



NATURAL AND HISTORIC RESOURCES UNIT

BROWN BOOBY (*SULA LEUCOGASTER*) MONITORING PROGRAM

YEAR REPORT 2010



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Satellite image: Google Earth**



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1. Introduction

This report shows and compares the results of three continuous years (2008 to 2010) monitoring the number of individuals and the percentage of mature and immature Brown Boobies roosting at the North of the island of Bonaire, between Malmok and South of Boka Katuna. The chosen base line number of individuals dates back to the 1950's and was taken from Dr. Voous book "Birds of The Netherlands Antilles". Dr. Voous reported approximately 200 birds in his well-known book. We also provide recommendations for management. For information about methodology, the study area and the background of this project refer to the report. "Brown Booby Monitoring Program. Year Report 2008", available from STINAPA Bonaire (www.stinapa.org).

2. Objectives

2.1 Main Objectives

- Estimate the total number of Brown Boobies roosting at Malmok throughout the year and their seasonal variability in numbers.
- Determine the ratio of immature to adults.
- Find indications of breeding or nesting activities.
- Compare numbers of Brown Boobies from 2008 to 2010

2.2 Secondary objectives.

- Determine the presence/absence of rare sea birds in the roost area, like Brown Noddies, Masked Boobies and Red-footed Boobies among others.
- Learn about bird behaviour and ecology by observations during the surveys.
- Find and identify ringed birds.
- Educate and directly involve local residents in bird conservation activities.

3. Change in Methodology

The lack of staff in the Natural and Historic Resources Unit resulted in a impossibility to find and coordinate all the volunteers required by the original methodology to carry out the surveys of July and October. After considering several options including the cancellation of the surveys, it was decided to proceed using only one surveyor walking along the 1.2Km of shoreline and counting birds on the roosting points as they were flushed. The numbers of mature and immature birds were kept by using a separate clicker for each category. Considering the objectives of this monitoring program and the fact that the detection probability of the individuals at the roost is very close to 100% with either methodology, we are confident that the data collected with this new method are comparable with the one obtained with the participation of the volunteers in previous surveys.

4. Results and Discussion

Looking at figure 1 we can observe that despite the variability in numbers for the 3 consecutive years and for the 4 different months surveyed each year, there is a clear yearly pattern in the abundance of birds at the roost with the highest numbers of individuals registered always in July and the lowest in January. The surveys of April and October show similarity in the number of birds.

Another significant result is that none of the surveys done in the three years produced a total absence (zero count) of birds at the roost and this situation was consistent not only during the scheduled surveys but also on 11 other observations throughout the year 2010, which were done at different times of the day on different months. We can infer from this information that the roost has a seasonal variability in abundance of individuals but the presence of birds is constant.

We can also see in figure 1 the lack of a trend in the abundance for the 3 years. This is an indication that the roost is not in a recovery process after the hunting rides reported by Dr. Voous neither is in a decline, but most likely in a stable state within the expected natural variability in number of individuals present. Therefore, we consider the roost to be “in good health” and STINAPA Bonaire will use the numbers obtained during the 3 years as a point of reference for evaluating the possibility of management actions in the future; when the numbers of individuals recorded at the roost differ significantly from the ones presented here, new reporting and/or management actions will be considered.

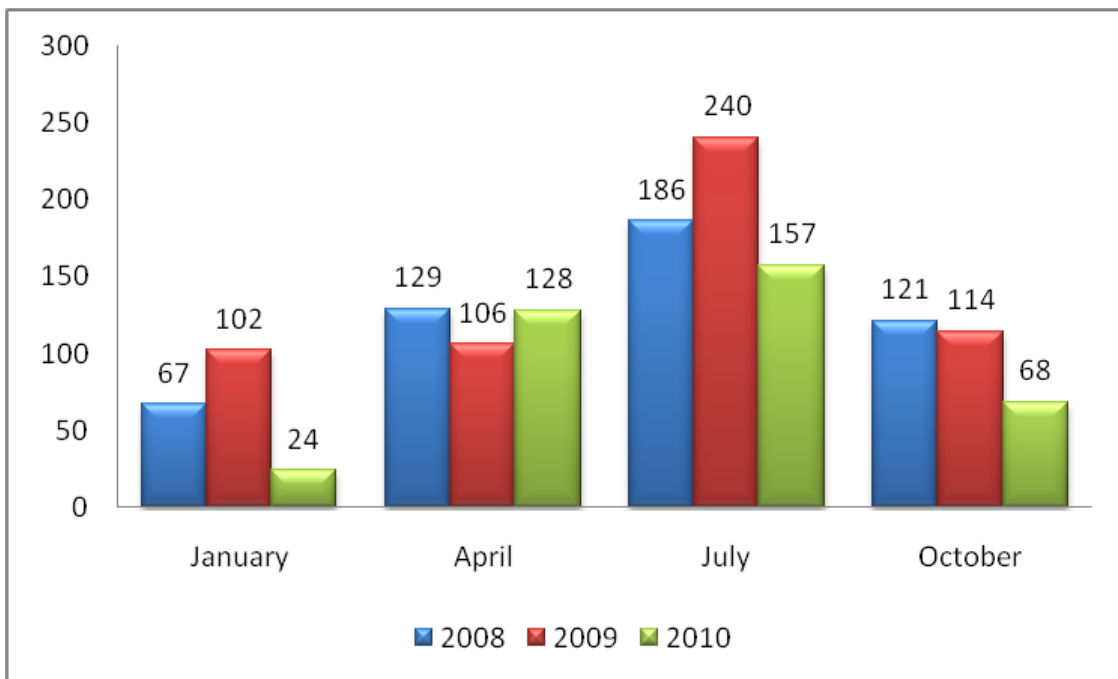


Figure 1. Number of Brown Boobies registered at Malmok from 2008 to 2010.

In 2010 we succeeded for the second consecutive year in the collection of data regarding the maturity of the birds at the roost. This presence of immature birds indicates that the population is productive, which is always a good indication of the population health, however we only have a small portion of the total population of this species roosting here at Malmok and we do not have enough information on the numbers of nesting pairs and other roosts located in this region, therefore we are not available to make definite conclusions on this matter. For the world population, the IUCN red list has Brown Booby classified as “least concern”.

Looking at figure 2 and comparing both years we can observe that the average percent of immature birds presence at the roosting area in 2009 was almost double compared to 2010, yet we can see a yearly pattern similar to the one shown by the total abundance (figure 1) but with the significant difference that April is the month yielding the largest numbers. If we look at both years together we can also estimate that immature birds account in average for approximately 16% or of the individuals at the roost but the variability can be quite high both monthly and for different years, (SD=7.31).

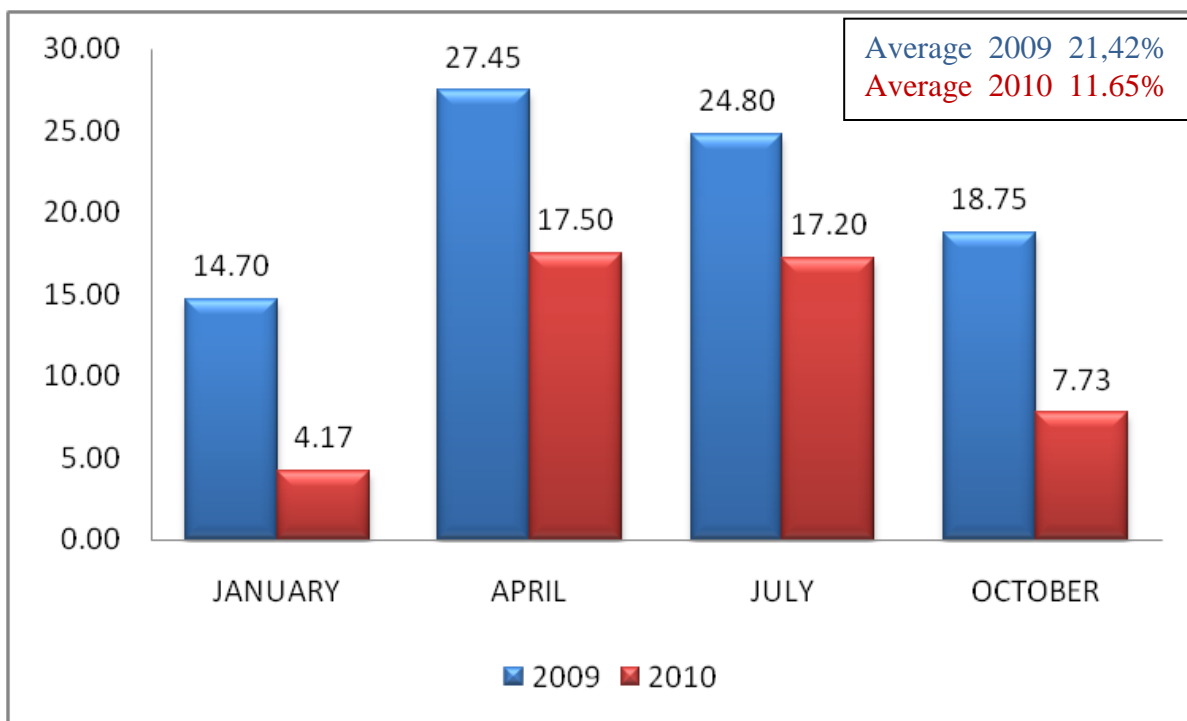


Figure 2. Percentage of immature birds at the roost in 2009 and 2010

During the month of June 2010, fishermen from Lac reported several individuals of Brown Booby on the fishermen pier at Sorobon who appeared sick or injured. This was corroborated by BNMP rangers who also surveyed for more individuals the eastern shoreline of the island, from Sorobon to Piedra Pretu. A total of 5 carcasses were recovered but in a very advanced stage of decomposition, therefore not viable for a visual inspection that could help determine the cause of death or their maturity. An e-mail was sent abroad to several experts by STINAPA Bonaire both as an announcement of the event and looking for possible explanations. Several responses

were received and in one of them Dr. A. Debrot from CARMABI reported that these mortality events are quite regular and often occur when juveniles are flying between islands. This mortality event could be one of the reasons or even the main reason for the smaller abundance of birds both mature and immature in 2010, however, given our limited resources, the corroboration of such hypothesis would be an unfeasible task for STINAPA Bonaire.

An female individual of Magnificent frigate bird, which we believe was the same bird throughout the entire year was observed at exactly the same spot during all 4 surveys in 2010 and during other visits to the area. In several occasions she chased Brown booby individuals with the intention to steal food from them, which is a well common behaviour of these birds. During 2010, we did not observe any ringed birds, neither breeding nor nesting activity. No individuals of Red-footed Booby or Brown Noddy were observed during the counts. However, in November 28th, 2010 a single individual Red-footed Booby was collected at Lac Bay by Elly Albers, one of our bird volunteers. The bird did not appear to be sick, but one of its wings was "hanging low" and it could not fly. During an inspection carried out by veterinary Dr. Jan Laarakker no injuries were found.

The adaptation in the methodology allowed for two important observations that were not included in the original objectives. The first one was the low tolerance of Brown boobies to the disturbance caused by the presence of humans, especially when walking along the cliff. This is a concern since local fishermen use this area very regularly, especially during the weekends. The second was a large amount of litter left behind most likely by the fishermen, being the most worrying items small batteries, plastic bags and entangled fishing line. The chemical pollution and physical damage that these objects can inflict in wildlife is well known, therefore a cleanup of the area was done and a press release informing the public of this event and asking for cooperation was produced. These two observations call for some discussion at management level in order to take actions that will eliminate or at least mitigate both the direct disturbance of birds by human presence and the littering.

Overall, 2010 was also a very successful year for the Brown Booby monitoring program. We collected all the necessary data and made other important observations. Despite the difficulties to find and coordinate volunteers for July and October in 2010, both local and visitors played a crucial role in the 3 year program. Overall, after three years of continuous monitoring of Brown Boobies at the roost located between Malmok and South of Boka Katuna, STINAPA Bonaire considers that all the objectives of this monitoring program have been achieved successfully. Today we have a good indication that the roost site is stable and in good shape when compared to the baseline. We also obtained important knowledge regarding the following: a) yearly patterns in the abundance of birds, b) the ratio of mature to immature individuals, c) nesting and breeding activities, d) presence of other sea bird species and e) threats. This new knowledge will allow us to provide better information to park visitors and the public in general. The threats found at the roost are pertinent material for discussion of potential management actions to be taken in order to mitigate or eliminate them. Regarding

public awareness, three reports (including this one) were produced and the involvement of volunteers was high among STINAPA staff, local residents and visitors.

5. Recommendations

- To keep collecting data for long term monitoring programs. It is fundamental for the proper management of our natural resources.
- Given the lack of staff and the achievement of the objectives, lower the frequency of the surveys and use the new methodology that requires only one surveyor.
- Increase the number of staff in the Natural and Historic Resources Unit.
- Discuss possible management actions to mitigate or eliminate the threats discovered at the roost.