

BETWEEN CULTURAL CHANGES AND THE FORMATION OF ECOLOGICAL INDIVIDUALS: THE TARTARUGUEIROS OF THE TAMAR PROJECT

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Resumo

Em 1980, o Projeto TAMAR iniciou as atividades de conservação das tartarugas marinhas e realizou um levantamento de informações sobre os usos e hábitos culturais relacionados às espécies nas praias brasileiras. Após diagnosticar a extração de carne/ovos e relacioná-lo às causas do risco de extinção, convidou alguns pescadores conhecidos pelo hábito de consumo de tartaruga para iniciar um trabalho na intenção de possíveis mudanças comportamentais das comunidades. Através desse Estudo, buscou-se compreender por meio das narrativas de dois *tartarugueiros* do Projeto TAMAR, as raízes dessas mudanças, que são observáveis no dia-a-dia, mas não investigadas de forma mais sistemática. Houve a formação de sujeitos ecológicos ou as mudanças se devem às induções circunstanciais (troca por dinheiro)? A metodologia utilizada foi baseada em narrativas biográficas. Os escolhidos para participar habitam a comunidade Coqueiros, Município de Jandaíra/BA. Foram feitas entrevistas semiestruturadas com dois *tartarugueiros*, e abordados os temas: ecologia das tartarugas marinhas, trajetória pessoal e formação profissional (como pescador/*tartarugueiro*). Entre as visões apresentadas, uma reduz a compreensão do ambiente à vila, a outra é mais ampla e há tanto a extensão do papel conservacionista para outras espécies (raposas), como para o ambiente em geral. Estas visões se expressam em variação da ação pessoal para além do emprego, variando do compromisso em manter a própria comunidade engajada não na predação e sim na ação educadora mais ampla. Pode-se afirmar que a relação de trabalho, as mudanças culturais gerais, a capacitação e os resultados observáveis do projeto, concorrem conjuntamente para as mudanças de comportamento em relação à tartaruga. A formação dos *tartarugueiros* como sujeitos ecológicos está em curso.

Palavra Chave: Ecologia. Tartaruga Marinha. Mudança de Comportamento. Conservação. Projeto TAMAR.

Abstract

In 1980, the Tamar project started conservation activities and performed a survey on Brazilian beaches looking for information about the usages and cultural habits related to the sea turtles. After diagnosing that the consumption of meat/eggs was related to the risk of endangerment, we invited some well-known fishermen to start a new work with the intention of achieving a possible behavioral change in the communities. Through this research, we sought to understand the roots of these changes through the narratives of two *tartarugueiros* from the TAMAR project. Such characteristics are observed on a daily basis, but not investigated more systematically. Was there a construction of ecological individuals, or did it all happen through circumstantial inductions (exchange for money)? The methodology used was based on biographical narratives. Those chosen to participate live in the Coqueiros community, Jandaíra County, state of Bahia, Brazil. Two semi-structured interviews were conducted with each *tartarugueiro*, and the topics addressed were: ecology of sea turtles, personal background and professional training (as a fisherman/*tartarugueiro*). Among the presented points of view; one narrows the comprehension about the environment to the village; the other one is wider and extends its understanding about the conservatory role towards other species (like foxes) and the environment in general. These views express themselves in a number of personal actions beyond their job, having the commitment of making the community focused on not being predators. One can say that the working relationship, the general cultural changes, the professional training and observable results of the project jointly contribute to the behavioral changes related to the turtles. The formation of the *tartarugueiros* as ecological individuals is ongoing.

Key words: Ecology. SeaTurtle. Behavior Change. Conservation. TAMAR project.

INTRODUCTION

In 1980, the Brazilian National Program for the Conservation of Sea Turtles (TAMAR, in Portuguese) began its activities aiming the conservation of the sea turtles, and has carried out surveys about the uses and cultural habits related to these species in Brazilian beaches.

After diagnosing that the extraction of meat and eggs was one of the main causes of its extinction risk, some fishermen known for their habits of consuming turtles were invited as coworkers in a study project which intended to introduce possible cultural changes in their own communities. These fishermen knew how to find sea turtle nests, the best time to work for conservation activities, which species come to this part of the Brazilian coast, etc., and became the *tartarugueiro*. All activities of protection and management, brought by the oceanology students of Rio Grande Federal University (FURG), sought to interact with traditional knowledge and practices.

Marcovaldi and Marcovaldi (1999) consider that the success of this conservation program was due to the participation of local communities, including the employment of fishermen to patrol the beaches and to protect the nests of sea turtles: the *tartarugueiros* (objects of this Study). Thus, the beginning of these activities, based on the relationship of inhabitants with the environment, falls within the field of Human Ecology, described by Pianka (1983) as an area of wider ecology, involving a range of environmental variables, including the social area.

Since it is an area that blends ecological and social studies, we have few established tools and research methods, which implies in specific methodological constructions. One of the possibilities of analysis is a qualitative research, which considers the new behaviors as a result of efforts and tasks (OLIVEIRA, 2008).

The observable changes draw up an intricate multi-causal network and circumstantial effects, environmental and cultural changes with both regional and even global reach. The

concept of Carvalho (2001) defines “environmental” as a heterogeneous set of actors and a diversity of practices, beliefs and values whose common axis refers to the importance of nature and the environment. This concept guides this Study. It is essential to consider, in these changes, the meanings, motives, aspirations, attitudes, beliefs and values expressed in the daily life of those involved (TEIXEIRA, 2002).

Thus, considering the complexity of human ecology and its multiplicity of social, cultural, economic, institutional and environmental relations, long-term initiatives, such as TAMAR, are a great opportunity to understand this process in which human lives and environmental projects interact and influence each other, which, according to Alves and Sá (2011), makes the individual seek to redefine its own role in the environment and towards society.

Currently, TAMAR has the *tartarugueiro* and their communities as fundamental and necessary allies in the conservation of sea turtle species. Internal reports point out that effective changes of behavior were registered, which are also commonly reported in the activities of environmental education and training of the *tartarugueiros*. Investigating these might also help the planning and, if necessary, conceptual transformations of TAMAR’s work with the turtles.

It is important to emphasize that the northern coast of Bahia is an important conservation area for sea turtles in Brazil, since it is an area known for dense nesting numbers of the loggerhead turtle (*Caretta caretta*), hawksbill (*Eretmochelys imbricata*), olive ridley (*Lepidochelys olivacea*) (M. A. MARCOVALDI; M. CHALOUPEKA, 2007; CASTILHO, 2011) and, occasionally, the green turtle (*Chelonia mydas*) (ALMEIDA, 2011). This region represents more than 30% of the nests in Brazil (BRASIL, 2018).

METHODOLOGY

This research was based on the Resolution 466/2012, which guarantees the rights and duties of those involved (researcher and State) and

received the CAAE (Certificate of Presentation for Ethical Appreciation) 56247716.9. 0000,5031. The interviews were conducted after the approval of the CEP (Research Ethics Council) of Bahia's Federal Institute of Education, Science and Technology, and followed the standards and guidelines of the Helsinki and Tokyo measures. For submission, a term of free clarification and consent for the interviewees was elaborated, ensuring confidentiality, anonymity and the certainty that it will not generate any legal or institutional embarrassments to their professional functions.

The present study seeks to understand, through the narratives of two *tartarugueiros* of the TAMAR Project, the roots of their cultural changes, which are observable in daily life, but were not investigated in a more systematic way. Was there the formation of new ecological individuals or were these changes due to circumstantial inductions like, for instance, money?

The methodology used was based on biographical maps, which focus on the life trajectories expressed in personal narratives. Carvalho (2003) reports that the success in this type of study depends on several communication activities: the informant must tell his life history; describe life situations, and argue about significant and recurring problems in their lives and how he/she relates to it. The researcher, by meticulously working on this material, becomes itself an active part of this dialogue while producing knowledge.

In August 2016, the semi-structured interviews were carried out on the topics: ecology of sea turtles, personal trajectory and professional training (as fisherman/*tartarugueiro*); perception of the changes that have occurred in recent years in their region and in their lives; projects and fears about their own future and their descendants'.

In these meetings, the social reproduction of this functional activity was approached, that means, to which extent the ancient cultural elements and the recently acquired ones play a role in the intergenerational narratives and on each individual life project.

Some authors like Triviños (1987) and Man-

zini (1990) conceptualize and characterize this type of interview that was used with the *tartarugueiros*. For the first, Triviños (1987), the semi-structured research has as characteristic only the search for answers to basic questions related to the theme, and is made through standardized answers, yet Manzini (1990), suggests the preparation of a script in which answers will emerge in a freer form, not conditioned to anything, that means, the interviewee can express itself in a natural way. For this study, I blended both definitions and, through a script and the organization of the ideas, the interviews were developed, answering the basic questions related to the understanding of the turtle ecology by the *tartarugueiros*; as a result of this informality, their life histories and their relationship with the environment and the sea turtle emerged.

The interviewees are not a sample, in the statistical sense, of the universe of the *tartarugueiros*. In Bahia, we have thirty-two professionals involved in monitoring beaches with the same kind of life, personal and professional history. The result represents the experience of those involved and refers to the possibility of gathering fragments for an understanding of this social reality, considering the individual as an expression of their time and context, as understood by Velho (1994) and Ginzburg (1987) and (1991). Besides these authors, several qualitative researches carried out through biographical narratives were based on only one or a few subjects (CARVALHO, 2000).

Both the field of phenomenology and several foundational authors of social research, such as Durkheim (2007) and Foucault (1967), have demonstrated the potential of each individual to be investigated as a phenomenon of its time. Alencar (2004) reports that, when researching a case study, there is the exposition of a possibly real part, generating, therefore, new hypotheses for the development of other researches with the same theme.

For this study, I searched for two *tartarugueiros* in full working activity, who inhabited the same community with the same development pressures, whose work had similar

characteristics since the beginning of the protection and management of sea turtle nesting activities. I chose the *tartarugueiro* with the longest working time, one who actually fed on the sea turtle, and another who inhabited the same community.

The biographical method is the interaction between the subject and its history. While reporting his experience, the *tartarugueiro* made the connection between his trajectory and the changes promoted by the working activities related to the protection and management of sea turtles. Benjamin (1987) says that tradition only makes sense insofar as it intertwines with the narrator's experience, and it is on this basis that the texts have been interpreted. These reports transposed the elements of part of the interviewees thinking into a recorded and transcribed report. While the *tartarugueiro* narrated, he also interpreted his history: a description and at the same time, a version.

According to Manzini (2004), the questions should be adapted to the reality of the interviewees and should be attentive to vocabulary, form and sequence. The interviews involved two moments: Pre-encounter and the meeting itself.

In the pre-meeting, the interviewees were visited by the researcher. The location was decided by the interviewee. At this moment of the research, a compromise was established between the parties. The consent and confidentiality agreement was signed by the interviewees.

At the second meeting, the interviewee was once more reminded that it was a recorded interview.

First question was: "Mr. X, tell us a bit about your life history, ever since you came to Coqueiros, how you became and lived as a turtle fisher, until this moment when you are a *tartarugueiro* at the TAMAR Project."

When the interviewee did not answer some important questions, I tried to receive this information during a more personal conversation:

- What has changed (the) most in your life? What has changed for the better and what

has changed for the worse? What about your family, your community?

- What do you think that has changed in yourself? Have the people in your family and community changed? How?
- What contributed the most to these changes? Tell one or more facts that were important to you, your family and the community.
- What do you miss in the past? What about selling and eating turtle eggs or turtles? What about your family? Do you think many people miss it in the community?
- What are your expectations for the future of your children and grandchildren? What do they expect?

We ended the interview by asking the interviewee if he would like to say something more or tell us something curious that he had lived throughout these years of activity. I thanked him and agreed to give him a transcription and a presentation of this work, introducing him and his family/community to the final product. The record player was turned off and I said goodbye.

STUDY AREA

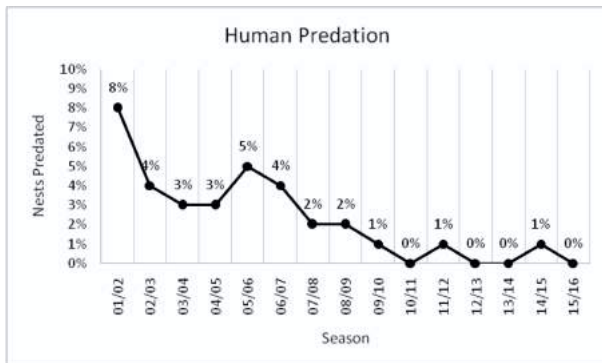
Among all the areas monitored by the TAMAR Project, the community of Coqueiros, in Jandaíra, Bahia, is the only one that still has characteristics similar to the ones found at the beginning of the monitoring efforts of sea turtles and still has the *tartarugueiros* since these activities began. Other monitored areas have already been more affected by the real estate development or the tourism, which brings to its inhabitants a greater set of influences beyond the TAMAR Project. This is a beautiful northern area of the Bahian coast, surrounded by sand and still with rustic features, within the Mangue Seco Environmental Protection Area, decreed as protected on November 6, 1991 (MEIO AMBIENTE, 1991).

RESULTS AND DISCUSSION

In the studied area, there was a reduction of the collected sea turtle eggs. This indication was

made based on SITAMAR (2018), as seen on in figure 1.

Figure 1. Proportion of Human Predation in Sea Turtle Nests throughout the Reproductive Seasons.



This reduction was an important premise for the beginning of the study of the *tartarugueiros* and their relation with the sea turtles. The *tartarugueiros* are all men, at least 49 years old, have incomplete basic schooling, approximately 14.5 years of activity as *tartarugueiros* and still inhabit small and simple places, where the native vegetation is very well preserved and there is almost no urbanization.

The *tartarugueiros* will be represented by numbers (1 and 2) and had the secrecy of their identity preserved, as according to the rules of the “Free Clarification and Confidentiality Term” based on Resolution 466/2012 of the National Health Council of Brazil. Interviewee 1 was born in 1953, has been a *tartarugueiro* for 27 years. He is illiterate. The interviewee 2 was born in 1973, has been for 20 years in this activity, and has not completed high school.

After transcription, the interview results were divided into categories according to each study proposal, which are: first contacts with the turtles; knowledge about biology and ecology of sea turtles; knowledge of threats beyond consumption; action as an environmentalist and changes of life; expectation for the future.

First contacts with the turtles

When the conservation activities of sea turtles begun, FURG students searched for people known for eating meat and eggs of these endangered animals. A quick and practical solu-

tion was to offer a compensation for the help on the beach and, thus, to have in each community an agent involved and reporting the number of nesting, birth of turtles and possible threats to the various species of sea turtle. This exchange of money for conservation played an important role in the construction of the pattern of new relations sought at that time.

When the TAMAR Biologist arrived in Coqueiros in 1988, all residents indicated interviewee 1 as the major consumer of sea turtles. He avoids asserting, but in the analysis of his speech, one notices that he actually ate, at least, the sea turtle eggs. This fear of recognizing his attitude can have several causes, from the risk of accountability to the will of not having it recorded in his biography, which is now marked by the protection of this animal. This was noticed when 1 reported: “I was at home, it was 6 o’clock in the afternoon and the boy arrived, it was not forbidden to eat a turtle, that day I even had some eggs on the roof of the house drying up”, and also in the speech: “he said that he had already heard that I was the one who killed the most turtles in Coqueiros beach there, I told him he was wrong, because I have always killed, but not many”.

Interviewee 2, who is a resident of the same community, knows several stories of turtle consumption, including those of 1.

In Brazil, there are have 5 species that nests in our beaches; 4 can be found in Coqueiros: the *Caretta caretta*, *Eretmochelys imbricata*, *Lepidochelys olivacea* and *Chelonia mydas*.

Knowledge about biology and ecology of sea turtles

All hatchlings are dark, by natural camouflage, and have similar sizes. A practical way to see the difference between species is the number of plates on the shell. This concept of differentiation was completely absorbed by the studied *tartarugueiros*. 1 reported on the identification of the species: “You can see the difference by its back” / “Lepi is the smallest one and has 7 or 8 boards from one side to the other, the comb only has 4, the grimace has 5 and the green one has 4 as well”.

According to the literature, *Caretta caretta* has on its shell 05 pairs of lateral plates juxtaposed and *Lepidochelys olivacea* (olive turtle) has 5 to 9 pairs (usually 6) of asymmetric lateral plates.

Tartarugueiro 2 also understands the morphological differences between the species, based on the ecological concepts passed by biologists on account of this scientific publication, and reported in his speech: "I count by plate, that to 'lepi', it has more plates than the caretta, it has less plates, it's 5". On the recognition of the species *Eretmochelys imbricate*, reported, corroborating the science: "The hawksbill we also identify by the carapace and it has the smaller head and the beak is more forward... The "de-pente" has 4 plates".

The sea turtle has a long life cycle and late sexual maturation, depending on the species, between 10 and 50 years old (M. Y. CHALOUKKA et al., 1997). For *Lepidochelys olivacea*, the most common on Coqueiros beaches, there is no study proving the real sexual maturation. What is of scientific knowledge is that in the Pacific Ocean they begin to reproduce between 10 and 18 years old (ZUG, 2006).

According to the TAMAR Project database (BRASIL, 2018), nests outside the reproductive season, from April to August, have increased during the last 15 years in the studied area, which reaffirms the increase of *Lepidochelys olivacea*. In this area, there are nests all over the year. This nesting increment of *Lepidochelys olivacea* was mentioned in Castilho (2011) in the review of conservation status of the species, and can be noted in figures 2 and 3.

The perception of this increase was noticed by the interviewee 1 and reported with pride: "nowadays, we have them, there is enough, there is no summer or winter anymore!"

The *tartarugueiro 2* reported, showing satisfaction, that in these 20 years of activity, his area has increased by almost 65 times the number of nests, it was from 11 to 700 nests during a turtle season. And as it is understood the life cycle of *Lepidochelys olivacea*, this increase in population is a direct result of his work in the area, as demonstrated when he was asked: "when you started, how many nests did you have?" The *tar-*

Figure 2. Number of nests in the last 15 years on the beaches of the Coqueiros community.

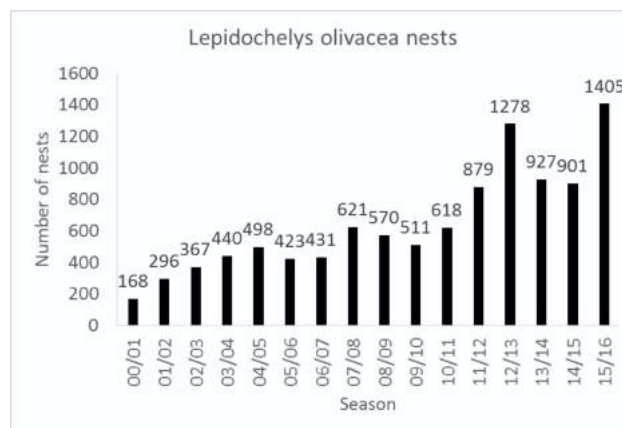
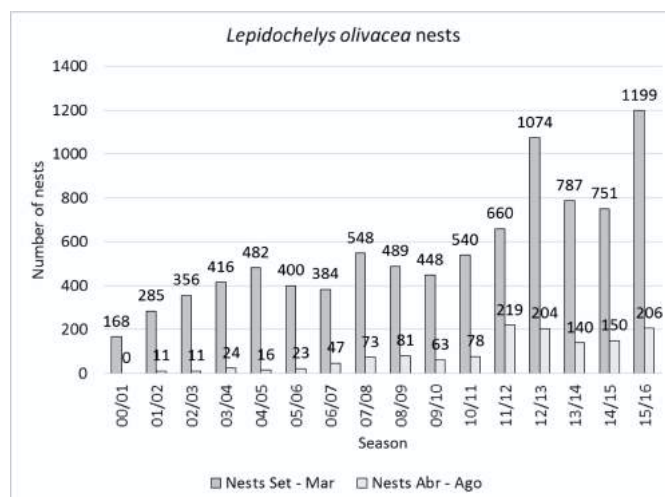


Figure 3. Number of nests during and after the seasons in the last 15 years on the beaches of Coqueiros community.



tarugueiro 1 said he had eleven: "nowadays, only in my area there are seven hundred". The man shows pride about this increase in the number of nests.

Knowledge of threats beyond consumption

Currently, the main threat to sea turtles is fishing and the interviewees have the real notion of all the problems involving shrimp trawling in the sea of their community, the main fishing gear used in Bahia's extreme northern region and in the whole state of Sergipe. According to Silva et al. (2007), there are records of catches of *Lepidochelys olivacea* by this type of fishery. On this subject, respondent 2 reported:

"Right here, what kills the most, I think, is

the boats out there, trawlers." Interviewee 1 has more conviction and is quite sure of this type of interaction with sea turtles and states: "the shrimp trawler, this is what kills most turtles because when they are out there, two or three days after, a lot of dead turtles appear".

Through the monitoring activities, we noticed that, when there are shrimp trawlers in activity, in a few days, the dead animals appear on the beach, usually in an advanced stage of decomposition. This perception of the field team corroborates the interviewees' reports.

Action as an environmentalist

The *tartarugueiro* 2 inspired by TAMAR activities has become a multiplying agent of our premises and always advises fishermen not to capture the sea turtles that get tangled in their nets. He reports that, sometimes, sea turtles can get entangled in the fisherman's net, tearing or getting trapped without being able to rise to breathe. The sea turtle is a lung reptile and, therefore, can die from drowning. There is a love-hate relationship between fishermen and sea turtles. According to his experience, the *tartarugueiro* reports: "there are people who do not like the turtles, every fisherman walks with his little knife or something and then, if it comes curled up, it takes, it cuts the net and unrolls the sea turtle loose". This shows that the community has not changed the relationship with animals so much.

Interviewee 1, as he does not see the fishermen landing in Coqueiros, did not report the possible multiplication of information about conservation of the sea turtles for this group, exactly for not finding them. One other point that shows their concern for their space: "it's kind of hard because they leave, we are here on land, and we do not find them."

Thus, with these years of TAMAR activity, field experience and broader understanding of the training process, the turtles have become a concern for the environment and the future of their community, revealing the importance of caring for nature, the maintenance of ecosystems and the conservation of the rustic charac-

teristics of the communities to guarantee their peace, their children's and nature's.

CONCLUSION

The *tartarugueiros* first contacts of with sea turtles happened in different decades and moments of TAMAR monitoring strategies. The exchange of money for the protection of nests on the beaches, in addition to the partnership with the new institution that had just arrived in the community, was fundamental for the beginning of the people's transformation, as demonstrated by the report of the *tartarugueiros*, including the one who was a consumer of meat and eggs.

The *tartarugueiros* are socially respected in their community because of their activity, mainly for the beginning of the recovery of sea turtle *Lepidochelys olivacea*. It is something visible, linked to their routine and to their land, and they can relate to the content that was absorbed after the trainings.

The training activities carried out with the interviewees throughout the seasons have brought a deep knowledge about the ecology of the sea turtle. The *tartarugueiros* know about the importance of sea turtles, how to identify species by side plates, the scientific names of all sea turtles and all the parts of their life cycle. Each year, when they had more nests on their beach because of their effort, their care for the environment increased, showing the importance of seeing, of being concretely part of the content of a training activity.

As a result of TAMAR activities since he was a teenager, one of the *tartarugueiros* became a defender and multiplier of the environmental discourse in his community. His perception of the environment is broad and he has a greater understanding of the facts and consequences of global actions. Both for a lesser personal relation to turtle consumption and for a higher schooling level, the younger *tartarugueiro* seems to have even more adherence to the discourse of conservation and a wider environmentalist thinking.

The *tartarugueiros* are proud of their environmental role, and the fact that they want their

descendants to study more and become Biologists in their community shows the will of professionalization in the area and gives more prominence to the children, perpetuating the sea turtle conservation work in this area.

At the end, it is possible to say that the cultural change, the good working relations, environmental training, community relationships and personal engagement are factors that contribute to the good conservation of the sea turtle. It can also be said that this transformation of the *tartarugueiros* into ecological individuals is under way, and the observed cultural change is a direct result of TAMAR activities.

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