1. Introduction

Few issues display more clearly the competition between China’s drive to become economically developed and to conserve biodiversity than hydropower development. This is the subject of China’s most recent environmental controversy. In August 2003, the National Development and Reform Commission, a powerful economics super-ministry, authorized construction of a 13-station dam along the Nujiang (Nujiang) in Yunnan Province. After at least a decade of construction, the dam would become the world’s largest. It would produce more electricity than the Three Gorges Dam, helping China address energy shortages while bringing jobs to poor residents of southwestern China and revenues to the provincial and local governments.

However, the Nujiang is one of only two large Chinese rivers that has not yet been damned. Originating in the Qinghai-Tibetan plateau, it flows through Yunnan into Myanmar, where it is named the Salween River. The river passes through spectacular gorges, and its waters wash habitats of many endemic plant and animal species. Indeed, it is one of China’s remaining ‘hotspot’ areas of rich biological diversity, and justifiably is called an ‘oriental treasure garden’. It is part of a UNESCO world heritage site.2

Reaction to plans for dam construction was swift and far-reaching. Local residents feared displacement (potentially affecting more than 50,000 farmers), loss of water for cultivation of crops, and depletion of fish and other species upon which residents depend. Although most local officials and scientists supported the project, national-level scientists and environmental non-governmental organizations (ENGOs) questioned the need for yet another expansive hydropower development that would put so many environmental values at risk. International forces became engaged in the Nujiang controversy as well, including downstream neighbors of China, the International Rivers Network and other international NGOs, even the World Bank.

No organized umbrella movement formed to challenge government plans to dam the Nujiang. Instead a loose collection of individuals and groups – including scientists, journalists, university students and NGO representatives – worked through a series of poorly coordinated, consciousness-raising activities: they conducted study tours of the region, held workshop sessions, spread flyers describing the risks of development, sponsored exhibits of photos from the area, sent petitions to government officials, established websites and communicated via the Internet. They did not attack the government.
instead they appealed to China’s acceptance of sustainable development goals and adoption of environmental impact assessment legislation, asking that these goals and procedures be observed. They also worked with the State Environmental Protection Administration, which entertained criticism of the project and questioned its environmental implications. One commentator called the Nujiang protests emblematic of ‘a new social movement’ in China that has avoided ‘confrontational methods’ and instead adopted a moderate strategy of advocacy.³

In April 2004, Premier Wen Jiabao surprised observers when he halted the project, asking that further studies be conducted. He acknowledged opposition and called for careful consideration of major hydroelectric projects ‘that have aroused a high level of concern in society, and with which the environmental protection side disagrees.’⁴ This was the first recorded instance of delaying a major state project; it was the first acknowledgment by high state officials of the new power of ENGOs in Chinese society. Opponents of the Nujiang project criticized the environmental assessment as lacking ‘public support’ and unlikely to pass ‘public scrutiny’, because it was not fully transparent.⁵ Indeed, some 61 NGOs (including Friends of Nature, China’s oldest) and 99 individuals memorialized the premier, asking that the environmental assessment be published. While it seems likely that some parts of the Nujiang project will proceed, and unlikely that the authoritarian state will disclose fully all decisional documents, just the public venting of the controversy is a breakthrough. We explore the ramifications of the Nujiang controversy in a more detailed consideration of the case in Chapter 8.

In the remote hills of Hsinchu county, Taiwan, in a place called Smangus, lives a small community of aborigines, of the Atayal tribe. Immigrants from China forced ancestors of these aborigines to the hills in the nineteenth century; then Japanese colonists pushed them further inland to harvest the acres of hardwood crowning Taiwan’s mountain peaks. The Atayal, however, refused to cut down the oldest cypress trees, believing that they possessed spirits that would haunt whoever felled the trees.⁶

Until 1991, the two dozen families of Smangus lived by collecting mushrooms, which they carried for six hours, over mountain trails, to the nearest market. However, in 1991, they discovered a stand of some 1000 rare Formosan cypress trees dating from 2500 years ago, which revolutionized village life. The state and county collaborated in the construction of a road that reached the village in 1996, ending its isolation. However, the road opened the village to floods of tourists. In the Chinese New Year celebration of 1997 alone, 1200 tourists in 500 vehicles entered Smangus. They carved initials on the cypress trees, invaded village plots and homes, and left piles of garbage.⁷

This prompted villagers to organize in order to protect their environment. They established a tribal foundation and deeded the cypress and all existing...
tourist facilities to it. Operating as a commune, this Christian aboriginal community established rules to protect its environment and culture. The Presbyterian Church played an important role in educating the Atayal and helping them establish the collaborative management system of the tribe. Each community family assumed responsibilities for farming, serving tourists, and maintaining community facilities such as roads and the local culture center. A sign at the village entrance expresses the village spirit: ‘Smangus is God’s Tribe’.

Most eco-tourism in Taiwan (and China) has brought economic benefits at the expense of biodiversity values. In Smangus, however, the community has taken advantage of the regime’s liberal provisions for self-government. Its comprehensive conservation plan excludes penetration by large tourist enterprises. The community limits tourist numbers and assigns visitors to community-owned guesthouses. Regulated tourism now benefits the community as a whole, which has a new school, restaurants, even an Internet connection, without threatening the ecosystem.

These two cases introduce the ongoing conflict between economic development, typically pursued by business firms and governments, and communities seeking to preserve and protect local human and ecosystem values. We cannot generalize from the examples to all other instances of environmental conflict in China and Taiwan today, yet they express important differences of governance. As the story in this book unfolds, we also note similarities in approach and method to environmental protection, irrespective of differences in political system and economic development. First, though, we define our subject and outline the approach.

**DEFINITIONS**

Biological diversity (biodiversity) refers to the variety of living organisms on earth, the range of species, the genetic variability within each species, and the varied characteristics of ecosystems. Biodiversity sustains life on earth. Today, loss of species and their habitats is a problem of global dimensions; it potentially undermines the equilibrium supporting ecological security.

In this study we introduce the problems and prospects of biodiversity loss and conservation in mainland China and Taiwan, from the perspective of governance. In addition to the work that political institutions and administrative agencies do to conserve species and ecosystems, we are also concerned with individuals, groups and communities as they influence and are influenced by the state. We discuss and examine informal processes as well as formal institutions and practices. China and Taiwan are thought to hold between 10–13 percent of the world’s known species. For this reason, and given the large number of endemic species there, government policies and practices, as
well as informal processes that attempt to conserve biodiversity, are not only in the interest of China and Taiwan, and the East Asian region, but also the planet as a whole.

We introduce the topic of the governance of biodiversity conservation through a brief examination of the nature of the problem and then a discussion of the significance of China and Taiwan in the global biodiversity challenges. Following that, we consider the root and primary causes of biodiversity loss. We turn then to a discussion of the contribution that comparative analysis – in this case, a comparison of mainland China and Taiwan – makes to an understanding of biodiversity conservation. The chapter concludes with an outline of the topics to be covered in this book.

THE PROBLEM OF SPECIES AND HABITAT LOSS

It is difficult to understand precisely the nature of the problem of biodiversity loss, because the total number of species in the world is unknown. However, a recent United Nations study estimates the total number of existing species as about 13 million, of which less than 2 million have been described.\(^\text{10}\) Of the described species, estimates of biodiversity loss vary widely, but well over 1000 species per year may be disappearing from the Earth, compared to only 1–4 species per year from the fossil record.\(^\text{11}\) The most intensely studied species are plants and chordates (including fish, birds and mammals). Studies estimate that the impact of human activities on other species has threatened the continued existence of 18 percent of mammals, 11 percent of birds, 8 percent of plants, and 5 percent of fish.\(^\text{12}\) Biodiversity loss has enormous consequences for humans. In economic terms alone, global threats to species and ecosystems may cost at least US$33 trillion.\(^\text{13}\) The increasing loss of species threatens purification of air and water, food security, complex compounds used in medicines, and myriad other links in the life chain.

These are global figures. When we turn to the risks to biological diversity in China, in view of the enormous pressures of population and economic activities, it is difficult to be optimistic. These pressures have led to a greater threat to biodiversity in China (and also in Taiwan) than elsewhere. Compared to the global rate in species loss of 10 percent, the estimate for China is larger, about 15–20 percent.\(^\text{14}\) The recent *China Species Red List* indicates that 40 percent of mammals, 7 percent of birds, 28 percent of reptiles, 40 percent of amphibians, and 3 percent of fish are at risk, and a greater percentage of endemic than non-endemic species appear in the threatened column.\(^\text{15}\) A recent Chinese Academy of Sciences report notes:

\(^{1}\)As a developing agricultural country with a huge population, China depends more on biodiversity than others do. However, China’s biodiversity is most severely...
threatened because of enormous pressures of population and rapid growth of the economy, which exerts heavy impacts on biological resources. It is estimated that 40 percent of ecosystems in terms of area are degraded severely, 15–20 percent of species being highly threatened, and genetic diversity suffers greatly from heavy erosion.\textsuperscript{16}

The issue of the loss of biological diversity – in species and their habitats – is thus of manifest importance. Few other environmental issues are so immediately pressing, with such broad ramifications for long-term human survival on the planet.

**SIGNIFICANCE OF SPECIES AND ECOSYSTEMS IN CHINA**

China is considered one of a handful of ‘mega-diversity’ countries.\textsuperscript{17} An early study of China’s biodiversity had this to say about China’s significance:

‘China is one of the world’s richest countries in terms of biodiversity. It owes its great natural richness to its large size, great physical range of conditions and the fact that it contains ancient centers of evolution and dispersion together with the fact that many areas served as Pleistocene refugia during the temperate species decimations of the Ice Ages.’\textsuperscript{18}

China is the largest country in Asia, and almost as large as all of Europe. It covers 9.6 million square kilometers, which is 6.5 percent of the area of the planet. At its greatest extent, China stretches for almost 4000 kilometers from the Pacific Ocean in the east to the Sino-Kazakhstan border in the west, and some 3200 kilometers from its southern frontier with Vietnam to the northern border at the Heilongjiang River.

Eastern China generally is low-lying; it consists of the basins of the Yellow (Huang He), Yangtze (Chang Jiang), and Pearl (Zhu Jiang) rivers. A series of mountain ranges, deserts, and plateaus occupy western China. The Tibetan plateau, the average elevation of which exceeds 4000 meters, is the most extensive upland area. It is bounded on the south by the Himalayas and on the north by the Kunlun range. Other major mountain ranges in western China include the Tian Shan, Pamir, and Altai. The main desert areas are the Takla Makan, Tarim Basin and Dzungarian (Zuangker) Basin. Semi-deserts and steppes cover almost the entire northern border area of China through Ningxia and Inner Mongolia. Extensive mountainous areas are also found in Gansu, Sichuan, and Yunnan, and south to the borders with Myanmar, Laos, and Vietnam.\textsuperscript{19}

China’s varied land ecosystems include forest, shrub, grassland, meadows, desert, mountain tundra, and agricultural ecosystems. Each ecosystem also varies by climatic conditions and categories of species. For example, forests
include coniferous, mixed, and broad-leaf types; deserts include dwarf-tree, shrub, semi-shrub, and mat semi-shrub deserts. Marine ecosystems include estuaries, inter-tidal belts, saline marshes, mangrove forests, coastal ports, seaweed beds, coral reefs, continental shelf, and open oceans and islands.

Table 1.1 below presents information on the number of species in China as compared to the world totals. The extremely varied ecosystems of China as

Notes:
5. Liaoning 16. Henan 27. Fujian
8. Tianjin 19. Anhui 30. Macau
9. Shanxi 20. Hubei 31. Hong Kong
11. Gansu 22. Guizhou 33. Taiwan

Source: Adapted from www.theodora.com/maps.

Figure 1.1 Map of China
as the large number of endemic species, present large challenges to those who seek to preserve biodiversity. Table 1.1 confirms that efforts to preserve China’s species and ecosystem diversity are very much in the interests of the planet.

### TAIWAN’S BIODIVERSITY CHALLENGES

Taiwan is an island located off the southeastern coast of mainland China. Taiwan’s coastline stretches up to 1600 kilometers, embracing a variegated topography including coral reefs, lagoons, wetlands, barriers, plains, basins, and hills. Mountains and valleys form the central core of the island, differing in height by nearly 4000 meters above sea level, and temperatures change with elevation. Heavy precipitation and a humid environment in Taiwan foster diverse plant communities across tropical, subtropical, temperate and alpine zones. The island has a rich and unique animal kingdom.

Taiwan has abundant biological resources and is home to about 150,000 species or 1.5 percent of the world’s species. Taiwan is famous too for the richness and diversity of its plant life, with over 4000 vascular plant species classified to date. Table 1.2 below shows the number of Taiwan’s recorded species.

Portuguese explorers of the sixteenth century called Taiwan ‘beautiful island’ (*Ilha Formosa*) for its unique geobiological environment. However,
Taiwan's long-term emphasis on economic development and its rapid industrialization have created significant adverse impacts and endangered a large number of species on the island. It currently faces serious crises over environmental pollution, destruction of habitat, depletion of natural resources, and disappearance of species.\(^{24}\)

**CAUSES OF BIODIVERSITY LOSS**

The root cause of loss in species and their habitats is the growing number and encroaching behavior of human beings and their institutions.\(^{25}\) China has the world’s largest population, now in excess of 1.3 billion (about 22 percent of the global total). Taiwan’s population increased rapidly from 6 million, at the time of colonization by Japan (1895–1945), to 23 million in 2000. The spread of human settlement crowds other species. The agricultural, extractive and industrial activities undertaken to support growing human populations directly and indirectly imperil other species and their habitats.

Conventional explanations of biodiversity loss point to a series of direct causes: deforestation, desertification, air/land/water pollution, transboundary air pollution, overfishing, invasive plants and animals, climate change, and certain economic development activities. Each of these is a global environmental problem, yet each begins in specific districts and regions of individual nation-states. China and Taiwan are contributors to species loss that has global ramifications; activities of Chinese and Chinese institutions also contribute to biodiversity loss in other nations. The relationship of these

<table>
<thead>
<tr>
<th>Category</th>
<th>Species in Taiwan (endemic)</th>
<th>World total</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammals</td>
<td>69 (17)</td>
<td>4170</td>
<td>1.7</td>
</tr>
<tr>
<td>Birds</td>
<td>500 (15)</td>
<td>9198</td>
<td>5.4</td>
</tr>
<tr>
<td>Reptiles</td>
<td>109 (28)</td>
<td>6300</td>
<td>1.73</td>
</tr>
<tr>
<td>Amphibians</td>
<td>42 (10)</td>
<td>4148</td>
<td>1.01</td>
</tr>
<tr>
<td>Insects</td>
<td>180 000</td>
<td>1000 000</td>
<td>18.0</td>
</tr>
<tr>
<td>Fish</td>
<td>2775</td>
<td>19 056</td>
<td>14.6</td>
</tr>
<tr>
<td>Pteridophyta</td>
<td>685 (72)</td>
<td>12 000</td>
<td>5.7</td>
</tr>
<tr>
<td>Gymnosperm</td>
<td>28 (18)</td>
<td>850</td>
<td>3.3</td>
</tr>
<tr>
<td>Angiosperm</td>
<td>3 600 (1 000)</td>
<td>260 000</td>
<td>1.4</td>
</tr>
</tbody>
</table>


Taiwan’s long-term emphasis on economic development and its rapid industrialization have created significant adverse impacts and endangered a large number of species on the island. It currently faces serious crises over environmental pollution, destruction of habitat, depletion of natural resources, and disappearance of species.\(^{24}\)
environmental issues and problems to biodiversity loss will be clearer after discussing them with examples.26

Deforestation is an elemental cause of biodiversity loss globally and in China and Taiwan, as forests are home to more than one-half of all species. Population growth and the timber industry are the major factors causing a substantial reduction in forests.27 About half of China’s forests have been destroyed since 1949. Today, forests cover 134 million hectares, 14 percent of the land area, but few virgin forests remain. In recent years, they have decreased at an annual rate of 5000 square kilometers. In Taiwan, the amount of forested land fell from 2.3 million hectares in 1945 to 1.87 million hectares in 1993, a decline rate of 19 percent.28 Mining and logging have deforested mountains, which causes erosion, reduced water storage capabilities, severe sandstorms in northern China, and species and habitat loss. About 600,000 hectares of Taiwan’s 1.3 million hectares of hilly areas are eroded (and 300,000 hectares are severely eroded).29

Agricultural development and housing settlements have also reduced forest and vegetative cover. For example, to increase production, farmers in Taiwan have planted crops like areca on marginal lands and forest reserves. This has caused a heavy loss of topsoil and severe damage to water and soil conservation. According to a survey by the Soil and Water Conservation Bureau of Taiwan province, 9.2 percent of the hillsides on Taiwan were over-used in 1997.30 As will be noted below, in China government policies of afforestation, reforestation, and converting cropland to grassland and forests have ameliorated some of the deleterious effects of deforestation, but because they replace natural forests, they have “altered the variety, quality, and the pattern of delivery of plant and wildlife habitats that had been provided previously”.31 The massive reforestation and afforestation programs have not yet curbed soil erosion, which threatens more than one-third of China’s territory.32

Sand and desert cover about 27 percent of China’s land area. The expanse of deserts has increased dramatically in the contemporary period (desertification annually claims an additional 3400 square kilometers)33 and is correlated with the increase of sandstorm activity in north China.34 Desertification in parts of China is attributable to deforestation as well as to poor protection and overutilization of water resources in arid and semi-arid regions of the north and west. Increased desertification in some parts of China also is attributable to agriculture, commercial, and residential development.

Pollution of air, land, and water is a third direct cause of species and habitat loss. As a number of observers have noted, China has eight of the world’s ten most polluted cities, and air pollution is found in rural as well as urban areas. China uses coal to supply nearly 70 percent of its energy needs, and coal is a heavy environmental polluter. Coal burned in factories emits sulfur dioxide, carbon monoxide, and heavier particulates that until recently have not been...
monitored by government agencies. Coal is also used for home cooking and heating.

Chemical and other industrial facilities pollute land and waters with toxic contaminants, diminishing plants and a host of invertebrate organisms. An extreme example is the rapid growth of Taiwan’s semiconductor industry. For the past 20 years it has caused severe damage to the environment. Huge loads of chemicals and toxic materials are flushed into the air, water and land, constituting a danger for humans and other species. Illegal dumping of toxics and waste discharges by the high-tech industry in Hsinchu, Taipei, and Kaohsiung contaminate streams and creeks and burden waste incinerators, wastewater treatment plants, and sludge farms.

Air and water pollution caused by improper production and use of pesticides has become increasingly serious recently. As Taiwan’s agricultural development progressed, fertilizer use tripled between 1952 and 1998, leading to infertile, acidified soils and gross drinking water contamination. Waste water polluted agricultural lands to the point that 30 percent of Taiwan’s rice is contaminated with toxic heavy metals. Food in Taiwan is also contaminated with pesticides, and farmers increasingly do not eat what they sell at the market. A large number of the rivers, streams, and lakes in China and Taiwan have been choked of all life by sewage, agricultural field, and industrial plant runoff. In China, ‘[M]ore than two-thirds of lakes are eutrophic to some extent and in 10 percent of lakes eutrophication has reached an alarming level’. Air pollution from neighbors affects China, and China’s atmospheric pollution (including airborne sand particles) affects other nations in East Asia, North America and even Europe. Acid rain falls on forests, grasslands, and croplands; it also increases the toxicity of rivers and lakes. Altogether, these forms of pollution endanger habitat that is critical for the continued survival of some animals, a large number of plants, and thousands of micro-organisms.

Marine and freshwater fish are a major protein source for the Chinese, but increased fishing (a global environmental problem) has rapidly depleted supplies. Intensive fish harvesting also has threatened species that lack much economic value, such as sea grasses, sea anemones, mollusks, and other forms of marine life. Illegal fishing practices – poisoning, dynamiting, electrocuting fish – causes shrinkage of fish stocks and long-term damage to marine coastal and fresh water areas. Sewage dumping off coastal cities has also contaminated ocean habitats.

Foreign animals and plants have invaded many ecosystems in China and Taiwan, with adverse consequences for species and habitats. For example, in south China invasive algae have bloomed in aquatic ecosystems, causing eutrophication and the demise of endemic aquatic species. Invasive plants have challenged endemic species in many regions of China.
Climate change is a cause of species and habitat loss on a global basis, and is particularly evident in China. Today China is the world’s second largest emitter of greenhouse gases (after the United States). Moreover, it is the chief global contributor to ozone depletion. The increase of average temperatures has led to greater evaporation of water and water insufficiency in many parts of northern China, calling for rationing and politically unpopular price hikes. Several of China’s northern and western wetlands, habitat to swamp grasses, and migratory bird species, among others, have dried out.

We mentioned economic development as a generic root cause of biodiversity loss. In China, some large-scale economic development projects have directly disrupted ecosystems and affected species’ survival. Most notable have been the large hydro-electric power developments, such as the Three Gorges Dam, and more recently the dam construction on the upper reaches of the Yangtze River and proposed construction of dams on the Nu River in Yunnan Province. Construction of large dams usually necessitates the resettlement of population. It may flood cultural heritage sites. Rising water levels also flood animal and plant habitats. Increased turgidity of waters imperils fish and the phytoplankton and other micro-organisms critical to aquatic life.

Smaller-scale examples of direct impacts of economic development on biodiversity loss include gathering of plants and herbs for use in traditional Chinese medicine. Although banned internationally and nationally, illegal trafficking continues in rhinoceros horns, tiger bones and bear bile. Poachers make huge profits from sales in trade of these exotic Chinese medicine ingredients. Other rare and endangered mammals such as Tibetan antelope, pandas and golden monkeys are poached also.

This brief survey pictures the abundant threats to species and habitats in China and Taiwan. The threats are created by human behaviors and are not naturally occurring. They affect diverse bioregions in China and Taiwan, and they present unique challenges to the governance of biodiversity conservation. Natural disasters – typhoons, earthquakes, floods – also cause environmental destruction. Until recent years, damage from these episodic natural events could be meliorated over time. However, accelerated human settlement, rapid economic growth and particularly deforestation have exacerbated the effects of natural disasters. Since 1996, Taiwan has experienced ‘debris floods’ and highly destructive mudslides; in 1998, the Yangtze River floods in China were among the worst of that century.

**COMPARATIVE ANALYSIS AND BIODIVERSITY CONSERVATION**

Comparative politics is a sub-field of political science, which investigates the national (and sub-national) structures and institutions of countries; their
political processes and values. Scholars in this sub-field may compare one country to a model or pattern; they may compare a small number of countries, either with mostly different or similar attributes; or they may compare a large number of nations, perhaps all, which implies the use of quantitative analysis.

Whatever set of countries is examined, the objective of comparative politics is to understand and explain the outputs and outcomes of state behavior – for example, the biodiversity conservation policies of nations and the extent to which they have been effective in protecting endangered species and ecosystems. The comparison process tells us whether the same policy outcomes are the product of similar or different structural and behavioral arrangements within nation-states, and whether the same kinds of power arrangements produce similar or different results.

This book compares the biodiversity conservation policies and practices of China and Taiwan, treating them for research reasons both as sovereign nation-states. There are important similarities between China and Taiwan. Most people in both countries are Han Chinese; most can read Chinese and speak Mandarin (Putonghua) – the official language of both China and Taiwan to this day. They share a Confucian heritage, memories of the world’s oldest continuous civilization, the social codes of the Chinese family system, and customs such as the Chinese New Year. During the nineteenth century, when Taiwan clearly was under the control of the Qing Dynasty (during which period it became a province of China), both jurisdictions experienced the humiliations of foreign imperialism and colonialism.

There are also large disparities between the economic situation of China and Taiwan. When the Nationalist (Kuomintang) leaders of the Republic of China lost the civil war to the Chinese communists in 1949, they removed their government and military to Taiwan. From 1949 to the early 1990s, the two regimes had little contact. By the late 1960s Taiwan’s entrepreneurs had developed a robust capitalist economy, and by the twenty-first century Taiwan had a per capita income greater than US$13,000, qualifying it as a rich nation. China’s leaders, on the other hand, operated a socialist economy until 1978 when Deng Xiaoping began market reforms. Although China’s economy grew quite rapidly in the 1980s and 1990s, it remains in 2005 a developing nation with a middle class considerably smaller than Taiwan’s proportionally and a per capita income one-tenth that of Taiwan.

The political differences between China and Taiwan are equally large. Since the establishment of the People’s Republic in 1949, the Communist Party has directed the state; it brooks no opposition to party rule. In contrast, by the late 1980s, Taiwan’s authoritarian leaders had acquiesced to the establishment of opposition parties and movements; in the 2000 elections, the leader of the opposition party, Chen Shui-bian, won the presidency, a sign of democratic
consolidation. In 2005, Taiwan is a democratic state and China remains an authoritarian polity.

The purpose of comparative analysis is to explain important political outcomes, such as degree and extent of environmental protection. It does so by testing hypotheses or generalizations in a relatively controlled setting. In this comparison, we can control many dimensions of culture and society that would confound analysis were we to compare China and Taiwan to western nations. Throughout this book, we will be testing whether differences between China and Taiwan in economic and political development have any significant bearing on the differences in policies and practice of biodiversity conservation.

PLAN OF THE BOOK

The argument of this book unfolds in seven substantive chapters. Chapter 2, ‘Historical Patterns’, begins with a description of traditional orientations to nature and conservation in China, and reviews elite orientations, such as Confucianism and Taoism, popular religious orientations, ancestor worship, and animism of minority groups. It considers the long history of dynastic rule and perceptions of national development informing behavior of elites. Then, it turns to the growth of capitalism in the new Republic of China, including economic development pressures on the environment. The next section of the chapter focuses on Mao’s China, radical political change through revolution, which resulted in what some observers have called ‘attacks on nature’, followed by a discussion of economic reforms under Deng Hsiao-ping and his successors. Taiwan’s political change since 1988 is discussed briefly. This chapter concludes with analysis of changes in public opinion on environmental issues in both China and Taiwan.

Chapter 3 describes the current status of species and ecosystems in China and Taiwan. First, the chapter examines the process that has been developed in both states to identify species at risk of extinction and their critical habitats. It then presents information about the most endangered and threatened species in mainland China and Taiwan, and discusses, with examples of internationally recognized endangered species, the pressures leading to adverse modification of their critical habitats. The chapter then reflects on the role that natural scientists and scientific institutions have played in the identification and preservation of biodiversity.

Chapter 4 introduces both the legal and institutional frameworks for biodiversity conservation. The first sections ask: How comprehensive and rigorous are the laws and regulations in China and Taiwan providing for wildlife conservation and environmental protection generally, and what is the nature of the revision process? The chapter treats China’s participation in
international biodiversity treaties and conventions such as the Convention on
the International Trade in Endangered Species (CITES) and the Convention
on Biodiversity, and evaluates their impact on Taiwan (which is not a member
but has observed their provisions). The second half of the chapter explores
the degree of integration and centralization in each country’s institutional
framework: central ministries with portfolios on biodiversity conservation,
devolution to sub-national governments, and important linkage mechanisms
(such as task forces). The chapter concludes with an analysis of the effects of
legal and institutional differences on policy making.

Chapter 5 treats the units established to protect threatened and endangered
species. We call them protected areas (PAs) but they may include national
forests, nature reserves, and cultural heritage sites. The chapter describes the
evolution of the protective systems in China and Taiwan, and then reviews the
distribution of protected areas. The focus of the chapter, however, is on policy
implementation: challenges to effective conservation management, because of
problems of finance, staffing, authority, and the conflict of national policy
with the needs of local populations. The chapter concludes with examples of
protected areas in China and Taiwan.

The final three substantive chapters examine different aspects of the politics
of biodiversity conservation in China and Taiwan. Chapter 6 addresses
business firms and the pressures they put on the living environment. It begins
with a comparison of the domestic organization of businesses in China and
Taiwan (including discussion of state-owned enterprises (SOEs), town and
village enterprises, and small and middle-sized enterprises (SMEs)) and then
examines state-business relations (including the role of business associations
and lobbying governments). The chapter features the special role that multi-
national corporations play in China and Taiwan, for example, their application
of international standards to Chinese conditions and other forms of diffusion
in environmental norms. It presents case studies of both adverse and positive
impacts of multinationals in China and Taiwan. This chapter concludes with
discussion of cross-strait trade; it asks whether the ‘race-to-the-bottom’
hypothesis applies to the situation of Taiwanese firms in mainland China.

Chapter 7 turns to the development of environmental non-governmental
organizations (ENGOs) and examines the extent in operation of ‘civil society’
in China and Taiwan. The chapter introduces several types of environmental
NGOs: those organized by governments to serve their missions and interests
(called GONGOs or government-organized non-profit organizations),
relatively autonomous national-level ENGOs with foreign linkages (such as
The Nature Conservancy, the World Wildlife Fund (WWF), Conservation
International, and Greenpeace), and grassroots NGOs, both at the national
level and in local areas. This chapter also briefly discusses biodiversity
conservation projects of NGOs, global banks, and other lending institutions,
Introduction

and the role played by media in publicizing environmental news and opening a forum for NGOs.

Chapter 8 contrasts the traditional, intra-elite (and bureaucratic politics) means of resolving environmental issues typical in modern China and pre-democratic Taiwan with decision making under conditions of democratization in Taiwan. It reviews the significance of interest group conflict, for example between business corporations and ENGOs, the extent to which environmental issues have entered political party debate, and the bearing of concerns such as biodiversity conservation in elections and on election outcomes. Then the chapter turns to two large case studies: 1) discussion of the proposed south coast (Binnan) development project on the Qigu wetlands in Taiwan and 2) the impact of hydro-electric power development on the Nu River region of Southwest China, for what they reveal about the political nature of environmental decision making.

The book concludes, in Chapter 9, with a summary of the argument and conclusions regarding the comparative politics questions we have asked concerning the relationships between economic development, democratization, and other important variables (such as horizontal diffusion) and conservation of biodiversity in China and Taiwan. The chapter also asks whether there are particular ‘Chinese characteristics’ in the global attempt to create a sustainable future.

ENDNOTES

1. Nu means ‘angry’ in Chinese.
8. Taipei Times, 8 November 2004, p. 16.
13. Pimm, Stuart et al. (1997), ‘The Value of Everything’, Nature (15 May). According to estimates made in China’s Biodiversity: A Country Study, the total economic value of China’s biodiversity is \( 39.53 \times 10^{12} \) to the twelfth yuan (RMB); see
http://www.zhbgov.cn/english/biodiv/state_con/en/bidiv_value_en.htm, last accessed 13/6/2004). The ecosystem service value of the Tibetan plateau alone is 9363.9 /H11003 to the eighth, accounting for 17.7% of China’s (and 0.6% of the world’s) ecosystem service value. See Xia Gaodi, Lu Chunxia, Leng Yunfa, Zheng Du and Li Shuangcheng (2003), ‘Ecological Assets Valuation of the Tibetan Plateau’ (in Chinese), Journal of Natural Resources, 18 (2) (March), 194.


17. A mega-diversity country is one having a very large number of species and extremely high levels of endemicism. See Russell A. Mittermeier (ed.) (1997), Megadiversity: Earth’s Biologically Wealthiest Nations, Monterey, Mexico: CEMEX.


Environmental Politics, 3 (3), 108. See also Peter Dauvergne (2001), Loggers and Degradation in the Asia-Pacific (Cambridge: Cambridge University Press).


31. Ibid, p. 120.


37. Prenton, Libby (2005), ‘Ecological Agriculture: The Answer to All our Problems?’, unpublished manuscript.


43. To the People’s Republic of China, Taiwan (or the Republic of China, the country’s formal name) is a renegade province of China and not an independent nation-state. However, Taiwan does meet formal definitions of nation-states in comparative politics and international relations. It has all the appurtenances of a state: people residing in a territory, under the control of a government that has sufficient force (a free-standing army, police) to compel obedience to the law. It is recognized internationally by about two dozen other states, and under the name ‘Chinese-Taipei’ or ‘Taiwan’ participates in a few international bodies, such as the International Olympics Association, the Asia Pacific Economic Conference (APEC), and the Asian Development Bank. Taiwan has trading relationships with most of the world’s nations. It also comports to definitions of a nation in that most of its residents share an identity with the current status and condition of Taiwan as a sovereign entity, though they may disagree about its future course (independence or unification with China).