

East Maui Rapid ‘Opihi Monitoring
3-year Study Mid-point September 2014-January 2016
Summary Report



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Overview

In collaboration with Dr. Chris Bird of Texas A&M University, The Nature Conservancy (TNC) provided technical and logistical support to two Maui community groups in conducting intertidal ‘opihi surveys in an effort to return this fishery to abundance. These coastal communities, referred to in this report as “east Maui” and “Kīpahulu,” have windswept, rocky shorelines that provide ideal habitat for the prized ‘opihi, an endemic Hawaiian limpet. Dr. Chris Bird of Texas A&M University is leading the three-year study designed to assess the effectiveness of the voluntary ‘opihi rest areas at both sites, including study design, quality control, training, and data analysis. TNC’s Maui Marine Coordinator Roxie Sylva is coordinating teams of staff, researchers, community members, and volunteers to conduct the rapid assessment surveys. Between September 2014 and January 2016, rapid surveys have been conducted at each site three to four times.

The Project partners are Texas A&M University, Haleakalā National Park, Kīpahulu ‘Ohana, Nā Mamo O Mū‘olea, and The Nature Conservancy, with participation from other community groups and individuals.

Methodology

The methodology involves counting every ‘opihi makaiāuli, or blackfoot ‘opihi, within the two rest areas and at four comparison sites 100 meters and 1000 meters north and south of each of the rest areas. Trained community and partner surveyors count and size every blackfoot ‘opihi within 2m-wide transects along the shoreline, working in teams of 2-4 people. ‘Opihi are sized into three size classes: juvenile, sub-adult, and adult.

Presentation of Results

In April 2016, Dr. Chris Bird presented to the communities of east Maui the data that had been collected from September 2014 to January 2016. The following is a summary of Dr. Bird’s presentation. Complete slides of the presentation are available in Appendix A.

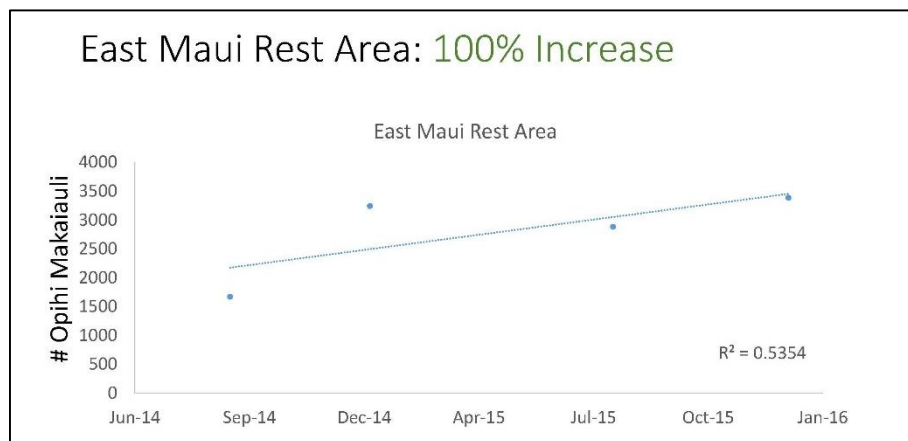


Figure 1. 100% overall increase in ‘opihi abundance (all size classes) at east Maui rest area.

East Maui

Within the 75-meter rest area in east Maui, there was a 100% increase in abundance overall (all size classes) (Figure 1). Juveniles increased, although it was not a clear trend. Sub-adults in the rest area saw a 100% increase over the study period, while adults increased 100%, then decreased 50% (Figure 2).

In the comparison areas outside of the east Maui rest area, the overall data showed the following:

- 1000m N – 40% increase
- 100m N – two sites
 - North A – 300% increase
 - North B – 250% increase
- 100m S – 200% increase
- 1000m S – 20% decrease

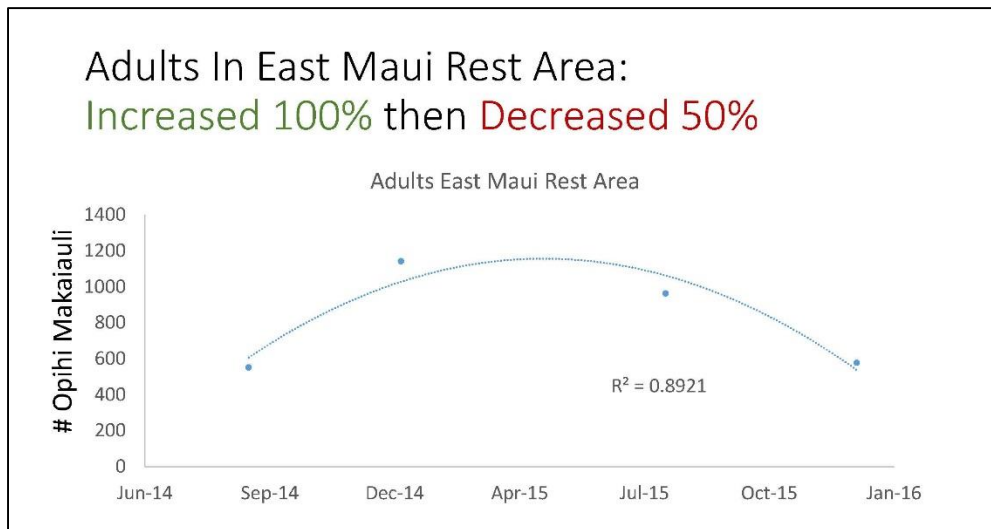


Figure 2. Adult ‘opihi in the east Maui rest area per survey, showing an increase of 100%, then a decrease in 50%.

Kīpahulu, Maui

Overall, the data collected in the Kīpahulu rest area showed an increase in abundance. Within the rest area along 1,600 meters of coastline, the rapid assessment method was used in seven monitoring areas, with the following results. (Note: areas D and G are inaccessible rocky coastline.)

- Rest Area A – 50% decrease
- Rest Area B – 25% increase
- Rest Area C – 50% increase (Figure 3)
- Rest Area E – 100% increase
- Rest Area F – 50% increase
- Rest Areas H and I – 35% increase

When the data is parsed out by size class, it was found that juveniles are increasing, but it is not a clear trend of increase. The population was fairly stable, then there was a large spike/increase in January. In areas A, B, H and I, there was a 100% increase for the sub-adult size class over the study period. This clear increasing trend may indicate good recruitment and potential for more adults. For adults in areas A, B, H and I, there was a 50% decrease.

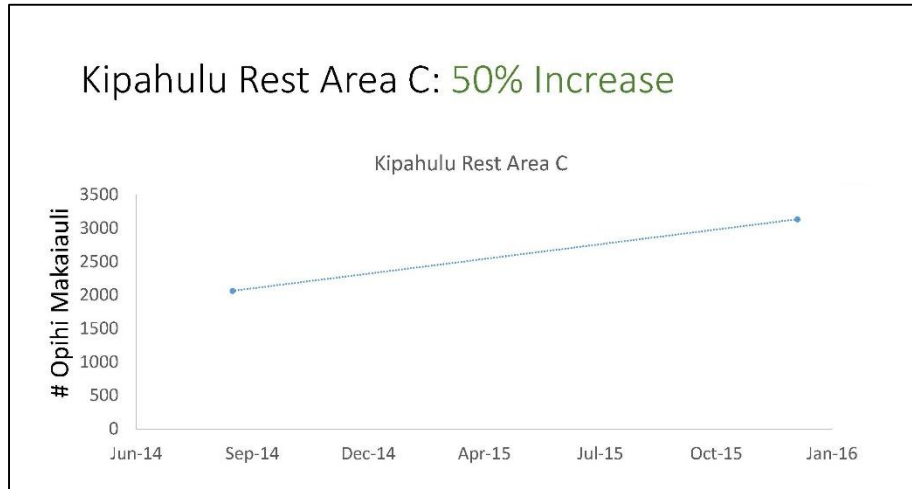


Figure 3. All size classes of ‘opihi in the Kīpahulu rest area C, showing a 50% increase.

In the comparison areas outside of the Kīpahulu rest area, the overall data showed the following:

- Kīpahulu 1000m N – 25% increase
- Kīpahulu 100m N – 100% increase, then a 25% decrease (Figure 4)
- Kīpahulu 100m S – 150% increase
- Kīpahulu 1000m S – 180% increase

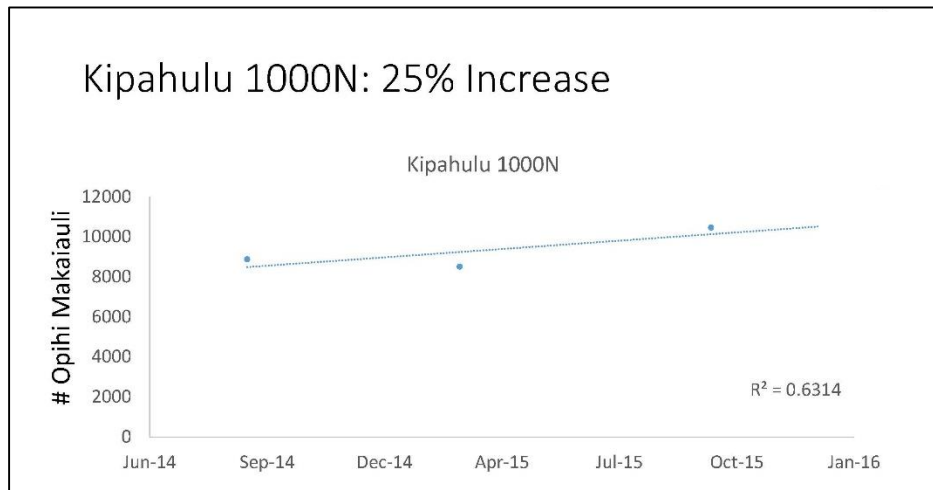


Figure 4. Results showing a 25% increase in all size classes at 1,000 meters north of the Kīpahulu rest area.

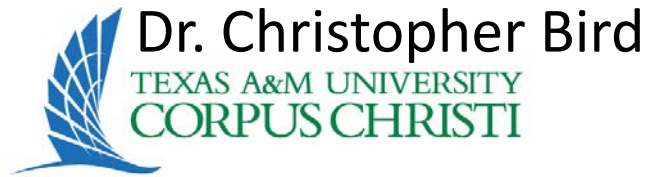
Summary

Overall, there are clear increases in the population in the rest area sites and comparison sites, with a few exceptions. The reasons for this change are not yet clear, and it is too soon to say if the increases are the effect of people complying with the voluntary rest area or to increased recruitment.

Partners will continue to collect data approximately every quarter for another 18 to 24 months to complete the 3-year Texas A&M led study.

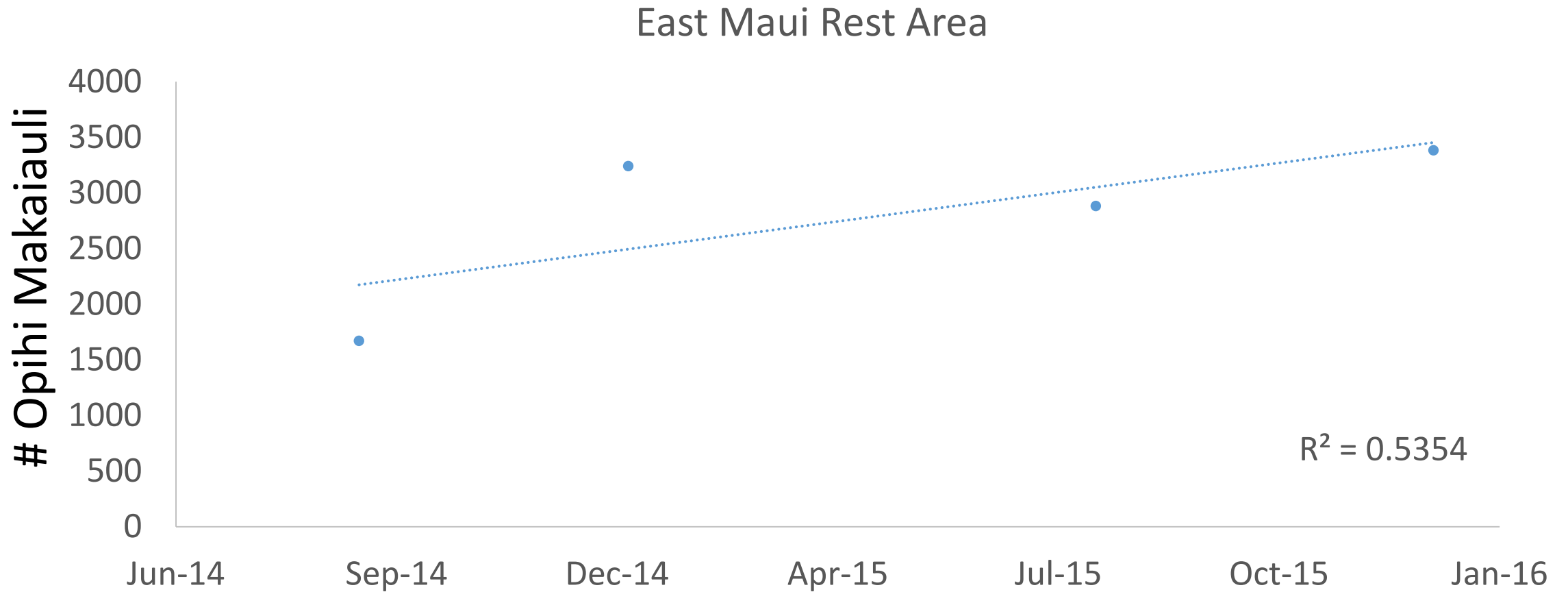
We would like to extend our appreciation to the NOAA Coral Reef Conservation Program for supporting this project and we look forward to a continued partnership. *Mahalo Nui Loa!*

Interim Report On East Maui Rest Area 2014-2016



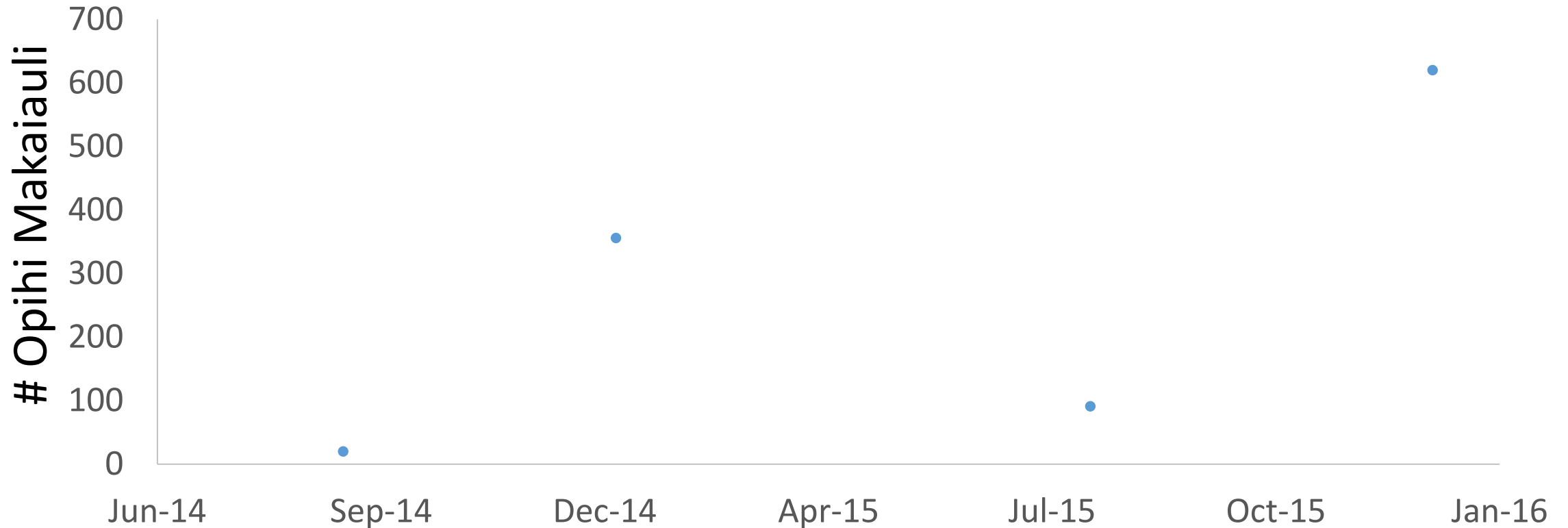
Kipahulu Ohana, Na Mamo O Muolea, The Nature Conservancy

East Maui Rest Area: 100% Increase



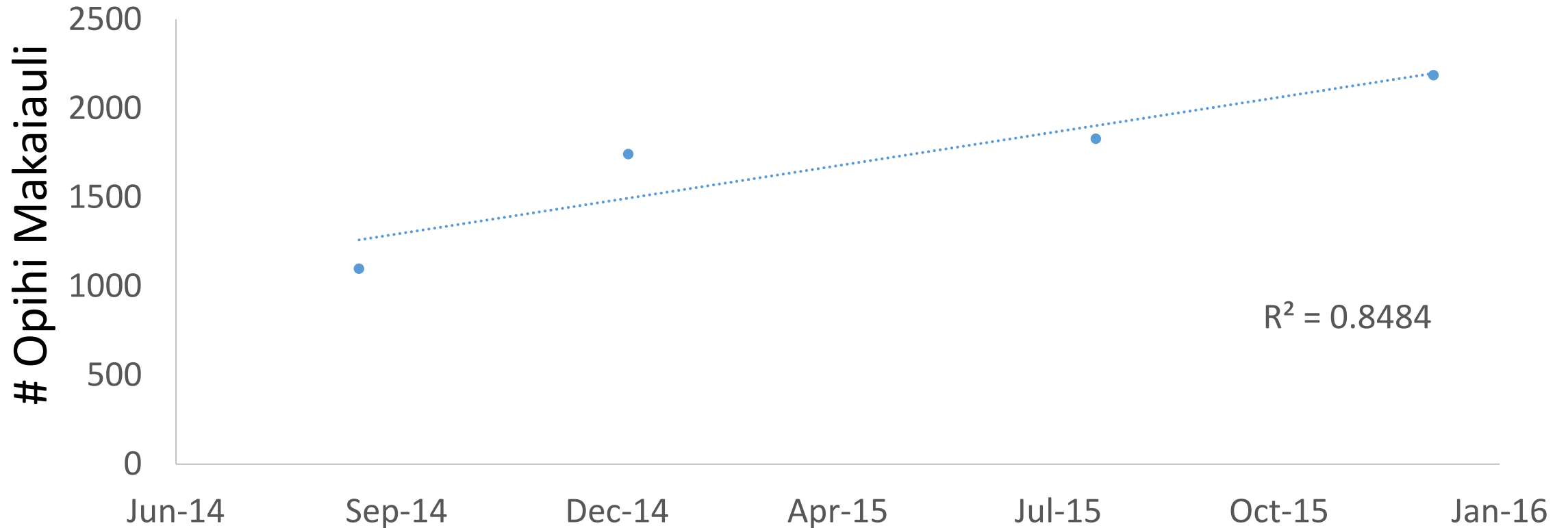
Keiki In East Maui Rest Area: Increasing

Keiki East Maui Rest Area



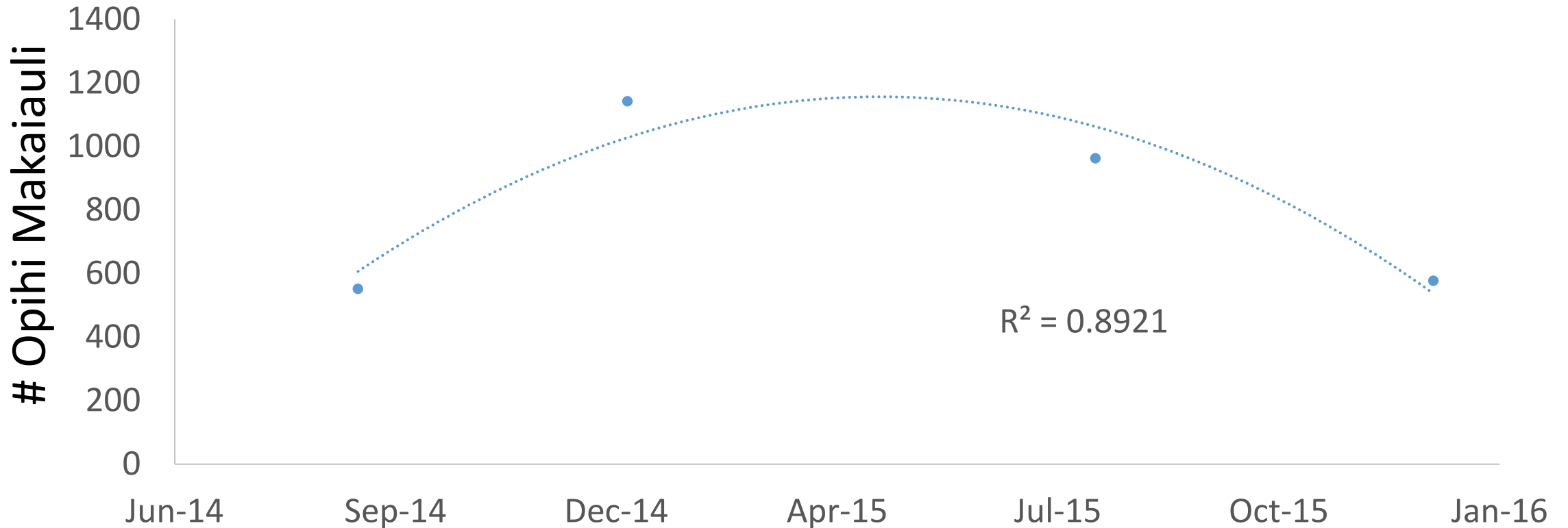
Teenagers In East Maui Rest Area: >100% Increase

Teenagers East Maui Rest Area

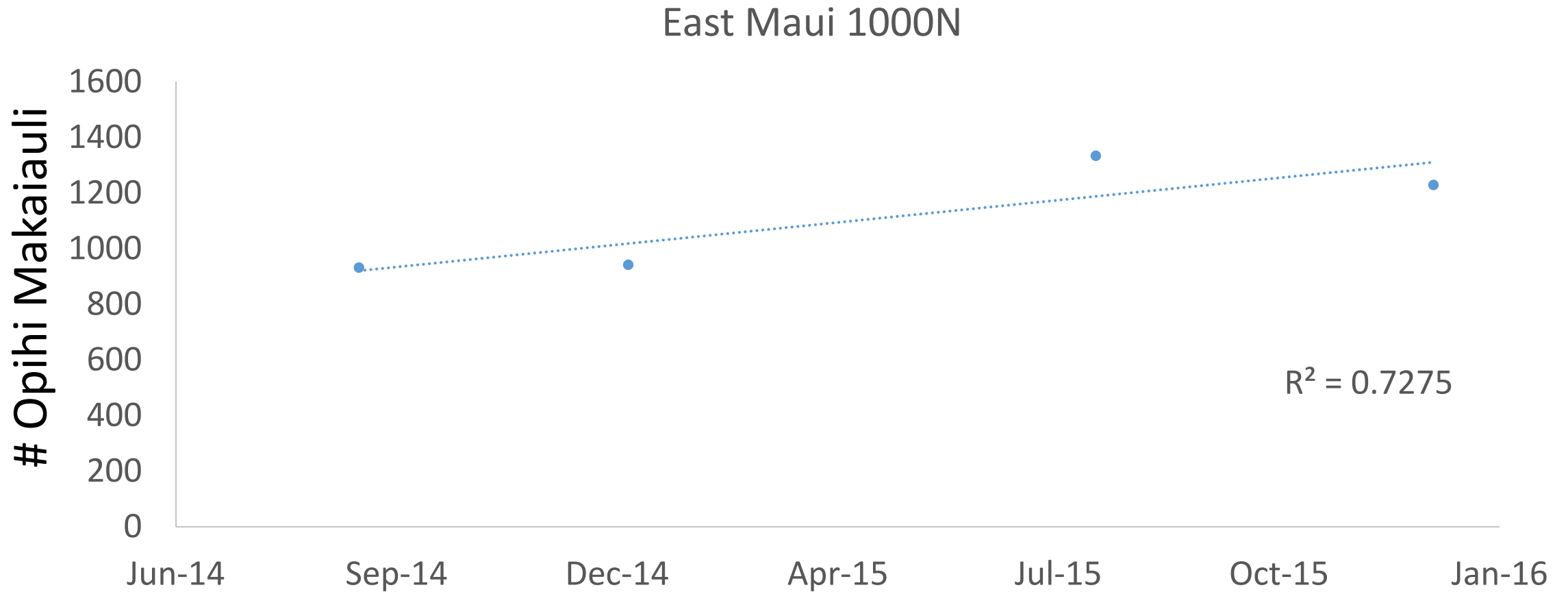


Adults In East Maui Rest Area: Increased 100% then Decreased 50%

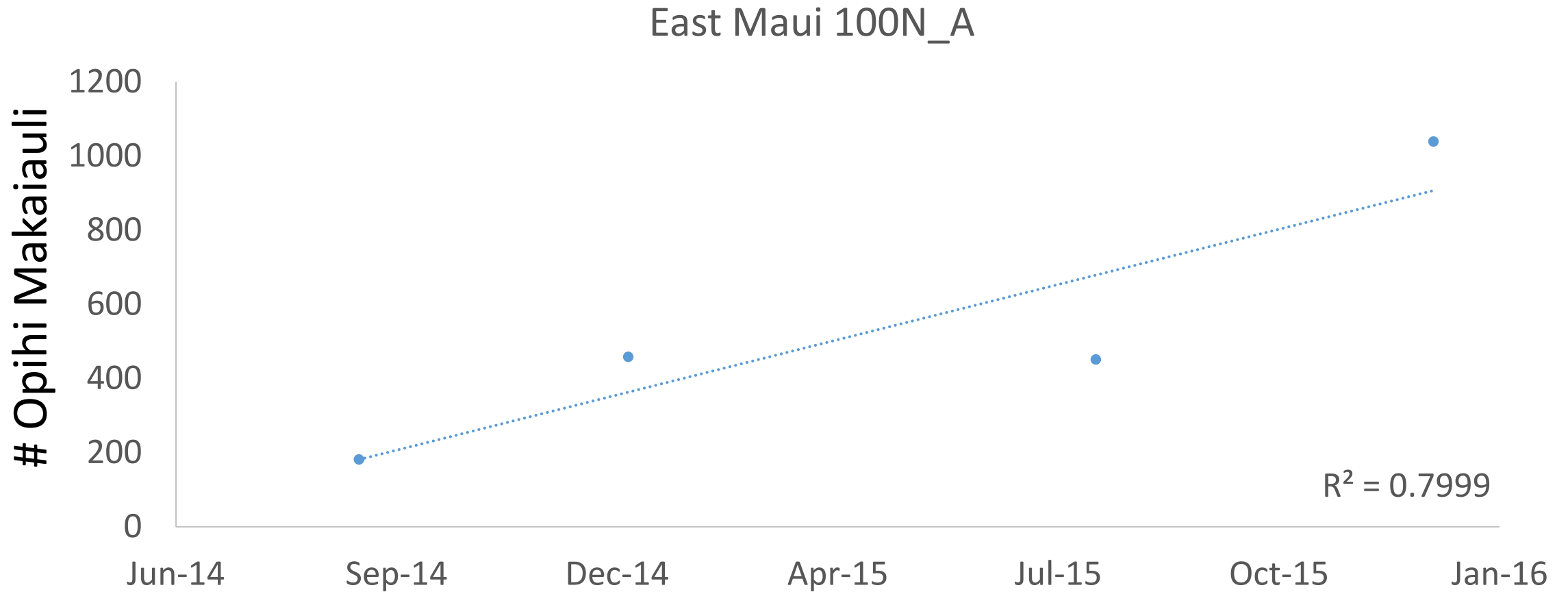
Adults East Maui Rest Area



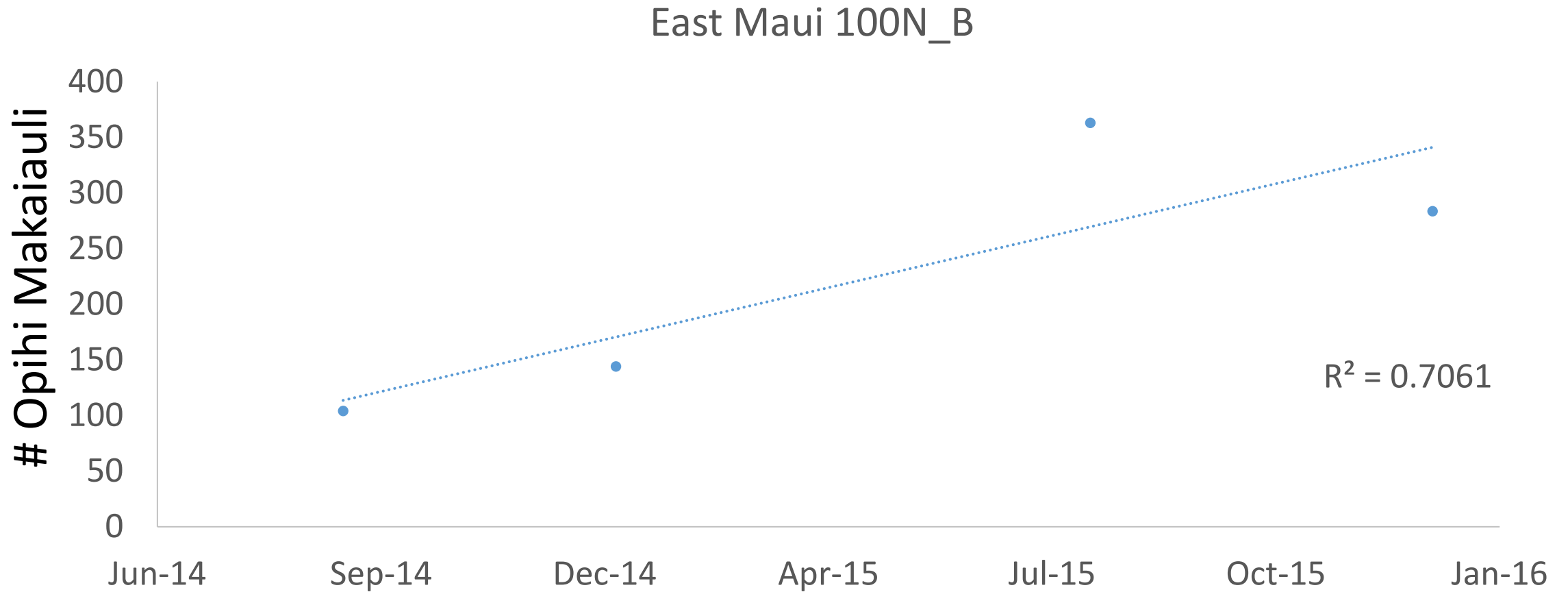
East Maui 1000N: 40% Increase



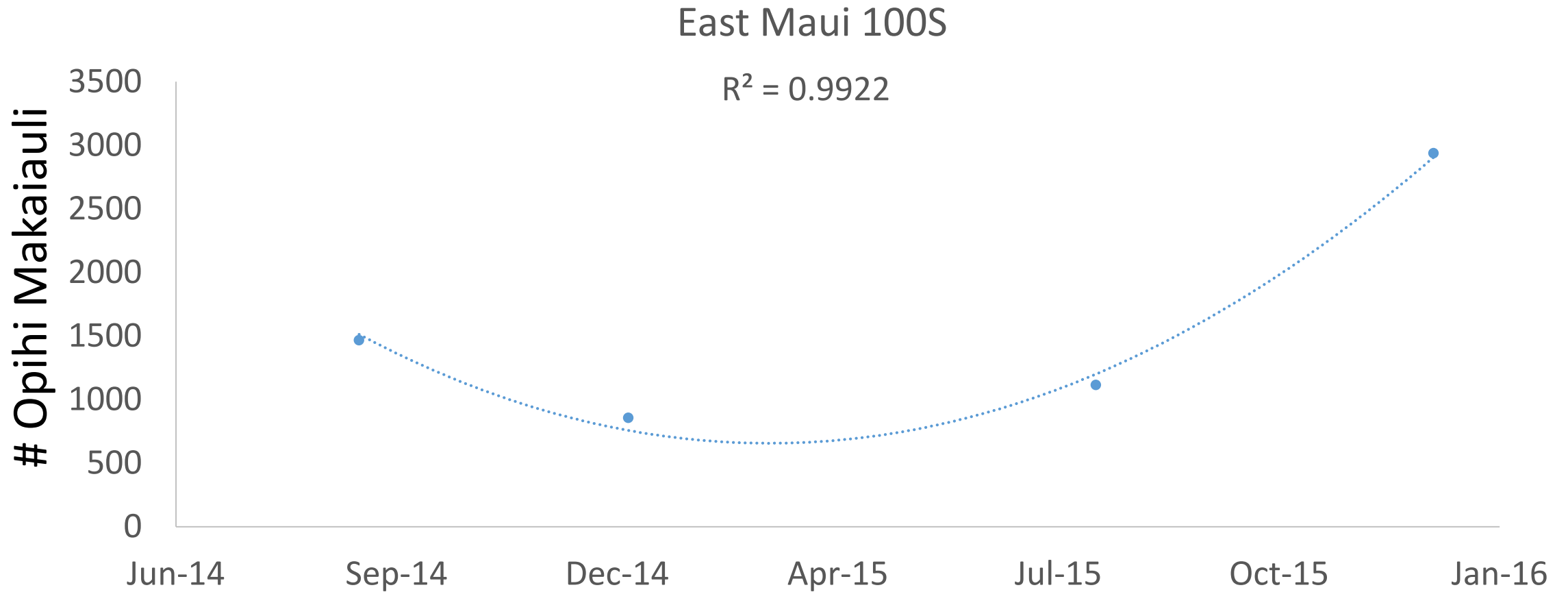
East Maui 100N_A: 300% Increase



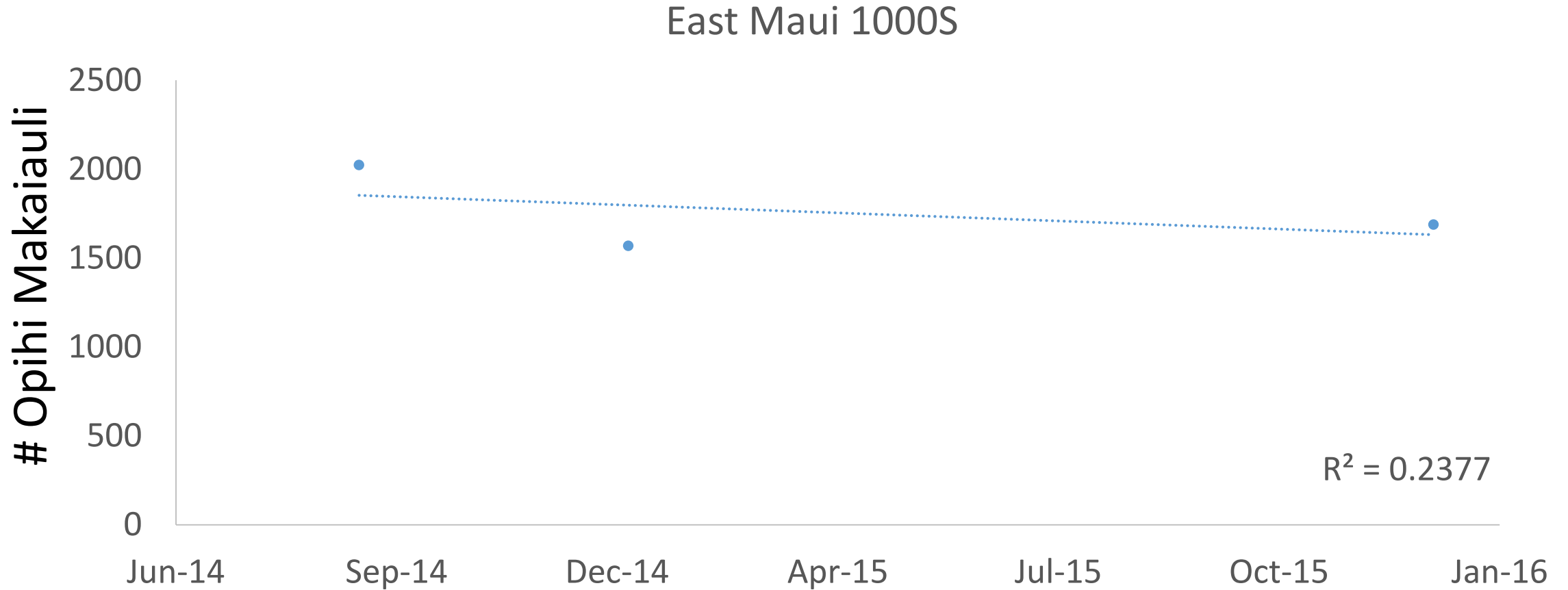
East Maui 100N_B: 250% Increase



East Maui 100S: 200% Increase



East Maui 1000S: 20% Decrease



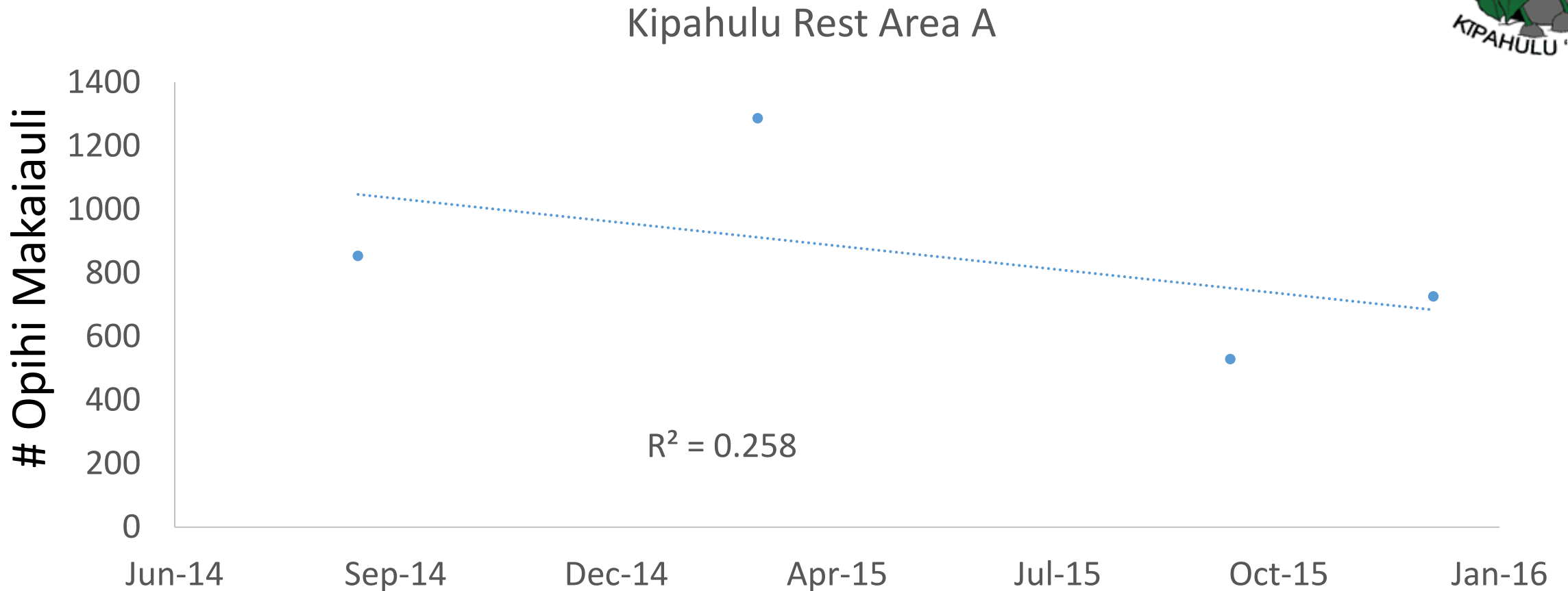
Interim Report On Kipahulu Rest Areas 2014-2016



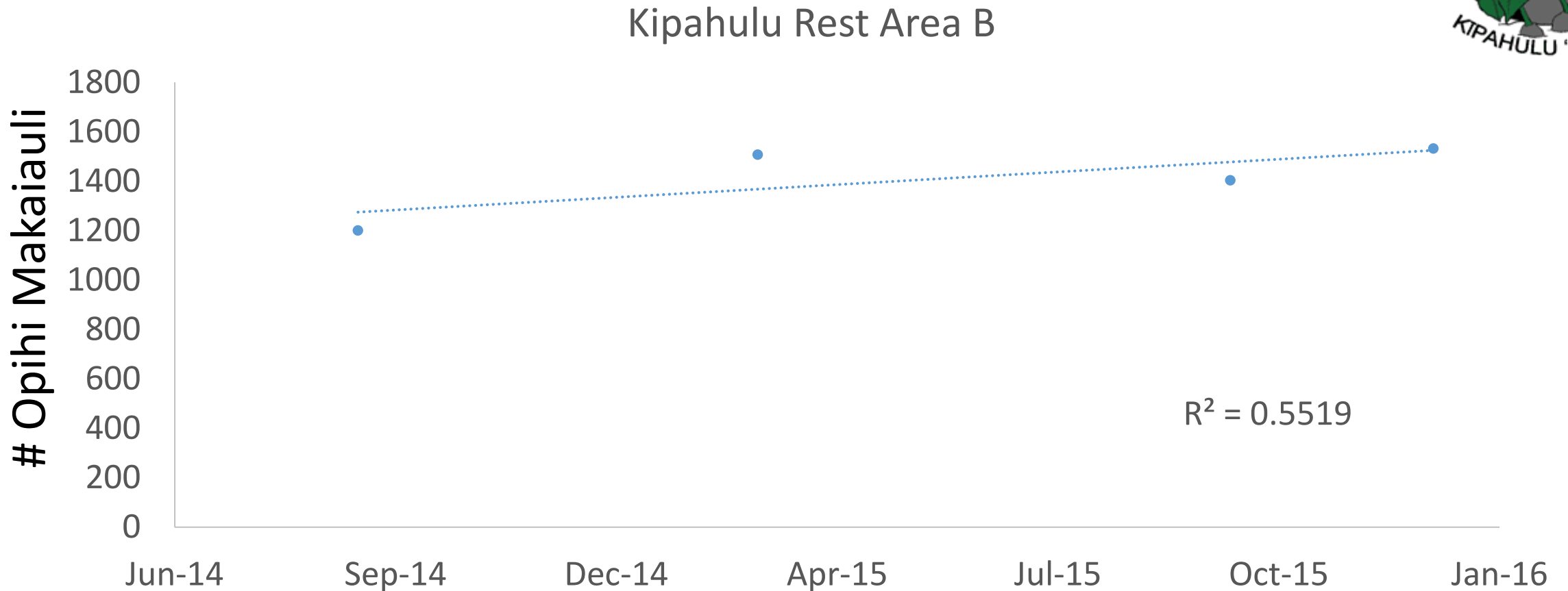
Kipahulu Ohana, Na Mamo O Muolea, The Nature Conservancy,
Haleakala National Park



Kipahulu Rest Area A: 50% Decrease



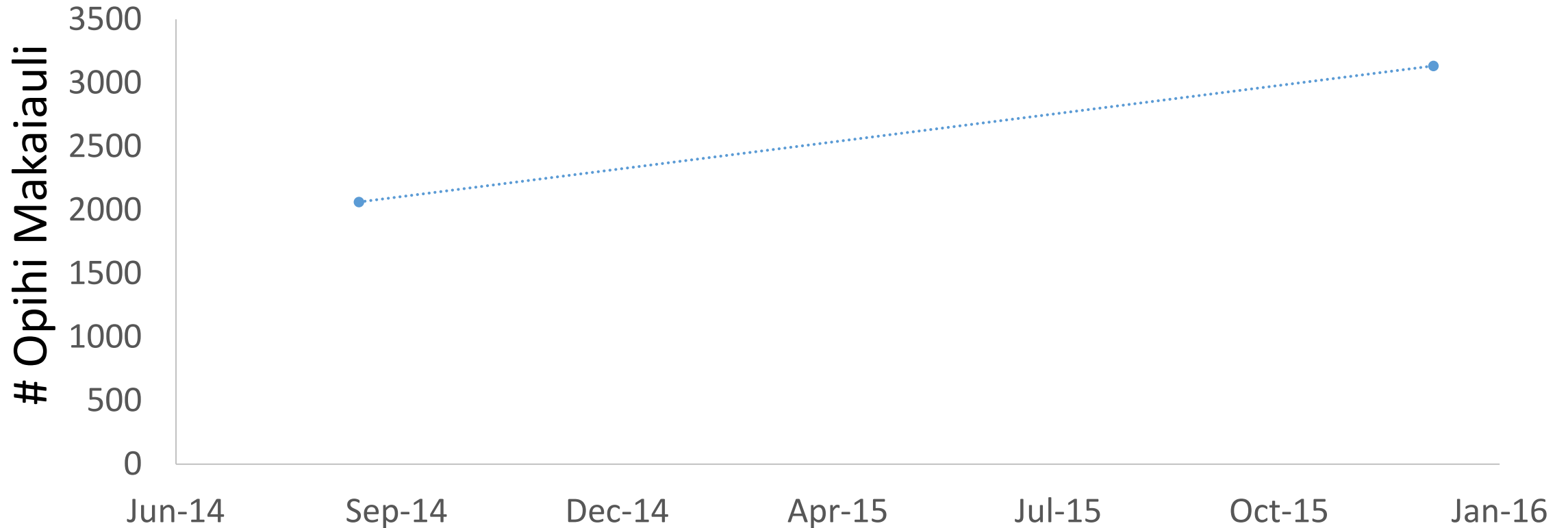
Kipahulu Rest Area B: 25% Increase



Kipahulu Rest Area C: 50% Increase



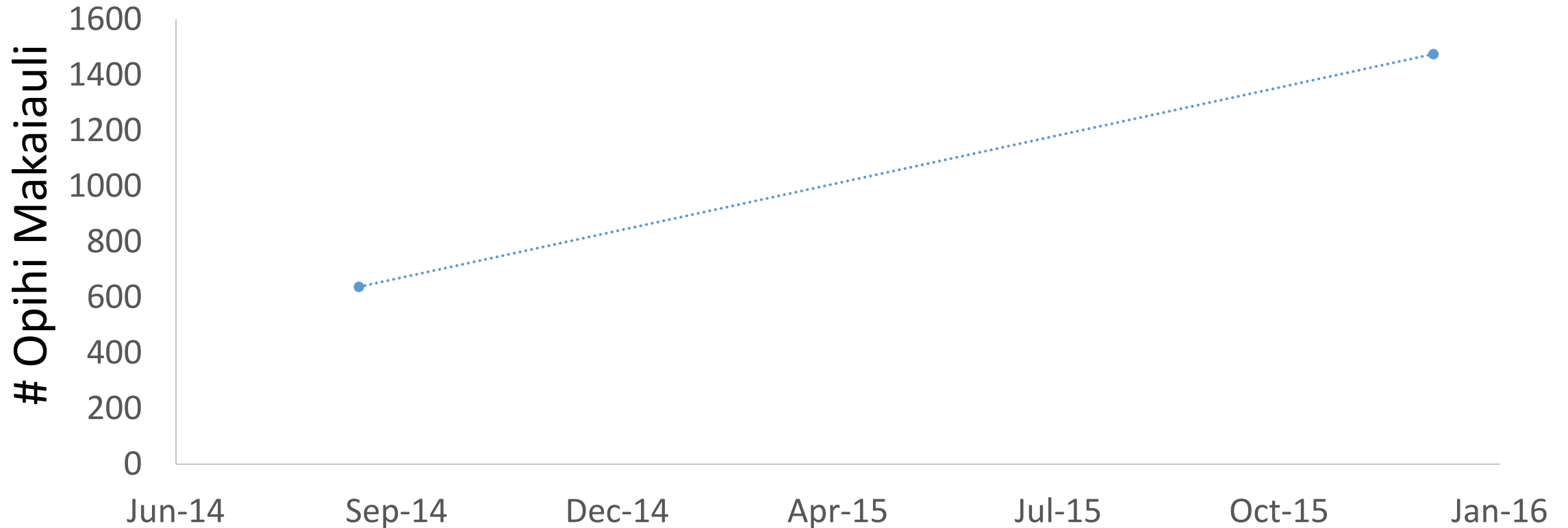
Kipahulu Rest Area C



Kipahulu Rest Area E: >100% Increase



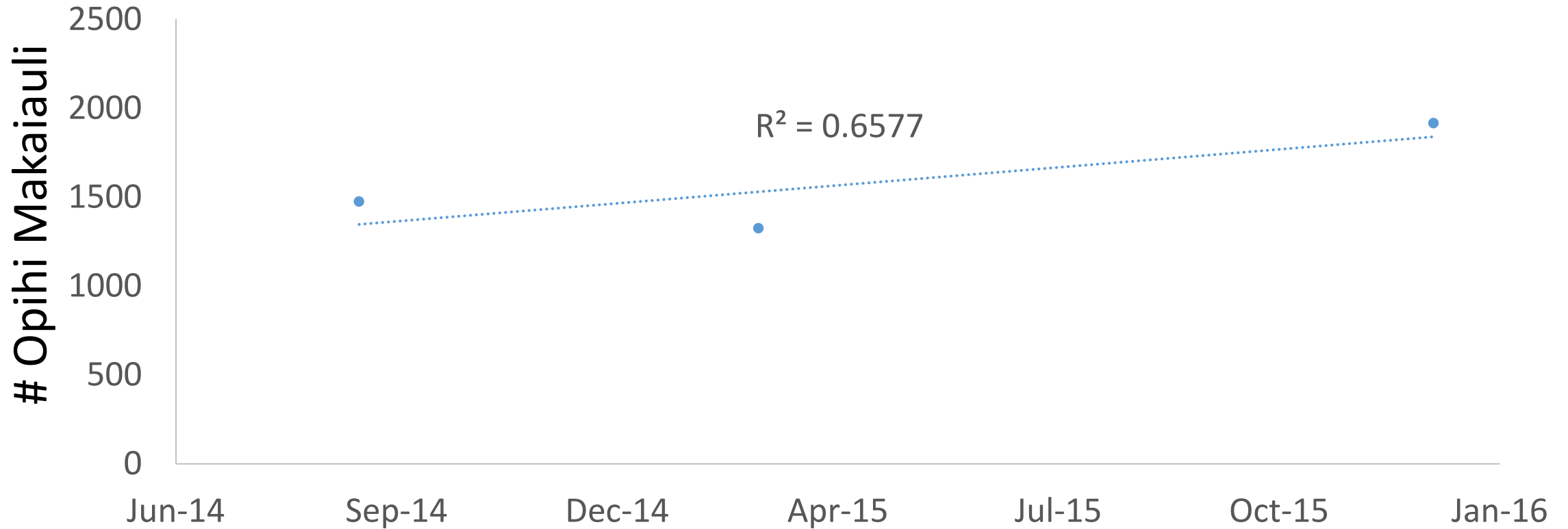
Kipahulu Rest Area E



Kipahulu Rest Area F: 50% Increase



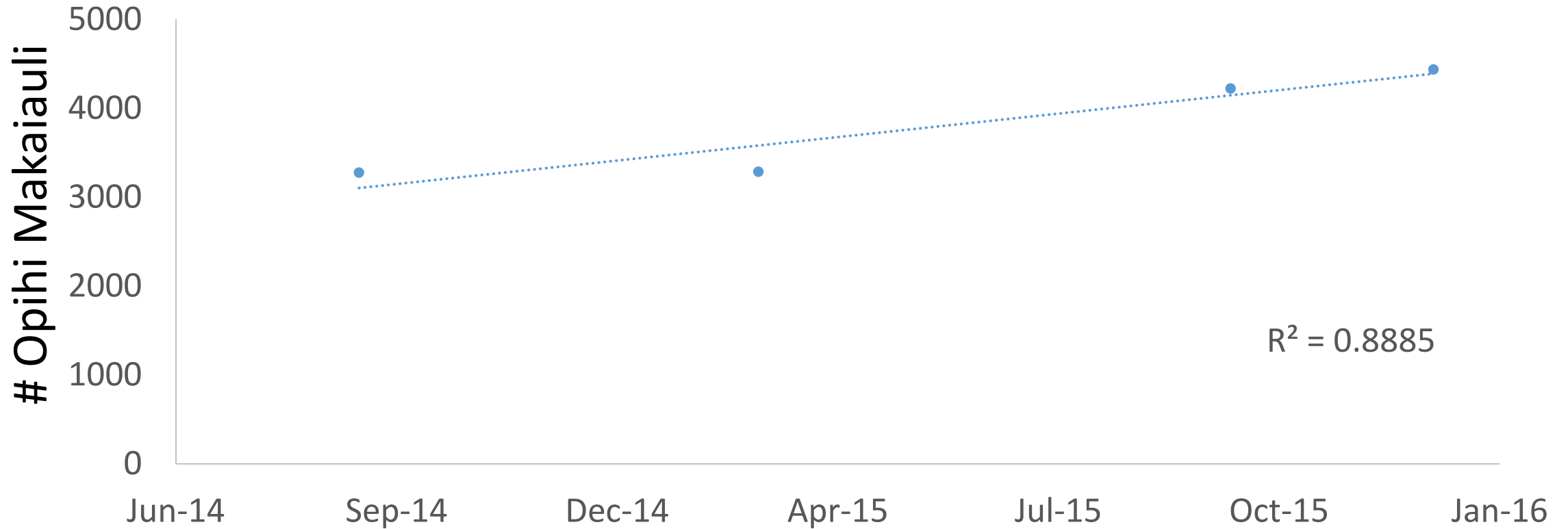
Kipahulu Rest Area F



Kipahulu Rest Area H & I: 35% Increase



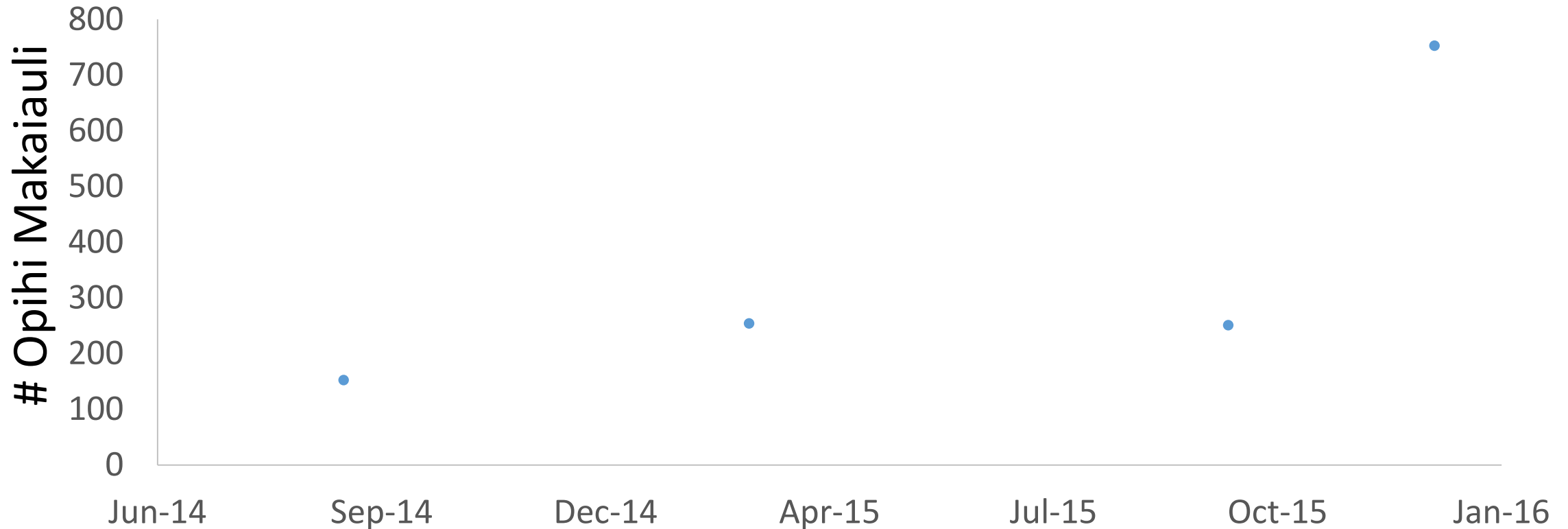
Kipahulu Rest Area H&I



Keiki In Kipahulu Rest Areas: Increasing?



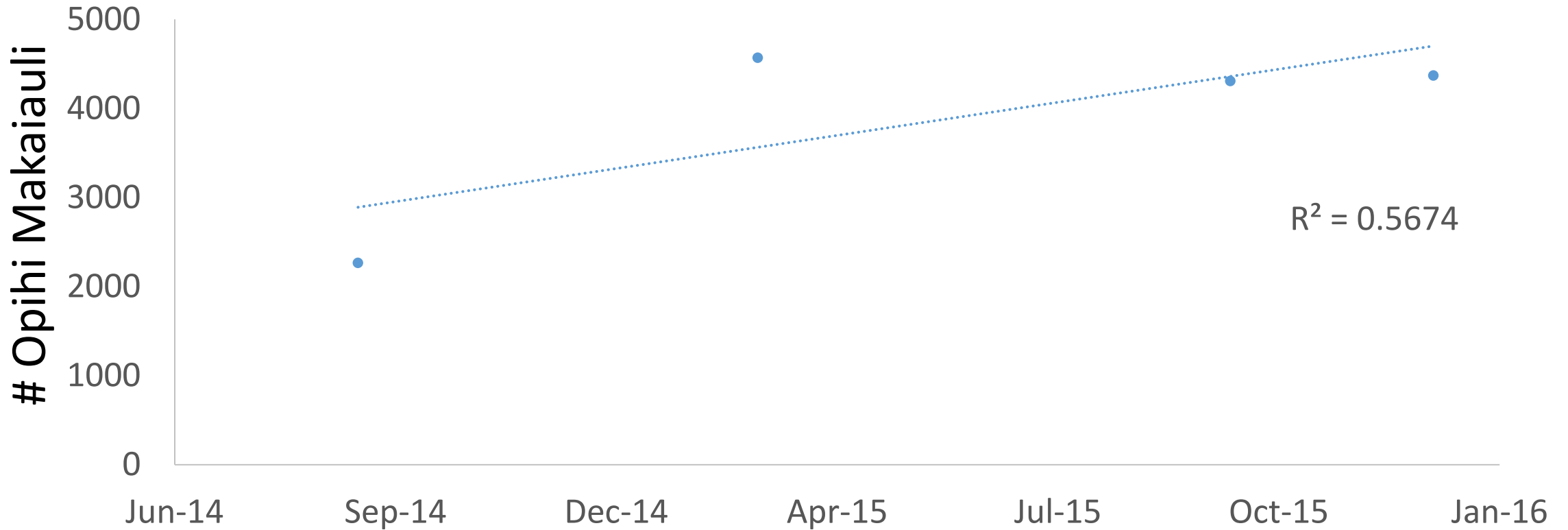
Keiki Kipahulu Rest Areas A, B, H, I



Teenagers In Kipahulu Rest Area: >100% Increase



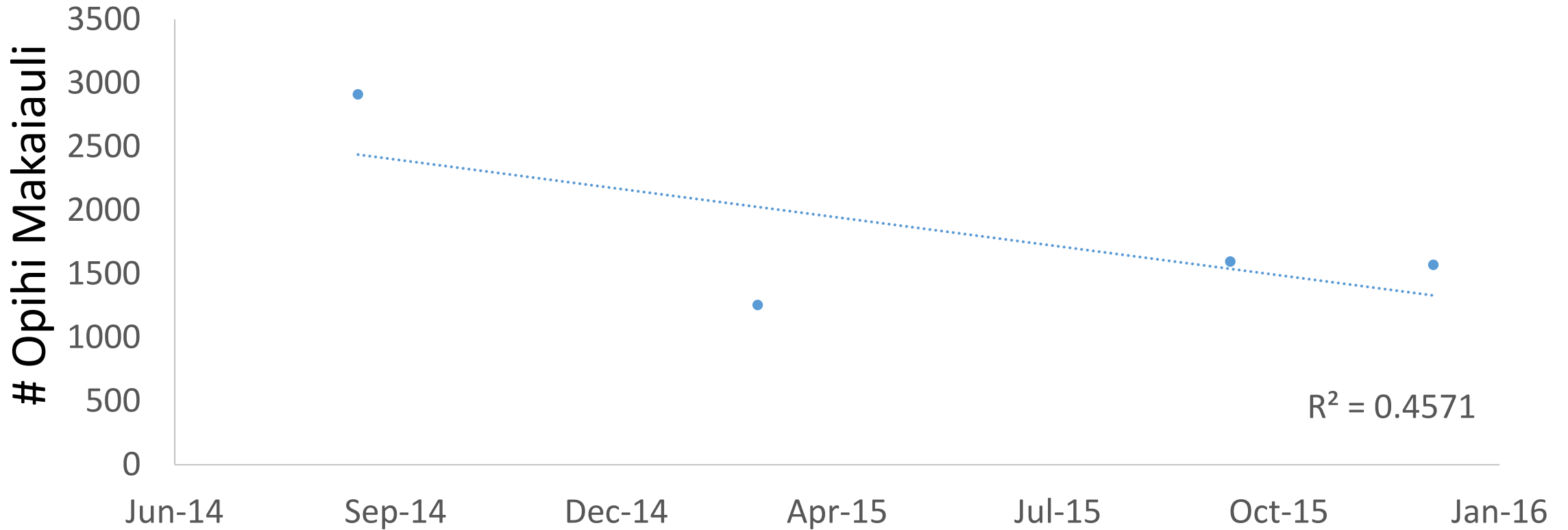
Teenagers Kipahulu Rest Area A, B, H, I



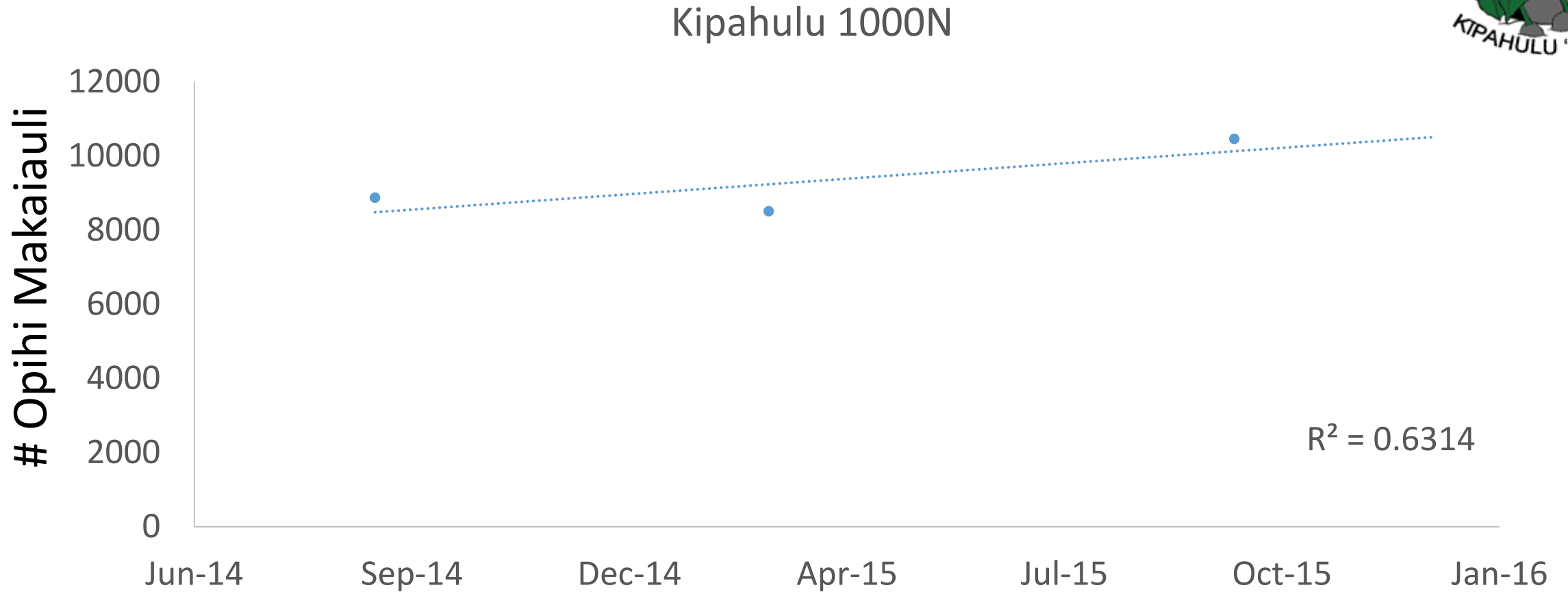
Adults Kipahulu Rest Areas A, B, H, I: 50% Decrease



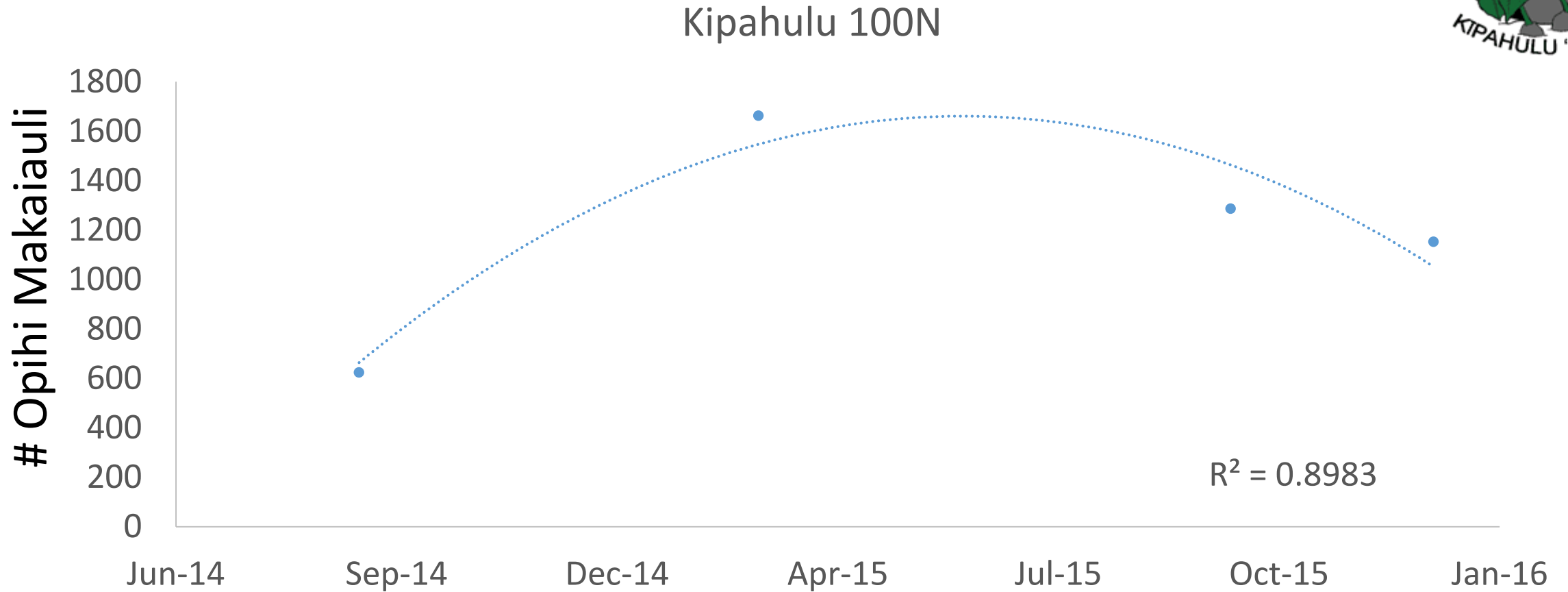
Adults Kipahulu Rest Areas A, B, H, I



Kipahulu 1000N: 25% Increase



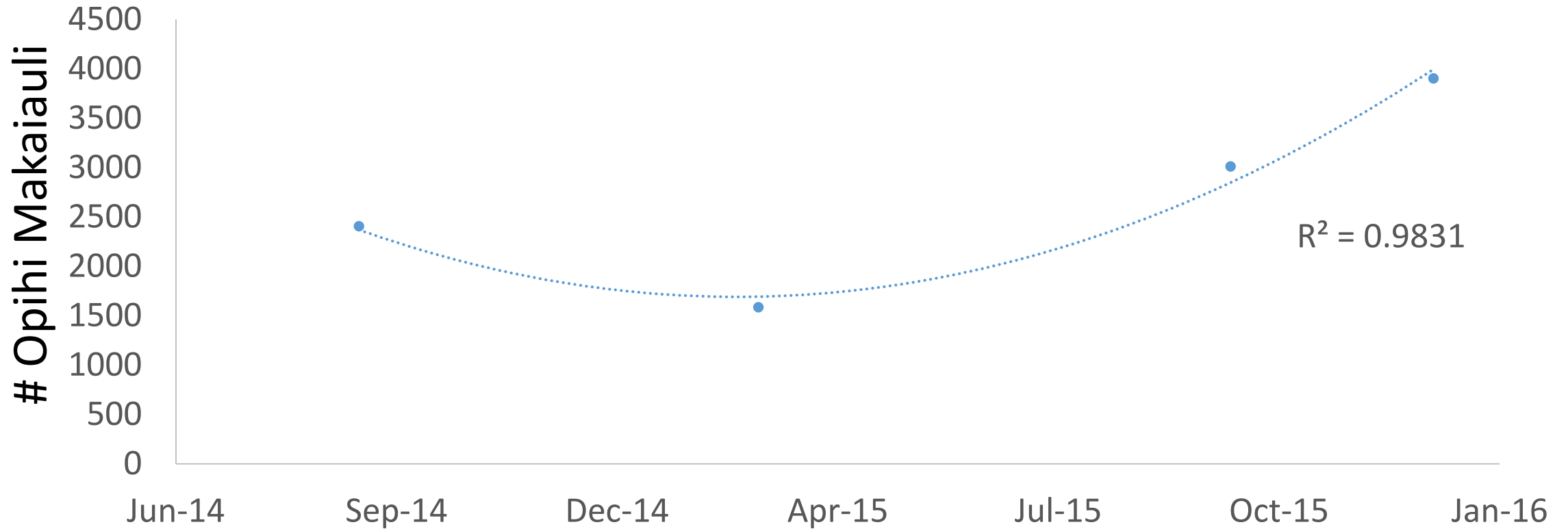
Kipahulu 100N: >100% Increase Then 25% Decrease



Kipahulu 100S: 150% Increase



Kipahulu 100S



Kipahulu 1000S: 180% Increase

