

What's wrong with bycatch ?

- ▣ Waste of life or protein (“moral” issue)
- ▣ Impacts on community structure
 - Removals of some trophic levels
 - Biomass transfers surface/pelagic to deep water/bottom
- ▣ Mortality of juveniles, or unmarketable sizes of target species
 - lower yield
 - impact on pre-reproductive component
- ▣ Non-sustainable mortality of K-species **K-Bycatch**
- ▣ Mortality of charismatic species (“cultural” issue)

WASTE = Moral issue

Discard of juvenile target species =
“Inefficient fisheries”

Unsustainable Bycatch of K species
(megafauna and others)
= Conservation issue

Massive discards =
Ecosystem impacts

Objectives of bycatch management

**Account for all sources of mortality
for all species.**

Avoid extinctions

Make all bycatches sustainable.

... and then ????

We know that fisheries are going to produce changes in the ecosystem..
So, which are the target levels for all species impacted by the fishery ?

Reduce all bycatches to a minimum level ?

Reduce some bycatches to zero ?

Diversify the harvest ?

Utilize all that is caught ?

Are these legitimate ecological goals ?

$$E = mc^2 \quad F = m a$$

In bycatch the First Law is:

$$\text{Bycatch} = \text{Bycatch per unit "effort"} \times \text{"Effort"}$$

Describing a simple two-lever system

CAREFUL: This "effort" doesn't always coincide with fishing effort in the traditional form. In fisheries where the effort is measured in Catch per hour searched you need a different unit for the bycatch equation.