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Application of topography survey on the green sea turtle (Chelonia mydas) conservation

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Taiwan is located in the Western Pacific monsoon region, typhoon is one of the common natural disasters. Taiwan is hit by typhoons 6 times on average each year, and 2016 have 5. Typhoon not only caused the loss of nature environment in Taiwan but also decreased the endangered species- green sea turtle's breeding success rate. In Wangan island, Penghu, green sea turtle nesting beach's slop is too steep to form the dune cliff, block the way which green sea turtle should nesting above the vegetation line. Nesting under the dune cliff is disturbed easily by the swell from typhoon, Leading to the whole nest was emptied or hatching rate decreased due to water content changed. In order to reduce the threat of typhoon on the green sea turtle, and promote the success of green sea turtle reproduction, we used LiDAR(Light Detection And Ranging) to monitor the topographic change of the green sea turtle nesting habitat and compare the invasion and deposition of the green sea turtle nests before and after the occurrence of typhoons.

The results showed that the breeding success rate before the typhoon (2016/09/12) was 93%, which was not affected by the swell. The breeding success rate at the higher position after the typhoon was 95%, and under the dune cliff, 10 nests reproduction failed due to the swell changing the sand layer thickness. The production of dune cliffs is formed by the roots of coastal sand-fixation plants. In the past, the residents collected the coastal plants for fuel, after collecting, sparse vegetation is good to form the flat beach, and to promote green sea turtle nesting on the higher position from the disturbance of typhoon.

In the future, to protect the success of green sea turtle's reproduction, should increase the human intervention that disturb the nesting beach's vegetation appropriately, Or cutting the roots directly to reduce the dune cliffs before the nesting season, help the green sea turtle nesting in a higher beach, improve the green sea turtle's breeding success rate.