### Supplementary Material Methods

### 1.1. Acoustic telemetry detections analysis

Minimum lag filters removed detection which fell within the minimum and maximum delays (double detection) or exceeded a duration threshold 30 times the nominal delay (e.g., 3600 s for a transmitter with a 120 s nominal delay; false detection; Pincock 2012).

### 1.2 Standard and Active Metabolism Calculations

#### 1.2.1 Standard Metabolism

Estimates of SMR for tagged Lake Trout in Lake Papineau were determined using equation (1)

(1)

derived from Stewart et al. (1983) and Evans (2007) where *T* is water temperature (°C). SMR was corrected for each individual by adjusting for body mass using equation (2)

(2)

derived from Peters (1983), Sandblom et al. (2014), and Cruz-Font et al. (2016), where *W* is the mass of the fish (kg). Standard metabolism is allometrically related to body size and is often described with an exponent scaling factor (Peters 1983). Several studies have tested standard metabolism in Lake Tout and have come to a consensus for the exponent scaling factor of 0.85 (Beamish et al. 1989; Evans 2007; Cruz-Font et al. 2016).

#### 1.2.2 A*ctive Metabolism*

Estimates of RMR for tagged Lake Trout in Lake Papineau were determined using statistical models described in Cruz-Font et al. (2016). They implanted Lake Tout with accelerometer acoustic transmitters and then measured different swim speeds (ss) in a respirometry swim tunnel, allowing for acceleration (ac) to be modeled by swim speed (ss) using a linear mixed-effects model.  
(3)

We used log10 transformed raw acceleration values [*log10[ac]*; 0–255 arbitrary units; (a.u.)], which are linearly related to the acceleration ] from Lake Papineau, Lake Trout implanted with accelerometer acoustic transmitters, to derive *log10[ss]*. Cruz-Font et al. (2016) then related *log10[ss]* measurements to observed measurements of *log10[MO2]* and modeled their results using the estimated linear mixed-effects equation:

(4)

We took the anti-log of *log10[ss]* values from equation (3) and added 1 to adjust for low swim speeds that would produce negative log10 values in equation (4). We then took the anti-log of *log10[MO2]* estimates derived from (4) to back-transform estimates of MO2. Lastly, MO2 values were weight- and drag-adjusted following Cruz-Font et al. (2016) using the following equation:

(5)

where *Wf* is the weight (kg) of a Lake Papineau Lake Trout implanted with an accelerometer acoustic transmitter, and *Wl* is the average weight (kg) of the Lake Trout used in the Cruz-Font et al. (2016) laboratory experiments.

#### 1.2.3 Swimming Activity

Daily swimming activity (SA) was determined using the following equation.

(6)

where Daily RMR is the daily mean of RMR calculated in equation (5) for each basin, and Daily SMR is the daily mean of SMR calculated in equation (2) for each basin. Daily means were calculated regardless of individual because RMR and SMR were calculated in different fish as some fish had depth and temperature acoustic transmitters (SMR) and some fish had accelerometer transmitters (RMR).