



7 of the Top 10 Causes of Premature Death in US from Chronic Diseases

Inflammation is a leading contributor to chronic diseases.

Heart disease is the #1 cause of death in the US.



Stroke



Heart Attacks



High Blood Pressure



Diabetes



Chronic diseases are preventable through:

Diet

Exercise

Smoking Cessation

Alcohol Moderation

Source: [CDC](https://www.cdc.gov)

Costs to Treat Chronic Diseases & Health Risks

86% of all health care spending is for one or more chronic medical conditions including mental health

Annual Chronic Diseases and Health Risk Behaviors Health Care Costs

Heart disease
& stroke
\$315.4 billion

Diabetes
\$245 billion

Age-related
cognitive
decline/
Alzheimer ²
\$216 billion

Cancer
\$157 billion

Phase 1 Campaign Metrics (2015-2017)

1 in 3 Americans added seafood to their diets to eat healthier within the last year

3.7 billion outreach impressions

50,991 people take Healthy Heart Pledge

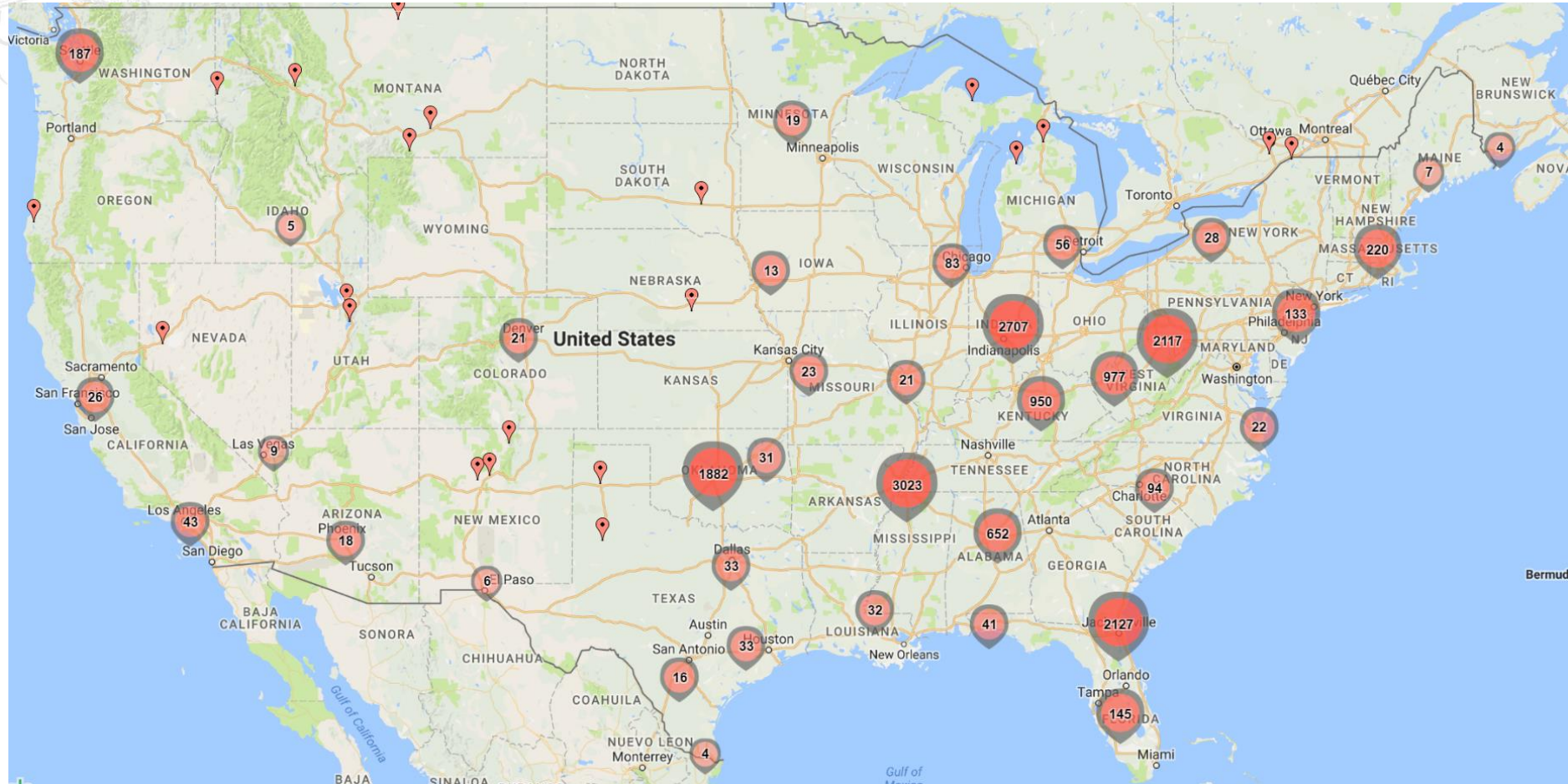
216,786 event attendees in target markets

22,000 registered dietitians nutritionists reached

Positive sentiments for seafood and health

Per capita seafood consumption trending positive

50,991 Americans Commit to Healthy Heart Pledge



RDN Resources for #Seafood2xWk

Inspire a healthier America and include seafood nutrition.

Leverage SNP Resources:

- [RDN Toolkit](#)
- [Seafood Recipes & Videos](#)
- Share On Social: Facebook, Instagram, Twitter, YouTube



Seafood Nutrition:

UNDERSTANDING THE SCIENCE,
COMMUNICATING TO CLIENTS, RESOURCES
AND RECIPES TO SHARE

RDN Toolkit



**We've established Americans
need to eat more seafood**

BUT

Is it OK to eat farmed seafood?

What do health experts say about farmed seafood?

FDA and EPA

Best Choices EAT 2 TO 3 SERVINGS A WEEK

| | | |
|-------------------|-----------------------------|--|
| Anchovy | Herring | Scallop |
| Atlantic croaker | Lobster, American and spiny | Shad |
| Atlantic mackerel | Mullet | Shrimp |
| Black sea bass | Oyster | Skate |
| Butterfish | Pacific chub mackerel | Smelt |
| Catfish | Perch, freshwater and ocean | Sole |
| Clam | Pickrel | Squid |
| Cod | Plaice | Tilapia |
| Crab | Pollock | Trout, freshwater |
| Crawfish | Salmon | Tuna, canned light (includes skipjack) |
| Flounder | Sardine | Whitefish |
| Haddock | | Whiting |
| Hake | | |

OR

Good Choices EAT 1 SERVING A WEEK

| | | |
|---------------------------------------|----------------------|--|
| Bluefish | Monkfish | Tilefish (Atlantic Ocean) |
| Buffalofish | Rockfish | Tuna, albacore/white tuna, canned and fresh/frozen |
| Carp | Sablefish | Tuna, yellowfin |
| Chilean sea bass/Patagonian toothfish | Sheepshead | Weakfish/seatrout |
| Grouper | Snapper | White croaker/Pacific croaker |
| Halibut | Spanish mackerel | |
| Mahi mahi/dolphinfish | Striped bass (ocean) | |

Choices to Avoid HIGHEST MERCURY LEVELS

| | | |
|---------------|-----------|---------------------------|
| King mackerel | Shark | Tilefish (Gulf of Mexico) |
| Marlin | Swordfish | Tuna, bigeye |
| Orange roughy | | |

*Some fish caught by family and friends, such as larger carp, catfish, trout and perch, are more likely to have fish advisories due to mercury or other contaminants. State advisories will tell you how often you can safely eat those fish.

www.FDA.gov/fishadvice

www.EPA.gov/fishadvice



Dietary Guidelines Advisory Committee

Question 2: What are the comparative nutrient profiles of current farm-raised versus wild caught seafood?

Source of evidence: USDA Agriculture Research Service (ARS) National Nutrient Database (NND)²⁵ updated with USDA-funded survey of most commonly consumed species in the United States.²⁶

Conclusion

For commonly consumed fish species in the United States, such as bass, cod, trout, and salmon, farmed-raised seafood has as much or more of the omega-3 fatty acids EPA and DHA as the same species captured in the wild. In contrast, farmed low-trophic species, such as catfish and crawfish, have less than half the EPA and DHA per serving than wild caught, and these species have lower EPA and DHA regardless of source than do salmon. Farm-raised seafood has higher total fat than wild caught. Recommended amounts of EPA and DHA can be obtained by consuming a variety of farm-raised seafood, especially high-trophic species, such as salmon and trout.

Implications

The U.S. population should be encouraged to eat a wide variety of seafood that can be wild caught or farmed, as they are nutrient-dense foods that are uniquely rich sources of healthy fatty acids. It should be noted that low-trophic farm-raised seafood, such as catfish and crayfish, have lower EPA and DHA levels than do wild-caught. Nutrient profiles in popular low-trophic farmed species should be improved through feeding and processing systems that produce and preserve nutrients similar to those of wild-caught seafood of the same species.

Why do we need aquaculture?



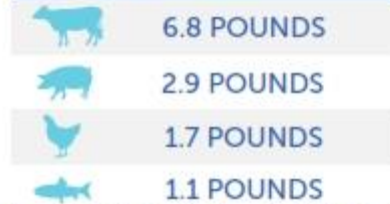
FEEDING A GROWING WORLD WITH AQUACULTURE FACT SHEET

For 20 years, we have demonstrated our commitment to feeding the world through responsible and sustainable aquaculture. The "Best Aquaculture Practices" certified mark means your seafood came from facilities that meet the highest standards, with respect for the environment, workers and their communities, and the animals themselves.



FARMED FISH IS THE MOST EFFICIENT form of animal protein on the planet [National Geographic].

Estimated Feed Required to Gain One Pound of Body Mass



MORE THAN 100 MILLION PEOPLE and growing – from farmers to fish processors and retailers – depend on the aquaculture industry for their livelihoods [Waite et al.].



AQUACULTURE HAS ZERO BYCATCH



No animals are unintentionally caught or harmed by fishing lines or nets.

IT'S TRACEABLE



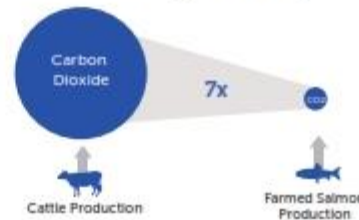
BAP 4-star certification covers the entire aquaculture production chain.

AQUACULTURE IS THE FUTURE OF FOOD

By 2030, nearly two-thirds of all seafood produced for human consumption will come from aquaculture [World Bank].



LOWER GREENHOUSE GAS EMISSIONS than other types of farming.



SUPPORTS RURAL COMMUNITIES IN A CHANGING WORLD

The aquaculture sector makes a significant socioeconomic contribution in coastal and rural communities where economic opportunity tends to be limited.



IT'S GOOD FOR YOU



Fish is rich in protein, Vitamin D, calcium, phosphorus and omega-3 fatty acids, which are important for your body and brain. Studies have also shown that obtaining omega-3s from fish instead of supplements can be more effective in lowering blood pressure [University of Pennsylvania School of Medicine].

IT'S SAFE



BAP-certified seafood is free from any prohibited antibiotics, drugs and any illegal substances. BAP also requires heightened testing of processing plants where residues of prohibited antibiotics are detected.

ONLY ONE IN TEN AMERICANS

eats the USDA/HHS Dietary Guidelines recommendation of two seafood meals per week for optimum health. A recent Harvard study found that eating one or two 3-ounce servings of fatty fish a week reduces the risk of dying from heart disease by 36 percent.



Why do we need aquaculture?



By 2030, nearly two-thirds of all seafood produced for human consumption will come from aquaculture [World Bank].







With the global population expected to reach 9.6 billion by 2050, the demand for healthy, sustainable animal proteins is continuing to increase.

Farming seafood via Aquaculture relieves pressure from the ocean's depleted wild fisheries.



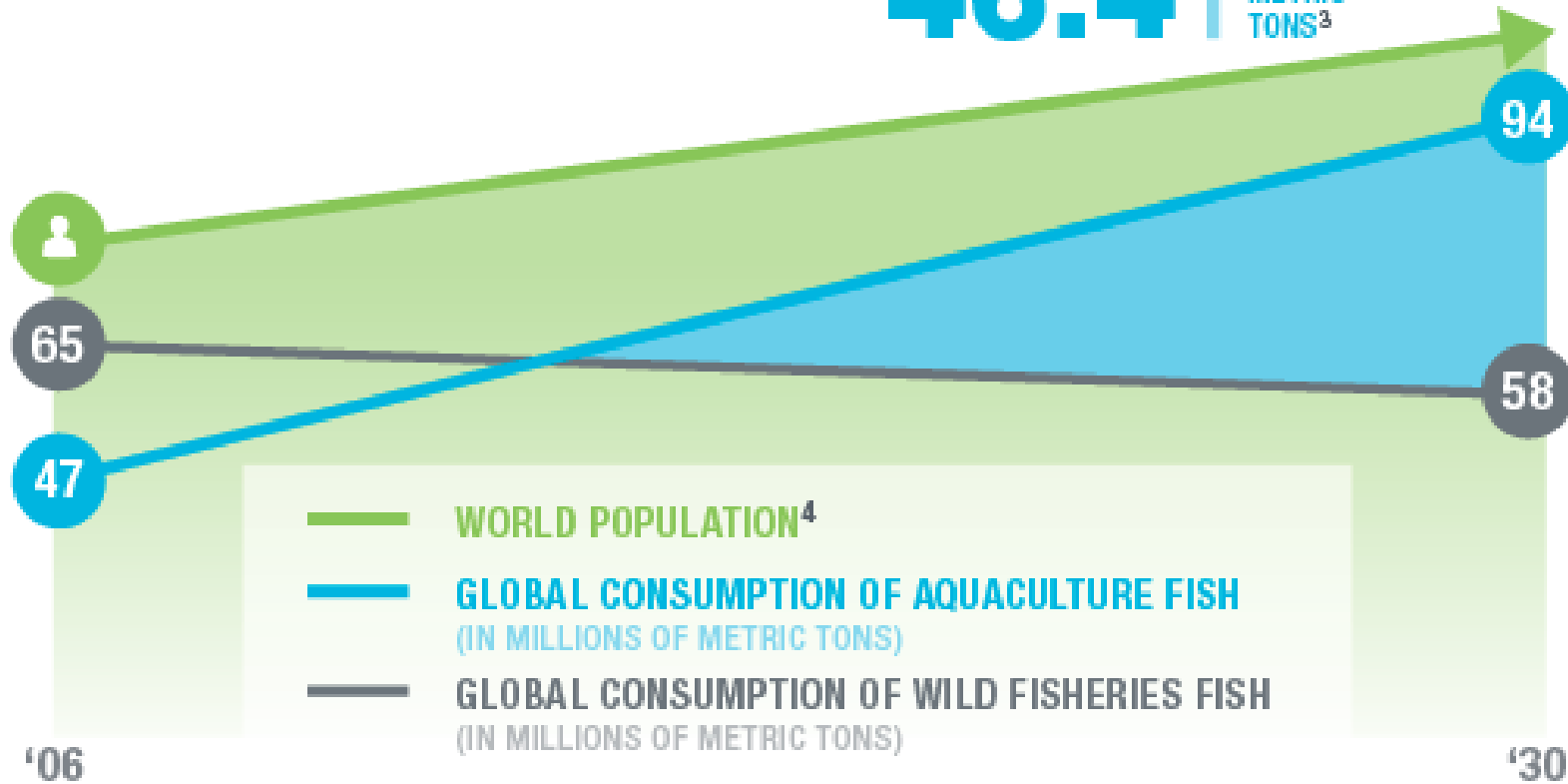
Farmed fish is the most efficient form of animal protein on the planet [National Geographic].

Estimated Feed Required to Gain One Pound of Body Mass

| | |
|---|------------|
|  | 6.8 POUNDS |
|  | 2.9 POUNDS |
|  | 1.7 POUNDS |
|  | 1.1 POUNDS |

Why do we need aquaculture?

TO MEET THE WORLD'S SEAFOOD NEEDS,
AQUACULTURE PRODUCTION
WILL NEED TO INCREASE BY **46.4** ↑ **MILLION METRIC TONS³**



**What are some of the common
myths and misperceptions
surrounding aquaculture?**

Public Posts See All

ns Natural Solutions Magazine ✓
 March 11, 2016 at 11:00pm · 🌐


Avoid eating this fish!

Warning... Stop Eating Tilapia ASAP Before It's Too Late

www.timefornaturalhealthcare.com

👍 🤔 😬 518

38 Comments 544 Shares




US TV doctor raises concerns over tilapia, shellfish

Dr. Oz urged viewers not to buy tilapia from China or southeast Asia.

by IntraFish Media
 November 5th, 2017 23:42 GMT Updated November 6th, 2017 03:17 GMT

US celebrity doctor, Dr. Mehmet Oz, raised a number of concerns on seafood safety on his television show Tuesday, specifically in regard to tilapia and shellfish.

During the show, Dr. Oz explained how tilapia is a relatively inexpensive fish, mainly because they are predominantly farm-raised in tanks "bursting at the seams" with water that is rarely changed, if ever, reports

HEALTHY LIVING

Antibiotics In Your Fish: Researchers Find Traces Of Antimicrobials In Seafood, Posing Concern For Resistant Bacteria

Oct 23, 2014 04:23 PM
 By Lecia Bushak

SALMON SHOCKER #8

It's been painted pink!



Wild salmon is naturally rose-tinted, a delicious side effect of the shrimp and krill in its diet. But because farmed salmon subsists on feed pellets made from ground fish and soy, its flesh is naturally

FDA to detain Malaysian shrimp imports after finding unsafe antibiotic residue

By Madelyn Kearns, Associate Editor

SHARE

Published on Thursday, April 21, 2016



It's eating chicken poop!



What popular seafood species come from aquaculture?

Shrimp

Most popular seafood item in the US

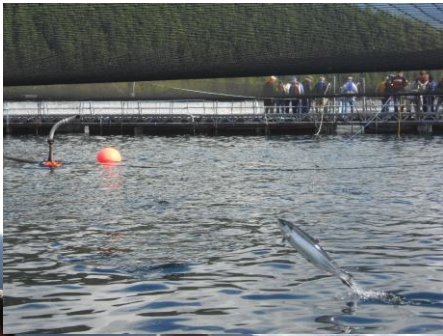
- More than 90% of supply is imported; greater than 1.4 billion lbs in 2017
- Top importing countries: India, Indonesia, Thailand, Ecuador and Vietnam
- The majority of imports are farm-raised
- About 100 million lbs from wild Gulf fishery



Salmon

Most popular seafood item in the US

- Imported more than 900 million lbs of Atlantic salmon in 2017
- Top importing countries: Chile, China*, Norway, Thailand*, Canada, UK
- 100% of Atlantic salmon is farm-raised
- Domestic wild-caught landings from Alaska were just over 900 million lbs in 2017
- The majority of this catch was pink salmon, which is primarily used in canning



Tilapia

Most popular seafood item in the US

- Virtually 100% of supply is imported; about 400 million lbs in 2017
- Top importing countries: China, Indonesia, Honduras, Columbia, Costa Rica
- It is 100% farm-raised



Catfish

Most popular seafood item in the US

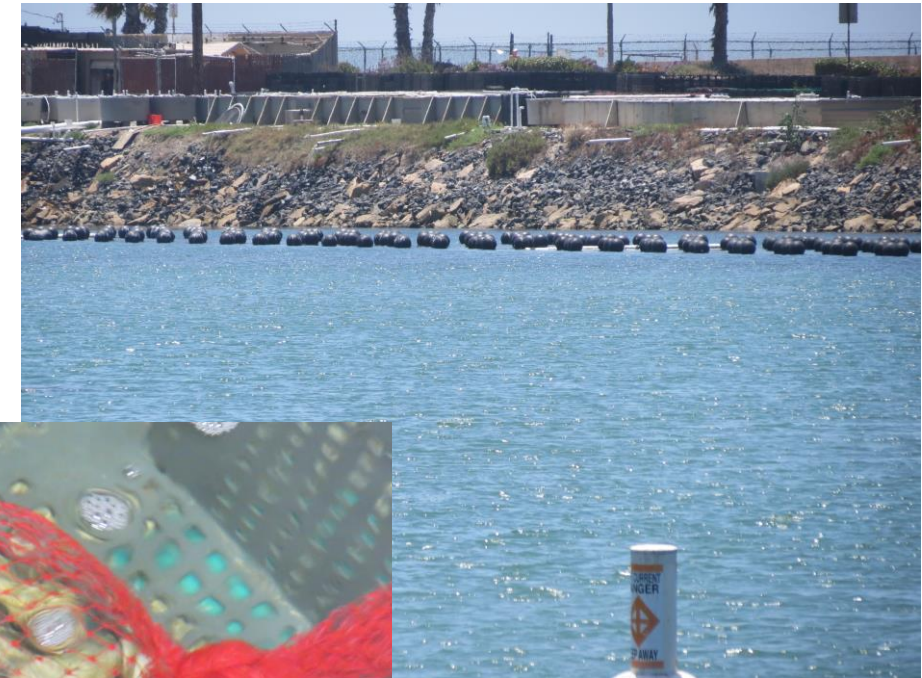
- Two major species: US channel catfish and Vietnamese catfish
- More than 60% of supply is imported; greater than 240 million pounds in 2017
- Top importing countries: Vietnam and China
- Domestic production is approximately 150 million lbs
- All catfish is 100% farm-raised



Shellfish

Most popular seafood item in the US

- About 50% of supply is imported; almost 120 million pounds in 2017
- Top importing countries: China, Chile, New Zealand, Argentina, Japan
- Domestic production has been increasing steadily because of increase in farming
- Combination of wild-harvested and farm-raised – very difficult to differentiate



**Who is GAA and what makes us
experts about aquaculture?**



Our Vision

To feed the world through responsible aquaculture





Our Mission

To promote responsible aquaculture practices through advocacy, education and demonstration



What Makes Us Experts?



ADVOCATE



EDUCATE



DEMONSTRATE



What does certification mean?

- **Demonstrates products are safe and responsibly produced**
- **Provides access to the marketplace**
- **Encourages a closer look at operations to make improvements**





What is BAP?



Comprehensive

- Covers the entire aquaculture production chain – hatcheries, feed mills, farms & processing plants
- Standards cover the 4 pillars of responsible aquaculture: environmental, social, food safety & animal health and welfare
- Covers virtually 100% of finfish, crustacean & mollusk species



Proven

- Third-party benchmarking: GSSI, GFSI, GSCP
- Standards are scientific rigorous and always evolving



Trusted

- Administered by the Global Aquaculture Alliance
- Robust Program Integrity
- Third-party Standards Oversight Committee (SOC), certification bodies and auditors, ensuring the audit is fair
- Supply chain transparency program
- Endorsed by over 150 retail & foodservice companies worldwide



The Pillars of Sustainability



Food Safety

Assurance that no banned antibiotics or other chemicals are used and that all approved chemical treatments are carried out in a responsible fashion.



Social Responsibility

Adherence to local laws for worker safety, child labor and community rights.



Environmental Responsibility

Compliance with standards that address such issues as habitat conservation, water quality and effluents.



Animal Health & Welfare

Best practices in animal husbandry, addressing issues such as disease control.



'3G' Integrity from Independent Benchmarkers

- **Environmental Integrity: Global Sustainable Seafood Initiative (GSSI)**
- **Food Safety: Global Food Safety Initiative (GFSI)**
- **Social Accountability: Global Social Compliance Programme (GSCP)**



BAP Standards Development



TC: Technical Committee

- Species-specific technical committees develop draft standards
- Members approved by SOC

SOC: Standards Oversight Committee

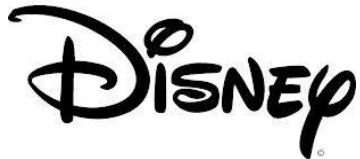
- Draft standards reviewed by a 12-member, independent SOC, whose diverse industry and non-industry members recommend changes, as necessary
- SOC consists of four representatives of the NGO community, four representatives of academia/regulatory/policy and four representatives of industry
- “Yes” vote from minimum of two NGOs needed for draft standards to be approved
- Draft standards then published for 60 days of public comment



Best Aquaculture Practices Market Endorsers



Endorsers in BAP Transparency Process



Watch BAP in action

Video



DON'T CHOOSE BETWEEN WILD AND FARMED THEY ARE BOTH GOOD CHOICES!

Ask!

What is your responsible sourcing policy?



What Makes Us Experts?



ADVOCATE



EDUCATE



DEMONSTRATE



Membership

Choose Your Membership

| | User Free | Supporter One-Time Donation | Individual \$50/year | Business \$500/year | Premier Partner \$7,500/year |
|-----------------------------|-----------|-----------------------------|----------------------|---------------------|------------------------------|
| MyGAA | ✓ | ✓ | ✓ | ✓ | ✓ |
| Unlimited News & Articles | ✓ | ✓ | ✓ | ✓ | ✓ |
| Member Listing | | | ✓ | ✓ | ✓ |
| Access to Marketing Toolkit | | | | ✓ | ✓ |
| Advertising Discounts | | | | ✓ | ✓ |
| Event Discounts | | | | ✓ | ✓ |
| GAA Films Placement | | | | | ✓ |



MyGAA

The most sophisticated networking platform for aquaculture enthusiasts worldwide.

GAA's goal is to drive interesting and solution-oriented discussions, and to grow academia and aquaculture practitioner presence.

| | |
|------------------------------------|--------------------|
| Species-specific Community Forums | Research Sharing |
| Job Board | Species Glossary |
| University Aquaculture Program Map | Global Event Board |
| BAP Certified Farm Map | Etc. |

- **It's Free! You do not need to be a paying member of GAA to access the platform.**
- **Users might choose to: poll consumers; find qualified auditors; find a new job or event opportunity; post an advertisement; etc.**



Global Aquaculture Academy

Features

- **High quality educational content**
- **Content specific to The Four Pillars of Responsible Aquaculture**
- **Learn about current topics in aquaculture**
 - **Social Responsibilities**
 - **Food Safety**
- **Flexible delivery options (online, blended, instructor led)**
- **Manage learning in one place**

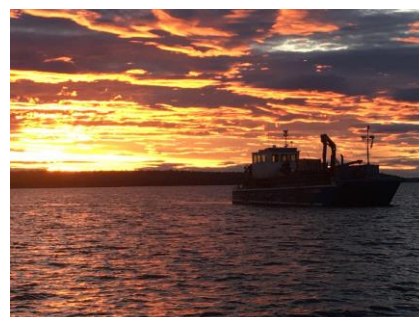


GAA Films

GAA Films creates documentary short films that highlight the untold stories of people who love, fight for, or are transformed by aquaculture.

We credit the success of these film to the fact that they are candid and personal accounts from individuals in the industry, not marketing pieces for any company or species.

- **One film produced per quarter.**
- **Open access to embed a GAA Film on your website or share through your social platforms.**
- **2017 Film Festival selection in the documentary short film category.**



GOAL Conference

Be inspired by 60-plus speakers providing insight on the trends shaping the future of responsible aquaculture production and sourcing, while networking with more than 400 seafood professionals from 30-plus countries. GOAL (Global Outlook for Aquaculture Leadership) is a pre-competitive event, an opportunity to put day-to-day business aside and bring together all industry segments to discuss shared responsibilities and goals. Since its inception in 2001, GOAL has been a must-attend event for the world's aquaculture thought leaders.

For the first time in seven years, the annual GOAL conference returns to Latin America. GOAL 2018 will be held at the Guayaquil Colon Hilton, which features almost 45,000 square feet of meeting space.



Global Aquaculture Advocate



The *Advocate* supports GAA's mission of feeding the world through responsible aquaculture by covering a dynamic and evolving industry with integrity and fairness and by providing timely, insightful and accurate information from journalists, researchers and other industry experts.

The *Advocate* appeals to industry professionals, academics, government officials, conservationists and marketplace representatives seeking news about responsible aquaculture production.

- **Growing audience:** 17,000 monthly pageviews and 15,000 weekly newsletter subscribers as of Nov. 2017

- **Global audience:** Readers in all 196 countries

- **Quality content:** More than 650 technical articles and news features since launch in Oct. 2015

- **Categorized content:** Eight content categories, for targeted advertising

- **Spanish:** Select articles translated into Spanish weekly

- **Coming soon:** Searchable archives from print editions, dating back to 1998



Global Aquaculture Alliance™

Thank You

ADDRESS

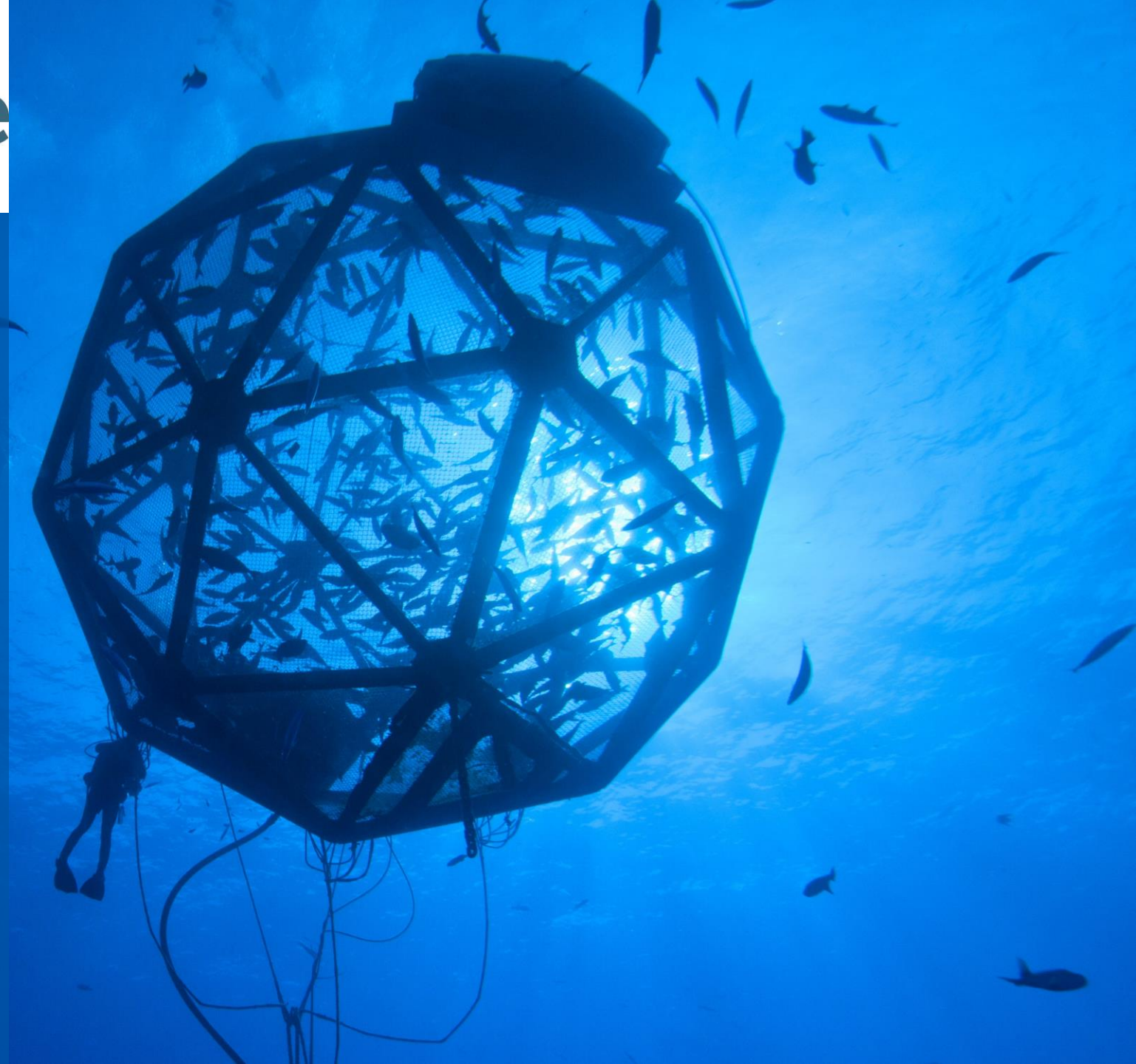
2 International Drive, Suite 105
Portsmouth, NH 03801

EMAIL

Steve.hart@aquaculturealliance.org

PHONE

(603) 317-5000



@bestaquaculturepractices



@BAP_aquaculture



@aquaculturealliance



LinkedIn.com/company/aquaculturealliance

