

Engaging Citizen Scientists in Prairie Falcon (*Falcon mexicanus*) Monitoring in McDowell Sonoran Preserve

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INTRODUCTION

Tom's Thumb in McDowell Sonoran Preserve is a popular area for both climbers and hikers with as many as 200 people visiting the site in an hour on weekends. In 2015, climbers discovered a pair of prairie falcons nesting on a rock face in the middle of several climbing routes.



Figure 1. Wide-view of eyrie location. Photo by H. Krautter Feb. 21, 2015. Close view by L. Rogalle, Feb 20, 2015.

Concerns with nesting raptors being impacted by high usage associated with rock climbing and hiking beneath the nest site led the McDowell Sonoran Conservancy Field Institute, working with the City of Scottsdale, to implement a prairie falcon monitoring project.

Our objective is to engage citizen scientists in field monitoring in order to better understand timing of nesting at this site, nest success, and potential impacts of recreation.

METHODOLOGY

Our prairie falcon monitoring program is conducted by citizen scientists. We train these volunteers on bird habitat, anatomy and behavior and on monitoring protocols.

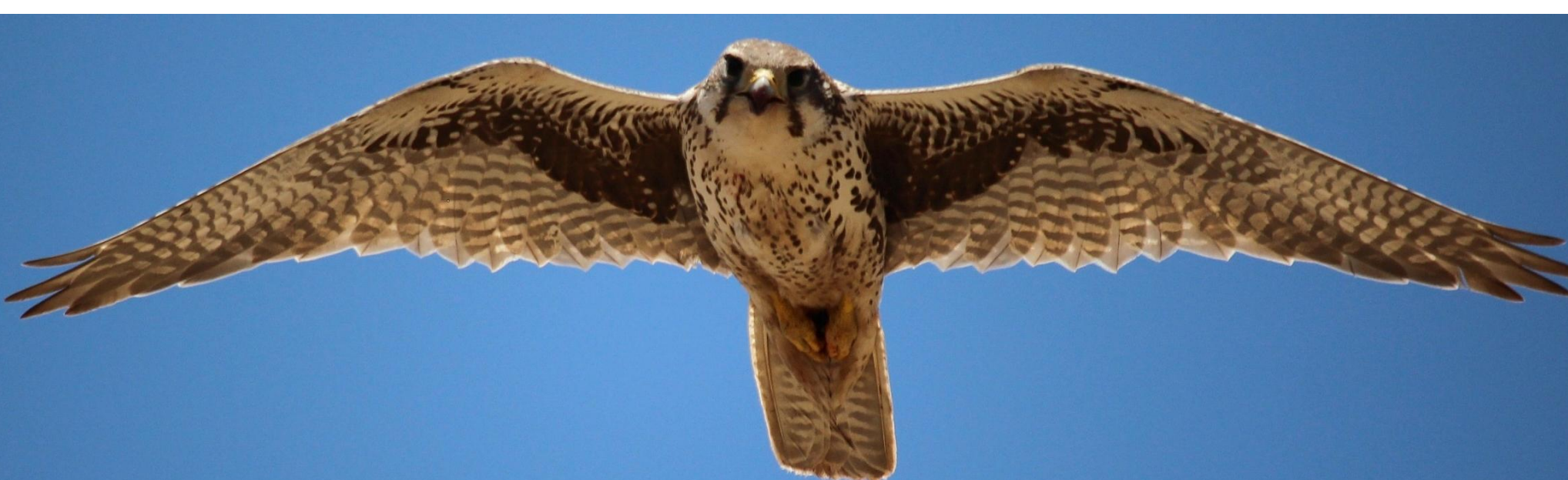


Photo A. Mayes

METHODOLOGY (cont.)

Field Institute managers and citizen scientists developed protocols based on the Arizona Game and Fish Department's (AZGFD) peregrine falcon monitoring protocol¹. Data sheets record prairie falcon behavior, nest timing, fecundity success measured by number of chicks produced and fledged, number of hikers and noise level.

MSFI- Prairie Falcon Monitoring (Reproduction Success and Human Impact Observations)

Date: 2-10-2016	Start Time: 1:00 pm	End Time: 4:25 pm
Observers: Allison Mayes, Doug Jensen	Temperature: 75° F	Temperature: 80° F
Phone:	Wind Speed: 5-10 mph	Wind Speed: 5-10 mph
Email:	Cloud Cover: 50%	Cloud Cover: 70%
Affiliation: MSC Steward, MSC Steward	Precipitation:	Precipitation:

Tally Observations in 1/2 Hour Increments	7:30 AM	8:00 AM	8:30 AM	9:00 AM	9:30 AM	10:00 AM	10:30 AM	11:00 AM	11:30 AM	12:00 PM	12:30 PM	Totals
Falcon Parent Observations												
Courship (wailing, courting flights)												
Aerial Displays												
Pray Delivery/Exchange away from nest												
Perching/Preening on Thumbs or Boulders												
Defensive diving or hunting dives												
Territorial Defense (calling, chasing)												
Notes:	<p>*: PrF approached perched PrF. Both began tandem flying frequently making contact with each other's feet, possible courtship display.</p> <p>☆: 2 PrF again began flying in tandem, flipping upside down, locking talons, vocalizing.</p>											
Nesting/Fledging Observations												
Pray Delivery to nest site												
Audible calls from inside nest site												
# of Nestlings perched on nest edge												
# of Fledglings perched/flying in area												
Notes:												
Human Interaction												
Hikers												
Climbers												
Noise Level (1 Low, 5 High)												
Notes:	PrF perched; observers left to avoid dark hike down											

Figure 2. Example of completed data recording sheet.

At the beginning of each breeding season, the City of Scottsdale Preserve management team takes steps to minimize disturbances near the eyrie by implementing the following:

- posting quiet signs
- closing several climbing routes
- fencing off the area below the nest

Trail Closures – Climbers/Hikers

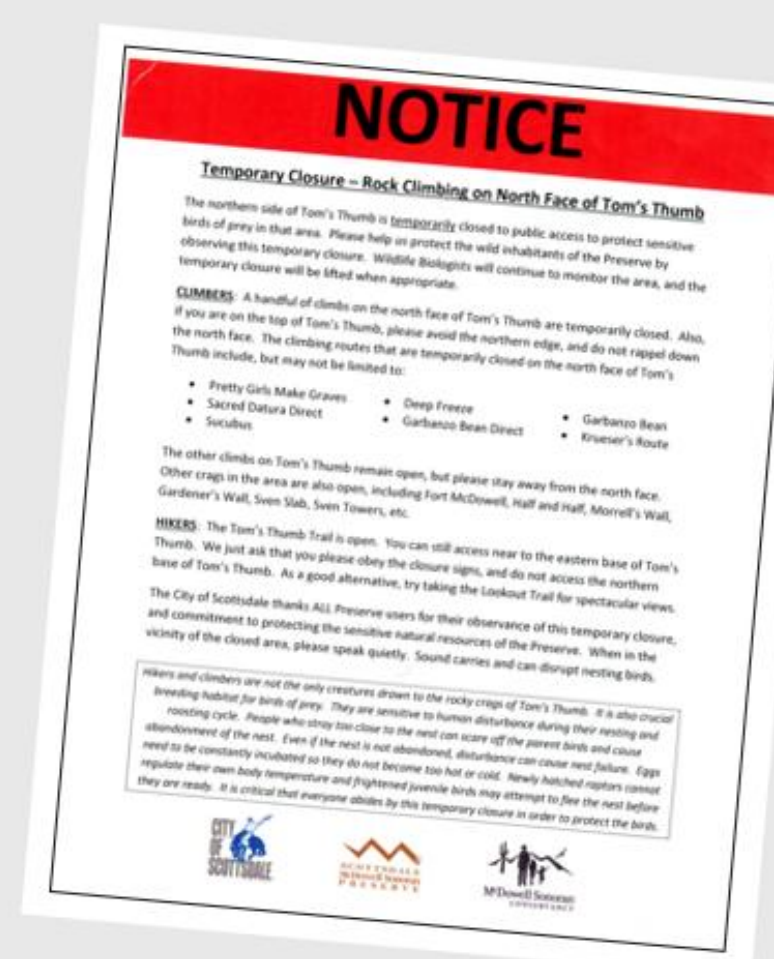
Closure starts February 1

7 climbing routes

Avoid north edge

No rappelling on north face

No access to north base of Tom's Thumb



METHODOLOGY (cont.)

Citizen scientist observers are trained using various methods:

- Workshop with AZGFD and Liberty Wildlife
- In-the-field and mentor training by a Certified Citizen Scientist project lead

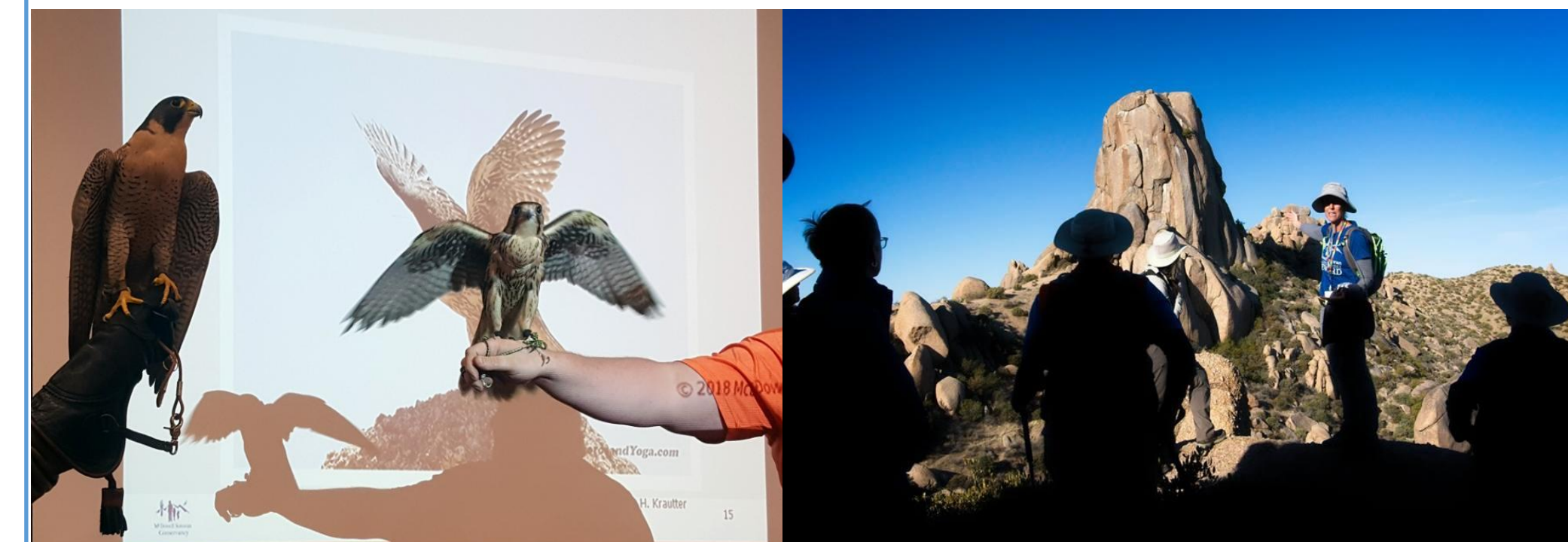


Photo J. Lund

Photo A. Ranz

An observation site was selected to provide the best view of the nest and minimal impact to the falcons.



Photo M. Jensen

Citizen scientists monitoring frequency was adjusted based on the falcons observed reproductive timeline, with more frequent monitoring occurring during key times in the nesting cycle.

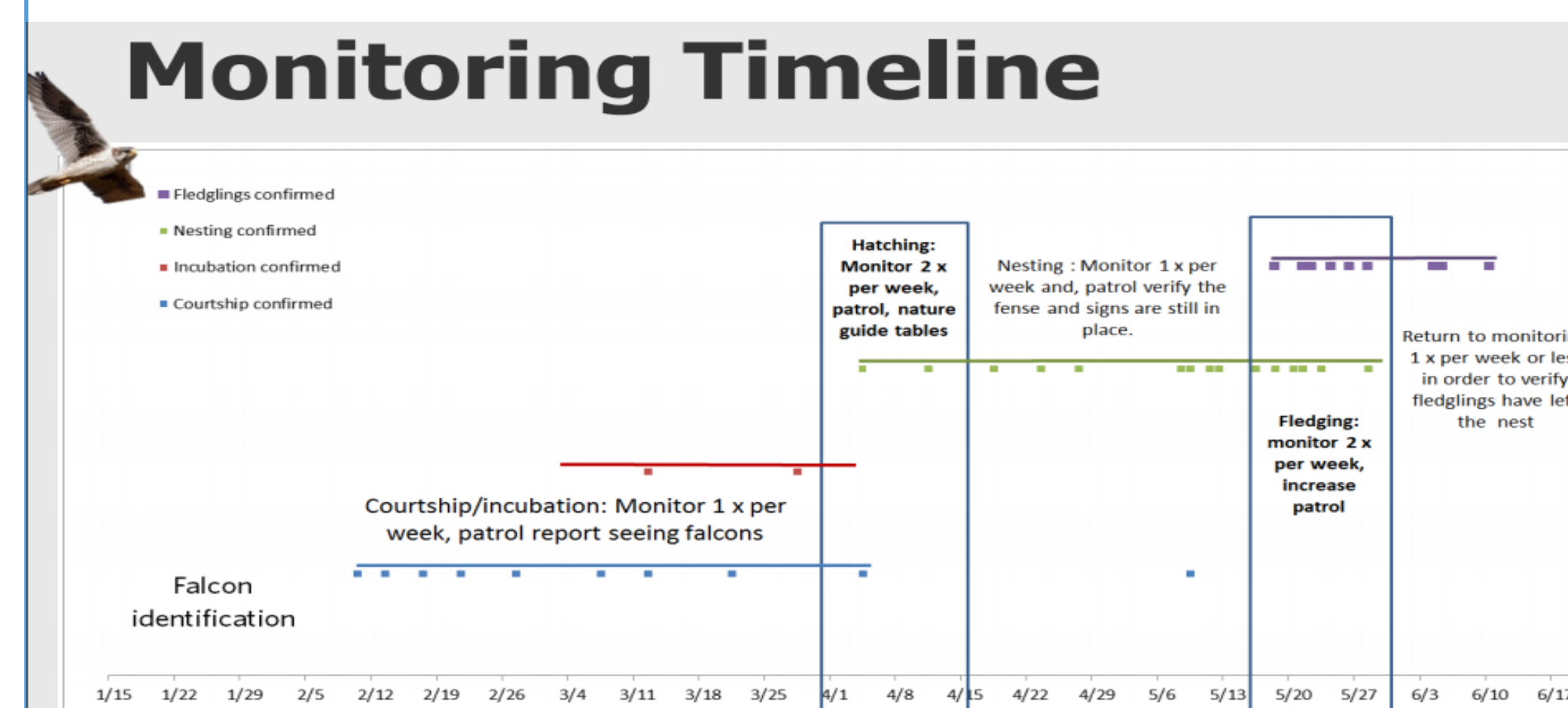


Figure 3. Monitoring frequency based on reproduction phase

RESULTS

We have engaged 50 citizen scientists in this project. Through their efforts, we have gained insight into prairie falcon behaviors, improved our monitoring protocols and increased awareness of human-wildlife interactions.

Prairie falcon productivity has varied by year, as recorded by number of falcons fledged: three in 2015; five in 2016 and two in 2017. Monitoring continues in 2018.

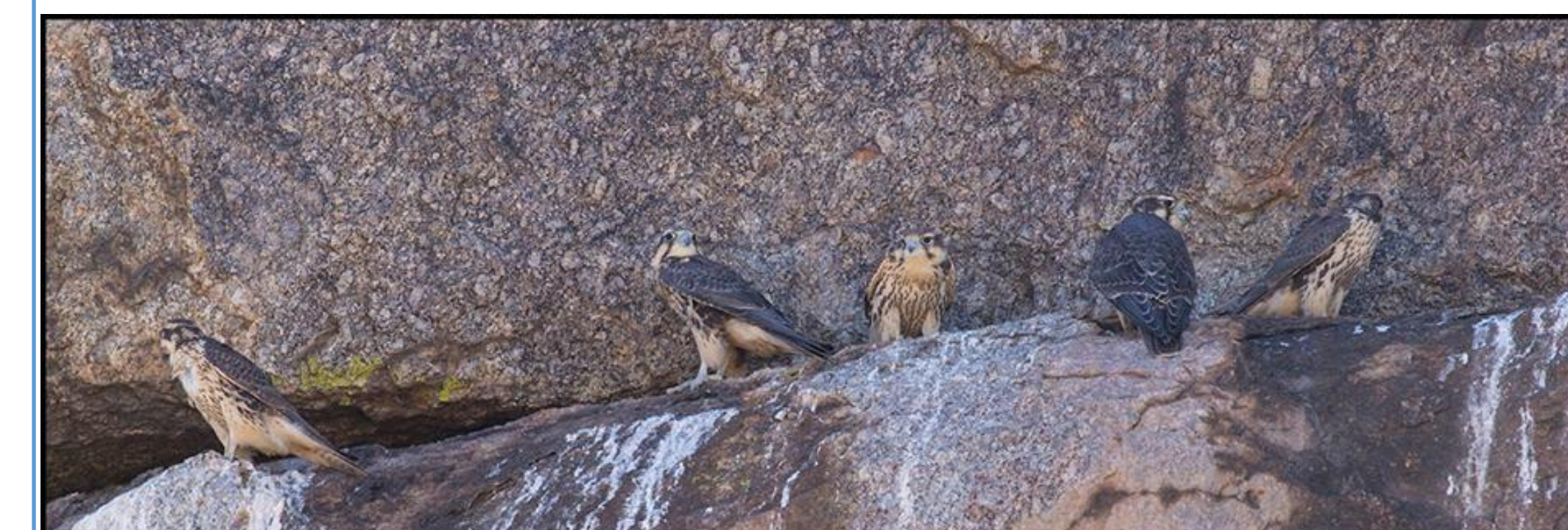


Photo H. Krautter

CONCLUSIONS

Preliminary results indicate the falcons' ability to successfully reproduce over three consecutive years with seasonal closures in place, in spite of noise and disturbances associated with high numbers of people visiting the area.

This project is an excellent way to engage volunteers in learning about and monitoring wildlife. The results we obtain also provide the opportunity to educate visitors about this species and the importance of protecting their habitat in McDowell Sonoran Preserve.

REFERENCES

¹Arizona Game and Fish Department. Peregrine Falcon Monitoring Protocol Occupancy, Nest Success, Productivity. http://www.azgfd.gov/w_c/Peregrine_Falcon_Nest_Site_Monitoring.shtml.

ACKNOWLEDGEMENTS

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