FROM BEE-BURNERS TO BEEKEEPERS: Supporting Community Beekeeping Organization in Principe

CEPF-100798

Assessment of honey harvest behavior in Príncipe

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Purpose:

The purpose of this document is to describe the reported infractions and assess the change in the behavior of local people and the beekeepers of the local cooperative (Cooperativa dos Apicultores da Ilha do Príncipe – COOPAPIP). During the project period (August 2017 – September 2019) we recorded any reported infractions to the regional bee protection law.

Background:

Honey in Príncipe has been collected from wild colonies of honeybees (*Apis mellifera*) by a destructive method that included burning the nest, killing most of the bees and risking uncontrolled fires in the forest. Honey collectors are known as "queimá vunvú" which literally means "bee-burners" in the local Forro dialect. They put themselves at risk scaling trees up to 25m high with minimal safety equipment to reach wild bee colonies, and the rudimentary extraction method used produces honey of poor quality with low levels of hygiene and contaminated by eggs and pupae. Government officials report that the practice of burning wild bee colonies has had a significant impact on the abundance of bees in Príncipe, and as a result, the production of wild bee honey has fallen significantly in the last 15 years.

In order to promote sustainable honey production as a livelihood in Príncipe, the Regional Government and FIDA/GEF (Projecto PAPAC) supported the creation of a beekeeping cooperative. COOPAPIP was created at the beginning of 2016 with 31 former bee-burners or honey traders.

In 2017, the project and COOPAPIP helped the Regional Government to draft a bee protection law. The law prohibits bee-burning, honey extraction from wild beehives and honey trade, unless if performed by a certified cooperative beekeeper.

1. Assessment of infractions:

Infractions are reported by phone or personal communication to Project members, COOPAPIP or Government and were tracked by the project team.

12 infractions were recorded during the project period – one in 2017, 3 in 2018 and 8 in 2019 – as presented in Table 1:

Table 1: The 12 bee law infractions reported during the project period (August 2017 – September 2019).

Date		Type of infraction	Description	Receiver	Development
Year	Month				
2017	December	Illegal trade	Attempt to sell illegal honey to one hotel. The hotel refused to buy the product and informed the project.	Project	The Government was informed
2018	March	Illegal trade	Local shop in Príncipe selling honey from suspicious origin	Project	Economics inspectors carried out inspections and found that honey came from stock prior to the creation of the law to protect bees.
2018	June	Bee burning	Signs of bee burning on a tree cut on a trail within the Natural Park near Porto Real community, found by technicians from the Forest Department.	Forest Department	The Government was informed
2018	July	Illegal trade	Supermarket in São Tomé selling jars of honey entitled Honey from Príncipe" but not produced by COOPAPIP. *Príncipe's honey is known for its high quality and adding the appellation of origin adds value to the product.	Project	COOPAPIP members and bee burners were investigated. There was no finding of honey sales in São Tomé. The Government notified the supermarket and the honey brand about the product's illegality. The product was withdrawn from the market.
2019	May	Illegal trade	Attempt to sell illegal honey to one hotel. The hotel refused to buy the product and informed the project.	Project	The Government was informed
2019	June	Illegal trade	Attempt to sell illegal honey to one hotel. The hotel refused to buy the product and informed the project.	Project	The Government was informed

Date		Type of infraction	Description	Receiver	Development
Year	Month				
2019	July	Illegal trade	Local shop in Príncipe selling honey from suspicious origin	Economy Department	Economics inspectors carried out inspections and found no evidence of illegality
2019	August	Illegal trade	Local shop in Príncipe selling honey from suspicious origin	Project	Economics inspectors carried out inspections and found that honey came from stock prior to the creation of the law to protect bees.
2019	August	Product adulteration	Local shop dividing the honey from the official COOPAPIP jars into smaller jars to increase profit	COOPAPIP	The store was notified by COOPAPIP, which canceled sales to that merchant.
2019	September	Illegal trade	Pearson carrying bottles of illegal honey for sale in the city	COOPAPIP	The Government was informed
2019	September	Illegal trade	Pearson carrying bottles of illegal honey for sale in the city	COOPAPIP	The Government was informed
2019	September	Illegal trade	Local shop in São Tomé selling jars of honey entitled Honey from Príncipe" but not produced by COOPAPIP. *Príncipe's honey is known for its high quality and adding the appellation of origin adds value to the product.	Project	COOPAPIP members and bee burners were investigated. There was no finding of honey sales in São Tomé. The Government notified the shop and the honey brand about the product's illegality. The product was withdrawn.

There was a correlation between the increase in the number of reports in 2019 compared with previous years as a reflex to the awareness and advocacy campaign promoted by the project (for additional information check the "Awareness assessment survey report" produced by the project). Awareness about the law and recognization of the jars of COOPAPIP as the only legal honey produced in Príncipe made it easy for the population to recognize and report illegal products in local shops. However, the

origin of the honey or the names of the bee burners were rarely revealed, likely due to fear of retaliation.

2. From bee-burners to beekeepers: change of behavior of COOPAPIP's members:

Baseline:

An assessment was conducted with 29 from the 31 beekeepers that started COOPAPIP trough informal discussions to create a baseline for behavior change and impact of bee-burning in Príncipe. From these, 22 declared to be former bee-burners and 5 to be occasional honey traders.

To collect the honey, the bee-burners formed groups of 2 or 3 people. Honey was harvested on average from the five months of high honey production in Príncipe (for more information check "Príncipe's beekeeping guidelines - Based on the experience of the project "FROM BEE-BURNERS TO BEEKEEPERS: Supporting Community Beekeeping Organization in Principe"). Number of beehives burned per month variated between 20 to 2, and liters of honey per beehive from 5 to 40. Honey used to be sold on wine glass bottles per 120 to 150 santomian dobras (5-6 USD) per liter.

Table 2: Number of beehives burned in Príncipe prior project start and honey production.

Number of bee-burners	Average of beehives burned per month	Total of beehives burned per year	Average of iters of honey per beehive per month	Liters of honey produced per year
Bee-burning group (3 people)	11	55	12	660
Total of estimated bee-burner groups from COOPAPIP (7 - 22 people gathered in groups of 3)	77	385	84	4620

Project period:

During the project duration, COOPAPIP members were monitored by the project to monitor possible reengagement with bee burning. Only one member was reported under suspect of illegal honey selling and bee-burning in November 2017. COOPAPIP applied its regulations and punished the member with 90 days of suspension, confiscated beekeeping equipment and informed the member about the items of the regional law of bee protection. After the suspension period, the member was reintegrated into the cooperative and no more infractions were committed by the end of the project. COOPAPIP performed a major membership revision in May 2019, remaining with only 11 active members. The former members of COOPAPIP were tracked by the project and no evidence of reengagement with bee burning was recorded trough: a) absence of police reports, b) absence of grievances to the project or FP, c) absence of infractions reported to project or stakeholders.

Discussion - Behavior change and reduction of bee-burning:

The creation of COOPAPIP in 2017 and the support of the project prevent that at least 770 beehives were burned in Príncipe between 2018 and 2019. More than 9000 liters of low unsustainable and low-quality honey stoped to be commercialized. In total, 22 people were converted from bee-burners to beekeepers and 8 of them remained as trained and active COOPAPIP members.

3. Monitoring of Wild Bees in the Natural Environment

Purpose:

The project aimed to protect bees through the promotion of sustainable beekeeping as an income alternative and way of life in Principe. Since 2017, a new law was approved in Príncipe, prohibiting the practice of bee-burning to harvest honey. We created a monitoring protocol that can be used to indicate the density of wild bees in the natural environment, the frequency of bee-burning or illegal honey harvest and monitor the impact of the legal extraction of beehives by members of COOPAPIP for the creation of apiaries. This method can and should be used in long-term monitoring, including post project life.

Methods:

Nine communities of Príncipe were selected using a random number generator from a list of all Príncipe's 45 communities - São Joaquim, Fundão, Pico Papagaio, Ponta do Sol, Sundy, Azeitona, Santa Joana, Santa Joaquina, and Nova Estrela. One observation point was created in areas of natural forest, distant from the communities, for each one of the locations, as presented in Figure 1. The team took a trail in the forest, walked 200m and recorded a GPS point. Using the coordinates, walked an additional 100m and recorded another GPS point to find the centre of the survey area. This was made walking 100m and creating the "Observation area central point". With this, 100m radio was surveyed. The observations were made walking slowly around all the survey area and with the help of a binocular. A team of 4 observers recorded at the study areas: the presence of beehives or signals of beehives removed or burned, date and time, GPS position, height, age, size and distance from the community. Two beekeepers were part of the team and recorded any beehive previously removed during project activities by COOPAPIP. The surveys were conducted two times on each location, at the end of July and middle September 2019.

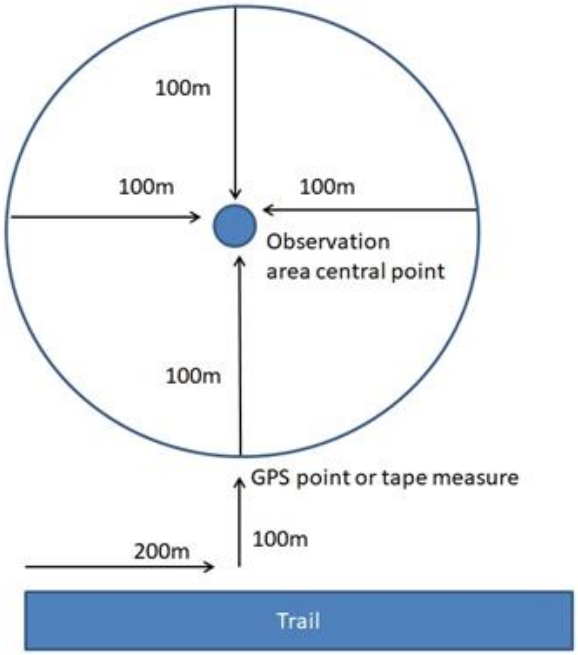

Figure 1: Survey method scheme – Monitoring of bee population in a natural environment in Príncipe

Results and Conclusion:

In general, we observed 16 beehives, 14 on the initial survey, and 16 on the final. Signes of burned beehives were observed on 2 beehives at initial assessment and 3 at the final one.

At the communities of São Joaquim, Fundão, Pico Papagaio, and Santa Joaquina we find no records or any signals of burned or extracted beehives. Ponta do Sol had one beehive that was extracted by COOPAPIP under project supervision before the implementation of this protocol. At Sundy, 4 beehives were observed at the initial and final surveys. Santa Joana had 3 beehives on pre and post, all were extracted by COOPAPIP beekeepers, and one swarm was detected on the initial assessment, but had already absconded on the final one. Azeitona had 2 beehives on the initial survey, one with signs of being burned, and on the final assessment, a new hive with signs of being burned was identified. Nova Estrela had 4 from the initial survey, one with signs of being burned and one was a beehive previously extracted by COOPAPIP under project supervision. On the final assessment for Nova Estrela, we identified 5 beehives, including one of the previously identified beehives extracted by COOPAPIP which was recolonized by bees (Table 3).

This protocol should be used on the long-term tool to monitor the natural populations, but we were not able to relate the number of beehives burned to the actions of the project. The data presented here should be interpreted carefully. The addition of only one burned beehive during the three-month monitoring, can't be extrapolated as an increase of bee-burning on natural areas. At the same time, the recolonization of beehives previously harvested by COOPAPIP members still does not provide strong evidence about the impact of this practice in Príncipe.

Table 3 (part 1) – Results of the initial and final surveys performed by the project in 9 communities of Príncipe between July and September 2019 using the protocol for monitoring of wild bees in the natural environment.

Observation point information						Hive information										
Community	N. of point	Date	Period (Initial or Final)	Time start of observation point	Time end of observation point	Time of the record	GPS point name	Latitude	Longitude	Age of the beehive	High (cm)	Size (cm)	Placement of beehive (tree specie)	Hive captured by COOPAPIP?	Burned?	Distancy from the community (Km)	Observations
São Joaquim	1	24/07/2019	I	15:32	15:53	0	0	0	0	0	0	0	0	0	0	0	
São Joaquim	1	18/09/2019	F	12:00	13:44	0	0	0	0	0	0	0	0	0	0	0	
Fundão	2	24/07/2019	I	10:40	11:02	0	0	0	0	0	0	0	0	0	0	0	
Fundão	2	19/09/2019	F	10:00	10:36	0	0	0	0	0	0	0	0	0	0	0	
Pico papagaio	3	24/07/2019	I	11:15	11:46	0	0	0	0	0	0	0	0	0	0	0	
Pico papagaio	3	17/09/2019	F	10:00	10:40	0	0	0	0	0	0	0	0	0	0	0	
Ponta do Sol	4	23/07/2019	I	16:30	16:52	16:33	PS1	164918	739075	2	60	50	Izaquenteiro	1	0	1	
Ponta do Sol	4	18/09/2019	F	11:00	11:25	11:09	PS1	164918	739075	2	60	50	Izaquenteiro	1	0	1	
Sundy	5	23/07/2019	I	15:13	15:42	15:15	SDY1	167684	738550	4	80	60	Figo Porco	0	0	2	
Sundy	5	23/07/2019	I	15:13	15:42	15:18	SDY2	167684	738550	4	60	40	Figo Porco	0	0	2	
Sundy	5	23/07/2019	I	15:13	15:42	15:19	SDY3	167684	738550	2	50	50	Figo Porco	0	0	2	
Sundy	5	23/07/2019	I	15:13	15:42	15:28	SDY4	167684	738550	2	40	60	Eritrineira	0	0	2	
Sundy	5	16/09/2019	F	15:19	15:41	15:30	SDY4	167684	738550	2	40	40	Eritrineira	0	0	2	
Sundy	5	16/09/2019	F	15:19	15:41	15:31	SDY1	167684	738550	4	80	70	Figo Porco	0	0	2	
Sundy	5	16/09/2019	F	15:19	15:41	15:32	SDY2	167684	738550	4	60	60	Figo Porco	0	0	2	
Sundy	5	16/09/2019	F	15:19	15:41	15:33	SDY3	167684	738550	2	50	50	Figo Porco	0	0	2	

Table 3 (part 2) – Results of the initial and final surveys performed by the project in 9 communities of Príncipe between July and September 2019 using the protocol for monitoring of wild bees in the natural environment.

Observation point information						Hive information											
Community	N. of point	Date	Period (Initial or Final)	Time start of observation point	Time end of observation point	Time of the record	GPS point name	Latitude	Longitude	Age of the beehive	High (cm)	Size (cm)	Placement of beehive (tree specie)	Hive captured by COOPAPIP?	Burned?	Distancy from the community (Km)	Observations
Azeitona	6	23/01/1900	I	14:03	14:52	14:40	AZT1	167576	739729	2	50	40	Océ	0	0	2	
Azeitona	6	23/07/2019	I	14:03	14:52	14:50	AZT2	167576	739729	3	100	60	Océ	0	1	2	
Azeitona	6	16/09/2019	F	16:12	16:28	16:12	AZT1	167577	739740	2	40	50	Océ	0	0	2	
Azeitona	6	16/09/2019	F	16:12	16:28	16:13	AZT2	167577	739740	3	100	80	Océ	0	1	2	
Azeitona	6	16/09/2019	F	16:12	16:28	16:16	AZT3	167516	739814	4	0	0	Océ	0	1	2	Added since the initial observation
Santa Joana	7	24/07/2019	I	14:36	15:07	14:37	PNT1	164188	740170	3	50	40	Eritrineira	1	0	1.5	
Santa Joana	7	24/07/2019	I	14:36	15:07	14:56	PNT2	164165	740217	0	50	0	0	0	0	0	Flying swarm
Santa Joana	7	24/07/2019	I	14:36	15:07	14:59	PNT3	164243	740286	0.6	30	20	Muandi	1	0	1.5	
Santa Joana	7	24/07/2019	I	14:36	15:07	14:59	PNT4	164243	740286	4	70	50	Océ	1	0	1.5	
Santa Joana	7	18/09/2019	F	12:04	12:50	12:01	PNT1	164188	740170	3	50	40	Eritrineira	1	0	1.5	
Santa Joana	7	18/09/2019	F	12:04	12:50	12:06	PNT3	164243	740286	0.6	30	20	Muandi	1	0	1.5	
Santa Joana	7	18/09/2019	F	12:04	12:50	12:06	PNT4	164243	740286	4	70	50	Océ	1	0	1.5	
Santa Joaquina	8	23/07/2019	I	9:53	10:06	0	0	0	0	0	0	0	0	0	0	0	
Santa Joaquina	8	17/09/2019	F	10:55	11:10	0	0	0	0	0	0	0	0	0	0	0	

Table 3 (part 3) – Results of the initial and final surveys performed by the project in 9 communities of Príncipe between July and September 2019 using the protocol for monitoring of wild bees in the natural environment.

Observation point information						Hive information											
Community	N. of point	Date	Period (Initial or Final)	Time start of observation point	Time end of observation point	Time of the record	GPS point name	Latitude	Longitude	Age of the beehive	High (cm)	Size (cm)	Placement of beehive (tree specie)	Hive captured by COOPAPIP?	Burned?	Distancy from the community (Km)	Observations
Nova Estrela	9	24/07/2019	I	16:16	16:48	16:26	NE1	161891	743447	5	70	50	Océ	1	1	1	
Nova Estrela	9	24/07/2019	I	16:16	16:48	16:26	NE2	161891	743447	4	70	40	Océ	1	0	1	Recolonization
Nova Estrela	9	24/07/2019	I	16:16	16:48	16:26	NE3	161891	743447	0.6	30	40	Océ	0	0	1	
Nova Estrela	9	24/07/2019	I	16:16	16:48	16:26	NE4	161891	743447	4	70	50	Océ	0	0	1	
Nova Estrela	9	18/09/2019	F	9:19	10:00	9:19	NE1	161891	743447	5	70	50	Océ	1	1	1	
Nova Estrela	9	18/09/2019	F	9:19	10:00	9:19	NE2	161891	743447	4	70	40	Océ	1	0	1	Recolonization
Nova Estrela	9	18/09/2019	F	9:19	10:00	9:19	NE3	161891	743447	0.6	30	40	Océ	0	0	1	
Nova Estrela	9	18/09/2019	F	9:19	10:00	9:37	NE4	161891	743447	4	70	50	Océ	0	0	1	
Nova Estrela	9	18/09/2019	F	9:19	10:00	939	NE5	161931	743273	0.6	20	30	Eritrineira	0	0	1	Added since the initial observation