Untangling UGLMU Gear Codes

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Gear

- CPUE is the fundamental measure of virtually all fisheries assessment programs
- effort (in cpue) is directly dependent on the gear that was used to obtain the catch.
- impossible to compare cpue numbers without knowledge of gear.

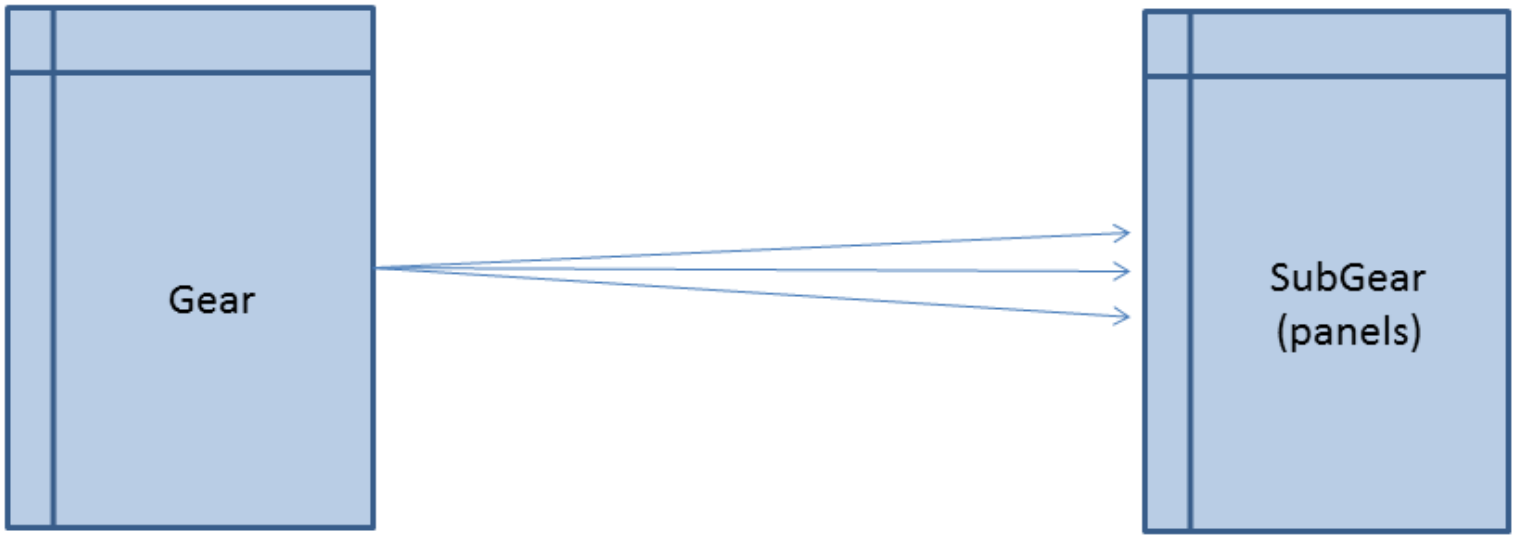
Existing Data Sources

- Gear codes in UGMLU databases are messy
  - some gear descriptions in FN013 and FN014 tables in Fishnet archive. Good for many projects in 1990s, earlier projects sketchy, latter project non-existent
  - some gear fields in master databases (GR, GRTP, EFF, EFFDST) that allow us to reconstruct some gears
- Darrel's Gear Spreadsheet
- Lookup tables on server
- available documentation on Project Tracker

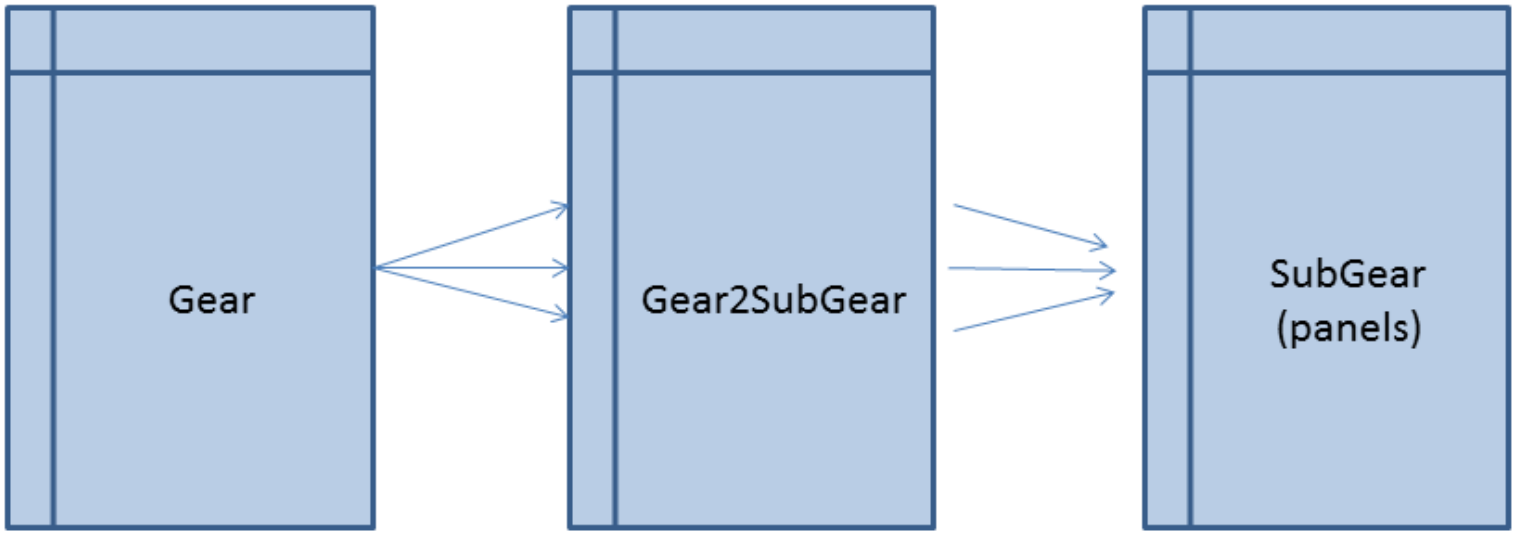
Gear and our data model

- Gear defines FN122 table:
  - one record per sam for traps and hoops
  - one record for each panel of gill nets
  - can't have records for meshes not in gear
  - ProcVal can check for these if gear is well defined and consistent across projects

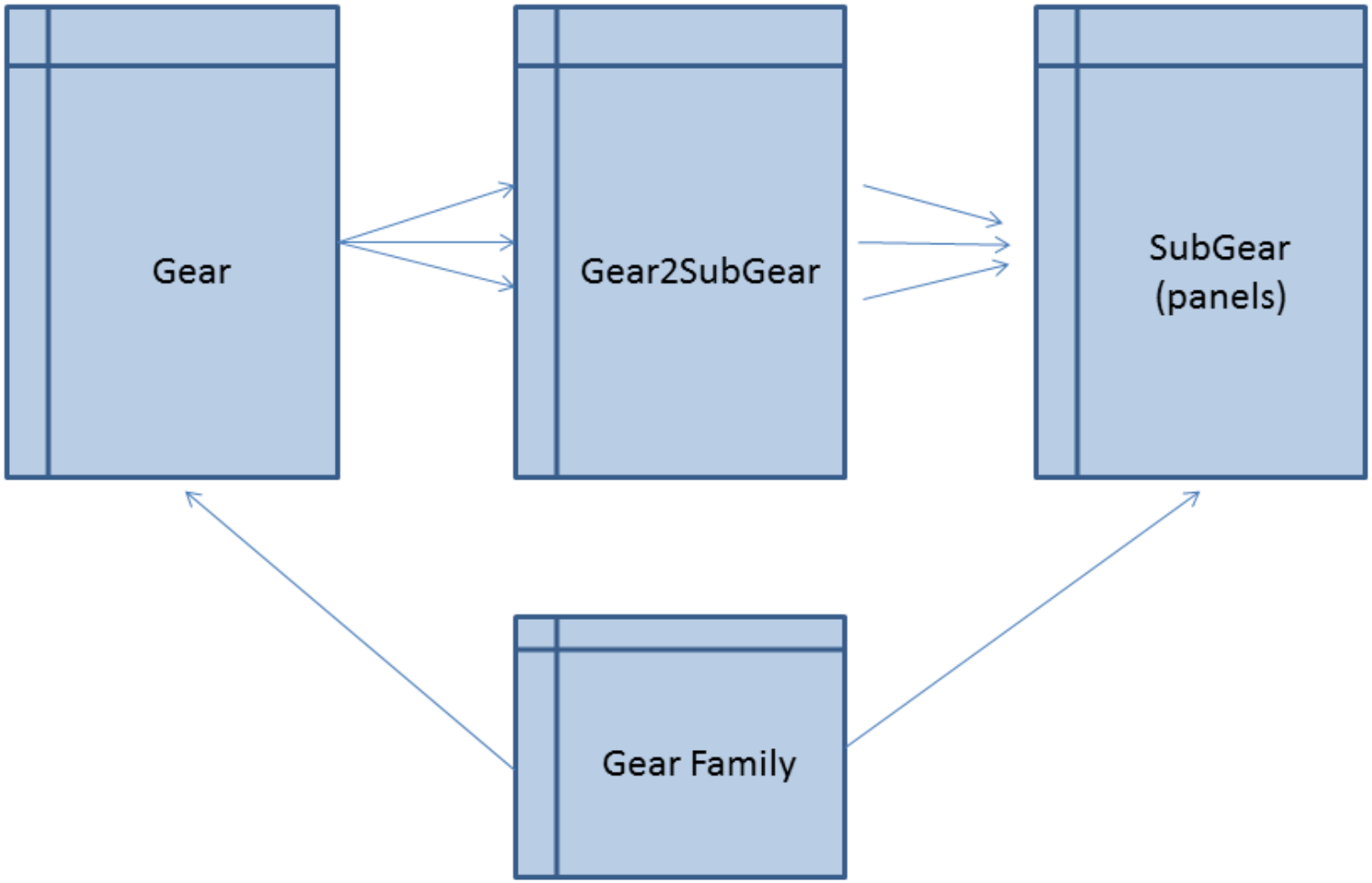
Where are we going?



Where are we going?



Where are we going?



Gear:

- A master table of gears. This will evaully replace the FN013 table.
- Each gear will only be defined once and will be associated to each SAM by Gear Code (or foreign key).

Subgear:

- A master table of gear panel attributes - each sub-gear will only be defined once and asscoaited with the appropriate gear through a many-to-many relationship.
  - For example, the 51mm offshore panel is used in multiple gears, and each gear has multple panels/subgears.
- analogous to data in Darrel's spreadsheet

Gear Family:

- A table to constrain relationships between gears and sub-gears
- Gears are comprised of subgears, but only subgears in the same family should be allowed.
- For example:
  - GL10, GL21, GL22 and GL32 are all derived from offshore monofilament (OSIA-mono) panels
  - GL01 is offshore multifilament (OSIA-multi)
  - GL50 is a FWIN family
  - GL38, GL51, GL64 are all part of the FLIN/SLIN family

Gear Family (cont'd):

- More Families:
  - Nordic nets
  - Bottle traps
  - GEE traps
  - Windermere traps
  - Smallfish-tall
  - Smallfish-short
  - North American Standard
  - Trap nets
  - Hoop nets
  - Unknown*

Gear2SubGear

- association table to facilitate many-to-many between gear and subgear
- contains additional information:
  - panel sequence
  - panel count

How we are going to get there?

- use fn_portal
- database tables for old fishnet tables have been created and populated
  - tables from the fish net archive will be used where possible
  - more recent data will be populated from gear codes where gear details are known (e.g. - offshore gears)
  - project leads, field staff may be asked to provide some input
- Gear, subgear and gear family tables have been created and populated from available data.
- summary of gears used in a project have been be added to project details in fn_portal

How we are going to get there?

- views have been created in fn_portal to:
  - list gears
  - gear details
    - ★ about the gear
    - ★ associated sub-gears
    - ★ projects where gear was used
    - ★ active/depreciated
    - ★ confirmed
  - edit gear description
- list of gears to be updated by <USER>

What have we learned?

- all projects need specific project protocols (many are missing from project tracker)
- project protocols need to explicit describe gear used in project
  - generic "same as other project" shortcuts are not adequate
- science 101 - sufficient detail to reproduce/re-run project

Gill Net Examples

GEAR CONFIGURATION AND SET METHOD

The standard index gear deployed during the offshore index program will be GL32. The configuration of a GL32 net is:

a 15 m panel of 1 1/4" - (32mm) and
a 25 m panel of 1 1/2" - (38 mm) followed by
50 m panels of 2" - 5" by 1/2" intervals (51, 64, 76, 89, 102, 114 and 127 mm)

This gear configuration is identical to the historical offshore index monofilament nets (GL10) with the addition of a 15 m panel of 32 mm mesh. Total net length of a GL32 gang is 390 m.

One of the three gangs will also include 50 m panels of 5.5" (140 mm) and 6.0" (165 mm) mesh and will have the order of the meshes randomized. The gear code for this net configuration is GL21 and the total gear length will be 490 m. The order of all panels in this third net has been randomized within mesh strata (each third of the net contains one randomly selected and placed small mesh, medium mesh, large mesh, and extra large mesh panel). The mesh order of this net configuration is:

64 102 32 114 51 153 89 76 38 140 127

This mesh order will remain unchanged for the entire years' offshore index program.

Trap Net Examples

South Bay Trap Net Survey
LHA_IS12_119

A trap net survey will be conducted in South Bay starting mid-October and likely running into the first week of November, depending on catch and weather. The primary purpose of this project is to monitor spawning lake trout.

This project will consist of two eight-foot trap nets set in Golding and Overfield (see map). The nets will be set in the same locations that have been used for this project in the past. They will be lifted and set every second day for the duration of the project. If fish numbers increase (X= >50 fish) at any time throughout the project, the net should be lifted and set on a daily basis and the alternate work schedule used.

Other Gears:

- any suggestions?
  - fyke nets
  - hoop nets
  - bottle traps
  - Windermere traps
  - electrofishing
  - others. . .

Consolidating Gear codes

- process of updating project masters to match gear master
- documenting undocumented GL and TP codes
  - inspecting FN122, FN123 and FN125 tables. Inferring gear from similar projects in same year
- FishNet Archive/FishLib
  - possible our archive are incomplete, especially for projects run by other offices (Espanola/Severn Sound)

Trap Nets

- 3 proposed codes:
  - TP06 - Standard 6' trap net
  - TP08 - Standard 8' trap net
  - TP - Undocumented trap net (only in rare cases)
- update masters to these codes where information exists to identify trap net size

Gill Nets

- eliminate gear code synonyms
- update gear codes where inconsistencies are evident

Next Steps/Homework

- confirm assigned gears:
  - provide description for assigned gear
  - verify sub gear attributes:
    - ★ populate where possible
    - ★ check existing values
- FLIN gear used with one or multiple efforts. Can these be the same gear code?
  - 1 can mean half of the net or all of the net
- export gear code master tables
- update proc-val to query master tables