The following supplement accompanies the article

Movements and diving behavior of Atlantic bluefin tuna *Thunnus thynnus* in relation to water column structure in the northwestern Atlantic

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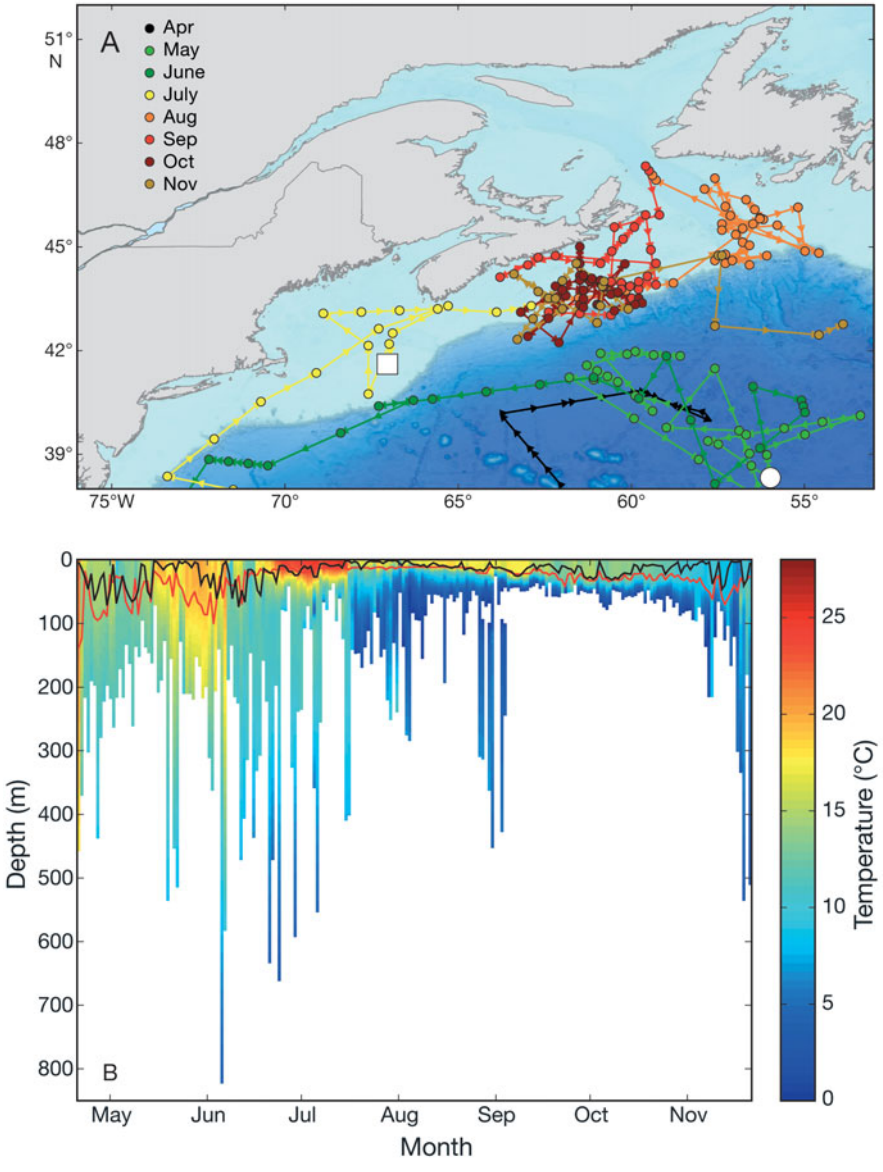

Fig. S1. *Thunnus thynnus*. (A) Representative track for a bluefin tuna (tag A2217) in the study region, showing an arrival in the off-shelf area in early spring, followed by occupancy of waters near the North Wall of the Gulf Stream, and then a movement onto the continental shelf in summer. White symbols indicate the locations of examples of diving behavior for this fish shown in Fig. S2. (B) Temperatures (color scale) experienced by this fish during its time in the study region as a function of depth and date. Vertical bars show daily tag-collected temperature-depth profiles, with the bottom of the bar representing the maximum depth reached that day. Black line indicates the median depth occupied each day; red line indicates estimated iso-thermal layer depth (ILD)

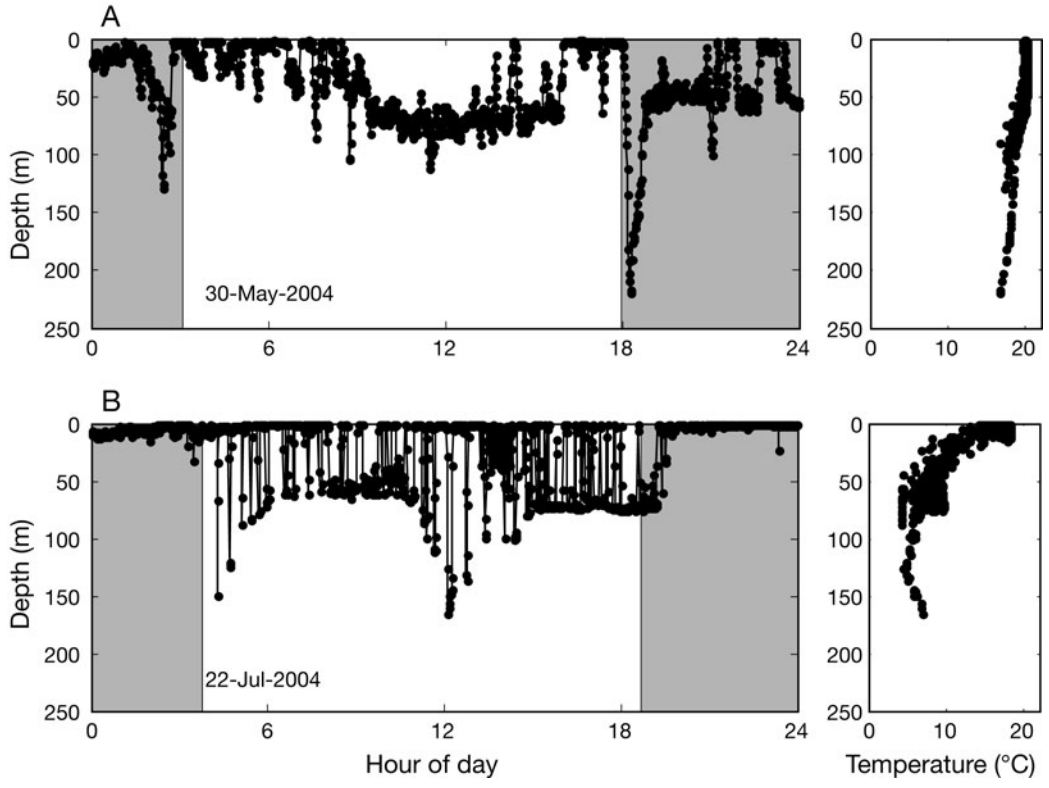

Fig. S2. *Thunnus thynnus*. Two representative days of time-depth and temperature-depth data for the bluefin tuna implanted with archival tag A2217, showing typical dive patterns in off- vs. on-shelf waters and in relation to varying water column types. (A) Measurements made on May 30, 2004 at an off-shelf location in the Gulf Stream (position indicated by white circle in Fig. S1A). (B) Measurements made on July 22, 2004 over Georges Bank in the Gulf of Maine Shelf sub-area (white square in Fig. S1A). Left-hand plot shows depth measurements relative to time of day, gray shading indicates night periods. Right-hand plot shows temperature-depth profile

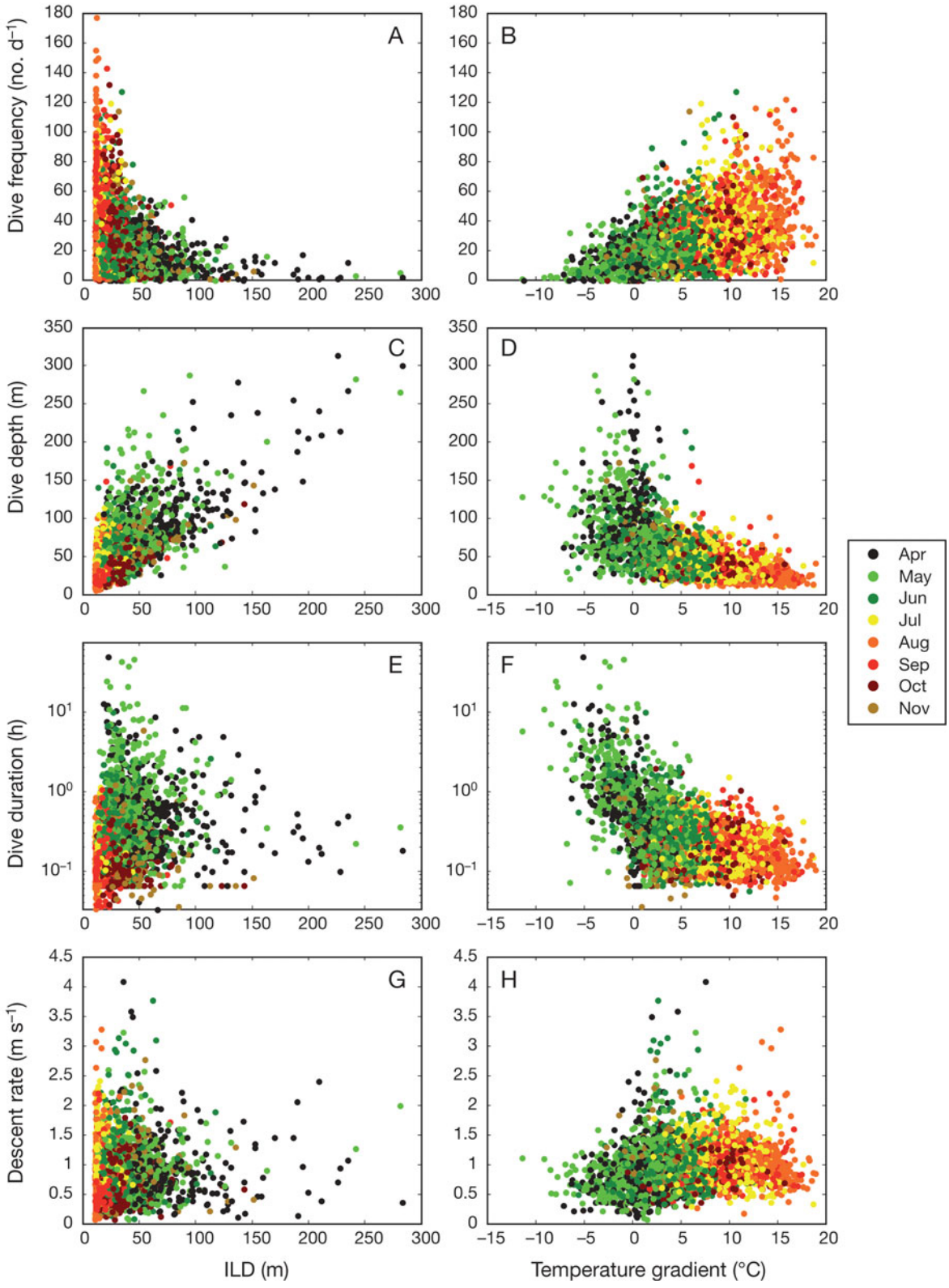

Fig. S3. *Thunnus thynnus*. Dive characteristics relative to the thermal structure of the water column. Shown are dive frequency, daily mean dive depth, daily mean dive duration, and daily maximum descent rate (for all 35 fish, years, and days spent in the region during April–November), plotted relative to the corresponding iso-thermal layer depth estimate (ILD, left-hand plots) and temperature gradient (right-hand plots). Temperature gradient is the difference in temperature between 10 and 100 m depth. Negative values thus indicate water columns where temperatures at the surface were colder than at depth. Dot color indicates month. See Table 2 in the main paper for correlation coefficients

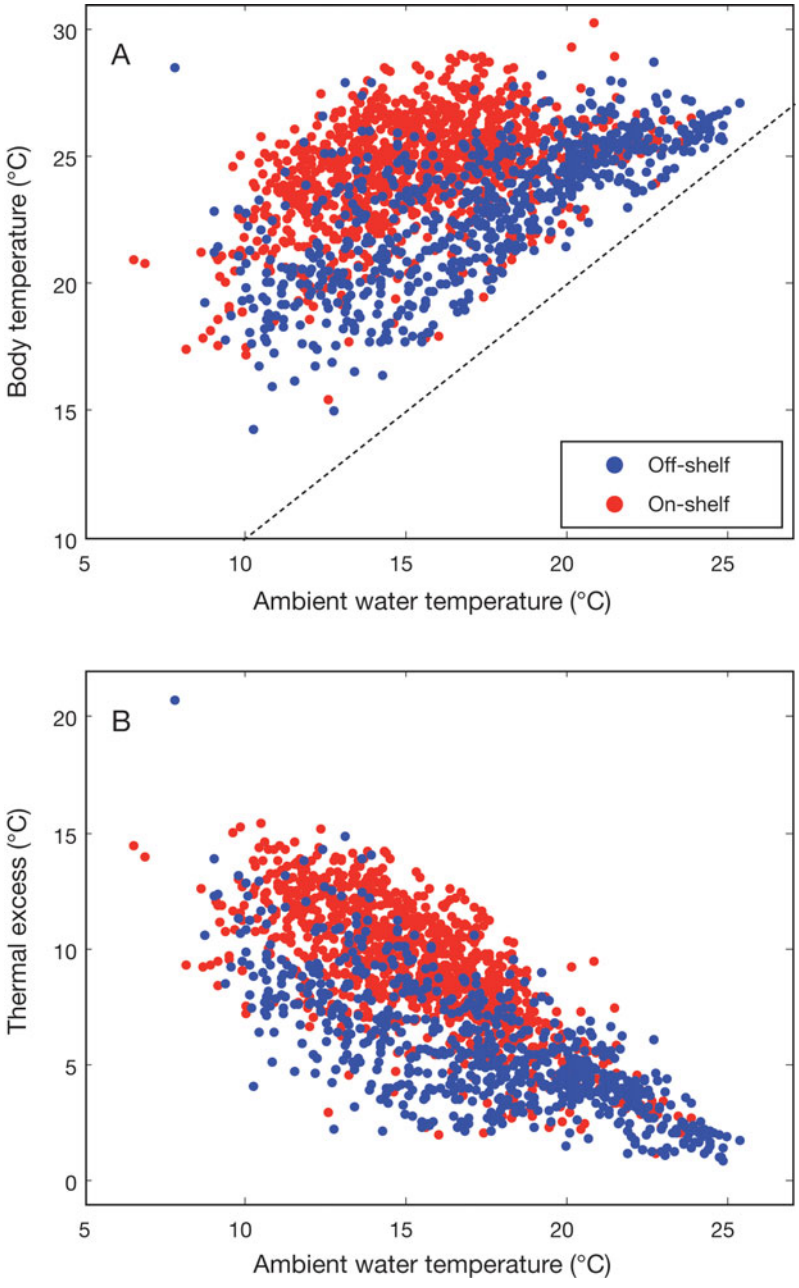

Fig. S4. *Thunnus thynnus*. (A) Daily mean body temperature and (B) mean thermal excess (body temperature – ambient water temperature) in relation to daily mean ambient water temperature for all days spent in the study region between April and November by the 21 (of 35) fish where measurements of internal body temperature were available. Note that body temperature was always greater than ambient temperature (Dashed line: 1:1). Dot color indicates days spent on vs. off the continental shelf. Data collected on days where the position estimate fell on the shelf but the maximum depth attained that day exceeded 500 m (a depth not consistent with being on the shelf) have been excluded. Both body temperature and thermal excess were significantly correlated with ambient water temperature (Spearman's $\rho = 0.51$ and -0.61, respectively, $p < 0.0001$)