

# Extracts from An Introduction to Stability

<http://www.fao.org/>  
**<ftp://ext-ftp.fao.org/pub/Turner/>**

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# ACCIDENTS



## DRIFTING

- Bad engine installation
- Bad maintenance of engine
- Lack of trouble-shooting experience
- Lack of fuel



## FIRE

- Careless use of open fire
- Bad installation of cooker
- Wrong location of gas bottle



## SINKING

- Poor standard of construction
- Bad maintenance



## COLLISION

- Lack of navigation and fishing lights
- Lack of radar reflector
- Careless crew



## CAPSIZAL

- Poor stability
- Heavy loads on deck
- Water trapped on deck



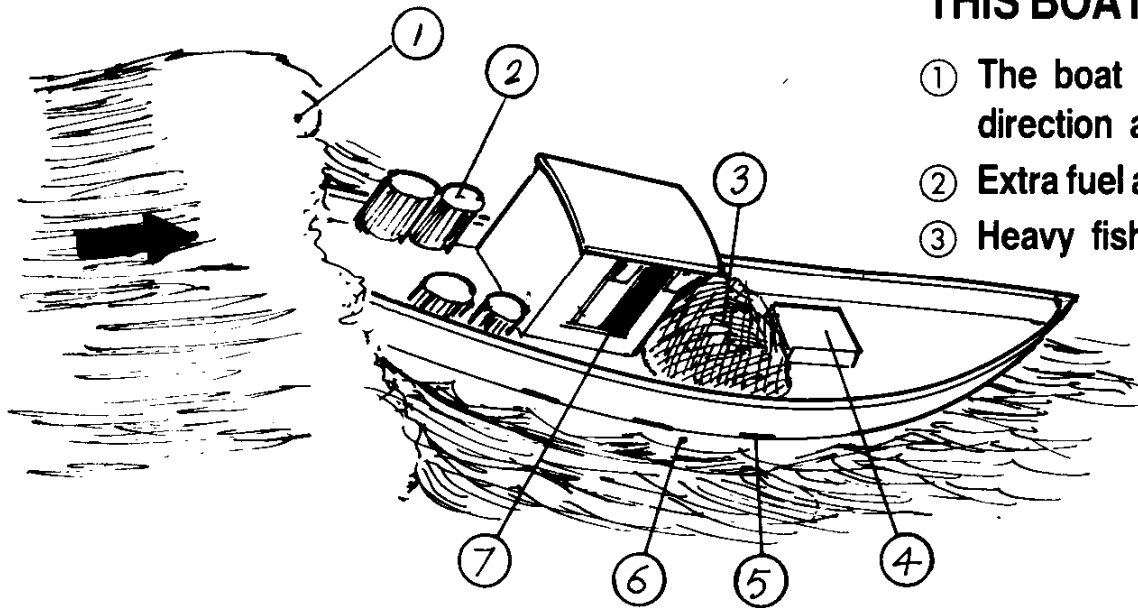
## WORK ACCIDENTS

- Slippery decks
- Unprotected deck equipment and machinery
- Tired crew

# How is stability reduced?

- Vessel flooded
  - (loss of freeboard plus free surface effect)
- Vessel overloaded
  - (reduced freeboard)
- Weights too high
  - (reduced freeboard plus CG raised)
- Water on deck
  - (free surface effect plus reduced freeboard plus CG raised)
- Half full tanks
  - (free surface effect)
- Water in bilges
  - (free surface plus reduced freeboard)

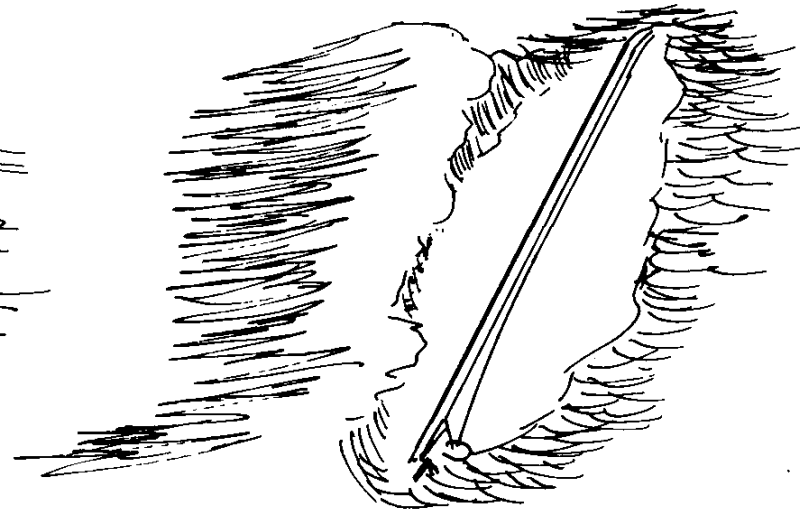
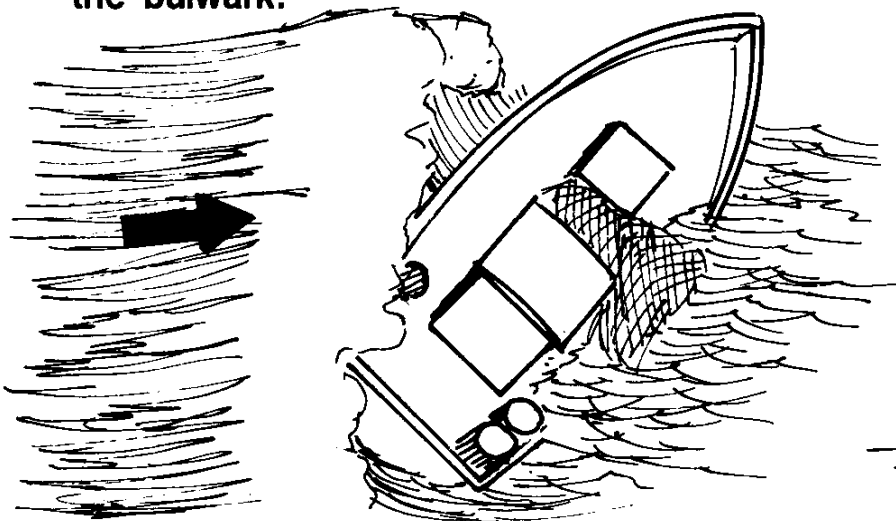
## THIS BOAT IS IN DANGER OF CAPSIZING



- ① The boat is going full speed in the same direction as the waves
- ② Extra fuel and fresh water are in drums on deck.
- ③ Heavy fishing gear is on deck.
- ④ Hatch covers are not lashed.
- ⑤ Freeing ports are small.
- ⑥ Freeboard is low.
- ⑦ Deckhouse door is open.

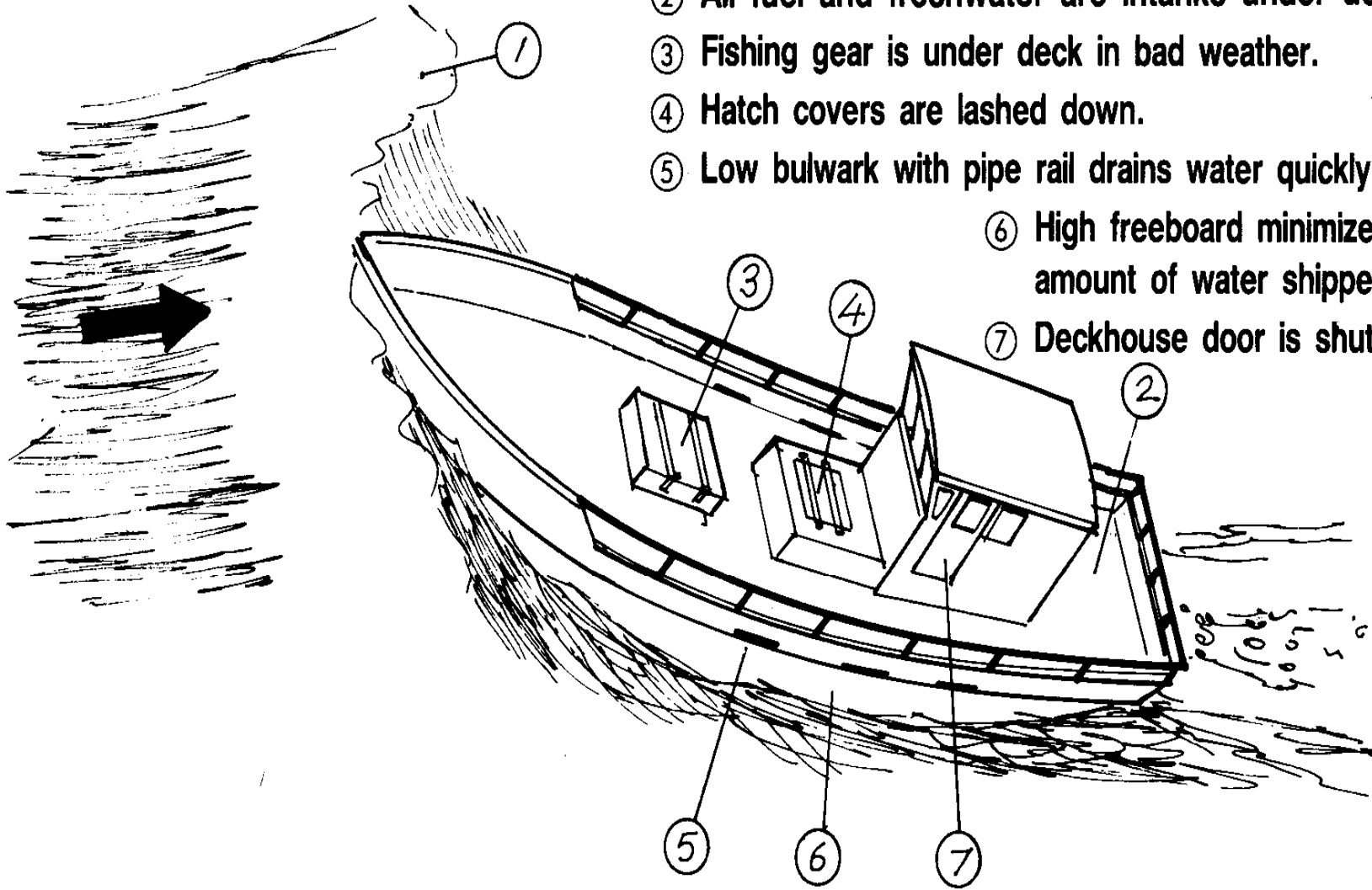
The boat is likely to be thrown broadside to the waves and the fishing gear and drums are likely to slide over the bulwark.

The boat is then likely to capsize with the next large wave.



# THIS BOAT IS BETTER PREPARED AGAINST CAPSIZING

- ① The boat is going slowly against the waves.
- ② All fuel and freshwater are in tanks under deck.
- ③ Fishing gear is under deck in bad weather.
- ④ Hatch covers are lashed down.
- ⑤ Low bulwark with pipe rail drains water quickly.
- ⑥ High freeboard minimizes the amount of water shipped in.
- ⑦ Deckhouse door is shut.



# Summary

- **Do not overload the vessel**
- **All fishing gear and other weights should be stowed, prevented from shifting and placed as low as possible**
- **Freeing ports must be of adequate size and unobstructed**
- **All doors, windows, hatches etc should be closed in bad weather**
- **Closing devices must be well maintained**
- **Fish holds should be longitudinally divided**
- **Minimize the number of partially full tanks**
- **Be alert to the dangers of following or quartering seas**

# Questions and Comments