Supplement

Accumulated Cyclone Energy (ACE) is a proxy for hurricane activity and damage potential on a monthly (April through October) and annual basis. The index is measured as the cumulative product of wind speed and duration, where measurements of one-minute maximum sustained velocities ≥35 knots (65 km/h) are recorded at six-hour intervals, squared, standardized by dividing by 10000, and summed from a given tropical storm's genesis along its track until wind speeds drop below the aforementioned threshold (Bell et al. 2000).

We retrieved data from the National Hurricane Center (NOAA, Miami, FL; https://www.nhc.noaa.gov/data/#tcr) to calculate ACE for 22 storms that had tracked past or made landfall on the Yucatan Peninsula during the period 2003-2015. The calculations were continued for storms that had passed the Yucatan until they either made landfall further along the western Caribbean coast or on the Gulf Coast to the north. Further, successive summation of monthly ACE, starting in April and continuing until October (Atlantic hurricane season), accounted for storms that began in one month, but carried over into the next.

Given that potentially different ACE values were associated with individual captures in a given regression tree leaf, the crocodile counts were accumulated in consecutive class widths that were ACE = 5; to reduce the inclusion of zero-value classes, data were regrouped to form the following activity bins: 0 (No storms); 0.1-5.0 (Moderately intense storms); 5.1-20.0 (Intense storms); and > 20.0 (Very intense storms). Thus, ACE was converted to an ordinal variable with four proportional (multinomial) responses. Counts are summarized (Table S1) according to their combinations of ACE class and regression tree terminal leaf (Figure 2).

Using contingency table analysis, we tested the hypothesis that proportions of responses varied among the four categories or levels independently of regression tree leaf. When considered as a simple 4 x 8 contingency table, we confirmed that the proportions of the categories differed significantly from a random assignment among the eight terminal leaves (Pearson Chi-square: $\chi^2 = 310$, df = 21, $p < 0.0001$), i.e., there was a relationship between the two factors Storm type and RT leaf. To perform further tests of differences between columns or rows, including directed contrasts, we submitted these categorical data to multinomial ANOVA (Woodward et al. 1990). The analysis was conducted in the standalone Basic program GENLOG (Bonett et al. 1985).

Table S1. Counts for ACE classes of crocodiles that were captured on Banco Chinchorro and Cozumel from 2003 to 2015. Counts are for the terminal leaves (left to right) that were created by 'rpart' (Therneau & Atkinson 1997), based upon partitioning of the animals' individual *K*-values by size class, precipitation, salinity and water temperature measurements (Figure 2). Note that values in parentheses are the percentage contributions of the counts in each column representing the storm intensities (rows).

ACE class Storm Type	Leaf 1	Leaf 2	Leaf 3	Leaf 4	Leaf 5	Leaf 6	Leaf 7	Leaf 8	Total
0.0 (Absent)	6 (6.5)	0 (0.0)	27 (64.3)	15 (30.0)	0 (0.0)	6 (19.1)	0 (0.0)	15 (65.2)	69
0.1 – 5.0 (Moderate)	28 (30.1)	0 (0.0)	0 (0.0)	26 (52.0)	21 (60.0)	34 (80.9)	2 (11.8)	0 (0.0)	111
5.1 – 20.0 (Intense)	12 (12.9)	12 (100.0)	0 (0.0)	0 (0.0)	11 (31.4)	0 (0.0)	13 (76.5)	8 (34.8)	56
> 20.0 (Very Intense)	47 (50.5)	0 (0.0)	15 (35.7)	9 (18.0)	3 (8.6)	0 (0.0)	2 (11.8)	0 (0.0)	76
Total	93	12	42	50	35	40	17	23	312

The multinomial model tested the ordinal response across two main effects factors, i.e., Group (2003-2009 vs 2010-2015) and RT leaves per group (i.e., leaves 1, 2, 3 and 4 vs leaves 5, 6, 7 and 8), together with the Group by Leaf interaction. Test statistics were reported as Wald Chi-square values rather than conventional F-values. Group x Leaf was significant (χ^2_9 = 1454.39, $p < 0.001$), as were main effects of Group (χ^2_3 = 52.94, $p < 0.001$) and Leaf (χ^2_9 = 386.40, $p < 0.001$). Within each group, we performed pairwise multinomial tests on storm proportions of left- and right-daughter leaves originating from a given internal split.

References

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