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Fisher-Assisted Records of Silvery Langurs (*Trachypithecus cristatus*) in an Urban Mangrove Fragment, Medan Labuhan, North Sumatra

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ABSTRACT

Primate populations inhabiting human-modified landscapes continue to face threats to their persistence and long-term viability. Local studies have therefore been conducted across different regions to document the effects of habitat modification on these populations. Small mangrove patches within industrial coastal areas are seldom included in primate surveys. We examined the occurrence of the silvery langurs (*Trachypithecus cristatus*) in an isolated mangrove patch near the Belawan International Container Terminal, Medan Labuhan, North Sumatra. Three boat surveys were completed in August 2024 with assistance from local fishers. Direct observations were recorded during each trip, and semi-structured conversations documented local ecological knowledge (LEK). Nine sightings were made, with group sizes from one to fourteen individuals; infants were present in two sightings. When approached by boat, the animals generally moved away from the channel and into denser vegetation. The fishers' descriptions of conspicuous morphological features and commonly eaten plants broadly agreed with published accounts, whereas their views of population change differed. Because individuals were not identified and the fieldwork comprised only three targeted surveys, the records establish occurrence during the survey month but do not confirm residency, abundance, or population trend. The observations provide a starting point for longer standardized surveys of silvery langurs and their mangrove habitat in Medan Labuhan.

Keywords: Coastal Mangrove, Fishermen, Indonesia, Local Sighting, Primate Occurrence

1. Introduction

Across Southeast Asia, the conversion and fragmentation of natural habitat by cities, ports, and other infrastructure have reduced the areas available to many primates [1]. Surveys for this impact have largely concentrated on animals in inland forests, although some populations now occupy small patches within towns or at their margins [2]. Despite lying between land and sea and experiencing rapid loss, the assemblage of non-human primates in mangrove areas or coastal mangroves has received less attention than that of inland forest [3].

Silvery langurs (*Trachypithecus cristatus*) or lutungs inhabit diverse habitats ranging from coastal forests, riverine forest, and mangroves of Southeast Asia [4]. As arboreal colobines, they forage and rest in the canopy; breaks in tree cover may therefore affect their movement through the habitat. Evidence of their occurrence in

mangroves exists [4], but few studies have described groups inhabiting small patches bordered by settlements or industrial facilities. Those patches are increasingly common in the Sundaic coastal landscape [5]. Along the northern coast of Medan, mangrove cover has been altered by aquaculture, urban expansion, and port development [6]. These changes are evident in Belawan, a major coastal and industrial area that includes the Belawan International Container Terminal. Although extensive mangrove stands remain in Belawan-Sicanang, smaller patches are interspersed among port facilities and settlements. There is still a poor documentation on the habitat use by arboreal primates, e.g. *T. cristatus* populations [7] in this area including the Medan Labuhan District.

Primate surveys in Indonesia were largely focused on extensive or protected forests, while smaller habitats outside conservation areas have received less attention [8]. In mangrove forests, field access may be restricted by coastal physical barriers, such as tidal channels; therefore, coastal residents or local fishers who are familiar with or regularly active in these areas may capture information that can support primate surveys in coastal forests based on observations over specific periods and long-term experience [3], [9]. This information develops through personal experience and recollection, is assessed separately from direct field observations, and may assist surveyors and researchers in conducting further investigations [10], [11]. The aim of this study was to document the occurrence and group composition of silvery langurs (*T. cristatus*) in an isolated mangrove fragment in Medan Labuhan District using fisher-assisted boat surveys. Fishermen's accounts supported the interpretation of sightings and valuable local ecological knowledge (LEK) about the langurs, however the surveys were not designed to estimate abundance or establish residency.

2. Method

2.1. Study Site

The survey was conducted in August 2024 in a patchy mangrove remnant in Medan Labuhan District, Medan City, North Sumatra, Indonesia (Figure 1). The site is located near Belawan International Container Terminal, between port facilities and coastal settlements. Its vegetation forms a smaller and more fragmented stand than the mangroves in Belawan Sicanang, Medan Belawan District. Much of the area can only be reached through tidal channels because dense vegetation restricts access on foot or by walking [6]. Surveys departed from Nelayan Indah Village, Medan Labuhan District, using small wooden fishing boats operated by local fishermen.

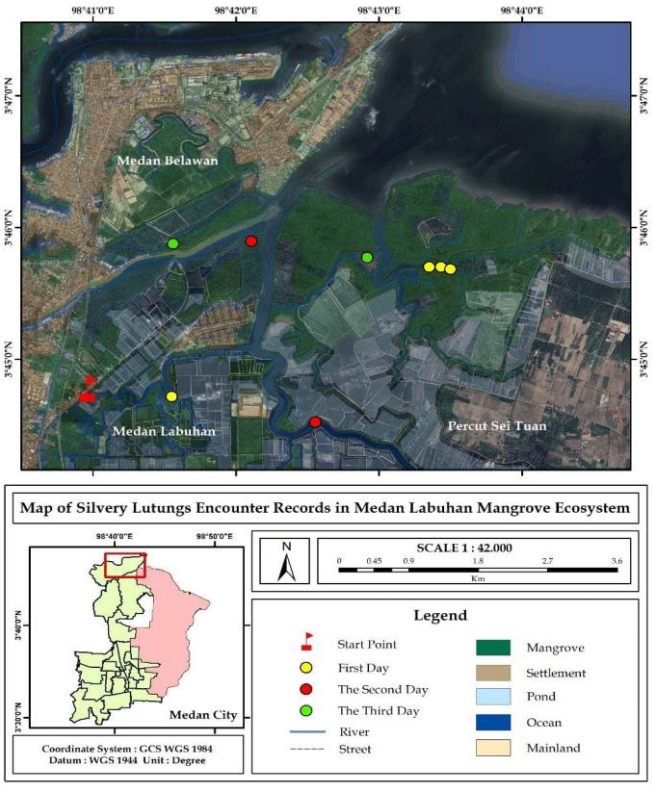

Figure 1. Locations of silvery langur sightings recorded along navigable channels in the Medan Labuhan mangroves.

2.2. Data Collection

Three surveys were conducted from 08:00 to 17:00 Western Indonesian Time (UTC+7), with a local fisher accompanying each trip. Prior fieldwork, members of fishing community selected several experienced fishers through a focus group discussion (FGD) to assist with the field survey [12]. The three selected fishers were fishermen who had lived and worked near the mangrove forest from 18 to 34 years. We followed the fishermen's boat route based on channel accessibility and sites where langurs had previously been encountered. At each site, the geographical coordinates, apparent group composition, visible activities, and typical vegetation were recorded, and these data were later analyzed qualitatively. Conversations with the fishers were conducted aboard the boats using semi-structured questions to obtain their LEK on langur morphology, behaviour, distribution, interactions with humans, and environmental change. Notes taken during the trips were completed immediately after each survey [13].

2.3. Data Analysis

Coordinates associated with each sighting were recorded using Timestamp Camera and entered into ArcGIS (Esri, Redlands, CA, USA) under the GCS WGS 1984 coordinate system [14]. The generated map presents the sites reached by boat and did not represent a model of the species' distribution. Each sighting was retained as an occurrence record. Because the animals were not individually recognised, some records may have involved the same individuals. Interview notes were read and coded without pre-determined categories. The codes were subsequently arranged into six themes: Morphology, responses to humans, activity and habitat use, diet, reproduction and infant care, and population trends and mortality [15]. Statements from each fisher were retained separately so that agreements, individual accounts, and conflicting information remained identifiable. The accounts were then compared with observations from the surveys and published descriptions. They were used to interpret the sightings but not to determine abundance, seasonal patterns, or demographic change.

3. Result and Discussion

3.1. Occurrence Records from Boat-Based Expeditions

Nine sightings were recorded during the three surveys (Table 1). Silvery langurs were seen on every trip, at times ranging from 08:40 to 15:30. The apparent groups consisted 1 to 14 individuals and included adults, subadults, and, in two sightings, an infant. During the trip, dense foliage restricted visibility, and the lack of individual identification means that some records may represent the same animals. After a boat approached, the animals usually moved away from the channel and into denser vegetation. Sightings lasted about 1-10 min before foliage blocked the view. No aggressive display toward the survey team was observed. Before moving out of sight, animals were seen resting, foraging, grooming, playing, or interacting socially (Table 1). All mapped points lie beside navigable channels because those were the only parts of the patch reached by the surveys (Figure 1); therefore, the map should not be interpreted as a distribution estimate.

Table 1. Encounter records of silvery langurs in Medan Labuhan mangrove ecosystem

Expedition(s)	Encounter(s)	Time (UTC+7)	Group size	Adults		Subadults	Infants	Main Observations
				Male	Female			
1st	1	14:35	5	1	1	3	0	Vocalization, resting, moving
	2	14:48	2	1	1	0	0	Resting, grooming, moving
	3	15:05	3	1	1	1	0	Resting, moving
	4	15:30	4	1	1	1	1	Resting, defecation, moving
2nd	1	12:40	7	3	0	4	0	Playing, foraging, moving
	2	13:45	1	1		0	0	Foraging, moving
	3	14:23	14	1	4	8	1	Resting, moving
3rd	1	08:40	8	1	2	5	0	Playing, resting, moving
	2	10:35	3	1	1	1	0	Playing, moving

3.2. Ecological Information Reported by Local Fishers

The collective information were organized under six topics: morphology; behaviour and responses to people; activity and habitat use; diet; reproduction and infant care; and population trends and mortality.

3.2.1. Morphology

All three fishers said that silvery langurs were larger than long-tailed macaques and had tails longer than the body. They described adult fur as black, very dark, or greyish, whereas infants were yellow or brownish yellow. Descriptions of the face differed: some considered it longer than a macaque's face and others broader. One participant recalled an upward crest, particularly in males. Fishers described the teeth as flat or blunt.

3.2.2. Behavior and response to locals

Fishers generally characterized the langurs as quiet and wary of people. They said animals moved into forest cover when boats or people approached and did not take food offered by residents. During the first trip, the accompanying fisher described loud calls before the animals moved away; he interpreted the calls as a response to danger. Participants mentioned aggression only when an infant was disturbed. Other fisher also recalled langurs being displaced by a larger group of long-tailed macaques. These behaviours, apart from retreat observed during the surveys, are participant reports and were not independently verified.

3.2.3. Activity patterns and habitat uses

Each fisher considered late afternoon (about 15:00-17:00 WIB) the period when langurs were most often seen. They also placed most sightings inside the mangrove rather than at open edges. The fisher on the second trip reported that langurs approached waterways more often during the rainy season. During our surveys, animals were seen in trees locally known as *api-api* (*Avicennia* spp.), *berembang* (*Sonneratia caseolaris*), and *bakau* (*Rhizophora* spp.). The three visits did not test daily or seasonal differences in activity.

3.2.4. Diet

The fishers described silvery langurs as foraging both leaves and fruit from mangrove plants (Table 2). Three mangrove stands (*Avicennia* spp., *S. alba,* and *S. caseolaris*) was mentioned by two participants, whereas *jeruju* (*Acanthus ilicifolius*) and *nipah* (*Nypa fruticans*) were each named once.

Table 2. Plants reported by local fishers in Medan Labuhan mangroves as food of silvery langurs

No	Plant species	Local name(s)	Plant part consumed	Expedition 1	Expedition 2	Expedition 3
1.	*Sonneratia caseolaris*	*Berembang*	Leaves, fruits	✓	✓	✓
2.	*Sonneratia alba*	*Perepat*	Fruits	✓	✓	–
3.	*Avicennia* spp.	*Api-api*	Leaves, fruits	✓	✓	✓
4.	*Acanthus ilicifolius*	*Jeruju*	Leaves	✓	–	–
5.	*Nypa fruticans*	*Nipah*	Fruits	–	–	✓

3.2.5. Reproduction and infant care

None of the three fishers regularly observed mating event of the langurs. The colloquial descriptions 'well-behaved' and 'polite' were used to explain why mating was seldom seen; these terms reflect local interpretation rather than behavioural categories. Participants said that females carried infants against the chest and sometimes positioned them higher when crossing waterways. A fisher described pregnancy with slower movement and fewer long leaps. Another fisher stated that births could occur twice a year, but the other two did not report this.

3.2.6. Population trends and mortality

The accounts did not agree on recent population change of langurs in the study site. A fisher perceived an increase, whereas two described smaller groups than in the past. The first two participants said that they rarely found carcasses and did not know the main causes of death. The third recalled earlier hunting in which adults were reportedly shot and infants taken. These historical accounts were not independently verified, and the surveys did not collect data suitable for estimating a population trend.

Silvery langurs were encountered on all three visits to the Medan Labuhan mangroves patch, and infants were present in two apparent groups. These observations establish use of the site during the survey month and

provide evidence that reproduction had occurred within the local population. They do not demonstrate year-round residence, reproductive rate, or dependence on this particular patch. Likewise, movement into denser vegetation after the boats approached records an avoidance response, but it does not by itself show that canopy structure is adequate. The records show that silvery langurs utilized a small mangrove remnant surrounded by aquaculture areas, coastal settlements, and port infrastructure [6]. Mangroves and peat swamps are used by numerous primates where other forest types have been lost [7], and the Medan observations extend that context to an industrial edge of the city. Several features described by the fishers agree with published accounts of T. cristatus. These include a long tail, dark adult pelage, yellow-orange infant pelage, and retreat into trees when approached [4]. Records of leaf and fruit consumption from Sonneratia spp. and Avicennia spp. also fit observations of mangrove-associated feeding in this species [4, 16, 17]. Agreement on these readily observed traits supports the use of experienced fishers to locate animals and describe common behaviours. It should not be interpreted as confirmation of less frequently observed events, such as mating, births, mortality, or seasonal movements. The reports on infant carrying resemble known maternal behaviour in silvery langurs [4]. By contrast, reduced movement during pregnancy and two births within a year were each single accounts. Published descriptions generally report one infant per birth and an interval of about one year between births [4], [18], so the local statements require further observation. The disagreement about population change is also unresolved.

Reports of silvery langurs' population dynamic differed among the fishers. A fisher recalled seeing more langurs in recent years, whereas the other two reported smaller numbers. These contrasting accounts may refer to different sites, periods, or group of animals. Without repeated counts and individual identification (focal sampling, marking), no conclusion can be drawn about changes in abundance of group composition [19]. In spite of that, these surveys have successfully documented sightings in areas accessible by boat. Local guidances have allowed the team to navigate through waterways with the surveys being concentrated at sites where langurs had occurred. Only three fishers were interviewed, each during a separate trip, and their statements were recorded as field notes rather than audio recordings. Personal recollection and information shared within the community may have affected their accounts [20,21]. Similar statements from different participants indicated agreement, but did not independently confirm their accuracy. The mapped locations were also restricted to accessible channels, and the absence of individual identification means that the nine sightings may have assigned the same individuals. Further surveys may use repeated routes during wet and dry periods and record survey effort and detection distance. Individual recognition would also help distinguish new encounters from re-sightings. Measurements of patch area, canopy continuity, and food-tree availability are also needed to assess habitat conditions. A larger group of residents should be interviewed to represent a wider range of local experience. Until these data are available, retaining mangrove cover and connections between nearby patches would provide a precautionary response to habitat loss affecting the species [18].

4. Conclusion

Three boat surveys in August 2024 recorded silvery langurs in the Medan Labuhan mangrove patch on every visit. Apparent groups ranged from one to 14 animals, and infants were observed twice. Animals commonly moved from channel-side trees into denser vegetation when approached. The three participating fishers supplied additional accounts of appearance, foods, reproduction, and past population change; agreement was strongest for conspicuous traits and commonly named food plants, whereas demographic accounts differed. Because survey routes were targeted, individuals were not identified, and fieldwork covered only one month, the study establishes occurrence but not residency, abundance, or trend. Longer standardized surveys and measurements of vegetation are needed before the patch's demographic or habitat function can be assessed.

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