



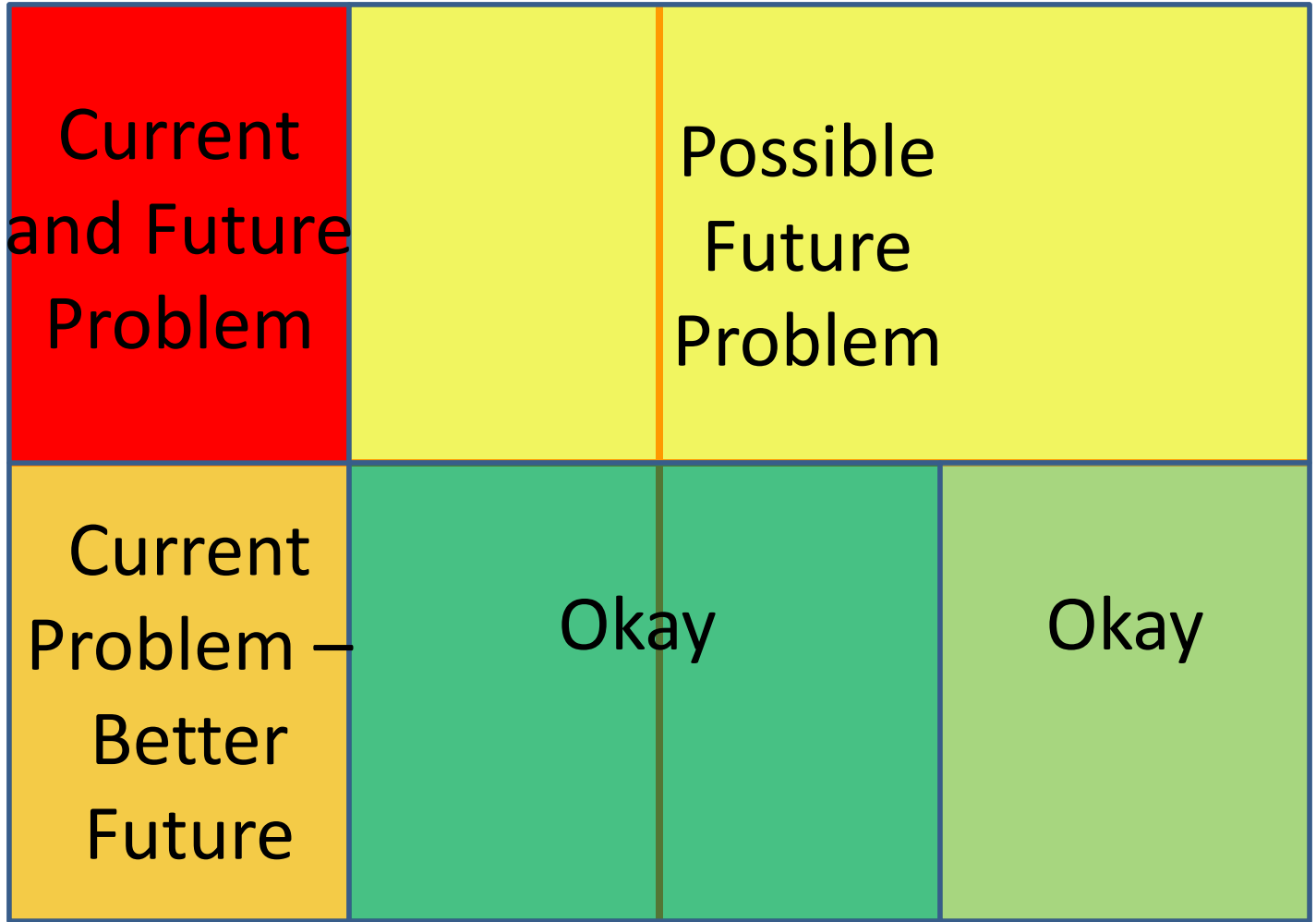
Sustainability and seafood labeling

Ray Hilborn
School of Aquatic and Fishery Sciences
University of Washington

The Brundtland Commission definition

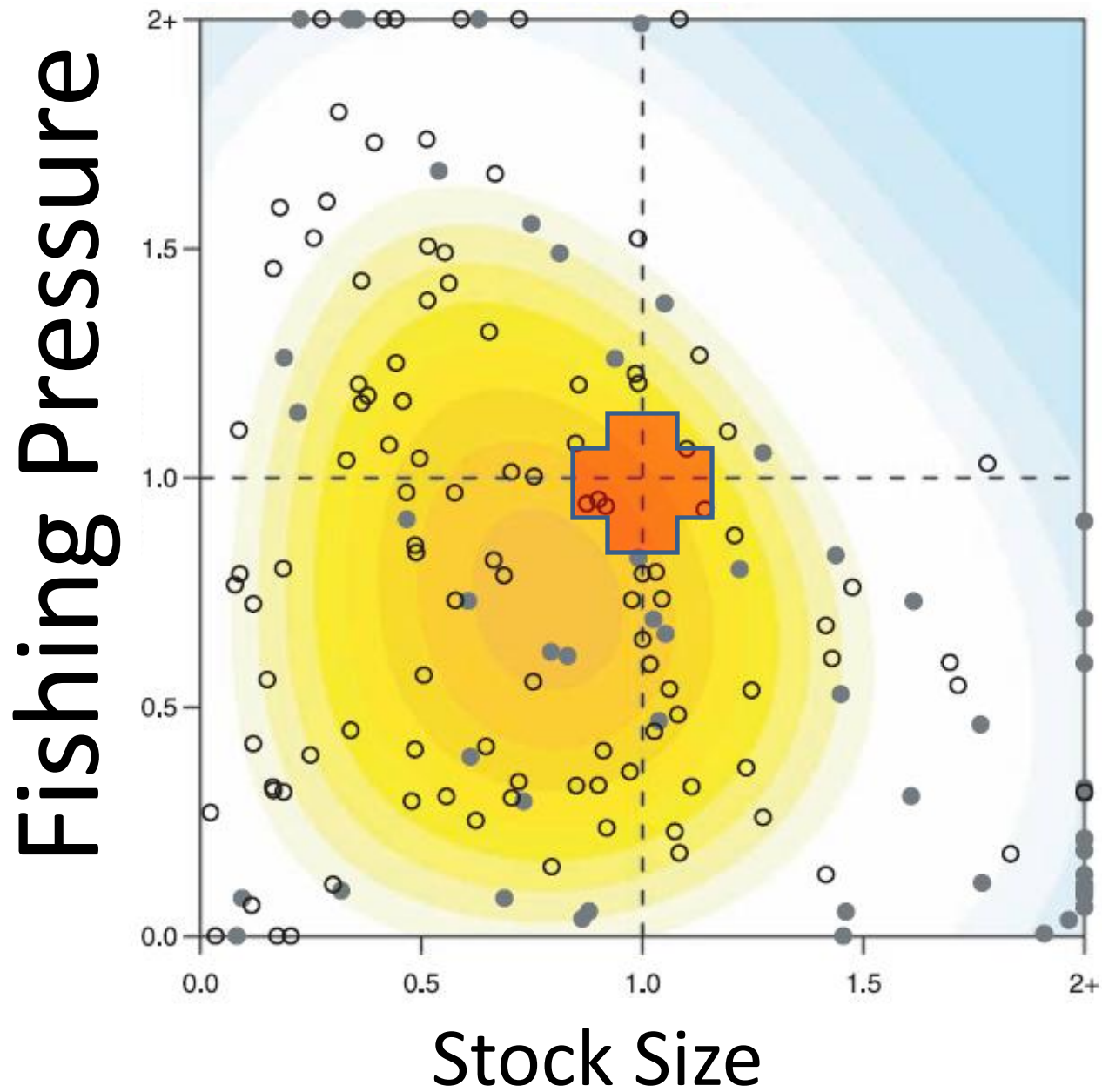
meets the needs of the present without compromising the ability of future generations to meet their own needs

Fishing Pressure

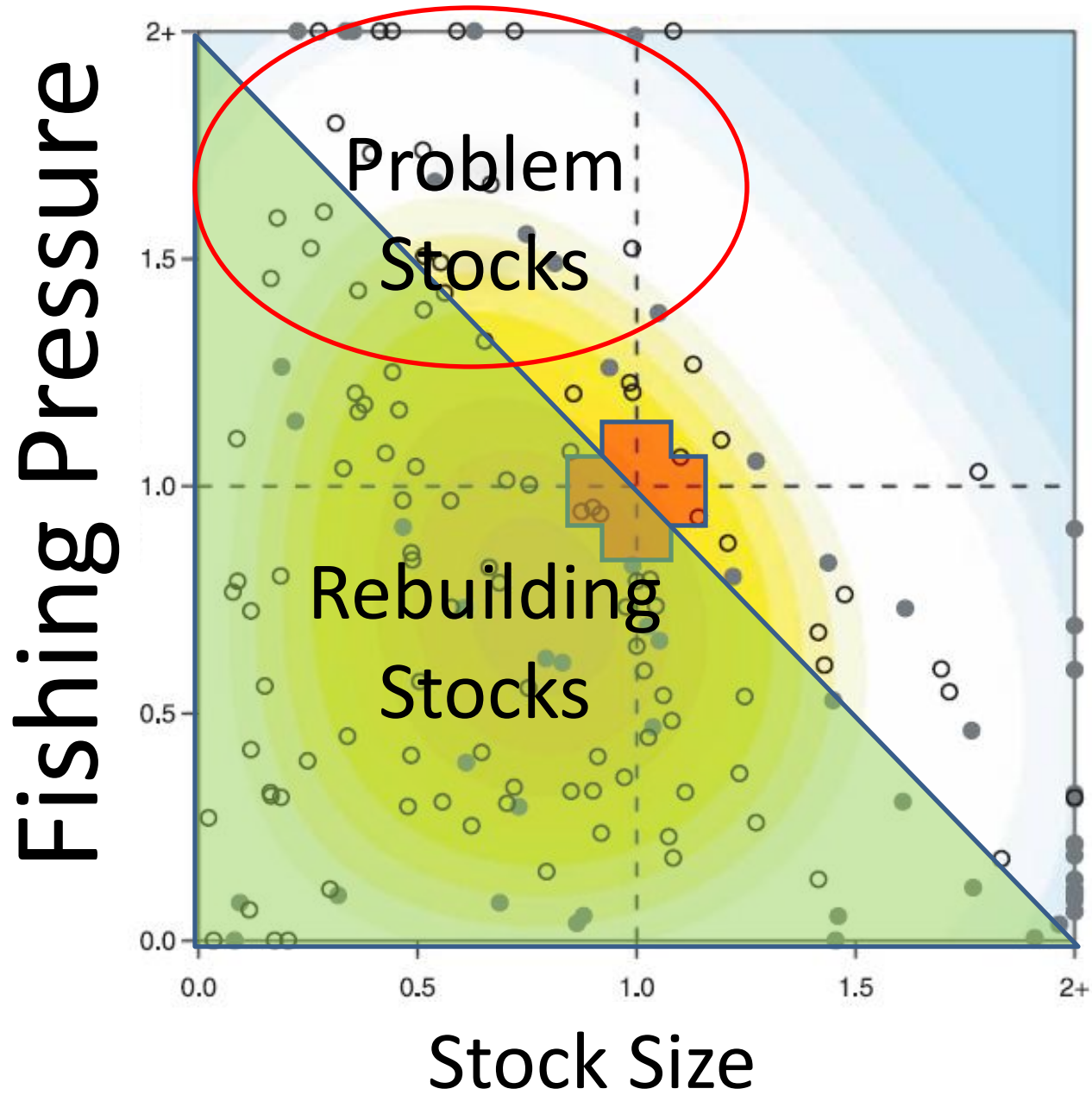


Stock Size

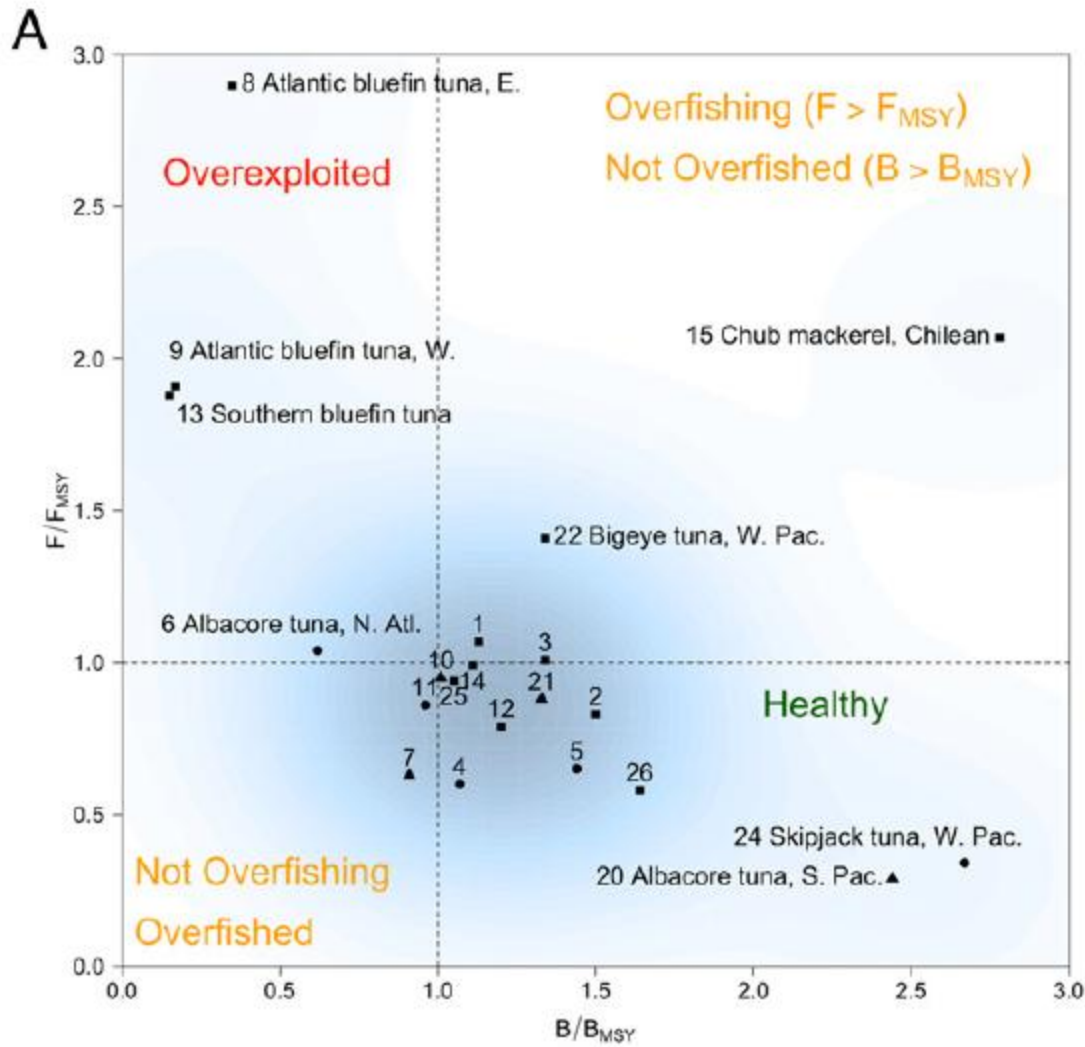
Assessed stocks in industrial and developed countries



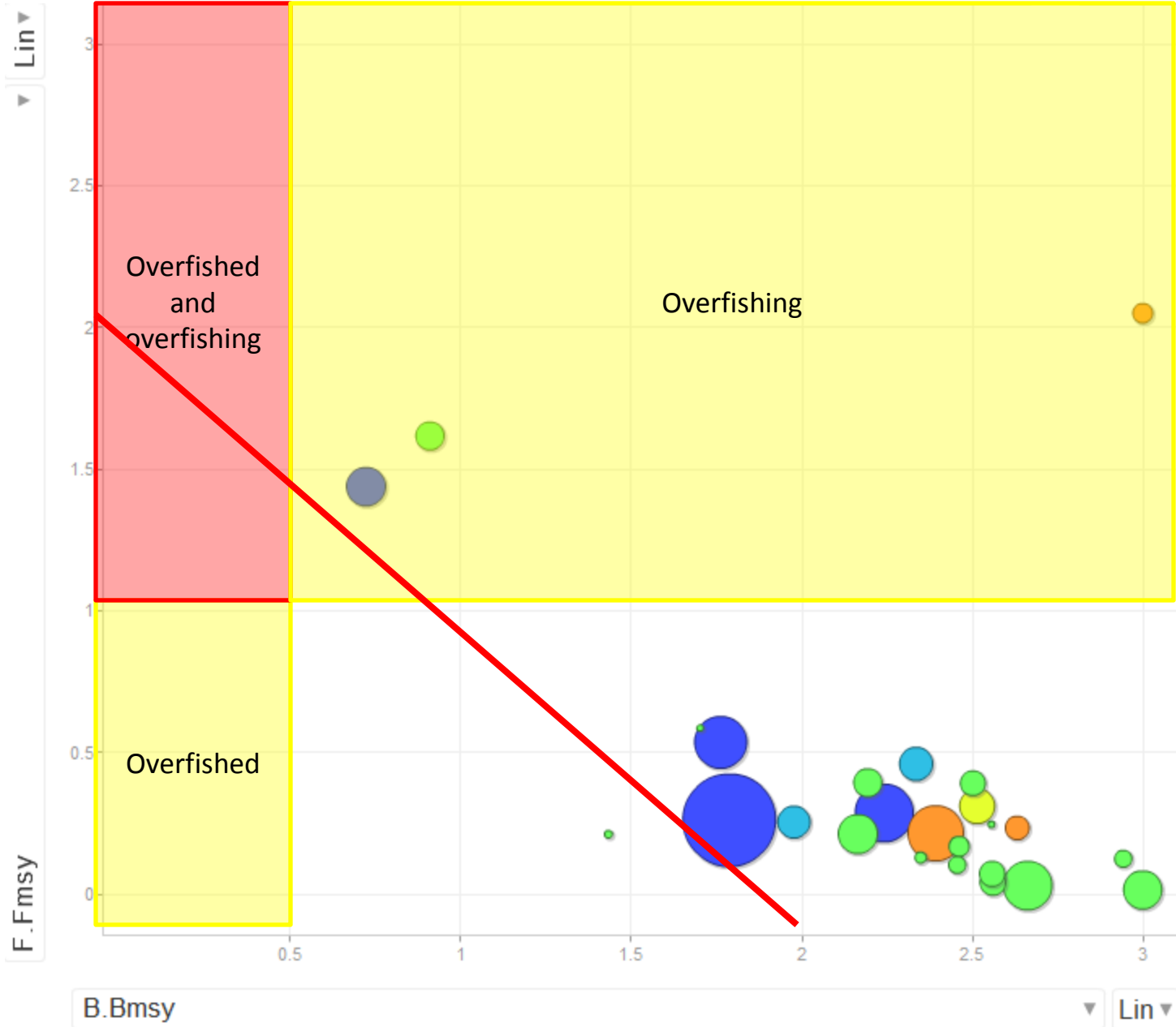
Assessed stocks in industrial and developed countries



World Tuna Stocks



From Juan-Jorda
et al 2011 PNAS



Color

Type

- Flatfish
- Inshore
- Shelf Rockfish
- Skate
- Slope Rockfish

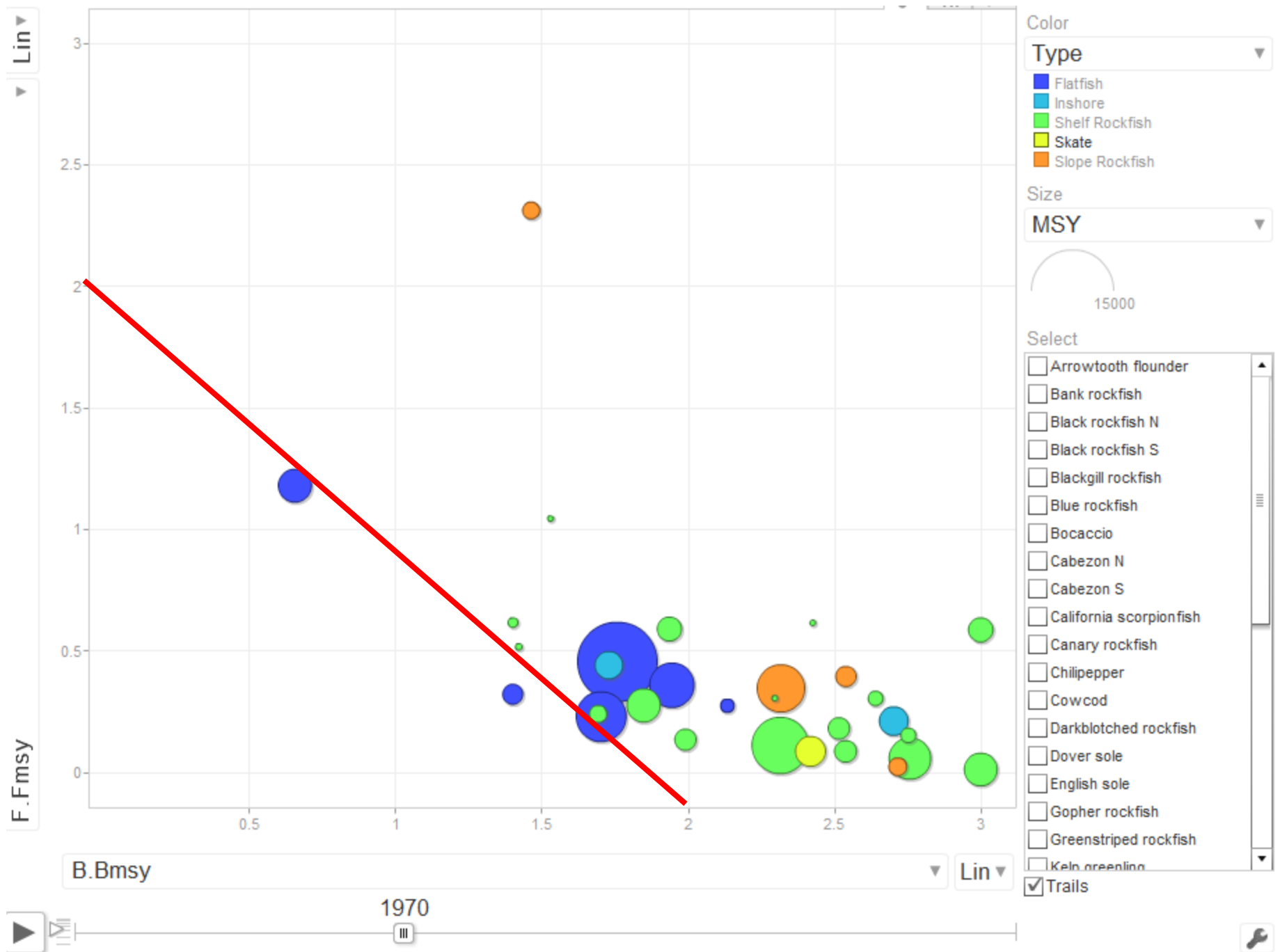
Size

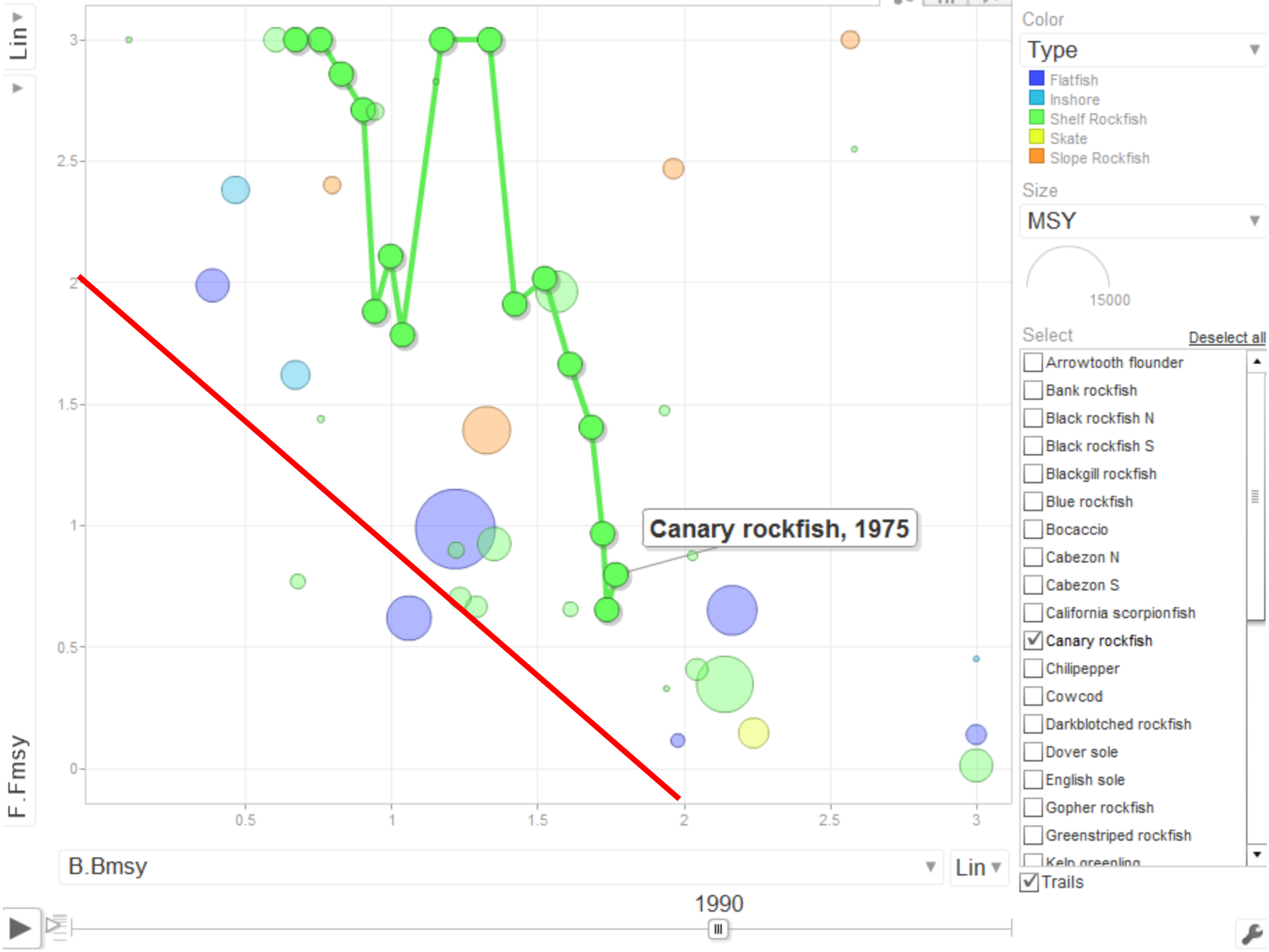
MSY

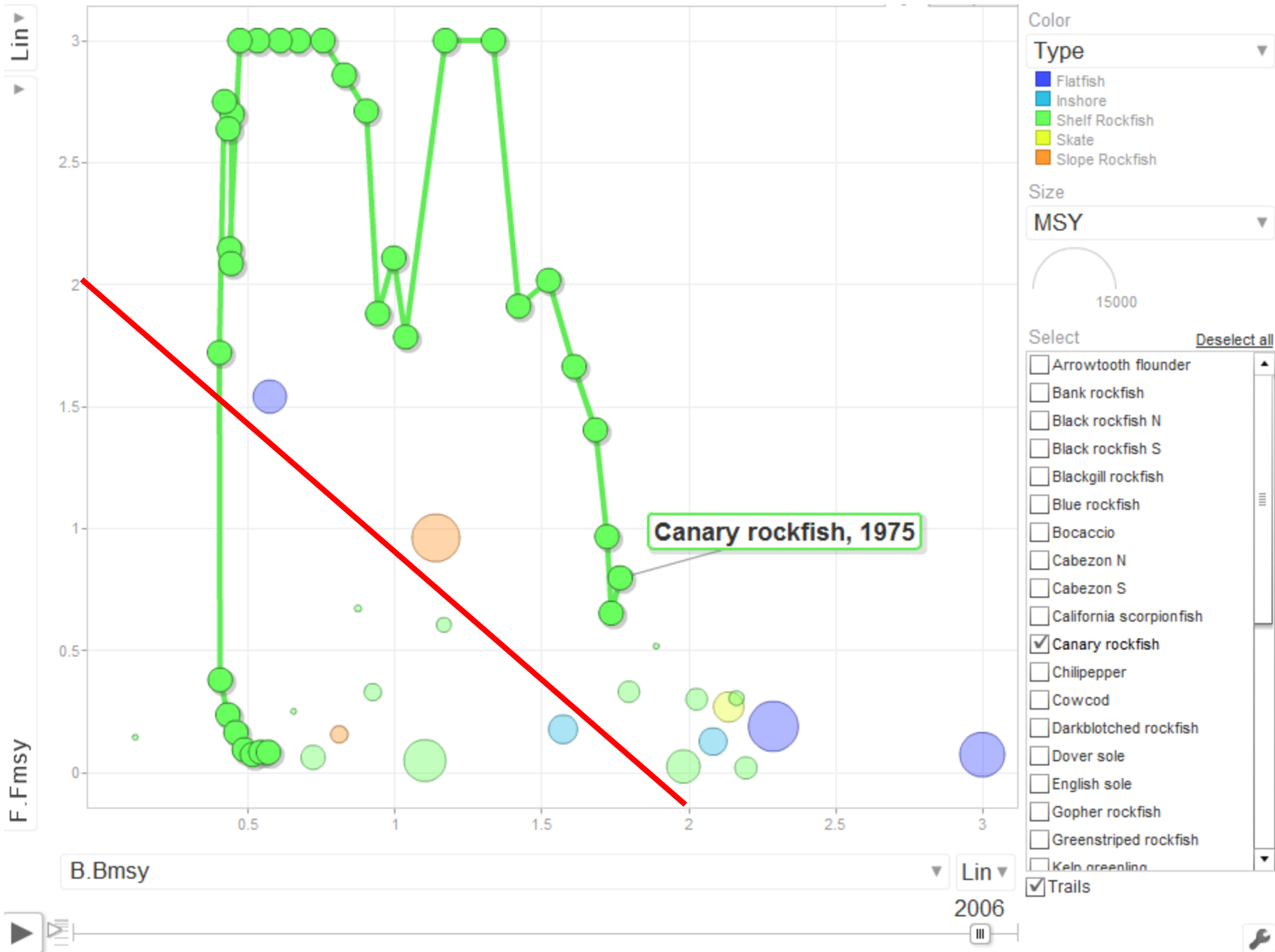
15000

Select

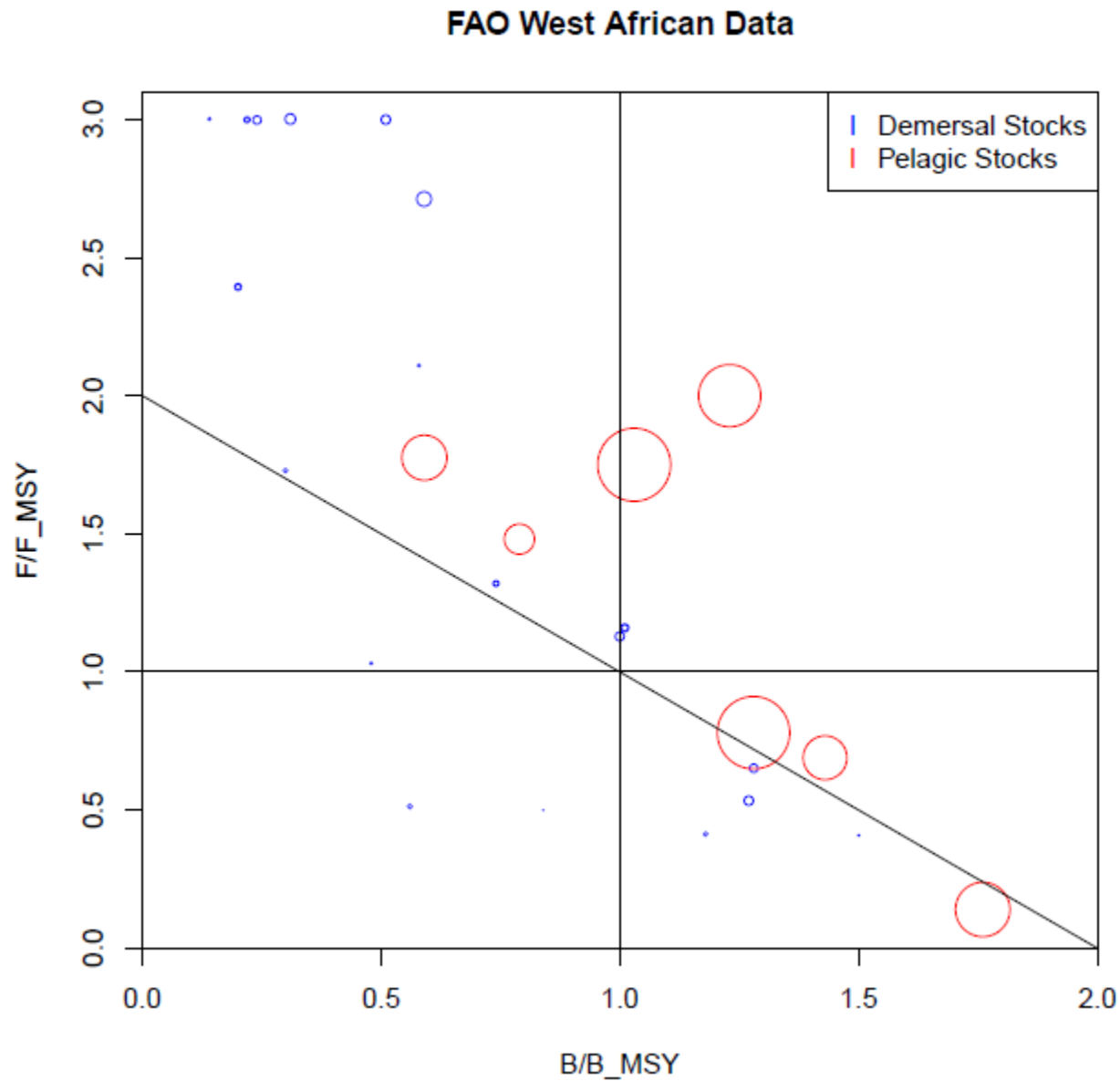
- Arrowtooth flounder
- Bank rockfish
- Black rockfish N
- Black rockfish S
- Blackgill rockfish
- Blue rockfish
- Bocaccio
- Cabezon N
- Cabezon S
- California scorpionfish
- Canary rockfish
- Chilipepper
- Cowcod
- Darkblotched rockfish
- Dover sole
- English sole
- Gopher rockfish
- Greenstriped rockfish
- Kelp greenling
- Trails







Some places are not sustainable



Environmental costs of food production

- Water use
- Pollution, fertilizer and pesticides
- Antibiotics
- Soil erosion
- Petroleum usage and greenhouse gas
- Biodiversity loss

New Zealand dairy meat and fish compared to international

per 40 g protein

	Energy MJ	Fresh Water (l)	Fertiliser (g)	Pesticides (mg)	Antibiotics (mg)	Surface area impacted (m2)	Greenhouse gasses (kg)
New Zealand Dairy	1.56	171	26	24	1.17	1.24	0.86
New Zealand Meat	4.90	262	188	129	1.17	18.14	3.70
International Dairy	3.62	Na	Na	Na	Na	1.63	1.26
International Beef	10.86	Na	Na	Na	Na	9.35	5.97
Squid	7.11	0	0	0	0	17	0.62
Hoki	7.31	0	0	0	0	100	0.64

From Hilborn and Tellier 2012

My son modifying biodiversity



Organic vegetable field my wife farmed



Fisheries may have less biodiversity cost than organic agriculture





Labeling

- Profusion of labels
- Consumer confusion
- Where should the bar be set
- MSC Principle II
- Costs



MONTEREY BAY

Seafood WATCH[™]

Choices for Healthy Oceans

BEST CHOICES

Catfish (farmed)
Caviar (farmed)
Clams (farmed)
Crab: Dungeness
Crab: Snow (Canada)
Crab: Stone
Halibut: Pacific
Lobster: Spiny/Rock (U.S., Australia)
Mussels (farmed)
Oysters (farmed)
Salmon (Alaska, wild-caught)
Salmon (canned)
Sardines
Shrimp/Prawns (trap-caught)
Striped Bass (farmed)
Sturgeon (farmed)
Tilapia (farmed)
Trout: Rainbow (farmed)
Tuna: Albacore (troll/pole-caught)
Tuna: Bigeye (troll/pole-caught)
Tuna: Yellowfin (troll/pole-caught)

PROCEED WITH CAUTION

Clams (wild-caught)
Cod: Pacific
Crab: Blue
Crab: Imitation/Surimi
Crab: King (Alaska)
Crab: Snow (U.S.)
Flounder: Summer/Fluke
Lobster: American/Maine
Mahimahi/Dolphinfish/Dorado
Oysters (wild-caught)
Pollock
Scallops: Bay
Scallops: Sea
Shrimp (U.S. farmed or U.S. wild-caught)
Soles (Pacific)
Squid
Tuna: Albacore (longline-caught)
Tuna: Bigeye (longline-caught)
Tuna: Yellowfin (longline-caught)
Tuna (canned)

A V O I D

Caviar (wild-caught)
Chilean Sea Bass/Toothfish
Cod: Atlantic/Icelandic
Crab: King (imported)
Flounders (Atlantic) except
Summer Flounder
Grouper
Halibut: Atlantic
Monkfish
Orange Roughy
Rockfish/Rock Cod (Pacific)
Salmon (farmed/Atlantic)
Sharks
Shrimp (imported)
Snapper: Red
Soles (Atlantic)
Sturgeon (wild-caught)
Swordfish
Tuna: Bluefin

This Just In: Everyone Confused by Eco Labels!

By Richard Romano on August 15th, 2012

A new study conducted by the International Institute for Management Development and the Ecole Polytechnique de Lausanne has found that the number and variety of eco labels has reached a kind of "Norman, coordinate!" level. (For those not up on old *Star Trek* references, all I mean is that eco labels have become too numerous and bewildering to serve as any meaningful guide to consumer behavior.) And the companies themselves are lost in a sea of green vis-à-vis eco labels. Says Environmental Leader:

From the MSC web site

PRINCIPLE 2:

Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.

Labeling conclusions

- Who sets the bar
- The cost for small stocks

Final thoughts

- If MSY is the objective we know what to do
- The more complex environmental trade-offs are real, but not quantified and that is the difficulty with Ecosystem Based Management, what are the objectives

Thanks to

GORDON AND BETTY
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OVERFISHING

WHAT EVERYONE NEEDS TO KNOW

RAY HILBORN, WITH ULRIKE HILBORN