Habitat on the Wing

It may come in a big box surrounded by concrete greys and asphalt blacks. Within, the bland cubicles are grey or muted brown, perhaps festooned with a brightly colored photo of children or a significant other, a shot from that vacation in Cancun, or of the honeymoon in Tahiti, anything as a rationale for another drab day blending the flotsam of life outside and within converging in a decadal struggle for one of the windowed offices where you can see the mountains or at least have your own door and a wall to hang a big print. Green within the building is the odd potted plant. Outside there may be a token tree with a bit of grass and a suite of foundation bushes, but there is no seating space and walkways are designed to pass you from building to car as efficiently as possible. Before the building, a weedy lot with dozens of birds framed the value, though little seen. Now, the only bird is an old crow eking out a living on roadkill and the odd scrap dropped by a six-year-old visiting his auntie Belle.

Not all construction needs to generate such a nihilistic, soul-sapping panorama. The philosophy of an organization may articulate a more holistic attitude toward space, whether rented or owned and Caltech is a good example of this. Caltech could have built a close-set jumble of buildings connected by expansive concrete walkways and no natural shade. The students and staff in such a sterile environment would have shuttled from one big box to another, from a building to a car or a dorm. Would our minds envelop it? Would this environment encourage intellectual pursuits and development? For some, it probably would, but Caltech decided that a pleasant external environment with eye-softening green space renders an important fabric for quality of life and intellectual productivity. Yet, even here, it is important to understand the limitations of this philosophy and how they play out in land-use decisions and the avian response. In this essay, I

examine two instances of land-use decisions by Caltech, one with an immediate effect on avian life and the other with consequences evolving over decades.

In the early 2010s, the Institute recognized that it needed more on-campus housing for students and decided to build a residence hall. The existing Children's Center on Chester was razed to create a building site for Bechtel, and a new Children's Center was built over the Maintenance yard by the tennis courts. This was a net positive for preschoolers on campus. Capacity increased and the new facility featured an expansive, albeit antiseptic, outdoor area. The old Children's Center had no real outdoor facilities. If you wanted to give your preschoolers a dose of nature, you walked a line of them deeper into the main campus to see the parakeets near Spalding or over to Throop ponds to look at turtles. The Children's Center provides a much-needed resource for the young children of Caltech faculty and staff and Bechtel is a solid housing resource for 200 or so student residents. From an avian perspective, however, these changes in land use were a disaster. Bechtel replaced one bird-poor environment with another, but the new Children's Center replaced a bird-rich, scrabbly environment (*aka* Maintenance yard) with a bird-poor construct. Before installation of the new Children's Center, the Maintenance yard was one of the birdiest places on campus. In the old days, you might have encountered a Lincoln's sparrow wintering in the yard or an olive-sided flycatcher passing through. Doves, finches, sparrows, warblers, vireos, flycatchers, corvids, hummingbirds, and hawks were all common sightings. Many, possibly most, bird walk orioles were seen in the Maintenance yard. The only

owl sighting in the history of the Caltech bird walk happened there. Now, only a sliver of the old Maintenance yard remains, and this environmental remnant is not enough. We are lucky to see the odd crow. The new Children's Center bequeathed a major avian loss and you can see the sadness of it in Alan's eyes.

Habitat loss is most obviously rung by the exchange of a supportive environment for birds with something that supports people but not birds. The second part of this essay explores a more nuanced consequence of land-use decisions. It primarily affected one species, Brotogeris chiriri and it comes with a mystery. In the 2010s, the Audubon Society listed the grove of silk floss trees around Spalding as one of the best places in southern California to see a yellow chevroned parakeet. Now, we are part of a yellow chevroned parakeet desert, and we haven't even seen one on the bird walk since 2021. Still, just in case we encounter a yellow chevroned parakeet on the walk, or you happen to float over to the Huntington Gardens or the Arboretum, I offer two photos (Fig.

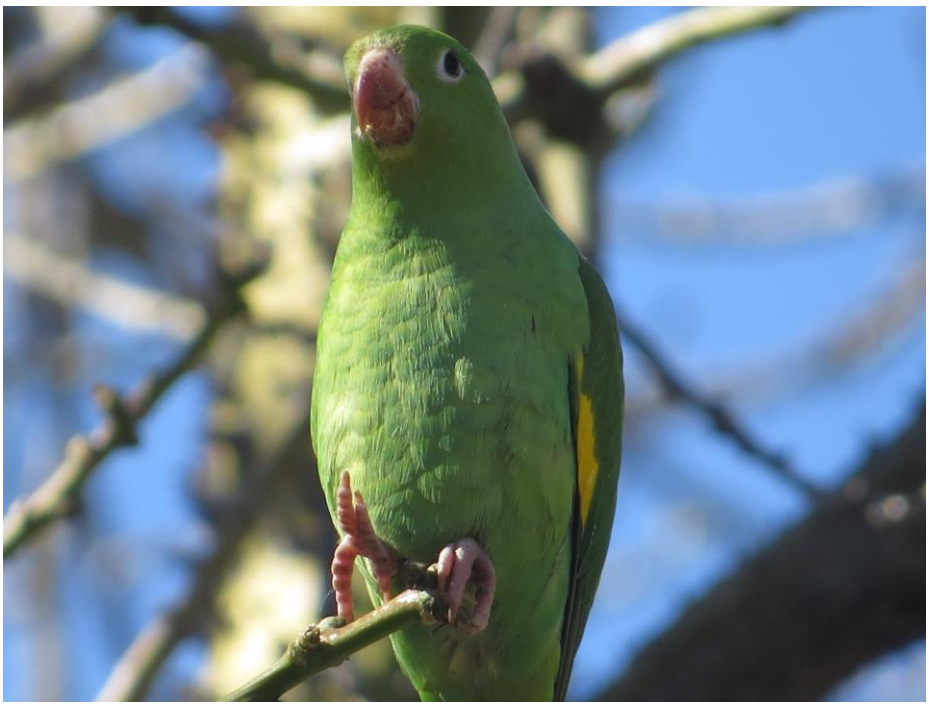

Fig. 1a. Yellow chevroned Parakeet. Photo by John Beckett

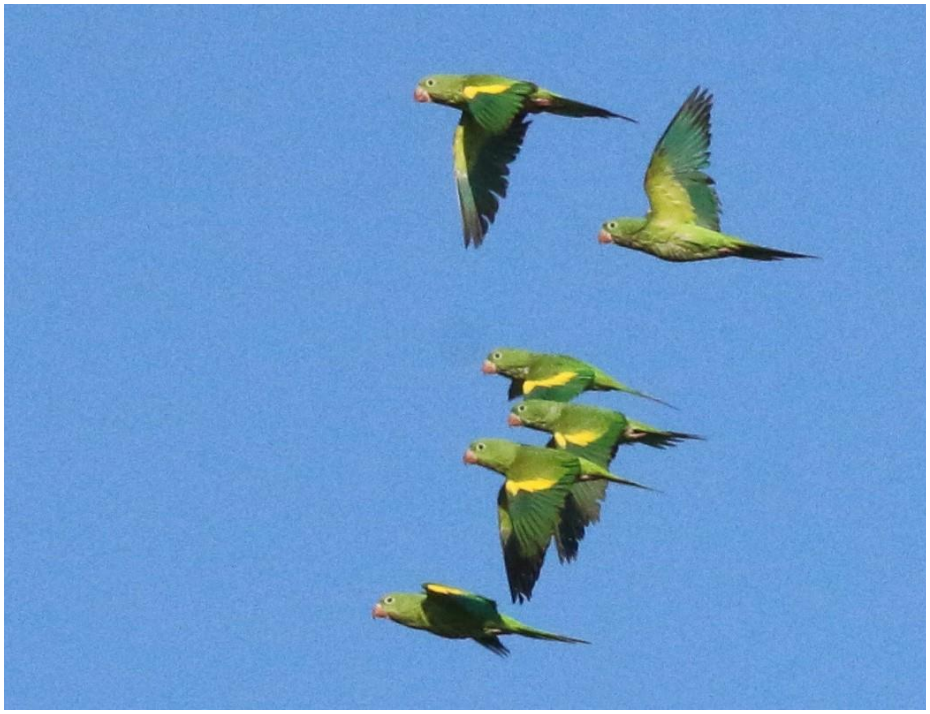

Fig. 1b. Yellow chevroned Parakeets in flight. Note the yellow chevron on top and a lack of vibrant colors below. Photo by Ira Blitz.

1ab). If perched, you are looking for a smallish, green-dominant bird with a pointy tail (i.e., a parakeet), a yellow bar (chevron) on the upper part of the wing, blue wingtips, a pink beak and legs and a white eye-ring. That wing bar is likely definitive for a Caltech bird (but see below). You will probably see the yellow if the bird is perched (Fig. 1a). If you can see the yellow while the bird(s) is in flight, that's great, but for me, the yellow tends to be washed out in noontime flights unless the birds are really close. Generally, I just look for red (automatic disqualification) and listen. The flight call of a yellow chevroned parakeet is much higher pitched and thinner than for red-masked or mitred parakeets and songs while perched are more of a breezy chortle than a raucous bray. Listen to a couple examples each of flight and perched vocalizations on xeno-canto (Results for 'yellow-chevroned parakeet' :: page 1 :: xeno-canto) and I think you will be ready for a blind hearing test on Caltech parakeets.

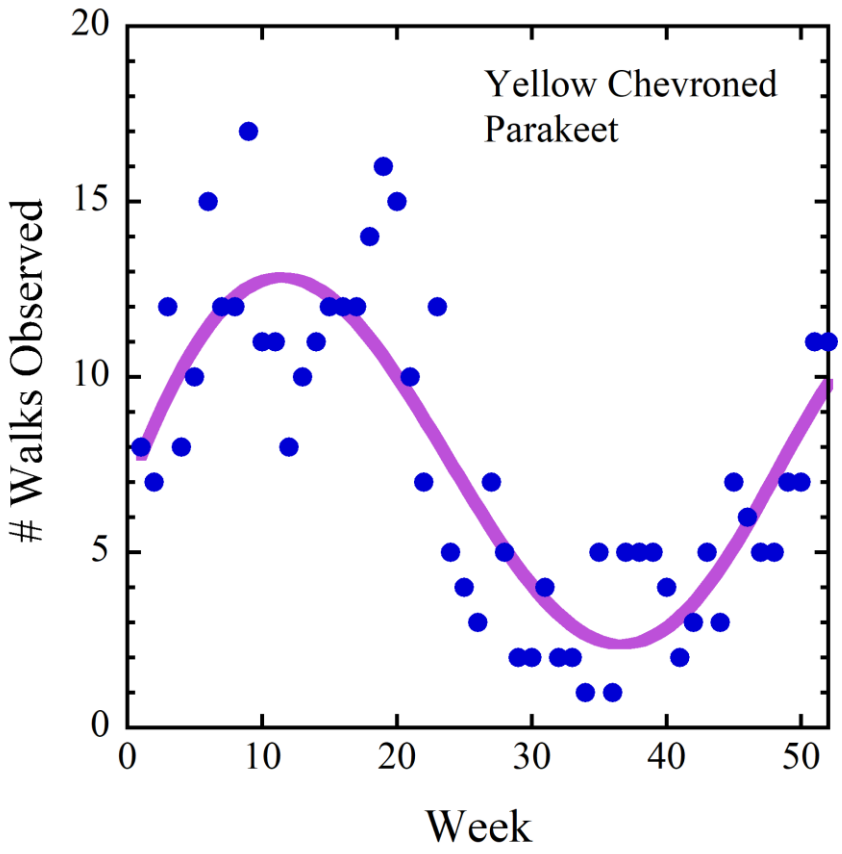

Fig. 2. Number of walks in which yellow chevroned parakeets were observed as a function of week of the year for 1990-2020. Visitations during this period show a seasonal pattern with sightings ramping up in the Fall and dropping off in the Spring.

For the sake of completeness and an excuse to mention the pet trade, I will note that there is one bird in southern California that can be confused with a yellow chevroned parakeet. The white-winged parakeet, which is a member of the same genus (Brotogeris), also sports a yellow chevron, but this is bounded by patches of white and the beak will be duller and darker. The identification problem is that the white patches can be hidden when the bird is perched and unless you happen to have a handy nearby yellow chevroned parakeet, the beak color is probably not going to be helpful.

In the 1960s, white winged parakeets were far more common than yellow chevroned parakeets in southern California but, starting in the early 1970s, Peru, which is where the pet trade had been sourcing them, clamped down on illegal avian exports. What's a self-respecting smuggler to do? Move to Brazil (or Bolivia) and start exploiting the similar, from a pet-trade perspective, yellow

chevroned parakeets. Back in southern California, the population of white-winged parakeets declined through the 1970s because of a declining flux of pet escapees (i.e., the feral population was not self-sustaining). It's possible that there were white winged parakeets on campus in the 1960s and 70s, but by the mid-1980s, the odds of seeing one on campus were quite low, consistent with our never having observed one on the bird walk (started in 1986).

As with many bird species on campus, there was a strong seasonal component to the presence of yellow chevroned parakeets as shown in Fig. 2. Usually, when you see a visitation pattern like this, it means the birds are wintering at Caltech and mostly spending summers elsewhere, but yellow chevroned parakeets that spend the winter in the San Gabriel Valley also spend the summer in the San Gabriel Valley. They are avian condottieri who fly from one concentrated food source to another. So, the pattern you see in Fig. 2 is not the manifestation of a regional migration. It's the manifestation of seasonal food sources and a fragmented habitat. Yellow chevroned parakeets love the seed pods that silk floss trees produce and Spalding has a cluster with overlapping canopies (best eating in Winter to Spring). They will also eat the flower blossoms (September - December). Since Caltech does not encourage exotic trees that fruit in the summer and silk floss trees are offering only old pods and a few early flowers by then, there is usually little incentive for a yellow chevroned parakeet to come to campus during the summer. This leads to a strong seasonal motif in visitations as shown in Fig.2.

I mentioned above that we hadn't seen a yellow chevroned parakeet on the bird walk since 2021. Yet, they were common a decade ago. I've seen no discussion of a recent regional decline in population in southern California and you can see them at the Huntington or the Arboretum any time you want to. Similarly, there was a sharp increase in sightings in the mid-1990s from an anemic base line. So, here's the problem. The silk floss trees are still here, but the yellow

chevroned parakeets are no longer visiting campus in large enough numbers to be caught in the bird walk. Figure 3 shows the distribution of bird walk sightings as a function of year. Yellow chevroned parakeets were uncommon on the bird walk before the mid- 1990s. They were common seasonally from ~2000 to ~2017 and then they disappeared. As an aside, I note that there is some structure within the peak period shown in Fig. 3, with some years yielding more than 20 weeks encountered and others with less. The difference is to be found in weeks 30-40 (i.e., mid-May to the end of July). If the parakeets showed up in the summer, we ended up with a high encounter year (>20 weeks observed) and if they didn't, we had a low encounter year. My best guess is that good years for Caltech birders were bad years for the parakeets because an otherwise desirable summer food source in the area was underperforming.

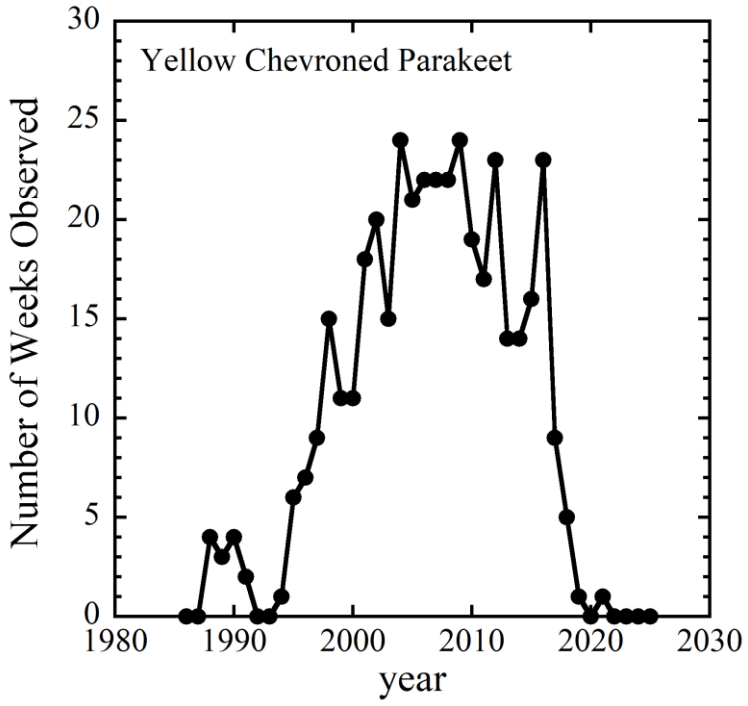

Fig. 3. Number of bird walks in which yellow chevroned parakeets were observed in a given year as a function of year. Visitations were sporadic before the mid-1990s, common from the late 1990s to ~2017, and then infrequent to absent.

So what happened before 2000 and after 2017? My original thinking about visitation rates in the 1990s brewed a theory that can only flourish in a fact-poor environment. Suppose the Spalding trees had been planted around 1990 and that they were three or four years old at the

time. Since silk floss trees don't produce seed pods until they are seven to ten years old, one could plausibly suggest that the appearance of yellow chevroned parakeets was coordinated with the Spalding trees maturing. As for the decline in observed visitations after ~2017, I know there were complaints in the mid-2010s that floss from the seed pods was fouling the air intake for Spalding and that pod productivity declined after ~2017. Now, suppose Caltech wanted to do something about those annoying seed pods. To suppress fruiting or seed production in a tree, you have three basic choices: take out the tree, remove seed pods or fruit individually before they become a nuisance, or spray the tree with a PGR (plant growth regulator), the approach Caltech uses to control olive production from our olive trees. A typical conspiracy theory blends two unrelated factoids (like seed pod production declined and Caltech's use of PGRs on olive trees) to conclude that Caltech must have used PGRs on the silk floss trees, thereby causing the observed decline in seed pod production and a loss of interest by yellow chevroned parakeets. Sounds nice, but the construct collapses in the face of reality constraints provided by Delmy Emerson and Ryan Robitaille from Caltech's Buildings and Grounds Department. The Spalding silk floss trees were planted around 1957, not 1987. Also, they would have been purchased as 24- or 36-inch box trees and 15-20 feet high upon planting. Since silk floss trees grow about 3 feet per year until they hit ~20 feet, this would make them, probably, 5-10 years old at the time of planting (i.e., they germinated from seeds, presumably, around 1947-1952 and they are now in their mid- to late-70s). Like humans, silk floss trees can live to be a hundred, but most don't make it there, so we can expect that the Spalding silk floss trees will be dying over the next couple of decades. In theory, a nutrition deficiency could cause a decline in productivity, but mature silk floss trees don't require a lot of fertilizer. This brings me, finally, to two basic but subtle effects of landscaping around buildings. In a natural setting, a grove of trees will likely

include members with a range of ages. Some would be snags (standing dead trees), others fallen logs, some mature and some just getting started. A variety of bird species could be taking advantage of these trees at their various life stages. A human-produced grove of trees is likely to consist of trees of similar age and neither snags nor saplings are allowed. This reduces the potential habitat niches available to birds. Secondly, in a natural grove, a tree may have nearby or overlapping canopies from multiple trees of the same species and in multiple directions. This optimizes foraging and cover opportunities for birds. A typical human planting will consist of isolated trees or a row with no or modest canopy overlap. Hummingbirds don't care. They will work on any flowering tree as long as the nectar is flowing, but most birds are looking for that extra cover. Yellow chevroned parakeets generally ignored the fine-looking lines of silk trees adjacent to Keck in favor of Spalding's clusters. Why did they not consistently find Caltech until the 1990s? I don't know the answer. Perhaps, one day a yellow chevroned parakeet woke up, got drunk on an overripe fruit, and accidentally led a flock northwest instead of northeast. This would be a major motivating anecdote in a human autobiography, but our bird never wrote a memoir or talked to a biographer, and we inhabit but a few precious shadows in the rich tapestry of a bird's life. Walk on.