DJI Mavic 3 Pro - Capture Protocol

Capture protocol and camera reference

1 All Protocols

- Pro: Auto shutter + fixed ISO/aperture; adjust EV. If unavailable, use manual shutter/ISO.
- Preferred shutter: AUTO; monitor it throughout each pass
- ISO 320 FIXED Increase to 640 if needed.
- Aperture f/2.8, set manually
- Histogram ON
- Overexposure warning ON, at the operator's discretion.
- Set the gimbal to nadir, −90°.
- If using a polariser, capture and label a paired comparison with and without it when practical.
- Keep original files and names.

2 High Altitude Survey Protocol

Settings

- wide camera at 5280 × 3956
- Frame set to 4:3
- Capture JPEGs.
- Interval Recording set to 2-second intervals
- Ground speed in m/s; survey in Normal mode, no more than 15 m/s

Protocol

1. **Fly to the highest allowable altitude on chart 2.1.**
2. **Use the matching water-height block on chart 2.2**
3. **Follow that block right to current shutter speed**
4. **Select the appropriate flight mode first; align with the intended direction and engage Cruise Control at a permitted chart speed.**
5. **Use a green-cell speed or slower; also respect overlap, flight-mode limits and conditions**
6. **Fly over and past whales**
7. **Repeat at permitted 1 cm/pixel steps from chart 2.1, down to 2 cm/pixel (73.3 m).**

Chart 2.1

Nominal GSD in 1 cm/pixel increments; heights above water

Height above water	Still cm/pixel	Nominal footprint
36.6 m	1	52.8 × 39.6 m
73.3 m	2	105.6 × 79.1 m
109.9 m	3	158.4 × 118.7 m
146.5 m	4	211.2 × 158.2 m
183.2 m	5	264.0 × 197.8 m
219.8 m	6	316.8 × 237.4 m
256.5 m	7	369.6 × 276.9 m

Charts use 1 cm/pixel steps; heights rounded to 0.1 m. Height above water ≈ takeoff-relative height + launch-to-water offset; record both. Minimum over animals: 55 m, or greater required separation. Lower rows are geometry references only.

2.2 Motion blur & overlap field reference

Ground speed	Height	Overlap 2 s	Capture GSD	1/500	1/1000	1/2000	1/4000	1/8000
4 m/s	73.3 m	90%	2 cm	0.40	0.20	0.10	0.05	0.03
9 m/s	73.3 m	77%	2 cm	0.90	0.45	0.22	0.11	0.06
15 m/s	73.3 m	62%	2 cm	1.50	0.75	0.38	0.19	0.09
4 m/s	109.9 m	93%	3 cm	0.27	0.13	0.07	0.03	0.02
9 m/s	109.9 m	85%	3 cm	0.60	0.30	0.15	0.07	0.04
15 m/s	109.9 m	75%	3 cm	1.00	0.50	0.25	0.13	0.06
4 m/s	146.5 m	95%	4 cm	0.20	0.10	0.05	0.03	0.01
9 m/s	146.5 m	89%	4 cm	0.45	0.22	0.11	0.06	0.03
15 m/s	146.5 m	81%	4 cm	0.75	0.38	0.19	0.09	0.05
4 m/s	183.2 m	96%	5 cm	0.16	0.08	0.04	0.02	0.01
9 m/s	183.2 m	91%	5 cm	0.36	0.18	0.09	0.04	0.02
15 m/s	183.2 m	85%	5 cm	0.60	0.30	0.15	0.07	0.04
4 m/s	219.8 m	97%	6 cm	0.13	0.07	0.03	0.02	0.01
9 m/s	219.8 m	92%	6 cm	0.30	0.15	0.07	0.04	0.02
15 m/s	219.8 m	87%	6 cm	0.50	0.25	0.13	0.06	0.03
4 m/s	256.5 m	97%	7 cm	0.11	0.06	0.03	0.01	0.01
9 m/s	256.5 m	93%	7 cm	0.26	0.13	0.06	0.03	0.02
15 m/s	256.5 m	89%	7 cm	0.43	0.21	0.11	0.05	0.03

Height colours are planning flags, not flight permission. Use only heights permitted for the location and operation. Blur colours: green ≤0.5 px; yellow >0.5–1 px; red >1 px.

3 Video

- Wide camera
- MP4 container (not ProRes)
- H.265
- Normal colour. Do not use D-Log or HLG
- Capture 4K UHD (3840 × 2160), 60 fps; test 3 cm/pixel at about 80 m above water

Protocol

1. **Use the 3 cm/pixel test height (79.9 m, nominally 80 m) only where permitted.**
2. **Use the matching water-height block on chart 3.2**
3. **Follow that block right to current shutter speed**
4. **Select Cine mode first; align with the intended direction and engage Cruise Control at a permitted slow speed.**
5. **Use a green-cell speed or slower, within the installed Cine-mode limit and conditions.**
6. **Select Cine mode before engaging Cruise Control; changing modes cancels it**
7. **Hover or SLOWLY track with whales.**
8. **Do not descend to the 2 cm/pixel row (53.3 m) while the 55 m minimum applies.**

Chart 3.1
Nominal GSD in 1 cm/pixel increments; heights above water

Height above water	Video cm/pixel
26.6 m	1
53.3 m	2
79.9 m	3
106.6 m	4
133.2 m	5
159.9 m	6
186.5 m	7

3.2 Video motion-blur field reference

Rows use exact nominal 2 and 3 cm/pixel GSD; heights are rounded to 0.1 m. The 53.3 m rows are reference only under the 55 m minimum. Video speeds are slow-tracking examples: use no more than the installed Cine-mode limit. Cells show translation blur, not photo overlap.

Ground speed Mode · height	Video GSD cm/pixel	1/500 s	1/1000 s	1/2000 s	1/4000 s	1/8000 s
1 m/s UHD 4K · 53.3 m	2.000	0.10	0.05	0.03	0.01	0.01
2 m/s UHD 4K · 53.3 m	2.000	0.20	0.10	0.05	0.03	0.01
2.8 m/s UHD 4K · 53.3 m	2.000	0.28	0.14	0.07	0.03	0.02
1 m/s UHD 4K · 79.9 m	3.000	0.07	0.03	0.02	0.01	0.00
2 m/s UHD 4K · 79.9 m	3.000	0.13	0.07	0.03	0.02	0.01
2.8 m/s UHD 4K · 79.9 m	3.000	0.19	0.09	0.05	0.02	0.01

4 Files and supporting information

Retain the original JPEGs and video clips, unchanged filenames, flight logs and SRT files when available. Link each test to a short capture log with the following information:

- Location, date, species and individual IDs where known; permissions and required credit.
- Actual height above water, launch height and any launch-to-water offset. A boat launch makes takeoff-relative altitude different from height above the water.
- Camera, mode, zoom, resolution, frame rate or still interval, exposure settings and polariser status
- Weather, lighting, glare, sea state and any operational changes or observed disturbance.

Keep each mode and height test identifiable so image quality can be compared without guessing which settings produced a file. Preserve the manual capture option while waypoint compatibility remains unresolved.

5 Mavic 3 Pro camera reference

DJI published specifications checked on 11 November 2026. All three cameras support JPEG and DNG; this capture protocol requests JPEG only. The wide main camera is the default throughout.

Specification	Main wide
Sensor	4/3 CMOS
Still resolution	20 MP 5280 × 3956
Field of view	84°
Equivalent focal length	24 mm
Aperture	f/2.8 selected (f/2.8–f/11)
Timed shooting	2 s selected

Video H265

Camera and resolution	Listed frame rates in fps
Wide (UHD 4K) 3840 × 2160	**60**

Nominal wide still and UHD 4K geometry

Camera baseline	Assumed diagonal	Image dimensions	Horizontal factor
Wide — still	84°	5280 × 3956	1.44117
Wide — UHD 4K	79.2°*	3840 × 2160	1.44117

UHD’s derived diagonal (*) assumes the full still-image width. UHD 4K (3840 × 2160) is 16:9, with a derived diagonal of 79.2°—not a separately published DJI FOV. Horizontal factor is footprint width per metre of height; UHD’s vertical factor is 0.81066. Verify the actual crop and water-relative height.

6 Conditional waypoint readiness

This is a readiness checklist and vendor-documented candidate workflow, not a procedure validated on the deployment equipment. Initial manual hover or slow-pacing tests do not depend on it. Controller-specific final steps remain conditional on confirming the actual setup.

Resolve the actual setup

- Confirm the exact aircraft and whether it is the Cine variant.
- Confirm the controller: DJI RC, DJI RC Pro or DJI RC N1, plus the phone operating system if a phone is used.
- Record the installed DJI Fly version and aircraft/controller firmware versions.
- Identify the intended mission planner and its actual export format. Confirm a vendor-supported workflow for that exact hardware and software combination.

DJI Fly supports native Waypoints on Mavic 3 Pro, but DJI documents no KML import or mission export. Its version 1.17 cloud-sync feature excludes the United States, so do not rely on it for Alaska. Waypoint altitude is relative to takeoff, not the water surface.

Dronelink candidate workflow

Dronelink documents a Mavic 3 Pro export route: convert the plan to onboard DJI Waypoints, then export a DJI Fly KMZ. In DJI Fly, create a clearly identified sacrificial temporary mission and back up existing missions. Only after verifying controller and operating-system file access, replace that temporary mission's file under /Android/data/dji.go.v5/files/waypoint with the KMZ renamed to exactly the temporary file's name. Do not replace an unrelated mission. Run the result in DJI Fly, not the Dronelink app; start interval photos manually. Converted paths or camera actions may differ. Verify the route, altitude reference, lens, camera actions, speed and failsafes before an authorized non-wildlife test. Retain the backup for rollback.

Map Pilot Pro documents a separate export-only Mavic 3 Pro workflow. Its iOS procedure differs, and Android 11 or later can restrict folder access. Do not mix the two vendors' procedures or install APKs blindly.

Validation gate

1. Confirm coordinates, units, takeoff and water-height references, nadir view, camera actions, interval, spacing and speed for the smaller footprint.
2. Review obstacles, operating conditions, failsafes and return-to-home behaviour with the operator.
3. Compare intended and actual behaviour in an authorized non-wildlife test; inspect the files before documenting controller-specific operational steps.

The operator's assessment of permissions, wildlife response, local aviation requirements and conditions governs whether and how a flight proceeds. No nominal altitude in this document is a clearance or an instruction to approach wildlife.

Sources

DJI Mavic 3 Pro specifications

DJI Waypoint Flight help

Dronelink — website and mission planner

Dronelink — onboard DJI Waypoints / KMZ export instructions

YouTube: Dronelink → DJI Fly workflow — Avios Media (linked by Dronelink)

YouTube: Create a waypoint mission from a template — Dronelink

Map Pilot Pro — KMZ export for DJI Fly

Video note: use the template tutorial for planning only; its direct Dronelink-app flight steps do not apply to Mavic 3 Pro. Use the KMZ → DJI Fly workflow above.