* Wildlife forensics
* Development in metagenomics – analyse eDNA – community composition in different areas
* Before was hard to have conservation focus to non-popular
* Sharks taxonomics - 100M sharks killed per year for fins and flesh – overfishing
* 25% of species threatened with extinction on IUCN – overfishing
* 500,000 tonnes of shark fin traded annually – cut fins and toss shark body into the ocean – packaging hard to identify what species of sharks
* Decline of FAO landings because sharks are declining – not fishing declining
* Aus neighbour also has high proportion of threatened species – global catch is relatively small in Aus
* Aus is a hotspot of species richness
* Different way of measuring biodiversity – phylogenics diversity – endemic to the regions – terrestrial in Aus has high level of endemism that are threatened
* Aus fishing zone
* Around 10 tonnes of shark catch reported
* Fav species to eat in Aus is sold as flake – should be gummy shark if labelled as flake – study says gummy shark is sustainable – school shark is not sustainable
* Tracing where they are caught from the market is hard – what is caught and where it is sold – lead to problems of measuring fisheries and policing laws
* Data for shark fins imports have only been for a few years
* Hard to know what we’re eating
* Still no standardised methods of labelling
* AMCS for sustainable seafood guide when purchasing seafood
* Most seafood industry supports standardised labelling and sustainable fishing
* Barcoding approach – CO1 in 2000 Genetics Biol – metabarcoding – multiplex PCR (different primers in one solution that are species specific)
* Pros – very sensitive – amplify very small quantity of DNA
* Cons – prone to contaminate – difficult in large fish market to detect legal trading
* Agarose gel – species specific primers for white sharks – concentration of DNA – keep diluting to get 10^-10 of the original
* Lots of different genes on mtGenome that can be used for detection – challenge is to choose genes that are different enough to detect between different species but not too different within species
* Fishing pressure in Indonesian water – very close to Aus – traditional Indonesian fishers can come to Aus (near WA) as long as they use traditional methods
* Want to get sample – genetic variation is primarily found in this part of the world (is what being studied)
* Global analysis of sharks in shops or boats – fair portions of endangered or vulnerable
  + Sample from Canda, China, Sri Lanka – large proportion of threatened and vulnerable
  + Not that high proportion for terrestrial
* Seafood labelling is a big issue – in UK up to 78% mislabeleed – in Victoria in 2015 high proportion of gummy shark mislabelled – across QLD, WA, NT, ACT also mislabelled – flakes labelled as gummy sharks that are not across Aus – whether intentional or not
* Enough of consumer interest to develop sth like accreditation system that fish vendor could be accredited as sustainable and be regularly monitored
* Next gen sequencing and metabarcoding hold a lot of hope with respect to monitor trades – detecting illegal trades of wildlife
* Carry out eDNA – NGS – bioinformatics – get the reads – go through and form stacks of sequencing – got rid of problematic sequences – get the OTU and match with the database
* Last year was barcoding – not metabarcoding