INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

專刊 SPECIAL ISSUE

日本 市貝町 Ichikai, Japan

日本 宇檢村 Uken, Japan

台灣 滿州鄉 Manjhou, Taiwan

> 菲律賓 桑切斯米拉 Sanchez Mira, Philippines

日本 宮古島市 Miyakojima, Japan

Contents

	Contents	S	02
Chapter 1	Introduc	tion	
	1.1	Identification Features and Migratory Ecology \nearrow TSENG Chien Wei	04
	1.2	Foraging Preferences and Satoyama Habitat Utilization	
		of the Grey-faced Buzzards / WU Yinyin	08
Chapter 2	Name, L	egends, and Anecdotes	
	2.1	Local Names for the Grey-faced Buzzard in Taiwan \nearrow LEE Jing Hong	12
Chapter 3	Conserva	ation Process	
	3.1	Hunting and Utilization of Grey-faced Buzzard \nearrow TSAI Yi Hua	16
	3.2	he Specimen Trade Era 🖊 TSAI Yi Hua	26
	3.3	The Establishment of National Parks and the	
		Migratory Bird Protection Program / TSAI Yi Hua	32
	3.4	Enforcement Action / TSAI Yi Hua	46
	3.5	From Hunting to Conservation:	
		The Ecotourism Development Journey of the Lide Community \nearrow	
		TSAI Yi Hua	53

Chapter 4	Research	
-	4.1	Kenting National Park Aut
		Raptor Count / TSENG Ch
	4.2	Grey-faced Buzzard Migrati
	4.3	Weather Radar-The Migrati
		Grey-faced Buzzard / SUN
	4.4	Tracking the Trip Set Off fro
	4.5	Catch a glimpse! - Satellite 7
		WU Yinyin

Epilog Reference Acknowledgments

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS



umn Migration	
iien Wei	66
on Survey of Baguashan / LEE Yi Hsin	68
ion Route of the	
Yuan Hsun	70
om Taiwan 🖊 YANG Chien Hung	76
Tracking of Rehabilitated Individual /	
	80
	82
	88
	89

國際灰面管噟暋 遷徙猛禽高峰會 INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

1.1

1.1

Identification Features and Migratory Ecology

TSENG Chien Wei / Executive Director / Raptor Research Group of Taiwan

Grey-faced Buzzard Butastur indicus

The genus name Butastur is composed of "buteo" for buzzard, and "astur" for hawk, suggesting its appearance is a combination between a buzzard and hawk. The species name indicus derives from the Latin for "India."

First Discovery and Description

"I received from the interior, at the same date, a specimen, new to the Formosan avifauna, of Buteo poliogenys, Schlegel. Bill blue-black, pale on the gonys and lower portion of base of upper mandible; cere and over the eye dull olive-green; eyelids and commissure-angle gamboge; legs and toes of a deep rich chrome-yellow; claws black, more or less patched with pale brown, chiefly about their middle portions; upper portion of the tibia feathered. Total length 161/2 in.; tail 9 in., of twelve even feathers, obtuse at the ends, and somewhat graduated outwardly, so as to give the tail a rounded appearance when expanded; wing 9 ¼ in., the fourth and fifth quills equal and longest. Tomiae of bill with a single deep festoon on each side.". "Appearance of bird, between Buzzard and Sparrow-Hawk; so that Hodgson's generic name Butastur if very aptly applied to it. Some feathers of the hind head long and subacuminate, forming a crest protruding about half an inch."

The first record of a Grey-faced Buzzard specimen in Taiwan was documented by Robert Swinhoe, a British diplomat stationed on the island in 1864. In a letter addressed to the editor of "Ibis," the scientific journal of the British Ornithologists' Union, he meticulously detailed the appearance of a specimen taken from an inland area near Tamsui. Nevertheless, an alternative theory suggests that Swinhoe might have mistakenly identified a Crested Goshawk specimen as a Grey-faced Buzzard because the description mentions olive-green bare parts, crown feathers, and a wing length that do not match its typical appearance.

Identification

Medium-sized raptor with body length of 47-51 cm, wingspan 102-115 cm, weight around 450g. Females tend to be slightly larger than males. Upperparts



rufous-brown. Head greyish-brown with indistinct white supercilium. Cheeks mouse-grey, giving the bird its name. Iris golden-yellow. Bill black with orange-yellow cere. Throat white with dark throat stripe and mesial stripe. Legs orange-yellow with tarsus devoid of feathers. Adult. Upperparts rich rufusbrown, making it one of the few diurnal raptors in Taiwan with a pronounced reddish tint on its back. Chest predominantly brown with interspersed white spots. Abdomen adorned with dense deep brown horizontal stripes. Adult males exhibit a uniformly brown chest with fewer white spots and less prominent supercilium, while the females feature distinct white supercilium and mottled chest. Juvenile. Upperparts less rufous, underparts covered with brown streak. Iris dark yellow, white supercilium broad and distinct. In the Hengchun Peninsula, adult Grey-faced Buzzards with their horizontal stripes are called " 橫 花 " (huâinn-hue), while juveniles with the streaking are referred to as " 直花 " (tithue). Flight Wings long and narrow with straight trailing edges. Wing tip pointed and dark. Underwing coverts covered with brown arrow-shaped markings. Tail approximately one-third the length of the wing; relatively short compared to other mediumsized raptors. Polymorphism Dark-morph individuals have uniform, markless dark brown color throughout their head and body. Mostly found in Japan's Yaeyama and Miyako Islands, they are extremely rare in Taiwan.







Juvenile underpart cover with brown streak Photo by Tseng Chien-wei

Upperparts rich rufus-browr Photo by Tseng Chien-wei

Migration

Widely distributed throughout East Asia. Breeding in eastern Russia, northeastern China, the Korean peninsula, and Japan. Wintering in Southeast Asia. In Taiwan, mainly migratory, with some overwintering and few staying for summer. Spring migration from mid- to late March. Autumn migration primarily occurs between mid- to late October. In spring, flocks head northward from Luzon, making landfall in southwestern Taiwan. They then head in s northwestwardly direction before heading towards China from Taiwan's western coast. In the fall, flocks make landfall between Taiwan's northern and northwest coast. They then proceed southward along the Central Mountain Range or along the east coast and head out to Luzon from the southern tip of the Hengchun Peninsula. In both spring and autumn, some groups pass through the waters off Taiwan without ever going to Taiwan proper.

Grey-faced buzzards exhibit high fidelity to their migration routes and stopover sites, such as Baguashan in Changhua County and Manzhou in Pingtung County. These locations are typically characterized by their proximity to departure points for sea crossings, hilly terrain and valleys that create favorable wind conditions and updrafts. They also have large, forested areas. These environments offer favorable conditions for migration along with sites that will allow them to conceal themselves and rest.

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

1.1

Observation timing

Observing Grey-faced Buzzards is best done during the migration seasons in mid-March and mid-October. You can witness the spectacular sight of flocks of buzzards repeatedly taking off and landing at their roosting sites in the late afternoon. On the following day, you can go to the vicinity of these roosting sites before sunrise and await their departure from the canopy in the dawn light. When observing these migrating flocks, it's advisable to pay attention to observation records from local birders. Choose a location near a mountainous area with expansive vistas to spot the passing flocks. While Grey-faced Buzzards prefer forests for roosting, you may see them along coastlines, in mountainous areas, or even over the open sea during migration.

Key points for distinguishing Grey-faced buzzard and Chinese sparrowhawk



Major Migration routes and Observation Site

Guanyinshan, New Taipei City / March – May Guanyinshan belongs to Taiwan's northernmost mountain range, the Datun Volcanic Group. It is situated adjacent to the Taiwan Strait. Some raptors traveling northward along the Xueshan Mountain Range will cross the relatively narrow area of the Taiwan Strait from here to reach the Chinese coast. While the overall number of migrants is relatively low, there is a great diversity of species.

Tongxiao, Miaoli County / March – May Located in a hilly region of northwestern Taiwan, Tongxiao Township lies adjacent to the Taiwan Strait and serves as a crucial roosting area for migratory raptors before they cross it. The area boasts a diverse and large number of migrants.

Baguashan Raptor-watching Platform, Changhua City / March – April

The northern part of Baguashan serves as a crucial roosting site for migratory raptors during their northward spring migration. Large numbers of Grey-faced Buzzards will gather in the local forests to roost in the evening. The Wild Bird Society of Changhua has conducted long-term surveys and has held the "Free Buzzard in Mt. Bagua" event here for decades.

Fengshan Hills, Kaohsiung City / March – May The Fengshan Hills are located in southwestern Taiwan and serve as a roosting site for Grey-faced Buzzards and Chinese Sparrowhawks during their northward spring migration. The Kaohsiung Wild Bird Society has conducted long-term surveys of migratory raptors in this area for many years.

Tataka, Nantou County / September – OctoberTataka is located along the migratory route of raptors passingthrough the Central Mountain Range, at an elevation ofapproximately 2610 meters. Local sites there such as Zizhong andLinzhishan have become popular raptor-watching spots in recentyears. They offer breathtaking views of flocks of hawks soaringthrough the valleys below during the early morning.



Ihihben, Taitung County / September

The East Rift Valley serves as a corridor for certain migratory raptors traveling south along Taiwan's eastern coast. Leshan in Jhihben Township and Sigeshan in the Beinan Township are popular spots for observing large numbers of migrating Chinese Sparrowhawks in the fall.

Kenting National Park, Pingtung County / September – October

Kenting National Park is located at the southernmost tip of Taiwan, with vast forests and sheltered valleys that provide excellent roosting sites for migratory raptors before they cross the sea towards the Philippines. The Sheding Nature Park is a great spot to witness the spectacle of raptor flocks gliding through the sky. You can also get close to the evening roosting and morning take-off of massive flocks of Grey-faced Buzzards in Lide Village and Gangkou Village in Manzhou Township.

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

1.2

1.2

Foraging Preferences and Satoyama Habitat Utilization of the Grey-faced Buzzards

WU Yinyin / Executive Director / Raptor Research Group of Taiwan

Satoyama Ecology and Seasonal Changes

Grey-faced Buzzards breed in southeastern Siberia, northeastern China, the Korean Peninsula, to the Japanese islands of Honshu and Kyushu. During the winter, they migrate to southern China, Indochina, the southwestern islands of Japan including the Ryukyu islands, Taiwan, the Philippines, and Indonesia. Its diet primarily consists of amphibians, snakes, lizards, insects, and small mammals. Research conducted in Tochigi Prefecture, Japan, shows that the breeding density of Grey-faced Buzzards is relatively high in Satoyama areas, or areas consisting of a mosaic of rice paddies and forests. From April to June Grey-faced Buzzards predominantly catch frogs in rice paddies. This coincides with the beginning to the middle of their breeding season. However, by the late breeding season in late July, the rice grows taller and it becomes more challenging to find prey. So Grey-faced Buzzards will then gradually shift their foraging area to dry fields, grasslands, and forest edges, where they primarily feed on insects. The prey available in these areas also varies with the seasons. For example, in the late breeding season, it coincides with the emergence of large saturniid moths, such as the Oak Silk Moth. The plump larvae of these moths can weigh up to 29 grams, providing Grey-faced Buzzards with an alternative food source when catching frogs becomes challenging.



Satoyama environment. A landscape where settlements, cultivated fields, streams, and forests intertwine. Photo by Tsai Yi-hua



INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

Prev Abundance in Satoyama Areas

Grey-faced Buzzards usually perch at high vantage points where they can scan for prey and swoop down to catch it. Therefore, having prominent perching spots like trees or utility poles in an area can increase their chances of successful hunting. Research in Tochigi Prefecture, Japan, indicates that the interface between agricultural fields and forests forms an ecotone with a relatively rich diversity of habitat types and species composition. The longer the length of these ecotones in the environment, the more available habitat there is for Grey-faced Buzzards. Surveillance camera footage from nests in the area showed that a breeding pair, which was raising three chicks, provided a rich and diverse diet. It included various frog species, snakes, lizards, small mammals such as voles and moles, insects (both adults and larvae), birds, and more. This abundance and diversity of food resources highlights the adaptability and foraging efficiency of Grey-faced Buzzards in this environment.



Grey-faced buzzard catches flying insects. Photo by Tseng Chien-wei



Citrus locust Photo by Tseng Chien-wei

The Special Nature of Satoyama Areas

The advantages of Satoyama areas in supporting the breeding of Grey-faced Buzzards are as follows: they have high heterogeneity, provide proper areas for foraging and nesting, include rice paddies, dry fields, irrigation channels, reservoirs, streams, and woodlands. These diverse habitats support a rich diversity of wildlife. Additionally, the environment undergoes dynamic changes due to agricultural management practices such as rice planting, harvesting, weeding, and other activities. These changes allow Grey-faced Buzzards to easily find alternative habitats when certain habitats are unsuitable for use. Furthermore, human activities and structures, such as utility poles, sprinklers, and windbreaks provide perching points for Grey-faced Buzzards during their hunting activities. These conditions collectively make Satoyama areas a preferred breeding and foraging habitat for Grey-faced buzzards.



Frogs are an important prey source for grey-faced buzzards during the breeding stage. Photo by Tsai Yi-hua



Habitat Utilization During Winter

While wintering, Grey-faced Buzzards do not require the large quantity and high diversity of prey as they do during the breeding season. Research in the Ryukyu islands, a Grey-faced Buzzard wintering area in Japan, suggests that the birds prefer grasslands and cultivated fields with elevated points such as windbreaks and sprinklers. They primarily prey on arthropods like the Citrus Locust, frogs, lizards, and other small game. The woodlands and windbreaks close to agriculture fields serve as elevated hunting perches and provide roosting sites. Therefore, the area of woodlands, windbreaks, and the forest edge adjacent to cultivated fields are crucial in determining whether an environment is suitable for Grey-faced Buzzards during the winter. Even if an environment seems to have plenty of grasslands and cultivated areas preferred by Grey-faced Buzzards, lacking trees can still make it less favorable for their use. Environments with high heterogeneity and diversity better fulfill its foraging and roosting needs.

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

2.1

2.1

Local Names for the Grey-faced **Buzzard** in Taiwan

LEE Jing Hong / Director / Wild Bird Society of Changhua

Through satellite tracking, the use of weather radars, and long-term observations by birders, a fairly comprehensive migration route and pattern has been established for the Greyfaced Buzzard's journey through Taiwan. Many roosting sites have also been discovered through long-term observations as well. Regardless of the season, they prefer to roost in mountain valleys near the coast. This allows them to reduce the physical exertion and lower mortality while crossing the sea. The Greyfaced Buzzard displays a high degree of fidelity to its migration routes and stopover sites, arriving at specific roosting sites year after year around the same time. Residents around these roosting sites have recognized this regular and stable migration pattern for generations. In order to pass down this knowledge as well as hunting techniques, people have given several names to this bird based on its behavior, timing of arrival, legends, anecdotes, and local place names.

The Grey-faced Buzzard boasts over 15 local names, perhaps holding the record for the most diverse regional appellations in Taiwan. They can be broadly categorized as falling into the following categories:

- 1. Characteristics, Habits, and Behavior: Huī-miàn-jiù, Lâmloo-ing, Garagaraw (Paiwan), Takoyab (Yami), âng-ing.
- 2. Migration Timing: Tshing-bîng-tsiáu, Guó-qìng-niǎo, Lâmhong-tsiáu, Pue-oo-tsiáu, Má-tsóo-tsiáu, Hân-lōo-tsiáu.
- 3. Legends and Anecdotes: Kok-sìng-tsiáu.
- 4. Related to Place Names: Buán-tsiu-ing, Suann-āu-tsiáu.

The 15 local names listed in the table all originate from regions south of Houlung Township in central western Taiwan's Miaoli County. Results from observations and satellite-tracking studies indicate that most of the transiting Grey-faced Buzzard populations enter and exit Taiwan south of Houlong. Therefore, even though thousands of Grey-faced Buzzards migrate through northern Taiwan annually, due to the insufficient stability in quantity and migration timing, the development of a hunting culture or emergence of local names related to this bird did not take place. Furthermore, some of the names for the Grey-faced Buzzard are used to refer to different bird species in various regions. For instance, '國慶鳥' (Guó-qìng-niǎo, which means National Day bird) in Dongshi District, Taichung City, refers to the Ashy Wood-Pigeon.

Local Names, Naming Locations, and Characteristics Related to the Grey-faced Buzzard in Taiwan TSAI Yi Hua / Research / Ratpor Research Group of Taiwan

Vernacular Name	Pronunciation	Name Origin Location and Transit Seasons	Meaning	Basis for Name
灰面鷲	huī-miàn-jiù	Taiwan	The raptor with grey cheeks	Characteristics, Habits, and Behavior
南路鷹	lâm-lõo-ing	Baguashan, Changhua County/ Spring	Raptors from the south	Characteristics, Habits, and Behavior
清明鳥 (祭墓鳥、 掃墓鳥)	tshing-bîng-tsiáu	Changhua County, Taichung City/ Spring	Seeing this bird is a sign that the Tomb Sweeping Day is approaching	Migration Timing
國姓鳥	kok-sìng-tsiáu	Tiezhenshan, Taichung City / Spring	Birds transformed by soldiers under the command of Koxinga	Legends and Anecdotes
南風鳥	lâm-hong-tsiáu	Xihu and Tongxiao, Miaoli. County / Spring	A bird that brings the southern winds in spring	Migration Timing
媽祖鳥	má-tsóo-tsiáu	Baishatun, Miaoli County / Spring	The bird that welcomes the goddess Mazu's inspection	Migration Timing
寒露鳥	hân-lõo-tsiáu	Meinong, Kaohsiung City / Autumn	The bird that migrates through Meinong in the lunar season of the"Cold Dew"	Migration Timing
國慶鳥	kok-khìng-tsiáu / guó-chìng-ni u	Manzhou, Pingtung County / Autumn	The bird that arrives around September 10th, the National Day of the R.O.C.	Migration Timing
山後鳥	suann-āu-tsiáu	Manzhou, Pingtung County / Autumn	The bird that appears from behind the mountain ridge	Locations and Landscapes
滿州鷹	buán-tsiu-ing	Manzhou, Pingtung County / Autumn	Raptors that appear in large numbers in the Manzhou area	Locations and Landscapes
Takoyab (達悟族語)		Orchid Island, Taitung County / Autumn	Traveler	Characteristics, Habits, and Behavior
紅鷹	âng-ing	Huayu, Penghu County / Spring	The red-colored raptor	Characteristics, Habits, and Behavior
飛烏鳥	pue-oo-tsiáu	Xiao Liuqiu, Kaohsiung City/ Spring	Seeing this bird represents that flying fish season is coming soon	Migration Timing



INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

2.1

"Ba-dan-ma" in Manzhou

LEE Jing Hong / Director / Wild Bird Society of Changhua

Near the Lide Bridge in Manzhou Township on the Hengchun Peninsula, there lies an ancient tomb unlike the typical graves found in Taiwan. It is a simple sandstone mound with an unmarked tombstone placed in front. Locally, it is known as "巴丹媽" (Ba-dan-ma), meaning the female ancestor from Batan Island.

Descendants of Ba-dan-ma tend to raise chickens and pigs on the hillside near Lide Bridge, which is surrounded by a lush coconut grove. Beneath this very grove lies the tomb of Bā-dānmā. During the Grey-faced Buzzard hunting season in mid-October, the coconut grove around Ba-dan-ma 's resting place remains off limits, sheltering the birds. A promise passed down through the generations of Ba-dan-ma's lineage ensure these birds' protection, establishing an unspoken covenant. Thus, it bestowed upon the Grey-faced Buzzards a refuge within this area.

In 2008, Mr. Wang, a descendant of Ba-dan-ma, mentioned in an interview the connection between Ba-dan-ma and the Greyfaced Buzzards:

"According to our ancestors' legend, Ba-dan-ma was a native woman from Batan Island who drifted to Manzhou about 500 years ago due to a typhoon. She was found by our ancestors and settled in Manzhou, where she married and bore four sons with one of our forefathers. Because she hailed from Batan, her descendants referred to her as Ba-dan-ma."



Tombstone of Ba-dan-ma Photo by Lee Jing-hung

"Although residing in Taiwan, Ba-dan-ma's heart ached with homesickness. Whenever the downhill winds began to blow in the autumn and the Grey-faced Buzzards arrived in Manzhou, she couldn't help but feel sorrowful. She implored her descendants, *These birds were sent by families in Batan to find their relatives. Though I can never return to Batan, please, never harm them since they are from my homeland! It would break my heart!*"

Ba-dan-ma's descendants made a lasting pledge to never hunt Grey-faced Buzzards, a commitment spanning generations. They pass down Ba-dan-ma's tale to their heirs every year when the Grey-faced Buzzards arrive. Local residents also uphold this tradition, refraining from hunting these birds as they rest on the hillside where Ba-dan-ma's tomb stands.



The Inscription of Jianjing, the Sword Well Photo by Lee Jing-hung

The Inscription of Jianjing, the Sword Well

TSAI Yi Hua / Researcher / Raptor Research Group of Taiwan

According to research by scholar Lee Jing-hong regarding this inscription, legend has it that in 1662, Koxinga and his troops were stranded in Tienzhenshan in today's Taichung City. They faced a severe water shortage, so Koxinga thrust his sword into the ground, causing a spring to gush forth and never run dry. After Koxinga's passing, it is said that the souls of his soldiers transformed into a flock of hawks. Every year they would gather and fly to this location around Tomb-Sweeping Day, emitting mournful cries and then descending into the well. However, historically, Koxinga never set foot here. Lee speculates that the well was likely constructed by the local indigenous people. When Grey-faced Buzzards arrived here in the evening, they rushed to drink from the narrow well and then couldn't get out and drowned.



INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

3.1

3.1

Hunting and Utilization of Grey-faced Buzzard

TSAI Yi Hua / Research / Ratpor Research Group of Taiwan

Manzhou Township and the Grey-faced Buzzards

In 1951, the Hengchun County Chronicles described the challenging conditions on the Hengchun Peninsula. It noted that the peninsula was surrounded by mountains and the sea with a narrow interior. The area was frequently battered by typhoons during the summer and autumn, while strong downhill winds blew during the rest of the year. The howling winds flattened rice crops and blew away grains, fruit, and flowers, creating unfavorable weather conditions for agriculture. Indigenous people settled on the Hengchun Peninsula and later lived alongside communities of people who came to Taiwan during the Ming and Qing Dynasty. These communities would engage in trade and clash over taxes, deforestation, local power dynamics, and land. While the peninsula's natural resources did attract different groups of people over the years, it did not guarantee a comfortable life.

Manzhou Township lies on the eastern part of the Hengchun Peninsula and is characterized by its hilly terrain. A flat valley was carved out by the Gangkou River, with settlements like Changle, Xianglin, Manzhou, and Lide developing along it. The surrounding hills have been repeatedly logged for natural resources like camphor, charcoal, and ramie, resulting in a sparse tree canopy that generally stands less than 10 m tall. When the downhill winds come, they are tempered by the terrain, blowing through the sparse canopy dominated by bamboo and Acacia trees. The air there is cool and breezy, making it a favorite roosting



site for Grey-faced Buzzards.

With the onset of mid-October's downhill winds, thousands of Grey-faced Buzzards grace the skies above the Manzhou Valley in the afternoon, arriving from the Yongjing and Gangkou areas. The early arrivals glide into the lush riverside grass to hunt, quench their thirst, or rest on branches. Their numbers are biggest around 4 to 5 pm, after which they head into the forest to rest.

The next day, the Grey-faced Buzzards take flight in the early light of the dawn. They hitch a ride on the northeastern winds, which, as they collide with the valleys create upward drafts. This allows the buzzards to spiral into higher altitudes allowing them to continue their journey southward. The migration period lasts a short two weeks, after which they vanish from the valleys, leaving only scattered individuals to spend the winter on the Hengchun Peninsula.

In this remote region, the Grey-faced Buzzard is akin to a seasonal source of meat and fat, much like flying fish. These buzzards migrate in groups and rest in sparse, low vegetation,



flocks of Grey-faced buzzard roosting in coconut groves. Photo by Tsai Yi-hua

making them easy prey. In an era when hunting had no legal constraints, Manzhou's locals in the 1950s continued the tradition of their fathers and grandfathers, venturing into the mountains to hunt the birds. Adding a bowl of buzzard soup or having buzzard meat stew with dried bean pods for dinner was an ordinary part of daily life, a custom that could be traced back at least seven generations.

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

3.1

Lights and Hunting Gear

TSENG Chien Wei / Executive Director / Raptor Research Group of Taiwan



Light and Lighting Gear

Torches

Torches were typically made from bamboo tubes filled with bundled dry grass, straw, or oil-soaked cloth. Torch light is scattered and cannot be focused, meaning its main use was for illuminating pathways or spotting Grey-faced Buzzards perched on low branches.



In an era when modern lighting was not yet common, hunters would head into the woods in the afternoon. Then, as the Grey-faced Buzzards flew in and out of the forest searching for food, they would wait for the birds to rest on a branch and then use bows and arrows to shoot them down. This hunting method, known as 暝暗烏 (mê-àm-oo) or "dim twilight," was conducted just before nightfall when sky was still bright. The hunt took less than a couple of hours and typically employed short-range, less accurate hunting gear like bows and bamboo tube guns. Refrigeration facilities for storing meat were not common at that time. Therefore the hunt yielded only a small quantity of prey, just enough for dinner that evening or sharing with neighbors.



Kerosene Lamps

A kerosene lamp is a simple lighting device consisting of a cotton wick immersed in kerosene, producing a bright flame when lit. It often includes a glass lampshade, offering improved wind resistance and illumination, commonly used for lighting pathways or low perched areas, like branches where Grey-faced Buzzards might rest.



Carbide Lamps

The Carbide lamp, popularized in the early 1950s, is a lighting device comprising a lower carbide container, an upper water container, a nozzle, and a reflector. It operates by generating flammable acetylene gas through the reaction of water with calcium carbide. The gas is ignited and provides illumination, with a range of about 5 to 8 meters. While not long-lasting and being relatively heavy, it offered improved visibility and was commonly used for household lighting in Taiwan in the mid 20th century. They also aided hunters in their nighttime pursuits.





Flashlights

Flashlights hold batteries and light bulbs encased in a cylindrical plastic or metal casing to produce a bright and focused beam of light. They are easy to carry, lightweight, can be easily focused, and provide good lighting intensity. Their portability, long battery life, and concentrated beam greatly enhanced hunting efficiency.

"Bateri" / Motorcycle Headlamps

Derived from the Japanese loanword " $\mathcal{N} \ \mathcal{Y} \ \overline{\mathcal{T}} \ \mathcal{Y} -$ " meaning car battery, hunters would carry an approximately 8kg battery on their back and use handheld or head-mounted headlights for illumination. This would produce a concentrated and bright beam of light that could reach targets tens of meters away. When Grey-faced Buzzards are exposed to intense light, their eyes temporarily lose vision, causing them to freeze in place and become vulnerable to hunting. This type of lighting ensemble became the most common lighting method after the 1990s, yet in earlier days only hunters with better economic situations could get them. Due to their long range, other hunters who used kerosene lamps or flashlights nearby would often take down the illuminated prey first. 3.1

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

Hunting Gear



Hand-Catching, Sticks and Hand Nets

During bad weather such as heavy rains or strong winds, Grey-faced Buzzards often take refuge in the lower branches of tress or may be forced to land on the ground. In such situations, hunters could easily reach out and grab the bird's legs, capture them from trees with a hand net or just knock them down with sticks. Trees like those of the family Leucaena, with their slender and soft trunks, could often be shaken back and forth to startle the buzzards perched on them. This would make them attempt to fly away in the darkness and collide with branches before falling to the ground. During the specimen trade period in the 1970s, hand-captured Grey-faced Buzzards maintaining their intact appearance could fetch high prices.

When large flocks of Grey-faced Buzzards passed through Changhua County's Baguashan area, they often perched on tombstones to roost, earning them the nickname "Tombstone Hawk." There are two theories explaining why they did this. One is that with so many buzzards crowding the nearby trees, some individuals were forced to land there. Another theory suggests that the vegetation there was low to the ground, making the tombstones a relatively higher point in the landscape and thus attracting the Grey-faced Buzzards to perch there. Regardless, this made them easy prey for hunters, who could catch them with their bare hands or by taking them down using sticks.

Bamboo Arrows

Bamboo arrows have their roots in the traditional hunting methods of Taiwan's indigenous peoples. They played a significant role in the hunting history of Manzhou Township. There, the use of bows, bamboo tube guns, and wooden guns, all of which employed bamboo arrows, were used to target buzzards. Each September, hunters would gather and select bamboo of suitable length and thickness. They would then meticulously roast the bamboo to straighten it, carve a groove in the back, and attach a long iron nail with a barbed arrowhead to ensure it stayed in place upon impact. During each hunting expedition, they typically carried a bundle of bamboo arrows. When arrows ran low, they would scavenge arrows left behind by others or craft new ones. In those early days, hunting tools had limited shooting power and accuracy, so it was common to see Grey-faced Buzzards flying with bamboo arrows stuck in them.

Bows

Bows were usually made from Thorn Bamboo and were traditional hunting tools widely used for daytime hunting in the early days. They proved to be less effective for nighttime hunting and were gradually replaced by other things.



Bamboo Tube Guns

Bamboo tube guns were made from locally abundant Longshoot Bamboo and the inner tubes found in bicycles. The inner tube was given tension to provide the force to propel arrows. While its shooting power was relatively weak, these guns would have an effective range of less than 2 meters. Meanwhile, the bamboo tube gun itself measured approximately 2 meters in length, extending to over 3 meters when held. This length allowed for a close-range shot at the buzzard's belly. Although it offered better aim compared to wooden guns, its cumbersome length made it unsuitable for densely vegetated areas. Longshoot Bamboo, characterized by rapid growth, few joints, and substantial height, was also frequently used in crafting tools, furniture, and drying poles.

Air Guns, Gas Guns and Hunting Rifles

Air guns were introduced for hunting in the 1970s, but due to their relatively high cost (NTD\$20,000 to 30,000), they were initially owned primarily by wealthier hunters. It wasn't until the 1990s that they began to gain wider popularity. In the early days of air gun usage, hunters often kept lead bullets in their mouths for quick reloading after shooting. They would also often use cigarette butts or incense sticks placed a few meters away to improve their aiming and shooting skills. Modern firearms such as air guns and gas guns have a range of more than 10 meters and can fire rapidly. Accuracy is also greatly improved if the gun is equipped with an infrared dot sight. Therefore, in the 1990s the hunting population decreased but the hunting pressure did not. However, a drawback of using these modern firearms is that they are loud, often startling the buzzards, especially on calm, moonlit nights with no wind.



Wooden Guns / Bow Guns

The wooden gun, also known as the bow gun, was the hunting tool of choice during the specimen acquisition period of the 1970s. Crafting a wooden gun required meticulously shaping a tree trunk into the form of a gun. A groove was carved above the frame to stabilize the trajectory of arrows, and two bicycle inner tubes were fixed at the front end, connected in the middle with thick wire in an " \square " shape. The tension generated when pulling back the inner tubes was instantly released when the trigger was pulled, propelling the arrow. Its range was up to 6 to 10 meters, yet due to its relatively weak aiming and power, shooting twenty or so arrows usually resulted in taking down just one or two buzzards. When the arrows were all used, new ones had to be made or the hunter would try to find spent arrows. The accuracy of the wooden gun depends on how straight the arrows and the gun frame were, with only skilled hunters making quality wooden guns.





Ing-á-tah, the Pole Traps Photo by Wu Chien-lung

鷹仔踏 (ing-á-tah) Pole Traps

The "ing-á-tah" is a common trap used for hunting Greyfaced Buzzards in central Taiwan. It operates on a similar mechanism as a pole trap used to catch shrikes but is much larger. The trap functions by using the weight of the bird to release the perching branch, simultaneously releasing the tension generated by the folded bamboo branches, which instantly tightens the loop around the buzzard's leg or tarsus. In the Hengchun Peninsula, "ing-á-tah" was not employed, as local hunters believed it wasn't attractive to buzzards coming for roosting. It is speculated that the abundance of trees with sparse canopy in Manzhou, such as Acacia, bamboo, and coconut species, provided sufficient perching branches for buzzards. This could be why it wasn't effective there.

Drop Trap

The dustpan drop trap was an early and simple trap used in Tongxiao, Miaoli County to capture Grey-faced Buzzards. When the buzzard would go to eat the bait placed under the dustpan, the mechanism would be triggered, causing the dustpan to fall and trap the buzzard.

Bird Glue

This was a unique method for capturing Grey-faced Buzzards on Orchid Island. Local residents would create a sticky substance by grinding the bark of the Mochi Tree and then attaching coconut leaves coated with this glue to bamboo poles. During the night, they would capture sleeping Grey-faced Buzzards by carefully extending the pole and gluing the birds on the back, wings, or neck.

Hunting and Cuisine

In the early days, most hunters pursued Grey-faced Buzzards purely as a source of protein. Some believed consuming birds that could travel such long distances would make them stronger. The act of hunting itself lacked religious taboos or rituals and did not give rise to songs, as in the case of activities like farming, tea picking, or counting fish fries. Hunters came from diverse ethnic backgrounds, including Hokkien, Hakka, and indigenous communities. Due to limited transportation in these times, hunters typically hunted in their own areas. According to a report by the Kenting National Park Administration titled Investigation of Grey-faced Buzzard Hunting in the Manzhou Area, a questionnaire survey conducted in 1983 revealed that Lide and Manzhou had the highest number of Grey-faced Buzzards being hunted, followed by Xianglin, Gangkou, Yongjing and Changle. At Jiupeng and Gangzai, which were located on the eastern coastline, the northeast winds were strong and unsuitable for Grey-faced Buzzards to roost. Therefore hunting was less frequent there.

Hunting teams typically consisted of two to three people. In the early days, it was often a husband and wife working together. Before the September hunting season, they would gather bamboo to craft bamboo tube guns or arrows. During the hunt, the husband would go after the target with a gun and a lamp while the wife carried a bag and a handful of arrows. When a buzzard was hit, it would be picked up and placed in the bag for the wife to carry.

During the hunt, it was best to hit the bird in the head or the chest (heart). If a shot didn't hit right, the dying buzzard would tightly grasp the tree branch and hang upside down. Then it would take several minutes for it to completely die and release its grip so it could be retrieved. Some less skilled hunters would specialize in collecting those prey left behind.

"Buzzards in autumn had thicker fat, while the Qingming birds are lean and lacking in fat." The term "Qingming birds" refers to the Grey-faced Buzzards that migrate northward in the spring. Local hunters believe that as the temperatures drop in the north, raptors consume large amounts of prey and accumulate fat for withstanding the cold and using as fuel for their southward journey. In contrast, during the winter they only need enough food to survive, resulting in a leaner appearance. When hunters in Manzhou would process Grey-faced Buzzard carcasses, they'd often find lizards, centipedes, locusts, grasshoppers, and occasionally, snakes, in their digestive tracts. Some individuals that arrive late may not have had time to forage, resulting in empty intestines with only intestinal mucus inside.

The most common recipe to prepare Grey-faced Buzzards in Manzhou was by making dried bean pod soup. The carcass would be finely chopped and simmered with dried bean pods. It's said that the pods become slightly chewy, giving the soup a sweet flavor after absorbing the bird's fat. Another common method is to stir-fry the chopped buzzard meat, intestines, and gizzard with seasonal ginger and soy sauce. This dish has evolved to include scallions, garlic, sesame oil, and rice wine, cooked in the "threecup" style.





Chicken stew with dried bean pods Photo by Tsai Chi-hsin

"I think it taste like an old hen, it is even more chewy than the local chicken." A former hunter described it as tough and containing small bones. The young can chew and swallow it, while most older people prefer to enjoy the soup, eat the pods, or use the fat to flavor their rice. With the prohibition of hunting buzzards and the ease of obtaining other meats, chicken is now a common substitute meat in these dishes.

In addition to consumption, some farmers in the Lide region would keep Grey-faced Buzzards and tie them up in the open space in front of their houses, to keep chickens away from pecking drying rice. However, most of the captive buzzards wouldn't survive for more than a month.

The mode of hunting Grey-faced Buzzards has evolved over time in response to advancements in lighting tools and market demand. In the early days, hunting took place during what was known as 「暝暗烏」 (mê-àm-oo), utilizing the fading daylight before sunset. The prey was typically consumed for dinner on the same evening or traded within villages for money.

As modern lighting and hunting equipment emerged, along with increasing market demand, the hunting hours extended into the early hours of the next day. Shooting accuracy also significantly improved and a substantial increase in the number of buzzards captured took place.

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

3.1

Local Crops and the Grey-Faced Buzzard

TSAI Yi Hua / Researcher/ The Raptor Research Group of Taiwan

Cowpeas pod and dried pods. Photo by Tsai Yi-hua

Local crops and early Grey-faced Buzzard hunting practices in Manzhou Township are closely intertwined. For instance, crops like Long-shoot Bamboo and Climbing Bamboo were used to make bamboo tube guns and arrows. Ginger and cowpeas grown in small fields and yards were commonly used in buzzard meat recipes.

Cowpeas (*Vigna unguiculata*, $\overline{\mathfrak{M}} \ \overline{\mathfrak{D}}$ jiāng-dòu), as well as similar-looking yardlong beans and string beans, are collectively referred to as ' $\overline{\mathfrak{K}} \ \overline{\mathfrak{D}}$ '(caì-dòu). This plant has numerous local names in Taiwan stemming from its long shape, the reddish color of the pods, and growing period. It was introduced to Taiwan during the Ming Dynasty and its preference for warm and sunny growing conditions and ability to thrive in very hot summer temperatures makes it one of Taiwan's most important summer vegetables. In Kaohsiung City and Pingtung County, you can find cowpea dishes in indigenous, Hokkien, and Hakka communities.

Due to many generations of cultivation, cowpeas have taken on a variety of appearances. In the early days, those commonly found in Pingtung's Hengchun and Manzhou were seen in such colors as purple-red, green, or mottled white, purple, and green. The pods were approximately 20 to 30 cm long, falling somewhere in length between green beans and long beans. After harvesting, the thick fibers on both sides of the pods were removed from the



stem. They were then folded into two sections and boiled until they turned a deeper color. Finally, they were spread out in front of the house to dry. Once dried, they could be stored for up to a year and used in soups and stews.

Nowadays, the most commonly seen dried pods in local markets are made from long beans. Long bean pods are cylindrical, ranging from 30 to 50 cm in length, and come in various colors ranging from deep purple-red to green. The process of making dried long bean pods is like that of cowpeas. Manzhou residents note that cowpeas have a firmer texture, whereas the now readily available long beans often lack the same chewy quality when cooked.

May is a rainy month in Manzhou, and residents typically practice slash-and-burn cultivation followed by sowing cowpeas at this time. The harvest of cowpea pods occurs from late August to early September, earning them the name "September beans" on the Hengchun Peninsula. In areas like Meinong District in Kaohsiung and amongst the indigenous Tevorang, cowpeas are known as "August beans" and "fire beans." Right after the cowpea sun-drying period, the Grey-faced Buzzards begin to arrive in Manzhou. Ginger is also harvested in October. As a result, in the past, the people of Manzhou would often choose between two methods when preparing Grey-faced Buzzard meat: chopping the meat and intestines, then stir-frying them with ginger, soy sauce, and sesame oil, or simmering them with cowpea pods to make a soup.

The Chinese Yam is another local vegetable found in Manzhou associated with the Grey-faced Buzzard, but not for the same reason. In autumn, when the stem and leaves wither, the tubers become full and ready to harvest. To extract them, local people would use semi-circular iron tools to dig pits of 1 to 2 meters in depth. These holes would sometimes prove treacherous for night-time buzzard hunters, who would occasionally find themselves stepping into one of these "yam traps" by accident. Getting out could prove quite difficult!



Firecrackers

TSAI Yi Hua / Researcher / Raptor Research Group of Taiwan

During the peak season of Grey-faced Buzzard migration over Manzhou, it's common to hear sporadic firecrackers in the evening, causing flocks of buzzards to take flight. Besides the firecrackers being set off during local temple festivals, single loud firecrackers are generally associated with traditional buzzard hunting practices. For instance, if hunters discovered that a buzzard flock had settled in dense forests or near hardto-reach ridgelines, they would repeatedly set off firecrackers to startle the birds until they chose a roosting site that was easier for the hunters to access, such as near a river or lower-lying area. Meanwhile, September and October are betel nut harvest season. Farm owners would use firecrackers to drive the buzzards away to prevent hunters from coming onto their land and possibly stealing their betel nuts.

Raptor-watching activities took off after 2000. With this, a number of rumors came out suggesting that birdwatching and photography groups paid locals to set off firecrackers to startle the flocks so they could capture them taking off on film.

Although hawk watchers would often report the harassment of birds to the police, the perpetrators would typically drive away on the winding mountain roads after setting off the firecrackers. It was nearly impossible to catch them in the act.

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

3.2

3.2

The Specimen Trade Era

TSAI Yi Hua / Researcher / Raptor Research Group of Taiwan

The Specimen Trade in the 1970s

"150,000 JPY for the Crested Serpent-Eagle, 15,000 JPY for the Fairy Pitta (exchange rate is about 7.7 JPY to 1 NTD)." The cabinets of the Daimaru Department Store would display raptor specimens and mark the price. In 1971, Noritaka Ichida of the Wild Bird Society of Japan initiated an investigation into the source of raptor specimens in Japan. During that period, raptor specimens were highly sought-after decorative items, and people frequently placed a raptor specimen in a wings-spread pose as decoration in their homes.

The specimens available for sale in Japan included species such as the Grey-faced Buzzard, Oriental Honey Buzzard, Eastern Marsh Harrier, Crested Serpent-Eagle and some passerine species. The vast majority of these were imported from Taiwan. In the 1970s in Japan raptors were already protected from hunting by law. Yet it was still possible to legally import specimens from overseas. Local Japanese bird conservation groups, facing difficulties trying to stop the trade of raptor specimens domestically set their sights across the sea, to Taiwan.

In June 1978, Mr. Wu Sen-xiong of the Animal Protection Association of the Republic of China (APA) traveled to Japan to attend a bird conservation conference. During the conference, he mentioned that Taiwan had implemented a comprehensive ban on the hunting of wildlife beginning in 1972. However, he was immediately questioned by fellow attendees about Taiwan's substantial annual exports of raptors and various bird specimens to Japan. Upon learning of Wu's arrival in Japan and his stay at the Shinjuku Prince Hotel, Ichida paid a visit to Wu that very evening. The two men engaged in long discussions on the state of the bilateral specimen trade and strategies for deterring the hunting of Grey-faced Buzzards. These talks were the catalyst for future collaboration on raptor conservation between Japan and Taiwan.

In August 1976, Ichida visited Taiwan by himself to investigate the raptor specimen industry. Under the premise of seeking to acquire specimens, he inquired about the availability of certain raptor species from shopkeepers. He skillfully elicited information such as the price and quantity of raptor specimens from the vendors. Some even drafted introduction letters to wholesale suppliers for him. All this eventually led him to Puli Township in Nantou County, a historic hub for specimen processing. It was there he successfully encountered local specimen dealers.

"Any raptor can be arranged for your needs. If it's a Greyfaced Buzzard you seek, we can provide you with up to three thousand specimens in a short period."

Opening the door to a massive, refrigerated storage facility as evidence, the dealer substantiated their claims, leaving Ichida astounded and momentarily speechless. While the anticipated supply of raptor specimens in Taiwan was expected to be substantial, witnessing this large-scale trade operation exceeded his expectations. Concluding his fact-finding mission, Ichida briefly met with his Taiwanese associates for a meal before returning to



Japan. He then wrote up an account of his findings in Taiwan for "Wild Birds", the periodical of the Wild Bird Society of Japan.

"The inability to eradicate poaching in Taiwan is attributed to its ability to provide an easy source of income for rural residents. However, due to significantly low local selling prices, these precious raptors are, in essence, driven to extinction merely to meet the modest income needs of the local population. For instance, the local price for salted hides (those treated with coarse salt for preservation) is 2,500 JPY, whereas the selling price in Japan could be tens of thousands or even hundreds of thousands of JPY, with the difference entirely benefiting Japanese specimen



Grey-faced buzzard specimen in a wings-spread pose. by Yangmingshan National Park Headquarters

dealers," Ichida explained in his report.

Even before the raptor trade, the Hengchun Peninsula had been actively engaged in the Taiwan-Japan specimen trade of butterfly specimens. The start of the Grey-faced Buzzard specimen trade remains unclear, but it gradually gained prominence during the 1970s. Initially, residents of the Hengchun Peninsula hunted the buzzards solely for local consumption. These hunts were carried out only by professionals who could craft weapons like arrows and wooden guns, possessed an intimate understanding of the buzzards' behaviors, and were willing to venture into the mountains during the evening.

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

3.2

Between 1973 and 1980, during the period when specimen dealers extensively acquired buzzards, traders journeyed to Manzhou to purchase untreated birds. Damaged specimebs or dead carcasses could fetch prices ranging from 300 to 500 NTD, while intact live individuals could get prices ranging from 800 to 1,500 NTD. Prices fluctuated in response to supply conditions and delivery times. During the buzzards' migration period in October, some vendors who typically dealt in mountain game assumed the role of retail traders. Laden with cash, they positioned themselves at the bridges between the settlements and the forest, awaiting on-site transactions with hunters returning home. Hunters exchanged information about selling prices amongst themselves, each hoping to secure the best possible deal.

During the 1970s, the profitability of hunting buzzards was indeed noteworthy. At that time, a high school teacher's monthly salary was 4,000 NTD. In relatively affluent Hengchun Township, a day laborer could earn around 300 NTD per day. Most of the residents in Manzhou Township, where many hunters hailed from, earned their income through odd jobs, electrical work, carpentry, or fishing. Daily wages for these jobs ranged from just over 10 NTD to around 30 NTD, increasing to around 80 NTD in the later period. Most of the agricultural labor and manual work was typically conducted through "exchange labor," where friends and family helped each other without receiving wages. Thus, in Manzhou, selling just one buzzard could yield the equivalent of a week's wages. During peak migration, if a hunter managed to capture 20 to 30 birds, it translated to the income of six months to a year of labor. Seizing the opportunity during the brief twoweek period of the buzzards' migration through the Hengchun Peninsula, hunters could significantly improve the living standards of their families with four or five children for an entire year. Some young hunters even funded their high school education by earning money through hunting buzzards.

"In the late afternoon, everyone would gather to observe where the birds were resting. As it started to get dark, we would prepare our equipment and hide beneath the trees. Once it was dark, we would turn on lights and commence hunting. If there were a significant number of buzzards resting in a particular area, everyone would rush in to seize the opportunity. After a round of hunting, we'd return home, have a meal, and then head out for the second round," one hunter from Manzhou is recorded as saying.

The first round of the hunt would typically last from dusk until eight or nine o'clock in the evening. Since no one knew where the buzzards would go when startled by the hunters, the second round mostly involved random searches along streams, with some individuals trying their luck by heading into the mountains. The competition among hunters was intense. Hunting continued well into the night, often ending around midnight. Afterwards, everyone returned home to rest for the agricultural work the following morning.

The most significant difference between hunting in the past and the era of the specimen trade lay in the immense allure of the profits. It transformed hunting from an activity restricted to a few skilled individuals to an almost universal village pursuit. Regardless of whether they possessed hunting skills, people across the region were eager to seize the opportunity to make quick money. Furthermore, the captured birds could be sold to the dealers right after the hunt. This meant there was no need to consider preservation conditions and they could aim to capture as many birds as possible.

These buzzards, after initial skinning and preservation, were exported in the form of salted hides. To evade detection, containers were filled with a mixture of chicken and duck feathers and delivered to Japan. The Taiwan-Japan specimen trade remained clandestine, leaving no official records. Estimates suggest that thousands or even tens of thousands of buzzards were involved in this annual trade.

"The responsibility of guarding the birds in Taiwan should lie with the people of Taiwan, but in the face of such massive financial incentives, we are powerless." These words from one of Ishida's Taiwanese friends weighed heavily on him. They sparked the idea for a collaboration between Japan and Taiwan to conduct migratory raptor surveys and to seek a deeper understanding of the buzzards' migratory patterns in Taiwan.

Japan-Taiwan Collaborative Conservation Action

In 1979, Wu believed that Taiwan needed to exercise selfrestraint in the hunting of Grey-faced Buzzards. He, along with Tsai Hang-yeh, then president of the Wild Bird Society of Taipei (WBST), invited conservationists to hold a symposium in Manzhou Township. They also invited renowned Japanese birdwatcher and photographer Yozo Tsukamoto, raptor researchers Teruaki Morioka, and Takashi Kawada to form an investigative team to watch the Grey-faced Buzzards and Chinese Sparrowhawks migrate through Eluanbi.

At that time, Taiwan was under martial law, and the possession of binoculars, telephoto lens, and spending time along the coastlines was restricted. Birdwatching activities were also not yet widespread. Upon their arrival, the investigative team faced numerous challenges with customs officers. Eventually, only one piece of their photographic equipment was allowed entry, and their subsequent actions were closely monitored.

However, the team did not follow the typical path taken by most foreign travelers and head to Taipei. They quickly disappeared from the sight of the police, prompting authorities to issue a nationwide emergency wanted notice for these "three suspicious Japanese". Late that night, the police, following a tip, forcefully entered a guesthouse in Eluanbi, waking up the men. Wu and other Taiwanese with them found this to be extremely rude treatment of their international friends who had come to Taiwan for conservation purposes. They registered a strong protest and accused the authorities of improper actions through Taiwanese legislator Liu Chin-yueh, who also served as the president of the APA.

This unexpected incident led to Tsukamoto being invited to publicly explain the reason for his investigation in Taiwan on a local radio station. It was a rare instance where broadcasting



in Japanese was allowed after World War II. For many people, this was their first introduction to the plight of the Grey-faced Buzzard in Taiwan.

The symposium took place as scheduled the following day with over 60 participants, including representatives from various administrative and law enforcement agencies, local residents, media, and birdwatchers taking part. The aim was to persuade locals to halt hunting from ethical, resource conservation, ecological, and tourism perspectives. They also called on the government to do the following: expedite the review of hunting regulations, request Japan prohibit specimen imports, name the Grey-faced Buzzard as the "National Day Bird" while promoting it as a tourist attraction during the October Tourism Festival in Manzhou and Kenting.

Leading up to the symposium, news about the event was continuously disseminated through the media, with publications such as *ECHO* and Min Sheng Daily featuring extensive coverage of buzzard hunting in Manzhou. Conservationists also used the media to appeal to the public to abandon the notion of "Chinese people's selfishness and inferior dietary habits" and instead collaborate in conserving migratory birds.

Even though Liu pledged to request law enforcement to crack down on hunting activities after the symposium, hunting buzzards had been a traditional way of life for locals. In an era where conservation awareness and regulations were still in their infancy, illegal hunting continued. However, far from the small towns, a wave of social movements brought the issue of hunting Grey-faced Buzzards into the limelight in northern Taiwan. The hunting of birds and specimen exports started receiving attention and people began calling on the government to strengthen law enforcement and establish relevant regulations.

Social Movements and the Rise of Conservation Awareness

During the 1970s, the post-war generation and scholars

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

3.2

returning from overseas began to take a bigger role in Taiwanese society. They brought with them ecological, environmental, and conservation concepts popular in western countries and presented them to the public. By the 1980s, Taiwan experienced a surge of capital inflow due to its economic development. Media coverage became more open and Taiwanese society was inspired by its third wave of democratization movements. This era was marked by intense enthusiasm and romantic ideas, where money, ideals, and passion mingled. People became increasingly aware of their ability to defend their rights and resist authoritarianism. Additionally, political constraints were gradually loosened due to international pressure, allowing grassroots movements to flourish. The long-suppressed environmental movement broke free from its restraints. Birdwatching groups also transformed from being just groups of enthusiasts into influential voices advocating for environmental issues.

"From polychlorinated biphenyls and land subsidence to Brown shrikes, these were all topics of fervent discussion at the time... Simultaneously, at least three types of people began to take notice of this issue, namely experts and scholars, grassroots citizens, and non-party people. They occupied different social strata, experienced varying levels of environmental degradation, and based on their actual experiences, each proposed their own strategies in response." (He Ming-xiu, 2001)

Renowned writer and journalist, Ma Yi-gong, in her article featured in the "United Daily News Supplement," described the scene of a folk concert held at Sun Yat-sen Memorial Hall in Taipei during the spring of 1980 titled "民風樂府" (mín-fēngyuè-f). During the performance of *Song of the Migrant Bird*, a mesmerizing display unfolded as enchanting images of migratory birds were projected onto the celestial canopy of the stage. Over two thousand spectators were captivated by the exquisite grace of birds in flight and fell into silence as they witnessed Brown Shrikes being trapped, owls confined within cages, and a Greyfaced Buzzard pinned on a wooden board. In another pantomime performance titled *The Grey-faced Buzzard*, directed by playwright Jin Shi-jie, dancers moved gracefully, portraying the majestic flight of the Grey-faced Buzzard and its harrowing struggle under a hunter's stick, ultimately meeting its death.

That same year, extensive media coverage brought to the forefront the hunting of Grey-faced Buzzards at Baguashan and the capture of Brown Shrikes on the Hengchun Peninsula. This once again inciting widespread societal concern.

In October 1983, the 2nd Meeting of East Asian Bird Protection Conference, hosted by APA, was held at Tunghai University. After the conference, representatives from Japan, Korea, various Southeast Asian countries, as well as members from wild bird societies across Taiwan gathered in Kenting for raptor watching. Dr. Lucia Severinghaus, an associate researcher at the Academia Sinica, served as the full-time translator in the meeting. She guided participants to observation points like the Kenting Guest House, Ocean View Tower, and the Kuarut settlement (current site of Sheding Nature Park) to observe raptor migration.

In 1984, the well-known children's encyclopedia *Echo Encyclopedia* was published. Among its volumes, *Stories of October* introduced the migration behavior of the Grey-faced Buzzard, the culture of hunting buzzards in Manzhou, and the story of foreign guests visiting Taiwan to observe raptors a year ago. This series of books deeply ingrained the impressions of the Grey-faced Buzzard and the "National Day Bird" in the minds of those born in the 1980s.

In the early 1980s, conservation efforts for Grey-faced Buzzards and other migratory birds were primarily driven by a relatively small group of experts, scholars, and artists. They used milder forms of activism such as performances, petitions, and advocating for legal regulations. Even though these petition campaigns brought attention to the issue, the situation where merchants offered high prices for Grey-faced Buzzard skins in the Hengchun Peninsula gradually waned. Yet the extensive hunting that had persisted for nearly a decade had already become deeply ingrained in the lives of the locals.

The History of Grey-faced Buzzard Hunting in the Changhua Area

LEE Jing Hong / Chief Executive / Wild Bird Society of Changhua

In 1860, during the 10th year of the reign of Xianfeng in the Qing Dynasty, a scholar from Changhua County named Chen Zhaoxing penned the poem "Lâm-Lōo-Ing," which means the "hawk from the south". In it he says, *"Towards the end of spring, a flock of hawks passed through Changhua. Those who come from the mainland couldn't recognize these birds and mistakenly took them for large geese.* " It has been 163 years since this poem was written and predates Robert Swinhoe's 1865 record. This poem not only stands as Taiwan's earliest documented record of the Grey-faced Buzzard but also marks the first appearance of the colloquial name " Lâm-Lōo-Ing," which is still commonly understood by Changhua residents today.

In Changhua County's Baguashan area, there's a proverb that says, "Of the Grey-faced Buzzards migrating through Baguashan, nine out of ten meet their demise here." This saying was first documented by Taiwan's United Daily News in 1994. However, the earliest record or description of the mass hunting of Grey-faced Buzzards dates back to a news article published in the Taiwan Daily News on March 29, 1900 during the Japanese colonial period. It reported, "During the hunting season which takes place around Tomb Sweeping Festival every year, there is a bird species that flies in from the south, known to the Taiwanese as 'Lâm-Lõo-Ing.' The locals would use firearms to bring one





Hunters in Changhua area use pole traps to capture gray-faced buzzards. by Wild Bird Society Of Changhua

down whenever they saw it, and very few would survive the massacre." This information allows us to trace the origin of the proverb back to the year 1900, indicating that it has been around for over a century.

In 1900, Changhua locals were still using firearms to hunt the Grey-faced Buzzard. However, by around 1970, they had transitioned to using traps similar to those used for capturing Brown Shrikes.

Older people living in Changhua's Baguashan area described the spectacle of Grey-faced Buzzards passing through decades ago:

"In the past, the number of Grey-faced Buzzards was so abundant that they would darken the sky."

"The branches were so crowded with buzzards that some of them could only perch on tombstones."

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

3.2

"In the past, we used wooden sticks to kill the buzzards sleeping on the tombstones, and their numbers were so plentiful that we had to transport them back using ox carts."

Locals learned that before settling in for the night, the birds would first perch on top of a tree or some bamboo along the mountain ridge before heading into thickets to rest. Exploiting this, hunters designed large "pole traps." These were made from Thorny or Long-shoot Bamboo, with a trap mechanism at the end. As soon as a buzzard landed on it, the trap would be sprung, capturing the bird. Around 1980, these devices were widespread throughout the Baguashan area. Locals hunted buzzards, with some consumed as food and the majority sent to specimen workshops in Yuanlin, Kuaiguan, or Fenyuan. After being skinned, the buzzards' hide was mixed with chicken and duck feathers and exported to Japan to be taxidermied. On October 15, 1980, local newspaper the China Times wrote: "approximately 20,000 to 30,000 Grey-faced Buzzard hides were exported each year, with around 95% of them going to Japan".



INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

3.3

3.3

The Establishment of National Parks and the Migratory Bird Protection Program

TSAI Yi Hua / Researcher / Raptor Research Group of Taiwan

Change Begins with Schools

As the demand for tourism extended into rural areas and conservation awareness was growing more and more, comments from domestic and international conservation groups were putting pressure on Taiwan's institutions. As the establishment of national parks drew near, the National Park Division of the Ministry of the Interior decided to dispatch personnel to Hengchun and Manzhou to promote the protection of migratory birds. They hoped to curb the custom of hunting Brown Shrikes and Greyfaced Buzzards.

In September 1981, Ma Yi-gong, the section chief of the National Parks Division, and the writer Han Han, embarked on a minibus journey to the Hengchun Peninsula. The bus was loaded with four sets of slides and bookmarks featuring bird conservation messages. The inaugural advocacy campaign for migratory bird protection lasted from September 7th-11th. Apart from holding discussions with locals and distributing bookmarks, the primary focus of the mission was to screen slide show presentations at 24 primary and secondary schools in Shihzih, Checheng, Manzhou, and Hengchun. During each 20-minute slide show, vivid depictions of living migratory birds were displayed as well as the grimmer slides featuring their capture and consumption. To elicit empathy from children, the narration for Brown Shrikes and Grey-faced Buzzards was voiced by a 6-year-old girl and an adult man, employing anthropomorphism as a means to touch the hearts of the young audience.

The "Kenting National Park Regional Migratory Bird Protection Awareness Program," also known as the "Migratory Bird Protection Program," was led by the Kenting National Park Headquarters (KTNPH). This conservation program aimed to eliminate the hunting of Brown Shrikes and Grey-faced Buzzards within its jurisdiction. It had two main objectives: educational outreach to schools and clamping down on the hunting of birds.

During the initial stages of the program's implementation, the focus was placed on school campuses. This approach was chosen because directly engaging with communities could face strong resistance. Conducting campus outreach allowed the integration of advocacy content within the existing teaching resources. Furthermore, it is crucial because students tend to exhibit higher receptivity to diverse ideas. Through these educational sessions, students could develop an understanding of migratory birds beyond the conventional notions associated with consumption and trade within their families. This might indirectly influence their families and subtly change local customs.

During the awareness campaign, the staff of the Interpretation and Education Section were fully dedicated to their mission. They visited schools to deliver speeches, taught conservation songs, and distributed stationery printed with conservation slogans. They also collaborated with schools across the Hengchun Peninsula, organizing competitions in singing, speeches, essays, posters, and calligraphy, all centered around the theme of "Protecting Migratory Birds." The song *Song of the Migrant Bird* that was taught on school campuses during that time Singing competition featuring songs about the protection of migratory birds. by Kenting National Park Headquarters



is still fresh in the memory of those interpreters today.

In 1984, the KTNPH commissioned teachers from Manzhou Junior High School to conduct a questionnaire with students' parents to gather information about hunting habits, hunting tools, and the utilization of the buzzards. They also sought to involve locals in estimating the number of roosting buzzards and counting the hunting lights in the forest at night. It was hoped these activities would guide locals to view the Grey-faced buzzard as something other than prey. Subsequently, the questionnaire expanded to multiple schools on the Hengchun Peninsula and continued for approximately five years. During this period, the staff introduced the national park and bird conservation to various student clubs as well as at other school activities.

Students from Manchou Elementary School performed a Shadow Puppet show depicting the conservation story of the Grey-faced buzzard. by Kenting National Park Headquarters



34



Interpreters from Kenting National Park Headquarters engage in outreach activities at middle and high school. by Kenting National Park Headquarters



In 2007, the KTNPH released a picture book titled *The Journey of the Grey-faced Buzzard*, which was authored by ecological artist, Ho Hwa-jen. They also commissioned the production of two short films, *The Story of Grey-faced Buzzard and Journey of Migration, Love of Kenting*, which were presented by interpreters during school visits. DVDs of these films were distributed to every elementary and junior high school student, allowing them to share it with their families.

After several years of advocacy, a shift in values gradually occurred among schoolchildren, with the belief that hunting and utilizing migratory birds was not something to be taken for granted. The generation born in the 1990s began to refuse to consume buzzards and Brown Shrikes. They also began to be concerned about being ridiculed by classmates for eating migratory birds. Through school outreach, shifts in values and peer influence changed local customs.

During one of the school lectures conducted by technical specialist Tsai Yi-jong, who led the "Migratory Bird Protection Program" for 30 years, a child once told him, "It seems like something is missing from our home now that hunting is illegal." The family atmosphere of processing the bird together in the living room after returning from the hunt had disappeared. Hunting was indeed a cherished family memory for a specific generation, but "culture is constantly evolving, preserving the good and discarding the outdated. If we simply maintain the status quo, there is no progress," Tsai said. The spirit of our ancestors, who observed, understood, and creatively used their

3.3

knowledge of wildlife to solve environmental challenges, is worth emulating. It's about embracing a spirit of adaptation rather than rigidly adhering to outdated traditions. "Schools act as a preventive measure, offering options for conserving migratory birds to children before their values are fully formed. When they enter society, if you want to convey these values, it may require enforcement through laws and penalties... Some may not see the *Migratory Bird Protection Program* as environmental education, but it genuinely is. It addresses environmental issues," Tsai said.

With the support of national policies, the "Migratory Bird Protection Program" taking place for over 30 years. Its scope has gradually expanded to encompass many aspects, including:

- Educational campaigns in schools, communities, and among tourists groups
- Development and distribution of media and publications
- Organizing bird-watching activities and events
- Law enforcement efforts to raise awareness of related regulations and outlaw illegal hunting
- Conducting research, such as monitoring migratory birds and surveying their habitats
- Guidance and support for community patrols and developing ecotourism

This comprehensive approach has played a significant role in raising awareness about migratory birds and contributing to their conservation in the region.

Starting Surveys

"In the autumn, Grey-faced Buzzards enter the Hengchun Peninsula from the west coast in the afternoon. Some flocks even come from Maobitou, the southwest tip of the peninsula. They head north, briefly circling over Guanshan and Longluan Lake before proceeding eastward towards the area of Manzhoushan. The largest number of buzzards typically roost in the southwestern foothills of Manzhoushan. There are also smaller roosting populations in areas such as Lanren Valley, Baisha, and Guanshan. The buzzards usually take off in the early morning and head south to southeastward out to sea from the eastern part of the peninsula, and notably diminish in number after noon."

excerpt from Research of Diurnal Raptors in Kenting Nation Park report (Severinghaus, 1991)

Systematic surveys are imperative to addressing questions related to the timing, spatial distribution, and quantity variations of Grey-faced buzzards passing through the Hengchun Peninsula. Seeing various countries' endeavors to locate suitable watch sites and establish methodologies underscores the substantial human resources and funds necessary to correctly do this. Fortunately, there is a group in Taiwan that integrates international experience, government resources, and bird enthusiasts' expertise to facilitate this work. Over the years, this community has amassed invaluable data on the raptor migration through the Hengchun Peninsula.

Though known to locals for generations, the phenomenon of significant roosting of Grey-faced buzzards in the Manzhou area only found its way into recorded history beginning in 1964. This was only due to the Migratory Animal Pathological Survey (MAPS) banding project initiated by the U.S. military in Asia. Then, it wasn't until 1979, with the convening of a symposium in Manzhou and a visit from a Japanese research team, that news of the prolific buzzard roosting spectacle began to circulate among bird enthusiasts.

In 1984, the KTNPH initiated various surveys of nature, humanities, and culture. With the report indicating that tens of thousands of Grey-faced Buzzards would roost in Manzhou annually, the KTNPH commissioned the Chinese Wild Bird Federation (CWBF, now known as the Taiwan Wild Bird Federation) to conduct the "Research of Diurnal Raptors in Kenting National Park" project in 1989. Lin Wen-hong, who had just retired from the military, took on this task. The idea was not just to clarify the distribution of diurnal raptors in the Hengchun Peninsula, but also to encourage birdwatching enthusiasts from all over Taiwan to participate in research and surveys.

"We'd like to unite raptor enthusiasts from all over Taiwan. Anyone interested can sign up with me, and I will assign survey locations."

Starting from scratch in doing the raptor survey, Lin invited Professor Severinghaus to plan the survey methods. Several sample lines were established in areas like Manzhou, Eluanbi, Hengchun, the west Hengchun plateau, and Sheding. The survey was conducted by along transects in conjunction with fixed-point observations.

However, no one had truly engaged in raptor surveys prior to this. Therefore, Lin gathered team members to learn and collaborate on raptor identification and counting techniques a month before it began. They attempted to develop methods to estimate raptor flight altitudes by recognizing cloud types and observing the sizes of kites at different heights. Over the course of a year, 50 surveyors, including Lin, participated in the research. Many of these same people would later become key figures in establishing birdwatching societies across Taiwan.

During the surveys, Lin assigned surveyors to predetermined observation points. When there was a shortage of personnel on non-holidays, he had to travel between several sample lines alone on his motorcycle. "There are very few Grey-faced buzzards! Really." Lin said, "They've been hunted to the brink. Counting a few hundred in a day is considered good; it seems like I've never counted over a thousand." In 1989, during the autumn migration, the number of Grey-faced buzzards counted was 10,504, conservatively estimated to be just over 7,000 after subtracting possible duplicate counts. Most of these buzzards departed from the eastern half of the peninsula, with the majority concentrated in the morning. These survey results laid the foundation for longterm monitoring methods and provided many recommendations to the Kenting National Park Headquarters.

Among these recommendations were goals such as ongoing migratory raptors count to track population trends, training hunters to become interpreters, and developing buzzard-watching tourism. Most of these were realized in the years to come.

Autumn Migration Raptor Count

Faced with many challenging questions during his tenure as an interpreter for the KTNPH, Technical Specialist Tsai Yi-jong felt the need to seek answers, especially to the pivotal question, *"How many hawks pass through Kenting annually?"* Starting in 1990, he, along with fellow interpreter Lin Chiung-yao and



Staff of the Kenting National Park Headquarter initiated raptor migration survey, from left to right: Lin Chiung-yao, Tsai Yi-jong and Tang Hong-xuan. by Kenting National Park Headquarters

Migratory raptor investigator Hong Fu-long performs investigation work.

by Raptor Research Group of Taiwan

Researchers from the Raptor Research Group of Taiwan conduct raptor banding work. by Raptor Research Group of Taiwan







3.3

The flocks of hawks taking flight in the early morning Photo by Tsai Yi-hua



Assistant Researcher Tang Hong-xuan, initiated a voluntary autumn migration raptor count. From September 1st to October 31st, from 5:30 am to noon, they conducted a two-month observation at the Skyline Pavillion. This work has been officially included in the "Migratory Bird Protection Program" since 1993.

He would count hawks in the morning, sort data at noon, write a short newsletter update on the daily count, and send it to subscribers by email. After all this, he had to attend to his official duties as a national park staff. In 2004 the responsibility for the survey was commissioned to the non-governmental organization the Raptor Research Group of Taiwan. Excluding the years 1990 and 1992 which had fewer than 40 survey days, this survey was conducted for a total of ten years. It significantly contributed to the establishment of long-term monitoring protocols, including survey locations, timings, and recording criteria.

In 2003, during the 3rd Asian Raptor Research and

Conservation Symposium, a research report titled *Investigation* of Autumn Migratory Raptor Populations and Migration Period in Kenting (1990-2002) was presented. The report summarized the findings of the 10-year count: "On average, the number of Greyfaced Buzzards during migration was 13,253 individuals. The numbers recorded in the latter five years exceeded those in the first five years and were also higher than the overall average, indicating a growing trend in Grey-faced Buzzard populations over the course of the ten-year survey period. The peak of migration occurred in mid-October, and the major migration window was short and concentrated."

The report also mentioned a possible connection between the Kenting population and populations in Shinshu, Nagano Prefecture, and Miyako Island, Japan. It was estimated that these raptors took around 20 to 23 days to travel approximately 2,500 kilometers from Shinshu, Japan, to Kenting, Taiwan. During his investigation, Lin Chiung-yao, who contributed articles to the Min Sheng Daily in her spare time, documented the daily count in her news articles, which were subsequently published in the newspaper. Around 1999, as the Internet gradually became more widespread, daily survey results were published on the website of Kenting National Park, Wild Bird Society of Pingtung, a personal website established by Tsai called 'Líng Xião Yīng Xiào,' and linked on the ARRCN website.

The media continued to relay Kenting's raptor news, sparking emulation from other outlets. During each migration period, media organizations vied eagerly to inquire about the migration situation of the Grey-faced Buzzards. "Kenting raptorwatching" and "National Day Bird," achieved unprecedented popularity. Media crews descended upon the Skyline Pavilion for interviews and filming. In the absence of wireless transmission capabilities, photographers shuttled back and forth between the broadcasting van and the watch site, ensuring the prompt broadcast of the spectacle of raptor migration over Sheding.

Kenting's raptor-watching thus found its way into the public consciousness through media, transcending its initial confinement within the niche birdwatching community and leaving a lasting imprint on subsequent hawk-watching activity.

In 2004, the Raptor Research Group of Taiwan (RRGT) took on the task of conducting the autumn migration raptor count. With funding support from KTNPH, two counters were able to carry out the two-month survey. Taiwan's academics and NGOs have been actively involved in raptor research and conservation for a relatively longer period than in Southeast Asian countries, but language barriers and limited international recognition have constrained the dissemination of their research findings and visibility on the global stage. Increasing research capacity among the public and enhancing international collaboration were the initial goals of the RRGT while taking on the Kenting survey and efforts were made to accomplish them.

It included presenting the results of the annual migration count at the ARRCN symposium and hosting international workshops. RRGT member Jiang Ming-liang led the first Greyfaced buzzard banding project from 2005-2007. However, during this period, trapping techniques were still in the experimental stage. Prolonged trap setups led to conflicts with locals, resulting in the premature termination of the project. From 2008-2011, the second stage of the buzzard banding project was successfully carried out, with 13 individuals being captured and later tracked using satellite transmitters. In 2009, a raptor survey training camp was organized in Kenting, targeting KTNPH staff, volunteers, and the general public. It provided guidance on raptor identification and survey techniques. In 2013, a synchronized autumn raptor migration survey was conducted in collaboration with ARRCN along the East Asia Oceanic Flyway. Participating countries including Mongolia, Korea, Japan, the Philippines, and Malaysia.

After 2020, the RRGT, drawing inspiration from the longstanding raptor research and conservation organization, the Hawk Mountain Sanctuary (HMS) in the United States, intensified collaboration with local interpreters from the Sheding community. The RRGT also recruited volunteers from the public who had received relevant training to assist visitors. These volunteers helped visitors locate raptors and provide answers to their questions, aiming to enhance the overall experience. This effort not only makes the raptor-watching experience more engaging but also sparks interest in migratory raptors among visitors who may have previously been unfamiliar with them.

This work has seen the involvement of numerous surveyors and the steadfast assistance and support of hundreds of members behind the scenes. The establishment and consistent execution of long-term monitoring for migrating raptors, from inception to execution, have faced diverse challenges over the past several years. This includes methodological development, resource mobilization, human resources allocation, and the dissemination of benefits. Each time a challenge is faced, a new opportunity arises. This enables the work to develop in a new direction and expand its influence.

The Kenting National Park Autumn Migration Raptor Count has been successfully conducted since its inception in 1989. Throughout this journey, the KTNPH has been a steadfast contributor. Their vital financial support has allowed for the meticulous and dependable execution of annual surveys, culminating in the establishment of highly credible results.

3.3

Publications and Media

CHANG Hung Ming / Director / Raptor Research Group of Taiwan



Tri-Mountain National Scenic Area Headquarters



Kenting National Park Headquarters



Kenting National Park Headquarters



Lee Jing-Hung

Surveyor of the Sky – Grey-faced Buzzard (DVD)

Producer: Jian duan Photography Variety Show Co., Ltd. Publisher: Tri-Mountain National Scenic Area Publish Date : December 2001

This short film starts from the crucial roosting site of the Grey-faced Buzzards, Baguashan, during their spring migration through Taiwan. It introduces the migratory ecology of Grey-faced Buzzards.

The Story of Grey-faced Buzzard (DVD)

Producer: Jian Duan Photography Variety Show Co., Ltd. Publisher: Kenting National Park Headquarters Publish Date : December 2008

This documentary leads the audience on a journey following the Grey-faced Buzzards along their migratory route, from Japan to the Philippines. It unveils the ecological behaviors of these birds in their breeding and wintering grounds, showcasing their distribution, migration, and reproductive life history. It also documents the mutual impact of human activities and the grey-faced buzzards, highlighting the efforts and achievements of the conservation work.

Journey of Migration, Love of Kenting (DVD)

Producer: Raptor Research Group of Taiwan Publisher: Kenting National Park Headquarters Publish Date: September 2007

This short film captures the remarkable moments of grey-faced buzzards as they arrive at their roosting site in Manzhou, drink from the creek, glide through the treetops, and take flight in the dawn. It also conveying the challenges of their journey. It delves into the long-term efforts and achievements in education, promotion, research, and conservation since the establishment of Kenting National Park.

"Protect the Migratory Birds" Stamps

In 1982, migratory bird conservation efforts began on the Hengchun Peninsula, and the following year, the Chunghwa Post issued a set of postage stamps featuring the Grey-faced Buzzard and the Brown Shrike. These stamps were released in conjunction with the 2nd Meeting of the East Asian Bird Conservation Alliance held on October 8, 1983, and came in two denominations: 2 NTD and 18 NTD. The artwork for these stamps was created by Mr. Huang Mu-tsun.

Journey of Grey-faced Buzzard

Ho Hwa-jen (Author) Ho Hwa-jen (Illustrator) Publisher : Kenting National Park Headquarters, Taiwan Interminds Publishing Inc. Publication Date: December 2007

The theme of this book revolves around a Greyfaced Buzzard named Grey. When Grey arrives in the Kenting area in October, the book takes readers on a journey through the rich birdlife, unique landscapes, and diverse flora of the Kenting National Park. It beautifully illustrates the region's incredible biodiversity, showcasing 78 different bird species alone, making it a comprehensive guidebook. The book also provides vivid depictions of the prominent landscapes like Dajianshan on the Hengchun Peninsula, the coral reef rocks at Sheding Park, and various plants such as the Kheng-moa, Screw-pine, Indian Barringtonia, and Sea Lettuce. It's a book that deserves a thorough reading to truly appreciate its content



Kenting National Park Headquarters



Tsai Yi-Hua



Kenting National Park Headquarters



Kenting National Park Headquarters

Feng Chi Ying Yang

Authored by Manzhou Elementary School students Wang Shao-chi, Sung Yu-tang, Sung Chia-hao, Lai Yu-chieh, Wu Chia-en, Lu Chun-yen, Pan Li-chen, Pan Yu-jen, Chou Tzu-chun Publisher : Children's Culture and Arts Foundation Publication Date : October 2022

This story shows the transition from the time when Grey-faced Buzzards were hunted as an important seasonal delicacy to the cooperation between local residents and the KTNPH in the conservation of the Grey-faced Buzzard through a conversation between a boy and his grandfather.









Feng Lai Ying Lai

Ma Ching-hsien (Author), Wu Hao (Illustrator) Publisher: Mandarin Daily News Publication Date : June 1988

When the downhill winds descend upon the Hengchun Peninsula, the Grey-faced buzzards start their journey southward from Japan, Korea, and northeast China. They gather in the valleys of Manzhou Township in Pingtung County for a night's rest, preparing for their continued migration to the Philippines the next day. The story revolves around a Manzhou Junior High School student and his classmates, who form a bird-loving team. They share information about the ecology and benefits of buzzards to the environment with local hunters. Their efforts persuade the hunters to refrain from capturing buzzards and, instead, join a patrol team to protect these magnificent birds.

The Gathering Raptors

Chang Yueh-hsuan (Author), Corry Shih Chung Chen (Author), Roger C. J. WANG (Author), Tsao Mei-hua (Author), Ho Hwa-jen (Illustrator), Chen Yi-ming (Illustrator)

Publisher : Kenting National Park Headquarters Publication Date: March 2006

Kenting National Park, located at the southern tip of Taiwan, is one of Asia's significant raptor migration sites. Studies have shown that there are as many as 27 species of diurnal raptor in the area, with around 200,000 raptors passing through the area every year. However, raptors usually fly high in the sky. This, coupled with their often hard-toidentify characteristics makes understanding their ecology challenging. This book addresses this by using accessible language, complemented by insitu photographs of raptor ecology and meticulously crafted illustrations, enhancing readers' understanding of these magnificent birds of prey.

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

3.3

The Jonkea Raptors Festival

TSAI Yi Hua / Researcher / Raptor Research Group of Taiwan



"Raptors in migration" sticker, designed by Ho Hwa-jen. Raptor Research Group of Taiwan

In 1984, the "Migratory Bird Protection Program" began to incorporate an increasingly diverse array of cultural and artistic activities into its advocacy efforts. These activities included hosting lectures, bird photography exhibitions, drawing competitions, and inviting bird clubs from various parts of Taiwan to visit Pingtung County's Manzhou Township for raptor-watching. Gradually, it became customary to organize events during the peak migration period of the Grey-faced Buzzards, with enthusiasts flocking to Lide Bridge in mid-October as if on a pilgrimage.

In 1994, the Taiwan Wild Bird Federation join BirdLife International. For the fall migration season in 1995, they organized the "World Birdwatch Day" on October 7-8 in Kenting National Park's Sheding with the support of Kenting National Park Headquarters (KTNPH), the Wild Bird Society of Pingtung (WBSP), *Min Sheng Daily*, and Taishin Bank. That day, the morning news show "Good Morning TTV News," featured "Kenting's Raptor Watch" as its central theme. In 1996, the WBSP adopted this event as an annual raptor-watching activity. They also incorporated more educational and interpretative elements to it.

However, discussions arose regarding the need to change the event's name, as the name Kenting did not adequately emphasize

the unique role that Manzhou played for roosting Grey-faced Buzzards.

In 2001, a large number of dead Grey-faced buzzards were discovered under Lide Bridge in Manzhou, sparking public outrage. It was widely suspected that local hunters resorted to such provocative actions to express their frustrations with the restrictions placed on them by the Kenting National Park Headquarters. The Raptor Research Group of Taiwan (RRGT) described the event in the book *The Gathering Raptors*, writing: "The conservation work of the Grey-faced Buzzard must be done in cooperation with local residents so that the buzzard becomes an asset to Manzhou's villagers rather than a debt in terms of image."

Public opinion went against the hunting practices in Manzhou. Birdwatchers continued to enter and leave the village regularly, but consumer spending fell at Hengchun's restaurants and downtown as well as hotels on Kenting's Main Street. Faced with this deepening divide, then RRGT president, Ho Hwa-jen, and secretary-general Roger C. J. Wang, believed that if locals could directly benefit from raptor-watching activities, it might present an opportunity to bridge the gap between the two sides.

With support from the KTNPH, the RRGT in collaboration with WBSP initiated the event "Raptor Meet in Manzhou" in











Children's performances, hawk-watching tours, and educational promotion interactive booths during Jonkea Raptors Festival. by Kenting National Park Headquarters

2002. It incorporated the raptor element into local shop signage and product package designs. They also encouraged birdwatchers to support local businesses while enjoying raptor-watching, which received a favorable response. The event was officially named the "Jonkea Raptors Festival", after the historic place name "Jonkea", refering to the area south of the Shuai Mang River in Fangshan Township in today's Pingtung County.

These days, people visit Manzhou to watch the the raptors gracefully soar above them in mid-October. Lide community interpreters display posters for guidance. They also set up scopes and direct visitors on where to raptor-watch in the forest. Art installations adorn the grassy fields while rows of tents house various local conservation groups engaging visitors with interpretation, interactive games, and hands-on activities to promote conservation concepts. Local farmers and artisans also showcase and sell farm products and handicrafts.

Amidst the howling mountain winds, the main stage resonates with the chanting of indigenous songs, moon guitar performances, and the singing or theatrical performances of school students. The event begins in the afternoon and goes on until evening. After the event, vendors share the rest of the food and drinks with each other, packing up their equipment into trucks. Meanwhile the raptors have already found a place to rest for the night.

After breaking down barriers between raptor enthusiasts and local residents, the "Jonkea Raptors Festival" has gradually evolved into the familiar and prominent event we know today. 國際灰面管噟暋 遷徙猛禽高峰會 INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

3.3

The 2002 Raptor Meet in Manzhou

Roger C. J. WANG / Chief Executive / WildViewTaiwan Nature Communication Society

While conservation efforts for Grey-faced Buzzards in Taiwan can be traced back to the 1970s, it remained confined to a small circle of birdwatchers and conservationists. It wasn't until the early 21st century that true localization and interaction with the local communities began to take root.

In order to accept the commission from the Asian Raptor Research & Conservation Network (ARRCN) to host the '3rd ARRCN Symposium,' the Raptor Research Group of Taiwan (RRGT) officially registered and established itself in 2001. However, on the afternoon of October 13th of the same year, the remains of approximately thirty to forty Grey-faced Buzzards were found packed into fertilizer bags and abandoned beneath the Lide Bridge in Manzhou Township, Pingtung County. This incident highlighted the conflict between residents and bird enthusiasts. Although it angered many, it also prompted deep reflection to finding a solution. Manzhou had long been an annual destination for raptor-watching by bird enthusiasts. Yet apart from causing local traffic congestion, there was little interaction with the local community, let alone the sharing of values related to nature conservation. Then RRGT president Ho Hwa-jen wondered how to make locals value the beauty and significance of Grey-faced **Buzzards**?



The stage play "All the Raptor Flyby" by Raptor Research Group of Taiwan



First and foremost, a focus was placed on children's education. The "Raptor Meet in Manzhou" event was planned with two distinct aims: children's education and helping improve the local economy. As part of these efforts, they secured a budget of 300,000 TWD from the Council for Cultural Affairs of Executive Yuan. RRGT member Lin Ze-xiong planned the stage play 'All the Raptors Flyby.' Meanwhile, Zhao Yi-fen, who graduated from the Department of Theatre Arts at Taipei National University of the Arts, served as the playwright and director. The show was acted out by Manzhou Elementary School's entire fifth-grade class.

RRGT also received a 150,000 NTD grant from the Council of Agriculture, Executive Yuan to design tea canister packaging for Manzhou's specialty "Gangkou Tea" called 'Tea of Raptor'.

Visitor of the "Hawk's Shop" can collect this Grey-faced buzzard stamp when making purchases, which can be exchanged for commemorative souvenirs. Raptor Research Group of Taiwan

Wooden boards with raptor designs were also made for order for local businesses. Visitors who made purchases at these shops could collect stamps they could later exchange for prizes.

This plan got the support of Lee Yang-sheng, director of Kenting National Park Headquarters at the time. He allocated a generous grant of 450,000 NTD to assist the collaborative efforts of the RRGT and the Wild Bird Society of Pingtung (WBSP) in organizing a series of raptor-watching events. As a way to expand the scope of the "Kenting Raptor Watch" initiative to encompass the whole Hengchun Peninsula and to connect these various activities, the organizers adopted the historic name "Jonkea" for the event's title. The name comes from in the indigenous Paiwan word "Jionkiakiao". This project began in September 2002 and has been taking place alongside the Grey-faced Buzzard migration ever since.

Between the well-planned marketing strategy and event coordination as well as distinctive woodblock prints by Ho Hwajen, a solid foundation was laid, garnering immense support from bird enthusiasts. During the "Manzhou Raptor Meet" event on October 12 and 13, 2002, local businesses, restaurants, and street vendors in Manzhou experienced a surge in customers as bird



Grev-faced buzzard tea canister design by artist Ho Hwa-jen. by Raptor Research Group of Taiwan



enthusiasts flocked to the area. The stage play "All the Raptor Flyby" received unanimous acclaim from both visiting tourists and locals thanks to its professional production and heartfelt performances. Furthermore, the event seemed to receive assistance from the raptors themselves, as spectators frequently witnessed Grey-faced Buzzards gracefully soaring in the sky.

Subsequently, RRGT took the stage play "All the Raptor Flyby" to Guandu Nature Park in Taipei. Besides the valuable performing experience, what excited the young actors even more was the all-you-can-eat McDonald's and a delightful outing in Tamsui. All these efforts were made with the intention of planting the seeds of conservation in the hearts of the children of Manzhou.

Years later, one of the actors, Yeh Yu-chen, returned to teach at Manzhou Elementary School and became a teacher in raptor conservation. Her story is a testament to the effectiveness of the event "Raptor Meet in Manzhou." She was amazed by the meticulous planning of the event and shared her own heartwarming story. Yeh mentioned that after participating in the performance, there were no longer any conservation wildlife products on her family's dining table. The wooden "Raptor's shop" board is still treasured and hangs on walls.

In recent years, thanks to the collaboration between the KTNPH, law enforcement, and judicial authorities, the illegal hunting of buzzards has significantly decreased. In fact, it has even led to the development of related ecotourism programs.

Back in those days, RRGT members enthusiastically participated. On the evening of October 11th, a hired tour bus would leave Taipei, arriving at Sheding Nature Park a little after 3 am. There would be no hint of daylight. What greeted everyone was a sky full of stars, an unforgettable sight like the memories created at the "Raptor Meet in Manzhou" and the "Jonkea Raptors Festival". These remain etched in the memories of many, especially the local residents from Manzhou.

國際灰面管噟暋 遷徙猛禽高峰會 INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

3.3

Free Buzzard in Mt. Bagua -Conservation Actions for the Grey-faced Buzzard

LEE Yi Hsin / Director-General / of Wild Bird Society of Changhua

In March, there are early signs of spring, signaling the start of a new work year after the Lunar New Year holiday. In centralwestern Taiwan lies Baguashan known for its shallow mountain forest environment. People around this time are gradually making their way up the hillsides. They stand on the open ridges, gazing upward to welcome the Grey-faced buzzard as the spring equinox approaches. Instead of waiting with sticks in hand and a truck to take their haul as in the past, they now hold binoculars.

The Baguashan Mountains extends from the northwest end of the Alishan Mountain Range, forming a longitudinal plateau that runs from north to south through Changhua County. The topography there features mountain valleys that experience strong winds and updrafts on the windward side, creating a diverse habitat for various flora and fauna. This stable environment, with abundant amphibians, reptiles, and large insects, serves as a crucial rest stop for the Grey-faced buzzard during their annual northward migration through Taiwan in the spring.

Before the 1970s, there were scarcely any conservation laws or conservation awareness in Taiwan. Locals used "ing-áta\[h" (pole traps) to capture Grey-faced buzzards, either for consumption or sale to specimen traders. As a result, there was a local saying in Changhua that nine out of ten Grey-faced buzzards die due to excessive hunting while migrating through the area. With the rise of conservation efforts, Taiwan's Wildlife Conservation Act was passed in 1989, replacing outdated hunting regulations. Buzzards were subsequently listed as a protected species under the law.

In June 1992, as various birdwatching societies were being established across Taiwan, a group of local bird enthusiasts initiated the formation of the Wild Bird Society of Changhua (WBSC). They chose the Grey-faced Buzzard, often mentioned by elders as the "lâm-loo-ing" as their representative bird as well as target conservation species. They began organizing the "Free Buzzard in Mt. Bagua" event in the same year.

However, due to issues with land ownership and space, the event had to be relocated multiple times because it was challenging to find suitable venues for hosting such a large-scale event. The first "Free Buzzard in Mt. Bagua" event took place in 1993 and was held at Dazhu Elementary School. Subsequent event locations included the Bagua Mountain Visitor Center, National Changhua Living Art Center, Sanqing Temple, Changhua County Stadium, the Hawkwatching Platform on Hugang Road. Over the last few years it has been held at Wende Elementary School.

During the event, interpreters provide informative tours for







訪, 赫然發現鳥籠中闢 80, mm 30, mm

visitors at the hawkwatching platform. Local NGOs and artists are also invited to present various exhibitions and interactive DIY activities such as bird-themed paper sculptures and face painting. WBSC volunteers engage visitors with interactive activities as well, making information more accessible and enjoyable. As of 2023, "Free Buzzard in Mt. Bagua" has been held for 30 years. Its focus remains the same, to educate the public about the Greyfaced buzzard and inspire people to take conservation actions. The goal of the event is to ensure that the buzzards continue to soar over the Baguashan, hence the name "Free Buzzard in Mt. Bagua."

The WBSC has evolved from promoting awareness and protection of the buzzard in the past to conserving the habitats and ecosystems of their migration stopover sites. The Greyfaced Buzzard is the star of the show. The "Free Buzzard in Mt. Bagua" event includes long-term basic population surveys and educational outreach activities. It has also gradually transformed into a broader biodiversity conservation initiative, aiming to protect the entire foothills zone environment and conserve local biodiversity. Sustaining a 30-year ecological conservation effort requires a continuous and unwavering passion. The reason everyone perseveres together lies in their compassion and hope for the future.

May humans and the creatures living in this environment coexist peacefully and thrive.

The Wild Bird Society of Changhua published a story in its publication about the successful rehabilitation and release of a Grey-faced buzzard. by Lee Yi-shin

3.4

3.4

Enforcing Protection of the Grey-faced Buzzard

TSAI Yi Hua / Researcher / Raptor Research Group of Taiwan

Hunting Activity After the 1990s

In the 1990s, the spectacle of Grey-faced Buzzards roosting in Manzhou had become a well-known annual event in the birdwatching community. Around October 10th, the peak period of buzzard migration, crowds of people with binoculars gathered around Lide Bridge, Shanding Bridge, and the roads surrounding the Pangola Grassland. Occasionally hunters on motorcycles would pass by, scouting for the location where the buzzards landed. In the evening, as birdwatchers headed home, sporadic firecrackers would startle the buzzards into flight, making them land again and again. The hunt would be on.

At this time, with improved economic conditions, there was easier access to transportation. Also, high-powered firearms such as airsoft guns, hunting rifles, and gas guns, costing 20,000 to 30,000 NTD and equipped with red dot reflector sight, were readily available in sporting goods stores in Kaohsiung and Tainan. These modern firearms far surpassed the range, accuracy, and lethality of the wooden guns commonly used in the 1970s.

"In the past, it would take more than a dozen arrows to shoot down a single buzzard. During the era of airsoft guns, one could shoot around ten in a day. It was the arrival of gas guns that was truly alarming. With a gas gun, if you saw ten buzzards, you could shoot down eleven" said one former hunter in Manzhou.

During the period when specimen traders acquired carcasses in Manzhou, low-accuracy wooden guns and bamboo tube guns were commonly used. One quiver of arrows could only take down two or three buzzards at most. With the widespread adoption of advanced firearms in 1990s, the number of buzzards captured increased instead.

"During those hunts, we'd enter the forest, each person hiding behind a tree, staying two trees away from each other so we can help each other if the police were close. We had a system for communication, such as signaling if it was time to turn on the lights. We would say, 'it's not dark enough yet, wait another 10 minutes'", that same hunter explained.

Hunters would use walkie-talkies and mobile phones to communicate with each other. After nightfall, they would simultaneously turn on their searchlights and begin hunting. Suddenly, the forest would come alive with the sound of lights being switched on, and the headlights would project bright beams of light. Then, the forest would erupt with the sound of gunshots as they aimed to shoot down the buzzards that had perched above them. During the peak migration season, it was common for a single person to harvest more than twenty to thirty buzzards in one night.

In 1989, although the implementation of the *Wildlife Conservation Act* effectively deterred certain hunting activities, the purchase prices soared due to the increased risks associated with it. An adult grey-faced buzzard weighing approximately 450g, or juvenile weighing 300 to 375 g, could fetch prices of 500 to 1000 NTD. This was the equivalent to the price of two or three chickens. During the two-week migration period, one could amass earnings exceeding 100,000 NTD. Many were willing to venture into this perilous pursuit. Rumor had it that thousands of grey-faced buzzards were hunted annually.

Since 2004, the Raptor Research Group of Taiwan (RRGT) organized the autumn migration count. Researcher Lin Wenhong, who would often assist in identifying the carcasses seized by local police from hunters' homes or packages, said about it, "After the 1990s, there were no longer specimen collectors offering high prices for acquiring carcasses. If the police inquired why they hunted the buzzards, the hunters simply stated that they did it for food." Vendors would arrive at the hunters' homes the next morning around six or seven o'clock to purchase the dressed carcass. Whether there were one hundred or one thousand, they would buy them in bulk. A significant number of grey-faced buzzards ended up in local diners, where foodies would inquire whether they offer "hui-lîng-ki (an airplane)" or "Mirage" (a fighter), referring to a dish made from Grey-faced Buzzards.

"Relatives and friends working in other cities would call to ask for a few, and then we would send them by mail. So, you could say it's a taste of home, and children who are away from home would crave it," A former hunter said.

Apart from local sales, those in their thirties and forties working in other cities would occasionally miss the taste of home too. They'd use convenient refrigerated delivery services to purchase the Grey-faced Buzzards from their hometown. Lin said, "sending a few buzzards to distant relatives and friends, such as those who make a living in big cities, who haven't tasted buzzard meat in decades, would consider it a precious gift."



The Jungle Warfare Between Law Enforcement and Hunters

In 1984, after the establishment of the Kenting National Park Headquarters (KTNPH), an official crackdown on hunting activities began, carried out by the National Park Police Force. Initially, the enforcement efforts were focused on a two-hour period from 7 to 10 pm, during which police would inspect vehicles to search of firearms and prey on the main bridges connecting communities. Since hunters who were already in the mountains at the time could easily monitor the movements of the police, they could avoid these inspections by taking different routes or delaying their return. Occasionally, when the police remained past 10 pm, impatient hunters in the vicinity of the bridges would shout across the woods or even shoot arrows to intimidate them. They wanted the police to simply put on a show make it appear that they were doing their job. During this time, many officers were familiar with the residents, as they were often relatives, friends, or classmates. They found it difficult to carry out their duties and would privately advise hunters not to go hunting on days when the police were patrolling.

Over the next few years, it became evident that the enforcement efforts were not effective. This was due to a lack of manpower, short patrol hours, police officers' unfamiliarity with the mountainous terrain, and most importantly, a lack of effective legal provisions to act as a deterrent.

"During nighttime patrols in the mountains, it is advisable

3.4

Media coverage of Grey-faced buzzard poaching incidents. by Hsiao Tsai-Ch'üan



In 1989, the *Wildlife Conservation Act* categorized the Greyfaced Buzzard as a third-level Other Conservation-Deserving Wildlife species. Unauthorized killing and hunting of them could result in carry a sentence of up to 3 years in prison or a fine of up to 30,000 NTD. Buying or selling protected animals and their products could result in a prison term of up to two years or a fine of up to 20,000 NTD.

In 1994, the Taiwanese government aimed to expedite its departure from the USA's Pelly Amendment sanctions. The Council of Agriculture substantially revised the Wildlife Conservation Act, expanding it from the original 45 articles to 5 and imposing stricter penalties for various criminal activities. The Grey-faced buzzard and many other raptors were classified as precious and rare second-level protected species. The punishment for killing one was increased to a prison term ranging from six months to five years or a fine of 200,000 to 1,000,000 NTD. Illegally trading one carried a penalty of one to seven years in prison or a fine of 500,000 to 2,500,000 NTD. Additionally, hunting buzzards not only violated the Wildlife Conservation Act but also the Controlling Guns, Ammunition, and Knives Act. This means hunting these birds with firearms could easily result in fines exceeding 200,000 NTD and a prison sentence of at least three vears.

During the initial period of regulatory announcements, representatives from the KTNPH were responsible for educating the public about the content of the act. Their aim was not only

to refrain from using artificial lighting to maintain a discreet presence. Personnel on duty should be dressed in uniforms, making it clear to poachers that the police are on patrol, thus acting as a preemptive deterrent..." Hsiao Zai-quan said, drawing from his past experiences dealing with hunters. He began participating in the raptor protection project in 1989 and later became a squad leader.

In his patrol plan, he outlined his recommendations for raptor protection duty. He suggested, "Upon apprehending buzzard hunters, immediately notify the driver for pickup, quickly exit the mountains, bring them in for interrogation, and depending on police resources, consider sending officers back to the mountains. There would be a high likelihood of making more arrests."

He also noted, "the duty hours should ideally span from early evening until the following daybreak, possibly lasting over ten hours. Special project duties are extremely strenuous, so it may be best to seek volunteers to help..."

In the 1990s, raptor protection duty was carried out by teams of five police officers from the National Park Police Headquarters, Jiupeng, and Houbihu Division. These officers would patrol the mountains by motorcycle around Manzhou to familiarize themselves with the terrain and trail before duty. The day of the operation, they arrived at the location where the buzzards would gather for roosting before sunset. Four of them would position themselves in the forest for the ambush. Meanwhile, one would stay at a vantage point, using a radio to guide their companions to the location of the hunting lights.

Experienced hunters, of course, would not be unprepared. The police had to move in the dark along mountain roads, sometimes even wading through streams, to avoid the people standing guard at the intersection. Ambush operations typically began in the evening and continued until around 5 am the next day. After witnessing the Grey-faced Buzzards take flight at dawn, the five-member teams would finally return home for some rest and prepare to go back on duty in the afternoon. During the tenplus days of the peak migration period, they slept during the day and worked at night.

In the 1990s, the Grey-faced Buzzard hunting activity mirrored the fervor of the specimen collection era. Along the route from Gangkou to Changle, one could see hundreds of lights searching for buzzards in the mountains. The effectiveness of deterring poaching with just five police officers patrolling such a vast area relied on taking the hunters by surprise, making some of them wary, and dissuading them from going hunting.

The Wildlife Conservation Act

The announcement of the *Wildlife Conservation Act* in 1989 provided a robust legal basis for enforcement, the ineffective Hunting Law was abolished in the same year. Prior to the enactment of the *Wildlife Conservation Act*, hunting of the Greyfaced Buzzard was typically regulated under the *Controlling Guns, Ammunition and Knives Act and the National Park Law*, with relatively lighter penalties in place. The penalties under the two regulations seemed inadequate due to the profits involved in selling Grey-faced Buzzards, leading many hunters to still be willing to take the risk.



National Park Police tracked down prey and guns hidden by hunters in the woods. by Kenting National Park Headquarters



to prevent people from inadvertently breaking the law and facing unaffordable fines but also to serve as a deterrent. Technical Specialist Tsai Yi-jong, who oversaw this task, mentioned the considerations behind their actions at that time, "I went to inform them that it's not about law enforcement but about introducing this law to you. Letting you know that we are no longer using the National Parks Law to deal with hunting the buzzard. You need to consider the practical side of things. You hunt buzzards for food or sale, but once caught, the consequences are significant, and you must think about it."

Individuals arrested for violating the Wildlife Conservation Act, if the offense was relatively minor, could attend a legal education course lasting from 2 to 80 hours, depending on the circumstances.

To boost the morale of law enforcement officers, the Pingtung District Prosecutors Office stationed prosecutors like Tang Xian-heng at the Hengchun Summary Court who actively participated in enforcement. They increased the bail amounts for poachers and sought heavier penalties in the indictment. Some prosecutors even personally led teams in executing operations. In addition to routine road inspections, they accompanied the police in avoiding main roads, fording streams, or taking alternative routes through the Jialeshui to encircle the hunting hotspots south of Gangkou Mountain. This elusive and aggressive approach left many hunters fearful, as the police were no longer just doing things as they expected.

"Save the Buzzards!!"

In October 2001, during the filming of Taiwan Eco-Notes by TTV in Manzhou, four large bags containing the feathers, beaks, talons, and other remains of Grey-faced Buzzards were found discarded under the Lide Bridge. Public opinion at the time suggested that locals deliberately left these remains at the popular hawk-watching spot as a form of provocation against law enforcement and to vent their frustration. 3.4

In 2002, outside the venue of the "Raptor Meet in Manzhou" event, a dead buzzard was discovered with a newspaper underneath it bearing the words "Dare to catch me".

In 2004, during a crackdown on poaching operations, National Park Police officers followed a trail and found 70 buzzards hidden by hunters, with 2 still alive. The confiscated buzzard carcasses were evaluated by experts from institutions such as the National Pingtung University of Science and Technology and stored as evidence in the Hengchun precinct. Surviving individuals were either released back into the wild or transferred to the Pingtung Rescue Center for treatment. This marked the largest single seizure of buzzards in years and received extensive coverage in the media.

Despite the implementation of the *Wildlife Conservation Act*, cases like these continued to emerge regularly. While the successful crackdowns were encouraging for the teams, the enforcement work resembled a nighttime jungle battle against hunters and was an incredibly demanding task. Team leader Xiao explicitly recommended that there should be a prompt integration of National Park Police, Forest Police, and local law enforcement to overcome the issue of inadequate police presence.

Watching hawks in the daytime and hunting in the night, the two groups appeared to have little overlap. Some birdwatchers lingering a bit later into the evening might hear things like, "It's dangerous after sunset. You never know where bullets might come from."

Some locals would jokingly say, "What are tourists even looking at?! We've caught them all! The buzzards left exceptionally early this year. Those that haven't are in our refrigerator!" Although birdwatchers were aware that hunting started at night, the stalemate of over a decade had left many feeling somewhat powerless.

In the fall of 2006, the sound of a gunshot in Lide Village, Manzhou, marked another significant turning point in the conservation history of the Grey-faced Buzzard. On October 15, 2006, media reports quoted birdwatchers as saying, "There were eight groups of people in Lide Village, two groups in Gangkou Village, and some outsiders who went up the mountain to hunt buzzards. Around Double Ten Day, the conservative estimate of buzzards killed in a single day was around 700 birds." (Another report, citing local residents, mentioned that 700 birds were killed in about three days.) This news sparked heated discussions online, and on October 17, an online article claimed that the previous year's hunting had reached as high as four to five thousand buzzards. Even though Shi Jin-fang, then director of the KTNPH, the captain of the National Park Police, and "Migratory Bird Protection Program" leader Technical Specialist Tsai Yijong all stated that this number was an overestimate, the accumulated anger had an online emotional mobilization effect. Many people responded by signing petitions and sending emails to the Executive Yuan and the Council of Agriculture, demanding government take action to protect the Grey-faced Buzzard.

In response to mail from wild bird societies and public, legislator Chen Yin-hao, along with legislator Tian Qi-jin, held a press conference on October 20 under the theme "Save the Grey-faced Buzzard." They called on the government to take the ongoing situation of poaching in Manzhou seriously. Over 50 people from various organizations and the public attended the event. The pressure from the legislative branch finally broke the impasse caused by the insufficient manpower of the National Park Police.

In 2007, the National Police Agency integrated the Hengchun Branch of the Pingtung County Police Department and the Forest Police Squad of the Forestry Bureau, along with Kenting National Park police working together to combat poaching. They were divided into three teams stationed in Jialeshui, Lide, and Xianglin. The Forest Police, with their extensive experience in dealing with "mountain rats" (Those who engage in the illicit felling and sale of timber), achieved outstanding results in their first year of duty.

In addition to conducting patrols in the mountains, the police would also act on tips to inspect hunters' homes, check their refrigerators, and randomly examine frozen parcels. Corry S.C. Chen, a researcher from RRGT who had assisted the police in identifying carcasses, mentioned, "back then, nearly all the frozen parcels labeled as "chicken" sent from convenience stores turned out to be the Grey-faced Buzzards. Once, when Hengchun precinct found a frozen package and notified me to take a look, I immediately recognized it as a buzzard, even though its legs had been removed. Its eyes slowly opened while it thawed. When it was reported in the newspaper, it turned into a supernatural tale that the buzzard died with a grievance and refused to rest in peace."

After the decline in the specimen trade, the Greyfaced Buzzard once again found its way to dining tables. Hunters had to take the prey home, pluck and butcher it, remove the talons and beak, and store it in their own refrigerators, awaiting buyers who would arrive the next morning. Yet if their homes were searched and the police found the dressed carcass or a large bag filled with bloodstained feathers and talons, they couldn't deny it. Even if they claimed it was chicken, the distinctive features of buzzards such as yellowish skin and bright yellow irises, made it difficult to defend.

Enforcement officers from different units both competed and cooperated with each other, enabling the three-year anti-hunting project to yield results. When the national park was established, there were still over 100 groups of hunters in the Manzhou area, by 2007, the numbers had decreased by around 70 to 80 percent.

Putting an End to Poaching



The jungle pursuit of hunters was no easy task. Police officers and hunters alike might get hit hard by rebounding bamboo, have Thorny Bamboo spikes get stuck between their fingernails, or fall into holes left by farmers harvesting Chinese Yams. After such a trek, there were always numerous scars and injuries. Hunters also occasionally suffered scratches on their backs from talons that punctured through the bags, leaving bloodstains on the shirt.

Destroying evidence as well as being caught and sent to jail was a shared experience for some hunters. When reminiscing about evading the police, older hunters animatedly described it as a thrilling life experience, though it was truly a matter of life and death. One said, "We were only 10 m apart from the police when they jumped out from the woods and started to chase us. Some of us got our shoes stuck in the mud, some ran uphill, some ran to the riverbank and hit a dead end, compelled to abandon their gear, swam across the stream with their gun in hand."

In response to police checkpoints and searches, hunters had their own tactics. They would hide their firearms and prey in the woods then retrieve them after ensuring the police had left. They could also extinguish their lights to blend into the darkness, make false trails, or carry a basket to pretend they were catching Chinese bullfrogs. However, if they were caught in possession of firearms and prey when encountering the police, the only option was to run.

After the implementation of the *Wildlife Conservation Act*, hunters became deeply fearful of encountering police on their way home or having their refrigerators inspected at midnight. The temporarily stored prey in the woods and the piles of carcasses in the freezers could turn into potential fines of tens of thousands or even millions of New Taiwan Dollars. They would also need to go through lengthy legal proceedings and interest accrued from borrowed bail money.

Most hunters were economic providers and caregivers in their agricultural communities. Upon arrest, their primary concern was often their families, who would lose their main source of support. Their children may also be looked down on at 國際灰面管噟暋 遷徙猛禽高峰會

3.5

school because of their father's bad reputation.

On the other hand, conservation values have been gradually integrated into school education over the years, and changing dietary habits led to a shift in taste preferences. "Our younger generation, those born in the 1990s, don't eat it anymore. They would tell their fathers, 'Dad, why did you cook this? It tastes terrible.' Yes, they find it unpalatable. Over time, since no one wanted to buy or eat it, there was a decline in hunting activities naturally," one hunter said.

A hunter that was struck by a rebounding arrow considered it a form of retribution. Others became weary of hunting when they witnessed buzzards fly with an arrow embedded in their bodies but still heading south undeterred. Changing values, family persuasion, concerns about the peer pressure their children might face at school, declining market demand, and the severe penalties and strong enforcement of the Wildlife Conservation Act gradually led even the most stubborn hunters to put away their guns. After more than 30 years of efforts, compromises, and understanding between various parties, the long-standing hunting tradition of the Grey-faced Buzzard on the Hengchun Peninsula gradually came to an end.

Since 2010, occasional sporadic hunting cases have still been reported. The motivation behind these hunts often involve those seeking excitement for personal entertainment or a nostalgic connection to their hometown flavors from childhood. Fortunately, the damage caused by these sporadic hunts is incomparable to the large-scale hunting of the past. Moreover, there are now law enforcement agencies, community patrols, and birdwatchers who have joined forces in Manzhou's valleys to continue protecting these precious guests.



Ecotourism

In 2002, in response to international trends, the Tourism Bureau of the Ministry of Transportation and Communications in Taiwan formulated the Ecotourism White Paper, defining ecotourism as "a responsible form of tourism that takes into account environmental conservation while preserving the welfare of local residents." The implementation principles must encompass the following aspects: the adoption of lowimpact operational and leisure activities on the environment; the limitation of the number of visitors to the area; the support for local conservation efforts in both natural resources and culture; the maximization of the use of local residents' services and transportation; the provision of nature-centered experiences for tourists; the employment of interpreters who possess knowledge of the local natural and cultural heritage; the assurance that wildlife and plants remain undisturbed; the commitment to preserve the environment; and respect for the traditional culture and privacy of local residents."



3.5

From Hunting to Conservation: The Ecotourism Development Journey of the Lide Community

TSAI Yi Hua / Researcher / Raptor Research Group of Taiwan

The Sheding Example

The United Nations declared 2002 the International Year of Ecotourism, initiating research, development, and educational promotion activities worldwide. In 2005, the Kenting National Park Headquarters (KTNPH) chose the Sheding Community and its surrounding areas as the first pilot site for ecotourism development in the area, aligning with the principles and spirit of the Executive Yuan's Ecotourism White Paper.

The Sheding Community, formerly known as Kuarut in the indigenous Paiwan language, is a settlement consisting of indigenous and various other groups. In 2005, the community embarked on an ecotourism development project. Under the guidance of Professor Chen Mei-hui's team from the Community Forestry Lab of National Pingtung University of Science and Technology, local residents gradually transitioned from direct utilization of natural resources to offering guided experiences, including activities like Chinese bullfrog conservation, stargazing, nighttime wildlife observation, and firefly watching. This shift allowed locals to generate income and contribute to their community through interpretive services.

In July of the same year, the NPUST team helped establish a regular patrol as well as specific species monitoring system for the community. During the initial implementation phase, they led community members in doing patrols, enhancing their understanding of natural resources through hands-on experiences. This allowed the members to acquire knowledge and materials to



share with tourists.

"The patrolling and monitoring work got a very positive response because they really needed this information. We took them out for surveys, and the knowledge they gained could be applied to their interpretation," said Hsieh Gui-zhen, a senior interpreter of KTNPH, who has been involved in the development of the Sheding community since 2004. She added, "they receive some income and can enhance their knowledge. They are very supportive of this project, so we thought about expanding this model to Lide."

The Sheding community not only developed ecological interpretation and natural resource surveys but also established the first unpaid patrol team to protect the local environment. Residents who used to rely on hunting for their livelihoods also experienced the disappearance of Reeve's Muntjac from the forests and the reduction of natural resources. Now, with these alternative sources of income, they have turned to protecting the forest and preserving wildlife.

After the pilot's introduction of tourists in 2008, the Sheding Community began to accept reservations for tours. With guides now leading visitors along the Taiwan ebony forest trail in the daytime while doing wildlife observation tours at night, years of effort have turned into tangible income.

Combining community patrols, natural resource monitoring, and ecotourism has proven to be a successful model. Following the experience of Sheding, other communities have also developed an interest in ecotourism.

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

3.5

The Grey-faced Buzzard Protection Patrol

The Mt. Nanren Service Station began recruiting residents of Manzhou Township around 1990 to conduct nighttime patrols to deter poaching during the transit period of the Grey-faced buzzard. The work spans from around 7 or 8 pm until the next morning, covering the three main routes of Xianglin, Lide, and Gangkou.

A ranger could earn a daily allowance ranging from 600 to 800 NTD, amounting to approximately 20,000 to 30,000 NTD per month. While this income pales in comparison to the profits from selling buzzards, it provided local residents with an attractive option to earn some income without the constant worry of evading the police. The first recruitment drive received an enthusiastic response.

Being caught in the tense relationship between the community and the public sector made a ranger's role quite awkward. Some residents accused them of being a "snitch," and some people had concerns about whether many of these rangers, who also had backgrounds as hunters, might be engaged in both night patrols and hunting activities. Despite these challenges, the rangers navigated the complex mountain terrain with the familiarity of their own backyard. They were well-versed in the locations of the buzzard's roost sites and knew the hunting strategies inside and out. The establishment of the patrol system put great pressure on poachers.

The significance of the patrol team goes beyond just extending the ability of enforcement. It also represents a shift in values. However, the financial support for this initiative was not endless. There was funding amounting to millions of NTD that could support the operations of patrol teams in Gangkou, Lide, and Xianglin in the early stages. Yet as the funding gradually dwindled, resources had to be concentrated on Lide, where poaching was more prevalent. The patrol period was also eventually reduced to just 20 days.

At the end of 2010, Chen Xuan-wu, the station chief of

Community interpreters sign a commitment pledging to adhere to the guidelines set forth for community interpreters and patrollers. by Kenting National Park Headquarters

里德社區巡守隊巡守監測規則
一、組織成員
 (一)社區巡守隊由本會會員申請為優先,由理事會同意方得加入。 (二)社區巡守隊設置隊長一名,負責排班及巡守督察。 二、義務與紅石
 (一) 巡守隊員應遵循排班表,確實巡守監測 應提前向隊長請假,否則以嚐班論。 (二) 巡守隊員應參加每次的工作會議,無法出席者應事先向理事
長、総幹事、隊長三者其中一人請假,否則以無放缺席論。 (三) 具備巡守隊員身分者,才能参加生態旅遊解說員認證。 (四) 本巡守監測為無給職,屬於義務性工作。
三、隊員守則
(二)巡守監測時,不得酗酒。
(三)巡守前須先領取表格、燈具,巡守結束後將表格及燈具繳回。 (四)若週非法事件請即刻通報相關管理單位處理,墾丁國家公園管
理處免付費保育專線電話:0800-885996。
 (五)隊員應參與本習各項訓練、習識及勤務,个得無敌號席兩次。 (六)每年曠班三次或無故缺席兩次視同放棄巡守隊員一職,無法參 距解說自協訓。
(七)禁止隊員私自以本隊名義或穿著制服從事任何公眾活動(包括 政治性活動)若有必要,需經理事長認可,方得行之。
(八)勤務用裝備屬社區資產,禁止私用,因保管不力而遺失,使用 人應負賠償之責任。
(九)本隊隊員難為自願,義務,無給職,但為保持團隊之精神及榮 譽,上述各款務必遵守倘有抵禦,隊長需提報理事會,由理事 長,常務監事及總幹事,隊長協商,依視情節輕重予以警告或 陸名,若因個人行骂鄰法,自負刑責。
(十)離職隊職員應將裝備繳回。
本公約自101年2月29日起生效,如有未盡事宜,得經本協會工作會議
加以修訂或追加新條文。
End - Not Str. Bar
and the section of th

Mt. Nanren Service Station, made the decision to apply the experiences garnered from developing ecotourism in Sheding to Manzhou. This initiative aimed to enable residents to reap benefits by providing guided tours to visitors and fostering self-imposed stewardship of natural resources. It also sought to continue the patrols while reducing reliance on public resources. To implement this, they needed to first confront the prolonged state of conflict between the community and government authorities that had persisted since the establishment of the national park.

It All Began with Opposition

Establishing a national park represents the transformation of a niche conservation awareness primarily in intellectual discourse to a pressing concern for the public following its merging with societal experiences. In 1980, the Ministry of the Interior embarked upon the planning of the Kenting region as a national park, with the primary objective being the preservation of the local natural landscape. The Grey-faced Buzzard and the Brown Shrike, among other wildlife, are afforded protection. Regrettably, initial deliberations did not consider the residents already living in the area. Locals found themselves stuck bearing the consequences of lifestyle restrictions imposed by conservation efforts. This led to conflict.

"What we oppose is the lack of consultation when our homes were included in the protected area upon the establishment of the national park in 1982. There was no room for negotiation. This is why the local people were hostile towards the KTNPH. In the past, this territory belonged to indigenous people and served as a traditional hunting grounds. Why can't I hunt on my own land? ... In the early days, it was a situation marked by conflict. After all, this is our own land, and our livelihood depends on it. There are no factories here for employment. If you prohibit hunting, how are we supposed to sustain ourselves?"

Approximately 70% of Manzhou Township fell within the boundaries of the national park, leaving residents confused by regulations imposed on hunting and gathering activities on their own lands. Their long-standing way of life had suddenly become illegal, leading to public condemnation by the media and society, branding them as uncivilized and backward. As the Grey-faced Buzzards arrived, outsiders bearing expensive binoculars and telephoto cameras entered the community. However, the local community saw little benefit from their coming.

In the book *The Only Earth We Have, Ma Yi-gong* said, "you always seem to take away its benefits, and the promised rose garden is nowhere to be found." The context of this resistance



Station chief Chen Xuan-Wu conducts interpreter training sessions for community residents. by Kenting National Park Headquarters



came not only from the impact of hunting restrictions on income but also from the sense that people were deprived of their community and livelihoods. Meanwhile, the anticipated income from tourism development remained nowhere to be seen. Most communities, including Lide and Gangkou, harbored a longstanding mistrust and confrontational attitude towards the KTNPH, to the extent of even resorting to egg-throwing demonstrations.

In the face of the prevailing atmosphere of opposition, even within the KTNPH, there were those who harbored reluctance towards engaging with the community. After all, who would willingly assume the role of entering a hostile place and attempting to mediate conflicts? Lide's community development and ecotourism promotion plan seemed like an impossible mission.

"I knew there were a lot of people who hunted and illicitly harvested trees in Lide at that time. Many people have conflicting relationships with us, so of course I was afraid back then," reflected Station Chief Chen on the initial stages of implementing community development and ecotourism in 2010. However, she added, "at that time, I went to talk to them first, telling them that the KTNPH was interested in promoting ecotourism and asking if they were interested. After the conversation, I gave them some time to consider my proposal, and then later they actually agreed!"

Fortunately, after receiving positive feedback from tourists in the Sheding community, other communities also expressed interest in ecotourism development. Even though some harbored skepticism and felt that park officials were just there to use up their budget, they were willing to give it a try. At the end of 2010, the ecotourism development plan in Lide community began. In 2012, the KTNPH once again collaborated with the Community Forestry Lab of NPUST, marking the official commencement of the training program for Lide communication with locals, organization and training, institutional establishment, visitor services, resource assessment, itinerary planning, and patrol monitoring. 3.5

Sharing the Fruits of their Labor

Under the guidance of the NPUST team, trainee members were tasked with integrating their past experiences in hunting and gathering with scientific knowledge to enhance their interpretive skills. In the process of training, those who could write took notes, while those who were illiterate recorded their lessons with tape recorders for repeated practice. Fearing embarrassment in front of tourists, peers engaged in mutual competition and learning. With the guidance of their instructors, members gradually gained proficiency in their interpretive skills, overcoming stuttering and hesitation. In the same year, a community patrol team was established, effectively deterring illegal harvesting and poaching activities through the vigilant efforts of residents. Simultaneously, this initiative deepened their familiarity with the natural resources along the routes.

After a long learning period, through interpreter training and patrolling activities, the Lide community succeeded in preserving its natural ecological resources, cultural history, and local narratives. These are the cornerstones for successfully developing ecotourism. After several months of training, members' interpretive skills and ability to identify flora and fauna were certified, allowing them to become official interpreters and commence taking reservations for guided tours.

Community ecotourism operates through a single window for reservations and capping visitor numbers. All members take turns leading tours, accumulating experience through practical opportunities. This ensures that income is redistributed to the community and the interpretive patrol team rather than being concentrated in the hands of a few. This approach not only provides income to participating interpreters but also allocates a portion of the surplus towards caring for the elderly and children. This allows the entire community to share in the benefits of ecotourism development. Such practices motivate community members to voluntarily persuade their fellow villagers to cease hunting, thereby preserving the surrounding natural resources.

In October 2012, the Lide community launched the "HAWK trip should be" itinerary, centered around hawk-watching. It combined sightseeing along the Lanren River, observing the Grey-faced buzzard at its roosting site, enjoying local dishes, and watching the buzzards take off in the early morning the next day. This pioneering blend of ecotourism and hawk-watching



The Lide Community Patrol Team's flag presentation ceremony by Kenting National Park Headquarter garnered a warm reception, with high visitor satisfaction ratings and interest in holding similar events in the future. The initial slogan, "You can make it by hawk-watching!" sounds like it is painting a rosy picture of an unrealistic vision, yet it proved to be more than just a lofty promise. The achievements greatly encouraged community members who had invested in patrols and interpretation, and then became more confident in their decision to embark on the path of ecotourism.

It Takes a Village

At the inaugural flag presentation ceremony of the Lide Community Patrol Team, Village Chief Pan Fu-yi took the stage to deliver a speech. He expressed his gratitude, saying, "Now that the patrol team has been established, I want to thank Station Chief Chen from the national park, and Professor Chen Meihui, who has shown extraordinary dedication. We are deeply appreciative." As he mentioned the community development guidance team, applause erupted from the patrol team members standing behind him. It is difficult to fathom how the relationship between the community and the public sector had evolved from heated confrontations at meetings to the present partnership. This transformation, built on commitments, close contact, companionship, and support, had cultivated trust and a sense of security between both parties. The evolution of relationships among participants was a crucial factor for successfully driving community development.

The core concept of ecotourism must strike a balance between environmental conservation and providing reasonable income to the local community. Discussing conservation principles right from the outset in an impoverished region may appear detached from the realities of life. Therefore, during the initial communications between the guidance team and the community, it was essential to pique the community's interest by highlighting tangible benefits. For instance, allowing retired elders to earn additional income, redirecting profits towards senior care

activities in the community, and the added physical and mental health benefits of regular patrol walks and social interactions were key parts to fostering community participation.

Key participants such as station chief Chen Xuan-wu, Hsieh Gui-zhen, interpreters from KTNPH, Professor Chen's team from the Community Forestry Lab of NPUST, and the subsequent establishment of 'Lishan Ecological Company' by these students, all dedicated extensive time working with community residents. They also invested a significant portion of their personal time to observe and think about planning and implementing tour itineraries.

During this time, they often stayed in the community, had dinner and drinks with locals, and participated in celebrations. This gradually broke down the barriers that had categorized them as outsiders.

"They won't pay any attention if you just throw them a bunch of rules, ... They place more emphasis on relationships than value judgments. They learn to think according to your standards from the direct interactions you have with them," Hsieh said. During guided tours, refrain from smoking, wearing slippers, or chewing betel nuts. Avoid alcohol consumption during patrols. Practice pruning in moderation during trail maintenance. Reduce the use of disposable tableware. Hsieh emphasized that in the process of interacting with community members, it is crucial not only to lead by example but also to play a significant supportive role. She said, "especially for those who used to be hunters and are now involved in ecotourism, I always answer their questions very actively, so they have a strong foundation in interpretation to rely on."

Rather than negating or passing judgment, those who continue to progress despite stumbling along the way need a supportive partner with whom they can talk and ask questions. When interpreters encounter questions they can't answer, or when former hunters itch to engage in old habits as Grey-faced Buzzards show up in large numbers, making a phone call or sharing a meal can serve as a response to these pleas for help. Strong friendships also grow in the process.

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

3.5

Interpreters who were once involved in hunting lead the public into the forest to explore the nature. by Lide Community Development Association

After starting to accept tourist reservations, the guidance team actively promoted the program. They donated the lecturer fees for the courses or guided the community in applying for grants, to procure equipment such as rain boots, hats, and flashlights for visitors' use during the tours. They also held regular meetings to review mistakes and foster cohesion among participants. Witnessing the dedication of the team, the community's trust in the KTNPH gradually increased. Meanwhile, the introduction of tourists confirmed that diligent management of ecotourism indeed brought income.

Regarded as a Teacher

"There was an elderly grandmother from the Lide community who joined the training at the very beginning. She couldn't speak or write Mandarin... After training for a while, we had to undergo certification. Since she couldn't read, someone recorded the materials for her to listen to, allowing her to learn through listening and practice speaking... One time, she was responsible for guiding a group of law school students, future judges. Those students had great admiration for the grandmother, saying, 'You are so old, yet you can understand so much.' Do you know how HAPPY that grandmother was??"

What incentives were there to choose ecotourism when selling buzzards could yield profits in the tens of thousands? An interpreter from the Lide community, who used to be a hunter, explained, "When you go hunting, you risk being pursued by the police. Plus, schools have been teaching children to go home and tell their parents not to hunt for years. There's a significant difference in terms of the honor passed down to future generations. So, even though interpreters don't earn much, it's not a bad living." The reasons for the decline in hunting activities were law enforcement, a declining market demand, and concerns about shaming their children by being hunters. Becoming interpreters

offered these individuals another avenue for self-fulfillment. Community members who typically engaged in farming, hunting, and odd jobs never expected that they would stand in front of so many tourists delivering interpretations. People referred to them as 'Teachers,' listening attentively to what they had to say. Some even had media coverage and interviews.

"Interpreter income may not be enough to live lavishly, but it provides a little extra cash. Whether or not you make money is secondary, at least you lead a happy life and make friends," one community interpreter said. Ecotourism charges range from approximately 400 to 1500 NTD per person depending on the tour. Considering interpreters are scheduled in shifts and the concentration of most groups on holidays, it can only be regarded as a little extra income. Can ecotourism create another path for the community? Chen Xuan-wu believes that in addition to continuing ecotourism, the community must also focus on boosting local industries. This can be done by processing and

packaging local agricultural products and natural resources to increase their added value. Tsai Yi-jong, who has continued to promote interpretive education in community college after retiring in 2015, believes that interpreters should continually improve their skills and seek out new materials. This way, visitors can receive more information or a unique experience during the tours, allowing them to evolve towards a more sophisticated and higher-priced market. Regardless, the income from ecotourism is not yet sufficient to keep young people from leaving for big cities in search of better opportunities.

However, this transformation has brought together people from different backgrounds and provided an alternative income option for natural resource harvesters. It has also allowed them to become protectors of the environment.

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

Research & Publication

WU Yinyin, CHEN En Li, LIN Wen Hung / Raptor Research Group of Taiwan

年代	作者	題目
1979	春生	滿州夜獵
1980	吳森雄	滿州護鷹記
1986	林世松,林孟雄	滿州地區獵捕灰面鷲之調查
1988	中興大學自然生態 保育社	春季八卦山灰面鷲過境北返調查
1989	洪先致	滿州地區獵捕灰面鷲之調查(二)
1990	林正二	滿州地區獵捕灰面鷲之調查(三)
1990	沙謙中	灰面鷲觀察和蘭嶼鳥類記錄
1991	林正二, 胡百忍, 蔡乙榮	滿州地區灰面鷲過境族群及獵捕行 為之調查研究
1991	蕭慶亮	八卦山,大肚山春季灰面鷲過境調查
1992	陳三慶	滿州地區獵捕灰面鷲之調查(四)
1993	顏春旺, 李清快, 戴瑞芬, 蔡乙榮	滿州地區灰面鷲過境族群及獵捕行 為之調查研究
1995	朱德恭、卓瓊玫	灰面鵟鷹之遷徙調查
1995	蕭慶亮	春季八卦山灰面鵟鷹過境探討
1998	蔡乙榮	墾丁地區秋季日行性猛禽遷徙現象 與日本的關係
1998	盧秀真	灰面鵟鷹在台灣之數量變化、遷移 路徑及夜間棲地分析
1999	林忠毅, 關永才, 鍾昇興	灰面鵟鷹北返暫棲地 (八卦山地區) 劃設研究
1999	林博雄,林文宏	大氣低層環流與灰面鵟鷹遷徙關聯 的探討
1999	黃光瀛	1999年八卦山台地灰面鵟鷹春季遷 移之研究
2000	李培芬, 盧秀真 , 許皓捷 , 張琪如	灰面鵟鷹在台灣春季過境的夜間棲 地推估
2000	李璟泓	灰面鵟鷹在八卦山的遷徙現狀
2000	蔡乙榮	墾丁地區秋季過境猛禽現況報告

漢聲雜誌 野鳥/中華民國野鳥學會叢刊 墾丁國家公園管理處保育研究報告 台灣野鳥 墾丁國家公園管理處 墾丁國家公園管理處 飛羽/中華民國野鳥學會季刊 墾丁國家公園管理處 變丁國家公園管理處 建丁國家公園管理處 中華民國野鳥學會專利 學丁國家公園管理處 學士國家公園管理處 學士國家公園會 學士國家公園會 學士國家会員 學士國家会員 學士國家会員 學士國家会員 學士國家会員 學士國國家会員 學士國國家会員 學士國國家会員<

碩博士論文

臺灣省政府交通處旅遊局

第二屆鳥類研討會論文集

南路鷹 / 彰化縣野鳥學會保育研究叢刊

2000年台灣猛禽生態研討會論文摘要集

2000年台灣猛禽生態研討會論文摘要集

2000年台灣猛禽生態研討會論文摘要集

年代	作者	題目	類型與刊物
2003	蔡乙榮、唐洪軒、 林瓊瑤	墾丁地區秋季遷徙性猛禽過境族群 羽過境其調查研究	墾丁國家公園研究報告
2004	李璟泓	彰化八卦山灰面鵟鷹春季遷徙之年 齡區別及族群遷徙模式研究	碩博士論文
2005	江明亮	2005 年秋季遷徙性猛禽先驅繫放調 查成果	2005年台灣猛禽生態研討會論文摘要集
2007	陳韻如 孫元勳 鄧 財文	2005年春季灰面鵟鷹在台灣中南部 之北返遷徙模式	台灣林業科學
2008	黃玉蟬	八卦山北端灰面鵟鷹暫棲地植群分 析	碩博士論文
2009	李文珍	從寫作中分析學生對灰面鷲的保育 概念	碩博士論文
2009	洪煜鈞	深色型灰面鵟鷹在台灣的首次影像 記錄	台灣猛禽研究
2009	張傳炯	墾丁與宮古島位在灰面鷲南遷的不 同路線上	中華飛羽
2009	黃鐘慶	野生動物觀光遊憩體驗與遊客行為 模式之研究 - 以賞鷹為例	碩博士論文
2010	張宏銘 林文宏 劉 小如	灰面鵟鷹遷移之衛星追蹤	2010年台灣猛禽生態研討會論文摘要集
2011	張宏銘 林文宏 劉 小如	灰面鵟鷹遷移之衛星追蹤	2011年動物行為暨生態學研討會
2013	湯京平 張元嘉	社區發展、市民社會與生態政治 以恆春半島灰面鷲的參與式保育為 例	政治學報
2015	庫曼德	2009 年春灰面鵟鷹在臺灣南部的遷 移模式	碩博士論文
2015	楊明淵 蔡佩妤	大風起兮鷹飛揚? 冷鋒與灰面鵟鷹 過境墾丁地區之關係	2015年台灣猛禽生態研討會論文摘要集
2015	楊明淵 鍾金男	數位照片測距之應用 墾丁遷移猛 禽飛行高度之估計	2015年台灣猛禽生態研討會論文摘要集
2015	Kunene, J. M. 孫元 勳	灰面鵟鷹在南臺灣的春季遷移模式	2015 動物行為暨生態學研討會
2016	黃馨儀	利用氣象雷達探討 2014 年和 2015 年秋季灰面鵟鷹在恆春半島的遷移 模式	碩博士論文
2017	劉孝伸 羅元鴻	美濃過境灰面鵟鷹初探	中華飛羽
2018	唐禎禧	2016年氣象雷達觀測灰面鵟鷹在台灣東部海面的秋季遷移模式	碩博士論文
2019	熊世文	滿州社區灰面鷲保育與賞鷹生態旅 遊對民宿經營之影響	碩博士論文

年代	作者	題目
2010	Lucia Liu Severinghaus, Yu-Cheng Hsu, Kuang-Ying Huang	Satellite Tracking The Migration of Grey-faced Buzzard (<i>Butastur indicus</i>)
2010	Ming-Yuan Yang	Spring Raptor Migration Survey in Henchun Peninsula, Southern Taiwan
2010	Severinghaus, L. L., Hsu, BY., Lin, WH.	Satellite Tracking the Migration of Grey-faced Buzzard (<i>Butastur indicus</i>)
2010	Yang, MY., Hong, FL., Hsu, TC.	Spring Raptor Migration Survey in Henchun Peninsula, Southern Taiwan
2012	Chow Jeng Wong	Application of Doppler Weather Radar in Studies of the Migratory Pattern for Chinese Goshawk and Grey-faced Buzzard in Taiwan
2012	Hsin-Chih Lai, Chen-Jeih Pan, Yu- Jen Wang	Application Techniques of Doppler Weather Radar in Recognition of A Large Number of Migratory Raptors in Taiwan
2012	Lucia Liu Severinghaus	Raptor Migration in Taiwan
2014	Yuan-Hsun Sun and Tsai-Wen Deng	Radar Study on the Spring Migration of Grey-faced Buzzards <i>Butastur</i> <i>indicus</i> at Henchun Peninsula, Southern Taiwan
2015	Hsu, YC., Cheng, SJ., Hs, CC.	Prevalence of blood parasites in three common Asian migratory raptors from Taiwan
2017	Scott Pursner	A Success Story in Community Conservation: The Tale of "Free Buzzard" at Mt. Bagua in Changhua County, Taiwan
2017	Yuan-Hsun Sun, Hsin-Yi Huang	Radar study on Grey-faced Buzzard migration in Taiwan

類型與刊物

The 6th Symposium on Asian Raptors Program & Abstracts

The 6th Symposium on Asian Raptors Program & Abstracts

2010 台灣猛禽生態研討會論文摘要集

2010 台灣猛禽生態研討會論文摘要集

The 7th Symposium on Asian Raptors Program & Abstracts

The 7th Symposium on Asian Raptors Program & Abstracts

The 7th Symposium on Asian Raptors Program & Abstracts

The 8th Symposium on Asian Raptors Program & Abstracts

Journal of Raptor Research

The 10th Symposium on Asian Raptors Program & Abstracts

The 10th Symposium on Asian Raptors Program & Abstracts

國際灰面蒼噟暋 遷徙猛禽高峰會

4.1

Annual Count of Grey-faced Buzzards from 2004 to 2022

Annual Migration Period from 2004-2022 (The date range during which 90% of the Grey-faced Buzzards are counted annually)

4.1

Kenting National Park **Autumn Migration Raptor Count**

TSENG Chien Wei / Executive Director of Raptor Research Group of Taiwan

The Autumn Migration Raptor Count has been conducted in Kenting National Park since 1989, spanning over three decades. In its inaugural year, the survey involved several transect surveys scattered across Pingtung County's Hengchun and Manzhou. This work provided a foundation for subsequent surveys in terms of methodology, timing, and locations. From 1990 to 2003, the survey methods were gradually refined. After 2004, it continued to take place with the involvement of non-governmental organizations. This ensured the sustainability of the project.

The Autumn Migration Raptor Count in Kenting is conducted at the Skyline Pavilion (21°57'13" E, 120°49'23" N, altitude 149m) located in the Sheding Nature Park. The survey period spans from September 1st to October 31st, with observations conducted between 5:30 am to 12:00 pm. In October, the survey begins at 5:00 am to align with the migration behavior of the Grey-faced Buzzards. Two observers equipped with 10 x 42mm binoculars, scan the sky and record the number of the Grey-faced Buzzards, Chinese Sparrowhawks, and Oriental Honey Buzzards with along with flight directions and altitudes. Other uncommon or rare species are also recorded regardless of their flight direction. Each record includes the observation time, species name, number, flight direction, flight altitude, and behavior. Additionally, meteorological conditions such as temperature, cloud cover, visibility, wind direction, wind speed, and a brief weather description are recorded each hour.

Survey data shows that Chinese Sparrowhawks constitutes approximately 70%-90% of the raptors counted. This is followed by Grey-faced Buzzards at around 10%-30% of the total. These two species collectively make up over 98% of the total count. The total count of Grey-faced Buzzards ranged from 23,140 individuals in 2004 to 117,971 in 2021. About 90% of the population passed through the observation site between October 10th and 20th. There is a slight tendency for the migration period to be delayed over the years. The overall trend in the number of observations shows a significant increase (P<0.01), with a minor decrease observed from 2009 to 2015. However, starting in 2016, there has been a continuous increase in the number counted annually, setting new record highs each year for the last five years.

While the results of this survey indicate an increasing trend in the number of Grey-faced Buzzards migrating through Taiwan, survey results from the nearby Miyako Islands in Japan have not. Breeding populations in the northeastern China have also shown a decline as well. However, long-standing hunting pressures along the migration route have significantly decreased over time. Hunting activities have almost disappeared in the Miyako Islands, and in recent years, only isolated cases of poaching have been found in Taiwan. Furthermore, in the important congregating and roosting sites of Grey-faced Buzzards in the Cagayan Valley in northern Luzon, Philippines, anti-poaching measures intensified beginning in 2015. This has allowed more birds to return to their breeding grounds and raise the next generation. It is speculated that the increase in the number of Grey-faced Buzzards migrating through Taiwan may be related to a significant reduction in hunting pressures along its migration route.

4.2

4.2

Grey-faced Buzzard Migration Survey of Baguashan

LEE Yi Hsin / Director General / Wild Bird Society of Changhua

The northern foothills of the Baguashan Mountains are comprised of valleys with elevations less than 100 m asl. The vegetation in this region mainly consists of orchards, Acacia trees, bamboo groves, secondary forests, and scattered grasslands. During their northward migration, a significant number of Greyfaced Buzzards choose to roost in this hilly area that extends northwestward towards the coastline, spending a night here before heading across the sea towards their breeding grounds. Greyfaced Buzzards, once heavily hunted, have seen their numbers recover thanks to three decades of continuous advocacy efforts, public engagement, and the establishment of relevant wildliferelated laws and regulations. However, with population growth and expanding settlements encroaching on wildlife habitats, the foothill zone adjacent to human communities is under increasing threat. This endangers the survival of local wildlife, including species like the Grey-faced Buzzard. Conservation efforts for these areas continue to be a matter of concern.

Effective conservation efforts for the Grey-faced Buzzard and proper assessment of its current population status relies on research data. In 1991, the Wild Bird Association of Taiwan, led by Hsiao Ching-liang, in collaboration with birdwatching clubs from several universities, initiated the first comprehensive survey of Grey-faced Buzzards in the Baguashan area. They recorded the migration and roosting behavior in locations like Peiyuan Junior High School and Anxiliao.

In 1992, the Wild Bird Society of Changhua was founded. This marked the start of systematic surveys of Grey-faced Buzzards

	入	卦.	4 5:3	0~	10:0	00 各	-時4	受觀	察說	绿			八圭	十山	灰面	骛质	亂詞	查觀	察結	;果	
1期	新温	風向	氣 候	5:30	6:00	6:30	7:00	7:30	8-9	9-10	18 2	日期	山巷八	起席	」使八	山落鹰	日期	山桂八	起鹰	山走八	山沼属
3/9	17°C	東	740[-140]	0	1						1	-	2.28	* *	ar 10	22 4		0.28	志 方		2 1
/10	14 °C	北	小雨一路	0		200		10100	10.1	10.0		-	S./M.R	141 73	17 10	11 %		2000		-	-
		展	13	0	100	-	10			-		3/8	0	0	0	0	3/29	1	0	34	
/13	16 ℃	米	13	0		9	2		20	93	13	3/9	0	0	1	0	3/30	18	0	889	350
/14	12°C	東北	陰		59	212	55			162	488	3/10	0	0	0	0	3/31	57	0	6	1.1
(15	13°C	東北	脑一小雨		2	47		73			12			-			4/2				
(16)	15 C	東北市	78		11	1		20	22	122	15	3/11	0	0	0	0	4/1	10	0	0	
/18	14 0	dh	16		52	9	1	2	20	0	6	3/12	0	0	2	0	4/2	3	0	34	2
/19	14 °C	西北	18	1	28	6	11	57	78	106	28	3/13	1	132	291	58	4/3	8	0	0	1.00
20	20 °C	北	晴	246	39	28	115	15	266	571	1280	0/74	-	1.00	-	002	14	17	0	0	
	20°C	東	晴	12	203	48	-	2	_	-	265	3/14	329	102	01	200	4/4	11			
22	13 0	12	ER	0	2	-	1	-		-		3/15	117	5	4	134	4/5	0	0	0	
24	14 °C	東北	助	2064	151	225	2141	1278	489	105	6454	3/16	47	106	57	105	4/6	1	0	21	1110
25	18°C	東北	晴	62	108	20					190	2/17	52	- 20	10	0	4/7	17	0	102	25
26	17°C	2	多賞	_	6	-	-	-	17	1	24	0/11	00		10	•	4/1				
27	15 7	東北	111 25		4	3		-	8	2	12	3/18	61	0	70	445	4/8	0	0	0	
29	16°C	東				-	111		1	-	-	3/19	71	159	70	124	4/9	0	0	2	9
30	16 °C	西	多官				19		2.1		21	2/20	410	- GALT	397	676	4/10	0	0	0	
31	18°C	東	-	53	5	1	1	3	-		63	0/20			001	010	4/10	-	-	-	-
/2	17 C	東	32 140-32	3			1	77	4		81	3/21	16	249	23	43	4/11	0	0	0	
3	20 °C	南	15		8		-				-	3/22	0	0	0	0	4/12	0	0	0	
(4	22 °C	無	75		2						15	3/23	2	0	89	47					
5	24 C	25	8	0							0	2/04	#70		00	1000					-
0	24 C	10	28	2		11	1	-		-	3	3/24	570	3660	28	1069					
8	23 °C	東	多雲一晴	0	0	-11	-				17	3/25	19	170	1	0	總計	出作几	安溪寨起	10	1908
9	22 °C	東北	78	0							1	3/26	1	16	7	2		八掛山	安溪寮南	方起鹰	7553
10	23°C	新	75	0	-	1					0	2.027	-		0	075		0.85-1-0		-	9155
	24 °C	展	- 10	0							0	3/27	7	5	0	215		(Marm)	K肉菜酒	05	2100

Publication of the Wild Bird Society of Changhua features the research findings from Baguashan's Grey-faced Buzzard Migration Survey. by Wild Bird Society Of Changhua

and other migratory raptors during their spring migration through Baguashan. During the early stages of this research, in cooperation with the Department of Biology of the National Changhwa University of Education (NCUE), annual events like "Free Buzzard in Mt. Bagua" were organized. These events included training sessions for residents and bird enthusiasts to adopt standardized survey methods. This approach aimed to replace random observations with consistent data collection practices, facilitating the accumulation of data suitable for comparative analysis.

Every spring, survey work begins on Jingzhe (Chinese solar term, around March 5th or 6th each year) and concludes on Qingming (Chinese solar term, around April 4th to 6th). The surveyors and volunteers gather at Baguashan every morning at 6 am, regardless of the weather conditions, and stay until 4 pm. They record the numbers of Grey-faced Buzzards taking off, passing through, and roosting. To avoid double-counting, the daily total is determined by taking the higher number of buzzards taking off on that day and roosting on the previous day, plus the number of buzzards passing through. This combined figure represents the total count for the day. These daily totals are then summed up at the end of the survey period to determine the seasonal total.

Survey results indicate that the number of Grey-faced buzzards observed at Baguashan gradually increases from mid-March, peaking around March 20th. During this period, it is possible to observe several thousand buzzards passing through or roosting in a single day. The numbers then rapidly decrease from late March to early April, concluding the northward migration

Annual Count of Baguashan's Grey-faced Buzzard Migration Surveyfrom 2010 to 2023

period in less than three weeks. The total number of buzzards migrating through in spring varies from 10,000 to 35,000 individuals, with an average of 251,294 individuals total in the past decade. The year 2020 saw the highest count with 38,922 individuals. Overall, the number of Grey-faced buzzards migrating through the northern part of Baguashan has remained stable, with slightly higher numbers observed from 2020 to 2023 compared to previous years.

This data not only demonstrates the annual fluctuations in the number of Grey-faced buzzards but are also invaluable for assessing the environmental conditions at Baguashan. They also help us understand the various life cycle behaviors of the wildlife in the area and serve as a foundation for conservation efforts and the promotion of ecological awareness.

國際灰面管噟暋 遷徙猛禽高峰會 INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

4.3

Weather Radar-The Migration Route of the Grey-faced Buzzard

SUN Yuan Hsun / Professor / Institute of Wildlife Conservation, National Pintung University of Science and Technology

During World War II, British military radars first detected "angels" flying in the sky. They were later confirmed to be birds. Following that discovery, radar technology rapidly advanced, giving rise to the field of Radar Ornithology.

The Grey-faced buzzard is a common migratory raptor in Taiwan, second in number only to the Chinese Sparrowhawk. In the past, information on the migration routes of the buzzards in Taiwan came from dedicated hawk watchers who provided longterm observation data. The Raptor Research Group of Taiwan (RRGT) expanded the scale of research through satellite tracking. However, both methods have their pros and cons when it comes to studying the migration routes of Grey-faced buzzards on the island. The limitation of the former lies in its relatively limited observation range. Meanwhile the latter is constrained by the difficulty in obtaining samples and the longer time intervals between location points, making it challenging to obtain more detailed route information.

This article introduces the use of weather radar observations from various locations over the past decade to study the migration route of Grey-faced buzzards. It aims to estimate the population and flight altitudes of the buzzards, exploring their migration routes and behavioral patterns. Additionally, this information can be valuable for assessing potential collision impacts with offshore wind energy development projects.

Eyes of the Sky

Radar waves, when emitted and encountering obstacles that bounce back to the receiving antenna, create images with pixel units of approximately one to two hundred square meters each. All flying birds within this range, regardless of size and quantity, are represented as a logarithmic value, reflecting their size and abundance. While weather radars have a lower resolution, its high transmitting power allows for the observation of high-altitude birds over distances of hundreds of kilometers. To differentiate between different biological elements, such as birds, bats, or

The Chiku weather radar station opened in 2002 - the radar most commonly used for migration surveys

butterflies, as well as non-biological elements like clouds and moisture, one must consider flight speed, direction, and the clustering behavior of migratory birds.

For instance, Grey-faced buzzards migrate using thermals and exhibit a unique "River of Raptors" clustering pattern in radar images, characterized by distinct lines. When combined with long-term raptor count data from various locations, it aids in interpreting the radar images. However, in weather and terrain conditions that lack thermals, there may be limitations and potential omissions in identification. One of the limitations of using weather radars is the inability to distinguish rare raptors within mixed flocks. Another situation arises when they are mingled with Chinese Sparrowhawks, another migratory raptor that travels in super flocks.

Autumn Journey in Taiwan

In October, the Grey-faced Buzzards arrive in Taiwan. Ground observations and rain radar data from Shulin in New Taipei City and Nantun in Taichung City indicate that the buzzards primarily make landfall along the coast between

The Kenting weather radar observed a Grey-faced buzzard departure from the west side of the Hengchun Peninsula in October 2015. The flocks are marked by red arrows.

northeastern Taiwan and Taichung (with a few individuals occasionally making a stopover in Penghu). From there, they follow the western side of the Central Mountain Range, making their way south. Along the journey, they spend at least one night resting before departing from the Hengchun Peninsula out to sea.

To determine whether Grey-faced Buzzards pass through western coastal areas or off the coast of the Hengchun Peninsula, we adjusted the elevation angle of the Kenting weather radar to 1.4 degrees from 2014 to 2015, allowing radar waves to pass over the mountains. As a result, we observed that a portion of buzzards would depart from the coastline between Fangliao and Guanshan out to sea. In 2014, this phenomenon accounted for 16% of the buzzard population, and in the following year, it increased significantly to 55%. This pattern continued regularly from 2019 to 2021, with proportions of 7.1%, 6.2%, and 17.3%, respectively.

In 2016, there was a new discovery in radar observations. Early on the morning of October 14th, the Hualien weather radar detected a group of buzzards migrating from Toucheng, Su'ao, and the mountainous parts of Nan'ao in Yilan County as they headed out to sea. Some of these buzzards made landfall along the coast from Xincheng to Shoufeng Township in Hualien County, while others continued southward and entered the radar's blind spot. Additionally, a portion of the buzzards were observed heading out to sea from Hualien City. These buzzards may have come from the population entering north of Hualien City, or from individuals migrating southward along an inland mountainous route from the northeastern corner of Taiwan.

The Grey-faced Buzzards observed departing from Hualien via weather radar formed an impressive "river" stretching up to 32 km in length, thanks to the thermal updrafts they utilized. These buzzards typically maintained an average altitude of 194.6 ± 80.4 m (n=26 flocks) while flying above the sea, with an average speed of 57.9 ± 14.8 km/hr (n=25 flocks). Normally, the Grey-faced Buzzards would increase their flight speed with the wind speed, but when faced with unfavorable headwinds or crosswinds during

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

4.3

10/14/2016. The Hualien weather radar observed that flocks of Grey-faced Buzzards left the Su'ao area and headed south. The width of the flock was from 0.2 to 2.9 km, with an average of 1.63 ± 0.74 km (n=33 flocks).

3/25/2022. The departing flocks detected by the Chiku weather radar (marked by arrow).

The migration routes and population proportions of Grey-faced buzzards observed by the Chiku radar in the spring of 2021 and 2022.

migration, they would lower their flight altitude. The stronger the wind, the lower their flying, as observed in both Kenting and Chiku.

The Southern Road Raptor

During the annual northward migration of Grey-faced Buzzards from March to April, their routes into the Hengchun Peninsula vary depending on the prevailing wind direction and speed at the time. These migration routes can sometimes veer westward, eastward, or lead to landfall between Guanshan and Eluanbi. When they shift westward and fly over the sea, most of the buzzards pass over the Hengchun Peninsula offshore and make landfall in Pingtung, Kaohsiung, Tainan, or even Penghu. One particular year, strong west winds over the Bashi Channel pushed several flocks eastward. Some flocks managed to land along the

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

4.3

The migration routes of Grey-faced Buzzards observed by various weather radars in previous years.

(Other areas pending observation include the Northern Coast, Green Island, and Penghu.)

coast between Xuhai and Nantian, while others were blown toward Orchid Island and Green Island.

The Grey-faced Buzzards exhibit an average speed of over 40 km/hr during their northward migration across the Bashi Channel, slightly faster than their average speed of over 30 km/ hr when moving over the island. This difference in speed may be attributed to their movement patterns over land as they search for thermals. They soar to high altitudes, spiral down, and sometimes reach speeds of up to hundreds of kilometers per hour during their descent. This method is less strenuous but involves longer flight paths, resulting in a slightly slower average speed.

Due to the relatively weak thermal conditions on the water, the buzzards mostly employ flapping flight, which is more energyintensive but allows for faster movement. Their flight altitude over the Bashi Channel can reach over 700 m on average, with some individuals flying even higher. Once they land and continue their northward journey, their flight altitude increases averaging over 300 meters. This altitude increase is especially pronounced for buzzards following the mountain routes, with flight altitudes at least 100 m higher than those taking the lowland routes.

Following observations at the Chiku radar in southern Taiwan, it was noted that in 2021, the buzzards primarily continued their northward migration along the land. Only a few populations departed over the sea in the area from the area between Yunlin and Chiayi, passing north of Penghu and heading to China. In 2022, there was a slight shift in the departure patterns of buzzards. Only approximately 46.2% of them followed the inland mountainous route northward. The rest either departed from the Yunlin-Chiayi region, flew over the waters north of Penghu when departing, or flew through the Taiwan Strait in succession after passing through the Bashi Channel.

How Many Buzzards Are Coming?

The beauty lies in the numbers. The annual visitation of Grey-faced Buzzards to the beautiful island of Formosa is a

Migrating raptors passing through the western coast of Taiwan will face an increasing risk of collisions with wind turbines.

much-anticipated event for every raptor enthusiast. In recent years, the number of buzzards passing through has consistently reached new highs, with a record-breaking 104,000 individuals in October 2021. Based on observations from the Kenting Radar in 2014-2015 and 2019-2021, it has been revealed that Greyfaced Buzzards not only migrate through the inland route but also opt for the offshore route, passing through the waters off the Hengchun Peninsula. Estimated from ground observations during the last five years, the actual numbers were approximately 70%, 40%, 90%, 86%, and 77% of the recorded figures. After conversion, the actual numbers were around 107,000, 89,000, 78,000, 121,000, and 135,000 individuals, respectively. In terms of trends, the migrating population of Grey-faced Buzzards provides an optimistic outlook. This is due to the collective efforts of multiple countries along the East Asia-Australasian Flyway over the past thirty years.

Photo byTseng Chien-wei

Epilogue

In recent years, to address long-standing air pollution issues in central and southern Taiwan, meet energy demands, and enhance international competitiveness, the government has actively developed its green energy industry. Taiwan is uniquely positioned, with the Taiwan Strait being one of the world's three best wind farm areas. As a result, the government has planned to develop a total of 15 GW (gigawatts) of offshore wind power generation projects by 2035. It is estimated that by that time, there will be thousands of large wind turbines, measuring two to three hundred meters in height, standing in the sea. This development raises concerns about its potential impact on the migration routes, flight altitudes, and numbers of Grey-faced Buzzards during their cross-sea migration and warrants further attention.

國際灰面管噟暋 遷徙猛禽高峰會 INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

4.4

4.4

Tracking the Trip Set Off from Taiwan

YANG Chien Hung / Director / Raptor Research Group of Taiwan

" A thousand buzzards have alighted this evening. Should be winging their way to your location tomorrow. "

"Twenty buzzards soared toward your vicinity just moments ago. Be prepared!"

"Weird, didn't three thousand buzzards come up yesterday? Why haven't we seen them yet?"

" It's crazy that countless buzzards are all over the sky but where did they come from?! We didn't hear anything from the South. "

These everyday conversations between raptor watchers during the migration season vividly illustrate just how elusive the migration routes of these birds of prey can be. It is a mystery that researchers have been working to unravel.

From a global perspective, the migration routes of raptors can be categorized into five main pathways based on geographical location. Among these routes, two are situated in the East Asia region, known as the East Asia Oceanic Flyway and the East Asia-Australasian Flyway. Taiwan is strategically located at the crossroads of the two.

The Oceanic Flyway connects the continental regions of Northeast Asia, Japan, and the Ryukyu Islands, passes through Taiwan, and extends further south to the Philippines and Indonesia. Raptors migrating along this pathway must continuously travel over the ocean, navigating between a series of islands. On the other hand, the East Asia-Australasian Flyway primarily follows terrestrial routes, starting from Northeast Asia's continental regions, proceeding southward through mainland Asia, and eventually crossing the Malacca Strait into Indonesia.

Taiwan, positioned at the intersection of two routes, serves as a critical junction for migrating raptors. It attracts a significant number of raptors from various regions, with the most prominent species being the Chinese Sparrowhawk and the Grey-faced Buzzard, with the latter being particularly well-known.

The Grey-faced Buzzard is a small to medium-sized migratory raptor primarily found in East Asia. During the summer, it breeds in the Far East regions of Russia, northeastern China, the Korean peninsula, and Japan. In the winter, it migrates to Southeast Asia. During its migration period, these birds can be spotted along the two main migrations flyways in East Asia. The exact origins and destinations of Grey-faced Buzzards migrating through Taiwan have long puzzled researchers and raptor enthusiasts.

In the past, traditional leg bands were used to confirm their migration between Japan and the Philippines. However, this method couldn't reveal the actual migration routes. Fortunately,

The Grey-faced buzzard equipped with a satellite transmitter. by Raptor Research Group of Taiwan

advancements in satellite tracking technology have taken raptor migration research to a whole new level. By attaching a transmitter to raptors, researchers can now track their movements without leaving their desks, providing valuable insights into their migration routes.

By 2008, the use of satellite technology for tracking wildlife had been gradually gaining popularity. While it may be costly, its unique capability to be free of border and terrain restrictions significantly enhances the effectiveness of tracking migratory raptors. To unravel the mysteries surrounding the migration of

the Grey-faced Buzzard, the Raptor Research Group of Taiwan (RRGT), with the support of the Forestry Bureau, initiated the Cape Buzzard Project. Under the leadership of Dr. Lucia Severinghaus, then president of the RRGT, a research team was assembled with the hope of utilizing satellite tracking to uncover the origins of Taiwan's Grey-faced Buzzards.

The first challenge in doing satellite tracking research is capturing the buzzards. Fortunately, through the wisdom of our predecessors and years of observation, we have gained knowledge about the timing of their arrival and the locations where they 4.4

圖 1.3.3、灰面鵟鷹編號 1、2、5、7 號個體之春季遷移路徑。

Gaining insights into the wintering grounds, breeding areas, and migration routes of Grey-faced buzzards through satellite tracking technology. <u>by Raptor</u> Research Group of Taiwan

圖 1.3.2、灰面鵟鷹編號 1、2、5 號個體之秋季遷移路徑。

gather and roost in large numbers. Researchers must prepare the necessary equipment for tagging and tracking well before the migration period. Then all they can do is wait.

The Cape Buzzard project, conducted from 2008 to 2011, involved tracking 13 Grey-faced Buzzards over a period of four years. Among these, four buzzards were successfully tracked to their respective breeding grounds, including northeastern China, North Korea, and Kyushu in Japan. While these areas were already known as part of the summer distribution range for Greyfaced Buzzards, this project revealed that the breeding grounds of buzzards passing through Taiwan are dispersed across various regions, not only Japan, as previously speculated. They also were found breeding in certain parts of continental northeastern Asia.

Interestingly, the individual breeding in Kyushu, Japan, followed a northward migration route similar to the northeastern Asian breeding population during its return journey. Instead of the expected island-hopping route along the Ryukyu Islands, it migrated northward along the eastern coast of China, crossed the Yellow Sea, and headed for Japan. The discovery of this individual's route to Kyushu was an exciting find for researchers. They immediately contacted local Japanese raptor researchers to survey the area. Although the tracked individual was not found on-site, observations confirmed that the region indeed served as a summer activity area for Grey-faced Buzzards.

Unfortunately, during its southward migration in the fall, the tracked individual's location was only successfully transmitted when it reached the Philippines. Therefore, we were unable to determine whether it followed a similar route as its northward migration or flew southward along the Ryukyu Islands. In autumn, these tracked individuals gathered in Taiwan from their respective breeding grounds and continued their journey southward, ultimately wintering on various islands throughout the Philippines.

Data from individuals tracked for over a year indicate that Grey-faced Buzzard exhibits fidelity to both their breeding and wintering grounds. Despite undertaking journeys spanning thousands of miles, they consistently return to their established breeding or wintering areas year after year. In this project, three individuals were tracked for more than a year, and they returned to the same wintering areas for two consecutive winters. This included two birds in Davao, Mindanao, and one in San Diego, Luzon. Notably, one buzzard was tracked to its breeding grounds in Sakju, North Korea, for two consecutive years.

Raptor migration is not always a seamless journey though. Among the 13 Grey-faced buzzards tracked by satellite, 5 of them were tracked for less than a month, and 3 of them only provided signals for about a month before going silent. Based on the positioning data, it is speculated that these eight buzzards may have encountered unexpected challenges and met their end, especially since most of their last recorded signals vanished over the open sea. It is highly likely that they possibly perished while crossing the ocean. Unlike on land, the open sea lacks favorable updrafts conducive to migration and places for resting in case of fatigue or encountering adverse weather. The East Asia Oceanic Flyway crosses vast expanses of water, highlighting the numerous challenges along this route.

With the advancement of satellite tracking technology, both the precision of positioning and battery life have evolved significantly. With current technology, researchers can obtain precise GPS coordinates. There are also lighter models available to minimize the impact of tracking devices on the individuals being monitored. By combining tracking technology with traditional observational records, it is believed that in the near future, we will gain a more comprehensive understanding of the status of migrating Grey-faced buzzard populations.

國際灰面管噟暋 遷徙猛禽高峰會 INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

4.5

Catch a glimpse! - Satellite Tracking of **Rehabilitated Individual**

WU Yinyin / Executive Director of Raptor Research Group of Taiwan

In May 2022, an injured bird was brought to the Raptor Rehabilitation Station of Grass Mountain Raptor Center. Surprisingly, it was a Grey-faced buzzard, the raptor with the second-highest population among migrating raptors in Taiwan, only surpassed by the Chinese Sparrowhawk. Collared Scop-Owls and Crested Goshawks are more commonly seen at the rehabilitation center due to their habitats overlapping with human settlements and their vulnerability to human-related threats. This makes them easier to find and be reported on by the public. In contrast, migrating raptors, despite their large numbers, spend relatively short periods in Taiwan. Most of them stay away from urban areas as well. It made the buzzard's appearance at the rehabilitation station a rare occurrence.

The buzzard was found lying on a golf course in Taoyuan. The golf course staff reported the bird and it was rescued and initially diagnosed by the Wild Bird Society of Taoyuan. They found that it was emaciated and suffering from diarrhea. The buzzard was transferred to the Grass Mountain Raptor Center's Raptor Rehabilitation Station for further treatment the following day.

This Grey-faced Buzzard was identified as a second-year immature male. Upon examination, no apparent wounds or injuries were found on its body. However, it exhibited miotic symptoms and had a history of diarrhea, raising the suspicion of poisoning. After receiving fluids and being fed with mice and frogs to supplement its nutrition, the buzzard's condition significantly improved.

After receiving treatment and rehabilitation, this buzzard made a full recovery. An evaluation confirmed that it had regained its vitality and flight capabilities to meet the criteria for release back into the wild. Special thanks to Professor Sun Yuan-hsun from National Pingtung University of Science and Technology for his support in providing a satellite tracking device to place on the buzzard. It was released near its original recovery location in Taoyuan on May 17th.

the injured juvenile Grey-faced buzzard was released back into the wild after receiving care and healing. Photo by Li Yi-jung

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

4.5

Following its release, it was expected the bird would immediately depart Taiwan. However, the tracking data said otherwise. In the first few weeks after its release, it continued to remain active near the release site, with a maximum distance of no more than 4 km from that area. It wasn't until May 29th that it left that site, departing from Linkou, along the coast to the north. It then made landfall in Sanzhi, New Taipei City, then passed through Shimen, Yangmingshan National Park, Taipei City, Sanchong, and Shulin in New Taipei City, completing an unexpected one-day tour of northern Taiwan in a clockwise direction. On June 1st, it set out again, heading northward along the coastline to Tamsui, but quickly turned back, roosting in Sanzhi that night. The following morning, on June 2nd, it departed from Baishawan again, attempting twice to leave but returning not far from the shore each time. Eventually, it returned to Taoyuan for the night. Afterward, its activity remained confined to shallow hilly areas in Taoyuan.

On June 18th, it suddenly flew south, roosting near Kuantaoshan in Miaoli on the first night. It continued its journey southward the next day, roosting at the border of Yuanlin and Fenyuan in Changhua. This location is known as a famous roosting site for Grey-faced Buzzards during the spring migration in the northern part of Baguashan. On the morning of June 20th, it took off to the northwest, near the sea by the Changhua Coastal Park. Unfortunately, the signal was lost over the sea, and no further updates were received. In summary, the tracking period lasted for 35 days, with the bird primarily staying in the foothills of Taoyuan. During the tracking period, there were three long-distance movements, two to the north and one to the south. The bird made attempts to head out to sea from locations including Linkou, Tamsui, Baishawan, Shimen, and the Changhua Coastal Park. As this was a secondyear immature bird, and considering the timing in May and June, both its age and the season add uncertainty to its behavior. Although researchers initially thought it might stay in Taiwan for the summer, it eventually ventured out to sea, with attempts made from both northern and central locations.

Despite being unable to track this Grey-faced Buzzard all the way to its breeding grounds, it was still quite exciting be able to track it as it transited through Taiwan. Hopefully, in the future, we will have the opportunity to unravel more mysteries about the migration routes of the Grey-faced Buzzard through updated tracking technologies.

5/29The tracked individual attempted to venture out to sea from Linkou but promptly returned to the land and circled back to its starting point. by Raptor Research Group of Taiwan

6/1 made another attempt to head out to sea and then promptly retraced its path by Raptor Research Group of Taiwan

6/18 Ventured out to sea from Changhua and subsequently lost its signal. by Raptor Research Group of Taiwan

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

Epilog

TSAI Yi Hua / Research Member of Ratpor Research Group of Taiwan

Solar pannel installed on the grassland adjacent to the Grey-faced buzzard roosting site. Photo by Tseng Chien-wei

The Grey-faced buzzard, which migrates through Taiwan in large flocks during the spring and autumn seasons, was historically hunted and consumed as food or sold in the specimen trade. After long-term education and outreach efforts, the enforcement of wildlife protection laws, and the changing conservation mindset of the public, as well as evolving dietary preferences, the risks associated with hunting the buzzard have markedly increased. Meanwhile the profits made from hunting no longer match those of the past. In recent years, only a small number of hunting cases have been recorded.

The Kenting National Park Autumn Migration Raptor Count has been taking place since 1989. The large amount of data collected over the years reveal a stable and increasing number of migrating Grey-faced Buzzards. It is assumed that the hunting pressures across Japan, Taiwan, and the Philippines have eased over the years, allowing more individuals to survive their migration journey and return to their breeding grounds. Wildlife rehabilitation units, academia, and raptor observation enthusiasts have also contributed to a more comprehensive understanding of the Grey-faced Buzzard's migratory ecology through exchanges involving satellite tracking, weather radars, and observational records.

While the population of buzzards is gradually recovering, it still faces threats. The expansion of settlements, the aging of rural populations, and shifts in industry have led to the gradual replacement and fragmentation of the foothills and Satoyama environments adjacent to these settlements. New homes, factories, and roads as well as the rapid proliferation of solar panels encroach upon forests and agricultural lands. Offshore wind turbines stand erect one after another along migration corridors, standing between the migratory birds and their destinations. These issues encompass the most pressing crises faced by migratory raptors in Taiwan.

In the past, we attributed the Grey-faced Buzzard's plight to hunting activities and a small group of hunters. Now it is a concern that involves us all. Scholars and conservationists must strengthen their roles by integrating migration data from countries along the flyway and conducting in-depth studies on migratory ecology. They must also provide an honest depiction of the Greyfaced Buzzard's population trends and behaviors. Utilizing this data, they can offer recommendations for safeguarding critical habitats and provide recommendations for the location and design of renewable energy facilities. The role of government entities should involve regulating the placement of green energy projects in appropriate locations. They should also establish a system and communications platform that allows for the consideration of

various perspectives during the planning phase of setting up the projects.

Addressing future conservation issues concerning migratory raptors will rely heavily on effective communication, mutual understanding, and oversight among numerous professionals from diverse fields, local communities, and society at large. We should embark on a reevaluation of whether today's pursuit of economic growth, which involves the extraction of vast resources and the cost of biodiversity, genuinely enhances the quality of human life and the well-being of the environment.

The Grey-faced Buzzard continues to soar between the islands of East Asia each year, gracefully descending into forests bathed in the glow of the setting sun, preparing for rest, and embarking once more at the break of dawn.

No one should miss this spectacle.

The Grey-faced buzzard passed through a wind turbine. Photo by Tsai Yi-hua Epilogue

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

Photo by Tsai Yi-hua

Reference

JOE 愛玩(2006)。為灰面鵟請命。檢自: https://e-info.org.tw/against/2001/against-01110801.htm NPOst編輯室(2017)。保育與發展的兩難,「生態旅遊」是否為解方?/「森社場所」專訪。檢自:https://npost.tw/archives/39841 公共電視(2002)。《我們的島》179集 - 灰面鷲的天空。檢自 https://www.youtube.com/watch?v=-ofBmIXuhJ4 公共電視(2003)。《我們的島》231 集 - 末日鵟鷹。檢自 https://www.youtube.com/watch?v=K2J_V_EQRMQ 公共電視(2007)。《我們的島》424集-老鷹和他的朋友們。檢自 https://www.youtube.com/watch?v=nD6I1FR3-gk 公共電視(2012)。《我們的島》674 集 - 南島不靠海。檢自: https://e-info.org.tw/against/2001/against-01110801.htm 王桂青、鄭漢文、賴子心(2015)。雅美族鳥類文化。新竹市:國立陽明交通大學出版社。 台灣猛禽研究會(2006)。鷹緣際會:墾丁國家公園觀鷹手冊。屏東縣:墾丁國家公園管理處。 市田則孝(1979)。台湾レポート。野鳥,395,頁489。 市田則孝(2005)。環境保護,激動の30年-サシバは誰が守る?,BIRDER,4,頁76-78。 何明修(2001)。台灣環境運動的開端:專家學者、黨外、草根(1980-1986)。台灣社會學,第2期,頁97-162。 吳森雄(1980)。滿州護鷹記。野鳥。5月,第1卷第2期。 李璟泓(2011)。1862年史溫侯與一對採購自天津的灰面鵟鷹標本。檢自:https://e-info.org.tw/against/2001/against-01110801.htm 李璟泓(2011)。1864年史溫侯收集的灰面鵟鷹標本疑點。檢自:https://e-info.org.tw/against/2001/against-01110801.htm 李璟泓(2013)。鐵砧山國姓鳥傳奇。檢自:https://e-info.org.tw/against/2001/against-01110801.htm 林文宏(1997)。台灣鳥類發現史。台北:玉山社。 林文宏(2020)。猛禽觀察圖鑑。台北市:遠流。 林世松、林孟雄(1986)。滿州地區獵捕灰面鷲之調查。墾丁國家公園管理處研究報告。 林瓊瑤(2002) 。墾丁國家公園保護候鳥歷程。載於 葉世文,蕭清芬,李養盛,林培旺,蔡佰祿,林永發,許文龍(主編), 臺灣國家公園史 1900-2000。台北市:內政部營建署。 唐禎禧(2018)。2016 年氣象雷達觀測灰面鵟鷹在台灣東部海面的秋季遷移模式。屏東科技大學野生動物保育研究所碩士論文。 陳美惠(2010)。墾丁國家公園環境資源管理暨夥伴關係發展計畫-社頂部落。檢自:https://e-info.org.tw/against/2001/against-01110801.htm 曾建偉(2022)。111年度墾丁國家公園秋季過境猛禽族群調查計畫。墾丁國家公園研究報告。 曾瓊慧、林俊男(2020)。社區與生態旅遊整合發展關鍵因素之研究-以屏東縣滿州鄉里德社區為例。 屏東科技大學高階經營管理碩士在職專班學位論文。 黃馨儀(2016)。利用氣象雷達探討 2014 年和 2015 年秋季灰面鵟鷹在恆春半島的遷移模式。屏東科技大學野生動物保育研究所碩士論文。 廖于瑋(2018)。八月豆。旬味高雄,29,頁 2-5。 漢聲雜誌社(1984)。漢聲小百科 10-十月的故事:西伯利亞來的灰面鷲。台北:漢聲雜誌社。 劉小如、郭達仁、曾美麗(1991)。墾丁國家公園日行性猛禽研究。墾丁國家公園研究報告。 劉小如(2008)。灰面鵟鷹衛星追蹤計畫期末報告。行政院農業委員會林務局農業管理計畫 劉小如(2009)。灰面鵟鷹衛星追蹤計畫期末報告。行政院農業委員會林務局農業管理計畫。 劉小如(2010)。灰面鵟鷹衛星追蹤計畫期末報告。行政院農業委員會林務局農業管理計畫。 劉小如(2011)。灰面鵟鷹衛星追蹤計畫期末報告。行政院農業委員會林務局農業管理計畫。 樋口広芳(2013)。日本のタカ学:生態と保全。東京都:東京大学出版会。 蔡乙榮、唐洪軒、林瓊瑤(2003)。墾丁地區秋季遷徙性猛禽過境族群與過境期調查研究(1990 年 - 2002 年)。 檢自:https://e-info.org.tw/against/2001/against-01110801.htm 貓頭鷹(2000)。灰面鷲悲歌。檢自:https://e-info.org.tw/against/2001/against-01110801.htm 賴鵬智(2019)。墾丁國家公園社區生態旅遊發展過程及現況。檢自:https://m.xuite.net/blog/wild.fun/blog/587822223 謝季剛(2017)。戰後臺灣鳥學知識與體系的形塑與推廣。國立政治大學臺灣史研究所碩士學位論文。 The Asian Raptor Research and Conservation Network (2014). Results of Collaborative Survey of Migratory Raptors in South East Asia. ° 檢自:https://e-info.org.tw/against/2001/against-01110801.htm Swinhoe, R. (1864). Letters from Formosa. Ibis, 6, 429. Wu, Y.Y., Fujita, G., Higuchi, H. (2006). What landscape elements are correlated with the distribution of wintering Grey-faced Buzzards Butastur indicus in the Sakishima Islands, southwestern Japan? Ornithological Science, 5(2), 157-163.

Acknowledgments

We extend our gratitude to the numerous interviewees, providers of reference materials and photographs, authors, as well as the government agency that have generously contributed to the production funds. Their invaluable information, unwavering responses to interviews, and support have been instrumental. Without the resources and assistance from all parties involved, we would not have been able to complete this publication. We are especially grateful for the following people and organization: Ku Chien-mou, Hsu Ming-cheng from Lide Community Development Association; Chao Ming-kun from Sheding Tribal Development and Culture Promotion Association ' Ku Ching-fang from Gangkou Community Development Associatio, for sharing the local hunting customs and their personal journeys in engaging in interpretive work; Section Chief Chen Xuan-wu, interpreter Hsieh Gui-zhen, interpreter Lin Chiung-yao and Associate Technical Specialist Tsai Yi-jung from Kenting National Park Headquarter, for share their experiences in conservation efforts for Grey-faced buzzard and the development of community ecotourism; Lin Wen-hun, Chang Hung-ming, Corry S.C. Chen, Lucia Liu Severinghaus from Raptor Research Group of Taiwa, for their contributions in sharing the history of Grey-faced buzzard conservation in Taiwan and their experiences in conducting raptor migration survey; Lin Wei-yuan for share the personally gathered literature and materials; Former National Park police Hsiao Zai-quan for sharing his law enforcement experience in combating poaching. To Chang Hung-ming, Lee Jing-hong, Lee Yi-hsin, Roger C. J. Wang, Sun Yuan-hsun, Tsai Yi-hua, Tseng Chien-wei, Wu Yinyin, Yang Chien-ho, for contributing their expertise, experiences, and research findings to write the manuscripts for this publication; To Scott Pursner from Taiwan Wild Bird Federation, for editorial review and polish the manuscript; To Lin Yi-Jung from iá-siok, who provision of Taiwanese language translations.

Special thanks to Kenting National Park Headquarters, Pingtung Branch of Forestry and Nature Conservation Agency, Yushan National Park Headquarters, North Coast & Guanyinshan National Scenic Area Headquarters, Maolin National Scenic Area Headquarters, National Nature Park Headquarters, Taiwan Biodiversity Research Institut, Pingtung County Government, Manjhou Township office, Taiwan Wild Bird Federation, Wild Bird Society Of Changhua, National Pingtung University of Science and Technology, National Chiayi University, for supported the production of this publication and the 2023 International Summit on Gray-faced Buzzard and Migratory Raptors.

This publication undoubtedly contains numerous omissions and regrets left unaddressed due to constraints of time and space. We hope to continue revising and perfecting it in the future. If there are any errors or inappropriate descriptions within the content, we welcome readers to provide feedback at any time.

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS

Special Issue-2023 International Summit on Grey-faced Buzzard and Migratory Raptors

Copyright © 2023 by Raptor Research Group of Taiwan

All rights reserved. No part of this publication may be reproduced, or transmitted in any form or by any means, electronic, mechanical, photocopying, or otherwise, without permission from the authorization of copyright owner.

To request permission, contact rrgt@raptor.org.tw

Published by Raptor Research Group of Taiwan

Kenting National Park Headquarters, National Park Service, Ministry of the Interior

Edited by Tsai, Yi-Hua 886-2-2362-5560 No. 7, Jianye Rd., Shilin Dist., Taipei City 111095 , Taiwan (R.O.C.)

Cover and Interior Design: Density Design Printed in Taiwan

Recommended citation (book)

Tsai, Y.-H. (Ed.), 2023. Special issue - 2023 international summit on Grey-faced Buzzard and migratory raptors. Raptor Research Group of Taiwan, Taipei, Taiwan.

Recommended citation (example chapter)

Tseng, C.-W., 2023. Identification Features and Migratory Ecology. In Tsai, Y.-H. (Ed.), Special issue - 2023 international summit on Grey-faced Buzzard and migratory raptors (pp. 4–7). Raptor Research Group of Taiwan, Taipei, Taiwan.

Photo by Tseng Chien-wei

INTERNATIONAL SUMMIT ON GREY-FACED BUZZARD AND MIGRATORY RAPTORS