

**A Giant's Dance: Underwater Social and Vocal Behavior  
of Humpback Whales (*Megaptera novaeangliae*)  
Recorded on the Northern Coast of Ecuador  
Supplemental Material**

Javier Oña,<sup>1</sup> Esteban Duque,<sup>2</sup> Ellen C. Garland,<sup>3</sup> Kerri Seger,<sup>4</sup>  
Martín Narváez,<sup>1</sup> Julia Maldonado,<sup>5</sup> and Judith Denkinger<sup>1</sup>

<sup>1</sup>*Colegio de Ciencias Biológicas y Ambientales y Galapagos Science Center,  
Universidad San Francisco de Quito, Campus Cumbaya, Quito, Ecuador  
E-mail: ecujavier10@gmail.com*

<sup>2</sup>*Madre Agua Ecoturismo e Investigación, Carrera 35ª No. 77 sur-113, Medellín, Colombia*

<sup>3</sup>*Centre for Social Learning and Cognitive Evolution, and Sea Mammal Research Unit, School of Biology,  
University of St Andrews, St Andrews, Fife KY16 9TH, UK*

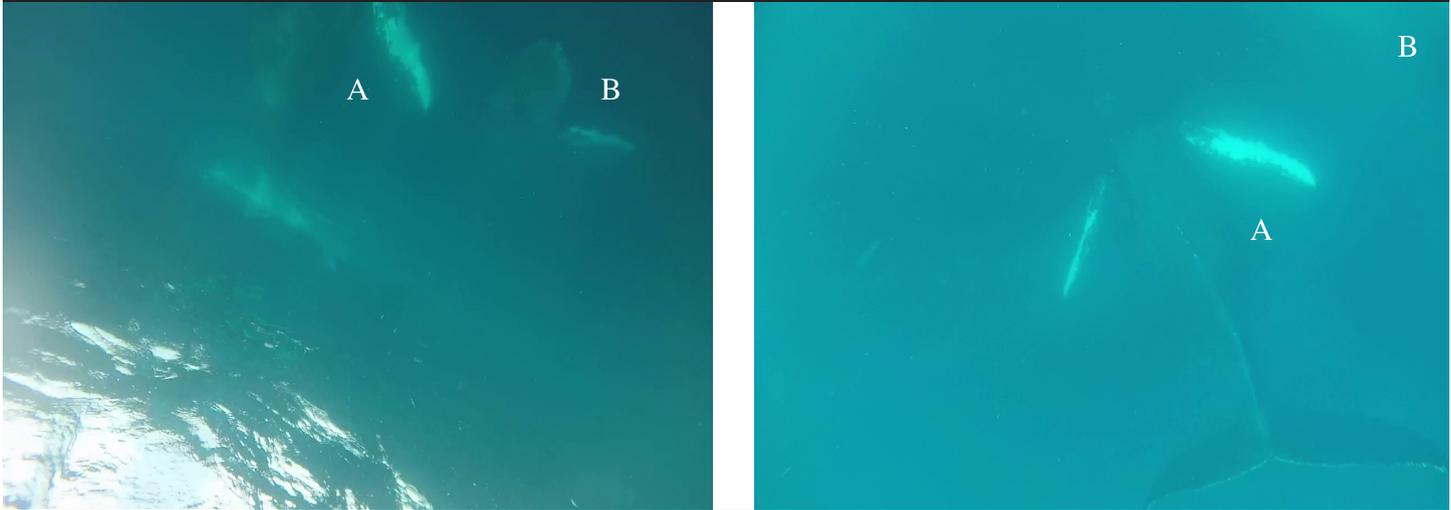
<sup>4</sup>*University of New Hampshire, 24 Colovos Road, Durham, NH 03824, USA*

<sup>5</sup>*Università degli Studi di Torino, Dipartimento di Scienza della Vita e Biologia dei Sistemi,  
Via Accademia Albertina 13, 10123, Italia*

## Supplement

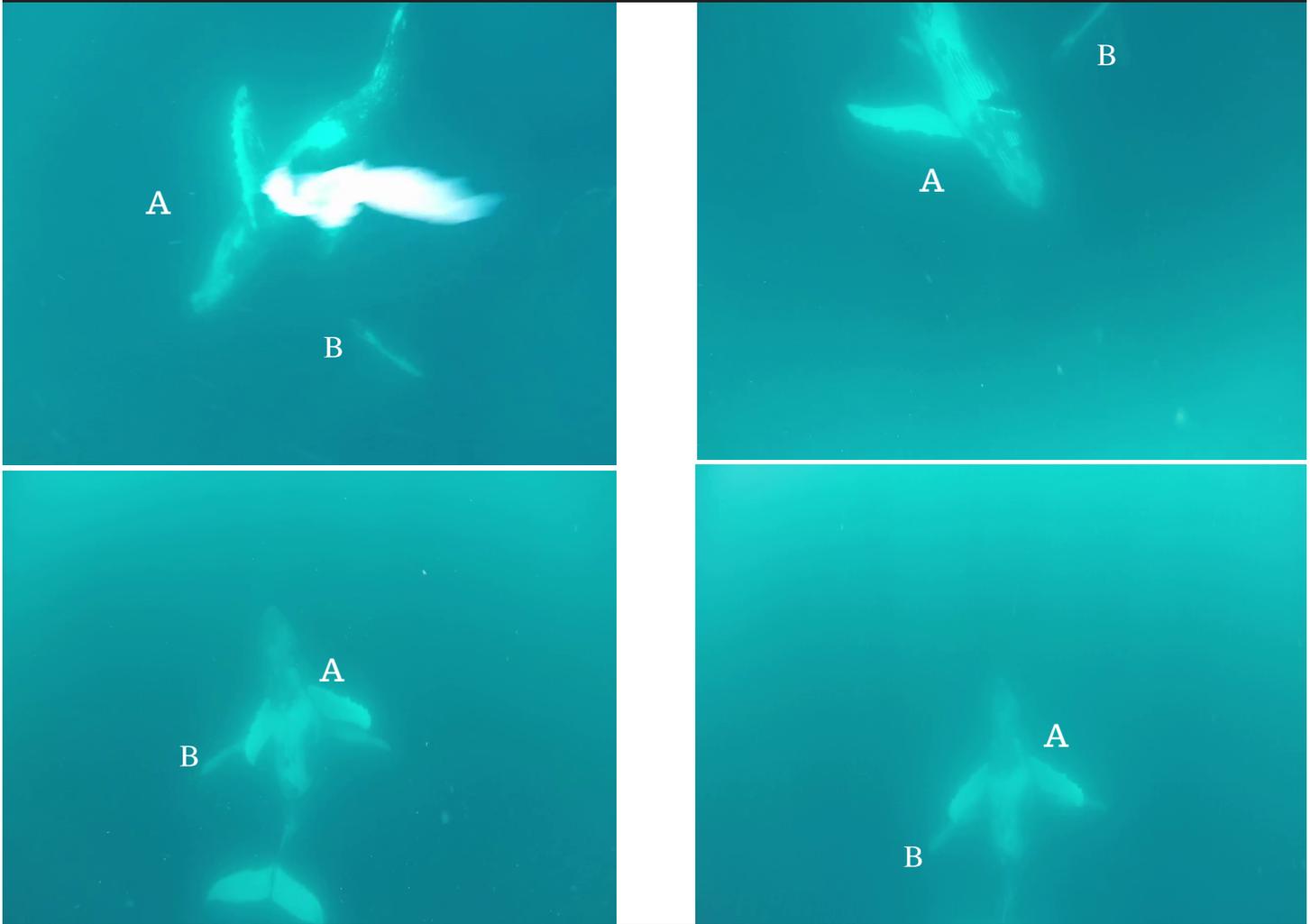
**Subsurface behaviors identified during the social interaction of a group of three (triad) of humpback whales off the coast of Esmeraldas, Ecuador.**

### 1. Dive



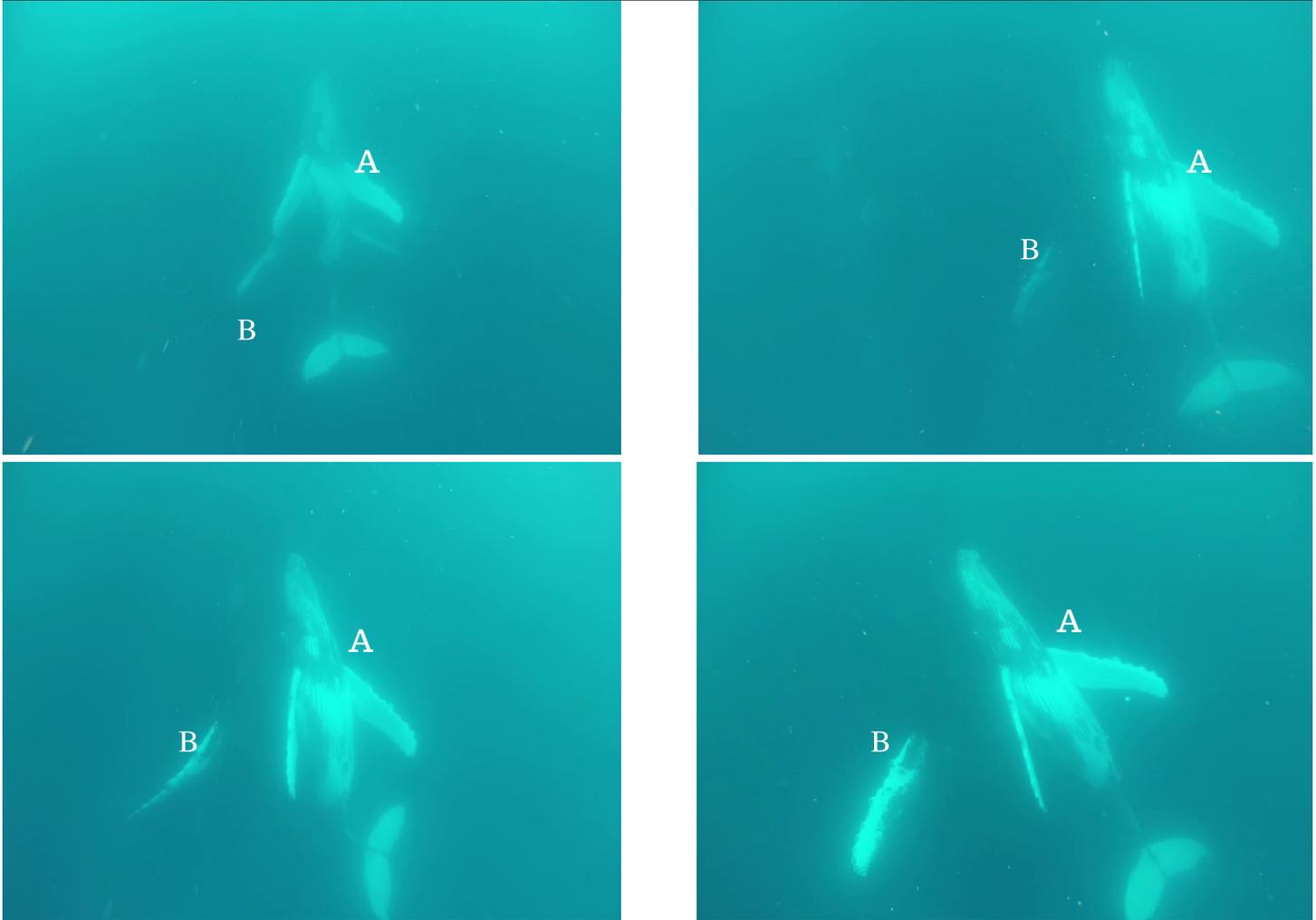
**Two whales (A and B) submerged for a minimum time of 6 seconds and at least 3 meters deep with same direction.**

## 2. Simultaneous subsurface swim of pair with back-to-back position



**Position of whale (A) with its body pointing to the surface (showing the ventral side) in back to back position to individual (B) swimming in the same direction at the same pace.**

**3. Simultaneous and synchronous subsurface swim in a back-to-back with pectoral fins extended**



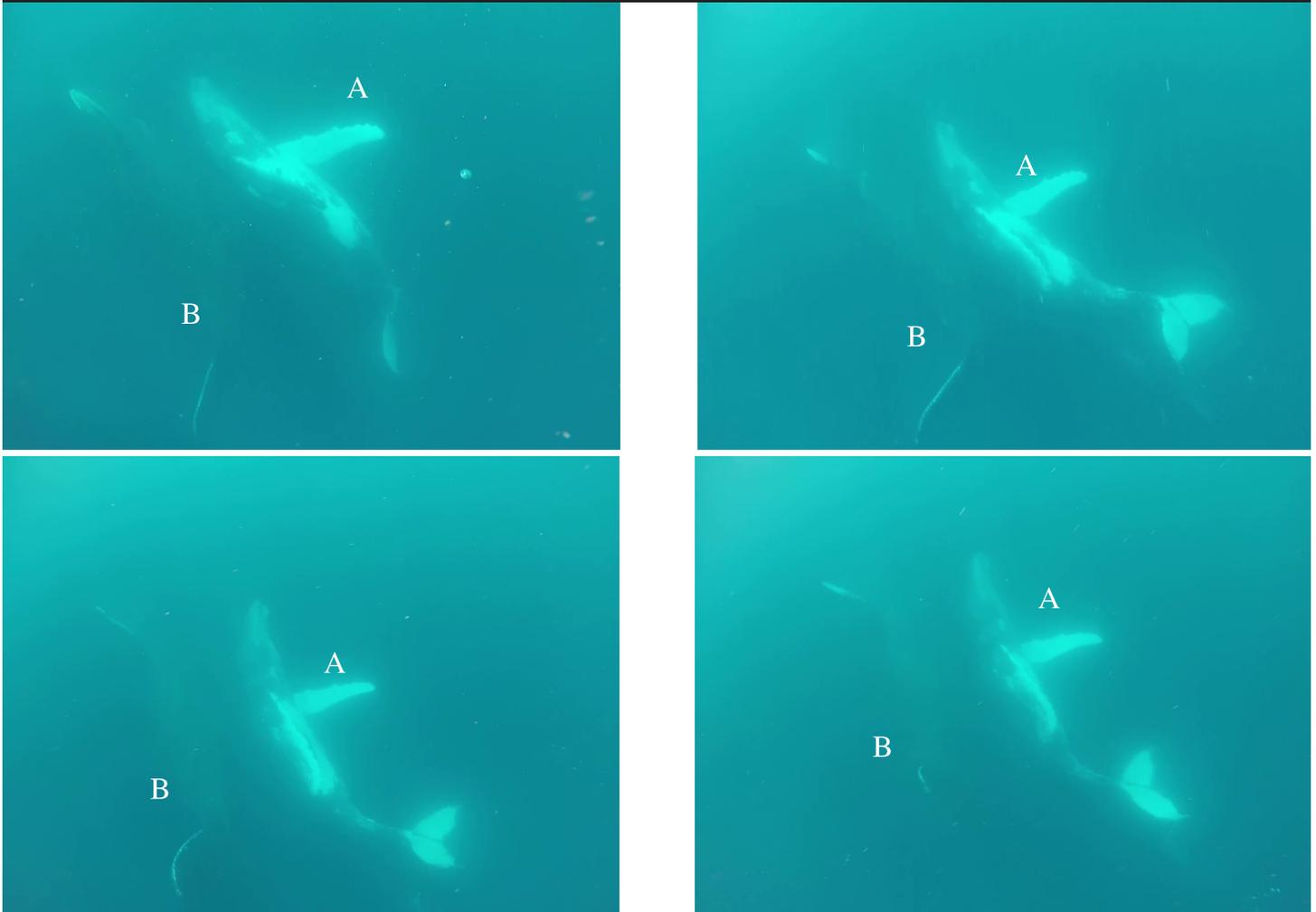
**Position of the whale (A) with its body pointing to the surface (showing the ventral side) in back to back position to an individual (B) swimming in the same direction at the same pace but pectoral fins outstretched and more synchronized swimming.**

**4. Third whale (C) swims below main pair**



**A whale escort (C) swimming below the focal pair (A and B), with similar movement direction.**

**5. Simultaneous subsurface swim with likely dorsal fin contact during swimming**



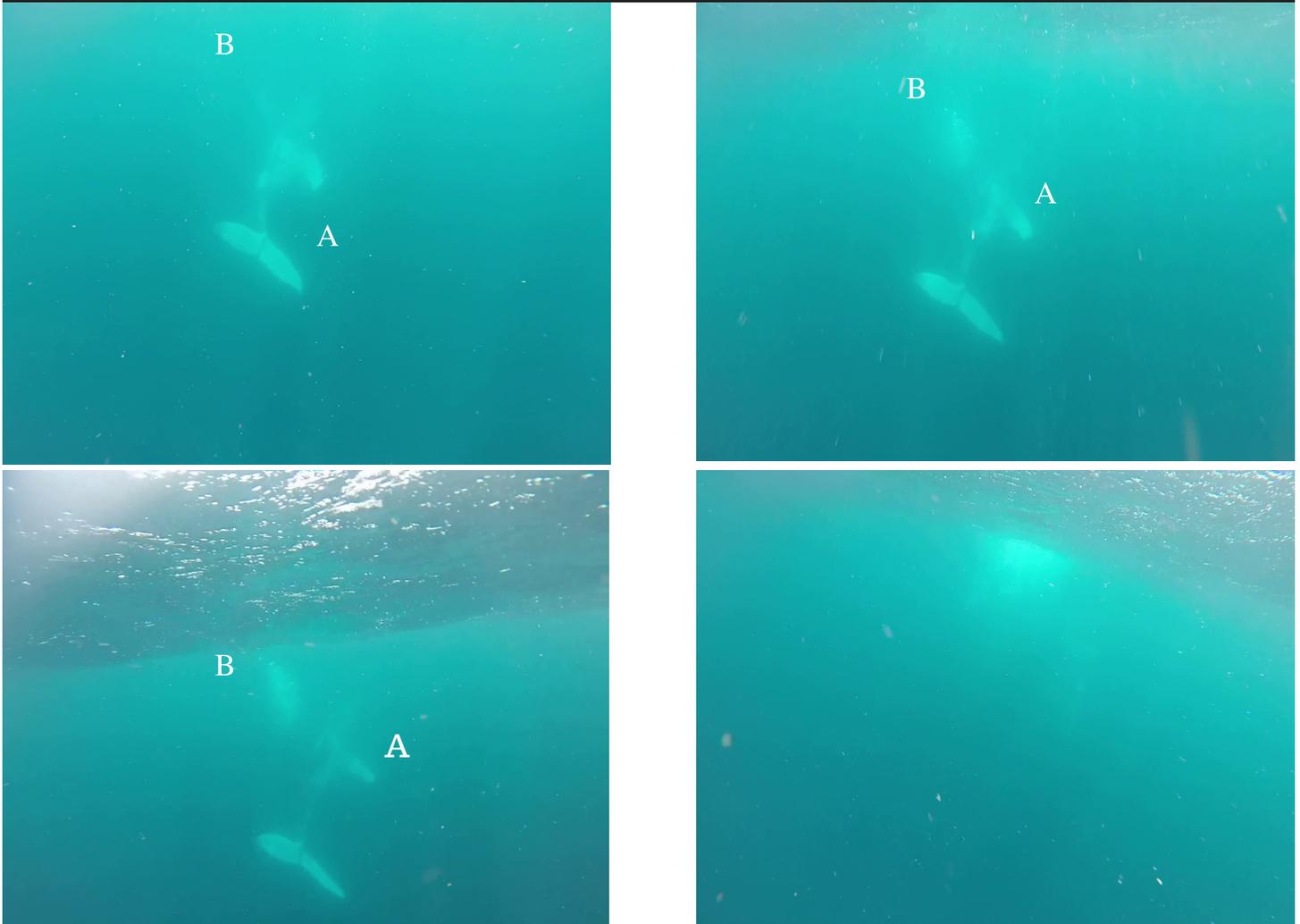
**Subsurface swimming with likely tactile contact between dorsal fins, while whales (A and B) maintained the same vertical position in the water column.**

**6. Subsurface swim of whales and return to sea surface**



**Focal whales (A and B) returned simultaneously to the surface, keeping the same parallel position, and moved gradually forward, with whale A's body still in a vertical position**

### 7. Whale pair to the surface



**Whales (A and B) returned to the surface. Whale (A) still with its body upwards position (showing the ventral side) in reference to another individual.**