

Data underlying the publication: **Effective integration of drone technology for mapping and managing palm species in the Peruvian Amazon**

Ximena Tagle Casapia^{1,2*}, Ernesto Fernández Gamarra³ & Sandra Teves³.

¹ Laboratory of Geo-Information Science and Remote Sensing, Wageningen University & Research,

² Instituto de Investigaciones de la Amazonia Peruana (IIAP), Iquitos, Loreto, Perú

³ Servicio Nacional de Áreas Naturales Protegidas (SERNANP), Lima, Peru

* Corresponding author: xtagle@iiap.gob.pe.

Madre de Dios Dataset (Testing set)

The study area (Fig. 1) is located at the Tambopata Natural Reserve, in the Madre de Dios region, in southeastern Peru. The area has a mean altitude of 300 m.a.s.l with a type of topography characterized by a terrain that is both alluvial and hilly. There are a wide variety of forest types in this region including flood plains, terra firme forests and “aguajales”, the latter a palm swamp where the dominant species is *Mauritia flexuosa*, a palm tree that produces fruits highly consumed in the region due to their nutritious values. The local communities are allowed to conduct ecotourism and non-timber product harvesting inside of the Reserve.



Fig. 1 Location of the Tambopata Natural Reserve in the Madre de Dios region. [Link in google maps.](#)

The UAV flights were carried out over palm swamps in the Tambopata National Reserve which is situated in the Tambopata River basin near Puerto Maldonado. SERNANP works closely together with local communities in this region to develop sustainable commercial activities, such as Brazil nut harvesting. More recently, in response to the growing demand for palm fruits, there has been an increased focus on harvesting the fruits of *Mauritia flexuosa* in the reserve

SERNANP conducted four UAV missions in two different sectors: Briolo and Sandoval using commercial small multi-rotors (DJI Phantom 4 Pro and DJI Mavic 2 Pro). The surveys occurred from 2019 to 2022 across two sites in the Briolo sector and flying over the Sandoval lake twice — in 2019 and in 2021.

The missions were conducted at a flying height of 180 meters AGL. The forward and side overlap ranged from 80 to 90% and the camera angle was always at the nadir position (90°). Further details are described on Table 1.

Table 1. Details of the UAV flights conducted in the Tambopata National Reserve, Madre de Dios and the generated mosaics

Mosaic name	Location	Aircraft	Flying Height ACL (m)	Sensor	No. Total Images	Acquisition Date	Cloud Cover	Wind Speed	Camera Angle	Area Total Mosaic (ha)	Area Test (ha)	Spatial Resolution
Sandoval_Aguajal 2019	Sandoval	Mavic2 pro	150	RGB	325	28-7-2019	partially cloudy	moderate	90	60	1,0	5,1
Sandoval31_07	Sandoval	Mavic2 pro / Phantom 4 pro	150	RGB	1553	31-7-2020	partially cloudy	moderate	90	200	1,0	4,2
Brigida220622	Briolo	Mavic2 pro / Phantom 4 pro	150	RGB	1468	22-6-2022	partially cloudy	moderate	90	400	1,8	5,1
Elina210622	Briolo	Mavic2 pro / Phantom 4 pro	150	RGB	2016	23-6-2022	partially cloudy	moderate	90	450	0,8	5,1