



General Certificate of Education
Advanced Subsidiary Examination
June 2014

Critical Thinking

CRIT2

Unit 2 Information, Inference and Explanation

Insert

Source Material

This Source Material is to be read in conjunction with the questions in Unit CRIT2

A

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Document A

Shark attacks on the increase

1. The International Shark Attack File (ISAF) investigated 125 alleged incidents of shark–human interaction occurring worldwide in 2011. Upon review, 75 of these incidents represented confirmed cases of unprovoked shark attack on humans of which 12 were fatal.
2. ‘Unprovoked attacks’ are defined as incidents where an attack on a live human by a shark occurs in its natural habitat without human provocation of the shark.
3. The 2011 total of 75 unprovoked attacks was lower than the 81 unprovoked attacks recorded in 2010, but higher than the 2000–2009 average of 64. However, the number of worldwide unprovoked shark attacks has grown at a steady pace since 1900, with each decade having more attacks than the previous. But this does not necessarily mean that there is an increase in the rate of shark attack.
4. The number of shark–human interactions occurring in a given year is directly correlated with the amount of time humans spend in the sea. As world population continues its upsurge and interest in aquatic recreation concurrently rises, we realistically should expect increases in the number of shark attacks and other aquatic recreation-related injuries. If shark populations remain the same or increase in size, one might predict that there should be more attacks each year than in the previous year because more people are in the water.
5. Shark populations, by contrast, are actually declining or are holding at greatly reduced levels in many areas of the world as a result of over-fishing and habitat loss, theoretically reducing the opportunity for these shark–human interactions. However, year-to-year variability in local economic, social, meteorological and oceanographic conditions also significantly influences the local abundance of sharks and humans in the water and, therefore, the odds of encountering one another.
6. Humans kill 30 million to 70 million sharks per year.



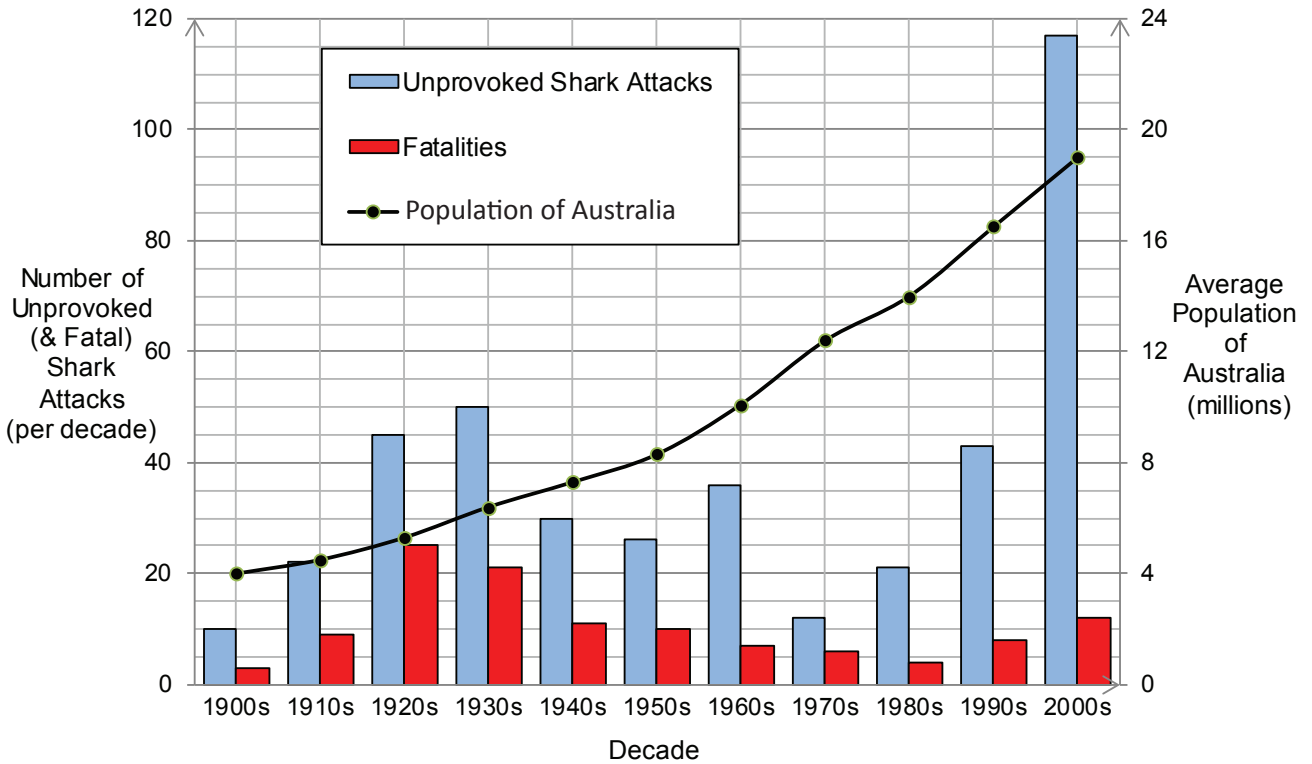
Source: extract from © 2012 International Shark Attack File
 Florida Museum of Natural History, University of Florida
 Top image from iStockphoto, © Thinkstock, 2012
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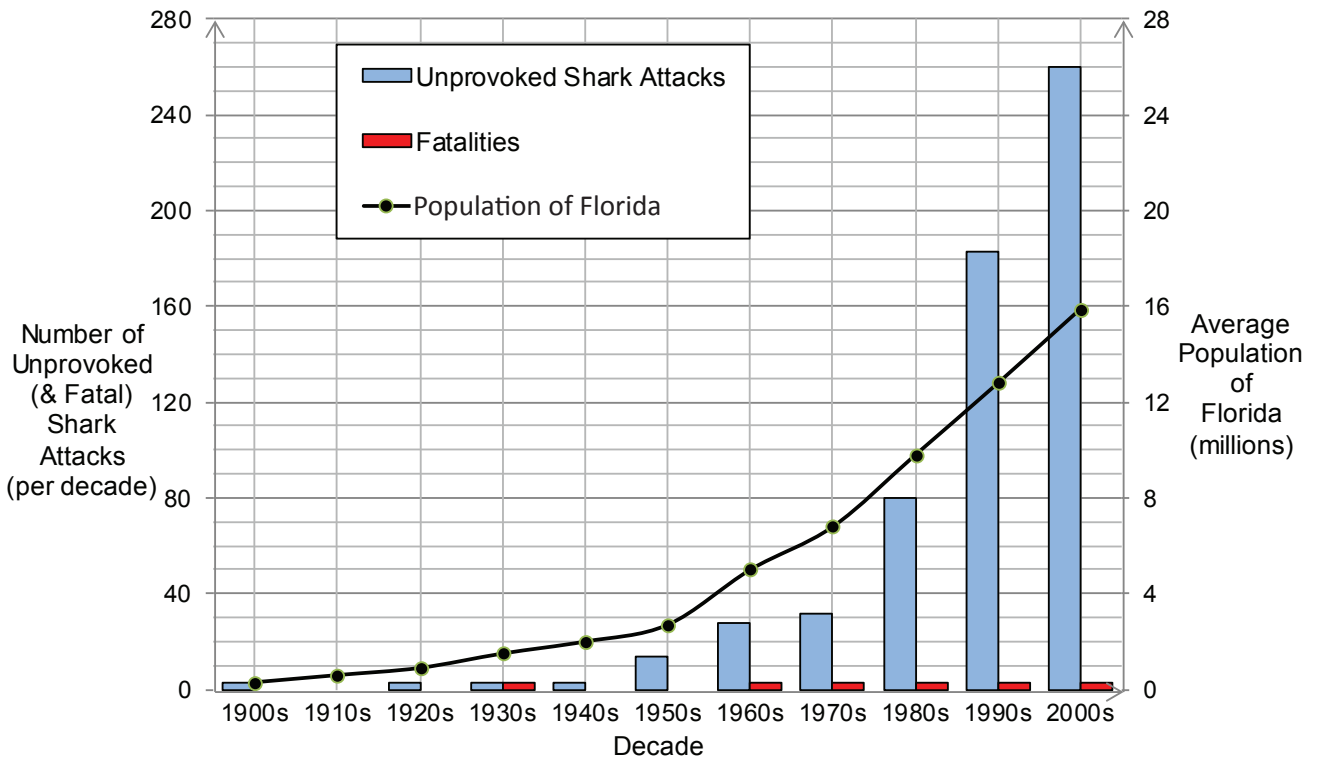
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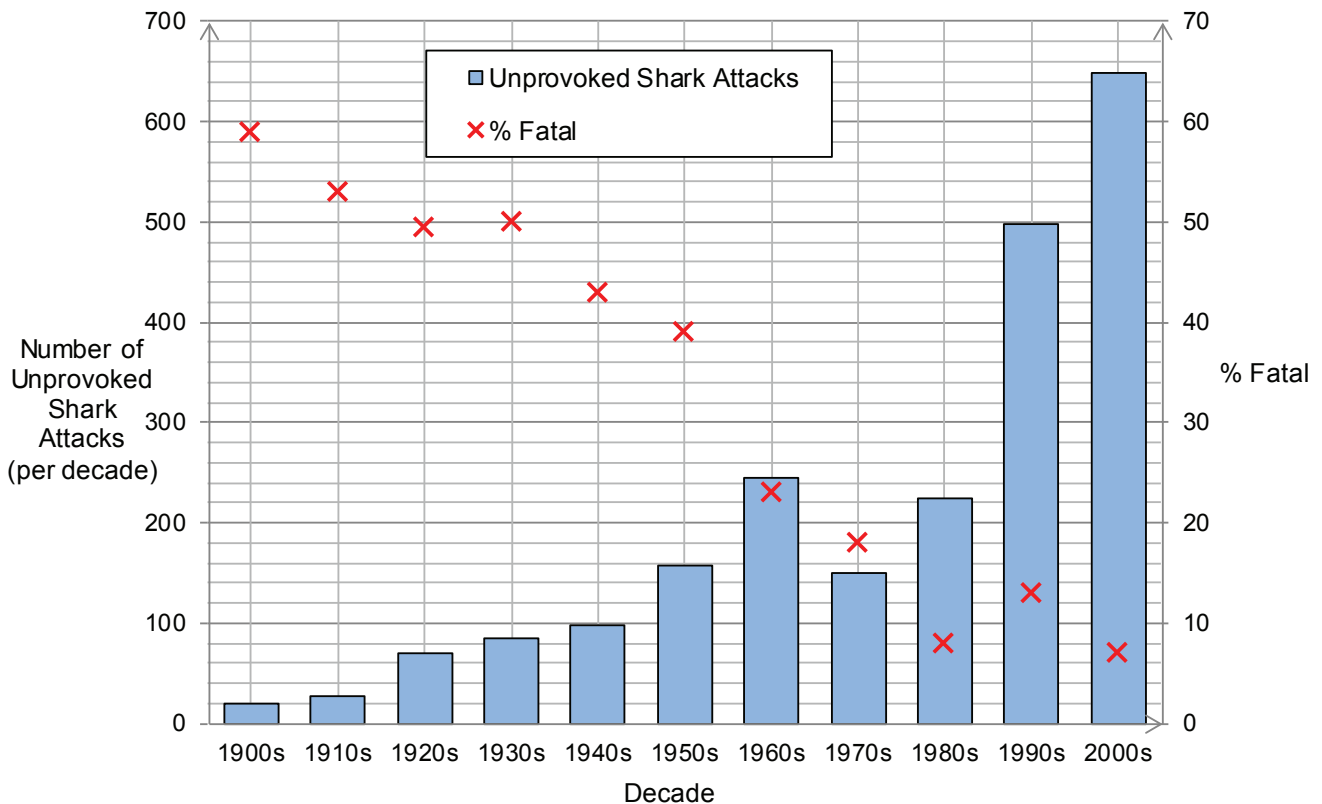
Document B: Graphs 1 to 3

Graph 1: Shark attacks, Australia, 1900–2010 (total of 412 unprovoked shark attacks)



Graph 2: Shark attacks, Florida, 1900–2010 (total of 609 unprovoked shark attacks)



Graph 3: Worldwide unprovoked shark attacks and rate of fatality, 1990–2010

UPDATE (2011): Twelve fatalities resulted from 75 unprovoked attacks in 2011. There were no fatalities in the US in 2011, but 3 in Australia, 2 in South Africa, 7 in the rest of the world.

Overall the trend in fatality rate per decade has been one of constant reduction over the past 11 decades, reflective of advances in beach safety practices and medical treatment, and increased public awareness of avoiding potentially dangerous situations.

Source: data and extract adapted from © 2012 International Shark Attack File
Florida Museum of Natural History, University of Florida

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Document C

Kill or be killed? No, live and let live

1. So, some Australians think that they have the solution to the recent flurry of shark attacks. Their answer is to go on the offensive and kill the enemy before it can kill them. Not only have the authorities taken steps to exact revenge on the individual fish responsible for the most recent attack, many officials in coastal communities are intent on ending the protection great white sharks have been under for the past decade and a half. Ending the protection would give the green light to unrestricted slaughter of this iconic creature, which may already be an endangered species.
2. The International Union for Conservation of Nature has described the Great White as “vulnerable”, but that has not deterred Norman Moore, Minister for Fisheries in Western Australia, from campaigning to legalise shark-hunting. No doubt he has an eye on the economic implications. He was quoted in the press as saying that the rash of fatalities in Western Australia – five in under a year – was, “unprecedented and cause for great alarm”. He added: “It won’t be helping our tourism industry, and those people who want to come here to enjoy an ocean experience will be turned away because of this situation. Further action is necessary to deal with it.”
3. The latest tragic incident made big headlines all over the country and was reported worldwide. A young surfer was bitten in half by a great white, and another was attacked, but survived unhurt, when he tried to help. Moore’s campaign has therefore stoked up a lot of feeling, but it is not all directed at the sharks. There are even some swimmers and surfers who recognise that the ocean is not just their playground. It has residents too. There is also a recognition that, compared with many other hazards, sharks do not pose much of a risk. Fatalities on the roads of Western Australia were 36 times the number killed by sharks in 2011 – and that is *normal*, not ‘unprecedented’. As several people have observed, you are in far greater danger driving to the beach than you are when you are in the sea. It is like travelling happily to the airport in a taxi and then being afraid of flying. Most people fear the wrong things.
4. Besides, no one has to swim or surf in waters which sharks are known to frequent. If we choose to enter their territory, it must be on the understanding that we are the intruders, not them. Sharks do not come ashore and attack people in their homes. If that sounds silly, it just goes to show how absurd it is to try to empty the ocean of these great sharks so that we can feel a bit safer when we go there to play. If we lift the ban on killing great whites, because they are inconvenient to have around, what next? Lions? Tigers? Polar bears? Slaughter every species that has big teeth or sharp claws and very soon we will have nothing but other humans, and furry pets, with which to share the planet – along with all sorts of man-made instruments of destruction and pollution that pose far greater threats. If we want to live longer there are far better ways to go about it than by hunting great white sharks.

Source: article by Mac Heath

Document D**Missing sharks upset the ecosystem balance**

1. The virtual elimination of large sharks from the east coast of the US has disturbed the marine ecosystem and decimated scallops, says a new study.
2. Massive over-fishing of large predatory sharks in the coastal waters of the Atlantic over the past 30 years has led to an explosion in the ray, skate and small shark species that they prey on, with devastating effects for one of the organisms at the bottom of the food chain.
3. “Large sharks have been functionally eliminated from the east coast of the US, meaning that they can no longer perform their ecosystem role as top predators,” said Julia Baum, a fisheries biologist at Dalhousie University in Halifax, Canada and co-author of the study. “With fewer sharks around, the species they prey upon – like cownose rays – have increased in numbers, and, in turn, hordes of cownose rays dining on bay scallops have wiped the scallops out.”
4. Several of the larger shark species in the northwest Atlantic are verging on extinction, according to Baum and colleagues who analysed a dozen surveys dating from 1970 up to 2005. The numbers of hammerhead, tiger, bull and other sharks appear to have declined by more than 97 per cent over that period.
5. The reasons are not hard to find, say the marine biologists. The growing demand for shark fins and shark meat, particularly in Asia (where shark fin soup is an expensive delicacy), has led to a rapid escalation in shark fishing.
6. With the drop in shark populations, a dozen species of rays, skates and small sharks have increased in numbers over the past 16 to 35 years, some of them tenfold, according to other data reviewed by the marine biologists. The rays feed on molluscs, including bay scallops, oysters, and clams. The boom in cownose ray numbers has been nothing short of a disaster for North Carolina’s bay scallop fishermen.

Source: article adapted from Agence France-Presse / Cosmos Magazine, 2007
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