

CONSERVATION OF AN ISLAND ENDEMIC:
CALAYAN RAIL *Gallirallus calayanensis*

FINAL REPORT

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EXECUTIVE SUMMARY

The Calayan Rail Project is conducted by Isla Biodiversity Conservation Inc. (ISLA), an environmental organization established by members of the pioneering expedition to the Babuyan Islands in 2004 that discovered the Calayan Rail *Gallirallus calayanensis*. The general goal of the project is to initiate a long-term program for the conservation of the Calayan Rail and other wildlife and natural habitats of Calayan Island.

Activities undertaken under this project included the following:

Calayan Rail survey. Playback census was employed to survey the abundance and distribution of the rails in April, May, October and December in 2005 and January and February in 2006. A total of 471 survey stations along or near trails throughout Calayan Island were covered. In each station, the number of rails responding to playback of the “chorus call” was recorded.

In the island-wide survey in April-May 2005, rails were detected at 3.4% of the total 323 stations surveyed. This translated to a low abundance index of 0.04 rails/station. The October 2005 survey resulted in 26.9% positive stations out of the 115 surveyed in Sitios Longog and Pilid, giving a moderate abundance index of 0.41 rails/station. In December 2005, 12.4% of 89 stations surveyed were positive for rails, translating to a low abundance of 0.18 rails/station. The island-wide survey in January to February 2006 resulted in 20.6% positive survey stations out of 471, translating to a moderate abundance index of 0.27 rails/station.

Total number of rails detected was 202, plus an additional 13 off-census rail detections. Out of seven barangays in the island, rails were encountered in five—Magsidel, Dibay, Dilam, Cabudadan and Dadao— indicating a wide distribution of the species.

4P workshop. A consultative workshop themed “Conservation of the Calayan Islands’ Natural Heritage” was held in October 2005 to identify key communication and education activities needed to raise local conservation awareness and cooperation. Thirty-eight local leaders and government officials participated in the workshop and contributed ideas. Teacher training, community meetings and further workshops were identified and the assistance of ISLA was sought for these.

Teacher training-workshop. Based on the outputs of the 4P Workshop, a training program for educators from Calayan Islands was held on 12-18 May 2006. The activity was jointly sponsored by the Center for Environmental Awareness and Education (CEAE), ISLA, and World-wide Fund for Nature (WWF)—Philippines. A total of 19 high school teachers, 33 elementary school teachers, six local government unit (LGU) staff, eight ISLA volunteers and one WWF staff participated in the training.

Community consultations. A series of consultations covering eight sitios and barangays was conducted in May 2006. The activity, participated by local stakeholders, resulted in a conservation action plan that specifies measures to control slash-and-burn farming, provide livelihood assistance to locals, intensify information and education campaigns, establish a protected area or sanctuary, and strengthen enforcement of environmental laws.

On 30 May 2006, a consolidation and action-planning workshop was held at the Calayan Municipal Hall. Participants, numbering 24, represented different barangays and the following departments/sectors: the Municipal Environment and Natural Resource Office, the Municipal Agriculture Office, the Municipal Planning and Development Coordinator's Office, the Municipal Legislative Council, the Philippine National Police and ISLA were present in this culminating activity of the consultations.

Environmental Education Campaign. During the Calayan Rail Project's last fieldwork in Calayan from 13 August-8 September, the team conducted the following environmental education activities: (1) Biodiversity Exhibit, (2) Poster-making Contest, (3) Coloring Contest, (4) Face-painting, (5) Quiz-Raffle, and (6) Seminars on Watershed and the Water Cycle. Except for the seminars, the activities were conducted during Calayan's town fiesta. A radio script calling for the conservation of the Calayan Rail is being prepared for airing at the local FM station in Calayan.

The exhibit and face-painting materials were then brought to Cagayan State University on loan for a week. More than 400 students visited the exhibit and participated in the activities.

Philippine Bird Festival. ISLA showcased the Calayan Rail Project during the 1st and 2nd Philippine Bird Festival, sponsored by the Wild Bird Club of the Philippines, held in Metro Manila on 18 November 2005 and 22-23 September 2006 respectively. Thousands of students, teachers and parents attended as well as members of the press and government agencies. Major conservation organizations in the Philippines joined the festival and put up exhibits. The project team leader presented lectures on Philippine biodiversity and the Calayan Rail Project during the 2nd Philippine Bird Festival.

The Calayan Rail Project also participated in a mini-birdfest held at a local mall on 6-10 March 2006. The short animated film and live video footages of the Calayan Rail was shown to mall goers.

Media coverage. Project team members are regularly invited to the only local FM station in Calayan to discuss conservation issues and ISLA's wildlife research activities. The broadcast covers four out of five islands in the Babuyan group.

The project team leader was interviewed on national TV about the Calayan Rail discovery during the 1st Philippine Bird Festival. She also guested at an environmental radio program during which she talked about the discovery, research and conservation of the Calayan Rail.

Environmental advocacy. In partnership with CEAE, ISLA is making a documentary on the Calayan Rail and Calayan Islands' natural treasures. The documentary is targeted for completion by the 1st quarter of 2007. The aim of the documentary is to raise pride and awareness for the island's natural heritage.

ISLA is also partnering with local universities in Northern Philippines in a volunteer program. Students and recent graduates are encouraged to volunteer in fieldwork in exchange for training and referrals. The group is working on a memorandum of agreement with the universities specifying the terms for the volunteer program to include academic and internship credits for the volunteers.

As an initial breakthrough, the Calayan municipal council has passed Municipal Ordinance No. 84, which prohibits the capture of the Calayan Rail and imposes fines of up to 2,500PhP or imprisonment for offenders. The Cagayan provincial government has subsequently approved the ordinance.

Planned long-term activities include: (1) Promote the establishment of an environmental monitoring system; (2) Conduct further community consultations and education campaigns; (3) Assist in the declaration of a protected area covering the Calayan Rails' area of occurrence; and (4) Set up a volunteer network for conservation activities.

CALAYAN RAIL SURVEY

INTRODUCTION

In May 2004, the Calayan Rail *G. calayanensis* was discovered in the island of Calayan in the Babuyan Islands where it is believed to be endemic. During the scientific expedition that led to the discovery, the Babuyan Islands was also found to be an area of conservation importance due to the presence of endemic species, lack of scientific research, and looming threats to wildlife and its habitats in the islands (Oliveros et al. 2004).

Consequently, members of the scientific expedition responsible for the discovery and members of the Calayan Rail Project established an environmental organization, Isla Biodiversity Conservation, Inc. (ISLA), whose mission is to help communities in small islands learn about their natural environment, conserve native species and their habitats, and pursue sustainable ways of living. The Calayan Rail Project is therefore being conducted under the auspices of ISLA.

The general goal of the Calayan Rail Project was to initiate a long-term program for the conservation of the Calayan Rail and other wildlife and natural habitats of Calayan Island. Primarily, it sought to provide baseline data on the Calayan Rail's abundance and distribution as well as threats to the species and its habitat in order to ascertain this species' conservation threat status. The rail's spatial distribution on the island of Calayan is especially important information that policymakers could use in defining the borders of a proposed protected area in the island. This study likewise intended to make an initial description of the ecology of the Calayan Rail i.e. feeding and breeding behavior and call variations. Lastly, environmental awareness-raising was one of the major thrusts of this project.

Accordingly, an initial abundance and distribution survey of the Calayan Rail was conducted in March-May 2005. The Haribon Threatened Species Program with grants from the Critical Ecosystems Partnership Fund provided funding for this preliminary survey. The study was successful in establishing survey stations throughout Calayan Island that were subsequently used in this project. It clarified some of the threats and added information on the biology of the species. Some of the call variations of the rail were also recorded in this initial island-wide survey.

The paper "A Preliminary Survey of the Island-Wide Relative Abundance of the Calayan Rail *Gallirallus calayanensis*" details the results of the survey conducted on March 31-May 13, 2005. This was presented by the project team leader at the annual symposium of the Wildlife Conservation Society of the Philippines. The paper is currently being reviewed for publication in a scientific journal containing the symposium's proceedings.

The Calayan Rail (locally known as "piding") was discovered and described by Allen et al. (2004). It was observed in both primary and degraded forests in Calayan Island and appeared to be restricted to those parts with coralline limestone outcrops (Allen et al. 2004). It is believed to have very limited flight capability—local people observed it flies only short distances. Due to its small population and range size, it was given an IUCN Red List category of "Vulnerable"

(BirdLife International 2006). No study has been conducted on its status and distribution in Calayan Island, where it is believed to be endemic.

STUDY AREA AND METHODS

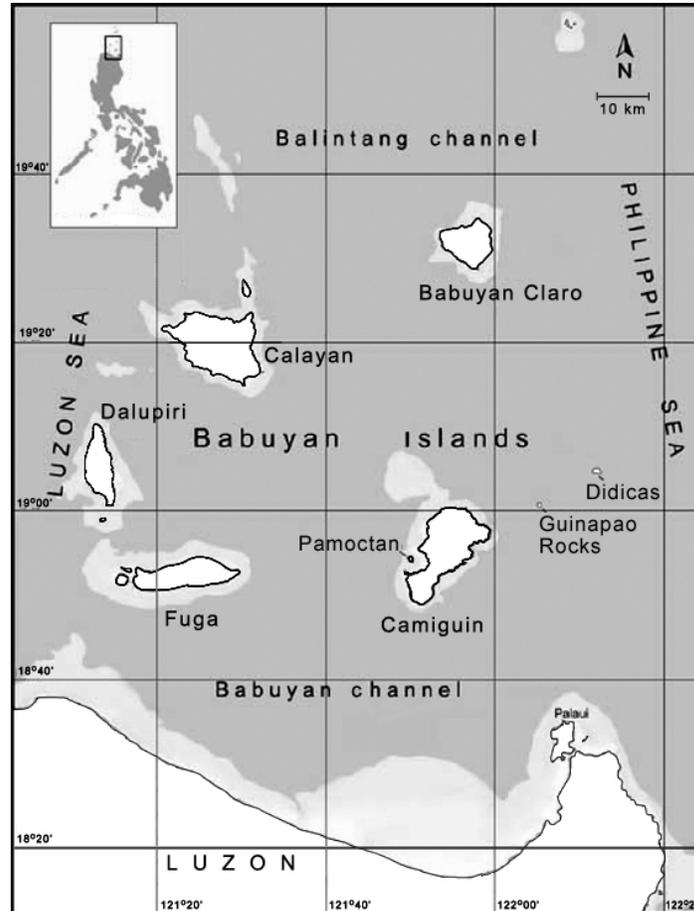


FIGURE 1. Location map of Calayan Island in the Babuyan Islands, Northern Philippines.

The island of Calayan (N 19° 20' E 121° 27'), occupying 196 km², is the largest in the Babuyan group of islands in the northern tip of the Philippines (Figs.1 & 2). It is the seat of the Calayan municipality which includes the islands of Camiguin, Dalupiri, and Babuyan Claro. It lies 60 km north of Luzon and south of the Batanes islands. It forms part of the country's northernmost Important Bird Area (IBA code PH001: Mallari et al. 2001). Initiatives have been taken by the Philippine government to establish the Calayan Islands Protected Landscape and Seascape in four of the five islands of the Babuyan group, including Calayan.

The topography of Calayan is low-lying (highest elevation is 499 m), with extensive primary and regenerating forests in its central area. These forests have intermittent clearings, often containing plots of land cultivated for rice, yam, corn and coconut. Extensive grassland covers the eastern coastline and the island's northwestern tip.

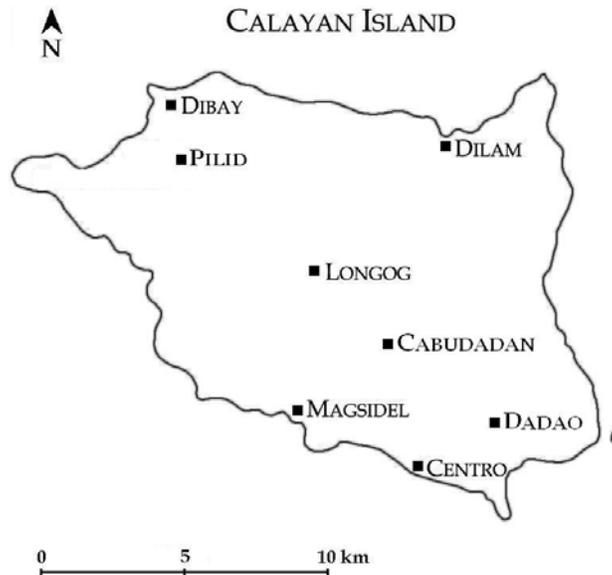


FIGURE 2. Map of Calayan Island showing the location of some of its barangays and sitios.

Main settlement areas are located on the southern and northern coasts, where ricefields and coconut plantations extend 1-2 km inland. A 2000 census put the human population of the island at almost 8,500.

Playback Census

Playback of calls has been effectively used to study the distribution and abundance of rails (Tomlinson & Todd 1973, Glahn 1974, Johnson & Dinsmore 1986, Mancini & Rusch 1988, Evens et al. 1991). Ozaki et al. (2002) and Gibbs et al. (2002) used this technique in their studies of the Okinawa Rail *Gallirallus okinawae* and the Galapagos Rail *Laterallus spilonotus*, respectively, both insular rail species. These studies involved setting up census stations from where vocal responses were elicited by broadcasting recorded calls of the target species.

The playback census technique was employed to survey *G. calayanensis* in a total of 471 survey stations located on or near trails throughout Calayan Island. Survey periods were April 22-May 10, 2005; 20-25 October 2005; 10-28 December 2005; and January 31-February 19, 2006. The April-May 2005 and the January-February 2006 surveys were island-wide. The October survey was conducted in Sitio Longog and barangays Dibay and Dilam while the December survey was conducted in Barangays Cabudadan and Dadao (Fig.2). Succeeding surveys after May 2005 were conducted in newly opened stations in addition to the same stations established in the April-May 2005 initial survey.

A pilot study was carried out from April 3-21, 2005 when rail vocalizations were recorded, rail response to playback was tested, and researchers practiced using the standard census method and the use of equipment. Line transects conducted for six days were found to be ineffective in surveying the rails because of their skulking and cryptic behavior. When threatened or disturbed, rails were observed to hide behind logs and boulders and remain motionless for several minutes making them difficult to detect in a line transect.

Interviews of upland residents about their rail encounters prior to the survey provided information on areas most likely to contain populations of the species. The team attempted an extensive survey of prime habitats located throughout the island. Some stations were also sited in areas where the rail was not expected such as grasslands, old kaingin farms or agroforests, and rice fields. In these areas, survey stations were located in the most promising habitats as similarly done by Evens et al. (1991).

Vocal responses were elicited by broadcasting prerecorded Calayan Rail chorus calls in a sequence of 40-second call and 5-second silence in each quarter direction, followed by four minutes of silence. The number of rails observed (both seen and heard) within a 20m radius plot and within the duration of the survey was counted. This plot radius was set after field testing revealed that an observer's ability to detect rails especially when they approach without calling declined beyond this distance. The rails' location (compass bearing) and approximate distance from the plot center were also recorded. Rails observed outside the survey station or outside the sampling effort were noted along with observations on their vocalizations and responses to playback.

The team separated into groups of two or more individuals and surveyed stations that were at least 100m apart (between survey plot centers) along existing trails, or at a distance off the trails in the case of highly disturbed or used trails. In April-May 2005, the team surveyed in groups of at least two individuals, but it was observed that groups of at least three individuals were more efficient since rail calls can be quite faint making detection difficult. The three observers positioned at least 10m away from each other in a line, with the one holding the speaker in the middle to maximize chances of hearing and seeing the rails. Dark/dull-colored clothes were required for all observers.

All counts were conducted in uniform/standard weather conditions to avoid introducing extraneous variables that would have affected the quality of data gathered. Evens et al. (1991) noted that an observer's ability to detect calls is hampered by background noise; therefore counts for this study were not carried out during particularly windy or rainy weather. Counting was done from 07:00 to 17:00. Gibbs et al. (2002) conducted their census from 07:00 to 14:00 while Evens et al. (1991) counted from dawn to 09:30. In this study, counts were not made near dawn to avoid the possibly high count variance resulting from the rapid change in bird conspicuousness (Shields 1977); and the high noise level from forest birds such as the Common Koel *Eudynamys scolopaceus*, the Black-naped Oriole *Oriolus chinensis* and the Chestnut-eared Bulbul *Microscelis amaurotis* calling at this time of day. While Johnson & Dinsmore (1986) noted that Virginia Rails *Rallus limicola* responded from a greater distance during night counts and Robert et al. (1997) found that male Yellow Rails *Coturnicops noveboracensis* constantly called at night, this study did not observe rails calling after dusk both during the pilot study and during the survey proper, which was likewise confirmed from interviews with local people. Several stations that were positive for rail presence during the day did not produce any rail response when the playback technique was used at night.

Results of the census were plotted on a map of Calayan Island with grid lines placed 0.5 minutes apart horizontally and vertically. The locations of rail occurrence were marked in the squares formed by the intersection of the grid lines to show the distribution of the species throughout the island (Fig. 3).

Seven distinct rail calls, made spontaneously and in response to playback, were observed during the survey (Table 1). Five of these calls, i.e. foraging kek, rapid kek, chorus call, errrk, and alarm call, were recorded using a Sony MD Walkman and lapel microphone. The call used for playback in April and May 2005 was the chorus call recorded from a group of rails in Longog in April 2005. Surveys after May 2005 made use of a clearer recording of the chorus call that was also taken from rails in Longog in March 2005. The chorus call elicited the following response: rails were drawn to the source of the sound and/or joined in the chorus call. Some rails even came to less than a meter away, within full view of the observer. The rapid kek and chorus calls were the same as those described by Allen et al. (2004) as “ngeck, ngeck, ngeck,” which the group used to elicit responses to playback in 2004. Allen et al. (2004) also described what sounded to be the agitated kek and the alarm scream, which were phrased as “krrreert” and “ngreeek,” respectively. The functions of the calls were not positively determined in this short survey.

TABLE 1. Summary of calls given by the Calayan Rail.

Name of call	Description
Foraging Kek	Soft, slow “kek-kek-kek” made by individuals while walking and searching for food in the forest litter.
Agitated Kek	A disturbance call similar to a foraging kek but higher pitched and more insistent. An individual was observed to make a threat display by moving closer to the source of the sound and flicking its tail while making this call in response to playback.
Rapid Kek	Loud and rapid “kek-kek-kek” made by individuals at variable speed and loudness. Call made with or without stimulation from the taped calls.
Chorus Call	Same as rapid kek but made in unison by two or more birds. Taped call usually elicits a chorus call when more than one individual is in the area.
Thump	Very low and terse “butt” that is more felt than heard. A response to playback that is usually followed by an “errrk” and/or chorus call. A rail has to be near the observer for this call to be detected.
Errrk	A loud, harsh, far reaching “errrk” also made in response to playback.
Scream	Alarm call when held in the hand.

Habitat Sampling

Vegetation in each station was described and examined following a modified relevé technique used by Gibbs *et al.* (2002). Percentage cover of different vegetation types was visually estimated in each circular survey plot using the following cover classes: 1 <1%, 2 >1-5%, 3 >5-15%, 4 >15-25%, 5 >25-50%, 6 >50-75% and 7 >75% (Table 3). The tree architecture or branching of 10 trees nearest to the station center was also noted. Tree architecture types which are indicators of the history of forest disturbance were based on Bibby *et al.* (1998). The proportion of different tree architecture types (A-D) correspond to the following forest types: old growth forest (A), recently disturbed forest (B) and older regenerating forest (C+D).

Old growth forest was characterized by closed canopy and trees with their first major branch well above half their height. Clemeno et al. (2005) conducted a floral diversity assessment of Calayan Island to complement this study. In the areas surveyed, the overstorey and understorey tree species with the highest importance values were *Shorea contorta*, *Aphanamixis polystachya*, *Spondias cytherea*, *Knema glomerata*, *Shorea polysperma*, *Agathis philippinensis*, *Palaquim tenuipetiolatum*, *Arthophyllum ahernianum*, *Strombosia philippinensis* and *Cyathocalyx*

acuminatus. The understory had a profusion of tree seedlings, juvenile rattan of genera *Calamus spp.* and *Daemonorops spp.*, Banban *Donax cannaeformis*, and Red Odontonema *Odontonema strictum*. Epiphytes such as *Drynaria quercifolia* (Family Polypodiaceae), and *Asplenium musaeifolium* and *A. nidus* (Family Ascladiaceae) were common. Vines from various families were present in the area, among which are aroids (Family Araceae), climbing palms or rattans (Family Arecaceae), climbing bamboo (Family Poaceae), yams (Family Convolvulaceae) and lianas (Family Cecropiaceae = Tiliaceae). Fern and fern allies of genera *Lygodium*, *Dicranopteris* and *Sellaginella* were also observed.

Recently disturbed forest on the other hand was characterized by tree growth with branching below half its height. These trees grew up in areas with open canopies where competition for light and space were minimal. Recently disturbed forest includes pioneer and/or invasive genera such as *Leucaena sp.*, *Mimosa sp.*, *Merremia sp.*, *Antigodon leptotus*, *Casuarinas spp.*, *Colocasia esculenta*, *Eucalyptus camaldulensis*, *Hibiscus tiliaceus*, *Lantana camara*, *Passiflora edulis*, *Psidium guajava*, *Ricinus communis*, and *Syzygium jambos* (Clemen et al., 2005).

A predominance of trees with (a) branching above half its height but with scars or (b) vertical branching below half its height characterized older regenerating forests. This habitat type had many plant species in common with the old growth forest but with an addition of fast growing and sun loving pioneer species that thrive in breaks in the forest canopy due to tree falls or selective logging. The understory as well as the undergrowth was much denser compared to old growth forests.

Percentage cover of each vegetation type was compared among stations where rails were detected and stations where no rails were detected. Other habitat features such as proximity to water and human disturbance, presence of fallen logs, exposed rocks or limestone, and abundance of gastropods were noted. A chi-square test was used to determine which elements of the habitat increases the probability of rail detection (Table 3).

Ethno-biology

Eighty-three people living in the vicinity of the forest were interviewed to gather local knowledge on the rail's distribution, habits and ecology. A preliminary assessment of the threats to the Calayan Rail was gathered from information on hunting practices and from observations on the extent of forest cover removed for slash-and-burn farming.

RESULTS

During the summer survey in April-May 2005, rails were detected in 3.42% of the survey stations mostly around sitio Longog from out of 323 located throughout the island. However, rails were also encountered outside the census effort in barangays Magsidel, Dibay, Dilam, Cabudadan, and Dadao, indicating a wide distribution of the rail in the island. Moreover, while the number of rails detected during the summer survey was low with an abundance index of 0.04 rails/station, residents report the rails to be more common and conspicuous from December to March. This prompted the survey team to return to the island thrice after the initial survey to cover the different seasons of the year.

Surveys during the rainy months of October and December in 2005 and January and February in 2006 yielded a higher percentage of rails responding to playback (Table 2). In October 2005, out of 115 census stations in sitios Longog and Pilid, 26.96% were positive for the presence of rails. This gives a moderate abundance index of 0.41 rails/station. In December 2005, 12.36% of the survey stations out of 89 were positive for rails giving a low abundance index of 0.18 rails/station. The island-wide survey in January to February 2006 resulted in 20.6% positive survey stations out of 471 with a moderate abundance index of 0.27 rails/station. The total number of rails detected is 202 plus an additional 13 off census rail detections. Majority of the rail detections in the study were heard only records with only 24-36% seen. Around 24% (76 stations) of the negative stations during the summer survey were positive in the rainy season surveys. Figure 3 shows the stations surveyed for the Calayan Rail in the island of Calayan.

TABLE 2: Abundance indices of the Calayan Rail across survey seasons.

Survey season	Number of stations w/ positive stations in parentheses	Percentage of stations w/ rails	Number of rails per station	Abundance rank
22 April to 13 May 2005	323 (11)	3.42	0.04	Low
20-27 October 2005	115 (31)	26.96	0.41	Moderate
10-28 December 2005	89 (11)	12.36	0.18	Low
31 January to 20 February 2006	471 (97)	20.59	0.27	Moderate

High = >0.90 rails/survey station; Moderate = 0.25-0.90 rails/survey station; Low = <0.25 rails/survey station (Evens *et al.* 1991)

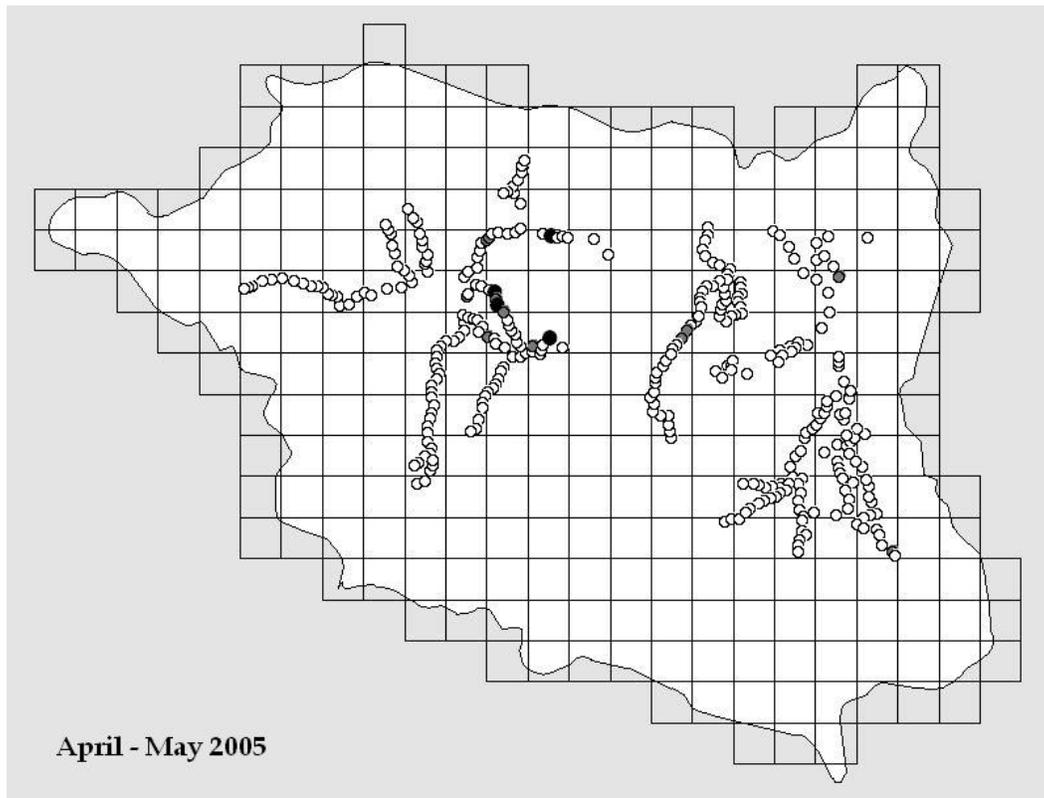


FIGURE 3. Areas in Calayan Island surveyed for *Gallirallus calayanensis* across seasons. Grey circles represent stations where rails were detected, white circles where no rails were detected and black circles where rails were detected outside the survey effort.

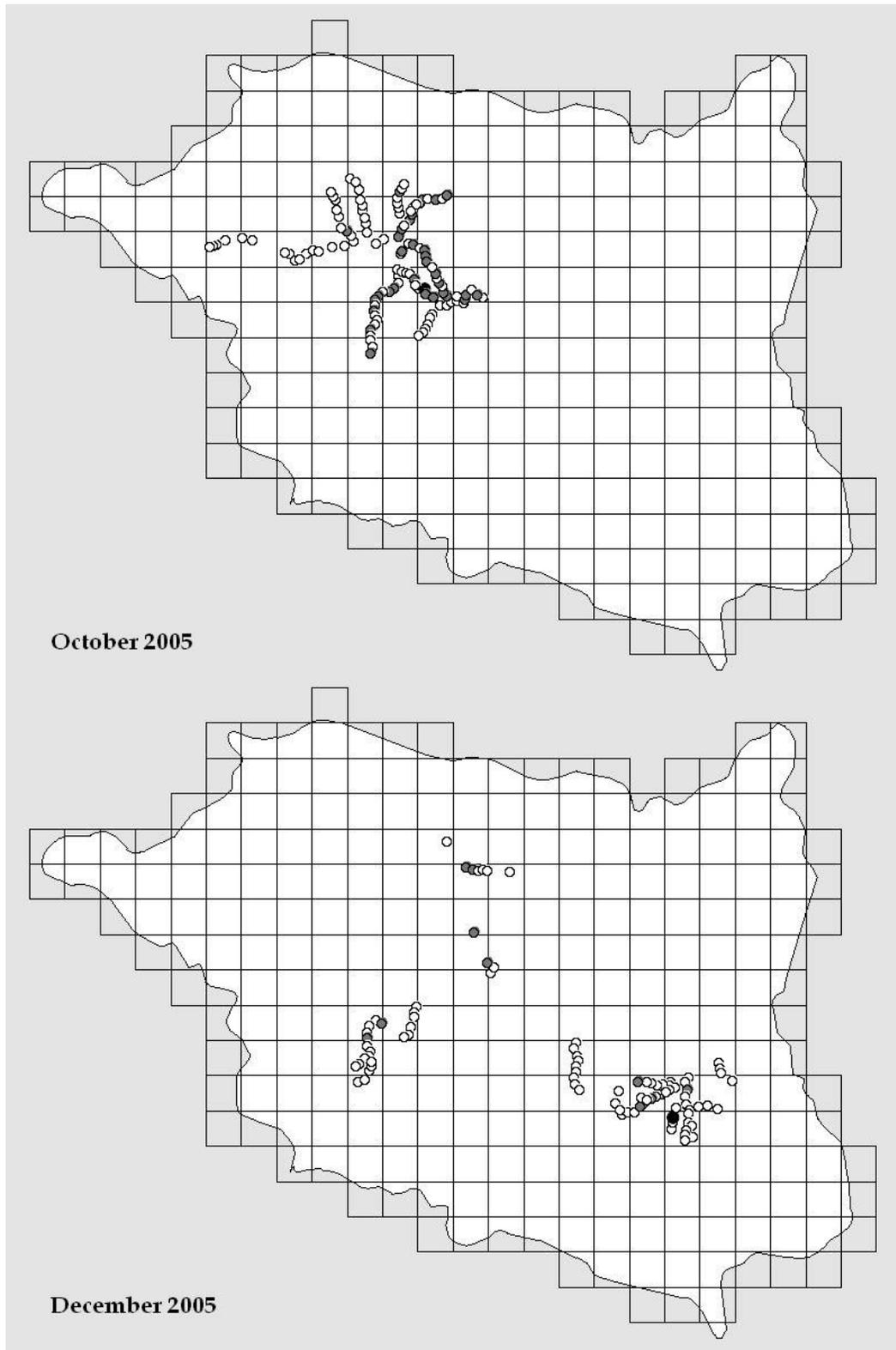


FIGURE 3 continued. Areas in Calayan Island surveyed for *Gallirallus calayanensis* across seasons. Grey circles represent stations where rails were detected, white circles where no rails were detected and black circles where rails were detected outside the survey effort.

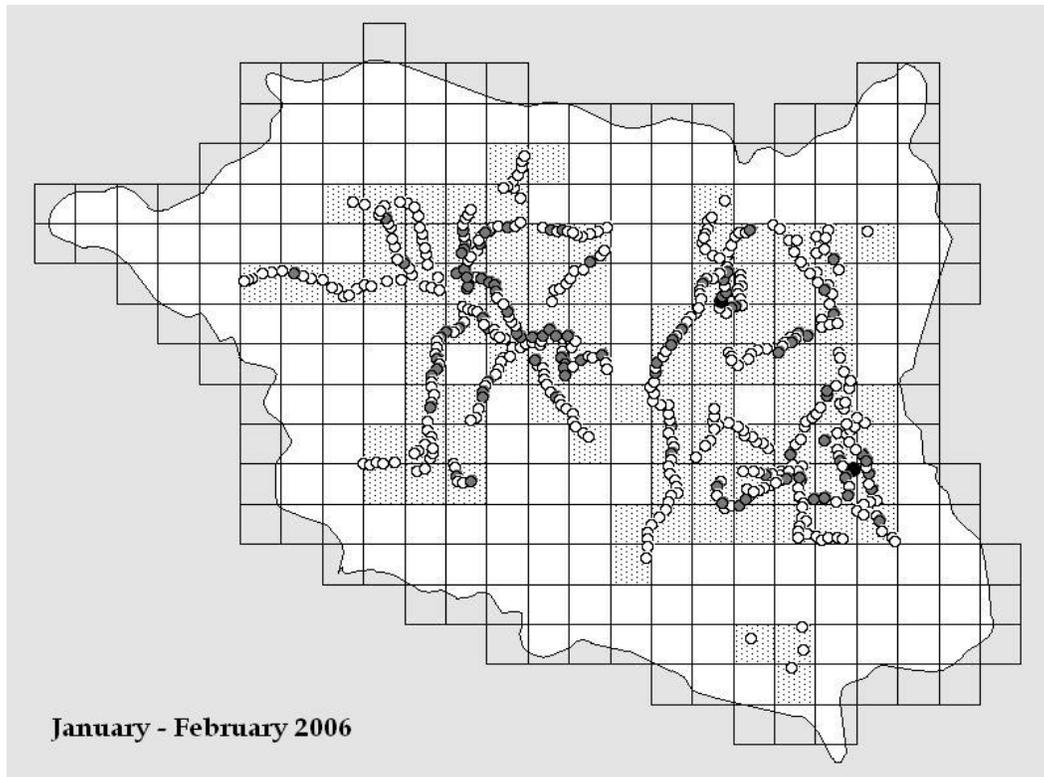


FIGURE 3 continued. Areas in Calayan Island surveyed for *Gallirallus calayanensis* across seasons. Grey circles represent stations where rails were detected, white circles where no rails were detected and black circles where rails were detected outside the survey effort.

Calayan Rail Habitat

Among the vegetation types, *Odontonema* is significantly correlated with the presence of rails in a survey station (Chi-square=56.6119, df=2, $P<0.0001$). With regard to the presence of other habitat elements i.e. fallen log, agricultural crop, gastropod, exposed rock, *Musa* and *Ficus*, no significant association was found with the rail's presence in a station. For the types of substrate, exposed limestone (Chi-square=6.4713, df=1, $P=0.0110$) and clay (Chi-square=8.6585, df=1, $P=0.0033$) showed significant differences in proportions between stations with positive and negative presence of rails. Rail presence is not significantly tied to tree architecture. In terms of human disturbance, the presence of cutting within (Chi-square=7.1859, df=1, $P=0.0073$) and trail near (Chi-square=7.1999, df=1, $P=0.0073$) a station is significantly associated with rail presence. Moreover, *kaingin* within a station is weakly associated with rail presence (Chi-square=3.0817, df=1, $P=0.0792$).

TABLE 3: Probability of rail detection based on the following selected habitat elements.

	Chi-square Test		
	Chi-square Value (adjusted for continuity)	df	p-value
<i>Vegetation type</i>			
Tree	1.7974	3	0.6155
Rattan	7.5886	6	0.2698
<i>Donax</i>	7.1086	5	0.2127
<i>Odontonema</i>	56.6119	2	<.0001
Fern	1.5114	5	0.9118
Grass	1.2917	3	0.7311
<i>Presence of habitat elements</i>			
Agricultural crop	1.7380	1	0.1874
Fallen log	0.6380	1	0.4244
Gastropod	1.6984	1	0.1925
Exposed rock	2.4780	1	0.1155
<i>Musa/Carica</i>	2.5986	1	0.1070
<i>Ficus</i>	0.0333	1	0.8552
<i>Substrate</i>			
Soil	0.6344	1	0.4257
Limestone	6.4713	1	0.0110
Smooth (river) rock	0.6149	1	0.4329
Water	0.0000	1	1.0000
Clay	8.6585	1	0.0033
<i>Tree architecture</i>			
A	8.8587	10	0.5456
B	5.3344	8	0.7213
C	10.8602	8	0.2097
D	7.7496	7	0.3552
<i>Human disturbance</i>			
1 (cutting inside station)	7.1859	1	0.0073
2 (trail within 50m of station)	7.1999	1	0.0073
3 (clearing within 50m of station)	1.1011	1	0.2940
4 (hunting/presence of snares)	0.2795	1	0.5971
5 (<i>kaingin</i> within station)	3.0817	1	0.0792

DISCUSSION

No historical record of the Calayan Rail distribution in Calayan Island exists apart from anecdotal information from local people, which reveal that the rails used to be seen near houses in the lowlands in barangays Magsidel, Dibay, Dadao and Dilam. Possibly due to the clearing of forests for agriculture and human habitation, the rails have been pushed back and are now found mainly in forests and forest edges higher up in the hills and mountains.

The study has found the rails to be widely distributed in the island with positive observations in five of the seven barangays, although rail detections were all above 81 masl. Rail numbers have reportedly declined as well, according to a hunter who reported catching up to 150 birds per year until five years ago when the catch dropped to 2-60 birds per year. It is possible that rail

abundance has declined steeply in the recent past. The moderate abundance of 0.27 rails/station in the January-February 2006 survey is very close to the 0.25 rails/station cutoff for low abundance. It is feared that if the cause(s) of the reported decline in rail abundance in recent years is not addressed, it may severely impact rail populations in the island. There is therefore a need to clarify the threats to the species so that sound conservation action could be initiated.

The low response to playback in summer 2005 could be primarily attributed to the onset of the rails' breeding activities. Rails were observed to be generally silent during the first half of April 2005 when they were with young. Local people also report that the rails breed from March to May. It is believed that their silence coincides with their egg-laying and brooding activities, which lasts for more than a couple of weeks past hatching. The same observation was made by Taylor and van Perlo (1998) of seasonally territorial rail species calling at a higher frequency and variety during the onset of courtship and breeding and becoming less vocal during or after egg-laying and throughout the rearing of young.

The drying of streams and waterholes during summer could have potentially caused the rail's range to shrink, making the rails more difficult to detect. Because there is no available map of water features in Calayan Island, the study sought to determine the proximity of bodies of water to the survey stations. In many areas, however, there were only rain pools that dry up during summer or long days without rain according to locals. Rails were observed (off census) near rivers in Sitios Piddan, Dibnong, and Malangsi in Barangay Dadao as well as in Barangay Dilam. In Longog, numerous underground caves and caverns act as water reservoirs that ensure an almost continuous supply of water year round to streams and *kaingin* farms in the area. Most of the rail observations were from Longog where they were more often heard spontaneously calling. There is a need to investigate the use of ephemeral rain pools by rails and its impact on the species' range.

Furthermore, the difference in the quality of the call recording used for playback during the initial survey in April-May 2005 compared to succeeding surveys may be the reason for the increased response in the succeeding surveys. The additional observer in each survey unit/team (at least 3 persons) after the April-May 2005 initial survey may have also increased the number of silent rails detected in the succeeding surveys. January to March may be the best time to conduct a survey based on very good response to playback during these months, which may be attributed to heightened territorial behavior near the start of the summer breeding season. It is also worthwhile to conduct surveys covering the other months/seasons of the year in order to obtain more conclusive data on the rail's habitat preference, feeding and breeding behavior, and possibly local migration, thus giving a better picture of its ecology and life history.

The rails' apparent preference to stations with *Odontonema strictum*, an understory shrub, is consistent with the finding that rail presence is also associated with the presence of limestone. This is because *Odontonema*, with its habit of wide-spreading surface roots, is able to thrive and was often found growing on limestone areas. Rails may be attracted to the gastropods feeding on moss growing on exposed limestone and rock. It was also observed that leaves of *Odontonema* seem to attract insects as shown by the numerous holes in them. Since insects form part of the rail's diet, this may be part of the reason why *Odontonema* is closely associated to rail occurrence.

The fact that there is no apparent relationship between the presence of fallen log and the presence of rails was unexpected as rails have often been seen feeding on termites, insects, and other invertebrates in rotting logs as well as in forest litter. Clay as a substrate, on the other hand, may have resulted in significant difference in proportions because the survey stations were mostly located along or near trails inside the forest with very few stations in disturbed areas. The substrate along trails is generally made of clay due to the constant trampling of cattle. This may have introduced a bias in the analysis.

The presence of *kaingin* was also found to be weakly associated with the presence of rails. Again, the location of survey stations mostly along trails may have affected the result of the analysis. *Kaingin* areas that were surveyed were also most often located at forest edges. On the other hand, the rails may have adapted to the rapid spread of clearings in its habitat by altering its feeding behavior to take advantage of the increased availability of food items in the edges of *kaingin* areas. Food items may include fruits, and insects, termites, and gastropods that feed on rotting matter and fresh plant growth. A possible explanation could be that rails venture into *kaingin* areas to feed but require close proximity to the forest for cover and shelter. It is not difficult to imagine that in the distant past, when human population in Calayan was still miniscule, the whole island must have been entirely forested and the rails completely adapted to available forest habitats. Succeeding surveys should include more stations in disturbed forest and agroforest areas to investigate further the strength of correlation to rail presence.

Other human disturbances to the survey stations including the presence of cutting and trail are important factors that determine a rail's presence. Although the analysis implies that hunting is not a concern for rails, in many of the stations it was not conclusively known whether hunting occurs in the area or not. Encounters with hunters and snares in the forest are the only evidences to hunting that were gathered. From interviews with locals it was known that hunting is a seasonal activity and hunters frequent particular areas. In some areas, it may not have been hunting season when the surveys were carried out.

In view of the rapid development in Calayan Island and its consequent threats to the Calayan Rail, it is important to initiate a monitoring system that will provide an annual index of rail abundance and distribution and guide habitat management directions. The use of playback recordings has been found to be an effective and cost-effective way of determining the indices to abundance and distribution of *G. calayanensis*, a mostly inconspicuous, skulking but vocal bird. Comparison of these indices is also facilitated across seasons or years because the survey stations are permanently setup. With three survey leaders and six trained field guides in the survey team in good weather, the island-wide survey of *G. calayanensis* can be carried out in 15-20 days, which constitute a modest sampling effort. Barring the constraint in the available number of playback equipment, additional survey leaders and guides from a local volunteer network can cut down further the number of field days in an annual survey. It is also important to monitor the changes in plant communities, especially of *Odontonema*, surrounding rail territories as this could provide an understanding of rail-habitat associations and predict the consequences of future habitat disturbance or land use changes.

NOTES ON BREEDING BEHAVIOR

Two entirely dark, downy chicks were seen on April 6, 2005 in Longog. They darted from out of a limestone mound with buttressed trees growing on top but it is not certain whether they were from the holes in the limestone or from the hollow buttress of a tree. Consequent search for a nest in the area proved unsuccessful. On April 16, two partly feathered chicks with red legs and dark bills, presumably the ones seen on April 6, were observed and videoed in the same area. Along with four adults, these chicks remained in the area during the more than three weeks that the survey team was in the vicinity of Longog. During the period where the young were observed, adult rails were also generally silent. Local people report that the rails breed from March to May. Hunters and farmers report seeing nests at the base of tree buttresses, rattan fronds and *Donax cannaeformis* leaves. A few hunters described the nest and eggs of the Calayan Rail as similar to those of the Barred Rail. The eggs are reportedly elliptical, white and with red or brown spots. There was no consensus on the number of eggs in a clutch as reports vary from three to seven.

THREAT ANALYSIS

HUNTING

Forty-eight out of 83 interviewees were active or retired hunters. All the respondents, except for a fisherman and an elderly person, were engaged in farming in certain months or throughout the year. Thus, none of the interviewees depended solely on hunting as a means of livelihood. Hunting is primarily engaged in to supplement the family's daily protein intake. Secondary reasons for hunting are sports or for "target practice" and the pet trade. Hunting is also a seasonal activity carried out during the seasons of crop planting and harvest when farmers go to their *kaingin* plots in the hinterlands. Although some hunters specialize in wild pig quarry, they also opportunistically catch birds and monitor lizards. Hunters of wild pigs hunt from August to December because pigs are supposedly fat at this time of the year. This coincides with the winter migration of birds thus presenting the pig hunters with an opportunity to also hunt birds. Other hunters prefer to hunt during the dry weather months from March to May when trails are less muddy and migratory birds on their way north are abundant.

Hunters in Calayan Island employ several types of hunting equipment that they often use in combination (Table 4). The majority of the hunters interviewed used airguns while only two respondent—both Aeta migrants from the mainland—used the bow and arrow for hunting wild pigs. A hunting technique rarely used at present involves digging a deep hole near areas with root crops in order to trap wild pigs. Snares or "silo" meant for the Red Junglefowl *Gallus gallus* pose one of the gravest threats to the Calayan Rail because rails reportedly do not know how to avoid these. Two hunters from Magsidel and Dadao reportedly caught about 4 rails for every 1 Red Junglefowl *G. gallus* using these snares.

TABLE 4. List of hunting equipment with their description and use.

Hunting Equipment	Description and Use
Airgun "Paltog"	A homemade .22 caliber rifle for shooting birds, monitor lizards, flying foxes and wild pigs. Its use sometimes requires employing hunting dog(s) that chase down prey before it is shot.
Trap "Bubo"	Used for capturing wild pigs, it is an enclosure made of bamboo or wood with a trapdoor. Root crops are planted inside the enclosure to attract the pigs.
Bow and arrow	An Aeta traditional hunting implement primarily used for catching wild pigs. Hunting dog(s) are also employed in the same manner as in the use of the airgun with dogs chasing prey until it is cornered.
Individual snares "Silo"	Used for catching ground feeding birds and monitor lizards. Usually set up in a series with stakes that flank it on both sides to direct game to the snare.
Battery of snares "Siyay"	Designed for catching Red Junglefowl <i>G. gallus</i> . A previously captured male Red Junglefowl <i>G. gallus</i> is pegged in the middle of the square-shaped battery of snares. As the pegged bird crows, other male birds in the territory are attracted and caught in the snares.
Slingshot "Palsiit"	Used for catching small birds.

The top six species hunted for food in the island are the Chestnut-eared Bulbul *M. amaurotis*, Green Imperial Pigeon *Ducula aenea*, Whistling Green Pigeon *Treron formosae*, Philippine Warty Pig *Sus cf. philippensis*, Red Junglefowl *G. gallus* and Common Emerald Dove

Chalcophaps indica. Table 5 lists the preferred quarries of hunters (ranked according to the number of hunters that catch them). The Calayan Rail registered low on hunters' list of preferred quarry but they are caught in snares set for the Red Junglefowl *G. gallus* which hunters relish more. The number of rails caught range from two birds to 60 per year. A hunter added that 5 years ago the catch was up to 150 rails per year.

TABLE 5. Calayan hunters' preferred quarry ranked according to the number of hunters that catch them.

Hunters' Preferred Quarry	Number of interviewed hunters that hunt the species
Green Imperial Pigeon <i>Ducula aenea</i>	16
Chestnut-eared Bulbul <i>Microscelis amaurotis</i>	15
Philippine Warty Pig <i>Sus cf. philippensis</i>	15
Red Junglefowl <i>Gallus gallus</i>	13
Whistling Green Pigeon <i>Treron formosae</i>	12
Common Emerald Dove <i>Chalcophaps indica</i>	9
Calayan Rail <i>Gallirallus calayanensis</i>	7
Water Monitor Lizard <i>Varanus salvator</i>	6
Tabon Scrubfowl <i>Megapodius cumingii</i>	6
Brown-headed Thrush <i>Turdus chrysolaus</i>	5
Black-naped Oriole <i>Oriolus chinensis</i>	4
Black-chinned Fruit Dove <i>Ptilinopus lechlancheri</i>	2
unidentified flying fox	2
Barred Rail <i>Gallirallus torquatus</i>	2

KAINGIN FARMING

A recent crackdown on chainsaws in the island has dramatically reduced its use. Nonetheless, people continue to use the axe to clear forests for farming. In the areas surveyed alone, an estimated 8.2ha of primary forests have been converted to farmlands with 4.7ha comprising newly cleared forests that are being prepared for slash and burn farming or *kaingin*.

PET TRADE

Another threat to the rail could be attributed to the widespread media attention its discovery generated. Early last year, a number of rails ended up in cages of a few residents. They were bought for as much as 300PhP each. Some of these rails were released back into the wild but at least six were reported to have perished in captivity. An attempt to transport a few birds to be sold in mainland Luzon was thwarted when members of the municipal council confiscated these and later released them back into the wild.

Interest by members of the municipal council to pass an ordinance protecting the Calayan Rail has successfully resulted in Municipal Ordinance No. 84. The ordinance prohibits the capture of the Calayan Rail and imposes fines of up to 2,500PhP or imprisonment for offenders. The Cagayan provincial government has subsequently approved the ordinance.

OTHERS

Although logging in the island occurs on a small-scale, it is not regulated. Logging supplies demands for housing material, boat construction material, and the furniture industry. It is feared that the construction of a road system from Dilam to Cabudadan will open primary forest tracts to human inhabitation and activities such as *kaingin* farming, hunting and the introduction of potential rail predators like domestic dogs, cats and rats. A dog was seen by locals attacking and killing a Calayan Rail in Longog. Feral cats also thrive in the forests of Calayan Island although it is not known how much of a threat they are to the rails. Because of their potential threat to the rail, there is therefore a need to survey, monitor, and assess the degree of predation of dogs and feral cats.

4P WORKSHOP

A 4-P workshop was conducted in Calayan Island on 14-15 October 2005 with 38 participants from the local government, school, church, and local organizations. The workshop's objective was to come up with environmental communications and education strategies to promote awareness and active involvement by the community in environment conservation. The theme of the consultative workshop was "Conservation of Calayan Islands' Natural Heritage."

Slash-and burn agriculture or "kaingin" and logging were identified as the most pressing problems in the forest while proper waste management was the most important issue in the lowland. Illegal fishing was the major problem for the marine environment. Other important issues were lack of action by government officials and lack of law enforcers. The following were the major publics identified: fishers/farmers, educators, policy-makers, community leaders, and law enforcers. Most of the activities or products identified, including an environmental education program and an advocacy campaign, were designed to be collaborative and were scheduled to commence in 2006.

The workshop was successful in identifying key activities and the assistance of ISLA was sought in teacher training, community meetings, and further workshops. Positive feedback was received from the participants after an evaluation of the activity. Most of the participants found the energizers, "The Web of Life" and "The Commons Dilemma" meaningful. T-shirts bearing the project logo were given to participants, who also received copies of the workshop proceedings.

TEACHER TRAINING-WORKSHOP

In answer to the need raised at the 4P Workshop in October 2005, a training program for educators from Calayan municipality was held on 12-18 May 2006. The activity was jointly sponsored by the Center for Environmental Awareness and Education (CEAE), ISLA, and World-wide Fund for Nature (WWF) – Philippines. A total of 19 high school teachers, 33 elementary school teachers, 6 local government unit (LGU) staff, 8 ISLA volunteers and 1 WWF staff benefited from the training.

The training program included two modules: Project Learning Tree (PLT) and Project Water Education for Teachers (WET). Each module consists of a collection of almost a hundred ready-to-use, innovative, hands-on and easy-to-use activities that can be easily incorporated by elementary and secondary school teachers into their curriculum. PLT focuses on the environment – land, air and water – and is designed to teach children how to think, not what to think, about complex environmental issues. Project WET, on the other hand, was crafted to facilitate and promote awareness, appreciation, knowledge and stewardship of water resources.

Each participant received training certificates, PLT and Project WET books and a Calayan Rail Project t-shirt. Ten boxes containing various teaching aids that teachers can use for the activities were donated to ten different schools.

Out of the 67 participants in the training program, 15 further received a facilitator's training course to enable them to conduct PLT and Project WET courses in the future.

The teacher training program could not have succeeded without the Department of Education – Division of Cagayan that provided support by giving service credits to public school teachers who attended the courses.

COMMUNITY CONSULTATIONS

A conservation action plan was developed by stakeholders on Calayan Island last May after a series of consultation activities covering 8 sitios and barangays on the island. The action plan includes activities that contribute to major goals such as: controlling *kaingin* or slash-and-burn farming, providing livelihood assistance, intensifying information and education campaigns, establishing a protected area or sanctuary and strengthening enforcement of environmental laws.

Community consultations were held from May 11-28, 2006 in each of the following barangays and sitios: Cabudadan, Centro-2, Dilam, Dibay (Pilid), Longog, Magsidel, Kaniwalan and Dadao. Attendance in the consultations varied from a low of 21 participants to a high of 45 participants that usually included barangay officials, representatives from farmers' organizations, women's organizations, health workers, and community members that are dependent on forest resources such as *kaingin* farmers and chainsaw operators. Representatives from the Department of Environment and Natural Resources and the Calayan Municipal government were present in three of the eight consultation workshops. In addition, eight ISLA volunteers helped facilitate the consultations. A total of 244 community members participated in the consultations.

In these workshops, we introduced ISLA and its mission, and the Calayan Rail Project and its goals. Information was gathered on: (a) the community's idea of nature; (b) the changes that they have observed in nature during their lifetime; and (c) actions that they propose to conserve their natural environment. We also shared an overview of the results of our study on the abundance and distribution of the Calayan Rail. The consultation activity usually lasted 3-4 hours. A total of 169 t-shirts bearing the Calayan Rail Project logo were given out to participants as tokens of appreciation.

On 30 May 2006, a consolidation and action-planning workshop was held at the Calayan Municipal Hall. Twenty-four participated from the different barangays and the following departments/sectors: the Municipal Environment and Natural Resource Office, the Municipal Agriculture Office, the Municipal Planning and Development Coordinator's Office, the Municipal Legislative Council, the Philippine National Police and ISLA were present in this culminating activity of the consultations. In this activity, results from the eight barangay-level consultations were presented and the action points from the consultations in the different barangays and the 4-P workshop conducted in October were consolidated into a master conservation action plan. This workshop lasted more than six hours. Copies of the master conservation action plan were distributed to some of the participants at the end of the workshop and to others within two days after the workshop. The proceedings of all consultations and the consolidation workshop written in Filipino were given out to participants.

ENVIRONMENTAL EDUCATION CAMPAIGN

During the Calayan Rail Project's last fieldwork in Calayan from 13 August-8 September, the team conducted the following environmental education activities: (1) Biodiversity Exhibit, (2) Poster-making Contest, (3) Coloring Contest, (4) Face-painting, (5) Quiz-Raffle, and (6) Seminars on Watershed and the Water Cycle (see photos in Appendix 1). After the seminar in each barangay, updates were provided on the conservation action plan which was developed during the community consultations last May 2006.

1. Biodiversity Exhibit ~ 21-24 August 2006

Theme: "Natural Treasures of Calayan." The exhibit featured 10 endemic and/or threatened species found in Calayan. Information on the conservation status, distribution, population, ecology, and threats were provided for each species. The booth was visited by around 100-250 people mostly children each day during the exhibit's duration.

2. Poster-making Contest ~ 23 August 2006

Theme: "*Ipateg ko ti nakaiparsuaan. Ipateg ko ti piding.* I love/value nature/creation. I love/value the Calayan Rail." Thirteen students from St. Bartholomew Academy, 11 students from Calayan High School and one out-of-school youth joined the contest that was held at the Calayan Multi-Purpose Hall. The 25 participants were aged 12-18 years old. The top three winners were all from Calayan High School and each one received a Calayan wildlife calendar, Calayan Rail t-shirt and cash prize courtesy of the mayor of Calayan. The rest of the participants received a Calayan wildlife calendar.

3. Coloring Contest ~ 21-23 August 2006

Visitors at the exhibit were encouraged to join the coloring contest. Crayons and Coloring sheets featuring 7 endemic/threatened Calayan wildlife were provided. Colored sheets judged most realistic were given prizes. Judging was done in four age categories: 5-8, 9-12, 13-16, 17-up. This activity was very popular among children and served to familiarize the participants with the appearance of local wildlife as well as develop their artistic skills. 700 coloring sheets were distributed during the duration of the activity. Winners were given t-shirts and Calayan wildlife calendars.

4. Face-painting ~ 22-23 August 2006

Children considered this a treat and queued to have their arms and faces painted with Calayan wildlife designs. The number of volunteers doing the face-painting was however too few that only a few children were able to avail of this.

5. Quiz-Raffle ~ 21-23 August 2006

A quiz on the information presented in the exhibit was given to exhibit viewers. The completed quiz forms served as raffle entries of which 3 winners were drawn. Only entries with perfect answers (30 entries out of 200) were qualified for the draw. Winners were also given t-shirts and Calayan wildlife calendars.

6. Seminar on Watershed and the Water Cycle ~ 27, 28, 30, 31 August and 1, 3, 5 September 2006

In answer to the need for a seminar on the importance of nature raised during the community consultations last May, seminars focusing on watersheds were conducted in the 7 barangays of Calayan Island. Attendance for each barangay ranged from 15-42 participants and was composed of barangay officials, and representatives from farmer's organizations, women's organizations, livestock associations, health workers, spring development organizations, and other community members. Representatives from the LGU were present during the seminars in 3 barangays while representatives from the DENR joined in 5 of the 7 seminars. From 7-10 ISLA volunteers helped in facilitating the seminars. A total of 185 community members benefited from the seminars.

After the introduction of ISLA and the Calayan Rail Project, the seminar started with a review of the water cycle processes and the forces that make water move in the environment. This is followed by an activity illustrating the role or importance of plant cover in the rate of waterflow down a slope. Practices to reduce erosion were also identified. The last activity explored people's concepts of a watershed and analyzed how land use variations in a watershed can affect the runoff of water. The seminar usually lasted from 1.50-2.75 hours not including the time used in giving updates on the conservation action plan which immediately followed each seminar. 2007 calendars featuring "Calayan's Natural Treasures" were distributed to seminar participants as tokens of appreciation. The printing of the Calayan Rail posters did not make it in time for the seminars but the posters were distributed by volunteers in Calayan soon after.

After the fiesta activities in Calayan, the exhibit and face-painting materials were brought to the Cagayan State University (CSU) in Tuguegarao City on loan for a week. More than 400 students visited the exhibit and participated in the activities. The dean of the college of arts and sciences, the head of the department of environmental science, and the directors for research and extension at CSU expressed support for future collaborative projects/programs with ISLA.

A radio script calling for the conservation of the Calayan Rail was written and is currently being prepared for airing at the local FM station.

PHILIPPINE BIRD FESTIVAL

The Calayan Rail Project under the auspices of ISLA joined the very first Philippine Bird Festival held in Metro Manila in 18 November 2005. This event was sponsored by the Wild Bird Club of the Philippines (WBCP). Most of the major conservation organizations in the country participated in the exhibit and other activities which were attended by hundreds of students, teachers, and parents. Video footages and a short film animation of the Calayan Rail and a slideshow of the Babuyan Islands wildlife were shown to guests who visited the project's exhibit booth. Possible volunteers and collaborators for conservation work in the Babuyan Islands also visited the booth.

WBCP held a mini-bird fest at SM Fairview mall in Quezon City from March 6-10, 2006. The Calayan Rail Project was once again given the opportunity to show the short film animation and video footages of the Calayan Rail to guests and visitors.

ISLA with the Calayan Rail Project was again invited as exhibitor in the second Philippine Bird Festival which was held on 22-23 September 2006 (see photos in Appendix 2). The theme of this year's bird festival focused on the endemic bird species of the Philippines. The event drew more than 3000 visitors, mostly students from Metro Manila (www.birdwatch.ph). A lecture on Philippine biodiversity and the Calayan Rail Project was presented by the project team leader on both days of the festival.

MEDIA COVERAGE

Spirit FM, the Calayan-based and church-owned radio station, regularly invite the project proponents to give an update on the Calayan Rail Project and on other conservation and research activities of ISLA in the Babuyan Islands. ISLA and the Calayan Rail Project were given free access to the station's facilities to broadcast upcoming activities. The broadcast reaches four out of five islands in the Babuyan group.

During the 1st Philippine Bird Festival, the project team leader was interviewed by a national TV station about the Calayan Rail discovery which was aired over primetime news. She was also invited as guest in an environmental radio program on 17 March 2006. The radio interview focused on the discovery, research, and conservation of the Calayan Rail.

Appendix 3 contains newspaper articles mentioning the BPCP grant and the Calayan Rail Project.

ENVIRONMENTAL ADVOCACY

ISLA's partnership with CEAE also extends to the making of a documentary on the Calayan Rail and Calayan Islands' natural treasures. The CEAE film production crew started filming last May. With assistance from ISLA, they visited Calayan and they were able to film the Calayan Rail in Longog. The documentary is targeted to be produced by the 1st quarter of 2007 so that it can be entered in the Moonrise Film Festival of the same year. It is envisioned that this documentary will not only encourage pride among Calayan residents in their natural heritage but also highlight the conservation importance of the islands.

ISLA partnered with local universities in Northern Philippines as part of its volunteer program. Last May, two new graduates of the Environmental Science program at the Cagayan State University joined the team as volunteers. It is hoped that in partnership with ISLA, future ecological monitoring activities as well as other conservation activities in the Babuyan Islands can be conducted by undergraduate volunteers from these local universities. ISLA is currently working on a memorandum of agreement with the universities specifying the terms for the volunteer program to include academic and internship credits for the volunteers.

Posters calling for the conservation and protection of wildlife were distributed among interviewees, schools, stores and barangay centers throughout the island in 2005. These posters were produced from a previous conservation grant. In September 2006 several conservation awareness materials focusing on the Calayan Rail in both English and the local language i.e. Ilocano were produced and distributed in Calayan as well as in mainland Luzon (Appendix 4). A Calayan Rail animation film was created for environmental education and advocacy campaigns (Appendix 5).

FUTURE PLANS

- In view of the rapid development in Calayan Island and its consequent threats to the Calayan Rail and other wildlife, the need for an environmental monitoring program cannot be overemphasized. This will provide an annual index of rail abundance and distribution that will enable environmental workers to detect and respond to any drastic decline in its population. And not only the Calayan Rail but also other key species in the island will benefit from the program. The program will involve training and deputizing forest wardens that will patrol the forests of Calayan. It will also entail the training of volunteers that will regularly gather ecological data for use in managing the natural resources of the island.
- Further community consultations are needed to discuss the threats to the Calayan Rail and other key species in the island and agree on measures to counter these. The resulting conservation action plan will be more effective in addressing the conservation need in the island if jointly implemented by the local government and communities in the vicinity of the rail habitat. The process of community consultations will be iterative and participatory.
- The declaration of a local protected area could check the rapidly declining quality of the Calayan Rail's habitat. The map of the rail's distribution in Calayan Island could be used as an aid in defining the protected area's borders.
- In line with the previous recommendation, declaring the Calayan Rail as municipal 'flagship species' will greatly increase local people's awareness and concern for the survival of the rail as well as other key species in the Babuyan Islands. The declaration can serve as an anchor by which a municipal-wide environmental pride campaign can be launched.
- Educational activities on the environment are necessary to increase the local people's cooperation in conservation efforts. Photographs, video footages and call recordings obtained in the field will be used to produce print and broadcast educational materials.
- A network of local volunteers for conservation is crucial in ensuring the continuity and sustainability of conservation efforts. With sufficient support, school science clubs will be able to conduct ecological/conservation projects in the community. For this project, porters/guides were chosen based on their interest in conservation work and willingness to learn basic field research techniques such as transect walks, photo documentation and note-taking. These individuals will be tapped again or recommended for future conservation projects in the area.
- A proposal to BPCP for a follow-up grant has been submitted.

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APPENDIX 1: Environmental Education Campaign photos. Photo credits: Miguel Ferido



A participant in the quiz-raffle is looking for answers in the exhibit materials.



The top 3 winners of the poster-making contest stand beside their work. Finished coloring sheets are displayed at back.



Participants of the poster-making contest show off their work.



The face-painting activity was popular among elementary children.



Participants of the seminar on watersheds and the water cycle in barangay Cabudadan.



A representative from the municipal government explain the need for protecting watersheds in Calayan.

APPENDIX 2. Philippine Bird Festival photos. Photo credits: Facundo Rey Ladiao, Arnel Telesforo



1st Philippine Bird Festival: CPE showing the Calayan Rail video and animation film to children.



1st Philippine Bird Festival: Isla Biodiversity Conservation, Inc. was one of the exhibitors together with other conservation NGOs.



1st Philippine Bird Festival: CHO showing children a slide show of the Babuyan Islands' biodiversity.



1st Philippine Bird Festival: CPE being interviewed on national TV.



2nd Philippine Bird Festival: Hundreds of children with their parents visited the booth.



2nd Philippine Bird Festival: CPE & CHO with volunteers. "Natural Treasures of Calayan" exhibit at back.

APPENDIX 4: Conservation-awareness materials focused on the Calayan Rail.

Smith Volcano "Fokis" *Calayan Stick Insects* *Anisoptera thurifera* *Humpback Whale*
Calayan Rail *Idea leucone*
Philippine Crocodile *Slender-Digit Chorus Frog*
Sibang Cove *Elegant Scops-Owl* *Coconut Crab* *Podocarpus costalis*

Calayan's Natural Treasures

January

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

February

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

March

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

April

S	M	T	W	T	F	S	
	1	2	3	4	5	6	7
8	9	10	11	12	13	14	
15	16	17	18	19	20	21	
22	23	24	25	26	27	28	
29	30						

May

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

June

S	M	T	W	T	F	S
				1	2	
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

July

S	M	T	W	T	F	S	
	1	2	3	4	5	6	7
8	9	10	11	12	13	14	
15	16	17	18	19	20	21	
22	23	24	25	26	27	28	
29	30	31					

August

S	M	T	W	T	F	S	
				1	2	3	4
5	6	7	8	9	10	11	
12	13	14	15	16	17	18	
19	20	21	22	23	24	25	
26	27	28	29	30	31		

September

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

October

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

November

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

December

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

The production of this calendar was sponsored by the BP Conservation Programme.
 Photo credits: Desmond Allen, Marge Babon (CEAE), Mads Bajarias, Genevieve Broad, Carmela Espanola, Carl Oliveros, Sol Pedregosa, Josh Smith

CALAYAN'S LIVING TREASURE



Local name:

PIDING

English Name:

CALAYAN RAIL

Scientific Name:

Gallirallus calayanensis

Found nowhere else in the world except on Calayan Island in Northern Philippines, the Calayan Rail was unknown to science until its discovery in 2004. It is seldom seen in the wild as it keeps within the shadows of the island's remaining forest and only occasionally ventures into the forest edge. It is a weak flyer and spends most of its time foraging for snails, insects and millipedes on the forest floor.



The Calayan Rail is threatened with extinction due to its small population and range size. Hunting and habitat loss due to kaingin farming are the major threats to this species. Pressure from introduced predators such as dogs and cats may rise as human settlements expand into Calayan's forest.

The Calayan municipal council has passed municipal ordinance no. 2005-84 that prohibits the catching of the Calayan Rail. Without unity and cooperation to protect the Calayan Rail, the people of Calayan may lose a beautiful and unique natural heritage.



Municipality of Calayan
Calayan Island



Department of Environment and Natural Resources
Region I



Department of Environment and Natural Resources
National Capital Region



BirdLife
International



Department of Environment and Natural Resources
National Capital Region



Department of Environment and Natural Resources
National Capital Region



Department of Environment and Natural Resources
National Capital Region



Department of Environment and Natural Resources
National Capital Region



Department of Environment and Natural Resources
National Capital Region