1. Great Barrier Reef's Coral Spawning

Prelims Level: Bio Diversity & Its Threat

Mains Level: GS-III Conservation, Environmental Pollution and Degradation, Environmental Impact Assessment.

Why in News?

- A mass coral spawning has begun on Australia's Great Barrier Reef recently.

About Great Barrier Reef:

- The Great Barrier Reef is the world's largest coral reef system composed of over 2,900 individual reefs and 900 islands.
- The reef is located in the Coral Sea (North-East Coast), off the coast of Queensland, Australia.
- The Great Barrier Reef can be seen from outer space and is the world's biggest single structure made by living organisms.
- The reef structure is composed of and built by billions of tiny organisms, known as coral polyps. It was selected as a **World Heritage Site** in 1981.

Coral Bleaching:

- The stunning colours in corals come from marine algae called zooxanthellae, which live inside their tissues.
- This algae provides the corals with an easy food supply thanks to photosynthesis, which gives the corals energy, allowing them to grow and reproduce.
- When corals get stressed, from things such as heat or pollution, they react by expelling this algae, leaving a ghostly, transparent skeleton behind.
- This is known as 'coral bleaching'. Some corals can feed themselves, but without the zooxanthellae most corals starve.
- Causes for Coral Bleaching include Change in Ocean Temperature, Runoff and Pollution, Overexposure to sunlight and Extreme low tides.

Hard Corals and Soft Corals:

- **Hard corals** have hard, calcium-based skeletons. Most hard corals -- also called stony corals -- consist of numerous single polyps living together in colonies.
- A single polyp consists of a sea-anemone like organism that secretes the calcium-based structure of the colony's skeleton.

- All hard corals' polyps have rings of six smooth tentacles which provide the majority of structure on coral reefs.
- While hard corals secrete calcium-based skeletons**, soft corals** do not**. Instead, Soft corals** contain structures within their tissues called spiracles that support their bodies. Additionally, soft corals have eight fuzzy tentacles for feeding.

What is Coral Spawning?

- One of the most spectacular events to occur on the Great Barrier Reef is the annual synchronised spawning of corals.
- This mass reproduction only happens once a year. It involves colonies and species of coral polyps simultaneously releasing tiny egg and sperm bundles from their gut cavity into the water.
- By expelling the eggs and sperm at the same time, the coral increases the likelihood that fertilisation will take place.
- The mass spawning occurs after a full moon and only after rising water temperatures have stimulated the maturation of the gametes within the adult coral. The day length, tide height and salinity levels also appear to be factors in deciding when the event will happen.
- The spawning lasts between a few days and a week. This is because different species release their eggs and sperm on different days to prevent hybrids from being produced.
- The phenomenon — which only happens at night — resembles an underwater snowstorm. But rather than being all white, there are also clouds of red, yellow and orange. All the bundles rise slowly to the surface where the process of fertilisation begins.
- While spawning takes place on a large scale, it doesn't happen across the entire Reef all at once.
- Instead, the time of year that corals spawn depends on their location. Those on inshore reefs usually start spawning one to six nights after the first full moon in October, whereas those in outer reefs spawn during November or December.
- When an egg is fertilised by a sperm it develops into coral larva called a planula that floats around in the water for several days or weeks before settling on the ocean floor. After the planula has settled in a particular area it starts to bud and the coral colony develops.
- The mass spawning also provides ready food for other marine creatures, particularly nocturnal animals such as plankton and some fish species.