

The Ontological Choreography of Conservation Practice at a Marine Turtle Rookery in India

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Abstract

The Rushikulya beach in eastern India is considered to be an important rookery (nesting site) for a species of migratory marine turtle, the olive ridleys *Lepidochelys olivacea*, because it is one of a handful of sites around the world where an arribada or mass-nesting event occurs. During an arribada, thousands of ridleys nest simultaneously over a small section of the beach, and several weeks later, millions of hatchlings emerge from these nests and crawl into the sea. Given the uniqueness of this phenomenon, conservation programmes have emphasised the monitoring and protection of ridleys during an arribada. In Rushikulya, this involves an assemblage of multiple actors, including biologists, their local assistants, and staff of the Odisha Forest Department. In this article, I use the concept of ontological choreography, drawn from multispecies scholarship, to focus attention on how members of this assemblage bring together different ontological orders, mainly nature and the individual self, to protect the ridleys. Further, I use this concept to direct attention to the hybrid nature of conservation practice—that it can simultaneously be affective, embodied, performative, sensory and technical. Overall, this article demonstrates how multispecies approaches can enrich social studies of conservation.


Keywords: Biodiversity conservation, conservation practice, embodied encounters, interspecies encounters, multispecies ethnography

INTRODUCTION

We had just completed 12 hours of monitoring an arribada on the Rushikulya beach when Satish¹, a biologist with whom I was sharing a ride in an autorickshaw, commented, “Even the crows look like turtles when I’m going back to the field station.” The Rushikulya beach is well-known to biologists as a major rookery (nesting ground) of the olive ridley turtles *Lepidochelys olivacea* due to the fairly regular occurrence of arribadas. An arribada is a massive nesting event during which “waves of turtles crawl ashore for many days to sometimes weeks and vie for limited space to lay their eggs” (Plotkin 2007:

3). Even seasoned biologists speak of a sense of awe when witnessing these events: “I have long considered arribadas to be the most spectacular manifestation of reptile life anywhere, and to aficionados they are a genuine and absolute wonder of the world (Pritchard 2007: 7).” While these vivid descriptions may lead one to imagine the archetypal ‘pristine wilderness,’ the Rushikulya beach is, in reality, lined by villages where small-scale fishing is a common occupation. Many villagers park boats, mend nets and dry fish on this beach; some are also involved in marine turtle conservation themselves (Ramesh 2021). However, in winter, the presence of villagers and boats is eclipsed by the presence of the turtles and an assemblage of conservation actors. In fact, there was such widespread interest in the arrival of the olive ridleys that for many people in Odisha, winter was simply the ‘turtle season’.

In this article, I present an ethnographic account of this period to describe how conservation practices occur at the intersection of nature and the individual self. Moreover, I demonstrate how these practices are not only technical exercises but instead, they also contain affective, embodied,

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performative and sensory elements. My approach is informed by multispecies studies, which have long been attentive to the dynamism and complexity of human-nonhuman (i.e., interspecies) encounters².

In her thought-provoking book, *When Species Meet*, Donna Haraway (2008) notes that interspecies encounters need to be interactive in some contexts, such as when studying animals or training them. She argues that in such situations, the onus is often on the human actor to be perceptive to the other's behaviour and respond to it appropriately. Moreover, to sustain these interactions, humans may need to follow the lead indicated by the animal. Haraway dubs this work that human actors do, in pulling together the technical and affective elements of their interactions to make a coherent whole, an act of ontological choreography. She borrows this concept from the work of Charis Thompson (2005), who studied clinics that offered assisted reproductive technologies. Thompson found that such projects required "a deftly balanced coming together of things that are considered parts of different ontological orders (part of nature, part of self, part of society)" (ibid.). She coined the term 'ontological choreography' to describe "the dynamic coordination of the technical, scientific, kinship, gender, emotional, legal, political and financial aspects" that were an integral part of these projects (ibid: 8). In this study, she also challenges the idea of a fixed subject or object position and thereby directs attention to shifts in power—for instance, in these clinics the patient may first exercise agency in choosing such treatments but at later stages, medical procedures may require objectification of their bodies. Thus, her work directs our attention to the role of practice in assembling different components of reality, navigating fluid power relations, and dealing with the accompanying uncertainty. Through Haraway's work, these ideas have entered multispecies literature, and Jamie Lorimer (2015: 183) has refined them further by recognising that "Conservation involves ontological choreography – a dance of relations conducted, but not composed, by human actors".

In fact, recent works in multispecies studies explicitly urge social scientists to extend their ethnographic attention to the nonhuman actors who constitute an important part of human social worlds and to bring a broader range of disciplines—such as ecology, history and anthropology—into conversation with each other (Kirksey and Helmreich 2010; Tsing 2012; van Dooren et al. 2016). This interdisciplinary approach is relevant to biodiversity conservation because here, humans spend much time and effort in knowing about, caring for and working with particular nonhumans. Therefore, in this article, I weave together strands from ethnography and natural history to describe an important aspect of conserving olive ridleys, i.e., arribada monitoring. I take direction from van Dooren et al. (2016: 17) that "[t]he arts of attentiveness remind us that knowing and living are deeply entangled and that paying attention can and should be the basis for crafting better possibilities for shared life." I also take seriously Laur Kiiik's (2018: 222) injunction to engage in "wild-ing" our studies of conservation by "filling our ethnographic textscapes with

a self-willed and valuable nature—with various other-than-human life-worlds, the planetary facts of ecological crisis, and awe".

The rest of this article is structured as follows: I provide an overview of multispecies scholarship on embodied encounters in the context of conservation on the ground, and how the concept of ontological choreography helps us knit together the many strands that constitute such encounters. I introduce the focal species of this article, the olive ridleys, and the significance of the Rushikulya rookery to establish the context in which Satish and I had been working when he commented on how overwhelmed he felt after an arribada. Next, I describe my entry and relations in Rushikulya and how my prior training as an ecologist influenced my ethnographic access to the field. I follow this up with a detailed description of how arribada monitoring contains not only technical elements but also affective, embodied, performative, and sensory ones. Finally, I conclude with some reflections on how multispecies scholarship can enrich our understanding of conservation practice on the ground.

HUMAN-WILDLIFE ENCOUNTERS FROM A MULTISPECIES PERSPECTIVE

Multispecies studies take their name from the domain of ecology, where relations between different species are considered to be as significant as relations within a species (Aisher and Damodaran 2016). Their main methodological attribute is their broad interdisciplinary approach and willingness to extend the ethnographic gaze to cultivate "interspecies sensibilities" (Tsing 2014: 34) or "passionate immersion" (van Dooren et al. 2016: 6). Moreover, these studies seek to create a distinctive genre of text that reflects the normative goal of valuing nonhuman presence and agency in human social worlds (Haraway 2008; Tsing 2014; Kiiik 2018).

What new insight have multispecies studies provided thus far on human-wildlife encounters in the specific context of conservation on the ground? I suggest that one of their key contributions has been to articulate the complexity of these embodied encounters without resorting to binaries such as conflict and coexistence. For instance, in his review of ethnoprimateology, Agustin Fuentes (2012: 101) reminds us, "Humans are literal and figurative kin to other primates, with whom many of us coexist in diverse social, ecological, symbolic, conflictual, and even hopeful contexts." He describes how studies from different regions suggest that coexistence is achieved through behavioural accommodations made by both human and nonhuman primates. A second group of nonhumans that have attracted considerable attention are elephants. These multispecies studies have drawn on an extensive range of sources (historical, biological, ethnographic, etc.) to make a robust case for recognising the sentience and agency of elephants. They analyse the myriad ways in which elephants and humans have negotiated the ability to live and work together (e.g., Locke 2013; Münster 2014).

Another body of work in multispecies studies describes the role of place in shaping the dynamics of interspecies relations.

It is sensitive to historical and cultural changes in places and how these impact human-nonhuman relations (Aisher and Damodaran 2016). For instance, Simon Pooley's work (2016) provides a fascinating example of how specific combinations of place, (historical) period, and culture result in a diversity of relations between humans and Nile crocodiles *Crocodylus niloticus* across Africa, from veneration to repulsion. A deeper exploration of the contextual and ethical spectrum can be found in Radhika Govindarajan's (2018) study. She describes how people in the central Himalayan region relate to wild and domestic animals on different emotional registers and the importance they accord to following a code of conduct, even as they provide some animals with lifelong care and kill others.

A third corpus of work focuses on the different emotions at play in the making of scientific knowledge about nonhumans. For example, in his study on corncrake *Crex crex* conservation, Jamie Lorimer (2008: 384) found that good bird surveyors were those who could "re-align their bodies [...] to immerse themselves in the field and feel for the bird". Therefore, he suggests that the field sciences are inherently affective practices that help humans 'tune in' to nonhuman presence. But he notes that the conventions of formal scientific writing elide this aspect from the surveyors' own reports. Similarly, Matei Candea (2010) finds that although biologists who study meerkats *Suricata suricatta* describe themselves as being 'detached' observers, it does not mean that they are uncaring. Instead, he finds that detachment acts as a form of embodied discipline that enables biologists to observe meerkat behaviour carefully. Candea proposes the term inter-patience to better describes this as a relation that requires gradual cultivation and entails "the mutual suspension of action, a cease-fire of sorts" between humans and animals (2010: 249). Going a step further, Xavier Leenders (2017) suggests that nurturing a relationship with nonhumans (here, quolls) is the basis of any zoological fieldwork. He emphasises, "Making knowledge in zoology is a part of an interconnected system in which animals are not biological machines to be decoded, but individual agents that move according to their own, self-constituted life worlds" (Leenders 2017: 12). He argues that knowledge creation is, in fact, an act of co-production between the zoologists and quolls. Leenders finds that an ethical commitment to ensuring the welfare of nonhuman populations³ undergirds these projects.

In a recent methodological reflection, John Hartigan Jr (2021) discusses the tensions and advantages of combining ethnographic and ethological methods⁴ to study humans and nonhumans respectively. The essay stems from his study of a controversial Spanish tradition in which certain villages corral wild horses and shave off their manes and tails in a display of human mastery over nature. Despite his qualms about mixed methods, he acknowledges that an ethologically informed ethnography improves the rigour of multispecies scholarship by providing a fuller account of nonhuman perspectives and agency.

A final point is that several multispecies studies that draw on ethnographic methods are situated in the Global South, especially India, where humans and wildlife live in close

proximity and at high densities. These studies seek to critique and inform conservation practice in different parts of India, especially in the case of 'difficult' species such as elephants (Oommen 2019; Thekaekara et al. 2021), leopards (Ghosal and Kjosavik 2015; Dhee et al. 2019) and tigers (Nijhawan and Mihi 2020; Aiyadurai 2021). They highlight the need for conservationists to recognise the polyvalent relations that human communities craft with nonhumans in their surroundings rather than perpetuate simplistic narratives and practices.

It is, then, with this motivation—to showcase the relevance of multispecies concepts, such as ontological choreography, to analyses of conservation practice—I turn the reader's attention to the arribada at the Rushikulya rookery. But first, I describe the olive ridleys.

NATURAL HISTORY OF OLIVE RIDLEYS

Olive ridleys are a migratory species of marine turtle found in the tropical waters of the Indian, Pacific, and Atlantic Oceans. Although abundant in many regions, the International Union for Conservation of Nature (IUCN) estimates that the global population of adult olive ridleys has declined by 30–50% over the past few decades due to a combination of threats, such as coastal development in nesting habitats, marine pollution, and incidental mortality caused by fisheries. Therefore, the IUCN classifies this species as "Vulnerable" to extinction (Abreu-Grobois and Plotkin 2008). Conservation programmes for olive ridleys often seek to regulate human activities in marine areas (commonly referred to as habitat management) as well as improve the survival of turtle populations by protecting the coastal breeding habitats, especially the rookeries. There are several such conservation programmes along India's eastern coastline.

Every winter, large numbers of olive ridleys migrate towards the eastern coast of India to mate and nest. At the Rushikulya beach, in particular, thousands of males and females congregate close to the coastline, around the mouth of the Rushikulya river, to form reproductive patches. A single such patch can extend over 50 sq. km in area (Tripathy 2013). As marine turtles need to surface for air repeatedly, their bobbing heads are sometimes visible to the naked eyes of observers on the beach (pers. observation). After mating ends, the female turtles clamber onto the beach to nest, whereas the males never return to land once they have hatched.

Based on the nesting pattern, the females can be loosely classified as sporadic nesters (i.e., those that emerge singly to nest and return to the sea) or arribada nesters (i.e., those that emerge and nest synchronously). An arribada is said to begin when over a hundred turtles nest within a few hours across a small area (Figure 1). However, sporadic and arribada nesting are not mutually exclusive categories because some individual turtles are known to switch from one pattern to the other (Bernardo and Plotkin 2007).

A single female lays up to 100 eggs in a clutch and may lay several clutches in a given season. However, it is estimated



Figure 1

Turtles returning to the sea after an arribada, Rushikulya rookery. Photo by Kalyan Varma

that only around one in 1,000 eggs survive to become an adult turtle (Witherington 2006). Another significant aspect of the reproductive behaviour of the olive ridleys is “natal homing”, i.e., as adults, they return to the coastlines they hatched at to breed the next generation (Bernardo and Plotkin 2007). Studies indicate that one of the cues marine turtles use to remember and return to their natal beaches is the direction and regional variations in the earth’s magnetic field (Lohmann et al. 2013).

But why exactly do turtles engage in mass nesting? Biologists believe that it is a form of safety in numbers: even if predators were around, the initial glut of food available around an arribada event (in the form of eggs or later, as hatchlings) would saturate their appetite and help the remainder survive. This is known as predator satiation. From an evolutionary perspective, the benefits of this seem to outweigh the accidental losses caused in an arribada when later nesters excavate and destroy previously laid clutches of eggs. Hence, despite considerable wastage of reproductive effort, the arribada behaviour has persisted for aeons (Bernardo and Plotkin 2007). However, the location of an arribada may shift. As a leading chelonian⁵ expert noted,

“[...] although the casual observer may assume that an arribada is a ritual of nature that has persisted from ancient times in each of a few secret places in the world, the reality is that even within a single human lifetime, new arribadas may form and others shift or disappear” (Pritchard 2007: 12-13).

In Rushikulya, olive ridleys are known to engage in sporadic nesting from around December until March. The arribada occurs around February or March for two to seven nights; typically, around 100,000 females nest within 5 sq. km of the beach (Shanker et al. 2003). At present, Rushikulya is one of only eight arribada locations in the world (Pandav et al. 1994; Shanker et al. 2003). Moreover, the beach conditions are such that over 90% of the eggs laid during sporadic nesting hatch successfully (Tripathy et al. 2003). Hence, biologists believe that the conservation of this rookery is of global importance to

the survival of olive ridleys (e.g., Pandav et al. 1994; Abreu-Grobois and Plotkin 2008). In the next section, I describe my entry and location with respect to the conservation actors at this site.

LIMINALITY OF FIELDWORK

The conservation of olive ridleys along the Odisha coast involves multiple actors such as biologists, their local assistants, staff of the Odisha Forest Department, local and non-local nongovernmental organisations, fishers’ unions, the Indian Coast Guard and even some industries around the region. I have earlier referred to them as a conservation assemblage (Ramesh 2018; 2021) because this is an informal, shifting group that comes together during each “turtle season” for the sole purpose of conserving the ridleys. A subset of these actors was directly involved in arribada monitoring in Rushikulya—primarily the biologists, their local assistants, and the forest department. They came together each December to engage in direct surveillance and care of the olive ridleys, to facilitate the reproduction of the species. Following Hennessy (2013), who studied the interplay of humans, nonhumans and material conditions in enabling the conservation of another endangered chelonian (the Galapagos tortoise *Chelonoidis niger*), I term this an ‘assemblage of reproduction’ to emphasise how “the reproduction of wildlife is neither a natural matter of tortoise [turtle] biology nor the product of human mastery over nature” (ibid:78) and is instead, an effortful bringing together of various elements.

The work of the reproductive assemblage began with monitoring the nesting turtle population from December onwards for two key reasons—the first is that monitoring sporadic nesting is a valuable exercise in its own right because these nests usually hatch successfully, and the hatchlings have a high rate of survival (Tripathy et al. 2003; Bernardo and Plotkin 2007). The second reason is that the number of nesters slowly builds up until it peaks with an arribada in February or March. As a result, the onset and the intensity of sporadic nesting in a given year often provide some indication of whether an arribada is likely to occur later on (Bivash Pandav and Kartik Shanker, pers. comm.). Due to these reasons, from a biological perspective, monitoring the arribada per se was inseparable from what occurred over the entire nesting season. Therefore, in this article, I present ethnographic vignettes of the five stages of a typical nesting season, including the arribada—expectations of the season, beach patrolling, preparatory exercises, counting nesters, and release of hatchlings. My account is based on relevant sections of the multi-sited ethnography I conducted in Odisha during December-April each year from 2012 to 2015. Some respondent names used in this article are pseudonyms. However, some respondents are well-known individuals who have written for general and expert audiences, been interviewed on television, run campaigns, etc., and I have cited their real names when referring to such resources. Similarly, certain established institutions are also mentioned by name.

My introduction to the conservation assemblage was facilitated by the Indian Institute of Science and Dakshin Foundation (a nongovernmental organisation that works in different parts of the Indian coast). They have run a collaborative turtle monitoring programme for over a decade now with a field station in Ganjam, a town about five kilometres away from the Rushikulya rookery. They have played a critical role in shaping turtle conservation in Rushikulya by supporting the involvement of local communities (Ramesh 2021). Although Dakshin's trustees have been directly involved in different aspects of conservation, they agreed that my study could provide a balanced, outsider perspective on turtle conservation. Therefore, they supported my presence as a participant observer in their field station and provided introductions where required.

As an interdisciplinary researcher, I occupied a liminal position throughout my fieldwork. My previous training in ecology and experience in turtle monitoring elsewhere meant that I could easily fit in amongst the conservationists. But, simultaneously, my analytical interest in human actors, discourses, and practices differentiated me from the insiders. I never satisfactorily resolved the question of whether I should introduce myself as a lapsed ecologist or an aspiring anthropologist, but fortunately for me, this liminality often opened doors. For example, I gained credibility in the eyes of the forest department as someone who understood the ecology of turtles and the importance of conserving biodiversity. This liminal position also offered me opportunities to conduct participant observations with biologists and other conservation actors, such as when they conducted training workshops or engaged in data collection. For instance, in February 2013 and 2014, I was asked to assist with collecting data during the arribada since there were not enough biologists on site. The request was made with the consent of the forest department (since olive ridleys are a strictly protected species under the Indian Wildlife Protection Act, 1972), so I readily agreed and attended a refresher session in January 2013 on the standard protocols used in turtle monitoring (Shanker et al. 2007). The biologists from Dakshin conducted the training. During the arribadas, I maintained two sets of notes, one filled with the ecological data that others required and another with my observations and interviews. I have used the latter set of notes in this article, to provide a composite description of the activities that conservationists undertook during the “turtle seasons” of 2012–2013 and 2013–2014. (The arribada did not occur the following season, in February–March 2015.)

While my liminal position opened some doors in the field, it closed others within academic circles. I was occasionally censured by colleagues, either for ‘losing my identity’ as a field biologist or for not ‘truly’ taking an anthropological stance since I was not ready to engage in a priori advocacy of community rights. However, these comments taught me to pay attention to disciplinary imaginations and normative values. They also served as a reminder that questions about conservation, whether in or out of field sites, evoke both scientific and emotional responses.

ELEMENTS OF ARRIBADA MONITORING

As mentioned earlier, a typical nesting season can be divided into five stages—expectations of the season, beach patrolling, preparatory exercises, counting nesters, and release of hatchlings. I share ethnographic vignettes in the sections below to illustrate the ontological choreography that occurred at each stage.

Expectations of the season

While I was doing fieldwork, it was clear that there were a priori expectations about the arribada, although these events are hard to predict. For instance, when I approached government officers and members of conservation organisations for interviews, the respondent would begin by asking me if and when I expected the arribada to occur that year. I soon realised it was better to hazard a guess because if I refrained, there was an awkward lull, or I was accused of being secretive—as a researcher, I was expected to declare at least an approximate date. In contrast, when I shared a guesstimate, it spurred several respondents to explain their approach to predicting the arribada dates. A few also used the opportunity to recall the arribadas they had witnessed in the past. Therefore, hazarding a guess furthered the conversation by creating a rapport between us as fellow speculators.

For the media too, turtle conservation was a popular topic in the winter months, and the arribada was frequently termed ‘the pride of Odisha’. In the past, senior bureaucrats and the governor of the state visited the Rushikulya rookery, which has added to the public interest in the arribada. However, just before every “turtle season”, the media often declared that the nesting population was shrinking and made dire predictions about the long-term survival of olive ridleys in Odisha (M. Muralidharan, pers. comm.). This put enormous pressure on the forest department, because if the arribada did not occur (for example, in 2015) or if the number of nesting turtles was lesser than that of the previous year, the department’s stewardship was widely questioned. One season, when the arribada was delayed, an officer issued a press statement on the expected number of turtles because he did not want to be criticised for the ‘failure’ of an arribada. The field staff, in turn, felt that the counting protocol should be modified to enable them to “meet the target” set by the officer. As these instances indicate, the weight of such expectations added a strong affective element early on.

In this context, arribada monitoring was not solely a technical exercise to assess the status of the olive ridley population in Rushikulya. Instead, it was also a form of performance through which the forest department, in particular, had to display its competency to manage the turtles. At the discursive level, the forest department responded by using militaristic terms that implied control over the situation—senior officers commonly described arribada monitoring as a “major operation”, their meeting centre on the beach was the “control room”, and range officers were given walkie-talkies to supervise the

“deployment of personnel” on “the frontline” or to “patrol” the beach. But, as Hennessy (2013) observed, claims of human mastery over nature rarely stand up to scrutiny. In practice, the forest department was greatly hampered by the uncertainty surrounding the timing, magnitude, and duration of the arribada. For example, one officer described how each year, they held a state-level meeting with the extended conservation assemblage that included the Coast Guard, conservation organisations and the marine police to plan for the protection of olive ridleys when the breeding aggregations began to form. At the meeting, each agency assessed the boats and staff available that year to patrol the nearshore waters.

“It is a task, [a big] planning exercise. And it’s a flexible plan because with all your efforts, in particular years the turtles don’t come. [...] Even [when] you see them, some years it happens - they do come for mating - you see them in the high sea but they don’t come to the shore” (Senior forest officer).

Another officer said, “I felt as though I was the sole parent of the turtles [because I was waiting for them anxiously]”. Yet another commented that “it is disappointing when it [the arribada] doesn’t happen. There is always room for improvement in conservation.” As these comments indicate, the arribada evoked a range of expectations and emotions even within the reproductive assemblage, from excitement and pride to irritation and disappointment. Consequently, from the beginning, an element of ontological choreography (Thompson 2005) was required to bring together nature, self and society in a way that would allow conservation to advance on the ground.

Beach patrolling

In December, the reproductive assemblage designated small teams of observers to walk along the beach all night and note the number of tracks that ended in false crawls (i.e., no nesting) versus nests. The teams were usually composed of the biologists and their local assistants (who were typically engaged for several years in a row). In some years, there were also teams comprising forest department staff and a few villagers hired temporarily. These night-time patrols required bodily discipline and inter-patience (Candea 2010). For example, a biologist explained that he had to completely reverse his sleep-and-wake cycle during the turtle nesting months so that he could be awake and active on the beach for at least four nights a week. In other words, patrollers disciplined their bodies and re-aligned their periods of activity to cultivate opportunities for interspecies encounters. Despite these efforts, in some years, the turtles arrived later than expected or were fewer in number.

Interviews with experienced patrollers suggest that the immersive, repetitive aspects of patrolling make it a critical channel of attunement because it deepens the ability of conservationists to read the field and acquire an interspecies sensibility (Lorimer 2008; Tsing 2014; Leenders 2017). For instance, patrollers could identify the freshness and direction of turtle tracks even though they used only dimmed torches or

moonlight (to minimise disturbance to the turtles). Many said after a few weeks, they were able to acquire ‘a feel’ for which stretch of the beach was likely to attract nesting turtles that season. This preference tended to shift each year because of changes in beach topography. Moreover, experienced patrollers could pinpoint the location of a nest from subtle differences in the sand, even after the tracks had gotten erased. They could also identify the stage of nesting from the movements of the flippers and tail: excavation of the body pit (a hollow for the turtle to position herself before she nests), excavation of the egg chamber, deepening of the chamber, laying of the eggs (noticeable as contractions of the tail muscles), refilling the chamber with sand and finally, plugging it by pounding with the plastron⁶ and rocking from side to side (Witherington 2006; Pritchard 2007).

Another interesting practice I observed among patrollers from the forest department was that they noted the number of turtle carcasses that had been washed ashore and buried those on the beach. The forest department believed that the sight of these carcasses could deter other turtles from nesting nearby—in other words, in this situation, they believed the ridleys were sensitive and responsive to the fate of their conspecifics. This contrasted with the larger militaristic discourse described earlier. (On a more mundane note, burying the carcasses prevented them from attracting jackals and dogs, which might also destroy viable nests in the vicinity.)

Overall, the patrollers’ attunement to the turtles made them sensitive to changes in nesting intensity. Hence, it was they who alerted other actors about if, when, and where the arribada would begin. Therefore, the repetitive beach patrols played a critical role in enabling the dynamic coordination between humans and nonhumans.

Preparatory exercises

Since Rushikulya was not a formal protected area, the forest department brought additional staff from other territorial divisions a few days before the arribada was anticipated. They often came with no prior knowledge or skills. Therefore, Dakshin’s biologists usually conducted a workshop for this group to explain the natural history of olive ridleys and the counting protocols to be followed. They also addressed concerns such as “Can a person get bitten or attacked if they walked close to a turtle in the dark?” It is worth mentioning here that olive ridleys are probably the only highly protected species in India (listed in Schedule I of the Indian Wildlife Protection Act, 1972) that can be seen in such large numbers in one location, and they are entirely harmless to people.

After the workshop, the forest department created a temporary enclosure by fencing in the area that was likely to be the peak nesting zone. (As mentioned earlier, this zone was identified by the researchers’ beach patrols and it tended to shift by 1–2 km each year.) The enclosure was somewhat rectangular, but the seaward side was left open to allow the turtles undisturbed access to nest on the beach and, later, to allow the hatchlings unfettered access to return to the sea. In

some years, the enclosure was declared a “restricted zone”, and only the department staff or ‘authorised personnel’, i.e., researchers with the required permits, were allowed in. In other years, when there was a shortage of field staff or senior officers emphasised community participation, small groups of villagers were allowed to assist the assemblage in various activities without applying for permits (Ramesh 2021).

Within this enclosure, the forest department and other conservationists followed a globally accepted counting protocol (Shanker et al. 2007) to estimate the size of the nesting population. This involved the use of the belt (or strip) transect method. In this method, the peak nesting zone (inside the enclosure) was divided into smaller sections called belts—the corners of each belt were marked with sandbags or casuarina poles so that they would be distinguishable to observers, even in the dark. Two observers counted the number of turtles in each belt (Figure 2). To avoid overestimation, only the females that were actually laying eggs (ovipositing) were counted and not all the ones that were on the beach because some may simply be walking to and from the surf, digging, resting, etc. This, combined with other variables such as the total nesting area, number of transects, duration of oviposition (time taken by the turtle to lay the first to last egg) etc., was used to estimate the nesting population in Rushikulya.

While technical descriptions of arribada monitoring e.g., Shanker et al. 2003; Shanker et al. 2007) are written in the dispassionate style characteristic of formal scientific writing, the situation on the ground was messy, and emotions ran high. For example, one year, the arribada did not occur within the enclosure. And the resulting choreographic ‘failure’ caused considerable frustration within the forest department:

“The conservation plan was made for area A with camps for the personnel, etc., but then the turtles started nesting nearer village B, and they entered the streets and houses because the settlement was very close to the sea. They threw sand over the drying fish on the beach as they were

moving and digging, and people wanted compensation. It is not possible to train turtles to go to a certain area and not another (emphasis added)” (Senior forest officer).

As mentioned earlier, the forest department often tried to control the turtles rather than develop a more flexible approach based on an interspecies sensibility. In contrast, the biologists who had cultivated such a sensibility believed that the onus was on the assemblage to respond appropriately to the animal rather than the reverse. For example, a researcher countered, “This is too bad [...] you buy [a] fence and all... if the turtles themselves want to come and nest here, why are you preventing them from coming here? [...] If turtles are coming and nesting here, they are nesting here for a reason (emphasis added). Ok? So instead of putting the fence here, put the fence there, no?”

This comment resonates with the multispecies perspective that attunement to nonhumans, rather than seeking to control them, is crucial to making the ontological choreography of conservation succeed (Hennessy 2013; Lorimer 2015).

Counting the nesters

When the arribada began, we (the observers) seemed to be standing in a sea of turtles as they spread out over the beach in their quest for suitable nesting spots. There was also a strong ‘fishy’ smell in the air. It soon took on a rotten overtone due to the large number of broken eggs strewn all around. Outside the enclosure, we could see the village dogs gorging on eggs. We felt quite overwhelmed by this combination of sights and smells. However, the only sounds we could hear from the thousands of turtles was an occasionally loud exhalation—the rest was the flapping of our clothes in the wind or muted conversations when we all sat huddled together during a break. My colleague and I began counting the turtles in our belt at 6 pm and repeated this once an hour, every hour. This lasted for 12 hours, with the only environmental change being the cold transition to night, followed by daybreak. Even one night of arribada monitoring was a taxing experience because it required a high level of embodied discipline and skill, both of which I describe in detail below. The forest department staff who had not participated in the patrolling earlier found it particularly hard because they had not had sufficient time to familiarise themselves with turtle behaviour or the constraints of working at night.

Each team of observers took up their designated belt within the arribada enclosure and began their work according to the instructions we had been given in the workshop. We used dimmed torches, talked to each other only in low voices, walked amongst the turtles to distinguish the nesters, measured their carapaces and peered under them to count eggs. Some of us also estimated the oviposition time, which was necessary for estimating the nesting population (Shanker et al. 2007). The turtles continued to come ashore, nest, and return like clockwork. What made the event seem particularly surreal for all of us was that although ridleys are typically sensitive to their surroundings, they become oblivious to human presence

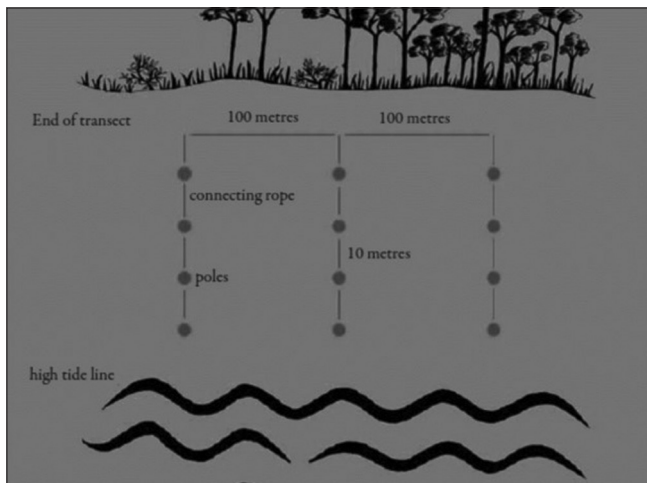


Figure 2
Belt transects

Source: Shanker, K., Choudhury, B.C. and Kar, C. S. (2007). *Census techniques for arribada*. Ecotone, Chennai

and other external stimuli once they have begun to lay eggs—biologists refer to this as a ‘nesting trance.’ In the case of the arribada, we were literally surrounded by thousands of silent ‘entranced’ turtles. As the number of turtles on the beach increased, it became progressively harder for inexperienced observers to discern which ones were actually nesting. The repeated excavation of sand by the turtles left huge pits on the beach that tired or sleepy observers stumbled over. The turtles knocked over the wooden posts that had been planted in the sand to mark the corners of each belt. With the passage of time, those observers were unable to discern the boundaries of their belt, leading to heated exchanges between several neighbouring teams.

We were exhausted long before the arribada ended. It was challenging to rest between counts because we felt cold—either we had dressed lightly and couldn’t cope with the chilly sea breeze or we had dressed warmly and were sweating during our transect counts. Moreover, to save energy, none of us wanted to rest too far away from our transects. But that meant we were sprayed with sand whenever a turtle covered a nest near us. It was especially exhausting for the department staff because most of them had regular diurnal duties as well. Consequently, they could neither keep up the counting all night nor get sufficient sleep.

After daybreak, the turtles returned to the sea, and if it were not for their tracks and the presence of broken eggs, one could almost believe we had experienced a mass hallucination. It was this strange mixture of sensory overload and unreality that I refer to in my opening anecdote about Satish. However, if there was a strong wind, the fine beach sand quickly covered even these signs. In summary, monitoring the arribada was a multidimensional act of choreography—it was both a technical and performative exercise that allowed the gathering of scientific information and a display of at least managerial skills if not mastery over nature. At the same time, it was an affect-laden encounter that evoked feelings of fascination, awe, boredom, and fatigue in the human actors. From the perspective of the assemblage, this long-awaited event was, in many ways, the easiest phase to choreograph because once the enclosure was set up correctly and the arribada began, the turtles behaved predictably. And, the trained members of the assemblage were able to pull together various elements and ensure that monitoring and protection of the nesting turtles were carried out.

Release of hatchlings

From the Dakshin researchers’ calculations, I knew that mass hatching would occur around mid-April, hence I ensured that I returned to Rushikulya beach by then. As with the arribada, books on the natural history of turtles abound with vivid descriptions of mass hatching. For example, as one biologist wrote, “Over only a few nights, one million or more tiny dark grey ridleys bubble from nests and flow down the beach to the sea” (Witherington 2006: 58). The conservationists I spoke to also agreed that it was another surreal, unique experience like

the arribada. In the section that follows, I describe this event in greater detail.

In April, the Dakshin researchers and I began to walk around the perimeter of the enclosure every evening, peering at the sand inside for signs of emergence. One evening, a sharp-eyed companion pointed to a small patch near the fence—the surface of the sand quivered for a few minutes, and a tiny dark oblong slowly emerged from under the ground. It was a hatchling. Suddenly, the sand around it began to collapse rapidly like an inverted cone and dozens of its siblings began to emerge. Soon, large sections of sand were quivering and within an hour, thousands of hatchlings began to crawl all around the enclosure.

Similar to the adults, the hatchlings were entirely harmless to humans and their appearance triggered a flurry of activity. In contrast to the arribada, the forest department encouraged villagers to participate in the rescue and release of hatchlings (Ramesh 2021). Hence, some of their field staff ran to the nearest village to ask the fisherwomen’s self-help group to come with their woven baskets and ferry the hatchlings to the surf line. Other villagers were also called to assist the women. Crows cawed loudly around us and swooped away with hatchlings in their beaks. The village dogs, too, dug their way under the fence and added hatchlings to their daily ration of turtle eggs. The sulphurous smell of rotten eggs and dead hatchlings was pronounced in some parts of the beach. Away from these, a few researchers were sprawled face down like starfish as they captured close-up photographs of the emerging hatchlings. Soon the Dakshin researchers marshalled us all into pairs and assigned us to monitor different sections of the fence—we carefully watched our section so that whenever the hatchlings got entangled in the fence, we quickly rescued them and put them into a basket. Every 15 minutes or so, we took the basket to the surf line and gently tipped the hatchlings out. As mentioned earlier, due to their innate ability to register the magnetic characteristics of the beach, the females would next return here as nesting adults (Lohmann et al. 2013).

The villagers assisting the assemblage shook their heads over how tiny the hatchlings were and how far they would have to swim to escape predatory fish and find food in the sea. On the other hand, the research assistants enjoyed telling others about the low survival rate in marine turtles. In conversations with people around me, I heard expressions of awe, concern and excitement. I have described elsewhere how several villagers who became conservationists attributed their motivation to these affect-laden, spectacular moments of interspecies encounter and sustained interactions with biologists (Ramesh 2021). However, as before, a palpable sense of fatigue soon set in—it was backbreaking work to bend over and disentangle one disoriented hatchling after another, and the numbers in which they emerged were overwhelming. Once mass hatching was complete, the arribada was deemed to be over. The forest department spent the next few days dismantling the fences and ‘redeploying’ its personnel. Other members of the assemblage also withdrew from Rushikulya one by one, and the villagers were once again allowed free access to the beach.

But, sometimes, the choreography could go wrong because this phase of the conservation work was particularly sensitive to changes in material conditions (Hennessy 2013). For example, a week or so before the mass hatching was expected to occur, the forest department tried to convince the adjacent villages and factories to switch off all external lights. This was to prevent misorientation of the hatchlings—they are very sensitive to light. If there is artificial illumination nearby, they move inland instead of crawling towards the sea and eventually die of either dehydration or predation (Pandav and Choudhury 2000). One season, there was a short but unexpected shower of rain that worried the conservationists—would the increased humidity result in fungal infection of the eggs and significantly reduce the hatching success that year? Yet another year, the fences themselves became a threat because the mesh size was not as small as it ought to have been. Consequently, hatchlings became tightly wedged in the interstices, and we could not rescue them before they were preyed on by dogs, jackals or crows. As some scholars have noted, fences represent an attempt to communicate with other species since they are intended to convey a particular message about the fenced area (e.g., the presence of danger or food). But, they may not be ‘read’ correctly by the nonhuman species or they may be used in unforeseen ways. Such events need to be viewed as an invitation to alter or improve interspecies attunement rather than impose tighter forms of control over nonhumans (von Essen et al. 2023).

REFLECTIONS

In this article, I have described how multispecies scholarship can help us extend our anthropological gaze to encounters with nonhumans, especially in the context of biodiversity conservation on the ground. To illustrate this, I have borrowed the lens of ontological choreography to analyse the embodied practices of conservationists involved in arribada monitoring at a marine turtle rookery in India. This lens helps us recognise that conservation on the ground occurs at a laboriously constructed intersection of nature and the individual self. Moreover, this intersection results in conservation practices that are hybrid in the sense that they contain a mixture of technical, affective, embodied, sensory, and performative elements.

As I mentioned earlier, my liminal position in the field—as a researcher trained in both ecology and anthropology—also played a role in deepening my analysis because it helped me be attentive to both humans and nonhumans imbricated in conservation at Rushikulya. For instance, it eased my entry into the assemblage of reproduction at Rushikulya and sharpened my ability to recognise the spectrum of human perspectives and practices. Simultaneously, it allowed me to (re)gain first-hand experience in attuning to the olive ridleys and participating in acts of care during an arribada. I have sought to carry this liminality forward in my ethnographic writing as well by attempting to provide a balanced account that neither glorifies the normative goals and labour that

go into conservation nor dismisses them entirely due to missteps and failures in execution. This, I suggest, is one of the most valuable opportunities that multispecies scholarship offers researchers of conservation as well as conservation practitioners—it helps us reflect on conservation practice without sacrificing an ethical commitment to nurturing multispecies landscapes (e.g., Hennessy 2013; van Dooren et al. 2016; Kiik 2018).

At the same time, as several multispecies scholars have noted (e.g., see Srinivasan 2019 on humans and dogs; Turnbull and van Patter 2022 on humans, wolves, dogs and coyotes), thorny practical limitations and ethical dilemmas often accompany efforts to foster multispecies landscapes because certain combinations of species may not lead to benign outcomes for anyone. In this, multispecies studies appear to share some common ground with conservation biology, which has similarly struggled to translate one of its core normative principles into action: “Biotic diversity has intrinsic value [emphasis in the original], irrespective of its instrumental or utilitarian value. [...] In emphasising the inherent value of nonhuman life, it [conservation biology] distinguishes the dualistic, exploitative world view from a more unitary perspective [...]” (Soulé 1985: 731). Therefore, I suggest that multispecies scholars may find it productive to engage more deeply with conservationists and learn from their on-ground experiences and challenges in attempting to craft a multispecies world.

To summarise, I suggest that an engagement with multispecies scholarship can be particularly fruitful for social studies of conservation as well as conservation practice because it accommodates an ethical commitment to both humans and nonhumans; it provides a nuanced conceptual vocabulary that can articulate the polyvalent nature of ‘doing conservation’; and it supports textscales that better reflect the liveliness and value of human-nonhuman encounters.

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The author has no competing or conflicting interests to declare.

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Research ethics approval

This study adhered to the ethical protocols followed by ATREE and MAHE.

Data availability

The data is available with the author.

NOTES

1. A pseudonym
2. Encounters are “engagements across difference” and ethnographies of encounters are studies that examine the relational dynamics of such engagements (Faier and Rofel 2014).
3. It is important to note that the distinction between conservation biologists and animal rights activists is often that the former focuses on the welfare of the population as a whole, whereas the latter focuses on individuals.
4. Similar methodological discussions have occurred in more-than-human geography as well, see for instance Barua and Sinha 2017.
5. Pertaining to reptiles with shells, such as turtles and tortoises.
6. The lower half of a turtle’s shell. The upper half is called the carapace.

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