

WHEN ORNITHOLOGY MEETS ETHNOLOGY AND ARCHEOLOGY: THE BIRDS OF THE BIRD-CULT AT RAPA NUI (EASTER ISLAND) AND THEIR DEMISE

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ABSTRACT

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The disappearance of the bird species involved in the bird-cult of Rapa Nui (Easter Island) was examined. The cult was a contest in which the winner gathered the first seabird egg of the year from a near-shore islet, allowing the winner to become the Tangata Manu, or Birdman. This title provided a heightened status, bringing social and economic benefits and a way of being closer to their gods. Three seabird species were involved in the bird-cult: Great Frigatebird *Fregata minor*, Sooty Tern *Onychoprion fuscatus*, and the Spectacled Tern *Onychoprion lunatus*, none of which currently breed in the area. Rock art suggests that frigatebird eggs were initially used in the bird-cult. However, when frigatebirds ceased to nest due to overexploitation of eggs and feathers, there was a switch to more numerous Sooty Tern eggs to satisfy the bird-cult. Spectacled Terns have probably never bred at Rapa Nui, though they do visit, and any relationship to the bird-cult is due to confusion with the Sooty Tern. The bird-cult itself was diminished by a decrease in seabird numbers, but also by two sociological factors: (1) enslavement of the islanders by Peruvian raiders, including the King and the most educated members of society; and (2) by the imposition of a new religion in which there was no need to idolatry the old gods. The bird species involved in the bird-cult disappeared due to a combination of factors: (1) the restriction (*tapu*) on the number of eggs and birds that could be collected for feathers and food—which was in place when the ritual was active—was removed as the cult diminished; (2) modernization brought better tools that facilitated gathering of eggs and feathers (e.g., canoes and then outboards motors in a land without trees); and (3) the introduction of a hunter-scavenger hawk, the Chimango Caracara *Milvago chimango*, put further pressure on seabird species that were already in decline. There is currently an urgent need to eradicate the hawk from the island because it continues to depredate large numbers of nestling seabirds.

Key words: bird-cult, Rapa Nui, Easter Island, Chile, Great Frigatebird *Fregata minor*, Sooty Tern *Onychoprion fuscatus*, Chimango Caracara *Milvago chimango*

INTRODUCTION

Rapa Nui (Easter Island) is well known for its large rock statues despite being an isolated, albeit inhabited island 3700 km from continental South America and 1568 km from the nearest landmass, Ducie Island in the Pitcairn Archipelago. It is the westernmost Chilean territory at 27°07'S–109°23'W. It has a surface area of approximately 166 km² and a maximum elevation of ~508 m in Cerro (Maunga), Terevaka, in the northwestern section of the island (see Methods). The island is triangular in shape owing to three large volcanoes at each corner: Rano Kao in the southwest corner, Rano Aroi in the northwest corner, and Pua Katiki in the northeast corner. The coastline includes several areas of high cliffs that drop abruptly to the sea. The island's interior is characterized by undulating hills with scattered volcanic cones above the basaltic plains. The interior is mainly grassland, with some eucalyptus groves and plantations found primarily near the town.

Birds or bird parts, such as feathers or wings, have played symbolic roles in the religions and cults of mankind, and despite its isolation, Rapa Nui Island is no different in this respect. Unique to Rapa Nui, however, is that the people of this island participated in a social and religious cult involving birds. The main goal of the Rapa Nui bird-cult was to attain social status and closeness to their gods by obtaining the first egg laid in a given year by the Sooty Tern

Onychoprion fuscatus, a seasonal resident of the island. Becoming the winner was not an easy task—the contestant had to swim about 1.2 km (one way) to a small offshore islet (Fig. 1) while contending with heavy currents and sometimes heavy swell. The winner was declared the Tangata Manu or “Birdman” for the year, allowing him to enjoy special social and economic privileges, as well as having a closer connection with their gods (Routledge 1917, 1920; Métraux 1940). According to Routledge (1920) “the whole of social existence (of Rapa Nui) revolved around the bird-cult.” Within the impoverished island fauna, the seabirds were the only conspicuous vertebrates besides humans, and this likely led to the origin of the religious cult (Métraux, 1940). The contest was an important feature in the life of Rapa Nui, and the value of the bird cult may have become more accentuated because of the great isolation of the island itself. McCoy (1978) proposed that the bird-cult arose in response to an overexploitation of natural resources, contributing to the impoverished fauna. A scarcity of animal life, overexploitation of natural resources, and a relative abundance of seabirds have all been proposed to have contributed to the rise of the bird-cult. All factors likely played a role.

The bird-cult was practiced for about 340 years. Lee (1992) indicated that it arose around the year 1550 AD during a time of extreme difficulty and much social unrest among the islanders of Rapa Nui. It lasted until 1866 or 1867. According to Routledge



Fig. 1. A view from Orongo village, Rapa Nui, where the contest to become a Tangata Manu began. The village is at the edge of Rano Kau volcano, with a view of the three most important near-shore islets of Rapa Nui (from front to back): Kao-cao, Iti, and Nui. Orongo village and Motu Nui played a very important role in the bird-cult. Notice that the rocks on the right side of the photograph, although quite weathered, contain some petroglyphs of the birdman. (Photo: M. Marín)

(1917, 1920), the cult persisted for an additional 30–40 years, but in a mutilated and degenerated form with new practices. As Christianity overtook the religious beliefs of the islanders, it is likely that the bird cult was no longer needed. McCoy (1978) reported that the accepted dates for the last ritual of the bird-cult occurred between 1866 and 1867, following Routledge's assertions. Lee (1992) reported that the cult ended around 1878 but indicated that the ceremonial practices of the cult's later years differed from the original ceremonial practices. However, according to Métraux (1940), the bird-cult died out around 1890, a conclusion derived from his local informant Mr. Tepano, who was 60 years old at the time of his interview in 1934. Mr. Tepano was well-acquainted with the ritual, and his uncle was one of the last Tangata Manu. In modern times, head dresses using mainly feathers (currently consisting primarily of chicken feathers) are used on special occasions and for tourist shows, and serve as a throwback to earlier times when the bird-cult was in practice. Despite the cult ending, the islanders continued to gather seabird eggs, a practice that persisted until very recently. Tern eggs are considered a delicacy not only on Rapa Nui but in many areas around the world. Indeed, the Sooty Tern is an abundant seabird, and egg collecting is substantial in some areas for consumption or for the gathering of egg yolk, in some cases leading to the abandonment of colonies (e.g., Feare 1976, 1984, Vermeer & Rankin 1984, Schreiber *et al.* 2002).

Most interpretations of the bird-cult, and the bird species involved, have been based on the anthropological, ethnological, or archeological points of view reviewed above. In the present paper, I examine the bird species involved in the bird-cult of Rapa Nui and describe their fate from an ornithological perspective.

METHODS

I visited Rapa Nui during 09–23 August 2009 and among other activities conducted interviews with some of the island's elders. In addition, I did an extensive search of published and unpublished literature of the bird species involved in the bird-cult, as well as a search for museum specimens in United States, Europe, and Chile (see Acknowledgments). A goal of this effort was to determine the periods and seasonality of each species' presence on Rapa Nui. Aside from information from local islanders, I also sought information from travelers, and archeological and anthropological expeditions. I found many discrepancies on published locality names, surfaces, positions, and distances, so all information reported here is taken from marine charts: British Admiralty (BA) 4002, 4608; Servicio Hidrográfico y Oceanográfico de la Armada, Chile (SHOA) 2510; and terrestrial chart Instituto Geográfico Militar (IGM) C-117-00. The surface areas were calculated using © Google Earth 2022.

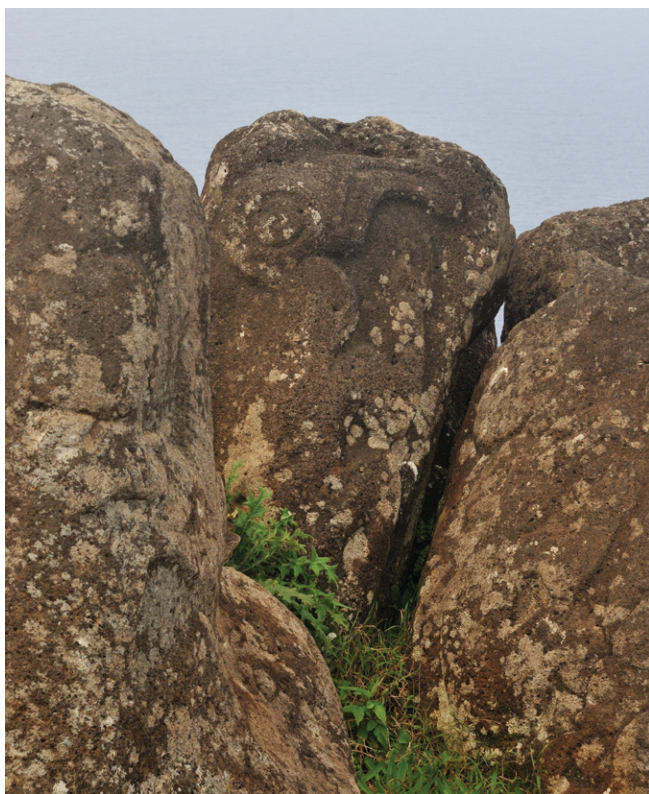


Fig. 2. One of the most typical and abundant petroglyphs of the birdman, showing part man and part bird with an egg in its hands. Note the large beak and gular pouch form resembling a frigatebird. (Photo: M. Marín)

RESULTS AND DISCUSSION

Bird species involved in the bird-cult

Based on available information and literature, the bird-cult was dependent on three seabird species to different extents: Great Frigatebird *Fregata minor* (*Makohe*), Sooty Tern *Onychoprion fuscatus* (*Manutara 1*), and Spectacled Tern *O. lunatus* (*Manutara 2*). Below I review the past and current situation for each of the involved species and their connection to the bird-cult.

Great Frigatebird – Makohe

Most petroglyphs involving the bird-cult depict the figure of a half man and half bird, which can be attributed to the Great Frigatebird (Figs. 1, 2). The species has a wide distribution throughout the tropical and subtropical waters of the Pacific Ocean from Australia to Chile (Nelson 2005, Marín & González 2022). Frigatebirds have an unusual breeding biology, involving long incubation, long nestling periods, and long nestling dependency. The Great Frigatebird has an incubation period of about 55 d, a nestling period of about six months, and a post-fledging dependency of another six to 10 months. One nesting cycle lasts well over a year, and consequently, the species is capable of producing only one young every two years (Nelson 1976, 2005). Owing to these elements of its natural history (i.e., low productivity), frigatebirds are quite sensitive to disturbance of their breeding patterns.

The frigatebird was obviously an important bird in Rapa Nui culture as it is an eyecatcher: it is a large, high-flying, extremely acrobatic

bird with an attractive mating display. It likely reproduced on Rapa Nui in the past but currently is only a visitor to the island (McCoy 1978, Lee 2000, Marín & González 2022). McCoy (1978), in an anthropological and archeological investigation on the near-shore islets off Rapa Nui, identified the place in Motu Iti (islet) where the frigatebirds used to nest (at least in the pre-1900s) prior to the first published reports on the avifauna on Rapa Nui. There are few published accounts of frigatebirds observed at Rapa Nui, and most observations occurred at near-shore islets. The species most likely became rare after the arrival of humans because it was persecuted for its feathers and eggs, reducing its already low reproductive rate. The islanders did fancy different feathers and bird skins in their head dresses and clothing, including crowns, headbands, circlets, diadems, crescents, and other body decorations (e.g., Philippi 1873, Routledge 1919, Chapin 1935, Métraux 1940).

Philippi (1873) appears to be the first to mention a species of frigatebird present on the island, based mainly on the feathers of a crown brought to the National Museum in Santiago, Chile. The rarity of the species at the time can be inferred from the accounts of different visitors. For example, Nicoll (1904) mentioned that frigatebirds were observed upon his arrival to Rapa Nui, with no further comment. Fuentes (1911) visited the island in April 1911 and observed no frigatebirds, but he mentioned the presence of frigatebirds based on Philippi's (1873) account. Routledge (1920) described at least four visits to near-shore islands during 1914–1915, but she does not mention frigatebirds. Kåre Bäckström visited the island from 15 June to 01 July 1917, but his specimens and notes do not make reference to frigatebird species. Bäckström's findings at Rapa Nui were written by Lönnberg (1921). Chapin (1935) mentions that he saw a few individual frigatebirds between 13 and 19 January 1935. In contrast, during his study of Motu Iti, McCoy (1978) identified a former frigatebird nesting site that was active no less than 150 years ago. Curiously, the first formal mention of the Great Frigatebird at Rapa Nui was in an ethnological monograph (Métraux 1940), which was not identified in the ornithological literature until recently. The correct identity of the frigatebird at Rapa Nui was a mystery for well over 90 years; see Marín & González (2022) for more details.

The bird-cult ritual began in Orongo, which is now an archeological site full of petroglyphs, many of which represent the half bird and half man figure in a crouching position (see Figs. 1, 2). Métraux (1940) clearly indicated that the birdman had the head of a frigatebird, which was recognizable by its pouch and hooked beak. Johnson *et al.* (1970) speculated that the species sought in the bird-cult may have changed over time, switching from the less numerous frigatebird in the beginning to the Sooty Tern in later years.

The petroglyphs associated with the bird-cult represent an anthropomorphic figure, part man and part bird, with a long-hooked bill that is unquestionably that of a frigatebird rather than a tern (Fig. 2). Some of the figures have an egg in their hands, but all represent the Tangata Manu. Lee (1992), in her extensive rock art survey, found that the great majority of the petroglyphs around Rano Kau, Orongo symbolize the birdman motif with frigatebird resemblance. Although the bird egg involved in the ritual may have been the Sooty Tern in more recent times, Lee (1992) proposed that it is likely that the prize went for the egg (and probably the feathers as well) of the frigatebird, or *Mahoke*, when the bird-cult began. This would explain the extensive iconography of the birdman with



Fig. 3. A rare figure in the rock art of Rapa Nui showing a full frigatebird. Other bird-related petroglyphs represent the birdman. This figure is on the roof of one of the caves where the islanders waited for the arrival of the birds or for the birds to lay an egg. The red pigment on the carved figure was brought from Rapa Nui as there are no soils with such color on the islets. (Photo: M. Marín)

a frigatebird resemblance, particularly at Orongo (see Figs. 1, 2). Interestingly, there are only a handful of rock carvings representing a real frigatebird, and one is in Motu Nui (Fig. 3). This figure is found in the roof of one of the caves in which the islanders waited for the arrival of the birds or for the birds to lay an egg.

It is very likely that heavy disturbance by egg gathering and feather collecting resulted in abandonment of the frigatebird colony, as frigatebirds are sensitive to these activities. Frigatebirds typically nest in isolated areas, and their complex life history (reviewed above) can easily be upset by disturbance (Vermeer & Rankin 1984, Harrison 1990). As argued by Lee (1992), an argument that I support, it is most likely that frigatebird colony abandonment accounts for the switch to Sooty Tern eggs in order to fulfill the ritual's requirements.

Sooty Tern – Manutara 1

The Sooty Tern is an extremely abundant species throughout all tropical and subtropical seas and oceans. Among the Chilean

subtropical offshore islands, it has been recorded breeding on Easter Island, Salas y Gómez, and in all three main islands of the Islas Desventuradas Archipelago, but it is only an occasional visitor to the Juan Fernandez Archipelago (Murphy 1936, Bahamonde 1965, Vilina & Gazitua 1999, Aguirre *et al.* 2009, MM pers. obs.). The Sooty Tern has an incubation period of 29–30 d and a nestling period of 55–60 d (Dinsmore 1972). Consequently, one breeding cycle takes a minimum of 3–3.5 months.

Throughout its range, the Sooty Tern is typically single brooded, e.g., Schreiber *et al.* (2002), but it can replace its lost clutch up to three times (Feare 1976). An extended breeding season may occur for at least two reasons: a) different cohorts or age classes may breed in the same area but arrive at different times, or b) eggs may be re-layed as lost eggs are replaced. Therefore, the observation of eggs at Rapa Nui in December (Johnson *et al.* 1970) and January (Chapin, 1935) were most likely replacement clutches rather than eggs from different breeding individuals. On the remainder of the Chilean subtropical offshore islands, hatching occurs between November and December, with young departing from late January to early March.

The first Sooty Tern individuals arrive to breed at the Chilean subtropical offshore islands around early to mid-August, and this is true of Rapa Nui. Following arrival of the first few birds, the remainder of the population arrives *en masse*. Egg laying starts sometime in early to mid-September and can extend through January, with a peak in October/November. The species departs by February/March. At Rapa Nui, Sooty Terns nest on the small near shore islets, called Motu, where their nesting phenology can be inferred from the observations of several naturalists. First, several accounts have noted when the species is present or absent. For example, Nicoll (1904) passed through Rapa Nui in early March 1903 and he observed many Sooty Terns, but MacFarlane (1887) went through around mid-March 1884 and observed none. Fuentes (1914) visited Rapa Nui in late April 1911 and observed none. When K. Bäckström visited Rapa Nui in June 1917, the species was not observed and, therefore, was not even mentioned in the *Birds of Easter Island* by Lönnberg (1921). Other visits to the island note the presence of Sooty Terns. During a visit to Motu Nui in November 1934, Métraux (1940) observed that the island was covered with birds nesting on rocks and in the grasses, with the birds swirling around his head in dense clouds. He added that within one hour, more than one hundred eggs were collected and most were eaten on the spot by his companions. Chapin (1935), in a visit to Motu Nui on 14 January 1935, observed that most birds that were flying over the island were Sooty Terns, and on 16 January he managed to capture two birds that are now at the American Museum of Natural History (AMNH #442895-6). While on anchor at Hanga Roa in Cook's Bay, a local visited his vessel offering to sell a headband made of Sooty Tern skin and feathers, but Chapin had no local money to make a purchase. On 17 January 1935, from the rim of Rano Koa volcano, Chapin also observed two boats at Motu Nui from which some people were collecting bird eggs. He later learned through the locals that most eggs that were collected were from Sooty Terns (a rather late date for Sooty Tern eggs, which might indicate replacement clutches; see above), a few were from Brown Noddies *Anous stolidus*, and a few others were from some *Pterodroma* spp. (Chapin 1935).

Review of naturalist's notes and publications also sheds light on the disappearance of Sooty Terns from Rapa Nui. During a visit to Motu Nui in mid-February 1956, M. Moynihan observed only one bird during a time when the presence of a few young individuals

and some adults would still be expected before their departure for the season (Moynihan *in litt.* to Goodall *et al.* 1964). Johnson (1967) mentioned that M. Moynihan had been informed that the Sooty Tern was nesting on the islet of Motu Marotiri on the eastern side of the island (Fig. 4) (sometimes spelled Motu Maratiri or Marotire). However, Moynihan was not able to land on Motu Marotiri because of bad weather. Nevertheless, Johnson (1967) also mentioned that nesting of Sooty Terns at Motu Marotiri was confirmed by T. Heyerdahl, who managed to visit the islet sometime late in 1955. After not finding Sooty Terns at Motu Nui, Johnson's party followed these observations and went to Motu Marotiri, where they found a small number of the species breeding on 16 December 1968. The egg data cards from the eggs collected on this date—which are now at the Western Foundation of Vertebrate Zoology (WFVZ numbers 41215-19; 41560-61; and 53590-92) in Camarillo, California—indicate that at least some of the collected eggs were fresh. There is no further mention of Sooty Terns at Easter Island after 1968 (see also Marín & Caceres 2010).

Johnson *et al.* (1970) mentioned that two weeks before their visit to Motu Nui in December 1968, the islet was raided by islanders who took fresh eggs (probably of any seabird species). In addition, Harrison (1971) visited Motu Nui in early February 1971, and although he did not mention terns specifically, he mentioned that while he was on the near-shore islet, an expedition of islanders took all the eggs and birds that could be collected, including two sitting adults of Kermadec Petrels *Pterodroma neglecta*. He kept one of the wings of the captured petrels, which was eventually deposited at the Cornell University Museum of Vertebrates (CUMV #34498). Lee (1992), who visited the island in the early to mid-1980s, indicated that the few birds that did arrive during those years were “eagerly captured and eaten.”

Terns adapt to colony disturbance by deserting the colony to then breed in a new area (Feare 1976, 1984). This behaviour likely explains the breeding ground changes from Motu Nui to Motu Marotiri sometime between late 1930s to early 1950s. From her interviews with elders, Routledge (1917) found that through time, due to the pressure of collecting, the terns had changed their nesting locations several times, from the top of Rano Kao, to Motu Iti, and to Motu Marotiri on the southern coast, which was the final known nesting location in Rapa Nui.

In summary, I conclude that the Motus were heavily raided for birds and eggs, particularly after modern means of transportation arrived in Rapa Nui. When I visited the near-shore islets, Iti and Nui, on 15, 16, and 19 August 2009, I found no evidence of Sooty Terns. During visits in 2001, Jaramillo *et al.* (2008) also noted the complete absence of this species. Furthermore, I visited Motu Marotiri on 14 August 2009. I did not land, but I was able to clearly observe and photograph the islet from the cliffs just ~200 m away. There were no visual signs of terns through 10× binoculars nor in the many close-up photographs of the area at a time when the presence of at least a few terns would be expected (Fig. 4.)

Spectacled Tern - Manutara 2

The second species of tern, also called *Manutara*, is the Spectacled Tern, which the islanders did not distinguish from the Sooty Tern. From 1900 onwards, there is only one clear record of this species, and it consists of three specimens collected on 01 July 1917 by K. Bäckström, Lönnberg (1921). Currently two of these specimens are at the Naturhistoriska Riksmuseet Museum, Stockholm, Sweden (NRM AV 90111487-488). Interestingly, Lönnberg (1921) mentioned the collection dates of these specimens as 28 June 1917. The Spectacled



Fig. 4. The flat top of Motu Manotiri, the last known breeding place for the Sooty Tern *Onychoprion fuscatus* at Rapa Nui, now devoid of birds; picture taken on 14 August 2009. (Photo: M. Marín)

Tern was also mentioned by Métraux (1940) as being one of the species collected and present on the Motus. However, it does not appear that a specimen was obtained because no specimens were found in the different museums where the specimens collected by Israel Drapkin (the medical doctor of the Métraux expedition) are deposited (see also Marín & Caceres, 2010). In accord, Devillers (1972) mentioned only specimens of Sooty Terns as part of their collection, but this was not mentioned by Métraux (1940), suggesting a probable species confusion by Métraux or Drapkin. Millie *et al.* (1969) and Johnson *et al.* (1970) considered the species to be scarce and not nesting during their visit in December 1968. Whether they actually saw the species is not clear. Nevertheless, Johnson *et al.* (1970) had already questioned whether the species had ever nested at Rapa Nui given the lack of breeding record. Jaramillo *et al.* (2008) never saw the species during visits in November and March when breeding birds would be expected in the area (at least in November). The closest breeding ground for the species would be the Tuamotu Archipelago, where the Spectacled Tern breeds year-round (Dupont 1976, Harrison *et al.* 2021). If the Spectacled Tern ever bred at Rapa Nui, it would have done so in the very distant past, likely in small numbers. However, because there is no evidence that this species breeds at Rapa Nui, it is more likely that it was an occasional post-breeding visitor.

The human impact

Human impact on bird populations

The bird population at Rapa Nui became diminished by a series of different events. From the 1770s to about 1890, the first Europeans and travelers explored the island. In their chronicles they emphasized that only a very small number of canoes were present on the island that were described as being not very seaworthy and made of driftwood, in accord with the lack trees on the island. From about 1890 onwards, the firm Brander, which was exploiting the island during that period, imported canoes from Tahiti to Rapa Nui and used them for many years (Métraux 1940). By the 1900s, the pressure on the island's bird species became greater with the innovation of canoes and, likely, traps or guns to catch the birds in question. In a visit to the near-shore islets during February 1971, Harrison (1971) mentioned that the islanders were now better supplied with outboard engines, fuel, and other equipment and were devastating the nesting seabirds (see also above). With canoes and modern equipment, it was no longer difficult to visit the Motus, and a tremendous pressure was placed on all seabird species, not just the Sooty Tern. During the era of the bird-cult there were measures (a *tapu*) in place to protect eggs and birds, two items that were a prized food resource (McCoy 1978). In that regard, at least two important regulated times were allowed for egg gathering, centering mainly on the Sooty Tern. The first egg collection period occurred during the *Tangata Manu* election (see above), and the second egg collection period occurred a month or so later, with egg collection solely the privilege of the warriors known as *ao*. During this time, the warriors were allowed to gather both eggs and young nestlings (called *piu*, a name given because of the sound the nestlings make) for consumption. After the cult was diminished, controls on egg collection were removed, resulting in the unbridled collection of eggs and nestlings for consumption, a practice that persisted until very recently. Moreover, adult birds were hunted for their feathers to be used in decorative headbands, crowns, and clothing, placing further stress on the bird population.

In addition, the introduction of a predator-scavenger bird, the Chimango Caracara *Milvago chimango*, placed further pressure

on the seabird species at Rapa Nui, particularly the Sooty Tern. The caracara was the last drop in an already filled glass. Although, the precise date of introduction is not clear (see Marín & Caceres 2010), the most recent information available indicates that this predator-scavenger species came to the island between 1928 and 1930. It was introduced by the manager of the Compañía Explotadora de Isla de Pascua as a predator to control an outbreak of rodents (Chapin 1935, Johnson *et al.* 1970, Marín & Caceres 2010). Throughout its distribution, the Chimango Caracara is an opportunistic hunter and scavenger. Based on visual observations (Barros 1960, MM pers. obs.) and stomach content analysis (Nuñez & Yañez 1981, Nuñez *et al.* 1982, Cabezas & Schlatter 1987), its natural diet consists of arthropods ranging from grubs, insects, and arachnids to live and dead prey items such as young birds, rodents, frogs, and lizards; on the seashore, it scavenges organisms that get washed onto beaches; and it will take vegetable matter such as almonds and sunflower seeds. In central Chile, the Caracara is well known to take small chickens and any running pullets. In addition, throughout the Chimango Caracara's range, I have observed that this species does not typically eat eggs, unlike one of its relatives, the Striated Caracara *Phalcooboenus australis* (Marín *et al.* 2013). This observation is supported by Luna *et al.* (2018) who experimented on unattended eggs in a colony of Red-tailed Tropicbirds *Phaethon rubricauda* at Rapa Nui. However, the case is very different for unattended, very young nestlings. Young tropicbird nestlings are unlikely prey for caracara because young nestlings of this species are not left alone in the nest and are too large for caracara later in their nestling cycle. In contrast, tern nestlings in the near-shore islands of Rapa Nui are attractive and easy prey, which can be attributed to their social feeding habits as emergent and ephemeral food items become available (MM, pers. obs.). During these times, the Caracara can have a devastating effect on any seabird colony. Harrison (1971) visited Rapa Nui in February 1970 and sounded the first alarm to the impact that the Chimango Caracara was having on seabird nestlings. Johow (2005) mentioned the presence of caracaras on Motu Nui but did not comment further. On 15 August 2009, I landed on Motu Nui and the second bird species that I encountered was a Chimango Caracara eating a young petrel *Pterodroma* spp. It was my impression that there were some resident caracara on the islet (Marín & Caceres 2010). Lazo (2010, 2011) also reported the presence of caracara and direct attacks on the nests of petrels in Motu Nui. On 14 August 2009, I visited the Poike Peninsula to check the Motu Marotiri (Fig. 4) and noticed very large numbers of Chimango Caracara, particularly on eucalyptus patches. The caracara population seemed to be thriving at Rapa Nui, with an unknown but probably large part of its diet consisting of young seabirds.

Human impact on the bird-cult

A series of events beginning in the late 1800s contributed to the final demise of the bird-cult. Commencing in late 1862 until mid-1863, a party of Peruvian slave-raiders took more than one thousand inhabitants from Rapa Nui (constituting at least 75% of the estimated island population at the time) to work on the guano fields in Peru (McCoy 1978). Significantly, they took some of the most important men, including the last *Ariki*, or chief, and many of the most educated members of the society (Routledge, 1920). Undoubtedly, these actions left a tremendous gap in knowledge of the bird-cult rituals. This was soon followed by the arrival of missionaries from the Catholic Church, which began around 1864, another pivotal event in the demise of the bird-cult. By 1868, the entire population of Rapa

Nui was baptized, and there was a push to end any “pagan” cults (Routledge 1917, 1920; Cristino 2011). These events put a final end to the bird-cult, and local inhabitants were no longer discouraged from collecting bird eggs and young for food.

In summary, a combination of factors occurring concurrently contributed to the demise of Rapa Nui’s seabirds and the bird-cult. However, the introduction of the Chimango Caracara was most likely the final straw that led to the eradication of the ritual’s primary bird (at least in more recent times), the Sooty Tern. The caracara has proven detrimental for all seabird populations on Rapa Nui. All three species of seabird involved in the bird-cult no longer breed on the island or islets and two of these species may no longer visit Rapa Nui. Therefore, there is an urgent need for the caracara to be eradicated from the island. With the eradication of the Chimango Caracara from Rapa Nui, a return of the Sooty Tern to Rapa Nui is likely.

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