The following supplement accompanies the article

Diel variation in home range size and precise returning ability after spawning migration of coral reef grouper *Epinephelus ongus:* implications for effective marine protected area design

Atsushi Nanami*, Hiromichi Mitamura, Taku Sato, Tomofumi Yamaguchi, Ken Yamamoto, Ryo Kawabe, Kiyoshi Soyano, Nobuaki Arai, Yuuki Kawabata

*Corresponding author: nanami@fra.affrc.go.jp

Marine Ecology Progress Series 606: 119–132 (2018)

Supplement 1

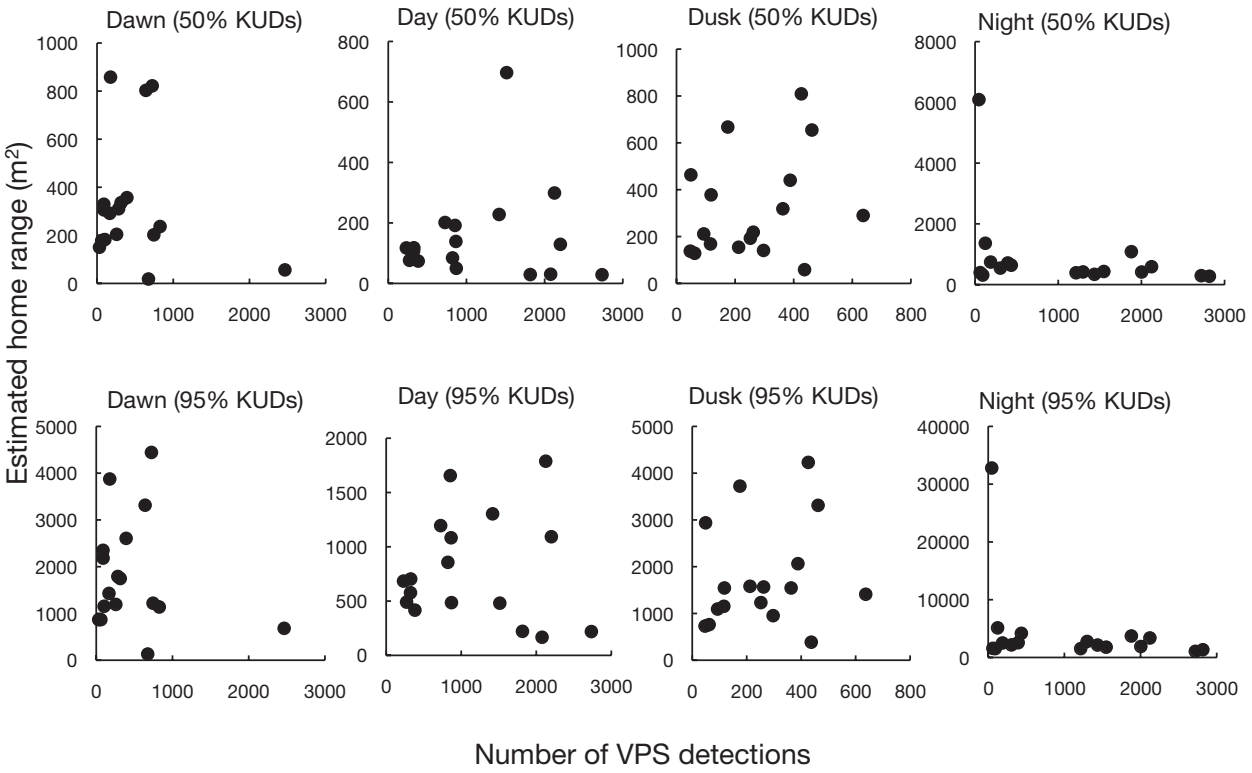


Fig. S1. Relationship between number of VPS detections and estimated home range size. No significant relationships were found for all cases.

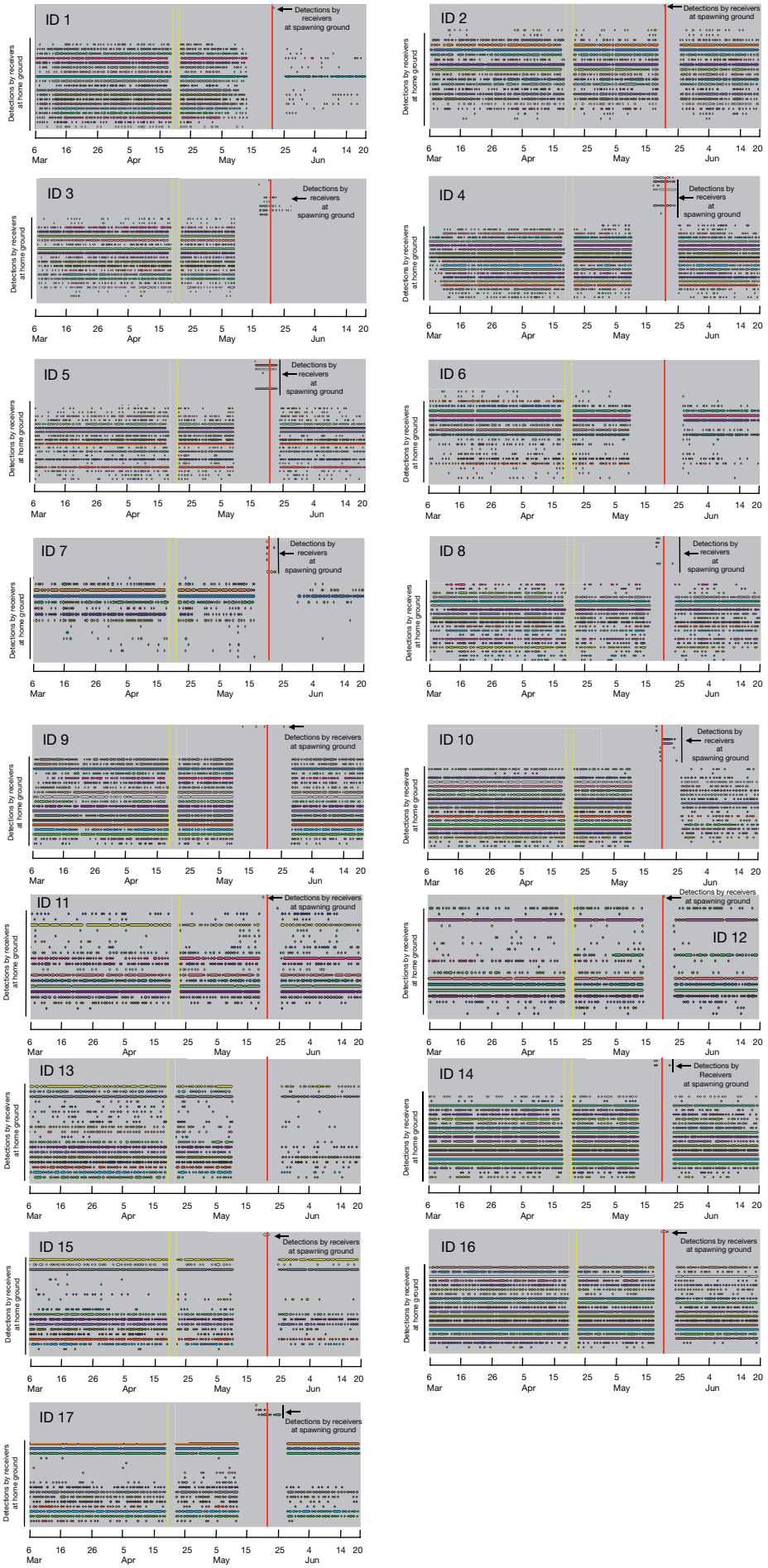
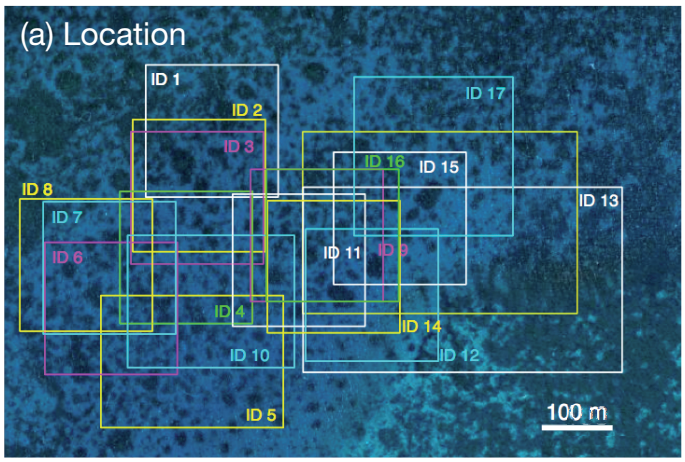
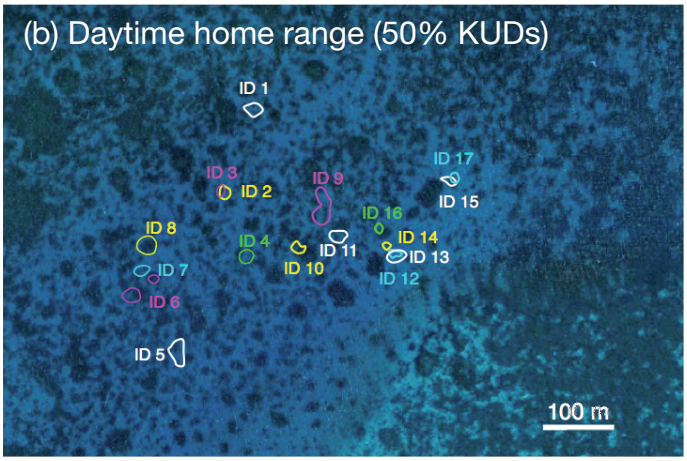
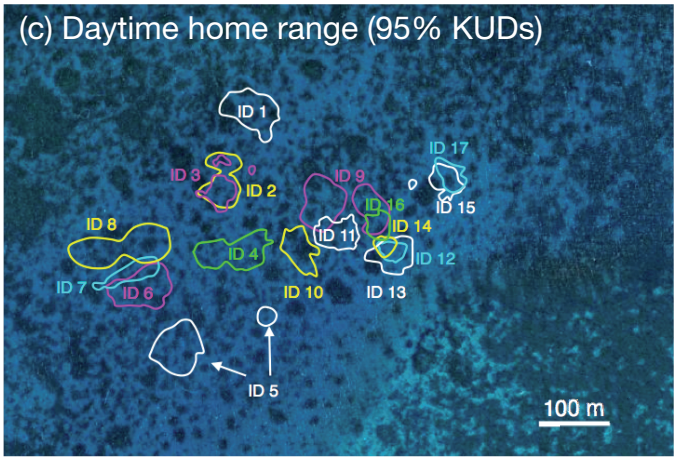
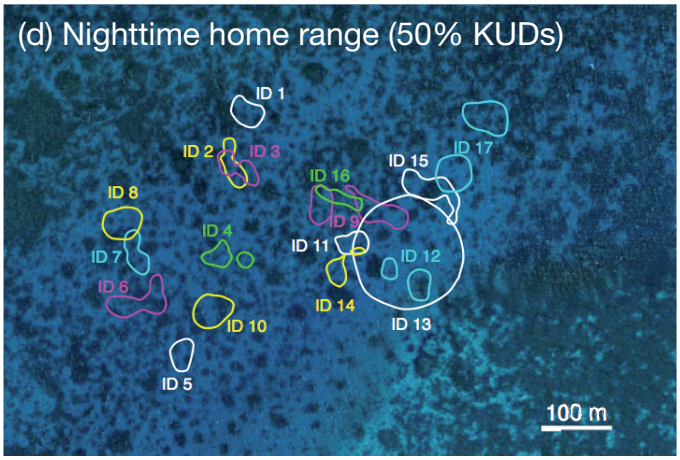


Fig. S2. Behavioral patterns of *E. ongus* detected by VR2W receivers. Each dot represents when and which receiver detected the tagged fish. Color differences of dots represent the detections by different receivers. The data obtained during 106 days (6 March, 2014 – 20 June, 2014) including spawning periods (middle of May 2014) are shown. The date of the last-quarter moon (May 21) is shown as a red solid line. No data was obtained during 2 days (19 April and 20 April, 2014) due to battery replacement for all receivers (the period between two yellow dotted lines).









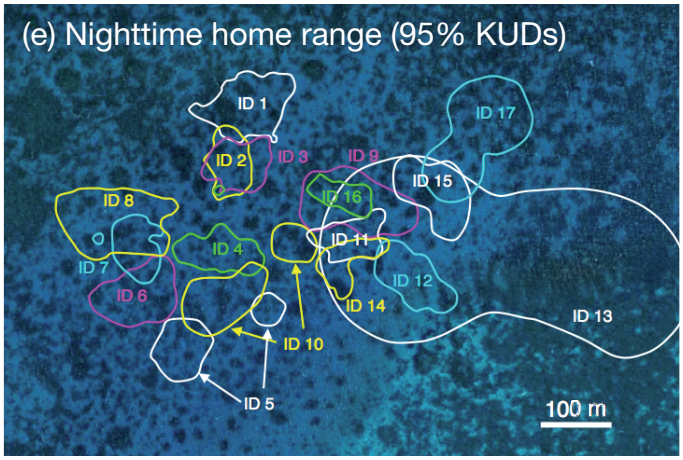


Fig. S3. Location of home ranges for each individual at the study site. Different colors represent different individuals. Squares in (a) represent the frame of Figure 2 for each individual. Home range boundaries during daytime and nighttime are shown in (b) – (e).