Habitat Oversight Committee/Habitat Plan Development Team

Developing alternatives to minimize the impacts of fishing on EFH

October 28, 2010

Goal of Amendment

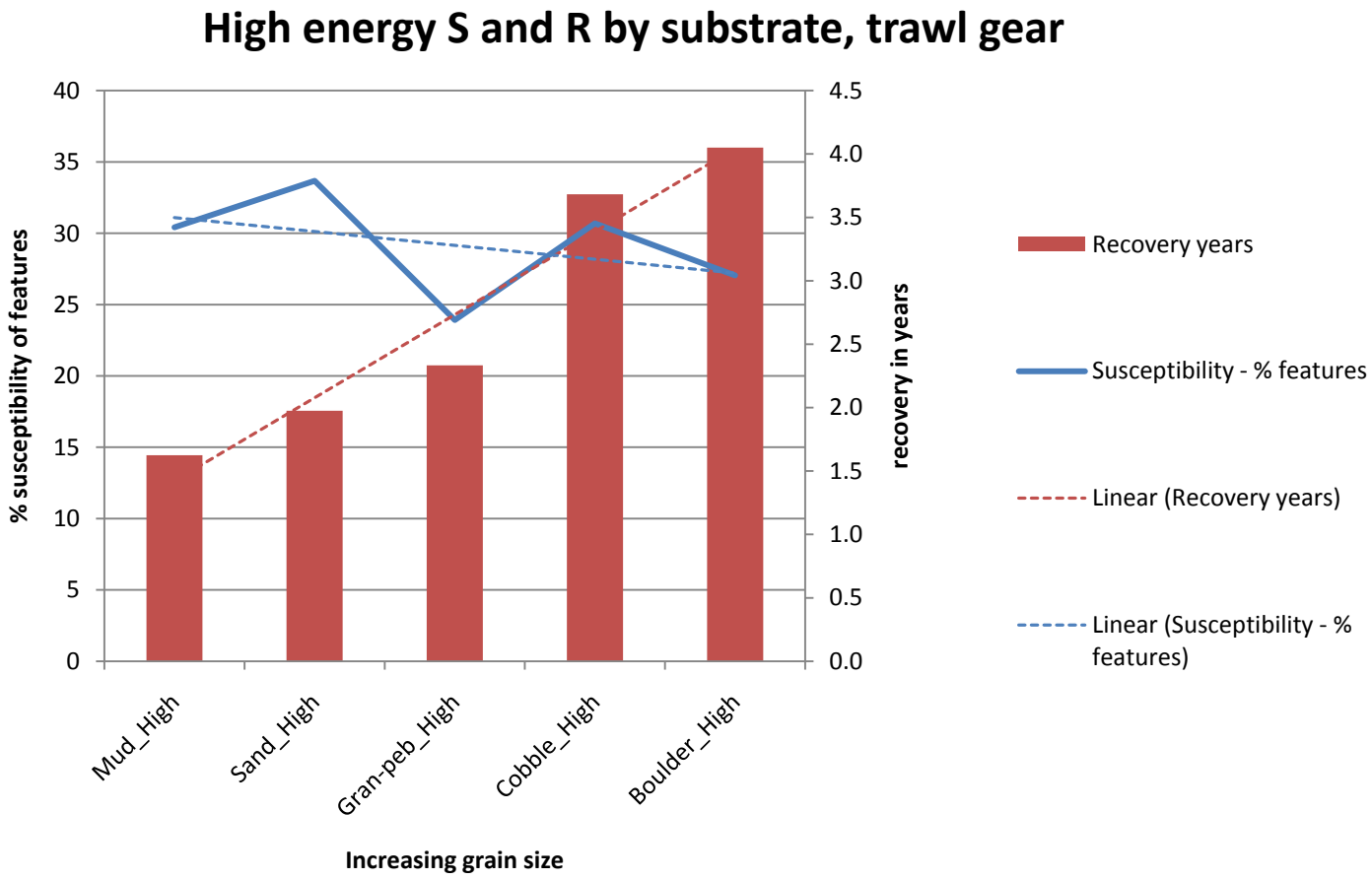
- Minimize **to the extent practicable** the **adverse** effects of fishing on EFH across the various NEFMC FMPs

SASI Premise

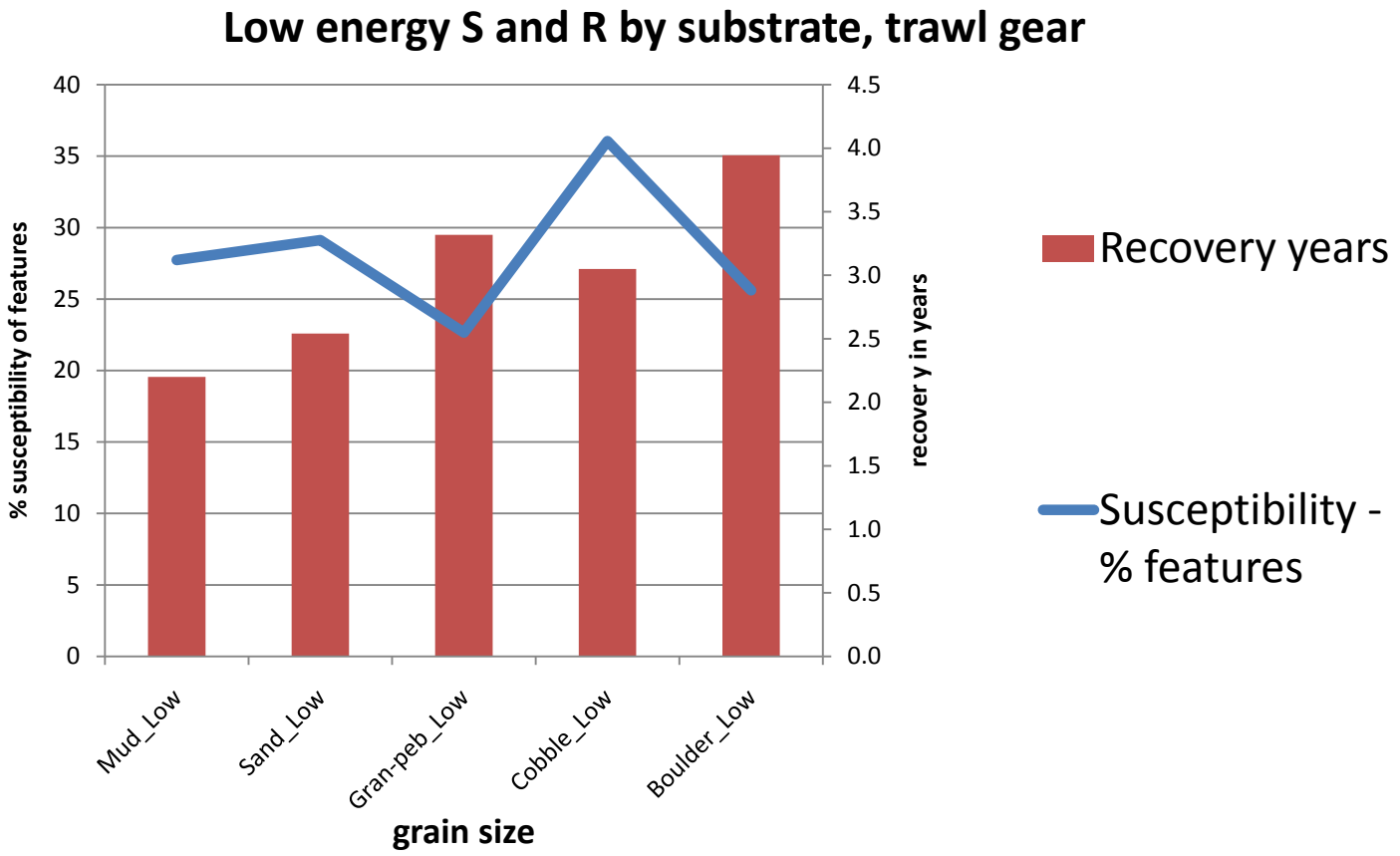
1. Seabed structures are useful to managed species as direct shelter and because the structures provide habitat for various prey items
2. Seabed structures can be negatively impacted by physical contact with fishing gear
3. If these structures are impacted in a way that is more than minimal and not temporary (as estimated by susceptibility and recovery values), an adverse effect to EFH is generated

SASI Results – Vulnerability Assessment

- *Granule-pebble* thru *Boulder* substrates recover more slowly than *mud* and *sand*

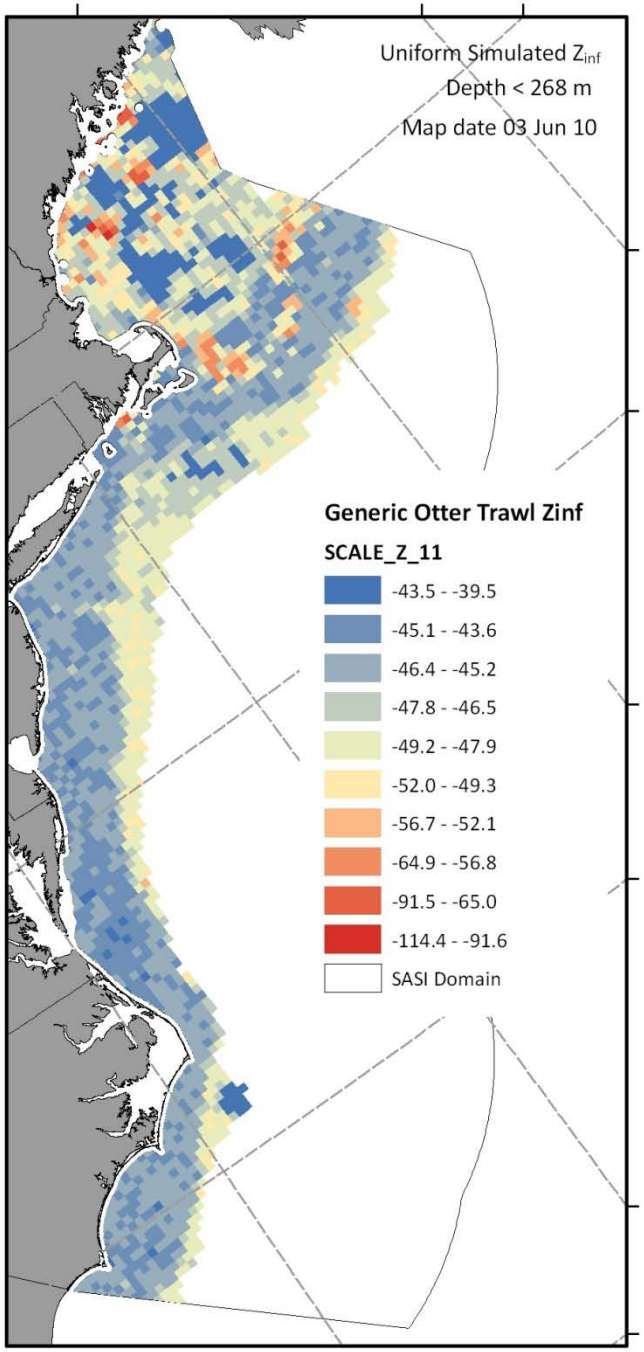


SASI Results – Vulnerability Assessment

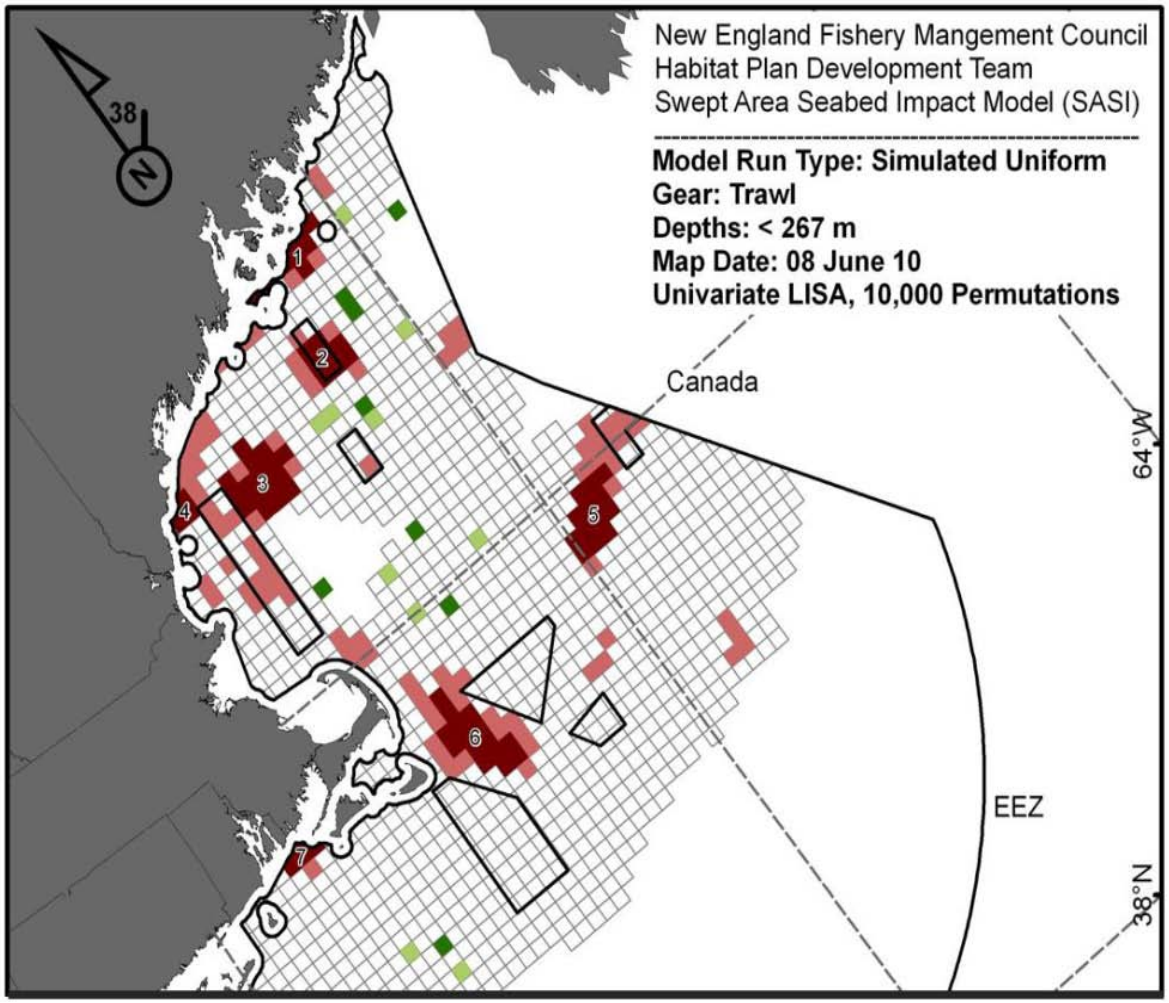


SASI Results – Simulated Adverse Effects (Z_{∞})

Adverse effects accumulate in areas where the susceptible and slow-recovery substrates are found

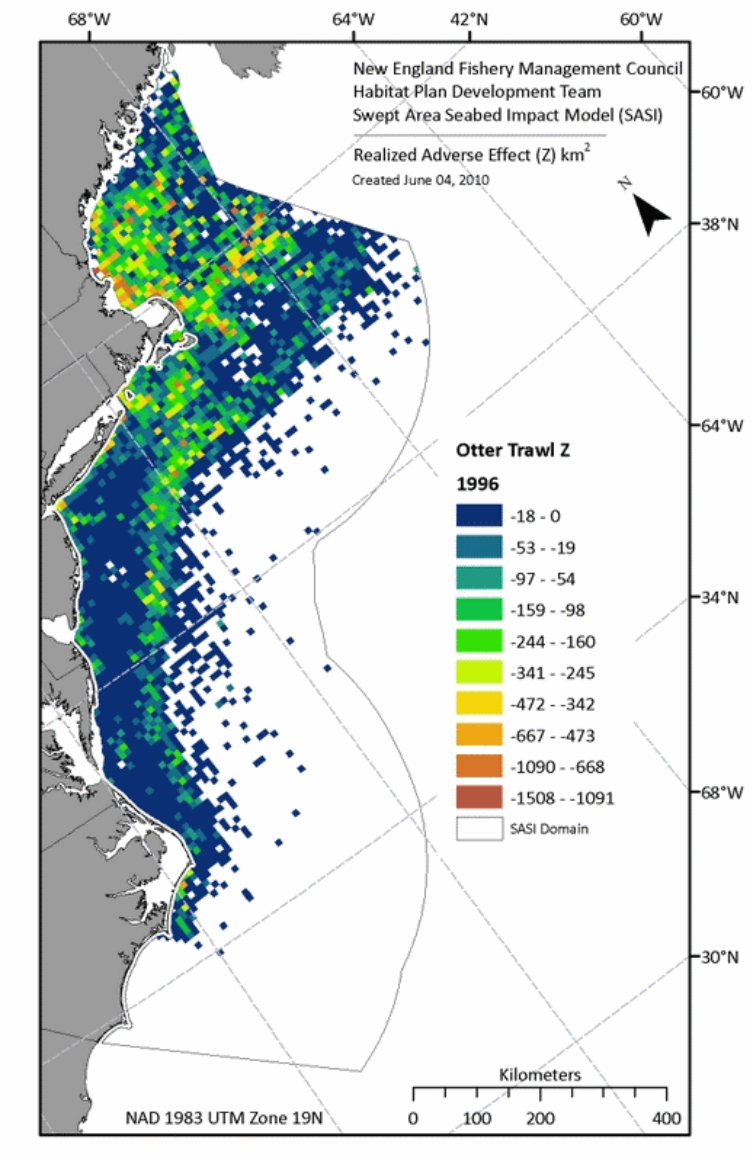


SASI Results – LISA



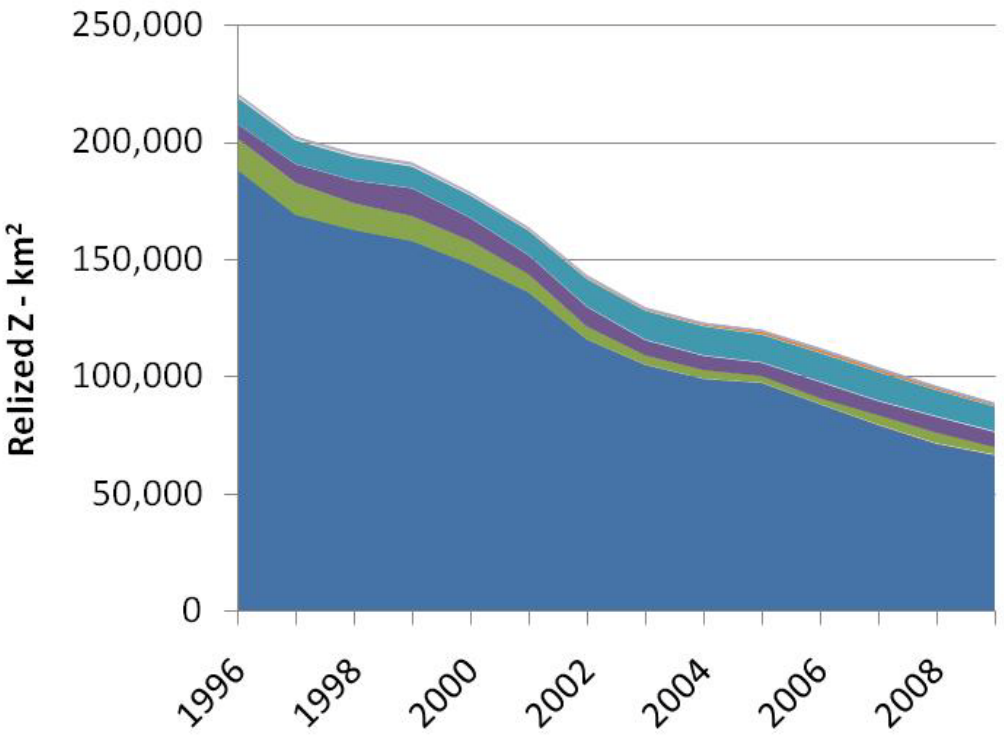
Clustering techniques show groups of grid cells with higher-than-average vulnerabilities, answering the question - *"what are the <u>best</u> areas to look at for spatial management?"*

SASI Results – Realized Adverse Effects ($Z_{realized}$)



Question: How have we done over time?

- Realized adverse effects have declined by over 60% since 1996 for all gear types.
- Mobile bottom tending gears account for 99% of adverse effects (85% of these from otter trawls)



Practicability: *e*

Gear	Mean *e*
g. otter trawl	0.91
shrimp trawl	1.28
squid trawl	0.67
raised trawl	0.47
scallop dr, la	0.1
scallop dr, gc	0.16
longline	0.04
gillnet	0
pots and traps	0.01

How much adverse effect (km^2) is generated per $1K in profit by each gear type?

Note: hydraulic clam dredge excluded due to insufficient data availability

What tools are available to minimize adverse effects?

- Area closures
  - To some or all types of bottom-tending fishing gear
- Gear restrictions
  - Might be applied in specific locations or broadly
  - Include options such as maximum roller gear size, reduced ground cable length
- Effort reductions to reduce area swept and thus seabed contact and adverse effects

- *Research areas may also be used to obtain information for use in future management decisions*

Costs of various options

Closed areas - differential catch rates between fishable and off-limits parcels (redistribution of constant effort)

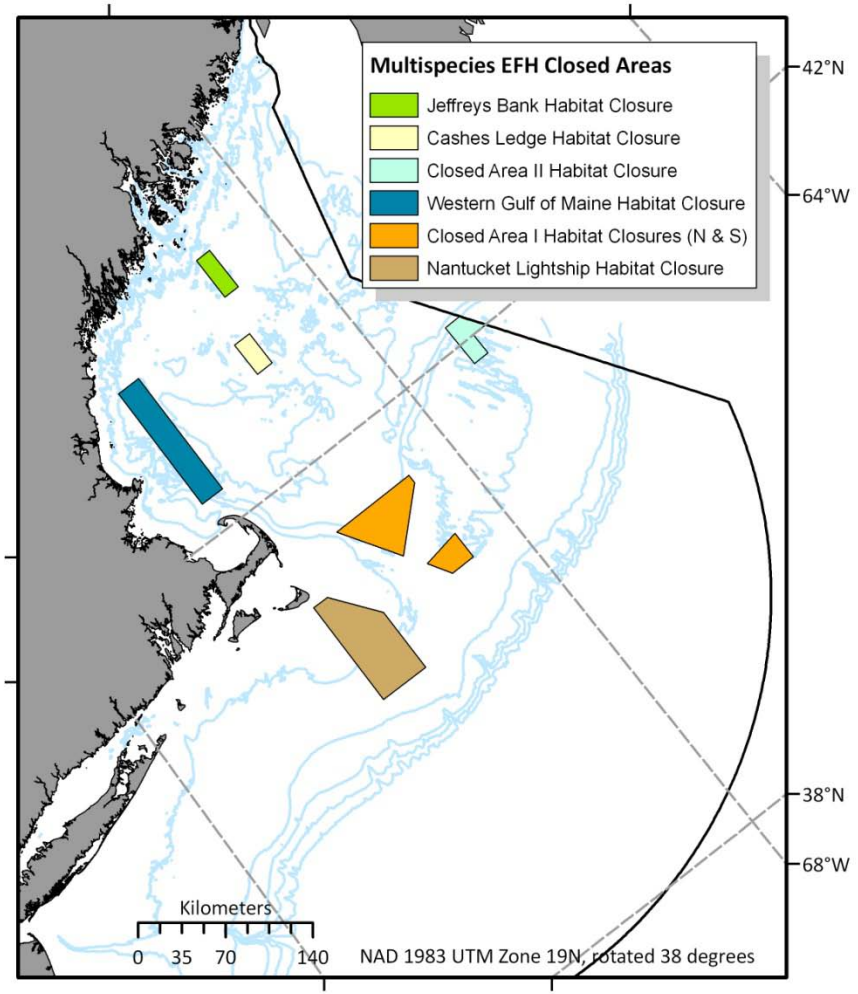
Gear modifications - direct costs plus those associated with gear selectivity/catchability

Effort reduction - costs associated with foregone yield but have second-order effects

- May be hard to decouple from biological objectives
- May result in increased CPUE/profits

Current measures to minimize adverse effects

- Habitat closed areas
- Apply to mobile, bottom-tending gear



Do current measures work?

- Current habitat closed areas have varying degrees of overlap with structural habitats vulnerable to mobile bottom tending gears (see EAP analysis)
- Externalities are associated with current habitat closed areas because fishing is redistributed elsewhere:
  - in some cases onto more vulnerable structural habitats, or
  - into areas where catch rates are lower

When to use various tools

- Level of certainty in underlying data and associated analyses is one way to decide which tool(s) to use: