

Malaysian Peregrine Falcon Survey Report 2017

***** Dedicated to the memory of Laurent Molard *****



All photos by the authors except when stated otherwise.

***Marc Kéry¹, Chiu Sein Chiong², Ooi Beng Yean³,
Robert Christopher Percival⁴, Su Ping Ong⁵ & Puan Chong Leong⁶***

¹ Swiss Ornithological Institute, 6204 Sempach, Switzerland (marc.kery@vogelwarte.ch); ² Ipoh, Malaysia (chiusch@gmail.com); ³ Ipoh, Malaysia (bengyeen@gmail.com); ⁴ Ipoh, Malaysia (robert.pval@gmail.com); ⁵ Kuala Lumpur, Malaysia (jensu27@yahoo.com); ⁶ Kuala Lumpur, Malaysia (clpuan@yahoo.com)

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Summary

During eight days between 6 and 19 January 2017 we conducted a survey of local resident peregrine falcons (*Falco peregrinus ernesti*) in parts of West Malaysia in the states of Kelantan, Perak, Pahang, and Selangor. We visited nine sites that were previously known to hold peregrine territories (Molard, 2005; Chiu et al., 2006; Molard et al. 2007) and more than 13 additional sites about whose status as a peregrine cliff nothing was previously known. We detected peregrines at 11 sites: a pair at 8 and a single bird at 3 sites. Eight sites previously known territories and 3 were newly detected ones. One of the new territories, in a quarry near Ipoh, was only about 2 km from a previously known, neighbouring territory. This is much closer than the previously known closest nesting pairs in Malaysia; hence, further confirmation of two separate pairs at these two sites would be highly desirable. On the other hand, this observation emphasizes the need to take into account the possible nesting of adjacent pairs at much closer distances than what was previously thought (e.g., 2–4 km).

Our report describes all visited sites and gives coordinates of the cliffs and suitable observation points, including a map for each site, and describes the sites and documents our findings during the 2017 survey. We describe our peregrine survey techniques and illustrate them using photographs, e.g. showing whitewash or places where the birds like to perch. We also illustrate the sites and sometimes, the birds, with plenty of photographs, not only for scientific documentation, but also simply to show the beauty and the fascination of The Bird and its wonderful cliff habitat. This report builds upon and updates the unpublished report by Molard (2005), which represented the first large-scale survey of peregrines in West Malaysia. We hope that both surveys will serve as the basis for more intensive and especially also more geographically extensive surveys of breeding peregrines in Malaysia in the future.

1 Introduction

The peregrine (*Falco peregrinus*) is probably the most widespread terrestrial vertebrate naturally, i.e., excluding species where we humans have interfered a lot, such as, well, our own species and rats etc. Malaysia is inhabited by the peregrine subspecies *ernesti* (White et al. 2013), which is a moderate to small and extremely dark subspecies which has simply a dark hood rather than the conspicuous black "moustaches" with the white auricular area behind it that is so typical of most peregrine subspecies. Indeed, *ernesti* is the darkest of all peregrine subspecies worldwide (White et al. 2013), and these authors have also called it the most handsome subspecies. When watched with the naked eye or even with binoculars at a distance, *ernesti* peregrines may look almost completely black. This is a striking contrast to other, more northerly subspecies, such as the nominate subspecies *peregrinus* in large parts of Europe and also the NE Asian subspecies *japonensis*, which winters in our study area (White et al. 2013; OBY and CSC, unpub. obs.).

The *ernesti* subspecies has been known to nest in Malaysia from a single instance of confirmed breeding in 1996 (Chong 2002), followed by more confirmed breeding records just after the turn of the century (Molard, 2005; Chiu et al., 2006). The first synthetic overview of the current knowledge on breeding peregrines in Malaysia was the unpublished report compiled by Molard (2005). It synthesized information that was collected by Laurent Molard with observations from his colleagues and information gleaned from the published literature. Molard's report lists 15 sites in the states of Selangor, Pahang and especially in the Ipoh area of Perak. Based on this information and including later observations, Molard et al. (2007) then went on to make an educated guess of the possible number of peregrine breeding pairs in the 135,000 km² of West Malaysia and arrived at 70–80 pairs, essentially in the centre and north of the country. In the last 10 years, no other syntheses on resident peregrines in Malaysia have been compiled, although local observers, especially Sein Chiong Chiu and some of his colleagues in the Ipoh area, have continued to observe peregrines during the breeding season at several sites.

In February 2014, Marc Kéry visited Connie Khoo and Chiu in Ipoh and they took him to several *ernesti* nesting sites. This fired in Marc the wish to spend more time watching these wonderful 'black peregrines' of Malaysia, which are so completely unlike those from his own natal Jura mountains in Western Europe. In January 2017, Marc had another opportunity to visit Malaysia and he scheduled a week for a peregrine survey. He set up headquarters in Ipoh, where he was met by Chiu, Ooi and Percival, which were also accompanied by Henry Goh and Gerry and Joy Danen on some outings. Chiu and Marc explored several known and potential breeding sites in the Ipoh area during three days, and Ooi, Robert and Marc ran a 2-day survey transect from Ipoh to Gua Musang and down to Kuala Lipis and then up again to Jeli, over the Main range to Gerik and down South again back to Ipoh. This was followed by a further day of surveys in the wider area of Ipoh. Finally, in Kuala Lumpur, Su Ping Ong, Puan Chong Leong and Marc checked the two long-known sites at the limestone outcrops at the Batu Caves and Bukit Takun/Templer park on two days.

In this report, we summarize our observations made during these eight observation days in January 2017 (the exact dates were 6–11 January in the North and 15 and 19 January in the KL area). We present each visited site with a map section taken from Google Earth, give its coordinates (those of the center of the likely nest site or, if we did not see any peregrines, of the main chunk of cliff where we would expect the birds) and give information about from where to watched and summarize our findings. We build upon the seminal report by Laurent Molard (2005), which we note has a much greater scope, since Laurent covered 15 apparently occupied sites in a much larger area than our current survey. We report our own peregrine observations made at 11 sites and describe a further 11 sites that we checked during our survey but at which we did not succeed in observing any peregrines.

2 Field methods

January appears to be at the height of the courtship period of Malaysian peregrines (Chiu et al. 2006), whose activity can then be expected to be concentrated at the nesting cliff with much flying and noisy, vocal interactions of the pair, especially the long, drawn-out "wailing" call, the aggressive "hek-hek-..." calls and the frequent "eee-chup" call, which is the most intimate call between the two mates when in courtship (Ratcliffe 1993). Hence, observations of flying and of calling birds are particularly important to ascertain the presence of birds in a nesting territory at this stage of the breeding cycle. (The other good and very enjoyable period to survey peregrines is when the young are grown but still in the nest and especially after their fledging. In Malaysia, this period in the breeding cycle is in April. However, to work out the distribution of nesting pairs, this period is less good than the peak courtship period in January, since many pairs will have failed by then, and failed breeders typically behave much more elusively. Surveying only in April is thus prone to produce an underestimate of the number of territorial peregrines in an area.)

To check a known territory or a likely new site for peregrines, we usually placed ourselves as close to the site as possible, at the base of the cliff, while trying to maximize the view of the sky around the cliff. Observations were made with the naked eye, with 8–10x binoculars and 20–60x telescopes mounted on a tripod. Key elements of such surveys in the courtship period are the naked-eye scanning for flying birds of the upper edge of the cliff or of the crest of the mountain in which a cliff is located and acoustic attention for the frequent calls. When a cliff is very high and/or steeply above the observation point or when watching birds flying overhead, the best observation position is often flat on one's back (best with a blanket and a pillow but a nicely browsed pasture can also serve; see photo below).



Robert and Marc watching the cliff and the birds flying overhead at the Army camp in Ipoh.

In addition, the use of binoculars and telescopes for checking of the cliff for perched birds and for whitewash was also always an important part of the survey at every cliff. Especially during courtship, birds perch actually more often in the first trees just at the top of the cliff, or also in trees within the cliff face, rather than directly on a rock in the cliff itself. Hence, painstakingly checking all cliff-top trees is particularly important when surveying for peregrines during this stage of the breeding cycle. Whitewash (droppings) accumulates especially under perching and night roosting sites within the cliff. A majority of occupied cliffs have some places with such 'mutes' (long, relatively wide and white fecal streaks), sometimes in large concentrations that may resemble a horse-tail (or "*queue de cheval*", as the French observers say). Not all occupied cliffs have whitewash though. Sometimes a cliff may be too overhung for whitewash to accumulate, the cliff may be too large for the human observer to even recognize whitewashed parts (which may be too small relative to the total extent of the cliff) or a cliff may be too white in color or have too many natural white rock extrusions, which can sometimes be hard to tell from peregrine mutes. (Also, in many parts of the world there are multiple cliff-nesting species that produce such whitewash and it may be difficult to tell peregrine mutes from mutes from those other species. Fortunately, in West Malaysia the peregrine appears to be the only moderate to large species which produces whitewash, hence this source of confusion does not arise here.) Observation periods per site lasted typically about 1 hour, though sometimes they were shorter, e.g., 30 min or even less for some of the less-promising-looking cliffs. On the other hand, we sometimes spent 2–3 or even more hours at a cliff. The presence of several observers was very beneficial, since it increased the probability of detection of birds, especially when these were not calling.

3 List of sites visited in January 2017 and survey results

Here we list all the surveyed sites and give full information about them and about our findings. Place names mostly follow Molard (2005) but were updated, complemented with additional information or corrected if necessary. Site coordinates were also partly taken from Molard (2005), but we checked all in Google Earth and corrected them if necessary. Coordinates typically denote the location of the center of a cliff or of its highest part or the presumed eyrie (nest) or the place where we observed a bird, rather than the location from which we observed the cliffs. Often, we also give coordinates of our observation points. We also recorded the elevation of the top of each site in Google Earth. This is somewhat suggestive only in some cases, because sometimes it was difficult to see where exactly the cliff-top was. We also give the aspect (= orientation) of each cliff face. This is very important for the daily planning of whether to visit a site in the morning ('morning sites') or in the evening ('evening sites'): one must always avoid having the sun in one's eye when watching a cliff.

We start with those 11 sites where we confirmed the presence of at least one peregrine and then list the sites which we checked but where did not detect any birds; see the map overviews in Figures 1 and 2.

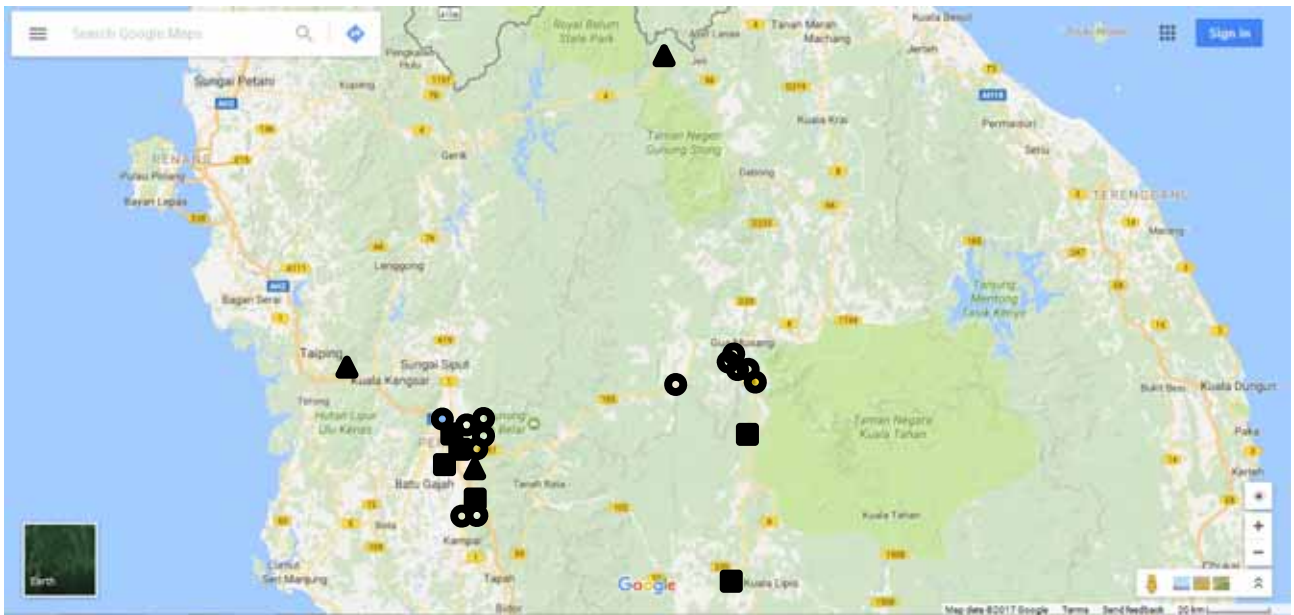


Figure 1: Overview of the surveyed sites in January 2017 in the states of Kelantan, Perak, and Pahang in North-Central West Malaysia. Open circles denote sites without observation of a peregrine, filled triangles sites with observation of a single peregrine and filled squares sites with observation of a peregrine pair of *Falco peregrinus ernesti*. See also Figure 14 for more detail of the Ipoh region.



Figure 2: Overview of the surveyed sites in January 2017 in the state of Selangor in West Malaysia. Open circles denote sites without observation of a peregrine and filled squares sites with observation of a peregrine pair.

3.1 Eleven sites where we detected *ernesti* peregrines in January 2017

We detected peregrines at 11 sites, of which 8 were sites that had previously been known as peregrine sites and the remaining three were apparently newly discovered sites. One further known site, the Tasek cement factory and quarry in Ipoh, was visited, but we did not detect any birds there. Tasek is therefore listed in section 3.2.

3.1.1 Gunung Pondok, Padang Rengas, Kuala Kangsar (Perak)

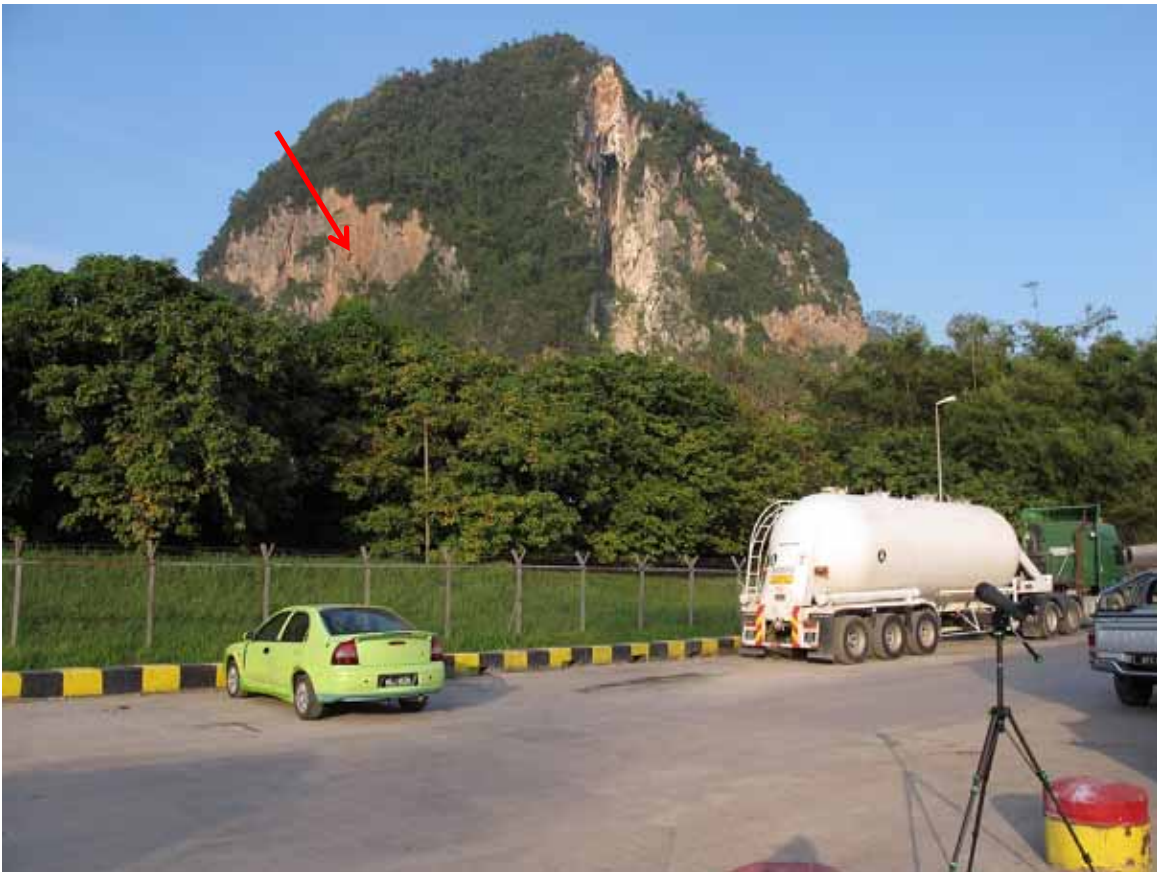
Coordinates of the cliff: 4.781335°N, 100.827176°E. Observation point coordinates: 4.776591°N, 100.826678°E. Elevation of hilltop about 150 m. Aspect: West. Distance to nearest known neighbouring territory (Doveby housing, Ipoh): 32 km.

This is a large, quarried hill, but the particular cliff which seems most likely to be the eyrie cliff is still natural. This whole cliff was covered in a film of dust from the quarry. This is a newly discovered site whose discovery is due to Robert, who suggested to visit this hill based on his knowledge of about the occurrence of caves in limestone outcrops in much of West Malaysia.



Figure 3: Location of the main cliff in the territory, in the vicinity of which the bird was observed repeatedly (yellow circle). Red dot indicates observation place.

Observations in 2017: On the evening of the 10 Jan 2017, Ooi, Robert and Marc watch for at least one hour. They get to talk to a friendly plant manager who wants to chase us away from the public ground on the side of the road ("*You are not supposed to watch my hill !*"), but then our very able Chief of Public Relations (Robert) engages him in a long conversation which calms him down (but perhaps also lets us miss a few birds). At some point we see one adult peregrine coming in from the East and towards the big cliff at the West end of the hill, in front of which we lose him; he probably perches somewhere. At some later time, we see a peregrine circling in front of that same cliff and then soaring up, before disappearing towards the NW and across the hill. One deep and huge hole in the cliff shows conspicuous whitewash and may well be the eyrie.



The presumed nesting cliff is the one on the left. It is covered in dust from the quarry. The arrow shows the location of the possible nesting cave.



Closer-up of the presumed nesting cliff.



Possible nesting site with plenty of whitewash.



The Plant Manager ("*you must not watch my hill !*") and our Public Relations Manager (Robert).

3.1.2 Gunung Panjang, Tambun, "Army Camp Ipoh", Ipoh (Perak)

Coordinates of the cliff: 4.602244°N, 101.130767°E. Observation point immediately below the cliff at its base (have to walk around the Polo field towards the cliff paintings and avoid annoying the BT Polo Club owner). Elevation of hilltop about 100 m. Aspect: Southwest. Distance to nearest known neighbouring territory (Paradise Valley): 4.3 km.

This cliff was previously known for occasional observations, including fledged young, but it seems that now for the first time a pair was clearly observed that was attached to this site.

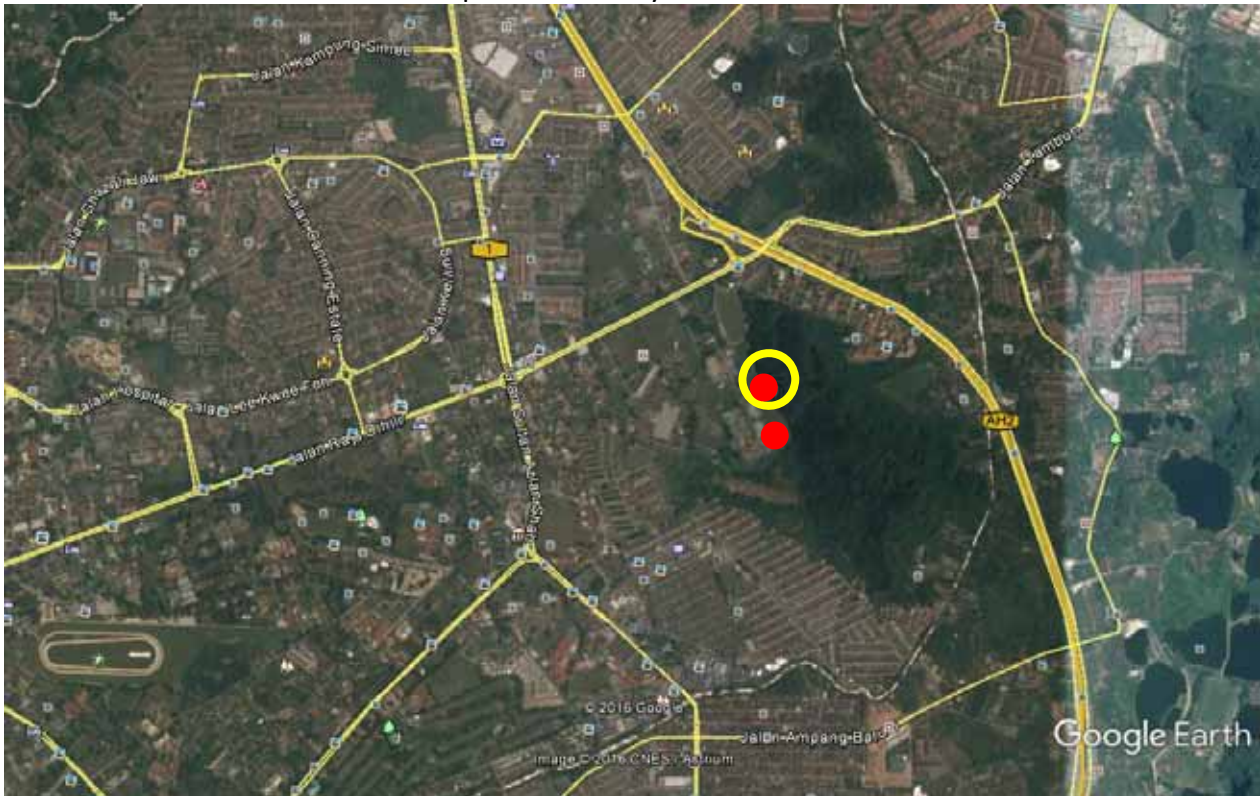


Figure 4: Location of the main cliff in the territory, where the pair was observed (yellow circle). Red dots indicate observation places.

Observations in 2017: On 6 January 2017, Chiu and Marc watch the pair in courtship in the cliff. In the morning of 7 January 2017, we don't see any peregrine, but in the evening, we see the tiercel much in evidence, he visits a food cache and gets prey and launches attack later. On the evening of 8 January 2017, with Chiu, Ooi, Robert, Henry Goh, Gerry and Joy Danen and Dr. Hamza, we observe the pair for a long period, see much courtship during which the female visits at least three possible nesting sites and the male another hole. All of them lie in the bottom half of the cliff.



The cliff is largely an overhang.



It is particularly rich in stalactites and is one of the most beautiful ones in the area.



Facing west, this is an afternoon (or evening) cliff.



The cliff in glorious evening light.



Chiu watching the birds.



Robert and Chiu.



Ooi, Henry Goh, Chiu and Dr. Hamza in full action.



In the last hour of the day, the cliff often turned into a wonderful rosy shine.



The cliff is full with stalactites, shown here again during the final hour of the day, when the light turned it rosy.



These stalactites are just so beautiful....



One of the most beautiful cliff faces one could imagine...



... with its most wonderful inhabitant, the peregrine falcon: here, the tiercel devouring prey.



Ditto.



The female visiting a potential nesting site.



The female arriving at a potential nesting site (Photo by Gerry Danen).



The female again.



Falcon in flight.



Ditto.



The tiercel visiting a potential nesting ledge; note the copious whitewash.



There were at least two pairs of the smallest species of birds of prey at the base of this cliff: the cliff-nesting Black-thighed falconnet (*Microhierax fringillarius*).

3.1.3 Paradise valley (Gunung Rapat), Ipoh (Perak)

Coordinates of the cliff: 4.564142°N, 101.138801°E. Observation point in the mushroom farm and resort of Jimmy Chee (info@everfreshmushroom.com) at the base of the cliff. Elevation of hilltop about 200 m. Aspect: Northeast. Distance to nearest known neighbouring territory (Army camp): 4.3 km.

This cliff has been well-known for quite a while and especially Connie Khoo has made wonderful observations at it and taken beautiful photos and footage of the nesting peregrines here. The birds always seem to nest on the Western of the two cliffs, but use the Eastern cliff for perching. Typical nest sites are two paired holey ledges rather low down in the right-hand part of the Western cliff.



Figure 5: Location of the main cliff in the territory of the Paradise valley, where the pair was observed (yellow circle). Red dot indicates observation place.

Observations in 2017: On 6 Jan 2017, Chiu and Marc observe the pair as it flies out of the left of the two big holes at the bottom right of the (Western) cliff, the right one of which was the eyrie two years ago (C. Khoo, per email). Later, the male is perched higher up in that cliff in front of another possible nesting place.



Nesting cliff in Paradise valley. The two yellow arrows show ledges where the pair came from when we watched them (lower arrow) and where the male went later (upper arrow). The red arrow shows a nesting site from ca. 2 years ago (C. Khoo, pers. comm.)



Chiu watching from under the shaded roof in the mushroom plantation in Paradise Valley.



The left-hand cliff where the birds only perch but don't seem to nest.



The tiercel perched in the top yellow ledge (see photo below).



More close-up shot of the nesting cliff with the same different ledges as above (same color code). A vertical carpet of creeper covers most of the lower parts of the cliff.

3.1.4 Simpang Pulai, Ipoh (Perak)

Coordinates of the quarry and possible nesting cliff: 4.546729°N, 101.135622°E. No decent nearby observation point was found. When Chiu and Marc find the pair, they observe from the village of Simpang Pulai, over which the pair is frequently in aerial courtship, at observation coordinates 4.534281°N, 101.130615°E, i.e., at a distance from the "twin quarry" of about 1.5 km. Elevation of twin-quarry hilltop about 150 m. Aspect: Southwest. Distance to nearest known neighbouring territory (Paradise Valley): 2.0 km.

This is either a newly discovered pair or else the pair from Paradise valley on a long excursion. Given the attachment of the birds to the "twin quarry" and extensive hunting and courtship flights away from both sites towards the South and South-West (and given the general presumably great richness in prey), we think it much more likely that this is a 2nd pair, rather than the Paradise valley pair, which we had confirmed at their usual site just 2 days ago. Up to now the minimum distance between two neighbouring pairs in Malaysia appears to have been 4-6 km (also in the Ipoh area). The fairly short distance of only 2.0 km between this site and the Paradise Valley site emphasizes the possibility (and indeed, the likelihood) of much closer adjacent nesting pairs also in Malaysia (in other parts of the world, peregrines pairs frequently nest only 2 km apart).

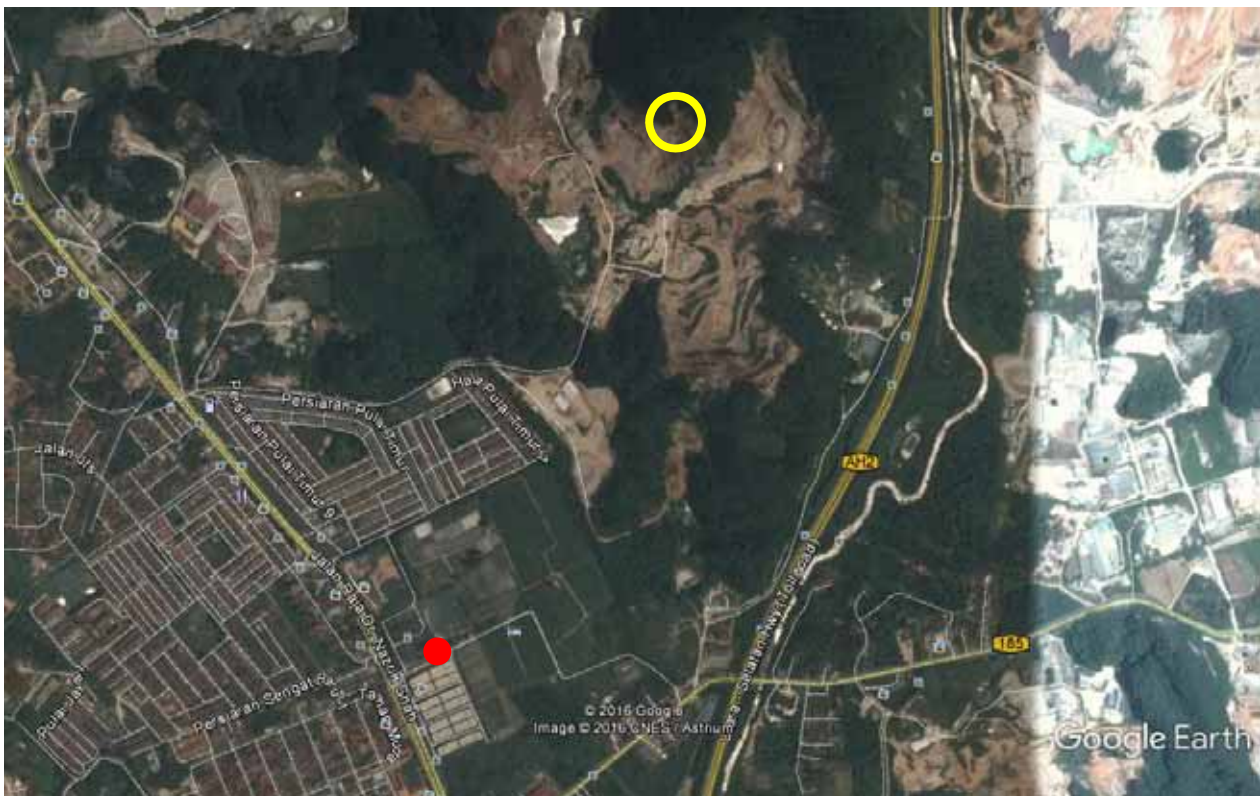


Figure 6: Location of the "twin quarry" (see photo), where the birds were seen starting a flight or heading to (yellow circle). Red dot indicates observation place. Courtship and hunting flights seen on the 8 January 2017 always took the birds towards the SW, i.e., over the village of Simpang Pulai.

Observations in 2017: On 8 Jan 2017, Chiu and Marc observe a pair for about an hour. At least five times, their flights either start or end at the right one of what we term the "twin quarries", 1.5 km NE of our observation point. The birds are very active and frequently come hunting towards us across the village. They also engage in the most wonderful courtship flights over the village. All activity is directed towards us, i.e., in a South or South-Westerly direction, and

hence away from the adjacent site of Paradise Valley, which to us seems to suggest that this is indeed a new pair separate from the one at Paradise Valley.

When told about these observations by email, Connie Khoo made the following comments on this pair: *"That pair you saw around Simpang Pulai I guess could be the pair I saw very often at Sam Poh Tong (SPT) or also name Nam Tin Tong. ... While I was driving from SPT towards Simpang Pulai few occasions I saw them on flight "*. Hence, we should not focus exclusively on the twin quarry when trying to localise the exact breeding site of this pair, but check other cliffs and quarries in this general area.



Chiu watching the new pair at Simpang Pulai, with the twin quarries visible in the back.



The twin quarries, where the birds started a flight or ended it at least 5 times during about 1.5 hours.



Another neat quarry face further NW from the twin quarries, but where the birds were not really observed during the day when we discovered this pair (8 January).

3.1.5 Kampung Kepayang, Ipoh (Perak)

Coordinates of the bigger cliff (where bird observed in 2017): 4.517281°N, 101.154437°E.

Observation point in the plain below the cliff. Elevation of hilltop about 150 m. Aspect: West.

Distance to nearest known neighbouring territory (Simpang Pulai): 3.9 km.

This is a traditional pair that has been well-known and studied for over 10 years.



Figure 7: Location of the main (bigger) cliff, where the bird was seen perched repeatedly. Red dot indicates observation place. In other years, the birds nested in the somewhat smaller cliff 200 m to the NW.

Observations in 2017: On 8 Jan 2017, Chiu and Marc (along with Henry Goh, Ooi, Robert, Dr. Hamza and Gerry and Joy Danen) watch during 4 hours and see the adult tiercel perched on the top of the main cliff for a long time. At one time, a second peregrine crosses the territory from West to East and is immediately attacked by the local tiercel. From this behaviour we clearly see that this second bird is an intruder and not the local female. The tiercel is also very aggressive towards any passing raptors. Perhaps the female is already on eggs. There are no recent signs of occupation in the lower and smaller former breeding cliff 200 m further north, but much whitewash at several places in the left (i.e., northern) part of the bigger cliff.



The smaller part of the cliff on the left side (North), where nesting events had taken place in earlier years.



The larger part of the cliff on the right-hand side (South), where nesting is suspected this year (2017).



Robert discovers the ideal observation position for peregrines flying overhead.



Chiu, Gerry and Joy Danen and Robert.



The cliffs at Kampung Kepayang in their full, brick-red glory.



The tiercel perched on top of the big cliff (Photo by Gerry Danen).

3.1.6 Sungai Siput Selatan, Gunung Tempurung, Kampar (Perak)

Coordinates of the cliff: 4.405110°N, 101.204541°E. Observation point coordinates: 4.396525°N, 101.208965°E. Elevation of hilltop about 470 m. Aspect: East. Distance to nearest known neighbouring territory (Kampung Kepayang): 13.6 km.

A natural cliff, according to Molard (2005) one of the grandest cliffs in all of West Malaysia. There are further cliffs on the East slope of the mountain, further north (1-2 km away), which are interesting enough for peregrines, but perhaps may be a little too close to the location of the pair at the top cliff. Plus, they are much lower down and so next to the top cliff may appear much less attractive to another pair ?



Figure 8: Location where the pair was seen to copulate at the top of the highest cliff on the Gunung Tempurung in 2017 (yellow circle). Red dots indicate observation places.

Observations in 2017: On 11 Jan 2017, Ooi, Robert and Marc get out of the car and almost immediately spot a flying peregrine in front of the highest part of the cliff visible. Very soon he dives down and copulates with the female who is perched there. Ironically, thus, at this largest cliff of all visited during our survey, it was by far the easiest to confirm the presence of the pair.



The Tempurung has been called one of the grandest cliffs in all of West Malaysia by Laurent Molard (2005).



The grandest cliff of all... and at the very top



... the grandest bird of all, the peregrine: here, the female after copulation.

3.1.7 Gunung Reng, Kampung Gunong (Kelantan)

Coordinates of the cliff: 5.715679°N, 101.744730°E. Observation points all around the hill.

Elevation of hilltop about 150 m. Aspect: seen the perched bird in the East-facing side.

This is a newly discovered site due to Robert, which we therefore called "Robert's massif" (or jokingly also "Robert's hump"). It is a completely isolated block in the middle of the valley (you wonder what it is doing there....), very scenically lying overlooking the nice river with quite bathable water, by the way. A must for a peregrine pair in this region at the Thai border, where otherwise cliffs seemed to be extremely rare or absent.



Figure 9: Location where the bird was seen perched in January 2017 (yellow circle). Red dots indicate observation places.

Observations in 2017: On 10 Jan 2017, Ooi, Robert and Marc see a perched adult male peregrine in the eastern side of the hill. He flies off several times and disappears around the corner to the left, but later comes back to the Eastern face. We circle around the hill and watch from all sides, but cannot see any more things. There are nice cliff faces all around, but the one on the East appears to be the biggest one.



The East side of the outcrop where the tiercel perched several times. This is the most vertical and most expansive cliff face on the karst outcrop.



Peregrine watchers.



West side of the outcrop.



This one with the adult tiercel perched in the East face looks like a painting.



This tiercel looks almost uniform dark grey underneath.





"We found another one !"



The river at the base of the limestone outcrop is immensely bathable.

3.1.8 Kampung Kubang Rusa (Pahang)

Coordinates of the cliff: 4.590700 N, 101.989267 E. Observations from forest road just West of that. Elevation of hilltop about 250 m. Aspect: West. Distance to nearest known neighbouring territory (Kampung Relong): about 45 km.

This is a huge cliff about 11 km S of Merapoh which was found by Molard (2005), who called it (erroneously) Kubang Resa.



Figure 10: Location where the pair was seen in January 2017 (yellow circle). Red dot indicates observation place.

Observations in 2017: On 9 Jan 2017, Ooi, Robert and Marc see the pair in the West-facing big cliff. The female is perched in a cliff-top tree for most of the time and the male is much flying, hunting towards the east several times. At one point, there is an exchange of prey and the female then eats for a longer time period somewhere on another tree. The birds are about 200m further South than the cliff that is indicated in Molard (2005).



Very nice place to watch the birds.



The part where Laurent Molard saw fledged young is in the middle left of this picture, but we now see them at the right-most end of the high cliff (but still before the isolated "thumb").



Laurent saw fledged young in this part of the cliff and suspected the eyrie here. However, we see the pair about 2-300 m further South along the escarpment.

3.1.9 Gua Bama, Kampung Relong (Pahang)

Coordinates of the cliff: 4.192601°N, 101.966916°E. Observation point coordinates: 4.193471°N, 101.964580°E. Elevation of hilltop about 110 m. Aspect: Southwest. Distance to nearest known neighbouring territory (Kampung Kubang Rusa): about 45 km.

Isolated limestone outcrop about 10 km NW of Kuala Lipis.

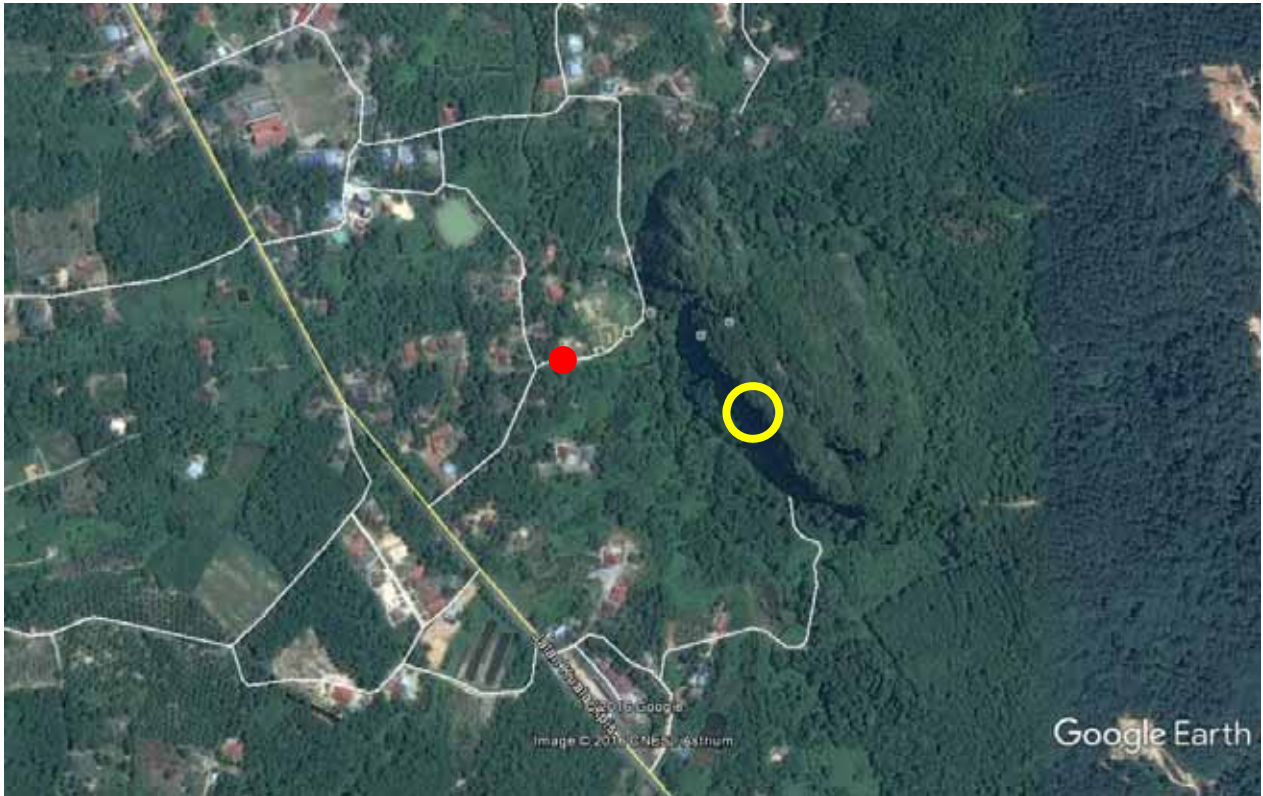


Figure 11: Location where the pair was seen flying into a possible nest site in January 2017 (yellow circle). Red dot indicates observation place.

Observations in 2017: On the evening of the 9 Jan 2017, Ooi, Robert and Marc watch for at least one hour without seeing anything. When they were almost ready to leave, both adult peregrines suddenly flew in coming from the SE, with much calling. One of them visits a deep hole with a dead bush in front of it which may well serve as the eyrie.



Watching during one hour without seeing any falcon.



When the falcons finally arrived, they flew into the right part of the cliff around the cave. One of them flies into a possible nesting ledge with a dead bush in front at the red arrow.



Possible eyrie site where one of the two birds disappears.



Towards the end of the day, in the Gua Musang region.

3.1.10 Bukit Takun, Templer Park (Selangor)

Coordinates of the cliff: 3.303562°N, 101.634639°E. Observation point coordinates: 3.302024°N, 101.637466°E. Elevation of hilltop about 250 m. Aspect: East-Southeast. Distance to nearest known neighbouring territory (Batu Cave): 8.6 km.

Traditional site known for a long time and well-known to Molard (2005).

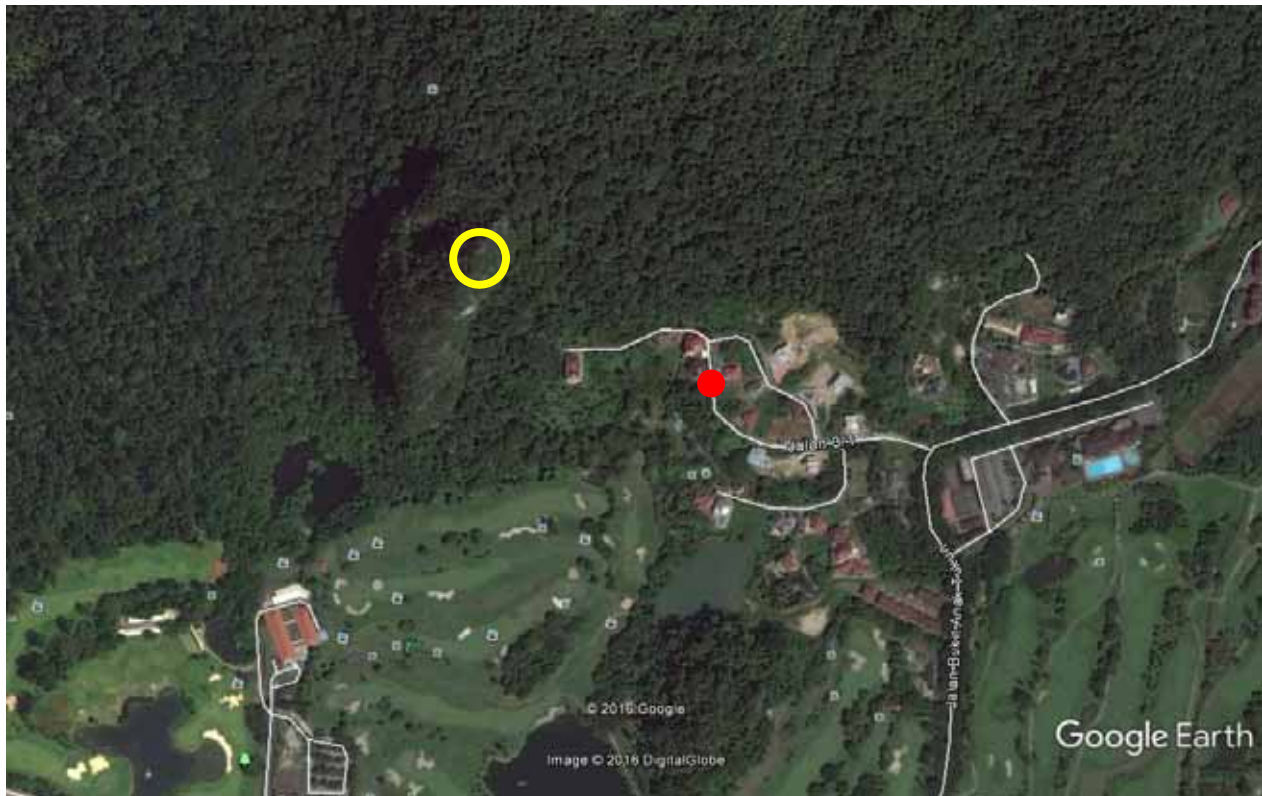


Figure 12: Location where the pair was seen in January 2017 (yellow circle). Red dot indicates observation place next to the house of a bird-interested citizen who had known Laurent Molard 12 years ago (*"a French guy sitting in the back of his car watching the birds for hours on every Sunday"*).

Observations in 2017: On 14 January 2017, Su Ping watches a peregrine fly out of the cliff and disappear towards the east. On 15 January 2017, Su Ping, Puan and Marc watch the pair with many flights, including very nice courtship flights of both members of the pair and also several hunting flights. They perch in the same general areas in the main cliff as is indicated in Molard (2005). We see a group of 6 climbers carrying ropes and backpacks walk up towards the cliff. This may indicate the potential for disturbance of the peregrines at their breeding site.



This is a grand cliff. The birds perched mainly in the centre right part of the cliff.



Peregrine watchers: Puan and Su Ping.

3.1.11 Batu Caves (Selangor)

Site of observation of the adult pair in 2017:

Coordinates of the cliff: 3.241256°N, 101.681399°E. Observation from street below. Elevation of hilltop about 80 m. Aspect: West. Distance to nearest known neighbouring territory (Batu Cave): 8.6 km. Distance to site mentioned in Molard (2005): 650 m.

Site of previous observations mentioned in Molard (2005):

Coordinates of the cliff: 3.245144°N, 101.685604°E. Observation point coordinates (bridge across dirty stream): 3.249119°N, 101.683066°E. Much better observation point coordinates (inside quarry at base of cliff, but have to cross fence): 3.246141°N, 101.685604°E. Elevation of hilltop about 180 m. Aspect: Northeast. Distance to nearest known neighbouring territory (Bukit Takun): 8.6 km.

This seems to be one of the longest-known peregrine sites in Malaysia. Molard saw the birds at a cliff in the northern end of the outcrop. We saw the pair at a much smaller cliff, lower down, at the Western end. Here, there is a highrise immediately opposite. The roof terrace of this building should provide stunning views into the nest (if they really nest in here). Perhaps one could talk to the manager and ask whether access to the rooftop could be granted ?



Figure 13: Locations of occupied cliffs and of observation places at the limestone outcrop at Batu Caves. Yellow circles indicate the cliff where Molard (2005) had seen the birds and the smaller cliff where the pair was seen in January 2017. Red dots indicate observation places. The one closest to the cliff in Molard (2005) is in a quarry for which one has to circumvent a metal fence.

Observations in 2017: On 15 January 2017, Su Ping, Puan and Marc check the site shown in Molard (2005) for over an hour, watching both from a little further away (the bridge across the little river in the NW) and also from inside of the quarry right at the foot of the cliff. This latter observation point is excellent, but one has to climb across a metal fence. Although the cliff shows

several nicely muted places and also one "horse-tail" (a very large concentration of whitewash indicating a night roosting site), we fail to see any peregrines. On the 19 January 2017, Marc returns and starts checking cliffs on the S end of the limestone hill, before walking around the Western end towards the cliff described in Molard (2005). In one of the cliffs at the Western end, an adult female is sitting in a tree, well-shaded from the sun. During an observation period of 1.5 h, she always sits in her tree. At some point, the second bird (the male, as can be deduced from the higher-pitched voice) is sitting somewhere relatively low down in the same cliff, but despite observations from the foot of the high-rise building just at the foot of the cliff opposite, Marc fails to discover where the tiercel is sitting. It is only when the tiercel flies out of the cliff that he discovers it. The tiercel does not go to the female, but instead into a nice holey ledge, which had attracted Marc's attention before, because its depth and plenty of whitewash could indicate an eyrie. The tiercel disappears into this ledge for about 5 mins, before coming out again and standing at the edge for a while. In the end, he flies out and disappears towards the South.



Su Ping and Puan watching the cliff where Laurent Molard saw the birds at the beginning of the century. There is some whitewash in the cliff (including a nice horse-tail), but we don't see any birds.



More close-up shot of the same cliff. It is not huge (though surely big enough), but nicely high up.



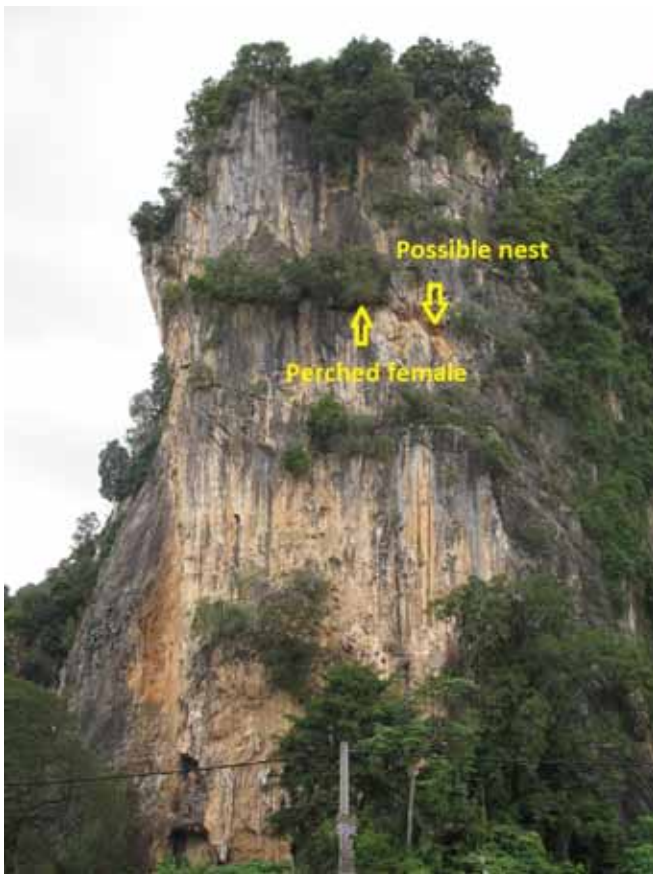
The best place to watch the cliff mentioned in Molard (2005) is from inside of the quarry at its base.



The other cliff, where the pair was observed in 2017.



This is really a rather small cliff compared to some of the others in the neighbourhood (including the parts of cliff shown in the right part of this picture).



A more close-up of the presumed nesting cliff in 2017.



The female is really well hidden in her tree during the mid-day heat.



But from a different angle she is better visible.



The female still.



This looks exactly like a possible nesting ledge. The tiercel (visible here) disappeared here for some minutes with loud "eee-chup" calls.



The tiercel at the presumed nesting ledge.



This really looks like a nesting ledge !



The cliff on the right is one of the biggest of the entire limestone outcrop around the Batu Caves. No peregrines were seen here though.



The cliffs above the statue in front of Batu Caves are full with feral pigeons and other prey species and indeed, in 2014, Marc saw one peregrine hunting right here.

3.1.12 Summary of the situation around Ipoh and comments on the spacing of pairs

According to Molard et al. (2007) the regions of Ipoh and Gua Musang represent the two strongholds of the peregrine in West Malaysia. Our survey confirmed this and showed a large number of potential cliffs in both areas. Further surveys should perhaps target mostly these two regions, although other regions, especially those highlighted in Molard et al. (2007) to hold suitable habitat and in general any limestone area in the country should not be neglected either.

To give a better overview of the particular concentration of sites around Ipoh, we here show a second map that shows all the cliff faces checked at least briefly around Ipoh. Not every cliff is highlighted in the main part of the report. In addition, there are many other cliffs in this area that remain to be checked or, perhaps, even to be detected in the first place.

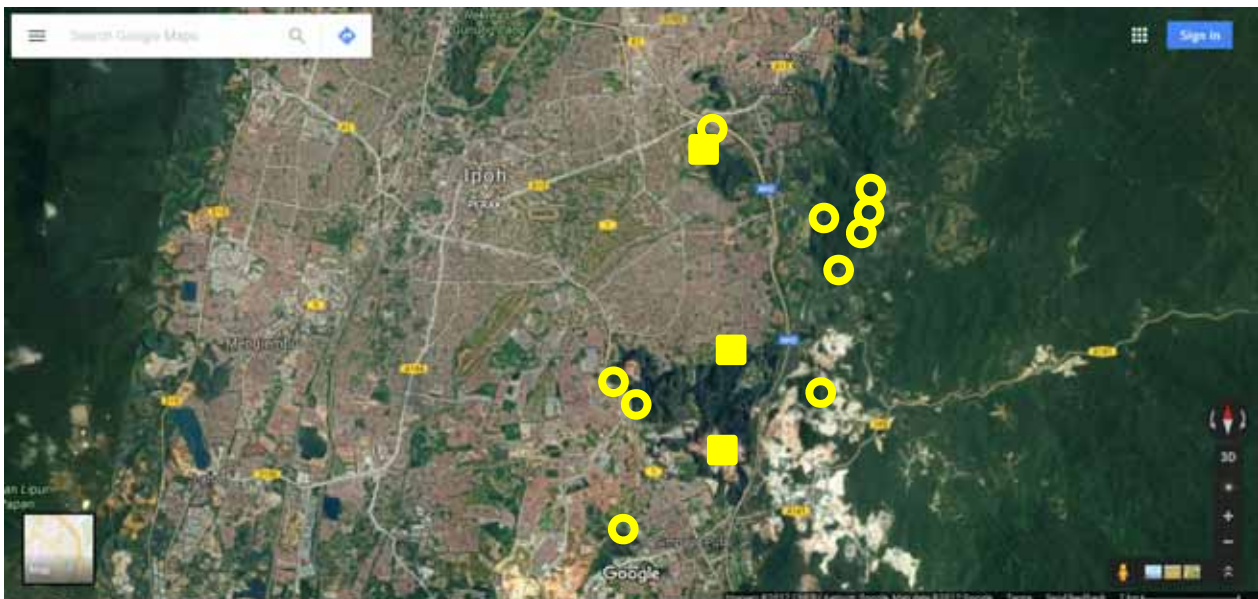


Figure 14: Overview of the surveyed sites in January 2017 in the immediate area of Ipoh (Tasek cement factory is slightly off to the North). Open yellow circles denote checked sites where no peregrine was observed and filled yellow squares show sites with observation of a peregrine pair. The hill East of the Iskandar Polo Club (Gunung Datuk) with a total of five checked sites appears like a MUST for another peregrine pair that remains to be found. --- NOTE: Many other suitable cliff sites exist in and around Ipoh which are not shown in this map.

It seems likely that the minimal inter-pair distance in Malaysia has been overestimated so far. Molard et al. (2007) write that no cliff massif with less than 7 km extent has more than a single pair. In contrast, we now know pairs that are about 4 (e.g., Ipoh army camp and Paradise valley) or apparently even as close as only 2 kms apart (Paradise valley and the "twin quarry" NE of Simpang Pulai). Nearest-neighbour distances between 2 and 4 km are common in many other parts of the world where there are enough cliffs and where the food supply is good. Although in general, West Malaysia seems to be rather poor in suitable cliffs, the Ipoh and Gua Musang regions are clear exceptions to this: both have *many* cliffs with good potential for peregrines and Molard et al. (2007) estimate around 20 pairs in the Ipoh area and 20–30 pairs around Gua Musang. From a cursory impression while birdwatching in the field obtained by Marc, both areas must be at least as rich in suitable prey in the small to medium size class (e.g., mynahs, starlings, sometimes pigeons) as other regions such as the Jura mountains in France and Switzerland, which have many instances of neighbouring pairs nesting only 2–4 km. Hence, it seems likely that also in Malaysia

observers should be prepared to occasionally find neighbouring pairs at such relatively high local density.



Another view of the wonderful cliffs at the Iskandar Polo Club in Ipoh.



Fledged eyass in the Taman Golf club in Ipoh, 2016 (Photo by Chiu). This bird and a sibling were fed by their parents for several days. They may have come from the site at the Army camp, which is 2.8 km away, or from Paradise Valley, which is 3.5 km away.

3.2 Eleven sites where we did not detect any peregrines in January 2017

We explored at least a further 11 sites where we did not detect any peregrines. Of these, one (the Tasek quarry in Ipoh) is known as a traditional peregrine site, but we did not detect any birds during our single, brief visit there and hence, we list this site in this section as well. We say 'about 11' sites, since of course the decision whether two cliff faces constitute one potential site or two potential sites is somewhat arbitrary. In addition, which cliff should even be listed as a potential cliff is also not always a straightforward decision. We briefly looked at several further cliffs but they did either not look promising enough or else we did not look at them for a long enough period that we thought inclusion in this report would be warranted.

3.2.1 Tasek Cement Factory & Perak Tong Cave Temple, Ipoh (Perak)

Coordinates of the cliff: 4.642838°N, 101.099193°E. Elevation of hilltop about 90 m. Aspect: Northeast. Distance to nearest known neighbouring territory (Army Camp Ipoh): 5.7 km.



Figure 15: Location of the usual nesting cliff (yellow circle) and of observation places at the top of the Cave temple at the site behind the Tasek Cement Factory in Ipoh.

Observations in 2017: On 7 January 2017, Chiu and Marc watch from the top of the Perak Cave Temple, but don't see any peregrines.



View of Ipoh and some of its peregrine country from the top of the Perak Tong Cave Temple.



The breeding cliff behind the Tasek industrial complex as seen from the top of the Perak Cave Temple.

3.2.2 Limestone outcrop along Gua Musang/Simpang Pulai road (Kelantan)

Coord. of cliff: 4.753960 N, 101.775524 E, elevation 420 m. About 1.3 km SE from the road at following coordinates, from which we quickly check this block: 4.76052 N, 101.76454 E.

A good-looking outcrop, which we quickly scan on 9 January, but don't see anything.

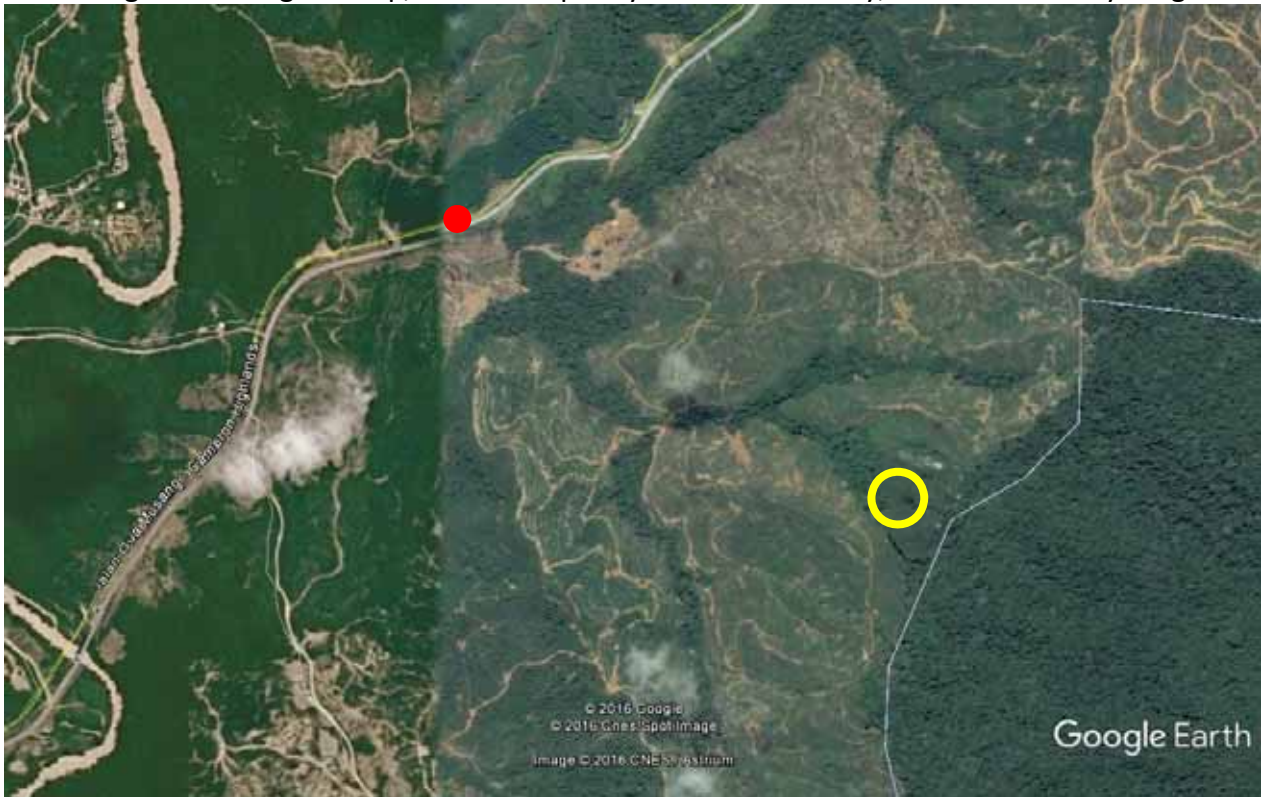


Figure 16: Location of limestone outcrop (yellow circle) and observation place (red point).



The outcrop as seen from the main road.



Ooi's peregrine survey mobile in front of a restaurant in Gua Musang.



Another picture of a fledged eyass in the Taman Golf club in Ipoh, 2016 (Photo by Chiu).

3.2.3 Cliffs A, B and C between Gua Musang and Pulai (Kelantan)

Coordinates of cliff A: 4.850101°N, 101.951000°E. Various observation places from the roads below. Elevation of hilltop at cliff A about 300 m. Aspect (cliff A): Northeast. One of the cliffs on this hill should really have a peregrine ! They are wonderful.

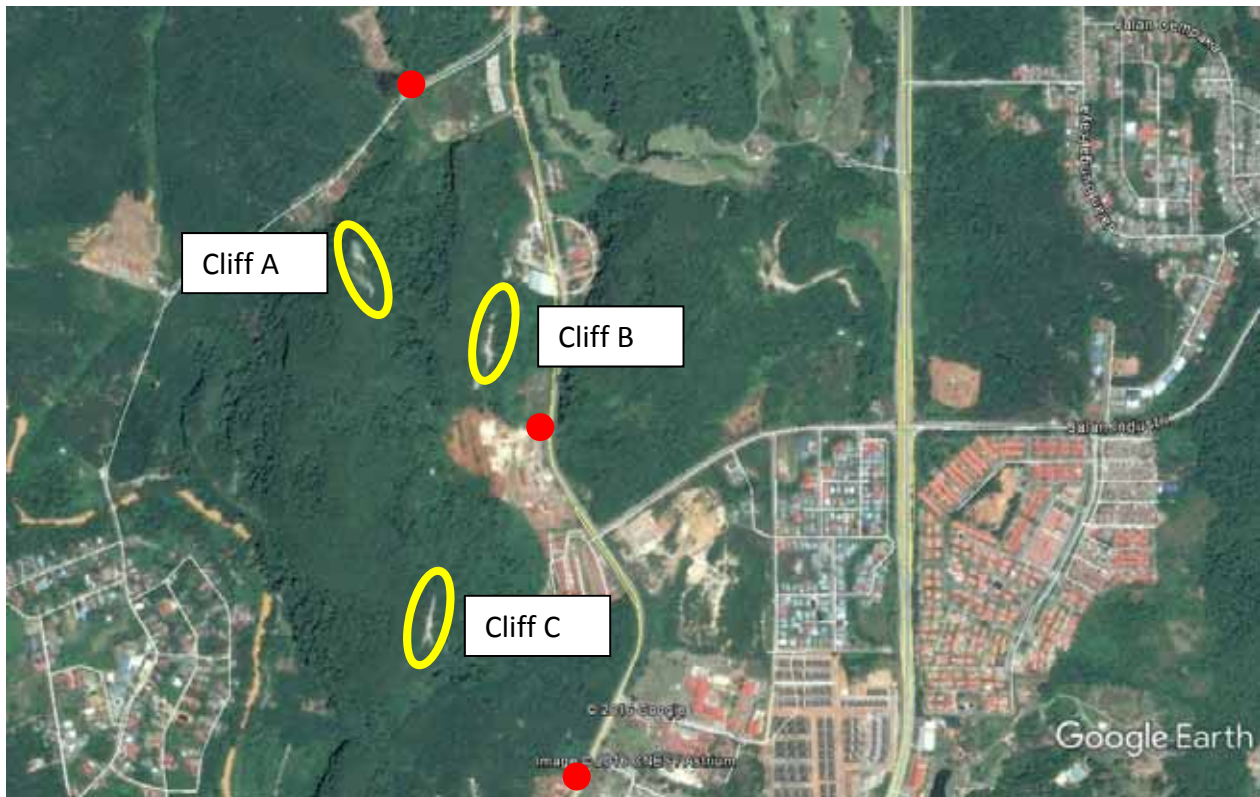


Figure 17: Location of the three checked cliff faces (yellow oval) and of the observation places. Cliff A is by far the most attractive one, followed by cliff C. Cliff B is quite big, but presumably too low down.

Observations in 2017: On 9 January 2017, Ooi, Robert and Marc fail to detect any peregrines during 45 min.



Cliff A really ought to have a peregrine pair !



Cliff A dominates the landscape.



This is cliff B. It is probably too low down in the landscape, even though it is rather high.



Cliff C is of a wonderful color. It would also be a good peregrine cliff. The warm color indicates a dry cliff where no water is coming in; for this reason, peregrines like cliffs with such warm colors.

3.2.4 Cliff D South of Gua Musang (Kelantan)

Coordinates of cliff: 4.810163 N, E101.973960 E. Elevation of hilltop about 230 m. Aspect: West. There are several very nice cliffs opposite to Ooi's favourite guesthouse (see red dot) where we stay for the night.



Figure 18: Location of one of the cliffs opposite to the nice guesthouse (yellow oval) and of the observation place (= the guesthouse).

Observations in 2017: On 9 January 2017, Ooi, Robert and Marc fail to detect any peregrine.

3.2.5 Cliff E just north of Merapoh (Pahang)

Coordinates of the cliff: 4.710074°N, 102.006938°E. Observation from a branch off of a smaller earth road West of the cliff. Elevation of hilltop about 340 m. Aspect: Southwest. One of the many nice cliffs in the Gua Musang region.



Figure 19: Location of the checked cliff face (yellow oval) and of the observation place.

Observations in 2017: On 9 January 2017, Ooi, Robert and Marc fail to detect any peregrines.



3.2.6 Cliffs overlooking the Iskandar Polo Club, Ipoh (Perak): Western end of Gunung Datuk

Coordinates of the cliff: 4.586023°N, 101.153458°E. Elevation of hilltop about 250 m. Aspect: West-Northwest. Distance to nearest known neighbouring territory (Army camp Ipoh): 3.1 km.

This set of two cliffs, like the next two sites in this list around this same "Pyramid hill", looks extremely good. At least one of these three sites is BOUND to hold a further peregrine pair that remains to be discovered !

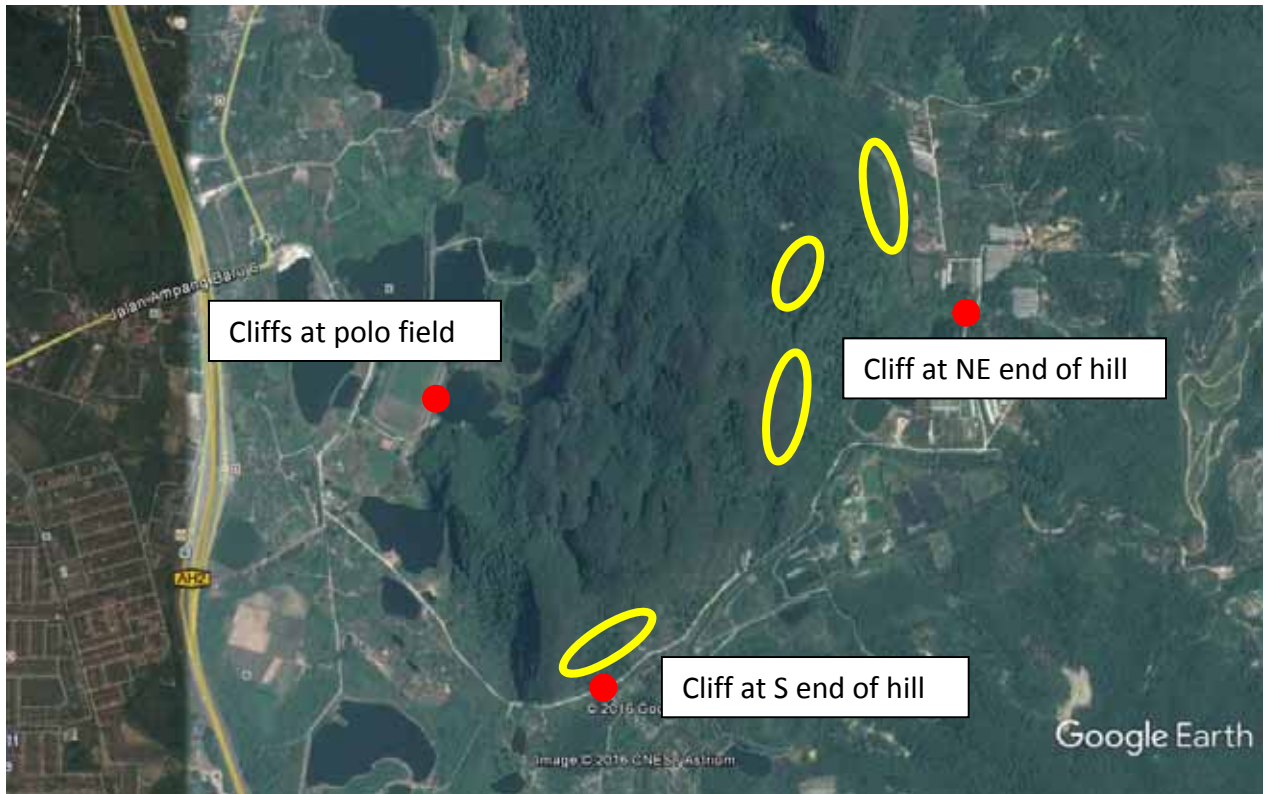


Figure 20: Locations of the checked cliff faces (yellow ovals) around Gunung Datuk and of the observation places (red dots).

Observations in 2017: On 7 January 2017, Chiu and Marc sneak into the Iskandar Polo Club and briefly look up to the cliffs with binoculars only, but don't see any peregrines. As always, there is a White-breasted sea eagle flying around, who must have its nest around here somewhere.



The magnificent site behind the Iskandar Polo Club where so far no peregrine has been detected.



Watching but in vain.

3.2.7 Cliff at the Southern end of Gunung Datung: "Pyramid hill", Ipoh (Perak)

Coordinates of the cliff: 4.582486°N, 101.156396°E. Elevation of hilltop about 200 m ? Aspect: Southeast. Distance to nearest known neighbouring territory (Army camp at Ipoh): 3.7 km.

This is another cliff that looks extremely good (see Map on Figure 20). Its distance from the previous site (Iskandar Polo Club) is only about 750 m. And, there is yet another suitable, big cliff in between the two (closer to the polo field), which is not indicated on Figure 20.

Observations in 2017: On 11 January 2017, Ooi, Robert and Marc spend almost 1 hour at its base, but don't see any peregrine.



The grand scenery of the Southern end of Gunung Datuk: the "Pyramid Hill". Such landscapes need a peregrine !



A closer look at the same cliff at Pyramid Hill.



A more close-up of the cliff at the Pyramid Hill, a wonderful cliff full with starlings and mynahs.



The watchers at Pyramid Hill: Ooi and Robert.

3.2.8 Several cliffs at the North-Eastern end of Gunung Datuk, Ipoh (Perak)

Coordinates of the best of the three cliff (the northernmost shown in Figure 20): 4.592796°N, 101.163959°E. Elevation of hilltop at this cliff is about 450 m. Aspect: East-Northeast. Distance to nearest known neighbouring territory (Army camp at Ipoh): 3.8 km.

This is another group of cliffs that looks *extremely good* (see Map on Figure 20). The best of them all is the northern-most one, a truly massive cliff. Its distance from the previous two sites is 1.4 km (Polo club) and 1.7 km (Pyramid Hill).

Observations in 2017: On 11 January 2017, Ooi, Robert and Marc spend about 30 min here, but disappointingly don't see any peregrine.



The southernmost cliff on the NE end of Gunung Datuk. Great cliff face, but perhaps too low down compared with the other neighbouring cliffs ?



This must be the grandest cliff of all on the entire hill. Disappointingly no peregrines are observed here during 30 min (which may simply not be enough...).



Robert's favourite observation technique...

Prediction: One of these three sites around Gunung Datuk is just BOUND to have a peregrine. It would even be possible to have two pairs on different sides of this hill which has such great cliffs.

3.2.9 Quarry face East of Simpang Pulai/Ipoh (Perak)

Coordinates of the cliff: 4.556860 N, 101.153845 E. Observation point coordinates: 4.55700 N, 101.162333 E. Elevation of hilltop about 180 m. Aspect: East. Distance to nearest known territory (Paradise valley): 1.8 km.

This seems to be one of the best-looking cliff faces that remain in this huge expanse of quarry. There are many others also in this area.



Figure 21: Location of the checked cliff face in this huge expanse of quarry (yellow oval) and of the observation place (red dot).

Observations in 2017: On 9 January 2017, Ooi, Robert and Marc spend about 30 min here, but don't see any peregrine.



Part of the huge quarry expanse east of Simpang Pulai along the road to the Cameron Highlands. Particularly nice cliff (the one with coordinates given here) is shown in the middle.



This would be a perfect peregrine cliff.



The same expanse of quarries seen from further north.



Adult tiercel and adult female at Kampung Kepayang, 2014 (Photo by Chiu).

3.2.10 Natural cliff East of Jeram (Perak)

Coordinates of the cliff: 4.385381°N, 101.173918°E. Elevation of hilltop about 100 m. Aspect: Southeast. Distance to nearest known peregrine territory (Tempurung): 4.6 km.

Looks good, but we don't see anything.

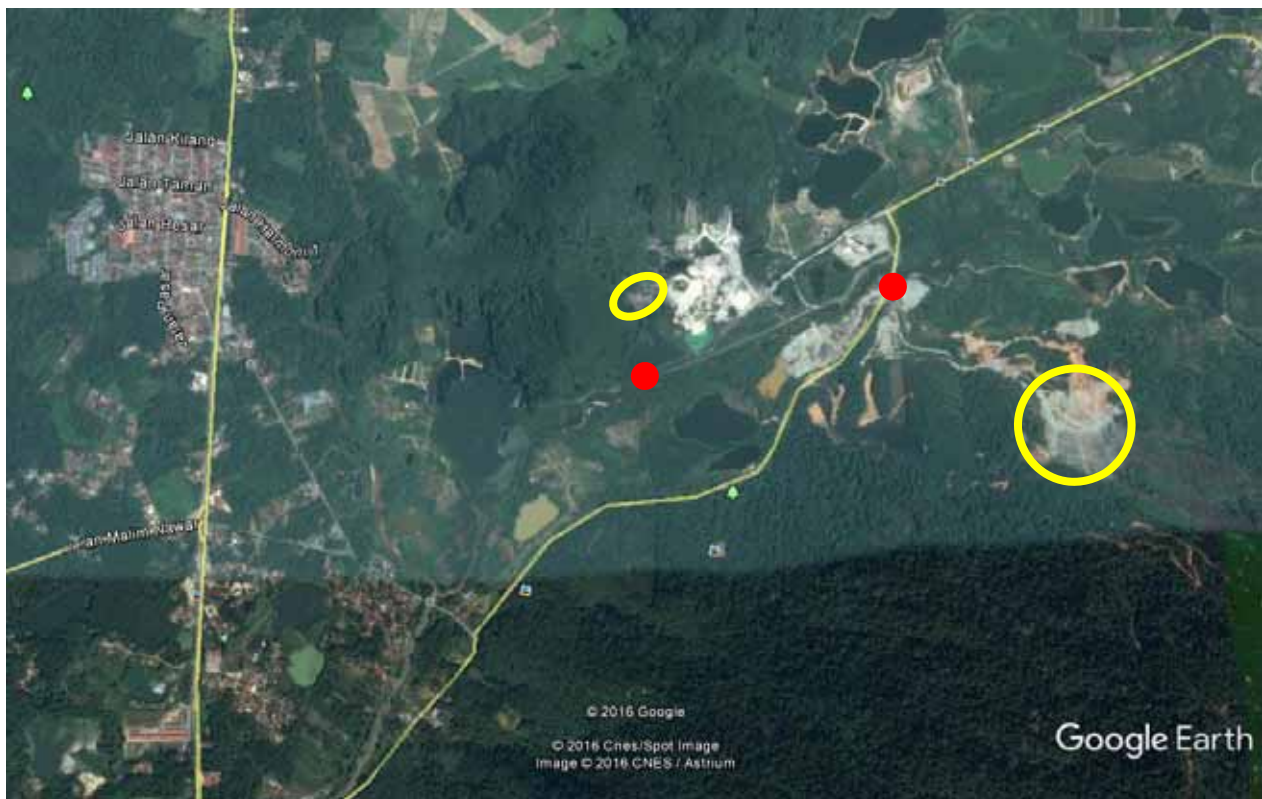


Figure 22: Locations of two potential sites East of the Kampung of Jeram: a natural limestone cliff (the one on the left) and a granite quarry (the one on the right)

Observations in 2017: On 9 January 2017, Ooi, Robert and Marc spend about 30 min here, but don't see any peregrine.

3.2.11 Granite quarry East of Jeram (Perak)

Coordinates of the quarry: 4.379314 ° N, 101.183850 ° E. Elevation of hilltop about 330 m. Aspect: Northeast. Distance to nearest known peregrine territory (Tempurung): 3.4 km.

This is a very high quarry. Although it is worked in steps (which is never good, because it "breaks" the full extent of the vertical cliff face), there appear to be sufficiently high vertical parts that a peregrine might find suitable and safe nesting sites. This quarry should definitely be checked again (see Figure 22).

Observations in 2017: On 9 January 2017, Ooi, Robert and Marc quickly look over the quarry from the main road (very far away) and don't see any peregrine.



The adult female at the Tasek Cement Factory, Ipoh, 2005 (Photos by Ooi).



4 Discussion

4.1 Summary and discussion of our observations

Between 2003 and 2005, Laurent Molard worked at the French embassy in KL and in his spare time conducted the first large-scale survey of resident nesting *ernesti* peregrines in West Malaysia. Combining his own discoveries with observations from colleagues and all the published information he could find, he arrived at a list of 15 sites with confirmed or probable nesting pairs (Molard 2005). Based on this information and later updates, which yielded a list of 21 probable or confirmed nesting sites, he then put forward an estimate of 70–80 nesting pairs in West Malaysia (Molard et al. 2007).

During 8 days between 7 and 19 January 2017, we conducted a second systematic attempt at confirming previously known peregrine territories and finding new ones by prospecting suitable habitat in the states of Kelantan, Perak, Pahang, and Selangor. We checked at least 22 potential nesting territories and confirmed the occupation by *ernesti* peregrine falcons of 11 of them. We observed pairs at 8 sites and a single bird at 3 sites. At least eight of these sites had been known before, but two and possibly three were new discoveries.

Nothing seems to be known about population trends of peregrines in West Malaysia. During our survey we revisited 8 of the 15 sites mentioned in Molard (2005) and found 7 of them occupied. The eighth site, Tasek Cement factory (see Section 3.2.1) was known to be occupied from incidental observations by Chiu at least in 2015. Hence, all 8 territories are likely still occupied, which may suggest a stable or perhaps even increasing population over the last 10–12 years.

We conducted our surveys during the height of the courtship period right before egg-laying. At this time, detection probability of territorial peregrine pairs is maximised by plenty of aerial activity of both members of the pair and frequent calling. At some sites, we literally found the pair right on getting out of the car, such as, perhaps surprisingly, at the tallest cliff of all, the mighty Gunung Tempurung (see Section 3.1.6), where we immediately spotted the flying tiercel and then very briefly afterwards saw him copulate with the female who was perched at the cliff top. However, at some sites (such as Kampung Relong; see Section 3.1.9) it took over an hour of fruitless waiting until the pair was finally confirmed, just when we were about to give up and leave (this was a clear instance of the "*magic of the last minutes*" of peregrine watching). Hence, even in this optimal period of the year for peregrine surveying, up to 2–3 site visits each with a duration of up to 1 hour or more may be required to confirm the occupation of a site by peregrines. As another example, we visited four times the site at the Army Camp in Ipoh (Section 3.1.2) and saw the pair during two visits, only the tiercel during one visit and no bird at all during another long visit. And at Kampung Kepayang (Section 3.1.5) we spent over 4 hours without ever seeing both birds. The tiercel was very much in evidence and showed plenty of territorial behaviour, both towards an intruding peregrine and other raptors, but we failed to confirm a female (she may have been on eggs already).

During our surveys we observed in groups of 2–3 watchers most of the time. This has the great advantage that different observers may watch in a different mode: one may use the binoculars to scan the cliff and especially the trees at the cliff top, while another may simply watch the sky with his naked eyes to try and pick up any flying peregrine. Such naked-eye scanning of the outline of the hill with the nesting cliff is an essential search behaviour for peregrines except if one is too far away from the nesting cliff such that one may not be able to pick up a flying peregrine against the sky by naked eye (This naked-eye limit may be 800–1000 m, but of course it depends on visibility conditions as well as on the visual acuity of an observer.) In addition, staring into the sky or scanning a cliff in a concentrated way for a long time can be very tiring and watching in a

small group will allow some members of the group to relax while the others continue the watch. (Of course, one must refrain from the temptation to engage in too much non-peregrine-related conversations, since these will then distract from the main goal of detecting the birds.)

Hearing is very important in peregrine surveys (unless one is very far away from the presumed nesting cliff or else in an extremely noisy environment such as next to a busy river or a road with extreme traffic). During the pre-laying period, any interaction between the pair is almost always accompanied by loud calling, hence, literally, even a blind person could find some peregrine pairs during this time of the year.

Lying flat on the ground, on a car roof or similar is an excellent way to watch peregrines that are flying high overhead or to watch at very high cliffs when one is standing close to the cliff base. This is much more relaxing and hence allows one to watch for longer periods in a more concentrated way.

While watching peregrine pairs with young (especially fledged young) is very beautiful and can be a very efficient way of detecting successful pairs, we emphasize again that population surveys that are limited to this stage in the breeding cycle are likely to seriously underestimate the total population size of all territorial pairs. The reason is that failed breeders often behave very inconspicuously or may even leave the nesting territory for a while or even permanently (Bruggeman et al. 2016). Since in many populations, in a given year up to 1/3 or more of all pairs may fail, we can easily see the possible magnitude of population underestimation when surveys are conducted only during the late nesting and the fledging seasons. Of course, a more profound assessment of a population should collect information not only about population size, but also about productivity, hence ideally, population surveys are conducted both at the start and at the end of the nesting cycle, to obtain reliable estimates of both population size and productivity.

4.2 Towards a more systematic peregrine surveying in Malaysia

The peregrine is arguably the most widespread terrestrial vertebrate in the world in the absence of any human intervention. It is widespread in tropical areas in Africa and Asia (though much less so in South America). However, almost all population studies on the peregrine falcon stem from temperate or cold latitudes, for what must be one of the sole exceptions, see Döttlinger & Nicholls (2005). Hence, more information on the status and trends of tropical peregrine populations would be extremely valuable. Malaysia offers a good opportunity to develop a population survey into this more long-term direction, in part due to the now extensive prior knowledge provided by the original survey of Molard (2005), the projection of suitable habitat in Molard et al. (2007) and the current compilation of observations. Between them, Molard (2005), Molard et al. (2007) and the current report have identified 24 likely nesting sites in West Malaysia. Given that the total population in this area has been projected at around 70–80 pairs, it is clear that much yet remains to be explored.

To some birdwatchers (such as some of the authors of this report) such an exploration of uncharted territory (speaking peregrine-wise) or a "peregrine hunt" is the most exciting of any birdwatching activities, with an intense feeling of elation created by the finding of a pair at a previously known site and even more so by the discovery of a new peregrine site. If we add to this the sheer pleasure to watch what is the fastest creature on earth, it might be possible to enroll more birders in such a peregrine survey conducted as a group effort, where every contribution counts: some observers may hunt down the birds at 10–20 sites in an intense and large-scale survey such as the one reported in here, while others may keep an eye on just their local pair. When all such information is combined in a working group that communicates by email or messenger services such as WhatsApp, really valuable surveys can grow out of a small-crowd effort.

During the field work period reported on here, Marc gave two 1-hour talks about the peregrine in his native Jura mountains at the local branch of the Malaysia Nature Society (MNS) in Ipoh and at the MNS headquarters in Kuala Lumpur. These events were attended by about 40 and 25 people, respectively, and were followed by lively discussions. Both events may perhaps help to motivate other observers to contribute to future peregrine surveys in these parts of Malaysia.



Two views of a talk about peregrines in the MNS HQ in KL.

For a more systematic survey it would also be important to compile any other available information about peregrine pairs such as, especially, internet or other data bases of observations (e.g., eBird), bird trip records from ecotourism and any recently published records later than about 2006 (up to which year most records will have entered the overview by Molard et al. 2007).

Depending on the available resources, a more systematic survey should contain the following elements:

- (1) A clear definition of the area to which a statistical inference (estimation of the number of pairs) is desired, e.g., the cliff-breeders in the whole of West Malaysia.
- (2) Identification of areas that are likely to contain cliff-nesting pairs. This will most likely be restricted to a large degree to the limestone areas of the country, hence, the potential distribution area of the peregrine may perhaps be read off a geological map (Though there may be some quarries in the granite areas that may offer suitable nesting sites; see Section 3.2.11).
- (3) Random selection of sample areas chosen by chance from the total area or, similarly, random selection of sites to be surveyed from the total list of sites. This ensures the validity of any generalisations from the sampled sites to the wider area.
- (4) Standardized field protocol, e.g., spend at least 1 hour at a suspected site
- (5) More than a single visit to at least a subset of all sites, since this will allow to use so-called site-occupancy models (MacKenzie et al. 2002) to factor into the population size estimate the possibility of imperfect detection, i.e., that a site may be occupied by a pair in a given year, but the observers fail to detect them during their visit(s).

All of what we have said so far concerned cliff-nesting peregrines. However, peregrines have been found to nest on buildings in many parts of the world and also at least once in Malaysia (in KL, see Molard 2005). Designing and conducting surveys for nesters on buildings is more difficult than surveys of cliff-nesters, in part because of the sheer number of potential breeding sites in many cities such as the KL metro area, but even also in smaller cities such as Ipoh. In principle, many dozens or even hundreds of peregrine pairs could nest in cities of West Malaysia, because there are plenty of "artificial cliffs" (= buildings) and no doubt a very plentiful supply of prey, including mynahs, starlings, pigeons. Possibly some kind of appeal to the general public via the media could help locate pairs in cities? This may also be a vehicle for promoting increased nature awareness in these otherwise so de-naturalized environments.

Such an improved state of knowledge about status and trends of Malaysian peregrine falcons may also be useful in conservation. Potential threats include the following:

- poaching and killing
- DDT and other pesticides
- disturbance, e.g. by photographers
- habitat destruction

Given that peregrines nest relatively far away from humans, one of the only practical ways to kill a peregrine would be a gun, but the very restrictive gun laws in Malaysia surely are beneficial in this respect. Likewise, stealing of eggs and young does not seem to be a likely problem in Malaysia, since most cliffs are extremely difficult to access from above, making abseiling into the nest close to impossible. For the same reason and for the sheer size of most cliffs, photography is not likely to pose a problem at any of the sites that we have seen. Perhaps the main remaining problem (other than prevailing use of DDT and other pesticides) may be downright destruction of nesting habitat by the large-scale quarrying that is prevalent at many places in the country. It may be hard to do anything towards the conservation of a peregrine pair nesting in a quarry that is about to disappear by total exploitation of a limestone outcrop. However, we believe that open communication with a quarry owner may perhaps lead to the protection of a site, even if only for a certain number of years. Hence, we think that improved knowledge about the location of peregrine pairs may also help perhaps, even if only a little, in the protection of this magical species: the Peregrine Falcon.

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