

## **OGASAWARA ISLANDS: AN EVOLUTIONARY LABORATORY OF NATURE AND CULTURE**

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The Ogasawara (or Bonin) Islands 小笠原諸島 of Japan, dubbed ‘the Galapagos of the East’, are a group of oceanic islands situated in the middle of the Pacific Ocean. Many of their numerous indigenous fauna and flora are at the brink of extinction, mainly caused by human settlement and construction during the last half century. Among those destructive factors, a plan to build a commercial airport was the most controversial and divided the community. Although the airport plan was withdrawn by the Tokyo Municipal Government in 2001, the native species are still facing various dangers.

‘Nature’ is defined as ‘everything in the physical world that is not controlled by humans, such as wild plants and animals, earth and rocks, and the weather’. ‘Culture’ is ‘the ideas, beliefs, and customs that are shared and accepted by people in a society’<sup>2</sup>. Here I would like to add the concept of ‘environmental culture’ (*kankyō bunka* 環境文化). This concept has been used in Japan for more than a decade to title books, articles and public talks, and to name university departments. Here ‘environmental culture’ can be defined as ‘the ideas, beliefs and customs that are shaped by a society’s understanding of its natural environment, and are used to protect the

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<sup>2</sup> *Longman Advanced American Dictionary*, an electronic version in CASIO XD-H7300, Tokyo, 2004.

environment'. This paper will focus on the correlation of nature and culture on the Ogasawara Islands in terms of their continuing evolution.

### Discovery of the Islands

The Ogasawara Islands, at longitude 136°04' - 153°59' E. and latitude 20°25' - 27°44' N., are located about 1000km due south of Tokyo and about 1400km due east of Okinawa. They are part of the administrative district of Tokyo, but are accessible only on a once a week, 25-hour long journey on a diesel-powered ship.

The islands were formed by eruptions of submarine volcanoes about 50 million years ago, and had no connection with any continent in their formation. Geologically they are referred to as 'oceanic islands'. The Ogasawara Islands took biological shape over millions of years as flora and fauna gradually crossed the 1000km kilometres of ocean from Polynesia, south-east Asia and south-west Japan, thanks to the wind, or the birds, or logs floating on the ocean waves.<sup>3</sup> Settled on the islands, the various species evolved uniquely according to their environment, becoming distinctive species.<sup>4</sup> They were mostly undisturbed by humans until settlement began in 1826.

By comparison with the more better known oceanic islands like the Galapagos Islands, Hawai'i and Easter Island, the Ogasawara Islands are tiny in scale, with a total area of a mere sixty-one square kilometres, which amounts to just one fortieth of Okinawa, one hundredth of the Galapagos and two hundredths of Hawai'i. Its largest island, Chichijima (Father Island), is twenty-four square kilometres. In Okinawa, in an area of twenty by twenty metres it is possible to find at least fifty species of trees, but in Ogasawara, no more than twenty species are found even in the most densely forested area.<sup>5</sup>

Birds living in Ogasawara tend to combine functions usually shared by different birds on continents. The typical example is the *meguro* (warbler, *Apalopteron familiare hahasima*), which like the silver-eye eats flowers and fruits at the top of trees, like the titmouse runs up and down the branches of trees to catch insects, and like the thrush hops along the ground to search for food. With few rivals, the *meguro* was able to develop an ability of searching for different sorts of food.<sup>6</sup> Ogasawara therefore is a perfect place to observe the development of species. Some species which might not have survived the processes of competition and natural selection on a continent could survive in

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<sup>3</sup> Shimizu Yoshikazu, *Ogasawara shizen nendaiki* [A Historical Record of Ogasawara's Nature], Tokyo, 1998, 22-23.

<sup>4</sup> Ono Mikio, *Kotō no seibutsu tachi: Garapagosu to Ogasawara* [The Animals and Plants of the Isolated Islands: Galapagos and Ogasawara], 2<sup>nd</sup> ed., Tokyo, 1997, 65.

<sup>5</sup> Shimizu, *Ogasawara*, 15-17.

<sup>6</sup> Shimizu, *Ogasawara*, 30-33.

these oceanic islands because of the lack of natural predators.<sup>7</sup> However, these island species were extremely vulnerable to change because in the small area there was no place of refuge for species to escape or re-settle. The new environmental conditions brought by human settlement and imported animals and plants proved fatal to indigenous species.

These islands were long thought to have been discovered in 1593 by Ogasawara Sadayori, an historical figure known to have been in the service of the warlords Toyotomi Hideyoshi (1537-98) and Tokugawa Ieyasu (1542-1616). However, the evidence for Ogasawara's discovery is tenuous. The claim was reiterated in 1675 by Ogasawara's son, in 1702 by his grandson and in 1727 by his great-grandson, who were seeking official permission to travel to the islands. Although these claims were subsequently found to be dubious, the islands nevertheless came to be known as 'Ogasawara Islands' and were also given names that suggested a large, extended family.<sup>8</sup>

The first confirmed record of the discovery of the islands concerns a Japanese ship blown off course and wrecked there in 1670 on its way to transport mandarin oranges from Kishū (today's Wakayama Prefecture) to Edo (today's Tokyo).<sup>9</sup> Five years later, in 1675, the Edo Government sent an exploration ship led by Shimaya Ichizaemon to investigate the islands. This expedition called the islands *Bunin Shima* (Uninhabited Islands), and built a shrine to commemorate their landing.

The 1820s mark a period in the islands' history of increasing contact with humankind. In 1823, the British whaling ship, *Transit*, arrived and its American captain wrote of the abundance of turtles and rufous turtledoves, the absence of four-legged animals, snakes and ants, the thick forest coverage that extended over the island, and the absence of any human habitation.<sup>10</sup> In 1826, another British whaler, the *William*, was wrecked on the shore, where the crew took refuge. Most were later rescued, but two of the sailors decided to remain on the island and began cultivation and raising pigs. In the following year, 1827, H.M.S. *Blossom* arrived, its captain describing the islands as a paradise of green turtles, 'so numerous that they quite hide the colour of the shore' and so inactive that they could be easily upturned. Already, he observed, the pigs introduced by the *William* had become wild and, he predicted, would in a short time destroy all the tree roots on the island.<sup>11</sup> One year later, in 1828, the Russian exploration ship, *Seniavin*, arrived with zoologists, botanists and ornithologists who documented and

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<sup>7</sup> Ono, *Kotō*, 76.

<sup>8</sup> According to *Tatsumi buninshima sojō oyobi kōjō tomegaki* [Petition for the Uninhabited Islands in the South-East and Record of a Conversation] in *Zokuzoku gunsho ruijū* (Collection of books) Vol. 9, Tokyo, 1906-1909; Tabata Michio, *Ogasawara yukari no hitobito* [People in Ogasawara's History], Tokyo, 1993, 8-10; Tanaka Hiroyuki, *Bakumatsu no Ogasawara* [Ogasawara at the end of the Edo Period], Tokyo, 1997, 9-15.

<sup>9</sup> Tanaka, *Bakumatsu*, 2-6.

<sup>10</sup> Tabata, *Ogasawara*, 43-44.

<sup>11</sup> F. W. Beechey, *Narrative of a Voyage to the Pacific and Bering's Strait*, 2 volumes, London, 1831, 230, 232.

took specimens of native birds that were soon to become extinct. The Russian captain observed that profits gained from the pigs were cancelled out by the damage they caused, since the pigs consumed a huge amount of turtle eggs.<sup>12</sup> In 1830, a group of two Americans, one Dane, one Italian, one Briton and fifteen islanders from Hawai'i arrived. Cultivating corn, pumpkin, potato, bean, melon, banana, sugarcane and pineapple, and raising pigs, chickens, turkeys, ducks, goats and deer, they became suppliers of provisions to the crews of various whaling ships. Their lifestyle was documented by Commodore Matthew Perry's American naval squadron who passed by the islands en route to 'open' Japan in 1853.<sup>13</sup> No sooner did human settlement on the islands begin than the environment began to suffer.

As the multi-racial, multi-lingual society began to take shape, the Japanese Government in 1861 sent the ship *Kanrin-maru* to explore and formally name the island group.<sup>14</sup> The name Ogasawara was officially adopted for the whole complex of islands. The central cluster, Chichijima Rettō (Father Island Archipelago), consisted of Magojima, Otōtojima, Anijima and Chichijima (Grandchild, Younger Brother, Elder Brother and Father Islands); the southern cluster of Hahajima Rettō (Mother Island Archipelago) included Hahajima, Anejima, Imōtojima and Meijima (Mother, Elder Sister, Younger Sister and Niece Islands); and the most northerly Mukojima Rettō (Bridegroom Archipelago) comprised Mukojima, Nakōdojima and Yomejima (Bridegroom, Go-between and Bride Islands). The scattered islands were united in the idealized form of an extended family.

In 1876, a Japanese Government office was built on Chichijima to govern the then motley group of 69 inhabitants.<sup>15</sup> Teaching of the Japanese language was started and settlement systematically encouraged. In 1882, the early settlers all took Japanese citizenship. Six decades later, just before the advent of the Pacific War 7711 people lived on ten of the islands; in 1944 virtually the entire population was evacuated. When the war ended, only those islanders of American and European origin were permitted to return, and the islands remained under United States military occupation, and became known as the Bonin-Volcano Islands until 1968. After the US Government handed sovereignty of the islands to Japan, the evacuated Japanese also returned. At present, only Chichijima and Hahajima are inhabited by civilians, and the total population on 1 September 2006 was 2367.<sup>16</sup> In this multi-racial society, one in ten of the islanders is descended

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<sup>12</sup> Tanaka, *Bakumatsu*, 33.

<sup>13</sup> Francis L. Hawks (compiler), *Narrative of the Expedition of an American Squadron to the China Seas and Japan, performed in the years 1852, 1853, and 1854, under the Command of Commodore M. C. Perry*, Washington, 1856, 196-214.

<sup>14</sup> The origins of the residents are Ogasawara, Britain, Italy, Denmark, France, Germany, Portugal, Azores, Cape Verde, Bermuda, America, Hawai'i, Tahiti, North Marquesas, Kiribati, Ponape, Bougainville, the Philippines, China, Madagascar, etc. Daniel Long, ed., *Ogasawara-gaku kotohajime*, Kagoshima, 2002, 274-276.

<sup>15</sup> Russell Robertson, 'The Bonin Island', *Transaction of the Asiatic Society of Japan*, 4 (1875-1876), 141.

<sup>16</sup> *Ogasawara sonmin dayori* [Ogasawara Villagers' Newsletter], 517 (October 2006).

from Europeans, Americans and Pacific Islanders. This exoticism is still an attraction today to visitors from mainland Japan.

The islands have long been a highly sought-after place for people longing for a different life. In the eighteenth century, those self-claimed ‘offsprings’ of Ogasawara wanted to travel there. In 1839, the Dutch studies scholar and artist Watanabe Kazan (1793-1841) and Takano Chōei (1804-50) were arrested because they planned to visit the islands.<sup>17</sup> In modern times, the poet Kitahara Hakushū (1885-1942) took his wife, who was ill with pulmonary tuberculosis, to the islands to escape the social pressures of the time. In a similar vein, in the late twentieth century and early twenty-first century, people have moved to the islands to escape the stresses of city life. For humans and botanical and zoological species alike, Ogasawara is often regarded as a kind of fantasy land, as its name suggests, an ideal family frozen for eternity, and a remote island paradise beyond the reach of modern civilization.

### **Destruction of Nature**

What today excites visitors as untouched nature is actually an environment transformed beyond recognition. In almost two centuries of human settlement, the islands have been subject to two different waves of development, the first lasting from 1826 to 1945, and the second beginning in 1968 and continuing today. The former approximated to the classic description of ‘future eating’, with great resource depletion evident over this period.<sup>18</sup> After the arrival of the Japanese settlers in 1876, about two to three thousand turtles were removed from the islands to be consumed.<sup>19</sup> Similarly, albatross soon disappeared after massive slaughter in the quest for their feathers and eggs.<sup>20</sup>

This was accompanied by a timber and sugar boom in 1880s. In only a decade, half of the islands’ forests disappeared. On Hahajima, huge and ancient trees were felled, some over two thousand years old. The forest was either burned to produce dead trees for growing *kikurage* (fungus) or cleared to make way for farms and sugarcane plantations and to provide fuel to fire the sugar kilns. Only trees that did not seem to be profitable or were located in inaccessible places survived this onslaught.<sup>21</sup> During World War Two, Chichijima, Hahajima and Iōjima (commonly known as Iwojima) were so

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<sup>17</sup> Tanaka, *Bakumatsu*, 81-87.

<sup>18</sup> Tim F. Flannery, *The Future Eaters: An Ecological History of the Australasian Lands and People*, Sydney, 1997.

<sup>19</sup> Charlotte M. Salwey, *The Island Dependencies of Japan*, London, 1913, 84-85.

<sup>20</sup> Kurata Yōji, *Shashinchō: Ogasawara hakken kara shizen made* [Photo album: Ogasawara, from Discovery to Nature], revised second print, Kamakura, 1993, 196-198; Shimizu, Ogasawara, 89.

<sup>21</sup> Tanaka, *Bakumatsu*, 255-258; Shimizu, *Ogasawara*, 88-92.

heavily bombed that their very topography was transformed.<sup>22</sup> Not only was the human toll immense, but also the plant and animal world suffered dramatically.

After 1968, following their reversion to Japanese control, the Ogasawara islands were subject to development plans. Funded by lavish central government subsidies, importance was placed on the development of infrastructure and public works. During the twenty-six years to 1995, the government poured more than 83 billion yen into the islands. These effects were seen on the islands' economy. Construction replaced primary industry as the major sector of the economy and accounted for 43.3% of its total income.<sup>23</sup> According to a survey by the Village Office in 2000, the employment proportion was:

Type of Employment	Percentage of Employment	
	Actual number	Percentage (%)
Public Sector	648	32.5
Services	475	23.8
Construction	405	20.3
Shops and restaurants	213	10.7
Fishing	100	5.0
Agriculture	69	3.5
Transportation and communication	45	2.3
Electricity and gas	21	1.1
Banking, insurance and real estate	4	0.2

More than twice as many people are employed in construction as in agriculture and fisheries combined. Had the construction works been occasioned by need, one would expect the role of public works to be high in the early years after reversion to Japanese rule, but, as that need was being met, it began to decline. The fact that this did not occur points to the inherently pathological quality of the process. As Gavan McCormack notes, public works-led development does not satisfy social need, but breeds more and more public works.<sup>24</sup>

Roads, harbours, bridges and coastal and river works proliferate. The environmental effects of this construction 'boom' were widespread. As the bulldozers used in construction felled native trees, and roads were widened and paved, the ferns in surrounding areas dried up and died, and it became easier for imported plants to supplant native ones.<sup>25</sup>

On the islands, human impact on nature is extensive, as demonstrated by a discussion of extinctions of birdlife. Among 109 kinds of birds sighted in Ogasawara from 1995 to 1996, fifteen are known to breed there, yet only

<sup>22</sup> Ogasawara shizen kankyō kenkyūkai, ed., *Ogasawara no shizen: Tōyō no Garapagosu* [Ogasawara's Nature: the Galapagos of the East], third ed., Tokyo, 1998, 43.

<sup>23</sup> Tada Minoru, 'Kūkō wa dare no tame?' [For whom is the airport plan?], *Shūkan kinyōbi* (31 January 1997), 35.

<sup>24</sup> Gavan McCormack, *The Emptiness of Japanese Affluence*, New York, 1996, ch.1.

<sup>25</sup> Yasui Takaya, 'Ogasawara no shokubutsu ni shinobiyoru kiki' [The crisis of Ogasawara's plants], *Puranta*, 63 (May 1999), 28.

one native species, *meguro*, and five native subspecies survive. The latter are: *Ogasawara nosuri* (buzzard, *Buteo buteo toyoshimai*), *Akagashira karasubato* (red-headed-pigeon, *Columba janthina nitens*), *Ogasawara kawarahiwa* (brambling, *Carduelis sinica kittlitzii*), *Ogasawara hashinaga uguisu* (long-beaked-bush warbler, *Cettia diphone diphone*) and *Ogasawara hiyodori* (brown bulbul, *Hypsipetes amaurotis squamiceps*). *Meguro*'s closely related species, *Mukojima meguro*, have disappeared, following the extinction of four native birds, *Ogasawara mashiko* (brambling, *Chaunoproctus ferreorostris*), *Ogasawara gabichō* (fly-catcher, *Cichlopasser terrestris*), *Ogasawara karasubato* (Bonin fruit-pigeon, *Columba versicolor*) and *Hashibutogoi* (thick-beaked-heron, *Nycticorax nycticorax*). As for sea birds, the short-tailed-albatross (*ahōdori*, *Diomedea albatrus*) disappeared a long time ago, although small colonies of Laysan albatross (*koahōdori*, *Diomedea immutabilis*) and black-footed-albatross (*kuroashi ahōdori*, *Diomedea nigripes*) still survive in remote outcrops.<sup>26</sup> *Ogasawara* accounts for five of the thirteen species of birds that have been lost in Japan as a whole.<sup>27</sup> It is estimated that only ten of the highly endangered pigeon *karasubato* were living in Chichijima, fifteen in Hahajima, and fifty in total in *Ogasawara*. The Ueno Zoo in Tokyo started an artificial breeding project from April 2001, and managed to successfully breed eleven chicks by May 2006.<sup>28</sup> But this success is still very limited and the process of returning them to *Ogasawara* and protecting them from cats is still to be dealt with.

Nor is the destruction limited to its birdlife. *Ogasawara* has various native butterflies, moths and dragon-flies, and as was recently discovered, some rare kinds of snails. Two of 23 kinds of butterflies, five of 12 kinds of dragonflies, twelve of 247 kinds of moths, 30% of about 300 kinds of beetles and 90% of about 100 kinds of snails are native. However, most of the snails are now extinct because of environmental changes, desiccation caused by forest destruction, the emergence of illegal gatherers and the use of agricultural chemicals.<sup>29</sup>

Among trees, many of the common species to be seen today, such as the Ryukyuan pine, camphor-tree, Indian rubber tree (*mokumao*) as well as banana and pineapple, are imports. The introduced trees *akagi* and *ginnemu* proliferate and threaten native plants.<sup>30</sup> Giant trees such as *momotamana* (*Terminalia catappa*), *Ogasawara-guwa* (mulberry, *Morus boninensis*), *udonoki* (*Pisonia umbellifera*), *akatetsu* (*Pouteria obovata*), and local varieties of palm that were sighted by seventeenth century visitors and featured in nineteenth century paintings and engravings, are now rare. At

<sup>26</sup> Shimizu, *Ogasawara*, 12, 104-106.

<sup>27</sup> Maki Hirozō, *Yachō* [Wild Birds], Tokyo, 1998, 79.

<sup>28</sup> Tōkyōto, 'Tōkyōto akagashira karasubato hogo zōshoku jigyo keikaku' [Tokyo Metropolitan Government Plan of Protecting and Increasing Red-Headed Pigeons], Homepage of the Tokyo Metropolitan Government, <http://www2.kankyo.metro.tokyo.jp/sizen/akagashira/kentoukai1/giji1806.htm>, Accessed 1 December 2006.

<sup>29</sup> Shimizu, *Ogasawara*, 113-117, 128.

<sup>30</sup> Shimizu, *Ogasawara*, 106-111.

present, 42% of 121 native flora species are being harmed by goats. Among 73 endangered species, 55% has been severely damaged.<sup>31</sup> The rat, *kuma nezumi*, is another major introduced pest that is destroying native plants at an alarming rate.

Currently, 40% of about 400 flora species are indigenous. Many smaller native botanical species, including distinctive varieties of fern, fungi, chrysanthemum, orchid and azalea may still be found in the more inaccessible mountains and valleys or on the uninhabited islands. In 1985, the 'Emergency Investigation for Ogasawara Native Plants Protection' project discovered that eighty species, about half of the native ones, were on the brink of extinction, twenty of them unable to grow and propagate in the natural environment.<sup>32</sup> One decade later, in the '1997 New Red List of Plants', published by Japan's Integrated Biodiversity Information System managed by the Ministry of Environment, 134 species of Ogasawara were listed as endangered species. Nowhere in Japan, save Okinawa, is there such a high density of endangered species.<sup>33</sup>

The wild peony *munin nobotan* (*Melastoma tetramerum*), and the azalea *Munin tsutsuji* (*Rhododendron boninense*) are especially rare because only a few plants survive in the wild. Scientists have succeeded in planting about two hundred cuttings from the surviving wild peony, but these cloned 'children' have the same genes as the mother tree, and have difficulty adapting to the changing environment.<sup>34</sup> Since the early 1980s after countless failures, the experts of the Botanic Gardens of the University of Tokyo succeeded in multiplying several endangered species and then transplanting them back to Ogasawara, including the wild peony and the azalea, the native shrub *kobanotobera* (*Pittosporum parvifolium*), native orchids *asahi ebine* (*Calanthe hattorii*) and *hoshitsuru ran* (*Calanthe hoshii*). The wild peony even started to germinate by itself in 1998 and blossomed.<sup>35</sup> Thus the fragility of nature, and the challenge of maintaining a threatened biodiversity, is manifest in Ogasawara.

## The Airport Plans

Since 1968, the Village Office has pressed the Tokyo Government to construct an airport in Ogasawara to resolve the residents' transportation problems. With the Japanese bubble economy of the late 1980s, the resort development 'boom' seemed irrepressible. In June 1988, Tokyo governor

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<sup>31</sup> *Ogasawara sonmin dayori*, 517 (October 2006).

<sup>32</sup> Wakatsuki Kunio and Shimozono Fumio, *Horobiyuku shokubutsu wo sukuu kagaku* [The Science which Saves Endangered Plants], Tokyo, 1989, 30.

<sup>33</sup> Shimizu, *Ogasawara*, 128.

<sup>34</sup> Wakatsuki and Shimozono, *Horobiyuku*, 81-82.

<sup>35</sup> Shimozono, Fumio, 'Zetsumetu kigushu no fukugen no mondaiten' [The Problems in Reviving Endangered Species], *Puranta*, 63 (May, 1999), 31-35. The white flowers were sighted in August 2000 by the author with a local guide, Mr. Harada Ryūjirō.

Suzuki Shunichi announced that an airport would be built on Anijima (Elder Brother Island). In 1991, the Ogasawara airport plan was incorporated in the ‘National Airport Development Plan’, which was enthusiastically endorsed by local construction companies.<sup>36</sup> However, the proposal was rather implausible. A modern airport with a 1800m long runway was to be built on the uninhabited island, and then linked to the population centre on Chichijima by a 500m-rope-way across a windswept ocean.

Pleas of opposition to the plan were entered by Ogasawara residents and conservation groups inside and outside Japan. The local people, led by botanist and high school teacher Yasui Takaya, urged that proper attention be paid to possible alternatives such as a turboprop plane which requires just a 1200m-runway; a plane that requires a shorter runway for landing and taking-off; an airship; a flying boat; re-use of a war-time airport in the Suzaki region of Chichijima with an 800m long runway; a vertical take-off and landing aircraft; an amphibian; a plane that flies between Ogasawara and the Izu Islands via Iōjima; a high-speed ferry; and a floating airport.<sup>37</sup> These alternatives show that a large-scale commercial airport can be avoided. As mentioned later, the fifth alternative was being considered in 2006.

In 1991, researchers conducted a five-day investigation along the planned runway. New discoveries were made one by one. More than ten species of snails, already lost in Chichijima and Hahajima, were found.<sup>38</sup> It was in the end the fact that Anijima was home to the biggest area of salt tolerant shrubs (*xeric sclerophyll*) in Japan and the most concentrated population of terrestrial snails that proved decisive. In January 1996, the Environment Agency called on the Tokyo Government to reconsider its plan, and to give due weight to preservation of the biodiversity. The decision by the Japanese Government to give priority to environment over development was at that time unprecedented.

The airport plan was also referred back for environmental assessment. A list of nine potential sites—five on Chichijima, two on Hahajima, two on other smaller islands—was considered, and in April 1998 a selection was announced. The best solution, according to the advice received, was Shigureyama of Mt. Tsutsuji, slightly to the south of the centre of Chichijima.<sup>39</sup> It would involve extensive works over the years 2001 to 2008 to level a 1720m strip of land across the island, at a height of 230m above sea level. The airport would completely transform the island’s topography.

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<sup>36</sup> Tada, ‘Kūkō wa dare no tame?’, 36.

<sup>37</sup> Ogasawara shizen kankyō kenkyūkai, ed., *Ogasawara kūkōmondai 13 nenkan no kiseki* [The Record of 13 Years of the Ogasawara Airport Controversy], 2002, 31, 17-18, 44, 86-88, 170-175, 219, 269-270, 279, 381, 407, 439-440.

<sup>38</sup> Shimizu, *Ogasawara*, 143.

<sup>39</sup> *Ogasawara kūkō kensetsu tō senmon iinkai, Ogasawara kūkō kensetsu tō ni kansuru teigen* [Suggestions for the Ogasawara Airport Construction...], 1998; Purekku, *Kabushiki kaisha purekku kenkyūjō, Heisei 9 nendo Ogasawara kūkō kankyō chōsa hōkokusho* [Report on the Investigation of Ogasawara Airport Environment in 1997], Tokyo, 1997.

The location was a nesting site for the native buzzard (mentioned above), and home to the wild peony and the azalea. The sole surviving wild clump of the azalea happened to grow just below the summit of Mt. Tsutsuji because it is the only place moist enough to allow the azalea to survive, and the topographical and climatic conditions simply could not be reproduced elsewhere. Besides, the forest around the location forms part of the catchment area for drinking water.<sup>40</sup> Yasui Takaya conducted a survey and found that 88 of the 217 plant species on the Shigureyama site were native, including twenty-seven which were classified as ‘endangered’, and another five as ‘at some risk’ according to the ‘Red List of Plants’.<sup>41</sup> Under the pressure from the local opposition the airport plan was officially withdrawn by the Tokyo Government in November 2001.

Meanwhile, in January 2001, the Ministry of National Land and Communication considered introducing the newly developed TSL (techno-super-liner) by which an express ferry of 15,000 tons could shorten the voyage time between Tokyo and Chichijima from 25 to 16 hours.<sup>42</sup> But, the project, which would have cost an estimated 11.5 billion yen, was abandoned at the eve before its launch in October 2005 because the fuel cost could not be subsidised by the Government and might incur at least 2 billion yen deficit annually.<sup>43</sup>

The withdrawal of the two airport plans and the TSL project left many residents with mixed feelings. Some of them still cannot understand why native species have to be prioritized over their want of an airport which they believe will overcome the long distance between the mainland and Ogasawara, and will provide better medical treatment and greater opportunities for economical development. Based on my experience of taking the 25-hour ferry six times, which was constantly tossed up and down by the rough waves, I deeply sympathize with the residents who long for a faster means of transportation for emergency medical treatments. A plane which requires a small-scaled airport can be justified if the impact on the native species can be kept to a minimum.

Instead of pouring more concrete on to the islands, many people on the Ogasawara group have realized that the development of eco-tourism which fully utilizes the value of Ogasawara’s nature can bring more financial profits. An effort to promote Ogasawara by the Ministry of Environment and register it as a World Heritage Site began in 2003.<sup>44</sup> Based on the information from

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<sup>40</sup> Shimizu, *Ogasawara*, 146.

<sup>41</sup> Yasui Takaya, ‘Chichijima no Ogasawara kūkō kōhochinai oyobi sono shūhen no ikansoku shokubutsu risuto’ [List of Plants in the Area of the Planned Ogasawara Airport on Chichijima], *Ogasawara kenkyū*, 24 (1998), 17-23.

<sup>42</sup> *Yomiuri Shimbun*, ‘Jisedai kōsokusen no hatsushūkō Tōkyō Ogasawara kan de kentō’ [Discussion about the High Speed Ferry of the new generation between Tokyo and Ogasawara], 27 January 2001 (on-line news).

<sup>43</sup> *Asahi Shimbun*, ‘Kokusaku no chōkōsoku TSL, To ga Ogasawara kōro dannen wo seishiki happyō’, [Tokyo Metropolitan Government officially gives up the Route to Ogasawara by the Super-Speed TSL], 18 October 2005 (on-line news).

<sup>44</sup> *Ogasawara sonmin dayori*, 468 (April 2003), 10.

monthly ‘Ogasawara Villagers’ Newsletter’ 小笠原村民だより published by the Village Office from May 2002 to September 2006, the publications from NPO, and my own observation in Chichijima, I will discuss how residents’ attitudes to nature are undergoing a transformation to one that recognises a sensitive balance between native species and human life is imperative if both are to have a future.<sup>45</sup>

### The Formation of an Environmental Culture

The uniqueness of the islands can be seen from the research pioneered by local resident, Abe Tetsuto. Over the last thirty years, he and colleagues have been investigating the newly formed oceanic island Nishinoshima (Western Island), located 130km west of Chichijima, which formed when a volcano erupted in 1973. This research is the first of its kind to detail the process of how an oceanic island, isolated from any continent by more than 1000km, is being colonized by plants and animals. Nowhere else on the planet is there so remote a new-born oceanic island.<sup>46</sup> In other words, it is thought that this tiny island may display the process of evolution the Ogasawara Islands went through during the last million years. The importance of saving the fauna and flora of the Islands is being gradually understood.

Thanks in part to the activities of botanist Yasui Takaya and his colleagues, as well as the efforts of various local organizations, more and more people have become conscious of the fragility of their natural surroundings. A nascent environmental culture is thus developing in Ogasawara. ‘Protection of biodiversity’ has recently become a buzzword in the islands at various levels, from ordinary people to the Ogasawara Branch of Tokyo Government and the Ogasawara General Office of the Japanese Government. Activities by volunteers to eradicate introduced plants and goats and to help plant native plants are becoming commonplace. For instance, the introduced grass, *kurinoiga*, was cleared from Minamijima (South Island) because the island’s karst landscape was considered to be ‘the most precious ecosystem in the world’.<sup>47</sup> Native trees *Shimahoruto no ki* (*Elaeocarpus photiniifolius*) have been planted on parts of Hahajima after the invasive tree *akagi* was removed.<sup>48</sup> Weeds and plastic rubbish at the beach of Ōgiura of Chichijima are regularly cleared.<sup>49</sup> The local government’s

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<sup>45</sup> In 1999, 2000 and 2002, I visited Chichijima and had various opportunities to meet and talk with local residents.

<sup>46</sup> Abe Tetsuto, ‘Shinseikaiyōtō, Nishinoshima no seibutsusō kara no kōsatsu’ [An Observation of the Plants on the New-Born Oceanic Island, Nishinoshima], Ogasawara yasei sei butsu kenkyūkai kaihō, 24 (29 November 2004).

<sup>47</sup> *Ogasawara sonmin dayori*, 455 (June 2002), 2.

<sup>48</sup> *Ogasawara sonmin dayori*, 472 (July 2003), 6; 481 (March 2004), 4.

<sup>49</sup> ‘Ogasawara Wildlife Research Society Newsletter’, 27 (July 2005), 2.

Construction Section also participated in the movement of clearing the introduced Taiwan tree, *mokugenji*.<sup>50</sup>

From 1997 to 1999, about 400 goats were removed by local hunters from Nakōtojima (Go-between Island) at a cost of 100 million yen. In 2002, Mukojima (Bridegroom Island) was declared free of goats. Now the northern Mukojima Archipelago is goat free, and newly planted native plants are growing surprisingly well and enjoying a paradise without natural predators.<sup>51</sup> Sadly, on Anijima, it is estimated that it will take at least seven years to eradicate all the goats. And on Chichijima, there is a still long way to go before even significantly reducing the goat population.

In Ogasawara, cats remain a serious threat to endangered native birds. The red-headed pigeon *karasubato* sometimes comes to visit villagers and eat papaya without noticing the waiting cats.<sup>52</sup> According to research on how the native warbler *meguro* and brambling *kawarahiwa* fall victim to cats, research revealed that between 1998 and 1999, a single cat kills at least one *kawarahiwa* and five *meguro*. About one hundred cats are still wandering in the forest of Hahajima, driving the number of brambling down to 200.<sup>53</sup> Between 1996 and 2006, more than 370 wild cats were caught and sterilized. In January 2006, during the breeding season of the native pigeon, it was deemed necessary to send the cats to the mainland to be adopted. At the same time, lectures on how to minimize cats' impact on native birds were given by experts in July 2006.

Other native species are also being protected. A re-discovery made in 2005 of one of the two native butterflies, *Ogasawara Shijimi* (*Celastrina ogasawarensis*), thought to have disappeared after 2002, aroused interest in a project designed to rescue them from the introduced iguana, *green anole*, their primary predator. An 'Association of Ogasawara Shijimi' to protect the butterfly was even started.<sup>54</sup> In the islands the most representative conservation organization is the Ogasawara Wildlife Research Society (OWRS) headed by Yasui Takaya, who played a decisive role in deferring the airport plans. Since its establishment in 1997, OWRS has energetically conducted research on native flora and fauna, issuing newsletters to disseminate research results, raising seedlings, planting trees, cleaning beaches, culling goats, and organizing public lectures and observation trips. Yasui and his members successfully planted the native trees *takonoki* (*Pandanus boninensis*), *Ogasawara biro* (*Livistona chinensis* var. *boninensis*), *momotamana*, *hasunohagiri* (*Hernandia sonora*) and *kusatobera* (*Scaevola ssericea*) on Yomejima (Bride Island) after the goats were cleared

<sup>50</sup> *Ogasawara sonmin dayori*, 478 (December 2003), 5.

<sup>51</sup> Yasui Takaya, 'Nakōtojima so no go' (Nakōtojima and its development), *Ogasawara yasei sei butsu kenkyūkai kaihō*, 26 (1 April 2005), n.p.

<sup>52</sup> Yumura Fumiko, 'Karasubato ga minka ni!?' (A Pigeon Enters a Village Home?!), 'Ogasawara Wildlife Research Society News Letter', 16 (July 2002), n.p.

<sup>53</sup> Kzuto Kawakami and Hiroyoshi Higuchi, 'Bird predation by domestic cats on Hahajima Island, Bonin Islands, Japan', *Ornithological Science*, 1 (2002), 143-144.

<sup>54</sup> *Ogasawara sonmin dayori*, 516 (September 2006), 3.

in the year 2000. They keep going back to see how the trees are enjoying the regained rival-free environment. In May 2006, OWRS was awarded the 'Prize of the Ministry of Environment' for its nine-year activities and achievements.

In the islands, education and entertainment groups have also put much weight on promoting a closer connection between humans and the land and sea. The Ocean Center, Ogasawara Whale Watching Association (OWA), the OWRS and the Ogasawara Nature and Culture Research Institute, have organized various exhibitions and lectures on Ogasawara's nature. The monthly newsletter by the Village Office has carried impressive articles on how the school pupils protected turtle eggs, and were overjoyed when seeing baby turtles hatching. The OWRS encouraged children to plant seedlings of the native orchid *asahi ebine*, successfully raised by students outside Ogasawara, on Mt Asahi-yama. Education for the younger generation is an effective way of deepening the connection between nature and humans.

The influence from the music and dance of the Pacific Islands is prevalent and this has become part of the islanders' identity.<sup>55</sup> Local residents try to not only revive the traditional dance, *Nanyō odori* (South Pacific Dance), but also further develop it with their own variation and creation. These performing arts, including musical instruments *kaka*, Bonin *taiko* (drum), and Fura Ohana dance are often used to accompany unique festivals, not seen anywhere else in Japan, such as the 'Passion Fruit Festival' in June and the 'Whale Festival' from March till May. The emphasis on the uniqueness of the local products and the local performing arts can gradually help shape local people's sense of 'self'. When the 'self' is inseparable from nature, then it is possible that a love for nature will be deep-rooted in people's minds.

Another interesting local event is called 'Ogasawara Native Night' that has taken place in the evening of 21 June since 2004. The night is the shortest during the year when the summer solstice arrives. People are encouraged to turn off lights for two hours to enjoy the starry skies. This event has seen a significant saving of electricity, and reinforces the image of the Ogasawara as the 'eco-islands'.

### **Profits from Eco-tourism**

How to develop eco-tourism for the islands has been a major focus during the last few years. The Village Office has decided to make eco-tourism the main industry of the islands, along with a promotion of recreation, leisure and historical sites, as well as further development of agriculture and fishery in order to make Ogasawara a sustainable society. Encouragement to consume

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<sup>55</sup> Konishi Junko, 'Uta ya geinō no ekkyō to aidentiti no sōzō' [Crossing Borders by Songs: Performing Arts and the Creation of Identity] in Long, ed., *Ogasawara*, 161-193.

locally produced vegetables and fruits and save energy in transporting goods has been made recently.

The OWA is a pioneer in eco-tourism. In 1988, for the first time in Japan, it organized a whale watching tour near Hahajima, and produced a guideline for whale watching, which is Japan's first for protecting tourism resources. The OWA started dolphin tours in 1992 during which 250 people swam among dolphins. According to OWA's estimation, one whale and one Ogasawara flying fox can bring 550,000 yen and 63,000 yen respectively each year.<sup>56</sup> By July 2004, the profit gained from whale watching and dolphin tours amounted to 436 million yen. In Japan, Ogasawara is the only place where dolphins and whales can be seen all year round. Ogasawara's native plants have also been an attraction to tourists. During Japan's decade-long depression from the early 1990s when there was a downturn in tourism in Ogasawara, diving, tramping and whale watching have kept earning profit.<sup>57</sup>

In June 2002, the 'Committee for Promoting Eco-tourism in Ogasawara' was established, and has been actively engaging in activities such as participating in conferences, taking observation tours, and learning from other eco-tourism operators. For instance, it tried to become familiar with Australia's system of certifying eco-tourism, and to study the experiences of the Barbados Island of the Caribbean Sea, Norfolk Island of Australia, the Galapagos Islands, and the Oze region in Japan.<sup>58</sup> In Okinawa, members were taught that it was important to conduct eco-tourism by local guides so that profits could be returned to the local community. Also, they understood that it is essential to establish a research institute to supply high-quality information and guides, and to avoid harming the ecosystem by eco-tourism.<sup>59</sup>

In July 2002, the Village Office signed with the Tokyo Government an 'Agreement on Proper Use of Natural Environment Protection and Promotion Areas in the Ogasawara Islands'. Visits to Minamijima's karst landscape are restricted by a ban which prohibits landing during the November-February period. Outside the period, only 100 people per day are allowed to the island for no more than two hours, and each guide may have no more than fifteen tourists in a group. Hahajima's Sekimon area can be viewed only with guides who have been educated by the 'Forest Guide System' and can be visited by no more than 50 people per day. Visitors must also be in a five-person group accompanied by one guide. It seems that more and more local people want to become a guide; 'Lectures for Certifying Nature Guides in Tokyo' are well attended.<sup>60</sup>

The Tokyo Government eventually established a policy to respect the uniqueness of the Islands while still maintaining public works from August

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<sup>56</sup> *Ogasawara sonmin dayori*, 469 (May 2003).

<sup>57</sup> *Ogasawara sonmin dayori*, 487 (August 2004).

<sup>58</sup> *Ogasawara sonmin dayori*, 480 (February 2004).

<sup>59</sup> *Ogasawara sonmin dayori*, 457 (July 2002).

<sup>60</sup> *Ogasawara sonmin dayori*, 458 (August 2002).

2004.<sup>61</sup> This is an impressive shift in the Government's conventional attitudes which had long ignored the fragility of Ogasawara's ecosystem by only applying the rules for metropolitan cities. The Village Office also started a series of workshops from February 2002 on using renewable energy as part of eco-tourism industry. A new school complex in Hahajima was completed in February 2005 and utilizes solar power generation (50 kw/hour) and rain water collection.<sup>62</sup>

A movement for getting Ogasawara registered as a UNESCO World Heritage Site began in 2002. But, the islands failed to be recommended, in 2003, for the registration because of a lack of sufficient systems to protect the environment. The Village Office eventually realized that only when the local people understand the value of the ecosystem and are determined to pass the islands to future generations, will the islands be successfully recommended. The Tokyo Government decided to concentrate on promoting Ogasawara from 2004. Fortunately in 2004, the Ministry of Environment had also decided to choose Ogasawara as one of thirteen model regions for its programme, 'Promotion of Eco-tourism in National Parks'. With the support of the Ministry, Ogasawara could do more to investigate natural resources, develop tourism organizations, create different tours, train staff and establish rules.<sup>63</sup>

In January 2006, the Ministry of Environment eventually decided to recommend about 60% of the Ogasawara islands to apply for UNESCO registration. If the bid is successful, Ogasawara will be officially registered as a World Heritage Site in 2009. As the first step toward the registration, about 61% of Chichijima and 59% of Hahajima were designated as Japan's 'Protected Forest Ecosystem Areas' 森林生態系保護地域 in August 2006.<sup>64</sup> This will lift the image of Ogasawara's ecosystem that is essential for successful registration.

## Conclusion

In September 2006, the Tokyo Government stated that its airport plan will be discussed in the 'Ogasawara Development Plan' 小笠原諸島振興開発計画. This new plan stresses a harmonious relationship between the residents and nature.<sup>65</sup> It is speculated that the old wartime airport with its 800m long runway in the Suzaki region of Chichijima is a possible location for the new

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<sup>61</sup> *Ogasawara sonmin dayori*, 487 (August 2004).

<sup>62</sup> *Ogasawara sonmin dayori*, 495 (March 2005).

<sup>63</sup> *Ogasawara sonmin dayori*, 486 (July 2004).

<sup>64</sup> *Ogasawara sonmin dayori*, 514 (July 2006), 10; *Asahi Shimbun*, 'Ogasawara shotō wo hogochiiki settei, sekai isan tōroku wo mezasu' [Designation of the Protection Area in the Ogasawara Islands to aim for World Heritage Registration], 29 August 2006 (on-line news).

<sup>65</sup> *Ogasawara-mura*, [Ogasawara Islands Blue Diamond Plan 2000-2009], 2000.

airport plan.<sup>66</sup> If this airport plan materializes, then it will certainly bring a sense of security to the local residents who need quick transportation to the mainland should an urgent medical situation arise. The lack of such a means of transportation has caused an apparent resistance to the preservation of native species in the islands. This is one of the major obstacles in saving the ecosystem of Ogasawara, along with indifference to eradicating introduced species, persisting thirst for construction works, and a lack of knowledge of the natural surroundings.

Nevertheless, as discussed above, many local residents have decided to live with nature as humbly as possible. They acknowledge that Ogasawara is a place where nature has to be prioritized over civilization, and where civilization will not have future unless the ecosystem is protected. In other words, the natural environment of Ogasawara shall not be sacrificed for commercial success and modern, technology-centred convenience. Hopefully, this new understanding will gradually permeate into everyone's mind. On the Ogasawara group, nature and culture must evolve at the same time, so that they can co-exist on these unique islands.

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<sup>66</sup> *Asahi Shimbun*, 'Ogasawara ni teiki kōkūro, To ga shinkō keikaku henkō, kaisetsu wo meiki e' [Tokyo Metropolitan Government writes in its plan of development a regular air route to Ogasawara to be built], 14 September 2006 (on-line news).