Appendix

Interactions among various data affecting the number of dolphins (only some are listed)

Water quality data

- Changes in temperature and salinity could synergistically affect where prey species can live.
- The study reveals that temperature warming almost always adversely affects dolphin numbers.
- The study found that high levels of nitrogen, E. coli and suspended solids in the water are critical threats to dolphins, despite decades of water quality improvement efforts.
- Excess nitrogen from chemical fertilisers and sewage, caused by increasing nitrogen loads from the Pearl River over recent decades, is linked to algal blooms, oxygen depletion and destruction of marine ecosystems, potentially causing catastrophic impacts on the dolphin food chain.

Fish production data

- Decreasing fish productivity and depleted prey resources are major concerns for dolphin conservation.
- Fish production and salinity have a positive correlation.

High-speed ferry data

- In north and northeast Lantau (NEL), high-speed ferries negatively impact dolphins, causing acoustic disturbances and collision risks.
- Surprisingly, in some subregions (e.g., northwest Lantau, NWL), ferries may positively impact dolphins by increasing prey-capturing efficiency in murky waters, as dolphins rely on echolocation to forage.
- Alarmingly, a 90% reduction in ferry traffic during 2020 (due to COVID-19) saw no dolphins return to NEL and only a few to NWL, indicating long-term habitat disruption.

Reclamation activity data

- Significantly lower dolphin sightings in one of their major habitats in the 1990s and 2000s resulted from the cumulative impact of factors influencing dolphins and possibly the role of landscape in their habitat use.
- While the creation of the North Lantau Marine Park has expanded the marine protected area, its effectiveness in safeguarding the dolphin habitat remains inadequate, as the whole of north Lantau (NWL + NEL) has been permanently altered by reclamation projects.
- Newly designated marine protected areas often overlap with areas of low fish stocks and reclamation sites, reducing their effectiveness.