Exploring marine stinger impacts on the Australian community
Dr Jaz Lawes, Dr Amandine Schaeffer, Mr Shane Daw, Prof. Moninya Roughan

INTRODUCTION
Marine stings are painful and can influence the enjoyment and perceptions around beach recreation, particularly if those stung are tourists or infrequent beachgoers.

The presence of marine stingers and their movements can be driven by environmental variables (e.g. currents, wind and wave action) and behaviour (e.g. migration), and anecdotally their prevalence on the coast is increasing.

Our current understanding of true impacts or marine stingers on coastal participation is limited so using surf lifesaving reporting tools and a nationally representative survey, we begin to address this knowledge gap with data presented today.

METHODS
National Coastal Safety Survey (NCSS)
The NCSS2020 is conducted in April each year and collected information about community swimming ability, behaviours and attitudes to coastal safety. The survey is conducted annually by Newspoll Market Research and Omnippoll and is run online over a four-day period each April among a national sample of approximately 1,600 respondents aged 16 and older. To reflect the population distribution, results were post-weighted (by age, gender, geographic strata and education) and projected to Australian Bureau of Statistics data. The study is carried out in compliance with ISO 20252 - Market, Social and Opinion Research.

SurfGuard
SurfGuard is a web-based application that enables SLS members and entities to access the national membership database and to input incidents. Incident reporting is entered via the Patrol Operations app but is collated and stored within SurfGuard for reporting. Marine stings are reported by patrolling members for each patrol with data as accurate as possible in relation to the occurrence of the incident.

RESULTS
The NCSS reports Marine sting data extracted from SurfGuard's surf lifesaving statistics (2009/10-2019/20) reports an average of 40,128 stings treated each year by surf lifesavers and lifeguards, with the number of treatments tending to increase each year (Fig. 1). This correlates with increasing perceptions of marine stinger hazards in the community since 2015 (Fig. 2).

SLSA’s National Coastal Safety Survey reports one in six Australians have been stung by a marine stinger (17%), mostly by bluebottles (Fig 2). Three out of four stings (77%) occurred along the eastern coast of Australia (Fig. 2) and most occurred while swimming (74%; Fig 4). Thirty per cent of survey respondents received treatment for their stings, of which forty-four per cent were treated by surf lifesaving services (Fig. 4).

IMPLICATIONS AND FINDINGS
- Number of treatments provided by surf lifesavers and lifeguards are increasing, as are the perceptions of marine stinger hazards in the community. This supports the anecdotal conversation that marine stingers may be more abundant on our coast.
- With many stings were untreated or not treated by surf life saving services, these results indicate that true marine sting numbers are much higher than reported here.
- Given that movements are driven by a combination of environmental variables, the ability to predict conditions when stinger risk is high will have social, environmental and economic benefits by informing beachgoers, surf lifesaving services and coastal communities.
- An innovative, collaborative project with UNSW using oceanographic modelling is hoping to develop a bluebottle prediction tool to enhance the beachgoing experience, by increasing hazard awareness to the general public.
- By better understanding impacts of marine stingers on beachgoers using research and innovation, we hope to reduce risk perception and enhance the coastal experience for coastal visitors.