**Table S1.** Description of all threats (sources of risk) used in the risk analysis (n = 37). All threats are either current threats, long-term ongoing threats# (climate change) or near-future threats\* (2015 to 2030). Information concerning climate change threats (i.e. past and near-future 2030 predictions) were sourced from the Australian Bureau of Meteorology. HM = Habitat modification

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| --- | --- |
| **Threat** | **Description** |
| Acid sulphate soil disturbance  | * Also includes acid water drainage from acid sulphate soil disturbance
 |
| Aquaculture: mussels | * Growout, sub-tidal sub-surface longlines
 |
| Aquaculture: Pacific oyster | * Growout, intertidal rack-and-rail and longlines
* Sub-threats include trampling, sedimentation, shading with rack-and-rail
* Does not include impacts from invasive feral populations or hatcheries
 |
| Aquaculture: predatory fish (plus diffuse nutrients) | * Growout, sea cages, southern bluefin tuna and yellowtail kingfish
* Main threat includes high diffuse nutrient input
* Does not include impacts from hatcheries or introduced pathogens
 |
| Boating  | * From recreational activities, commercial fishing, aquaculture operations and ecotourism
* Sub-threats include grounding, sediment re-suspension, anchor damage, waste discharge and antifoulants
* Does not include threats related to invasive species or fishing
 |
| Brine discharge\*  | * From a desalination plant
* While no desalination plants currently exist in spencer gulf, it is expected that they will be developed in the near-future
 |
| Climate change: ocean acidification# | * Decrease in ocean pH by 0.07
* Consider that ocean pH has already decreased over the past 200 years by about 0.1
 |
| Climate change: global warming# | **For inter-tidal and sub-tidal habitats:** * Increase in mean sea surface temperature by 0.8°C
* Consider that SST increase, over the past 100 years, has been relatively minimal for the South Australian region (< 0.1°C)

**For inter-tidal and extra-tidal habitats:** * Increase in mean air temperature by 0.4 to 1.1°C
* Consider that air temperature, over the past 100 years, has already increased by around 0.7°C in the South Australian region
 |
| Climate change: sea level rise# | * Rise in mean sea level by 120 mm (12 cm)
* Consider that sea level has been rising along the Australian coastline about 2.1 mm/year over the past 50 years
* Sub-threat includes increases in extreme sea level events (e.g. Astronomical tides, storm surges and wind waves)
 |
| Climate change: increase in hot weather events# | * Increase in number of hot days (air temperature > 35°C) to 60 days/year
* Consider that most of the Spencer Gulf region has experienced about 30 hot days/year over the past 30 years
 |
| Climate change: increase in extreme rainfall events# | * Increase in the intensity, rather than frequency, of rainfall events. Magnitude of increase unknown.
 |
| Climate change: decrease in rainfall# | * 15% decrease in winter rainfall
* Consider that there has been a prolonged period of drying in the South Australian region since the 1990s
 |
| Coastal activities | * Such as walking, sunbathing, off-road vehicles and grazing
 |
| Coastal habitat modification  | * Such as land reclamation, native vegetation removal and shoreline hardening
* Does not include threats associated with increased coastal activities, sediment runoff and acid sulphate soil disturbance
 |
| Disease & pathogen outbreaks | * Outbreaks from naturally occurring and introduced species
* Does not include harmful algal blooms
 |
| Fishing: hand collection | * Abalone, commercial and recreational
 |
| Fishing: handline, longline | * Scalefish, commercial and recreational
* Sub-threats include low level bycatch
 |
| Fishing: haul nets, gillnets | * Scalefish, commercial and recreational
* Sub-threats include medium level bycatch
 |
| Fishing: pots | * Blue crab and rock lobster, commercial and recreational
* Sub-threats include low level bycatch
 |
| Fishing: demersal trawl | * Western king prawns, commercial
* Sub-threats include high level bycatch and sediment re-suspension
 |
| Fishing: purse seine | * Sardines, commercial
* Sub-threats include low level bycatch
 |
| Fishing: illegal | * All types
 |
| Harmful algal blooms  | * Outbreaks from naturally occurring and introduced species
 |
| Heavy metals | * Point source and diffuse pollution from historical mining operations, stormwater, metal manufacture and power stations
 |
| Invasive species: benthic filter-feeders  | * Key species include European fanworm, Pacific oyster and pearl oyster
 |
| Invasive species: encrusting, fouling  | * Key species include ascidians, hydroids and macroalgae
 |
| Invasive species: predators, parasites  | * Key species include crabs, goby fish and shell-boring worms
 |
| Marine debris  | * Includes general litter, fishing gear, aquaculture gear and illegal dumping
 |
| Marine HM: commercial harbors, ports  | * Sub-threats include alteration of currents/tides, sedimentation and coastal erosion
 |
| Marine HM: jetties, seawalls  | * Sub-threats include alteration of currents/tides, sedimentation and coastal erosion
 |
| Marine HM: marinas, boat ramps  | * Sub-threats include alteration of currents/tides, sedimentation and coastal erosion
 |
| Marine HM: dredging\*  | * Sub-threats include alteration of currents/tides and sediment re-suspension
 |
| Nutrient discharge (point source)  | * Mainly nitrogen and phosphorous
* Point-source pollution from wastewater treatment plants, stormwater drains, steel manufacture, fish processors, power plants, land-based abalone farms, aquaculture (finfish) hatcheries, agricultural runoff via riverine/creek discharge and shark-cage berley
* Does not include impacts from sea cage aquaculture
 |
| Oil spill  | * The most-likely, worst-case oil spill for Spencer Gulf. For example, the 1992 *‘ERA’* spill: fuel source = ship’s fuel from ruptured fuel tank; fuel type = highly-persistent heavy fuel oil not easily broken down by chemical dispersants; spill size = 100s of tonnes.
 |
| Sediment runoff & dust  | * From land clearance and coastal habitat modification
 |
| Shipping  | * > 100 ships crossing a habitat per year
* Sub-threats include sediment re-suspension, anchor damage, waste discharge, noise and antifoulants
* Does not include threats related to invasive species or oil spills
 |
| Shipping (high level)\* | * As above, but based on near-future predictions for shipping intensity in Spencer Gulf (300 to 600 ships crossings per year)
 |
| Thermal pollution  | * Point-source from power plants and steel manufacture
 |